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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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CONTENTS

	Page
Patents and Trademark Notices	
Board of Appeals Decisions Rendered in the Month of October 1973	2
Registration to Practice	2
European Patents Convention	2
Patent Suits	2
Patent Notices	
Certificates of Correction for the Week of December 4, 1973	4
Disclaimer and Dedication	4
Dedications	4
Disclaimers	4
National Technical Information Service	5
Condition of Patent Applications	7
Defensive Publications (T917,001)	8
Reissue Patents Granted (27,825)	12
Patents Granted	
General and Mechanical (3,775,774)	15
Chemical (3,776,690)	255
Electrical (3,777,040)	320
Design Patents Granted (229,453)	391
Index of Patentees	PI 1
Indices of Applicants of Defensive Publications, Reissues and Designs	PI 45
Classification of	
Patents (Including Reissues)	PI 49
Designs and Defensive Publications	PI 52
Geographical Index of Residence of Inventors	
Plants (Including Reissues)	PI 53
Designs and Applicants of Defensive Publications	PI 55

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of October 1973

Examiner affirmed	149
Examiner affirmed in part	16
Examiner reversed	34
Total	199

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before December 28, 1973.

Bellamy, Werten F. W., Standard Oil (Indiana), 200 E. Randolph Drive, Chicago, Ill. 60601

Perlstein, Louis J., 5403 Chillum Place NE., Washington, D.C. 20011

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

European Patent Convention

The Convention for the setting up of the European Patent System was signed at the Munich Diplomatic Conference on October 5, 1973 by fourteen European states. The official text of the Convention is contained in one volume in three languages (English, French and German). Published editions of the official final text of the Convention are now available from the,

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RENE D. TEGTMEYER,
Nov. 7, 1973. *Acting Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,734,228, W. D. Hay, CRIMPING APPARATUS; **2,759,358,** E. H. Shattuck, FILAMENT CRIMPING APPARATUS; **2,760,252,** same; **2,854,738,** A. G. Gray, NICKEL COATED URANIUM ARTICLE; **3,000,060,** Shattuck and Benedek, CRIMPING APPARATUS, **filed** May 9, 1973, D.C. Del. (Wilmington), Doc. C–4649, *Roselon Industries, Inc.* v. *Joseph Bancroft & Sons Company.*

2,743,378, Covely and Seeberger, SCAN CONVERSION SYSTEM UTILIZING RESOLVED WRITING DEFLECTIONS; **2,841,566,** T. A. Te Grotenhuis, HIGH POLYMERS WITH CHEMICALLY BONDED REINFORCING AND METHOD OF MAKING SAME, **filed** May 4, 1973, Ct. of Appeals, N.D. Ohio (Cincinnati), Doc. 72–1743, 72–1744 and 72–1803, *Westwood Chemical, Inc.* v. *Johns-Manville Fiber Glass, Inc., Certain-Teed Products Corporation and Ferro Corporation.* The orders and judgment of the District Court are affirmed, May 4, 1973.

2,758,358. (See 2,734,228.)

2,760,252. (See 2,734,228.)

2,841,566. (See 2,743,378.)

2,854,738. (See 2,734,228.)

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, **filed** May 3, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73–606, *Edward T. Molinaro and Anthony P. Catanzaro* v. *Lafayette Radio Electronics.*

2,923,507, L. S. Suozzo, CONSTANT SUPORT DEVICE; **3,148,870,** same, SPRING SUPPORT DEVICE, **filed** May 1, 1973. D.C.N.J. (Newark), Doc. C–596–73, *Carpenter and Paterson, Inc.* v. *Leonard S. Suozzo and Bergen Pipesupport Corporation.*

3,000,060. (See 2,734,228.)

3,023,300, G. Lehnert, METHOD AND APPARATUS FOR FORMING CABLE SHEATH; **3,208,256,** same, APPARATUS FOR THE MANUFACTURE OF CORRUGATED THIN WALLED METAL TUBES; **3,280,609,** same, METHOD AND MEANS FOR FORMING THIN METAL TUBING; **3,383,895,** same, COILABLE WAVEGUIDE, **filed** May 3, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1145, *Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft* v. *Justice Associates, Inc.*

3,061,139, B. Edwards, SELF-VENTING PACKAGE; **3,091,360,** same, NESTABLE CUP, **filed** May 4, 1973, D.C., N.D. Ill. (Chicago), Doc. 73o1161, *Illinois Tool Works, Inc.* v. *Foster Grant Company.*

3,091,360. (See 3,061,139.)

3,148,870. (See 2,293,507.)

3,159,505, Burgess and Johnson, BINDER PRODUCT AND PROCESS, **filed** June 6, 1973, D.C. Kans. (Kansas City), Doc. KC–3754, *Krause Milling Company* v. *Lincoln Grain, Inc.*

3,166,854, Packer and Benedetto, PLEAT-MARKING DEVICE; **3,306,603,** D. F. Ziers, HOLDING APPARATUS FOR SHEET MATERIAL, **filed** Sept. 20, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–661–C, *Lightron Corporation and Harold I. Kaplan* v. *George Callas.* Defendant forever restrained and enjoined, Dec. 22, 1972.

3,179,026, A. F. Crone, SEALING ELEMENT FOR PAVEMENT GROOVES; **3,276,336,** same, SEALING DEVICES FOR GROOVES BETWEEN STRUCTURAL BLOCKS; **3,482,292,** A. Frohlich, ENDSTOP MEMBERS FOR SLIDE FASTENERS, **filed** Mar. 26, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C–1971–136, *Acme Highway Products Corporation* v. *Watson-Bowman Associates, Inc., Stewart C. Watson and Thomas C. Bowman.* Stipulation and order of dismissal filed May 10, 1973.

3,183,529, G. Beuchat, SWIMMER'S FOOT-FIN WITH THRUST-ACCELERATING DEVICE, **filed** June 5, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1261–LTL, *U.S. Divers Company* v. *Under Sea Industries.*

3,208,256. (See 3,023,300.)

3,254,970, Dittrich and Shepard, FLAME SPRAY CLAD POWDER COMPOSED OF A REFRACTORY MATERIAL AND NICKEL OR COBALT; **3,322,515,** same, FLAME SPRAYING EXOTHERMICALLY REACTING INTERMETALLIC COMPOUND FORMING COMPOSITES, **filed** Apr. 25, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73C561, *Eutectic Corporation et ano.* v. *Metco, Inc.*

3,276,336. (See 3,179,026.)

3,280,609. (See 3,023,300.)

3,306,603. (See 3,166,854.)

3,316,574, R. L. Pare, ROAD EXPANSION JOINT, **filed** May 11, 1973, D.C. Del. (Wilmington), Doc. 4653, *Robert L. Pare and The General Tire & Rubber Co.* v. *The Johnson Rubber Company.*

3,322,515. (See 3,254,970.)

3,329,984, R. M. Akers, LOADING DOCK RAMP ASSEMBLY, **filed** Nov. 3, 1967, D.C., E.D. Wis. (Milwaukee), Doc. 67–C–361, *Robert M. Akers, doing business as R. M. Akers Mfg. Company* v. *American Dockbridge, Inc.* Judgment: Claim 5 of Patent No. 3,329,984 invalid, defendant has not committed any acts of unfair competition; defendant Rite-Hite has not attempted to monopolize trade and commerce in dockboards nor otherwise violated the Sherman Act. Plaintiffs do not have unclean hands, nor did plaintiffs commit fraud on the Patent Office, nor did plaintiffs violate the antitrust laws by the attempted enforcement of claim 5 of United States Patent No. 3,329,984. Except for the requests by the defendants for declaratory judgments which are merged in this judgment, this action, including all claims and counterclaims is dismissed on its merits, May 8, 1973.

3,383,895. (See 3,023,300.)

3,403,953, R. O. Clark, DEVICE FOR RENOVATING OLD CABINETS; **Reg. No. 840,745** (CABINETPAK), Homewood Cabinet Top Company, **filed** May 7, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1175, *Homewood Industries, Inc.* v. *Thomas Caldwell, individually and doing business as Cabinetpak Kitchens, Inc. et al.*

3,418,111, R. B. Herchenroeder, COBALT BASE ALLOY, **filed** July 31, 1972, Ct. of Cl. (District of Columbia), Doc. 301–72, *Cabot Corporation* v. *The United States.*

3,421,731, Koch and Rocher, HOT TOP MAINTAINING SYSTEM, **filed** June 7, 1973, D.C., W.D. Pa. (Pittsburgh), Doc. CA 73–471, *Metallurgical Exoproducts Corporation* v. *Pittsburgh Metals Purifying Company, Inc.*

3,479,873, H. Hermanns, SELF-CLEANING ELECTRODES, **filed** Mar. 2, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73C 119 (4), *Emerson Electric Co.* v. *Fischer & Porter Co.*

3,482,292. (See 3,179,026.)

3,581,874, M. A. Keith, PORTABLE STACKING DEVICES FOR CONVEYORS, **filed** Apr. 15, 1972, Ct. of Claims (District of Columbia), Doc. 317–72, *Milroy A. Keith* v. *The United States.*

3,631,631, J. I. Greenstein, PNEUMATIC ABRASIVE CUTTING APPARATUS, **filed** Mar. 2, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–461–CC, *Dental Gold Company, doing business as American Gold Company* v. *Futurecraft Corporation.* Stipulation to dismiss with prejudice and order thereon, June 7, 1973.

3,647,983, Fitzsimons and Phelps, KEY SYSTEM LINE CARD CIRCUIT, **filed** June 4, 1973, D.C., M.D. Fla. (Tampa), Doc. 73–275–C T.K., *San/Bar Corp.* v. *International Telephone & Telegraph Corp. and Graybar Electric Co., Inc.*

3,650,460, B. P. Lokey, PAPER BAG; **3,687,356,** Goodrich and Waxlax, GUSSETED TYPE BAGS, **filed** May 29, 1973, D.C., S.D. Iowa (Des Moines), Doc. 73–117–2, *Great Plains Bag Corp.* v. *St. Regis Paper Company.*

3,665,318, Hoffman and Schonegg, RADIO RECEIVER; **3,714,585,** R. C. Koch, SCANNING RADIO HAVING RAPID CHANNEL SKIPPING CAPABILITY, **filed** Apr. 6, 1973, D.C., E.D. Mich. (Detroit), Doc. 39931, *Regency Electronics, Inc.* v. *Crandall Wholesale Co.*

3,687,356. (See 3,650,460.)

3,705,061, E. B. King, CONTINUOUS REDOX PROCESS FOR DISSOLVING COPPER, **filed** May 14, 1973, D.C.N.J. (Newark), Doc. C–672–73, *MacDermid Incorporated* v. *Southern California Chemical Co., Inc.* **Same, filed** May 10, 1973, D.C., S.D. Tex. (Houston), Doc. CA 73–H–602, *Southern California Chemical Co., Inc.* v. *Philip A. Hunt Chemical Corp.*

3,714,585. (See 3,665,318.)

3,718,923, Horwitz, Gordon and Becker, BIPOLAR FLOATING INPUT, PARTICULARLY FOR DIGITAL PANEL METERS, **filed** May 8, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73–C–638, *Gordon Engineering Company* v. *General Microwave Corp., doing business as Gralex Industries.*

3,737,866, R. H. Gruner, DATA STORAGE AND RETRIEVAL SYSTEM, **filed** June 7, 1973, D.C. Del. (Wilmington), Doc. 4674, *Data General Corporation* v. *Digital Computer Controls, Inc.*

Re. 27,510, J. Hoeltzenbeln, ARTIFICIAL KIDNEY, **filed** May 7, 1973, D.C.N.J. (Trenton), Doc. C–616–73, *Vernitron Medical Products, Inc.* v. *Baxter Laboratories, Inc.*

Reg. No. 840,745. (See 3,403,953.)

Certificates of Correction for the Week of Dec. 4, 1973

Re. 27,320	3,708,219	3,728,175	3,739,649
Re. 27,601	3,709,950	3,728,383	3,739,711
Re. 27,604	3,710,957	3,728,450	3,739,803
Re. 27,606	3,711,045	3,728,538	3,739,897
Re. 27,633	3,711,767	3,729,006	3,739,983
Re. 27,684	3,712,613	3,729,223	3,740,143
Re. 27,708	3,713,687	3,729,420	3,740,269
Re. 27,731	3,713,908	3,729,536	3,740,333
Re. 27,744	3,714,035	3,729,546	3,740,513
D. 227,531	3,714,176	3,729,699	3,740,569
D. 227,707	3,714,623	3,729,918	3,740,633
3,516,782	3,714,900	3,730,571	3,740,660
3,542,587	3,716,895	3,730,731	3,740,693
3,573,211	3,717,746	3,730,739	3,740,897
3,595,813	3,717,972	3,731,001	3,741,276
3,596,008	3,718,472	3,731,044	3,741,438
3,627,773	3,718,489	3,731,045	3,741,802
3,629,856	3,719,082	3,731,047	3,741,986
3,636,221	3,719,229	3,732,095	3,742,033
3,639,157	3,719,474	3,732,129	3,742,070
3,642,426	3,719,830	3,732,463	3,742,317
3,645,556	3,720,288	3,732,645	3,742,329
3,646,071	3,720,656	3,733,121	3,742,365
3,655,655	3,720,707	3,733,179	3,742,381
3,659,018	3,721,258	3,733,309	3,742,413
3,666,632	3,721,653	3,733,796	3,742,469
3,673,474	3,721,679	3,734,003	3,744,963
3,676,398	3,721,692	3,734,071	3,745,133
3,683,027	3,722,458	3,734,873	3,746,342
3,685,602	3,723,101	3,734,953	3,746,371
3,689,468	3,723,135	3,734,975	3,747,970
3,693,370	3,723,145	3,735,464	3,748,039
3,693,697	3,723,258	3,735,482	3,748,272
3,694,466	3,723,469	3,735,617	3,749,890
3,697,955	3,723,475	3,735,848	3,750,003
3,699,169	3,724,143	3,735,909	3,751,542
3,699,531	3,724,427	3,736,135	3,752,048
3,700,710	3,724,513	3,736,855	3,752,764
3,700,771	3,724,529	3,736,871	3,753,936
3,700,883	3,724,776	3,737,051	3,755,176
3,701,660	3,725,203	3,737,391	3,755,802
3,701,798	3,725,248	3,737,697	3,757,644
3,702,251	3,725,350	3,738,013	3,757,889
3,702,734	3,725,363	3,738,457	3,757,979
3,702,963	3,725,403	3,738,554	3,757,998
3,703,530	3,725,433	3,738,755	3,758,232
3,705,181	3,726,054	3,738,800	3,758,742
3,705,491	3,727,515	3,739,034	
3,707,747	3,727,592	3,739,448	
3,708,211	3,727,767	3,739,460	

Disclaimer and Dedication

3,633,173.—*Charles F. Edge,* Los Angeles, Calif. DIGITAL SCAN CONVERTER. Patent dated Jan. 4, 1972. Disclaimer and dedication filed Aug. 17, 1973, by the assignee, *Hughes Aircraft Company.*

Hereby disclaims all claims of said patent and dedicates to the Public the entire term of said patent.

Dedications

2,730,338.—*Joseph S. Gregorius,* Tarentum, Pa. GLASS REFINING APPARATUS. Patent dated Jan. 10, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,736,218.—*Florian V. Atkeson,* Tarentum, Pa. CUTTING TOOLS. Patent dated Feb. 28, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,763,928.—*Harry A. Smith, Jr.,* Tarentum, Pa. TIMER CONTROLS FOR AUTOMATIC GLASS CUTTING MACHINE. Patent dated Sept. 25, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,782,569.—*Bruce D. Robbins,* Arnold, Pa. CORNER GRINDING MECHANISM AND METHOD. Patent dated Feb. 26, 1957. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,795,083.—*Robert M. Hainsfurther,* Brackenridge, Pa. METHOD AND APPARATUS FOR MINIMIZING WAVE IN ROLLED GLASS. Patent dated June 11, 1957. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,805,519.—*Walter A. Adamsky,* New Kensington, Pa. HANDLING GLASS SHEETS FOR THERMAL TREATMENT. Patent dated Sept. 10, 1957. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,805,520.—*Lloyd V. Black,* Tarentum, Pa. METHOD FOR BENDING AND TEMPERING GLASS. Patent dated Sept. 10, 1957. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,831,791.—*Daniel T. Downes,* Wilkinsburg, and *Edward Faustin,* Brackenridge, Pa. METHOD AND APPARATUS FOR PROCESSING GLASS. Patent dated Apr. 22, 1958. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,849,345.—*William G. Smith* and *Brook J. Dennison,* Tarentum, Pa. PRELIMINARY PRESSING OF BENT GLASS ASSEMBLIES. Patent dated Aug. 26, 1958. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

3,607,005.—*Gordon H. Chambers,* Philadelphia, Pa. PROCESS OF EXTRACTING VANADIUM. Patent dated Sept. 21, 1971. Dedication filed Sept. 4, 1973, by the inventor.

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,360,157.—*Richard Robert Bolt,* Lake Villa, and *Delbert Edmund Woble,* Carry, Ill. METHOD OF FORMING A COATED METAL CONTAINER AND ARTICLE PRODUCED THEREBY. Patent dated Dec. 26, 1967. Disclaimer filed Sept. 4, 1973, by the assignee, *American Can Company.*

Hereby enters this disclaimer to claim 1 of said patent.

3,548,936.—*Marion D. Kilgore,* Houston, and *Robert C. Pumpelly,* Dallas, Tex. WELL TOOLS AND GRIPPING MEMBERS THEREFOR. Patent dated Dec. 22, 1970. Disclaimer filed July 23, 1973, by the assignee, *Dresser Industries, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 5, 6, 39 and 42 of said patent.

3,604,527.—*Warren H. Price,* Sheboygan, Wis. TRACTOR SUBASSEMBLY. Patent dated Sept. 14, 1971. Disclaimer filed Aug. 29, 1973, by the assignee, *Gilson Bros. Co.*

Hereby enters this disclaimer to claim 6 of said patent.

3,630,170.—*Nicholas Christo,* Boonton, N.J. TAPE AMOUNT INDICATOR FOR TAPE RECORDERS. Patent dated Dec. 28, 1971. Disclaimer filed July 26, 1973, by the assignee, *Continental Commerce Corporation.*

Hereby enters this disclaimer to claims 1 and 4 of said patent.

3,672,155.—*John M. Bergey* and *Richard S. Walton,* Lancaster, Pa. SOLID STATE WATCH. Patent dated June 27, 1972. Disclaimer filed Sept. 7, 1972, by the assignee, *Hamilton Watch Company.*

Hereby enters this disclaimer to claims 4, 14, 15 and 16 of said patent.

3,719,903.—*William Eugene Goodson,* Freehold, N.J. DOUBLE SIDEBAND MODEM WITH EITHER SUPPRESSED OR TRANSMITTED CARRIER. Patent dated Mar. 6, 1973. Disclaimer filed May 7, 1973, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to all claims of said patent.

3,729,794.—*Richard W. Douglass,* Needham, Mass. FIBERED METAL POWDERS. Patent dated May 1, 1973. Disclaimer filed May 2, 1973, by the assignee, *Norton Company.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 1, 1989.

3,731,237.—*Henry Richard Beurrier,* Chester Township, Morris County, N.J. BROADBAND TRANSFORMERS. Patent dated May 1, 1973. Disclaimer filed July 16, 1973, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1–4 of said patent.

3,736,093.—*Cadet E. Bowman* and *Frank Hayward,* Sycamore, Ill. INTEGRAL REGULATED HAND TORCH. Patent dated May 29, 1973. Disclaimer filed June 28, 1973, by the assignee, *Olin Corporation.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,748,597.—*Franz Karl Reinhart,* Summit, N.J. OPTICAL MODULATORS. Patent dated July 24, 1973. Disclaimer filed Aug. 10, 1973, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1 through 8, 10 through 13, and 15 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents; 18th and C Streets NW.,
Washington, D.C. 20240

Patent application 393,385. Recovery of Sulfur. Filed Aug. 31, 1973. PC $3/MF $1.45.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents;
Washington, D.C. 20545

Patent application 306,510. Ductile Super-Conducting Alloys. Filed Nov. 14, 1972. PC $3/MF $1.45.

Patent 3,732,422. Counter for Radiation Monitoring. Filed May 23, 1972. Patented May 8, 1973. Not available NTIS.

Patent 3,736,126. Gold Recovery From Aqueous Solutions. Filed Sept. 24, 1971. Patented May 29, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY
Chief, Patents Division; Office of Judge Advocate General;
Patent Division, Room 2C–455; Pentagon;
Washington, D.C. 20310

Patent 3,139,663. Concrete Casting Machine. Filed Sept. 29, 1961. Patented July 7, 1964. Not available NTIS.

Patent 3,373,741. Plastic Splint. Filed Mar. 19, 1965. Patented Mar. 19, 1968. Not available NTIS.

Patent 3,550,440. Pressurized Tensile Test Apparatus. Filed Jan. 8, 1969. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,550,909. Stake Extracting Apparatus. Filed June 24, 1968. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,562,551. Unit Distance Counter. Filed Sept. 20, 1967. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,591,113. Mast Support. Filed Jan. 13, 1970. Patented July 6, 1971. Not available NTIS.

Patent 3,609,613. Low Loss Transmission Line Transformer. Filed Nov. 3, 1970. Patented Sept. 28, 1971. Not available NTIS.

Patent 3,610,277. Pressure Actuated Flow Regulator. Filed Oct. 20, 1969. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,610,741. Flame Spraying Aluminum Oxide To Make Reflective Coatings. Filed Jan. 8, 1969. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,377. Doppler Radar With Target Velocity Direction and Range Indicator Utilizing Variable Delay Lines. Filed Jan. 21, 1970. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,616,523. Glass Laser Window Sealant Technique. Filed Nov. 24, 1970. Patented Nov. 2, 1971. Not available NTIS.

Patent 3,620,940. Method of Inducing Polarization of Active Magnesium Surfaces. Filed May 12, 1970. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,634,860. Doppler Radar With Target Velocity Direction and Range Indication, Utilizing a Variable Frequency Generator Filed Jan. 21, 1970. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,645,206. Ammunition Cartridge. Filed Feb. 19, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,645,810. Solid Fuel Composition. Filed June 14, 1955. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,263. Semiautomatic Television Tracking System. Filed Jan. 4, 1971. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,651,425. Multiple Unit Laser System. Filed Dec. 22, 1964. Patented Mar. 21, 1972. Not available NTIS.

Patent 3,656,983. Shell Mold Composition. Filed Oct. 14, 1970. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,665,514. Low Profile Size Adjustable Protective Helmet. Filed Sept. 22, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,665,857. Base Ejecting Ordnance Projectile. Filed Nov. 23, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,040. Sensor for Detecting Radio Frequency Currents in Carbon Bridge Detonator. Filed Sept. 28, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,671,968. Two Channel Direction Finder. Filed Jan. 26, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,673,064. Method of Eliminating Copper Contamination. Filed Oct. 29, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,675,327. Filled Cold-Curing Acrylic Resin as a Splinting Material. Filed Jan. 13, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,676,901. Adjustable, Quickly Releasable Webbing Connector. Filed Dec. 14, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,677,075. Method for the Detection and Classification of Defects in Internal Combustion Engines. Filed Oct. 20, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,677,588. Fastener. Filed Dec. 1, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,677,847. Photolithographic Etching Method for Nickel Oxide. Filed Mar. 15, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,677,879. Thermally Conductive Bearing Material. Filed Apr. 28, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,677,974. Multi-Purpose Conductive Adhesive. Filed Sept. 18, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,678,194. Digital Data Transmission and Detection System. Filed Jan. 26, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,678,276. Infrared Radiometric Detection of Seal Defects. Filed July 1, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,678,362. Solid State Pulser Using Parallel Storage Capacitors. Filed Sept. 17, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,678,398. Presettable Frequency Divider. Filed Mar. 23, 1972. Patented July 18, 1972. Not available NTIS.

Patent 3,680,138. Cross-Mode Reflector for the Front Element of an Array Antenna. Filed Sept. 21, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,680,406. Flexible Cams. Filed June 7, 1971. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,680,924. Endless Track Pin Assembly. Filed Mar. 6, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,681,010. Preparation of Ultrafine Mixed Metallic-Oxide Powders. Filed Sept. 14, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,681,011. Cryo Coprecipitation Method for Production of Ultrafine Mixed Metallic-Oxide Particles. Filed Jan. 19, 1971. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,681,162. Antenna Fabrication Method. Filed Dec. 27, 1968. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,681,715. Reciprocal Latching Ferrite Phase Shifter. Filed June 23, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,685,347. Squib Switch Simulator. Filed Aug. 30, 1971. Patented Aug. 22, 1972. Not available NTIS.

Patent 3,686,520. Fluid Electrical Generator. Filed May 6, 1971. Patented Aug. 22, 1972. Not available NTIS.

Patent 3,686,591. Anisotropic Crystal Circuit. Filed July 24, 1970. Patented Aug. 22, 1972. Not available NTIS.

Patent 3,686,592. Monolithic Coupled Crystal Resonator Filter Having Cross Impedance Adjusting Means. Filed Oct. 8, 1970. Patented Aug. 22, 1972. Not available NTIS.

Patent 3,687,000. Gas Operated Firearm Muzzle Attachment. Filed Apr. 30, 1970. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,687,519. Semi-Micro Absolute Transmittance and Specular Reflectance Accessory for Spectrophotometers. Filed Feb. 24, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,189. Real-Time Initial Atmospheric Gradient Measuring System. Filed May 28, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,218. Stimulated Radiation Cavity Reflector. Filed Jan. 29, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,222. Matched Ultrasonic Delay Line With Solderable Transducer Electrodes. Filed Mar. 18, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,225. Slot Line. Filed May 21, 1969. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,556. Wear Testing Apparatus. Filed June 25, 1971. Patented Sept. 5, 1972. Not available NTIS.

Patent 3,689,770. Exposure Control Circuit for an Electrically Shuttered Image Tube. Filed July 28, 1971. Patented Sept. 5, 1972. Not available NTIS.

Patent 3,689,948. Polyvinyl Alcohol Gel Support Pad. Filed June 9, 1970. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,690,170. Automatic Wind Direction Readout Device. Filed July 30, 1971. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,690,323. Device for Draining Ventricular Fluid in Cases of Hydrocephalus. Filed Dec. 1, 1970. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,690,552. Fog Dispersal. Filed Mar. 9, 1971. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,690,972. Green Flare Composition. Filed July 16, 1971. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,691,478. Laser Energy Monitor and Control. Filed Nov. 9, 1970. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,691,497. Leadless Microminiatnre Inductance Element With a Closed Magnetic Circuit. Filed Oct. 15, 1970. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,691,902. Monitoring System for Pneumatic Cylinder. Filed July 13, 1971. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,692,161. Self-Locking Clutch. Filed Oct. 14, 1970. Patented Sept. 19, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters; NASA—CP–2; Washington, D.C. 20546

Patent application 367,268. High Lift Aircraft. Filed June 5, 1973. PC $3/MF $1.45.

Patent application 367,606. Self Energized Plasma Compressor. Filed June 6, 1973. PC $3/MF $1.45.

Patent application 372,142. Graded Bandgap al(X)ga (1-X)a S-Gas Solar Cell. Filed June 21, 1973. PC $3/MF $1.45.

Patent 3,730,287. Vehicle for Use in Planetary Exploration. Filed May 17, 1971. Patented May 1, 1973. Not available NTIS.

Patent 3,732,409. Counting Digital Filters. Filed Mar. 20, 1972. Patented May 8, 1973. Not available NTIS.

Patent 3,733,424. Electronic Strain Level Counter. Filed July 8, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,733,463. Temperature Control System With a Pulse Width Modulated Bridge. Filed Dec. 24, 1970. Patented May 15, 1973. Not available NTIS.

Patent 3,736,607. Life Raft Stabilizer. Filed Nov. 30, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,736,764. Temperature Controller for a Fluid Cooled Garment. Filed Apr. 25, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,736,938. Ophthalmic Method and Apparatus. Filed November 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,736,956. Floating Baffle To Improve Efficiency of Liquid Transfer From Tanks. Filed Sept. 16, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,117. Docking Structure for Spacecraft. Filed July 6, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,121. Dual-Fuselage Aircraft Having Yawable Wing and Horizontal Stabilizer. Filed Dec. 9, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,181. Disconnect Unit. Filed Feb. 24, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,217. Visual Examination Apparatus. Filed July 6, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,231. High Pulse Rate High Resolution Optical Radar System. Filed Nov. 13, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,737,237. Monitoring Deposition of Films. Filed Nov. 18, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,639. Derivation of a Tangent Function Using an Integrated Circuit Four-Quadrant Multiplier. Filed May 17, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,737,676. Low Phase Noise Digital Frequency Divider. Filed Nov. 18, 1971. Patented June 4, 1973. Not available NTIS.

Patent 3,737,757. Parasitic Suppressing Circuit. Filed May 15, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,737,776. Two Carrier Communication System With Single Transmitter. Filed June 9, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,815. High-Q Bandpass Resonators Utilizing Bandstop Resonator Pairs. Filed Nov. 27, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,737,824. Twisted Multifilament Superconductor. Filed Aug. 11, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,737,905. Method and Apparatus for Measuring Solar Activity and Atmospheric Radiation Effects. Filed Mar. 31, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,737,912. Collapsible High Gain Antenna. Filed Sept. 16, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,740,671. Filter for Third Order Phase Locked Loops. Filed Apr. 6, 1972. Patented June 19, 1973. not available NTIS.

Patent 3,740,725. Automated Attendance Accounting System. Filed June 16, 1971. Patented June 19, 1973. Not available NTIS.

Patent 3,744,794. Restraint System for Ergometer. Filed June 25, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,744,972. Nondestructive Spot Test Method for Magnesium and Magnesium Alloys. Filed July 16, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,745,089. Protein Sterilization Method of Firefly Luciferase Using Reduced Pressure and Molecular Sieves. Filed Mar. 5, 1968. Patented July 10, 1973. Not available NTIS.

Patent 3,745,090. Method of Detecting and Counting Bacteria in Body Fluids. Filed Apr. 30, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,745,739. Apparatus and Method for Skin Packaging Articles. Filed Mar. 24, 1971. Patented July 17, 1973. Not available NTIS.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Room W 513, 401 M Street SW.; Washington, D.C. 20460

Patent application 324,041. Atmospheric Fluidized Vapor Generator. Filed Jan. 16, 1973. PC $3/MF $0.95.

[FR Doc. 73-23536; Filed 11-6-73; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 10, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-03-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-09-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-08-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-18-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-18-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-04-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-08-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-17-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-02-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-05-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-04-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-21-72

Expiration of patents: The patents within the range of numbers indicated below expire during November 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,769,173 to 2,772,414, inclusive
Plant Patents ..... Numbers 1,526 to 1,531, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 4, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

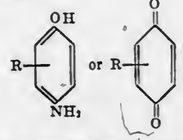
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T917,001
SYNTHESIS OF CHLORINATED BALLASTED QUINONES

Albert E. Anderson, Jr., Penfield, and Ilmari F. Salminen, Rochester, N.Y. (both % Eastman Kodak Company, Rochester, N.Y. 14650)

Filed Dec. 2, 1971, Ser. No. 204,295
Int. Cl. C07c *49/64*
U.S. Cl. 260—396 R
No Drawing. 7 Pages Specification

Chlorinated, ballasted quinones are prepared in one step in high purity and high yield by the oxidative chlorination of the corresponding ballasted p-aminophenol or quinone. Specifically,



wherein R=alkyl or aryl of at least 8 carbon atoms, is treated with chlorine in the presence of a solvent mixture of acetic acid and water. The solvent mixture is preferably 70–90% by volume of acetic acid. The process is preferably carried out at a temperature of from 80–120° C. 2,3,6-trichloro-5-(n - pentadecyl)-1,4-benzoquinone is prepared by employing either 3-(n-pentadecyl)-4-aminophenol or 3-(n-pentadecyl-1,4-benzoquinone) as the starting reactant. The chlorinated ballasted quinones thus prepared are useful in preparing dye-releasing or dye precursor-releasing compounds for image transfer systems.

T917,002
SEWING THREAD HAVING A SILICONE LUBRICANT AND FLAME RETARDANT ON THE SURFACE OF THREAD

Robert R. Sanders, 3289 Ashley St., Kingsport, Tenn. 37664

Filed June 15, 1972, Ser. No. 263,065
Int. Cl. C09d *1/00*
U.S. Cl. 117—136
No Drawing. 7 Pages Specification

Disclosed is a sewing thread comprised of a synthetic thermoplastic polymer, the sewing thread having on its surface a silicone lubricant and an organic bromine-containing flame retardant. More specifically, the sewing thread has on its surface, based on the weight of the sewing thread, from about 0.3 to about 6 weight percent silicone and, based on the weight of the sewing thread, a sufficient quantity of an organic bromine-containing flame retarder to result in about 0.1 to about 2 weight percent bromine on the surface of the sewing thread. Examples of the many kinds of synthetic thermoplastic polymers that are within the scope of this invention include cellulose acetate, polyamide, polyester, cellulose triacetate, acrylic and modacrylic. In a preferred embodiment the synthetic thermoplastic polymer is polyester and in one especially preferred embodiment the polyester is poly(ethylene terephthalate). The silicone lubricant used in this invention is the type normally employed to lubricate sewing thread and chemically is poly(dimethyl siloxane) having a molecular weight making it suitable as a sewing thread lubricant. The flame retarder used in this invention can be described as a bromine-containing flame retarder which contains, based on the weight of the organic bromine-containing flame retarder, from about 40 to about 85% of bromine by weight and preferably contains from about 60 to about 80% bromine. Flame retarders that contain both phosphorus and bromine are particularly desirable in this invention. Suitable flame retarders are represented by bis(bromochloropropyl) bromochloropropyl phosphonate, tris(2,3 - dibromopropyl) phosphate, tris(dibromophenyl) phosphate and di(2,3-dibromopropyl) tribromophenyl phosphate. The sewing thread of this invention advantageously exhibits desirable sewability due to the silicone lubricant and also imparts desirable flame retardancy to the sewn garment due to the organic bromine-containing flame retarder.

T917,003
PHOTOGRAPHIC PROCESS AND PRODUCT

Charles A. Goffe, Robert D. Lindholm, and Peter M. Stacy, all % Eastman Kodak Company, Rochester, N.Y. 14650

Filed Sept. 28, 1972, Ser. No. 293,289
Int. Cl. G03c *5/24, 5/26, 1/76*
U.S. Cl. 96—48 RP
No Drawing. 9 Pages Specification

An element comprising a halogen acceptor coated on a transparent support contacted with a second element comprising a print-out photographic emulsion on a separate support provides an improved print-out photographic product. An improved print-out photographic process is provided by imagewise exposing the product to light and separating the two elements. A stable, visible image results without the need of a subsequent photo-development or heat stabilization step.

T917,004
PROCESS FOR THE CHLORINATION OF POLYOLEFINS

Warren L. Young, 9542 E. Damuth Place, Baton Rouge, La. 70815; John T. Holloway, 4121 Florida St., Zachary, La. 70791; and James S. Kennedy, 463 W. Chalfont St., Baton Rouge, La. 70815

Filed Dec. 11, 1972, Ser. No. 313,765
Int. Cl. C08f *45/04*
U.S. Cl. 260—29.6 XA
No Drawing. 12 Pages Specification

A process for the chlorination of essentially linear polyolefins in suspension in an inert liquid wherein such chlorination takes place at least in part at a temperature above the agglomeration temperature of the polyolefin being chlorinated and in the presence of an inert filler material, e.g., a platy talc, to control the particle size of the chlorinated product, wherein the improvement consists of adding the inert filler material during that portion of the chlorination reaction which is conducted at or above the agglomeration temperature of the polyolefin. Utilization of this process permits the obtainment of chlorinated polyolefin of small particle size, e.g., less than 600 microns, while utilizing as little as 4 parts of inert filler per 100 parts of polyolefin.

T917,005
PIPE CEMENT

Everett Walter Knight, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

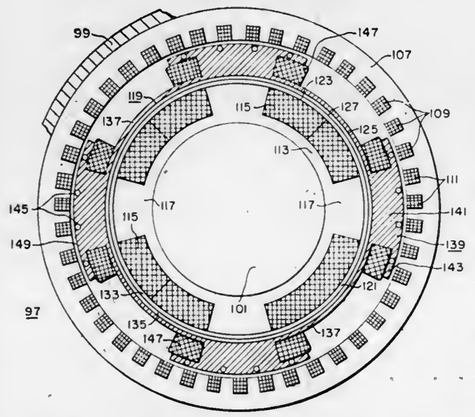
Filed Dec. 15, 1972, Ser. No. 315,562
Int. Cl. C08f *29/18, 45/04, 45/28*
U.S. Cl. 260—30.4 R
No Drawing. 8 Pages Specification

A cement composition is provided for PVC and CPVC pipes which contain from about 10 to about 18 parts by weight of pipe grade PVC resin or pipe grade CPVC resin, from about 55 to about 75 parts by weight of tetrahydrofuran, from about 3 to about 9 parts by weight of a high boiling solvent, from about 1 to about 7 parts by weight of a micro colloidal silica powder and from about 5 to about 25 parts by weight of a nonsolvent for the pipe grade PVC and/or CPVC resins.

T917,006
DYNAMOELECTRIC MACHINERY UTILIZING SUPERCONDUCTIVE WINDINGS

Cecil J. Mole, Monroeville, and Robert F. Edwards, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 29, 1973, Ser. No. 327,540
Int. Cl. H02k *9/00*
U.S. Cl. 310—52
4 Sheets Drawing. 36 Pages Specification



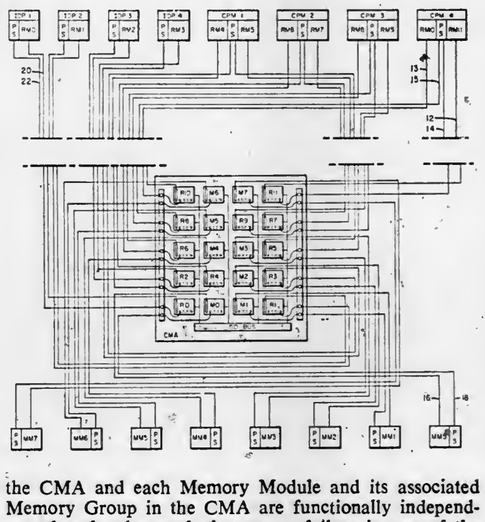
Iron or other ferromagnetic material is utilized in the magnetic circuit of dynamoelectric machines having superconductive field or excitation windings. In DC machines, a stationary salient pole field structure with a superconductive main field winding is utilized. An armature winding is wound about a smooth rotor. In AC machines, a ferromagnetic structure that encloses and rotates with a superconductive excitation winding is utilized. The ferromagnetic structure may include either salient poles interconnected by ferromagnetic shunts or a slotted or toothed rotor.

T917,007
CENTRALIZED MEMORY ACCESS MODULE FOR A DATA PROCESSING SYSTEM

Douglas E. Hair and John A. Bonnes, both of Univac Park, P.O. Box 3525, St. Paul, Minn. 55165

Filed Feb. 14, 1973, Ser. No. 332,526
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5
14 Sheets Drawing. 25 Pages Specification

A Centralized Memory Access Module (CMA) that provides a means whereby the associated Data Processing Subsystem (DPS) configuration having up to twelve Requester Modules (RM0–RM11) may be multiplexed or interfaced with up to eight Memory Modules (MM0–MM7) is disclosed. The CMA is comprised of an array of groups of printed circuit cards that are mounted on a single panel for back panel wiring. The CMA is comprised of twelve similar Requester Groups R0–R11 and eight similar Memory Groups M0–M7. Each Requester Module and its associated power supply PS are wired to only its associated Requester Group in the CMA, e.g., RM11 is wired to only R11 in the CMA, and each Memory Module and its associated power supply PS are wired to only its associated Memory Group in the CMA, e.g., MM0 is wired to only M0 in the CMA. Thus, each Requester Module and its associated Requester Group in



the CMA and each Memory Module and its associated Memory Group in the CMA are functionally independent of each other such that power failure in one of the modules affects only its associated group in the CMA whereby failure of one or more but not all of the modules does not cause DPS failure. The logic design of the groups that make up the CMA isolate all data, address, control and power signals from each other group and from the other modules while having a common ground bus and intercouples data, address and control signals between one Requester Module and one Memory Module, all under control of the associated Requester Group and Memory Group.

T917,008
HOT MELT ADHESIVE CONTAINING HYDROGENATED AROMATIC HYDROCARBON RESIN TACKIFIER

Robert G. Fajans, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 9, 1973, Ser. No. 339,693
Int. Cl. C08f *29/12*
U.S. Cl. 260—28.5 A
No Drawing. 8 Pages Specification

Hot melt adhesive compositions comprise a thermoplastic component and a tackifier comprising hydrogenated aromatic hydrocarbon petroleum resins. The thermoplastic component can be low molecular weight polyethylene, amorphous polypropylene, paraffin wax, styrene-butadiene copolymers, styrene-isoprene-styrene block copolymers, polyvinyl acetate, and is preferably an ethylene-vinyl acetate copolymer.

The hydrogenated aromatic hydrocarbon petroleum resins used as the tackifier are derived from polymerized cracked naphtha fractions boiling in the range of from about −10° C. to about 280° C. and containing polymerizable unsaturated hydrocarbons of which at least 50%

by weight consists of a mixture of aromatic olefins, cyclic olefins and cyclic diolefins.

Hot melt adhesives are used to bond wood, paper, plastics, textiles, etc.

T917,009

THERMOPLASTIC POLYOLEFIN MOLDING COMPOSITIONS CONTAINING GLASS FIBERS WHICH HAVE BEEN TREATED WITH AN ANIONIC EMULSION OF A MODIFIED POLYOLEFIN

Max F. Meyer, Jr., 509 Altamont 37663; Frederick B. Joyner, 404 Meadow Lane 37663; and Willis C. Wooten, Jr., 521 Lakewood Road 37660, all of Kingsport, Tenn.

Filed Apr. 2, 1973, Ser. No. 347,003
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 AG
No Drawing. 15 Pages Specification

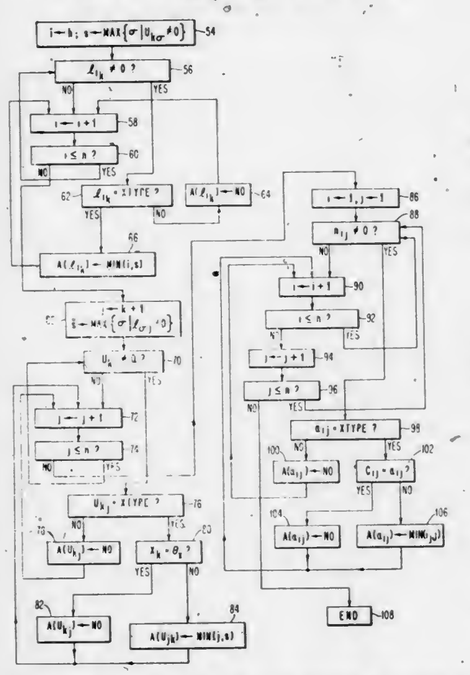
This invention relates to polyolefin/glass fiber compositions containing glass fiber which have been treated with an anionic or nonalkali emulsion of a modified polyolefin. These compositions form molded objects having significantly higher tensile strengths and heat-distortion temperatures and are more hydrolytically stable than similar molded articles made with glass fiber coated with an alkali-containing emulsion of a modified polyolefin.

T917,010

METHOD OF STORAGE RECLAMATION IN SPARSE MATRIX TECHNIQUES

Robert K. Brayton, Briarcliff Manor, and Fred G. Gustavson and Gary D. Hachtel, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,832
Int. Cl. G06f *15/32*
U.S. Cl. 444—1
3 Sheets Drawing. 32 Pages Specification



A novel method for optimally reclaiming X storage in the 1–2–3 GNSO technique is set forth. The method defines

(1) the minimal storage which is necessary to carry out the 1–2–3 GNSO technique

(2) defines the minimal storage necessary to carry out variability-type Gaussian elimination by looping type code

(3) reduces the amount of code necessary for large problems as the base registers need only span the minimal set of C values

(4) defines the values of the A matrix which can be used for C storage

(5) realizes effects 1–4 for the case of four or more distinct variability types appearing as arguments in the coefficients of the matrix A.

In carrying out the method, assuming that step k of the OPTORD algorithm, as described in the publication of G. D. Hachtel, R. K. Brayton and F. G. Gustavson, "The Sparse Tableau Approach to Network Analysis and Design," IEEE Transactions on Circuit Theory, January 1971, pp. 101–113, has been attained whereby $A^{(k)}$ is had, then a pivot is selected and $A^{(k)}$ is updated to $A^{(k+1)}$ by performing an outer product operation. The following rules are then valid

(A) $l_{ik}i \geq k$ is available if it is of the X type and pivot step i has been reached or if the last element in row k of U has been processed, i.e., l_{ik} is available at pivot step $I \geq k$ where I=min. (i,s) and s=max. $\{l/U_{kl} \neq 0\}$

(B) $u_{kj}j > k$ is available if it is of the X type and x_k is not needed to solve $Ux=y$ and when pivot j is reached or when the last element of column k of L is processed, i.e., at pivot stage $j > k$ where

$$k = \text{min. } (j,s) \text{ and } s = \text{max. } \{\sigma/l_{\sigma j} \neq 0\}$$

(C) if the formula is not $C=A$, then when $a_{ij}(x)$ is used, it can be reclaimed, i.e., the value of C is stored in the A space.

T917,011

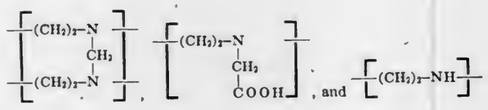
SEQUESTERING RESIN FROM CYANOETHYLATED POLY(ETHYLENE IMINE)

Edward A. Grannen, Upland, and Leon Robinson, Diamond Bar, Calif., assignors to Occidental Petroleum Corp., Los Angeles, Calif.

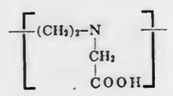
Continuation of application Ser. No. 193,703, Oct. 29, 1971. This application May 24, 1973, Ser. No. 363,380

Int. Cl. C08g *33/08*
U.S. Cl. 260—2.2 C
No Drawing. 12 Pages Specification

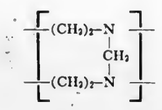
This application describes a substantially water-insoluble, cross-linked sequestering resin having a plurality of units in arbitrary sequence selected from the group consisting of



wherein at least 15% of the units are



and about 15% of the units are



Ethyleneimine is formed into a low molecular weight branched pre-polymer in an acidic aqueous solution. This is then cyanoethylated and cross-linked in a strongly acid solution of formaldehyde and hydrocyanic acid. The resulting cross-linked polymer is hydrolyzed to provide active sequestering groups >N—CH_2—COOH on the chain.

T917,012

PVC-CONTAINING BLENDS AND FILMS THEREOF

Tibor G. Mahr, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 321,577, Jan. 8, 1973, which is a continuation of application Ser. No. 169,798, Aug. 6, 1971. This application June 11, 1973, Ser. No. 369,114

Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 D
No Drawing. 10 Pages Specification

Improvement in blends of PVC and ethylene/carbon monoxide copolymers wherein minor amounts of an aliphatic petroleum hydrocarbon tackifying resin or microcrystalline wax are added to promote processability without serious loss of mechanical properties and yield films of high clarity.

REISSUES

DECEMBER 4, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

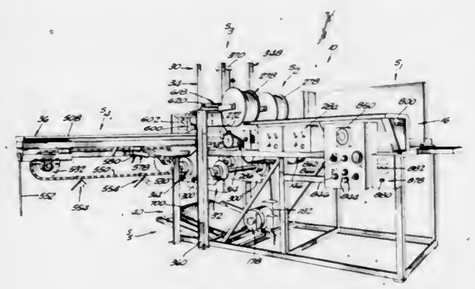
27,825
BOTTOM SEALING MACHINE

Lawrence C. Roesner, Anaheim, and Lenard E. Moen, Whittier, Calif., assignors to Precision Produce Specialties Inc., and Calavo Growers of Calif., fractional part interest to each

Original No. 3,342,116, dated Sept. 19, 1967, Ser. No. 428,462, Jan. 27, 1965. Application for reissue Feb. 7, 1972, Ser. No. 224,351

Int. Cl. B31b *17/60*

U.S. Cl. 93—55 R **50 Claims**



A method of and a machine for forming a container from a pair of preformed end panels and a preformed blank having a central rectangular bottom wall forming panel, hinged side wall forming panels along opposite sides of the bottom wall forming panel, and projecting end panel joining flaps along the edges of the bottom and side wall forming panels, the method and machine operation involving adhesively coating one side of the blank along the flaps thereof, relatively moving the end panels and blank to positions wherein the end panels engage the bottom wall forming panel of the blank along and just inward of the hinge lines of its flaps, and then simultaneously folding the side wall forming panels of the blanks upwardly about the ends of the end panels and folding the flaps of the blank inwardly against the outer surfaces of the end panels to adhesively join the flaps to the end panels.

27,826
MARINE PROPULSION DEVICE

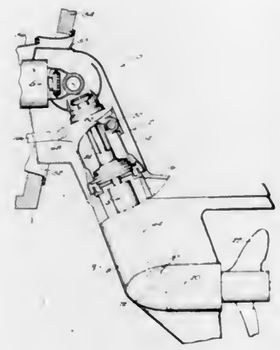
John A. Langley, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Original No. 3,589,204, dated June 29, 1971, Ser. No. 855,846, Sept. 8, 1969. Application for reissue June 12, 1972, Ser. No. 261,639

Int. Cl. B63h *5/12*; **F16h** *35/00*

U.S. Cl. 74—385 **32 Claims**

Disclosed herein is a marine propulsion device which includes a drive shaft housing having upper and lower housing sections, and in which the upper housing section is rotatably supported for movement about a horizontal tilt axis by oppositely extending trunnions which are received in inwardly open coaxial apertures in spaced supporting members fixed to the boat hull. Power is transferred from the engine output shaft to a drive shaft by a horizontal cross shaft which is rotatably supported in coaxial relation to the tilt axis and between the trunnions by a gear case having first and second gear case sections. The first gear case section is fixed to the boat hull. The second gear case section is integral with the upper end of



the drive shaft housing. Steering is afforded by rotating the lower drive shaft housing section by a steering linkage which includes a worm wheel sector on the lower housing section and a worm gear which is rotated by a drive which includes a stub shaft rotatably supported within one of the trunnions.

27,827
HEATED OR COOLED CEILING OR WALL STRUCTURES

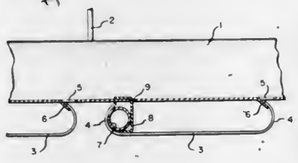
Pierre Alfred Jean Ledoux, Paris, France, assignor to Hunter Douglas International N.V., Willemstad, Curacao

Original No. 3,516,486, dated June 23, 1970, Ser. No. 722,487, Apr. 18, 1968. Application for reissue June 22, 1972, Ser. No. 265,357

Claims priority, application France, Apr. 19, 1967, 103,305

Int. Cl. F24h *3/02*

U.S. Cl. 165—54 **5 Claims**



The present invention relates to panel ceiling and wall structures comprising metal elements constituting the visible ceiling structure and comprising supporting bars or channels upon which said elements are clipped. These supporting channels are hung by means of hanger straps from the ceiling of the building. The invention relates more specifically to the type of ceiling in which the elements which are clipped on the supporting channels

are shaped as panels with upturned longitudinal edges thus leaving a free space between their interior wall and the supporting channels which constitute the supoort means for said panels.

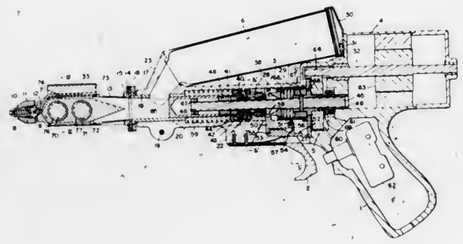
27,828
APPLICATOR FOR DISPENSING A MOLTEN MATERIAL

Albert R. Salonen, 560 Baxter Ave., Victoria, British Columbia, Canada

Original No. 3,550,815, dated Dec. 29, 1970, Ser. No. 657,983, Aug. 2, 1967. Application for reissue Nov. 26, 1971, Ser. No. 202,078

Int. Cl. B67d *5/62*

U.S. Cl. 222—146 HE **20 Claims**



An applicator for dispensing a molten material which includes a container for material to be melted; a heating chamber forward of and communicating with the container in which chamber the said material is melted; one or more nozzles forward of and communicating with the heating chamber to supply the molten material; means operable to force material in the container through the heating chamber and subsequently through the or each nozzle; and motor means for operating said material forcing means. The applicator is particularly suitable for hand-held operation.

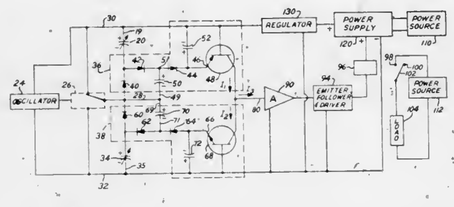
27,829
CAPACITANCE-MEASURING TECHNIQUES

Floyd L. Tiffany, Marshalltown, Iowa, assignor to Fisher Controls Company, Inc., Marshalltown, Iowa

Original No. 3,543,046, dated Nov. 24, 1970, Ser. No. 815,795, Apr. 14, 1969. Application for reissue Sept. 21, 1972, Ser. No. 291,052

Int. Cl. G01f *31/00*

U.S. Cl. 307—118 **24 Claims**



The relative capacitance of a first capacitor may be accurately measured by providing a second reference capacitor and a switch that cyclically charges and discharges the first and second capacitors at a predetermined rate. The cyclical charging and discharging of the first capacitor produces a first current that is amplified by a first amplifier. The cyclical charging and discharging of the second reference capacitor produces a second current that is amplified by a second amplifier. The first and second currents are algebraically summed and conducted to a comparison device that indicates the relative difference between the capacitance of the first and second capacitors by sensing the magnitude of the summed currents.

27,830
MULTIFILAMENT CONDUCTOR

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Original No. 3,513,251, dated May 19, 1970, Ser. No. 814,198, Apr. 7, 1969, which is a continuation-in-part of Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of Ser. No. 730,933, May 21, 1968, both now abandoned. Application for reissue Oct. 12, 1972, Ser. No. 296,786

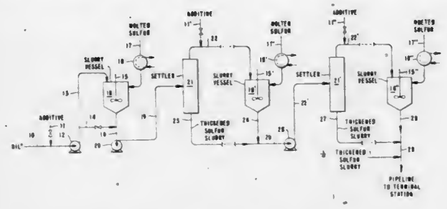
Int. Cl. H01b *5/08*

U.S. Cl. 174—128 **22 Claims**



An insulated multifilament conductor prepared from aluminum alloy having an electrical conductivity of at least sixty-one percent (61%) based on the International Annealed Copper Standard and unexpected properties of increased ultimate elongation, bendability and fatigue resistance when compared to conventional EC wire of the same tensile strength. The aluminum alloy wires contain substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron to an alloy mass containing less than about 99.70 weight percent aluminum, no more than 0.15 weight percent silicon, and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals and annealed after the final draw. After annealing, the wire has the aforementioned novel and unexpected properties of increased ultimate elongation, electrical conductivity of at least sixty-one percent (61%) of the International Annealed Copper Standard, and increased bendability and fatigue resistance.

27,831
OPERATING TECHNIQUE FOR SULFUR SLURRY PIPELINE
Leonard F. Bolger, Clarkson, Ontario, Canada, assignor to Shell Oil Company, New York, N.Y.
Original No. 3,547,497, dated Dec. 15, 1970, Ser. No. 813,994, Apr. 7, 1969. Application for reissue Dec. 21, 1972, Ser. No. 317,450
Int. Cl. B65g *53/30*
U.S. Cl. 302—66 **11 Claims**



An improved method of making concentrated sulfur-oil slurry for pipeline transportation comprising increasing the sulfur content in the process of making a slurry by increment addition of fresh molten sulfur into a preformed slurry of low sulfur concentration until a concentrated sulfur-oil slurry is obtained.

27,832
SOLID INSULATED CONDUCTOR
Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.
Original No. 3,513,250, dated May 19, 1970, Ser. No. 814,182, Apr. 7, 1969, which is a continuation-in-part of Ser. No. 795,055, Jan. 29, 1969, which is a continuation-in-part of Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of Ser. No. 730,933, May 21, 1968, all now abandoned. Application for reissue Oct. 12, 1972, Ser. No. 296,824
Int. Cl. H01b *7/00*
U.S. Cl. 174—110 R **12 Claims**

A solid insulated conductor prepared from an aluminum alloy wire having an electrical conductivity of at least sixty-one percent based on the International Annealed Copper Standard and unexpected properties of increased ultimate elongation, bendability and fatigue resistance when compared to conventional FC wire of the same tensile strength. The aluminum alloy wire contains substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron and no more than 0.15 weight percent silicon to an alloy mass containing less than about 99.70 weight percent aluminum and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals, annealed after the final draw and insulated. After annealing, the wire has the aforementioned novel and unexpected properties of increased ultimate elongation, electrical conductivity of at least sixty-one percent of the International Annealed Copper Standard and increased bendability and fatigue resistance.

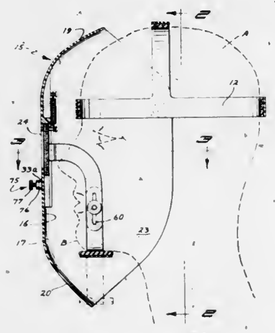


PATENTS

GRANTED DECEMBER 4, 1973

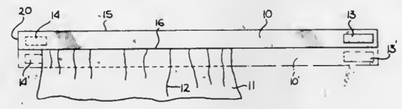
GENERAL AND MECHANICAL

3,775,774
LENS HOLDING STRUCTURE FOR WELDER'S HELMET
Edward B. Herman, Rt. 4 Box 239, Excelsior, Minn.
Filed July 20, 1972, Ser. No. 273,487
Int. Cl. A61f *9/06*
U.S. Cl. 2—8 **2 Claims**



An improvement in the lens holding structure of a welder's helmet consisting of spring means to normally position a lens to overlie the lens opening of the helmet and means operable by the jaw of the operator to move said lens away from said lens opening.

3,775,776
NECKPIECE
Charles A. Smith, Jr., Box 574 Chenago Lake Rd., Norwich, N.Y.
Filed Feb. 5, 1973, Ser. No. 329,439
Int. Cl. A41d *25/02*
U.S. Cl. 2—149 **2 Claims**



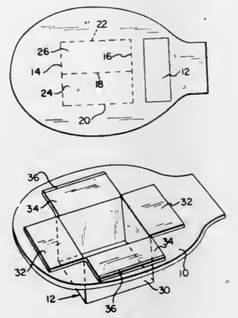
A neckpiece or cravat which includes an elongated neck-encircling band and a body piece is disclosed. The band, when folded once upon the body piece, may be fastened around the neck of a wearer without exposing the band at the front of the neckpiece and without the fasteners being exposed.

3,775,775
DESIGN CODING FOR COORDINATED GARMENT SETS
Anthony Mazzenga, Commack, N.Y., assignor to Garan, Incorporated, New York, N.Y.
Filed Sept. 18, 1972, Ser. No. 290,274
Int. Cl. A41d *1/00*
U.S. Cl. 2—80 **5 Claims**



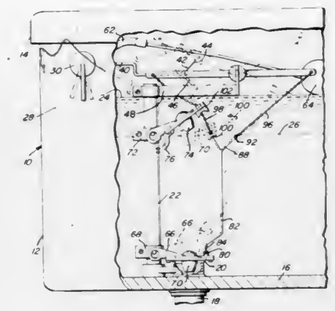
Coordinated sets of wearing apparel wherein identical identifying indicia are applied to each garment of the set in order to facilitate selection of the appropriate matching garment.

3,775,777
STOOL SPECIMEN TEST KIT
Timothy Roberts, Jr., SSN 398-14-4349, USAID/CSO, APO San Francisco, Calif.
Continuation-in-part of Ser. No. 159,268, July 2, 1971, abandoned. This application Nov. 23, 1971, Ser. No. 201,287
Int. Cl. A87k *17/00*
U.S. Cl. 4—1 **8 Claims**



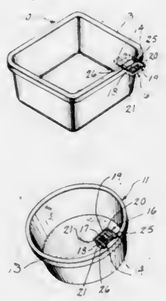
A stool specimen test kit, including; a generally-flat support means of a size and shape to fit over the bowl of a toilet and to be held in such position by the seat of the toilet; a perforated section in the support adapted to be punched out to form a centrally-disposed opening therein; a plastic container of a size and shape to fit in the opening of the support and having at least two closure flaps adapted to be folded outwardly to lie flat on the support and suspend the container in the opening of the support; and sealing means on the flaps of the container to seal the container after use.

3,775,778
TOILET FLUSH TANK MECHANISM
Joe Y. Lee, Box 446, Dumas, Ark.
Filed Apr. 7, 1972, Ser. No. 241,980
Int. Cl. E03d 1/34, 5/02, 5/10
U.S. Cl. 4—67 A 5 Claims



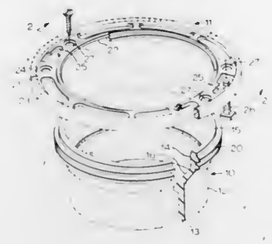
A mechanism operative to selectively discharge substantially all or only a major portion of the water within the flush tank of a toilet. The mechanism includes a single operator shiftable in a first direction from a rest position for discharging substantially all of the water in the flush tank and in the opposite direction for discharging only a minor portion of the water within the flush tank. The mechanism is constructed whereby it may be readily incorporated into existing flush tank mechanisms by the addition of certain components and substitution of other components for some of the components of conventional flush tank mechanisms.

3,775,779
WASH BASIN AND SOAP DISH COMBINATIONS
Terry J. Kohler, Sheboygan, Wis., assignor to The Vollrath Co., Sheboygan, Wis.
Filed Jan. 28, 1972, Ser. No. 221,575
Int. Cl. A47k 1/04
U.S. Cl. 4—166 5 Claims



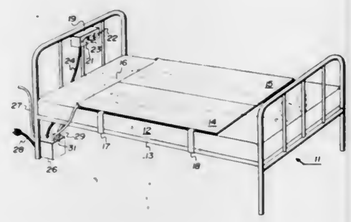
A plastic wash basin designed to have a soap container or dish removably snapped thereon, said wash basin being either rectangular, round, or any other desired contour, and said soap dish having integral locking means thereon which permits the intentional removal of said dish when desired but which prevents the same from becoming inadvertently or accidentally disengaged from the basin.

3,775,780
WATER CLOSET COUPLING
James Eric McEwen, London, Ontario, Canada, assignor to Multi Fittings Limited, London, Ontario, Canada
Filed July 17, 1972, Ser. No. 272,653
Int. Cl. E03d 11/13; F16l 15/00, 5/00
U.S. Cl. 4—252 R 9 Claims



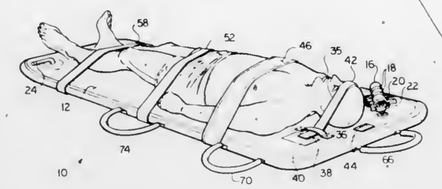
A water closet coupling comprises a plastic annular connector providing flow communication between the drainage outlet of a water closet and an installed drain waste conduit, and a radial securing flange. The securing flange is connected to the annular connector by means of a helically threaded connection which permits vertical and rotational adjustment of the flange.

3,775,781
PATIENT TURNING APPARATUS
Joan F. Bruno, 2668 6th Ave., and Richard E. Pietras, 6917 Lipman St., both of San Diego, Calif.
Filed Oct. 15, 1971, Ser. No. 189,702
Int. Cl. A61g 7/10, 7/00
U.S. Cl. 5—61 3 Claims



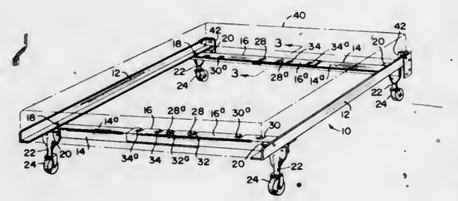
A patient turning apparatus, for operation by a patient, in which a two-sectioned air mattress is placed on a patient's bed having a width generally conforming to the width of the bed and a length terminating at the patient's shoulders and calves. Each section of the air mattress is coupled through a different solenoid operated valve to a source of air pressure. A switch box disposed above the patient's head, having coded buttons, operates the solenoids and allows the patient to inflate either side, effecting a turn either to the left or right, with a third control for exhausting both sections of the air mattress when desired.

3,775,782
INFLATABLE AQUATIC RESCUE BOARD AND METHOD OF RESCUE
Charles A. Rice, and Michael L. Foust, both of Chambersburg, Pa., assignors to R. F. Inc., Grantsville, W. Va.
Filed Mar. 30, 1972, Ser. No. 239,732
Int. Cl. A47b 83/04
U.S. Cl. 5—82 9 Claims



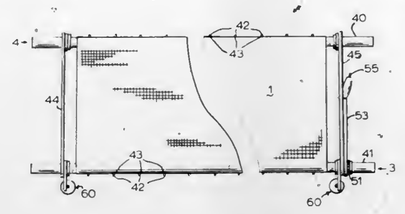
An inflatable aquatic rescue board is provided having particular advantage in rescuing persons who have sustained injuries while swimming or diving, and who frequently must be held rigid to prevent further injuries while being removed from the water. Prior to inflation, the rescue board is quite flexible, permitting it to be rolled into a compact bundle for storage. Then, upon activation of a self-contained compressed gas supply, the rescue board quickly becomes stiff and bouyant to form an ideal aquatic stretcher. The board comprises a planar structure having two impervious parallel broad faces constrained to a maximum separation by internal members extending therebetween. Transverse reinforcements provide additional rigidity and two longitudinally extending flat springs facilitate unrolling of the rescue board under water during rescue. Strategically placed straps are provided for securing an injured person to the board and handles are placed for maximum ease of removal from water and transportation to competent medical treatment.

3,775,783
SELF-LOCK TYPE ADJUSTABLE WIDTH BEDFRAME
Richard A. Miller, Bedford Heights, Ohio, assignor to Rusco Industries, Inc., Los Angeles, Calif.
Filed Aug. 19, 1971, Ser. No. 173,107
Int. Cl. A47c 19/04
U.S. Cl. 5—201 4 Claims



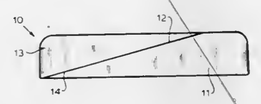
A bedframe which may be easily adjusted for use as a single, double, or queen size bed. The frame has a pair of side rails and first and second cross rail sections connected to each side rail. One of the cross rail sections has a pair of upwardly projecting shoulder rivets and the other side rail section has, preferably, three pairs of L-shaped notches with the notches of each pair being spaced apart by a distance equal to the separation of the rivets of the other cross section and with the pairs being separated by distances equal to the differences in the desired width of the frame.

3,775,784
STRETCHER
Cyril Harold Fry, 9055 West 64th Place, Arvada, Colo.
Filed Dec. 30, 1971, Ser. No. 213,972
Int. Cl. A47b 83/04; A61g 1/02
U.S. Cl. 5—81 R 3 Claims



A stretcher disposable under a prone body without moving or disturbing the body including a first frame upon which a sheet is wound carried upon a second frame about which an endless belt is wound. As the frames are pulled under the body, the sheet is unwound beneath the body with no longitudinal movement of the unwinding sheet with respect to the body or the ground.

3,775,785
ADJUSTABLE PILLOW APPARATUS
Theodore H. Mittendorf, Rt. 1 Box 102, Tavares, Fla.
Filed Dec. 26, 1972, Ser. No. 318,022
Int. Cl. A47c 27/22
U.S. Cl. 5—341 2 Claims



An adjustable pillow apparatus having a pair of pillow sections to form a pillow, each pillow section having a wedge shaped portion so that the pillow sections can be adjusted along their wedge shaped portions to vary the shape of the pillow. Attachment members attached to each pillow section allow the pillow sections to be removably attached at any desired position along the angled surfaces of the wedge shaped portions of the pillow sections.

3,775,786
BIOLOGICAL PRODUCT AND PROCESS FOR TREATING AND RESTORING HONEYCOMBS INFECTED WITH BACILLUS LARVAE (AMERICAN FOULBROOD DISEASE)
Charles P. Reinert, Garvin, and Samuel F. Tutt, Lake Wilson, both of Minn., assignors to Winona Research, Inc., Winona, Minn.
Filed Feb. 14, 1972, Ser. No. 226,196
Int. Cl. A01k 51/00
U.S. Cl. 6—12 R 5 Claims

A biological product and process for treating and restoring honeycombs infected with American Foulbrood disease (Bacilus larvae) includes the steps of applying a solution of water and living Penicillin mold to a diseased honeycomb. The solution containing the Penicillin mold is applied to the honeycomb by dipping the honeycomb in the solution, or by spraying the solution onthe honeycomb so that substantially the entire surface of the honeycomb is contacted by the solution. The treated honeycomb is allowed to remain at room

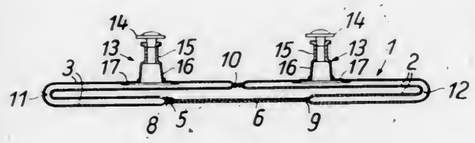
temperature (about 70° to 80°F.) for a period of time sufficient to permit good growth of the Penicillin mold so that the mold substantially covers the honeycomb. The treated honeycomb is then placed in a bee hive where the mold dries, and the scale and foreign matter is then easily and effectively removed by the bees so that each cell has a clean interior wax surface.

3,775,787
BUOY MOORING DEVICE
Charles E. Rager, 214 S. Oak St., Clarksville, Ind.
Continuation of Ser. No. 75,008, Sept. 24, 1970, abandoned. This application Oct. 19, 1972, Ser. No. 298,964
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R **4 Claims**



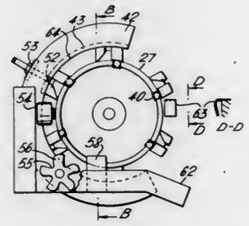
A buoy mooring device comprising a counterweighted frame slidable along a cable which extends from anchor to buoy. The counterweight and frame travel on the cable as the water level rises and falls permitting the distance between the anchor and the buoy to be varied while the buoy is retained in a stabilized, unsubmerged position.

3,775,788
INFLATABLE SWIMMING SUPPORTS
Bernhard Markwitz, Broderswеb 9/10, Hamburg, Germany
Filed Nov. 15, 1971, Ser. No. 198,561
Claims priority, application Germany, Feb. 19, 1971, P 21 07 979.8
Int. Cl. B63c *9/16*
U.S. Cl. 9—344 **1 Claim**



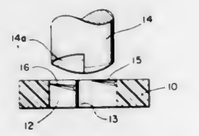
An inflatable swimming support for the upper arm consisting, in the uninflated condition, of two superimposed cylindrical annular parts connected along their edges, made of a flexible water-and air-tight material, wherein a part of the circumference which rests on the inside of the upper arm when the ring is fitted is formed as a non-inflatable surface, and the diameter of the uninflated swimming support, the circumference of which is about double its length in the uninflated state, is about twice as large as the mean diameter of the upper arm of a person for whom the swimming support is intended while, in the longitudinal direction of the upper arm, the width of the swimming support corresponds substantially to the length of the upper arm between the armpit and elbow bend of the person. The two parts of the swimming support are connected in the zone opposite the noninflatable surface along a line which divides the inflatable portion of the swimming support into two substantially equal inflatable chambers, each chamber being adapted to be inflated through a nipple which is closable by means of a removable plug.

3,775,789
TIMBER CONNECTORS AND/OR MACHINES FOR MAKING THE SAME
Edgar Edward Dagley, Auckland, New Zealand, assignor to Automated Building Components New Zealand Limited, Auckland, New Zealand
Filed June 19, 1972, Ser. No. 264,702
Int. Cl. B21g *3/20*
U.S. Cl. 10—52 **12 Claims**



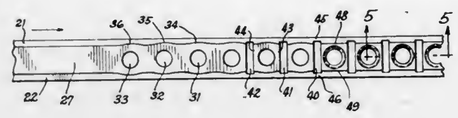
A machine for making timber connectors from wire having a central portion with spikes turned at right angles to the central portion and mutually at right angles to each other, has cutting means which cuts lengths of wire from a roll and deposits the wire in forming dies and forms the wire to the required shape by rotation of a rotary head, with the ends of the wire being manipulated automatically so that the points of the wire are straightened, the spikes turned to form a U shape and one spike is then twisted relative to the other to take up the aforesaid right angled relationship and the connectors then discharged.

3,775,790
FASTENING MEANS FOR A ROTATIONAL FASTENER AND METHOD
George A. Tinnerman, 3600 Stewart Ave., Lakewood, Ohio
Continuation of Ser. No. 6,153, Jan. 27, 1970, abandoned, which is a division of Ser. No. 640,213, March 22, 1967, Pat. No. 3,491,646. This application Sept. 24, 1971, Ser. No. 183,662
Int. Cl. B21d *53/20, 53/24*
U.S. Cl. 10—86 F **5 Claims**



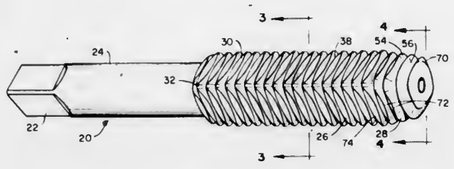
The rotational fastener such as a nut element has an aperture with helical ribs on the circumferential walls spaced by breaks in the periphery of the aperture. These helical ribs commence at the breaks near one surface of the element and extend axially and circumferentially, the ribs increasing in radial height with increasing distance from the one surface. The ends of the ribs serve as teeth for engagement with a shank and cut grooves in the shank.

3,775,791
METHOD OF MAKING PIERCE NUTS IN STRIP FORM
William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.
Division of Ser. No. 21,777, March 23, 1970, Pat. No. 3,704,507. This application Apr. 13, 1972, Ser. No. 243,890
Int. Cl. B21d *53/20, 53/24*
U.S. Cl. 10—86 CL **7 Claims**



A strip containing a series of flanged pierce nuts connected by flexible and severable sections for use in automatically applying flanged pierce nuts to a panel. The method of forming the strip is also disclosed and comprises providing a blank strip formed with opposed laterally extending flanges, perforating the strip between the flanges, and then slotting the strip between adjacent perforations to form the nut body, after which the sides of the strips are straightened, the holes are threaded and the strip coiled into predetermined lengths. Further, there is disclosed the method of applying pierce nuts from such strip to a panel.

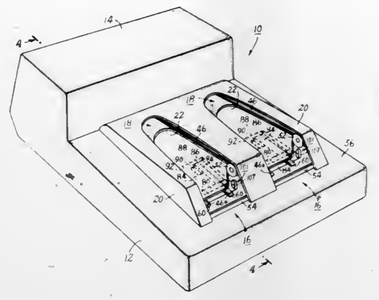
3,775,792
THREAD FORMING TAP
Donald L. Leonard, Lyndonville, Vt., assignor to Vermont American Corporation, Louisville, Ky.
Filed Mar. 1, 1972, Ser. No. 230,844
Int. Cl. B23g *7/02*
U.S. Cl. 10—152 T **23 Claims**



A tap having a threaded body of polygonal cross-sectional shape in which the thread comprises arcuate portions with V-crests separated by intervening chordal portions having truncated crests, the initial thread turns on the entrant end of the tap having a continuous sharp V-shaped crest.

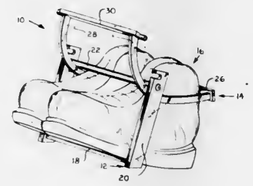
3,775,793
SHOE COVERING APPARATUS
Roger M. Casavant; Wesley S. Larson, both of Enfield, Conn., and Richard L. Panicci, Westfield, Mass., assignors to Allen S. Chen, Belleville, Mich.
Continuation of Ser. No. 84,327, Oct. 27, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,623
Int. Cl. A43d
U.S. Cl. 12—1 R **19 Claims**

Apparatus for covering shoes on the feet of a wearer with a protective sanitary shoe wrapper formed of heat-shrinkable material is disclosed, wherein individual shoe wrappers are positioned at a heat-shrink station in an open configuration to



receive and enclose a shoe on the foot of a wearer; after the insertion of the shoe, heat is applied to the wrapper to heat-shrink it and conform it to the shoe.

3,775,794
SKI BOOT HOLDER
Jere D. Fisher, 462 N. Holly St., Elizabethtown, Pa.
Filed Jan. 31, 1973, Ser. No. 328,241
Int. Cl. A43d *5/00*
U.S. Cl. 12—1 R **8 Claims**

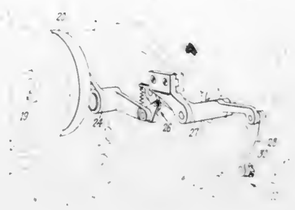


A pair of hollow frames for supporting ski or other kinds of boots. The first frame is fitted over the toe end of the ski boots and a wall of a second frame extending through the first frame is moved behind the boots. Both frames extend around the boots. The free end of the second frame forms a handle for carrying the boots.

3,775,795
SHOE INSEAMING MACHINE WITH UPPER PRE-TENSIONING MEANS
Richard A. Collins, Beverly, and John F. Martin, South Essex, both of Mass., assignors to USM Corporation, Boston, Mass.
Filed Oct. 5, 1972, Ser. No. 295,246
Int. Cl. A43d *43/00;* **D05b** *15/02*
U.S. Cl. 12—13.2 **5 Claims**

A shoe inseaming machine for attaching an upper to an insole along an upstanding rib near the periphery of the insole, while both the upper and insole are positioned on a last, is provided with improved means for progressively pretensioning the upper on the last. The upper pre-tensioning means are lasting instrumentalities which comprise a lasting spur for engaging the upper and a lasting block for driving the upper cooperative to draw a marginal portion of the upper in a

direction having vector components both normal and parallel to an insole-supporting surface of the last. Drawing the margin



of the upper initially tensions the upper on the last. Preferably, means for resiliently driving the spur and block are provided.

3,775,796

MACHINE FOR PRE-SHAPING SHOE PARTS

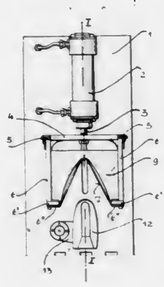
Herbert Schindler, Wagenstrasse 38, Pirmasens, and Gerhard Winter, Pirminiusstrasse 2, Hauenstein, both of Germany

Filed Sept. 5, 1972, Ser. No. 286,585

Claims priority, application Germany, Sept. 8, 1971, P 21 44 904.7

Int. Cl. A43d *11/00*

U.S. Cl. 12—54.3 **15 Claims**



Two electrically non-conductive bands are movably mounted on a machine for pre-shaping shoe parts. Electrically conductive layers are provided between the two bands — the bands and the layers both being flexible. A source of high frequency electrical energy is connected to the conductive layers and to a conductive portion of a rigid form in the shape of a heel last member. A gripping jaw arrangement is provided which stretches the upper leather of the shoe over the heel last member — a thermoplastic heel stiffening or counter being heated by a high frequency heating when the upper leather has been stretched over the heel last member and the two bands are moved into the region of the heel last member.

3,775,797

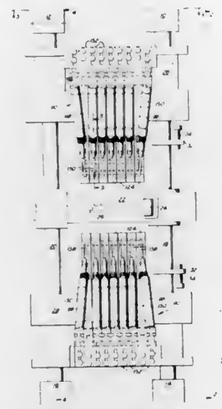
METHOD AND MACHINE FOR LASTING

Jacob S. Kamborian, deceased, late of Newton, Mass.; by Lisbeth N. Godley, Washington, D.C.; by Michael M. Becka, Watertown, Mass.; by Jacob S. Kamborian, Jr., Lincoln, Mass. (executors), and Costa Couris, East Walpole, Mass., assignors to Jacob S. executor of Kamborian Kamborian, Jr., Lincoln, Mass.

Filed Feb. 18, 1972, Ser. No. 227,376

Int. Cl. A43d *21/12*

U.S. Cl. 12—145 **58 Claims**



A lasting machine for stretching the sides of an upper about a last and wiping the margin of the upper against an insole located on the bottom of the last. The stretching and wiping is performed by a plurality of lasting straps. Mechanism is provided that causes bottom segments of the lasting straps to clamp the top line of the upper against the last, then causes middle segments of the lasting straps to press the portion of the upper between the top line and the insole against the last with a pressure that commences proximate to the top line and works its way toward the insole, then causes top segments of the lasting straps to be folded inwardly under relatively low pressure part way towards the insole to act as a back-up while cement is applied along the insole periphery, and then concomitantly causes the middle segments to be stretched upwardly while the clamping and pressing are maintained to stretch the upper about the last and the top segments to be folded against the insole under relatively high pressure to wipe the upper against the insole and cementatiously attach the upper to the insole.

3,775,798

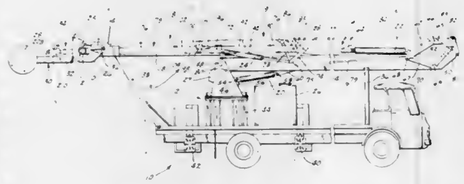
HIGH LEVEL WASHING AND DUSTING APPARATUS FOR AIRCRAFT AND THE LIKE

Walter E. Thornton-Trump, 7410 Old Post Rd., Lincoln, Nebr.

Filed Apr. 13, 1971, Ser. No. 133,534

Int. Cl. B64f *5/00*

U.S. Cl. 15—21 E **18 Claims**



A washing and dusting unit particularly for cleaning the upper surfaces of larger aircraft. A powered brush is connected to the distal end of a powered boom structure which has three elements connected pivotally in seriatim. The first element is adjustably coupled to a support and the elements can be adjusted into a generally inverted-U configuration to bring the brush onto the upper surfaces of the aircraft. The brush is connected to a telescopic member which is in turn connected to an adjustable arm coupled to the boom structure. A seat is provided adjacent the adjustable arm and the orientation of both arm and seat is maintained by a levelling mechanism coupled to the boom structure. The adjustable arm has shoulder, upper arm, elbow and wrist adjustments to position the brush as desired.

3,775,799

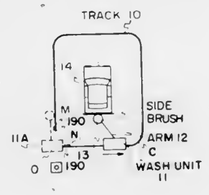
CAR-WASH INSTALLATIONS

Wilburn D. Talbot, 1742 S. 145 East, Orem, and Willis Robert Dunkley, Jr., 2131 Condie Dr., Taylorsville, both of Utah

Filed July 3, 1972, Ser. No. 268,622

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 E **10 Claims**



Improvements in car-wash installations wherein a track comprising contiguous J and L sections form a geometric figure similar to a rectangle having rounded corners, but which is open at one corner and a leg of which extends therebeyond for proper storage of the washing equipment. A wash, rinse-and-wax unit, hereinafter simply referred to as a "wash unit," travels about the track structure and, by its design, accommodates essentially all sizes of automobiles. The revolving side-brush structure associated with the wash unit is dragged or pulled, while in its revolving condition, about the periphery of a small car or compact, and this in both directions of travel relative to the wash and rinse cycle portions. For larger cars the revolving side-brush is alternately pulled by the wash unit during the wash portion of the cycle and then is pushed or leads the wash unit during the return portion of the cycle when the car is rinsed or rinsed-and-waxed. The system is designed such that water is sprayed at all times upon the vehicle, and the top and side-revolving brushes are in continuous motion. The side-brush structure is pivoted about a vertical axis so as to accommodate both lead and lag positions relative to the car-wash function. The track rails and cooperating roller unit guide the wash unit in its path about the vehicle. Numerous advantages are presented in the structure relating to the travel of the wash unit as well as the function and structure of the side-brush or brushes, the rail and travelling roller feature, counter-weighting, and so forth.

3,775,800

ROTARY BRUSH

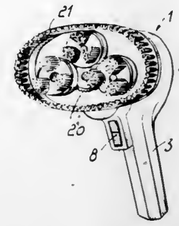
Marco Antonio Veneziani, Via Trezzo d'Adda 3, Milan, Italy

Filed Dec. 20, 1971, Ser. No. 209,770

Int. Cl. A46b *13/02*

U.S. Cl. 15—28 **2 Claims**

Portable electromechanical household tool appliance consisting of a box-like casing made of a number of parts of plastics enclosing an electric motor. A driving shaft of the motor emerges from the box-like casing. A plurality of working tools or cleaning members can be removably secured to the device, the cleaning members including a first interchangeable cleaning member provided with brush means



and removably mounted on the shaft and a second interchangeable cleaning member provided with a peripheral row of bristles and removably mounted on the casing of the device.

3,775,801

DISPENSER FOR A MOIST FLEXIBLE SHEET MATERIAL

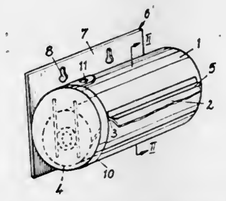
Kurt Walker, Marienstrasse 1, Stuttgart, Germany

Filed Sept. 10, 1970, Ser. No. 71,178

Claims priority, application Germany, Sept. 11, 1969, P 19 46 018.2

Int. Cl. A47k *10/36*

U.S. Cl. 15—104.93 **2 Claims**



A dispenser for a moist flexible sheet material for medical and similar purposes comprising a normally closed container into which the material is either inserted in a moist condition, preferably in the form of a roll, or into which a treating liquid is poured so as to moisten the sheet material while bring unwound from a dry roll when it is withdrawn through a narrow slot in the container wall and a sheet of the desired length is then torn or cut off by a cutting edge or a cutting blade.

3,775,802

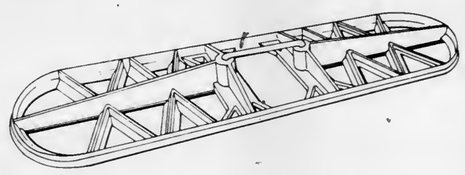
MOP FRAME

Willard F. Grassman, Dayton, and Malcolm Erich, Xenia, both of Ohio, assignors to Silco, Inc., Cincinnati, Ohio

Filed July 27, 1972, Ser. No. 275,783

Int. Cl. A47l *13/24*

U.S. Cl. 15—147 A **10 Claims**



Molded mop frame having a generally oval or rectangular outline including parallel front and back edges joined by end

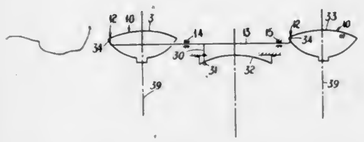
members. Transverse brace members near the center of the frame receive a steel bar for attachment to a handle. Longitudinal brace members extend from the transverse braces to the end members, with additional bracing provided between the longitudinal brace members and the front and back edges.

3,775,803

HEADLAMP CLEANER ARRANGEMENTS

Karl Brumm, and Rudolf Lamprecht, both of Russelsheim, Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed May 1, 1972, Ser. No. 249,231
Claims priority, application Germany, May 3, 1971, P 21 21 531.6
Int. Cl. B60s *1/18*
U.S. Cl. 15—250.29 **7 Claims**



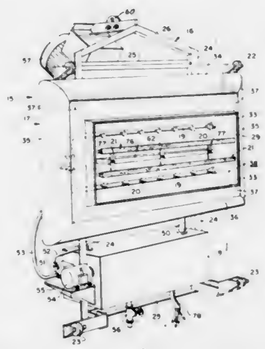
A motor vehicle headlamp cleaner arrangement for cleaning the curved surface of headlamp lenses has wipers carried on a reciprocable rod journalled in fixed bearings. Guide means associated with the rod co-act with the wipers to effect rotation of the rod to move the wipers towards and away from the lenses so that the wipers follow a curved path similar to the curvature of the lenses, and move to and fro over the lens surfaces and engage them with a substantially constant wiper pressure.

3,775,804

WINDOW WALL WASHING DEVICE FOR HIGH-RISE BUILDINGS

Ralph H. Hoener, Jr., 704 Interdrive, University City, Mo.

Continuation-in-part of Ser. No. 130,616, April 2, 1971, abandoned. This application Feb. 28, 1972, Ser. No. 229,846
Int. Cl. A47l *5/38*
U.S. Cl. 15—302 **36 Claims**



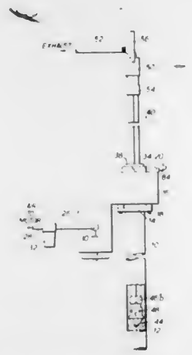
A wall washing device is provided with self contained liquid spray means, wall and window surface scrubbing means such as brushes or sponges and means for providing a curtain of high velocity, in-rushing air around a wall washing sight. This air serves to dry the freshly laundered wall and window surfaces and also to confine the washing liquids and retard their egress from the wall washing sight. The high velocity, in-rushing air curtain is delivered through a perimeter aperture which is spaced-apart from the window/wall surfaces, in accordance with a first embodiment; and is provided by forceably drawing atmospheric air inwardly at the perimeter of the wall washing sight in accordance with a second embodiment. The device is adapted to ascend and descend between a pair of vertical mullions of the building. The device is further adapted to provide its wall and window washing function during either the ascending or descending runs or both. The device moreover is intended for remotely controlled operation.

3,775,805

CLEARING SOLID MATERIAL FROM ELONGATE TUBES AND PASSAGES

David Thomas Somerled Mitchell, Norwich, and Henry Roy Francis Melsom, Gorlestone, both of England, assignors to Hunting Oilfield Services Limited

Filed July 23, 1971, Ser. No. 165,520
Claims priority, application Great Britain, Mar. 12, 1971, 6,715/71
Int. Cl. A47l *5/38*
U.S. Cl. 15—304 **11 Claims**



Method and apparatus for clearing solid material from elongate hollow structures, e.g. solidified catalyst filled tubes of a reformer, comprises inserting into the hollow structure a drill bit connected to a drive motor by a hollow drill stem, operating the motor to rotate the bit and break up the material and simultaneously withdrawing broken up material by the application of sub-atmospheric pressure to the interior of the drill stem which is in communication with the interior of the hollow structure via apertures in the drill bit body.

3,775,806

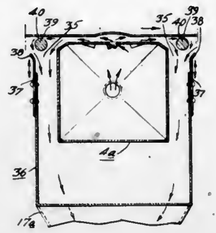
REMOVING AND COLLECTING DUST FROM TRAVELING MATERIAL

Goran Olbrant, Farsta; Bengt Citron, Vendelso; Sven-Olof Rosby, and Krister Sandblad, both of Vaxjo, all of Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Continuation-in-part of Ser. No. 11,755, Feb. 16, 1970, abandoned. This application Nov. 16, 1971, Ser. No. 199,112
Claims priority, application Sweden, Feb. 14, 1969, 2043/69
Int. Cl. A47l *5/14, 5/38, 9/10*
U.S. Cl. 15—306 A **5 Claims**

Apparatus for removing and collecting dust from a travelling sheet or web of material including a blow box having means for impinging jets of clean air against the sheet in directions both in the direction of travel of the sheet and opposite thereto. A suction box cooperates with the blow box to form suction gaps withdrawing the air after its engagement with the material to thereby remove the dust from the material. The suction in the suction box is sufficient to withdraw additional air from the surrounding atmosphere through the spaces which exist between the material and the suction box,

and means is provided to remove the dust from the air withdrawn by the suction box. An alternate embodiment pro-



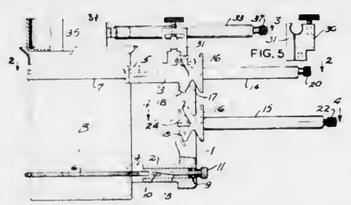
vides guide elements in the suction gaps which support the material at these points through a film of air.

3,775,807

LABORATORY SUPPORT CLAMP STRUCTURE

Roger William McBrien, 211 Hi Point Pl., East Alton, Ill.

Filed July 13, 1971, Ser. No. 162,160
Int. Cl. B65d *23/10*
U.S. Cl. 16—114 R **2 Claims**



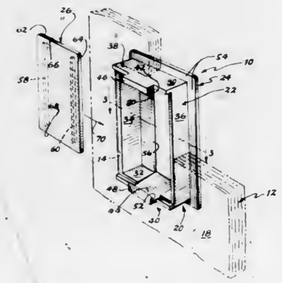
Clamp structure for stably holding one or more laboratory utensils, such as a beaker, test tube, heating pan or other articles, in the hand or on a bench standard. The structure comprises a rigid handle mounting member and associated readily adjustable clamps and handle extensions for ready application to and removal from each other or various other articles to be supported. Preferably the structure includes a utensil support extending from the handle mounting member, and readily operable means for adjusting the support on the handle.

3,775,808

DOOR PULL

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,917
Int. Cl. A47b *95/02*
U.S. Cl. 16—124 **12 Claims**



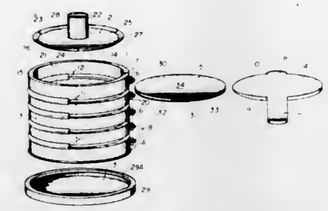
A pull for a sliding door is mounted within a door mounting opening and includes a pull piece retained within the opening by a resiliently deformable back piece; the back piece accommodating for varying door thicknesses.

3,775,809

PATTY-FORMER

Paul Roedel, 39 Muncey St., Lindenhurst, N.Y.

Division of Ser. No. 790,538, Jan. 13, 1969, Pat. No. 3,594,854. This application July 26, 1971, Ser. No. 166,228
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **5 Claims**



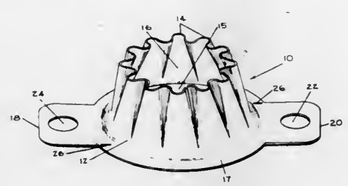
A patty former comprising a tublar body member adapted to have ground meat packed therein, the tubular body member including a wall having a plurality of parallel slots extending about a portion of the circumference thereof, a divider plate adapted to be selectively inserted through the slots in the wall of the tubular body member to divide the meat into patties, a separating member adapted to be releasably secured to the divider plate so that upon removal of the divider plate the separating member is released and maintains the patties in a separated state.

3,775,810

EXPANDABLE COLLAR

Jay G. Smith, Jr., Lewisville; David H. Michal; Thomas E. Cartee, both of Winston-Salem, and Burton J. Rothrock, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed July 3, 1972, Ser. No. 268,323
Int. Cl. B65d *77/10*
U.S. Cl. 24—30.5 S **5 Claims**



A securing collar for use in securing the four corners of a "sheet" of tobacco to produce a bundle comprising an annular frustro-conical shaped body with corrugated walls which surrounds the four corners of the "sheet" and a severing tab to permit easy removal of the collar.

3,775,811

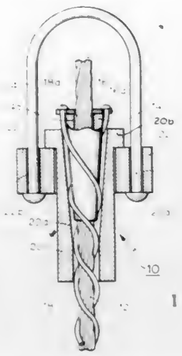
APPLIANCE FOR LINEAR BODIES

Clarence E. Smrekar, Cleveland, and Erwin H. Goetter, Willoughby Hills, both of Ohio, assignors to Preformed Line Products Co., Cleveland, Ohio

Filed July 26, 1972, Ser. No. 275,227
Int. Cl. F16g *11/04*
U.S. Cl. 24—122.6 **12 Claims**

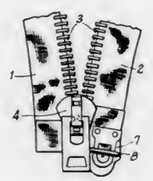
The disclosed termination appliance for a load bearing cable or the like comprises a frusto-conical member having a central bore for passing the cable and a peripheral flange at its

enlarged end. Helical rods captivated by the flange extend along the beyond the conical member for gripping the cable. The described subassembly is disposed in a housing having a



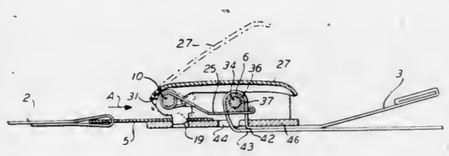
central passage of a contour complementary to that of the frusto-conical member for receiving said member with the helical elements wedged between the member and the internal housing walls. Other features are disclosed.

3,775,812
ZIPPER
William M. Carver, Jr., Lombard, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Jan. 3, 1972, Ser. No. 214,834
Int. Cl. A44b *19/38*
U.S. Cl. 24—205.11 R **2 Claims**



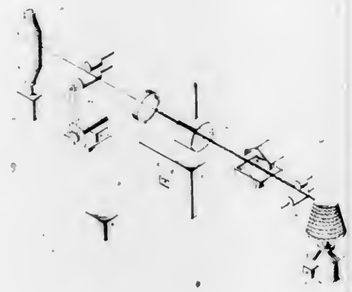
A zipper with features which simplify the engaging and disengaging of the co-operating interlocking elements of the zipper. The movable stringer of the zipper is provided with a male element which co-operates with a female element on the fixed stringer of the zipper to simultaneously seat and lock the movable member for engagement or disengagement of the co-operating interlocking elements on the adjacent edges of the stringers.

3,775,813
SAFETY BUCKLE
Nori Higuchi, 147-25 38th Ave., Flushing, N.Y.
Filed Dec. 17, 1971, Ser. No. 209,288
Int. Cl. A44b *11/06*
U.S. Cl. 24—230 A **7 Claims**



A buckle for safety belts including latch means for releasably connecting the buckle to a first webbing, adjustment means for adjustably securing the buckle to a second webbing, and spring means which cooperate with both the latch and adjustment means. The adjustment means includes a member which is pivoted to extend down to the base plate of the buckle and has a groove therein which meshes with the base plate. The length and position of the member directs the load along the plane of the base plate to better distribute the load on the buckle and prevent the base plate fron deforming. The groove in the member causes the webbing to travel in a greater path to provide more surface contact, and thus a greater holding force. The member is also split longitudinally so that it may be readily removed from its supporting shaft. The spring means cooperates with the latch to releasably secure an end plate of the first webbing to the buckle and also acts to bias the adjustment member to a home position; a position where the webbing can be readily adjusted with respect to the buckle.

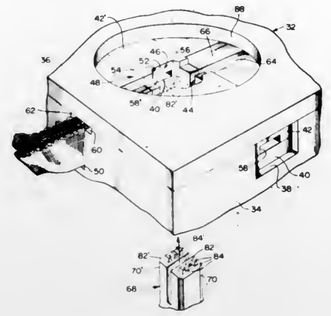
3,775,814
ELECTROSTATIC YARN BULKING APPARATUS
Mayer Mayer, Jr., New Orleans, and Albert Baril, Jr., Metairie, both of La., assignors to The United States of America as represented by the United States Department of Agriculture, Washington, D.C.
Division of Ser. No. 129,735, March 31, 1971, Pat. No. 3,707,024. This application Sept. 29, 1972, Ser. No. 293,730
Int. Cl. D02g *1/00*; **D02j** *1/20*; **D06m** *13/00*
U.S. Cl. 28—1.2 **3 Claims**



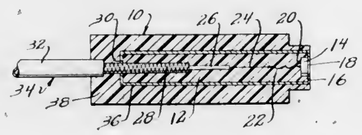
Chemical and physical methods and apparatuses have been employed to impart permanently bulked configuration to cellulosic and certain non-cellulosic yarns. This has been accomplished by passing the yarn through an electrostatic field either before or after impregnating the yarn with certain chemical crosslinking formulations.

3,775,815
APPARATUS FOR FORMING SLIDE FASTENER STOPS
James R. Johnston, Meadville, and George B. Moertel, Conneautville, both of Pa., assignors to Textron Inc., Providence, R.I.
Division of Ser. No. 28,793, April 15, 1970, Pat. No. 3,686,719. This application Jan. 25, 1972, Ser. No. 220,589
Int. Cl. B29d *5/00*; **B23p** *19/04*
U.S. Cl. 29—207.5 ST **8 Claims**

An apparatus for forming a top stop for a slide fastener of the type providing a seam-like closure including a forming block for supporting the slide fastener with its edges folded and the undersides of the folded edges exposed, stock guides supplying fusible material to recesses on either side of the forming block, a forming anvil for shearing the fusible material and defining cavities with the recesses for the fusible material and a member for fusing the material to the undersides of the folded edges to form two separate stop members for the top stop.



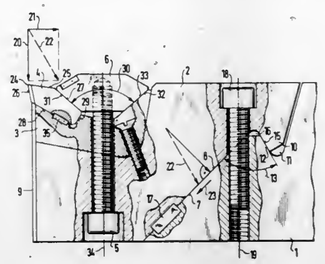
3,775,816
METHOD OF MAKING A MOLDED PIEZOELECTRIC TRANSDUCER ASSEMBLY
Norman R. Gordon, Kennewick, and Herbert N. Pedersen, Richland, both of Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Division of Ser. No. 142,145, May 11, 1971, abandoned. This application July 27, 1972, Ser. No. 275,581
Int. Cl. B01j *17/00*; **H04r** *17/00*
U.S. Cl. 29—25.35 **4 Claims**



A piezoelectric transducer assembly consisting of a molded inner body securing a piezoelectric crystal, one electrical conductor and the electrical connection therebetween. The surface of the body is plated with a conductive film to provide an electrical connection between the exposed face of the crystal and a second electrical conductor. A molded housing is disposed about the inner body to protect the conductive surface and provide the final configuration for the assembly. Also disclosed is a method for making the described transducer assembly.

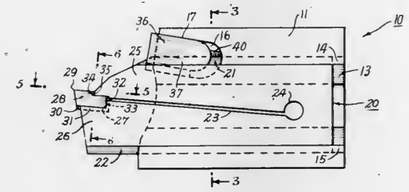
3,775,817
TURNING TOOL
Karl Hertel, Oedenberger Strasse 29, Nuernberg, Germany
Filed Jan. 11, 1972, Ser. No. 217,002
Claims priority, application Germany, Jan. 19, 1971, P 21 02 237.7
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **18 Claims**

A turning tool which includes a head, to which a cutting edge may be attached, and a mounting for the head such that the principal contact face between the head and the mounting slopes downwardly and towards the forward end of the tool to provide a pressure bearing surface for the pressure transmitted to the head from the cutting edge during operation. In



order to help secure the head against sliding motion along this principal contact face an anchoring protuberance is provided on the head to engage in a corresponding recess in the mounting.

3,775,818
TOOL HOLDER WITH CUTTER CLAMPING MEANS
Frank Sirola, 419 Getty Ave., Clifton, N.J.
Filed Sept. 14, 1972, Ser. No. 289,004
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **3 Claims**

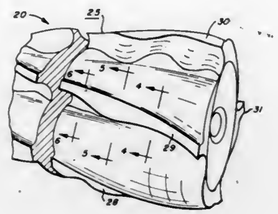


The invention embodies a tool holder in which a spring plate is slidably mounted and which plate includes oppositely disposed spring portions, one of which portions is formed with a seat adapted to receive a cutter element in projecting relation thereon and the other portion having bearing engagement against the cutter element when disposed on the seat. A slide member is also slidably mounted in the tool holder for movement into and out of camming engagement with said spring plate for tightening the cutter element between said spring portions and a screw threadably engaging said tool holder and said slide member is provided for manually turning thereof in opposite directions for moving said slide member into and out of said camming engagement.

3,775,819
ROTATING CUTTING TOOL
Thomas A. Ribich, Cleveland, Ohio, assignor to The Weldon Tool Company, Cleveland, Ohio
Continuation of Ser. No. 174,058, Aug. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 31,594, April 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 822,971, May 8, 1969, abandoned. This application Dec. 14, 1972, Ser. No. 315,021
Int. Cl. B26d *1/12*
U.S. Cl. 29—103 A **31 Claims**

A rotatable milling cutter having a plurality of helically extending teeth each of which has a cutting face side and a trailing side interconnected by a relieved surface which extends at

an acute angle to a tangent line which extends through a cutting edge defined by the intersection of the cutting face side and the relieved surface. Wall means are provided on the cutting face side of the teeth which define a plurality of generally axially spaced pockets or indentations recessed from the cutting face side toward the trailing side. This construction presents a cutting edge which when geometrically developed is a generally regularly shaped reoccurring curve which has a



large pitch with respect to amplitude and this cutting edge is the edge which is presented to the work which the cutter operates upon. The construction of the present invention also includes the provision of flattening the high point or high area of a portion of the above referred to reoccuring curve and the flattened portion is designed to be generally parallel to the axis of the tool. The present construction also improves the strength characteristics of the teeth at their extreme end faces.

3,775,820

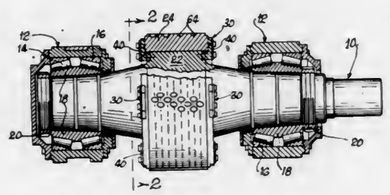
COMPACTING ROLL STRUCTURE AND METHOD

Leroy S. Harris, Rolling Meadows, Ill., assignor to K-G Industries, Inc., Rosemont, Ill.

Filed July 5, 1972, Ser. No. 269,049

Int. Cl. B60b *7/00*

U.S. Cl. 29—118 **23 Claims**



A material compacting apparatus and method wherein a roll tire is located on a supporting shaft section. The roll tire is preferably heated to a temperature in excess of the shaft temperature whereby the tire can be more readily located in position relative to the shaft section. A key structure is employed for securing the tire against movement relative to the shaft section. The key structure comprises a base which is attached to the shaft section and an extension adapted to be received within a recess defined in a side edge of the roll tire. A retaining plate serves to adjustably hold wedges which are adapted to be inserted between the sidewall of a key extension and an inner wall of a recess. A plurality of key structures are preferably employed and the retaining plate serves to secure the assembly of keys and wedges after the wedges are tightly fit relative to the key extension.

3,775,821

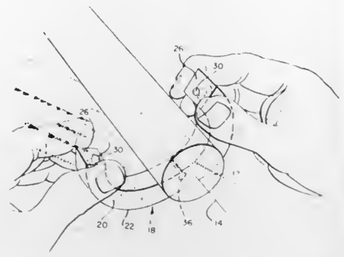
ELASTOMERIC FEED ROLLER

Richard C. Somerville, Dover, Mass., assignor to Globe Rubber Works, Inc., N. Quincy, Mass.

Filed Dec. 7, 1972, Ser. No. 313,136

Int. Cl. B21b *31/08*

U.S. Cl. 29—129 **14 Claims**



An elastomeric replacement feed roller adapted to be secured about a driven roller, which feed roller comprises: a cylindrical doughnut-type feed roller composed of a solid flexible elastomeric material, the inner diameter of the feed roller the approximate diameter of the driven roller about which the feed roller is to be secured, the roller characterized by a single opening extending from the outer to the inner surface of the feed roller to expose a first and second face surface, the surfaces adapted to be secured together, the feed roller composed of a material of sufficient flexibility to permit the feed roller to be opened to a distended position without permanent distortion and placed about the driven roller, the outer surface of the feed roller of sufficient coefficient of friction to move a material placed in contact therewith in operation; means to secure the first and second face surfaces in close sealing engagement and the feed roller about the driven roller; and means to relieve stress in the area opposite the first and second surfaces of the feed roller when the surfaces are in distended position.

3,775,822

METHOD OF MAKING FITTING FOR ASBESTOS CEMENT PIPE

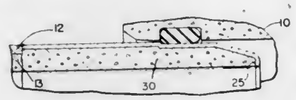
Jay S. Forni, 1101 Leema Dr., Danville, Calif.

Division of Ser. No. 52,470, July 6, 1970, Pat. No. 3,738,689.

This application Mar. 6, 1972, Ser. No. 232,071

Int. Cl. B21d *53/06*

U.S. Cl. 29—157 **2 Claims**



Fittings for asbestos cement pipe are made utilizing cement-lined iron pipe sections, by welding to each end of each section a generally cylindrical sleeve of sheet metal having a portion of the same diameter as the iron pipe succeeded by a spin-formed section of smaller diameter meeting the other one at a step-gasket shoulder, the spin-forming providing increased tensile strength to hold the portion in round, this portion being succeeded by a spin-formed tapered terminal portion ending in a radial lip. After the sleeves are welded to the iron pipe section, they are interiorly lined with cement, using the lips to help hold the cement in place at each end. Then a coupler of asbestos cement having a pair of interior annular grooves, each with a gasket, is placed over the sleeve, and one of the gaskets is abutted against the shoulder.

3,775,823

DISPERSION-STRENGTHENED ZIRCONIUM PRODUCTS

Elvind Adolph; Niels Hansen; Jens Christian Balling Jensen; John Kjoller, all of Roskilde, Denmark; Paul Donald Parsons; Edward David Hindle, and David John Marsh, all of Lancs, England, assignors to Atomenergikommissionen, Copenhagen, Denmark

Filed Aug. 18, 1971, Ser. No. 172,616

Claims priority, application Denmark, Aug. 21, 1970, 4318/70

Int. Cl. B22f *1/00, 3/00, 3/14*

U.S. Cl. 29—182.5 **18 Claims**

A method of producing dispersion-strengthened zirconium products containing fine particles of yttria, magnesia, cerium oxide or beryllium oxide in a matrix of zirconium or a zirconium alloy. Preferred products are such containing dispersed fine particles of yttria. In the method hydrided zirconium or zirconium alloy in a manner known per se is in a pulverulent state mixed with a fine powder of the oxide, and the mixture is then heated in vacuum with a view to expel hydrogen. Simultaneously or subsequently, the mixture is — in a compressed condition — sintered. This heating operation for expelling hydrogen and sintering the mixture is carried out at a temperature below 800°C, and preferably below 750°C. Prefered dispersion-strengthened zirconium products are characterized by having the metal oxide particles, of an average size not substantially exceeding 0,5μ and preferably between 0,01 and 0,5μ, dispersed in the said matrix having an average particle size not exceeding 5μ and preferably between 1 and 3μ.

3,775,824

APPARATUS FOR RESTORING THE INITIAL WORK-HARDENED CONDITION IN A CONDUCTOR PORTION ANNEALED BY WELDING

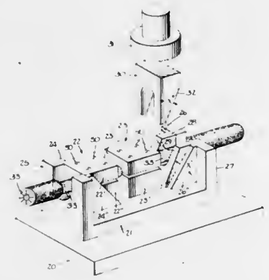
Agostino Oriani, Sesto San Giovanni, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Division of Ser. No. 82,437, Oct. 20, 1970, Pat. No. 3,707,865.

This application June 23, 1972, Ser. No. 265,573

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 R **6 Claims**



Apparatus for restoring the initial work-hardened properties of a portion of two welded-together cable conductors which has been annealed by the welding, the apparatus comprising a pair of vises mounted on a support so as to grip the conductors at opposite sides of the annealed portion, at least one of the vises being displaceable toward the other axially of the conductors to thereby compress and work-harden the annealed portion. The displaceable vise may be moved toward the other vise by a wedge between the displaceable vise and an inclined surface on the support or by threaded pins interconnecting the vises and having adjustable nuts thereon which engage one of the vises.

3,775,825

CLIP APPLICATOR

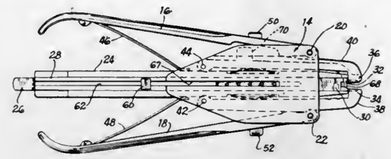
Ernest C. Wood, Los Angeles, and Peter B. Samuels, Encino, both of Calif., assignors to Rene G. Levaux, Beverly Hills, Calif., part interest to each

Division of Ser. No. 817,496, April 18, 1969, abandoned. This application Aug. 24, 1971, Ser. No. 174,501

Claims priority, application Great Britain, Sept. 17, 1971, 43438/71; Feb. 4, 1972, 5352/72

Int. Cl. B23q *7/10*

U.S. Cl. 29—212 D **9 Claims**



This application discloses apparatus for applying spaced clips to a filament and severing the filament between the clips so as to provide clips secured on the free ends of the severed filament. The apparatus is disclosed in the context of a method of suturing skin wounds wherein a suture is drawn through an edge of the wound and the clip applicator applies the spaced clips and severs the suture so as to provide one clip holding the suture at the edge of the wound and another clip to the thread so that it may be used to start the next suture.

3,775,826

CLIP APPLICATOR

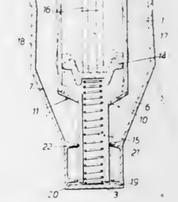
David Arthur Reed, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 31, 1972, Ser. No. 276,529

Claims priority, application Great Britain, Sept. 17, 1971, 43438/71; Feb. 4, 1972, 5352/72

Int. Cl. B23q *7/10*

U.S. Cl. 29—212 D **9 Claims**



A wound clip applicator comprising a magazine for wound clips and forceps jaws, which may be squeezed together to bend a clip into a desired position across a wound and release the clip from the magazine, in which the magazine and forceps jaws are composed of a single piece of plastics material.

3,775,827

CORONA-DISCHARGE ELECTRODE MOUNTING DEVICE

Ivan Keserin, Hochst, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 27, 1971, Ser. No. 212,299

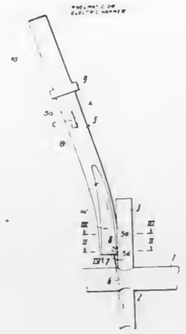
Claims priority, application Germany, Jan. 27, 1971, P 21 03 696.4

Int. Cl. B23p *19/02*

U.S. Cl. 29—275 **3 Claims**

A tool for securing corona-discharge electrode wires, preferably of a polygonal concave (i.e. clutch) profile,

wherein a wedge is driven into an opening in an electrode-support frame into which the electrode wire is inserted. The tool has a projection received within the concavity of the electrode wire and, in turn, is formed with a groove receiving the head of



the wedge; the lower end of the tool is bent at an obtuse angle so that the impact portion of the tool is turned away from the electrode or any imaginary extension thereof. A pneumatic or electromotive impactor may be provided at the end of the tool remote from the wedge-engaging end.

3,775,828

APPARATUS AND METHOD FOR FIELD-REPAIRING HIGH-VOLTAGE ELECTRICAL CONNECTOR LEAD ASSEMBLIES

Kenneth Oscar Kopenhaver, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 24, 1972, Ser. No. 256,496
Int. Cl. H02q *15/00*; H01r *13/54*
U.S. Cl. 29—401 **8 Claims**



A field-repairing kit for repairing high-voltage electrical connector lead assemblies in the field having a contact pin socket, shrink tubing, a tubular retention cap, and an insulation boot.

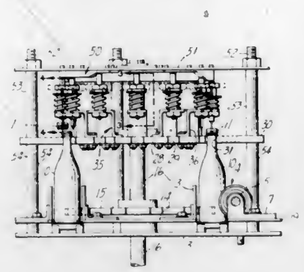
In repairing a defective or damaged lead assembly, the assembly to be replaced is severed from the high-voltage lead, a portion of which is then stripped of its insulation so as to expose its wire conductor. A contact pin socket is then crimped or soldered to the exposed wire conductor, after which the shrink tubing, tubular cap, and insulation boot are slipped over the socket and onto the high-voltage lead in the order recited. A bonding agent may be applied to secure the components in their relative positions, after which the shrink-tubing is shrink-fitted thereover.

3,775,829

METHOD AND APPARATUS FOR REMOVING SCREW CAPS FROM CONTAINERS

Harold B. Rice, Walnut Creek, Calif., assignor to John Burton Machine Corporation, Concord, Calif.

Filed July 31, 1972, Ser. No. 276,451
Int. Cl. B23p *19/00*
U.S. Cl. 29—426 **7 Claims**



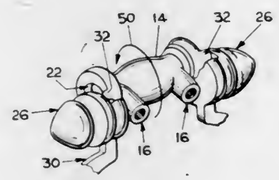
A method and apparatus for removing the screw cap from returnable bottles and like containers prior to refilling the bottles. The twist-off cap on the bottle is impaled by a blade and the blade and bottle are then relatively rotated to remove the cap. In the preferred form of the invention the bottles are moved around an arcuate path of travel and the large diameter body portion of the bottles are pressed against a frictional material to rotate the bottle while the impaling blade is held stationary relative to the bottle. Ejector means is provided for removing the caps from the blades. In another form of the invention, particularly adaptable for use with noncircular bottles, the impaling blades are rotated relative to the bottles.

3,775,830

METHOD OF ASSEMBLYING A DRAWER PULL

Edwin Van Ryn, and Edwin J. Driesenga, both of Holland, Mich., assignors to Keeler Brass Company, Grand Rapids, Mich.

Division of Ser. No. 882,042, Dec. 4, 1969, Pat. No. 3,673,634. This application Nov. 26, 1971, Ser. No. 202,248
Int. Cl. B23p *19/00*
U.S. Cl. 29—434 **3 Claims**



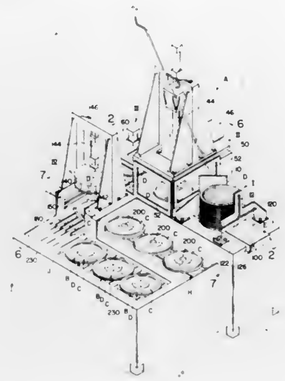
An improved drawer pull and method of assembly, the pull utilizing a support having rearwardly-mounted, axially-extending ears which cam against a cut-away portion of the bail of the pull so as to cause the support to pivot during assembly into coaxial alignment with the bail with the axle of the bail mounted in a bearing slot in the support. The ears and the extremities of the cut-away portion serve to limit the possible rotation of the bail on the support once the support is attached by screws to the drawer. The bail axle and the support bearing slot can be either short so as to require two of each, or the axle and slot can extend across the full length of the support.

3,775,831

METHOD OF PRODUCING A RING GEAR AND FLYWHEEL ASSEMBLY

John F. Cachat, Cleveland, Ohio, assignor to Park Ohio Industries, Inc., Cleveland, Ohio

Filed July 20, 1972, Ser. No. 273,525
Int. Cl. B23p *11/02*
U.S. Cl. 29—447 **8 Claims**



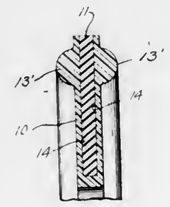
There is provided a method for producing a ring gear and flywheel assembly, which method includes the use of a shuttle arrangement for moving successive ring gears through a high frequency induction heating and quench hardening station, a lower frequency tempering station, and a station wherein the heated ring gear is magnetically held and shifted over the outer periphery of an aligned flywheel preparatory to cooling of the ring gear to shrink fit it upon the flywheel.

3,775,832

METHOD OF MANUFACTURING SHROUDED GASKETS

Bruno H. Werra, Waukesha, Wis., assignor to Ladish Co., Cudahy, Wis.

Division of Ser. No. 83,042, Oct. 22, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,250
Int. Cl. B23p *11/02*
U.S. Cl. 29—450 **2 Claims**



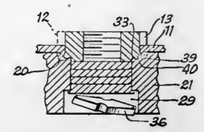
The gasket comprises a sheath of firm, relatively tough and non-stretchable fluoroplastic material having a circular peripheral slot machined into its periphery and having machined externally-projecting ribs, and a flat, ring-shaped elastomeric core which is stretched into position for insertion in said slot of the sheath.

3,775,833

METHOD OF SECURING FASTENERS TO SHEET MATERIAL

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

Division of Ser. No. 13,007, Feb. 20, 1970, Pat. No. 3,693,237. This application Apr. 20, 1972, Ser. No. 245,765
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **6 Claims**



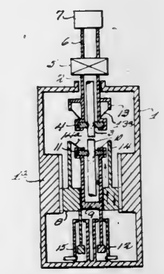
A method of attaching a pierce nut to a panel is disclosed wherein by a single stroke of a ram a threaded fastener, such as a nut, acts as a punch and pierces its own hole in the sheet metal panel to which it is to be fastened. The nut has one or more laterally extending flanges which abut upon one side of the said panel, the corners of the nut being displaced laterally in the die associated with the piercing operation, preferably under the flange, to clinch the material therebetween. The panel is also displaced at the displaced region of the nut and in the same general direction as the displaced region of the nut. The method is not dependent upon any particular thickness, hardness or ductility of the material of the panel, nor does the nut need to have any predetermined hardness. The displaced material of the nut and panel is compressed together to form, in effect, a cold weld, but it is not confined laterally, thereby avoiding binding of the displaced material in the back-up die used to displace the materials.

3,775,834

METHOD OF FRICTION WELDING AND APPARATUS THEREFOR

Yuji Ishikawa, Showa-ku, Nagoya; Mitsuhiro Numata, Kasugai-gun, and Teruki Tomisige, Nakamura-ku, Nagoya, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1970, Ser. No. 98,432
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **6 Claims**



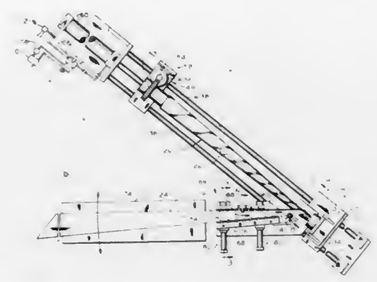
An improved method of friction welding consisting of friction, correction, and upset steps, is disclosed. Said improvement exists in that during said correction step, as soon as the relative rotational speed between the respective bodies to be welded has been reduced to zero, at least one of said bodies to be welded is quickly rotated about the axis of said rotation by the amount falling within 0° to 360° in one direction to make correction of the relative angular position about said axis of rotation. In the preferred embodiment of the disclosure, the quick correction of relative angular position is achieved by means of a pair of positioning members having complementa-

ry configurations to mesh with each other, one being fixedly secured to one of the bodies to be welded, while the other being secured fixedly in the rotational direction but slidably in the axial direction relative to the other body to be welded.

3,775,835
TAPERED POLE CONSTRUCTION AND MANUFACTURE OF SAME

Ford B. Cauffiel, 4940 Homerdale Ave., Toledo, Ohio

Filed Sept. 7, 1971, Ser. No. 177,992
Int. Cl. B23k *31/06*
U.S. Cl. 29—477.3 **2 Claims**

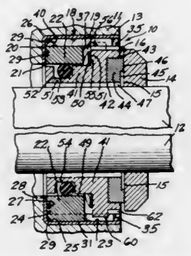


A tapered pole construction and apparatus for making same are provided. The tapered pole is made from a spirally wound strip of tapered configuration and, in a preferred form, the strip has an offset, welded lap seam. The pole also can be made of tapered metal strips, joined end-to-end, of different gauges so that lighter gauge strips are used toward the top of the pole and heavier gauge toward the bottom. The apparatus for making the tapered poles includes a tapered mandrel having a spiral groove therein which receives the flat overlapped, offset welded joint. The mandrel is rotated in one direction as the strip is wound thereon and, when the pole is completed, the mandrel can be rotated in the opposite direction with the pole held stationary so that the pole can be unscrewed from the mandrel for easy removal. The apparatus includes sensing means for sensing one edge of the strip being wound onto the mandrel with the sensing means operating drive means for the mandrel to advance it at a desired rate.

3,775,836
SHAFT SEAL METHOD OF MANUFACTURING

Richard H. Jackson, Downers Grove, and Dale J. Warner, Chicago, both of Ill., assignors to Gits Bros. Mfg. Co., Inc., Chicago, Ill.

Division of Ser. No. 108,850, Jan. 22, 1971, Pat. No. 3,718,336. This application Aug. 7, 1972, Ser. No. 278,599
Int. Cl. B23k *1/20*
U.S. Cl. 29—483 **2 Claims**

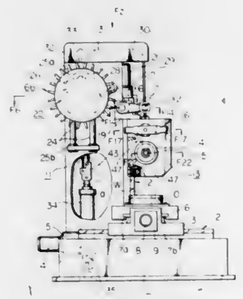


A mechanical shaft seal having a primary face seal and a secondary internal seal wherein the seal line of the secondary seal is balanced in axial alignment with the primary face seal. The seal is a take-apart seal having a housing with a brazed-in internal radial step, the housing receiving a stepped adapter having a circumferential groove therein for the secondary seal and an axial end face adapted to hold the primary face seal. The adapter is axially movable in the housing and is urged out of the housing by a spring.

3,775,837
NUMERICALLY CONTROLLED MACHINE TOOL WITH AUTOMATIC TOOL CHANGING APPARATUS

Tamaki Tomita, Okazaki-shi; Takesi Kusakabe, Kariya-shi; Mikishi Kurimoto, Nagoya-shi; Tsuneo Iwami; Keniti Iwami, both of Kariya-shi; Kenzi Nomura, and Yoshikazu Sano, both of Aichi-ken, all of Japan, assignors to Toyoda Machine Works, Limited, Aichi-ken, Japan

Filed Sept. 29, 1969, Ser. No. 861,666
Claims priority, application Japan, Sept. 30, 1968, 43/71024
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **30 Claims**



Numerically controlled machine tool with automatic tool changing apparatus is capable of carrying diverse tools in an interrelated relationship. The tool changing apparatus comprises a tool magazine and carrying means for both taking a new tool from a predetermined first position of the tool magazine to a predetermined second waiting position thereof after normal turning of the tool magazine by two angular pitch and for carrying a previously used tool positioned at the second waiting position to the first position, and a tool transfer arm for simultaneously removing the previously used tool from the spindle and removing the new tool from the carrying means at the second position and next transferring the new tool to the spindle. The previously used tool is transferred from the tool transfer arm to the carrying means and then to the magazine at the first position after an inverse turning of the tool magazine by one angular pitch.

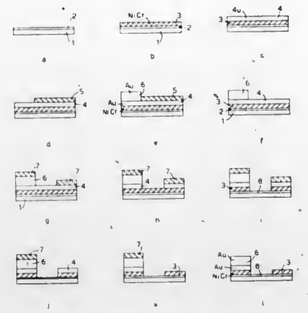
3,775,838
INTEGRATED CIRCUIT PACKAGE AND CONSTRUCTION TECHNIQUE

Claudio Dalmasso, Ivrea, Italy, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea, Italy

Continuation of Ser. No. 120,185, March 2, 1971, abandoned. This application Apr. 24, 1972, Ser. No. 246,595
Int. Cl. B01j *17/00*
U.S. Cl. 29—577 **4 Claims**

Disclosed is an integrated circuit arrangement and construction technique wherein an improved circuit board, having deposited thereon resistors and conductors, is constructed by means of a combination of evaporation and electrodeposition techniques. A layer of resistive material and a layer of

conductive material are successively deposited by means of evaporation onto a substrate. A third layer of conductive material is then deposited by means of electroplating. The

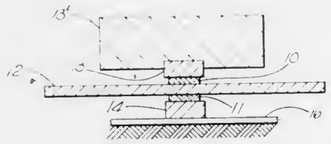


construction process includes a high temperature stabilization phase, an improved resistor trim by means of electroerosion, and a semiconductor afixation phase which utilizes high temperature gas in conjunction with mechanical friction.

3,775,839
METHOD OF MAKING A TRANSDUCER

Robert Eugene Talmo, Pasadena, and Edward R. Brady, Sierra Madre, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,070
Int. Cl. G01r *3/00*
U.S. Cl. 29—595 **11 Claims**



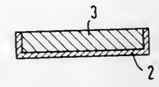
A method of making a strain gage transducer including the steps of fusing a glass sheet to each side of a metal cantilever beam in an inert gas, lapping the fused sheet, and bonding a silicon strain gage to each sheet by heating and simultaneously applying a positive potential to each gage relative to the potential of each corresponding sheet. Thin sheets may be employed, whereby breakage due to differential thermal expansion may be eliminated. The fusion step also is advantageous because the glass is firmly bonded to the beam. This means that the beam reinforces the fused sheets. They can, therefore, easily be lapped without fear of breakage.

3,775,840
METHOD OF PRODUCING A COMPOSITE CONDUCTOR BAND FOR USE IN MAKING A TUBULAR SUPERCONDUCTOR

Heinrich Diepers, Erlangen-Bruck, and Horst Musebeck, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1972, Ser. No. 279,387
Claims priority, application Germany, Aug. 19, 1971, P 21 41 621.7
Int. Cl. H01v *11/00*
U.S. Cl. 29—599 **9 Claims**

A method for producing a conductor band which includes a layer of niobium adjacent a layer of an electrically normal conducting metal and respective niobum chords defining the longitudinal edges of the band. The bimetal conductor band is produced by bending a niobium strip to have a U-shaped profile, at least approximately filling the space bounded by the inside surface of the U-shaped niobium strip with an electri-

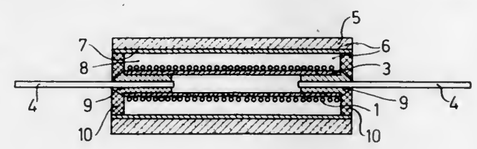


cally normal conducting metal, and then joining the normal conducting metal to the U-shaped niobium strip to form the band. The bimetal conductor band made in this manner is used in a method of producing a tubular conductor for superconducting cables and the like.

3,775,841
METHOD OF ADJUSTING THE DIMENSIONS OF SINTERED FERROMAGNETIC CORES

Franciscus Johannes Maria Lathouwers, and Jacob De Groot, both Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,696
Claims priority, application Netherlands, Oct. 9, 1970, 7014813
Int. Cl. H01f *41/02*
U.S. Cl. 29—605 **2 Claims**

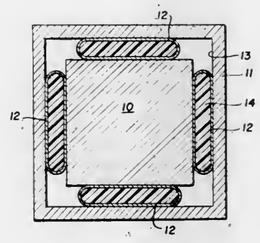


A method of adjusting the dimensions of sintered ferromagnetic coil cores by coating the cores in a mold with a layer of coating material consisting of a binder and a ferromagnetic powder.

3,775,842
METHOD FOR CENTERING AND RESTRAINING COILS IN AN ELECTROMAGNET

Robert Sheldon, Geneva, Switzerland, and Bruce P. Strauss, Downers Grove, Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

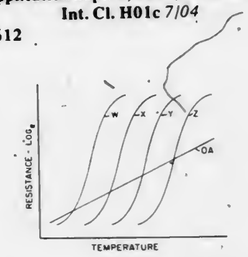
Filed Aug. 16, 1972, Ser. No. 281,264
Int. Cl. H01f *7/06*
U.S. Cl. 29—606 **9 Claims**



A body is centered within a housing and restrained from moving from such centered position by surrounding the body

with a plurality of flattened like tubes positioned between the body and the interior walls of the housing and simultaneously expanding the tubes so as to center the body by filling the tubes with a hardenable material under pressure. Upon hardening of the material, the body is restrained from moving from the centered position. The method is applied particularly to the coils of an electromagnet and the beam tube of a particle accelerator so centered and restrained within a tubular electromagnet housing by hydraulically pumping an epoxy resin under a high pressure into the symmetrically spaced like tubes which are connected hydraulically in parallel and, following curing of the epoxy, capping the ends of the tubes to maintain hydraulic integrity of the system.

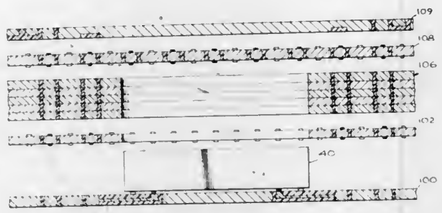
3,775,843
METHOD OF MAKING TEMPERATURE RESPONSIVE APPARATUS
Richard E. Wendt, Jr., 348 Maple Ave., Edgewood, Pa.
Division of Ser. No. 62,111, Aug. 7, 1970, Pat. No. 3,731,535. This application Sept. 6, 1972, Ser. No. 286,639
Int. Cl. H01c 7/04
U.S. Cl. 29—612 **10 Claims**



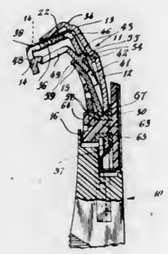
There is disclosed a method of making thermistors included in apparatus for measuring precisely, to 0.01° C., difference in temperature; the thermistors are subjected to the temperatures whose difference is being measured. The logarithm of electrical resistance of each thermistor is proportional to its temperature and the thermistors are connected in a ratiometric circuit for measuring their relative resistances. Each thermistor is a ceramic of ferroelectric material (for example, barium-strontium titanate) formed by mixing powders of different compositions, each composition having a different ferroelectric resistance anomaly, and then firing and oxidizing bodies pressed from the mixture of powders. The powders are derived by reducing separate slurries, each containing a composition, to powder. The mixture of powders is heterogeneous so that the grains of the ceramic include a plurality of particles of powder which microscopically would manifest distinct ferroelectric resistance anomalies if fired along but the macroscopic response of the ceramic is log-linear over a substantial temperature range.

3,775,844
METHOD OF FABRICATING A MULTIWAFER ELECTRICAL CIRCUIT STRUCTURE
Howard L. Parks, Woodland Hills, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Calif.
Division of Ser. No. 49,873, June 25, 1970, Pat. No. 3,705,332, which is a continuation-in-part of Ser. No. 613,652, Feb. 2, 1967, abandoned.
Filed Apr. 27, 1972, Ser. No. 248,003
Int. Cl. H05k 3/30, 13/00
U.S. Cl. 29—626 **18 Claims**

A method of fabricating an electrical circuit structure comprised of a plurality of electrically conductive wafers stacked together under pressure to form a parallelpiped structure containing one or more active components (e.g., integrated circuit chips) as well as conductor means providing coaxial interconnections in X, Y and Z-axis directions. A stack is normally comprised of conductive wafers of different types including component wafers, interconnection wafers, and connector wafers. Z-axis interconnections, i.e., through-connections in a wafer, are fabricated directly from the wafer material itself by selective chemical etching of the wafer so as to form spaced electrically insulated solid conductive slugs within the wafer profile extending between the top and bottom wafer surfaces, with each slug being surrounded by dielectric material which supports the slug and electrically isolates it from the remainder of the wafer material. X-Y axis interconnections for electrically connecting the Z-axis slugs in a wafer in a predetermined manner are also fabricated directly from the wafer material by selective chemical etching so as to form X-Y axis conductors which are likewise contained within the wafer profile and surrounded by dielectric material providing support and electrical isolation. Highly reliable wafer-to-wafer electrical interconnections are obtained in a stack by providing malleable conductive contacts between opposing contacting Z-axis slugs in adjacent wafers, and pressure stacking the wafers so that these malleable contacts are deformed. Additional malleable contacts which are likewise deformed by the pressure stacking are also advantageously provided between other opposing portions of adjacent wafer surfaces for providing wafer-to-wafer ground interconnections. The advantages of pressure stacking are further increased by providing a uniform pattern for the Z-axis slugs and the ground interconnections on all of the wafers of a stack so as to obtain uniform distribution.

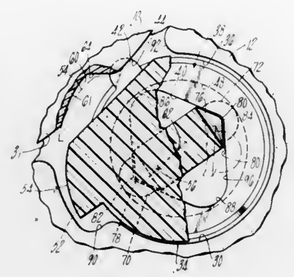


3,775,845
ADJUSTABLE SINGLE EDGE RAZOR WITH GUARD AND WASH POSITIONS
Leopold K. Kuhnl, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Sept. 14, 1972, Ser. No. 289,038
Int. Cl. B26b 21/24, 21/40
U.S. Cl. 30—41 **8 Claims**



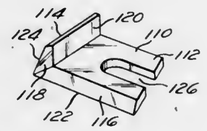
The specific embodiment provides an adjustable single edge razor having a helical cam for moving a guard bar relative to the cutting edge of the blade. The cam has a recess formed therein which permits significant movement of the guard bar away from the cutting edge to provide a blade wash position. The cam also has a position for moving the guard bar in front of the cutting edge to protect the blade when not in use.

3,775,846
PRUNER
Edward J. Johnson, New Britain, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Jan. 31, 1972, Ser. No. 221,923
Int. Cl. B26b 13/16
U.S. Cl. 30—262 **6 Claims**



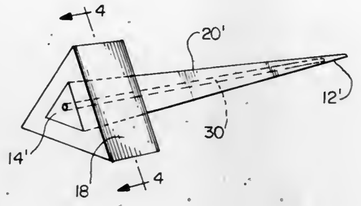
A pruner having a pair of pivoted handles with opposed confronting surfaces. A rotary latch with a latching finger mounted in a transverse opening in one handle engages a recess in the confronting wall of the other. The recess is formed on an arc about axis of latch and the engaging surface of the latch finger is formed on an arc about an axis offset from the latch axis to provide wedging engagement with the recess. Resilient bifurcated legs on the latch pass over center to a latching position and a force urging the handles apart produces a force on a moment arm to two axes to urge the latch through the overcenter position by a snap-action to assume an unlatched position.

3,775,847
CUTTING BLADE FOR REMOVING COVERING MATERIAL FROM AN ELECTRICALLY CONDUCTIVE CABLE
Raymond G. Horrocks, Parkview, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio
Division of Ser. No. 878,022, Jan. 2, 1971, Pat. No. 3,620,104, which is a continuation-in-part of Ser. No. 846,196, July 30, 1969, abandoned. This application Aug. 11, 1971, Ser. No. 170,845
Int. Cl. H03g 1/12
U.S. Cl. 30—353 **5 Claims**



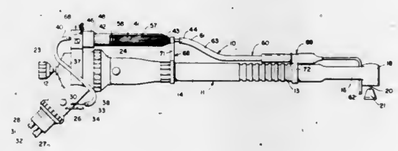
A cutting blade for removing insulation and/or semi-conductive material from an electrically conductive cable. The blade includes a flat, thin body with a plane bottom surface and a thin flange at one end of the body having a plane outer side surface with the blade being beveled to form a long cutting edge on the body and a short cutting edge on the flange, the cutting edges making a wide included angle with one another and having a common end.

3,775,848
PERIODONTAL AND DENTAL CLEANSER AND PERIODONTAL STIMULATOR
Edward M. Barnett, 1 Masters Ct., Potomac, Md.
Continuation-in-part of Ser. No. 130,395, April 1, 1971, abandoned. This application Nov. 3, 1972, Ser. No. 303,342
Int. Cl. A61c 15/00
U.S. Cl. 132—89 **5 Claims**



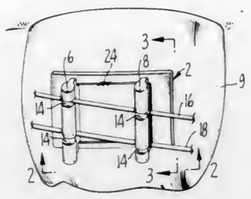
A periodontal and dental cleaning and periodontal stimulating device for both interdental spaces of anterior teeth and interproximal tunnels of posterior teeth comprising an elongated body member having a tapered configuration and fabricated of a material which is partially elastic and is deformable on contacting the hard surfaces of the teeth or firm, healthy gingival tissue, and a core member ensheathed within the body member. The core member is fabricated of a material which is generally stiff axially of its length and sufficiently bendable in all other directions when the device encounters the hard surfaces of the teeth and firm, healthy gingival tissue to enable the device to pass through the spaces and tunnels, but is also sufficiently resistant to bending to enable the device to depress or displace unhealthy, edematous or inflamed gingival tissue in the spaces and tunnels.

3,775,849
DENTAL HANDPIECE ATTACHMENT
John J. Condon, N. 5901 Lidgerwood, Spokane, Wash.
Continuation-in-part of Ser. No. 133,173, April 12, 1971, abandoned. This application Mar. 20, 1972, Ser. No. 236,252
Int. Cl. A61c 13/22
U.S. Cl. 32—59 **3 Claims**



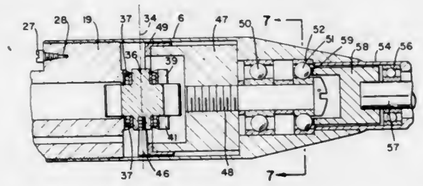
A dental handpiece attachment is described for use on a dental handpiece fitted with a prophy contra-angle. The attachment has a cartridge filled with prophy paste that may be dispensed as desired adjacent the working element of the polishing tool to provide a lapping compound for accomplishing a polishing procedure without the necessity of periodically removing the polishing tool to replenish the lapping compound. The cartridge has a free piston mounted therein that is responsive to the application of air pressure to push the prophy paste. The cartridge is releasably loaded in a spring-biased receiving fixture that is affixed to the handpiece.

3,775,850
ORTHODONTIC APPARATUS
Michael E. Northcutt, 1704 Miramonte Ave., Los Altos Hills, Calif.
Filed Oct. 28, 1971, Ser. No. 193,400
Int. Cl. A61c 7/00
U.S. Cl. 32—14 A 26 Claims



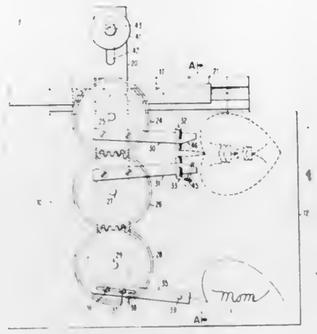
Orthodontic apparatus employing parallel unbent arch wires in cooperation with brackets having predetermined ideal three dimensional positions built into the bracket structure for each tooth. Friction between the bracket and arch wires is minimized by using point contacts. In one embodiment, a plastic bracket may be used having snap-in slots for holding the arch wires. In another embodiment a staple may be inserted in the bracket to hold the arch wires. Both embodiments also permit the use of ligature wires to hold the arches. The unbent light arch wires may be configured in pairs, normally one above the other, or in threes, triangular or in line, to provide greater rigidity. Substantial time saving is achieved through the use of the orthodontic apparatus herein disclosed while at the same time achieving greater success with less skill by the practitioner. The invention overcomes the shortcomings of prior art "edgewise" and "light-wire" orthodontic techniques.

3,775,851
DENTAL HANDPIECE
Lloyd P. Flatland, 15 Quisisana Dr., Kentfield, Calif.
Filed July 14, 1972, Ser. No. 272,075
Int. Cl. A61c 19/02
U.S. Cl. 32—26 11 Claims



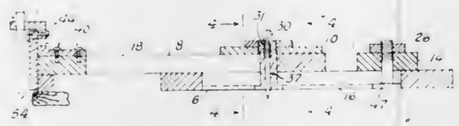
The dental handpiece disclosed herein has a housing extending along a longitudinal axis. An air turbine rotatable about a transverse axis is disposed within the housing and fed with air through a hollow rod in the housing and rotatable about the longitudinal axis so that an inclined nozzle at the rod end can drive the turbine in either direction. The turbine drives a transverse friction shaft engaging a friction disc on a drive shaft journalled in the housing for rotation about the longitudinal axis. Spent air my exhaust directly to atmosphere or through a hand controlled port or through a port throttled according to drive shaft speed. A externally releasable chuck in the housing is driven by the drive shaft.

3,775,852
REVERSE IMAGE PANTOGRAPHIC APPARATUS
Nels T. Sandin, 15 Van Etten Rd., Binghamton, N.Y.
Filed Aug. 14, 1972, Ser. No. 280,507
Int. Cl. B43l 13/10
U.S. Cl. 33—23 E 4 Claims



A pantographic apparatus of the type which, by virtue of intermeshing gears bearing styli, simultaneously produces a true and a superposed reverse image of a tracing is described.

3,775,853
PORTABLE DRAFTING INSTRUMENT
Raymond Doret, and Michel Doret, both of 65-84 Booth St., Forest Hills, N.Y.
Filed Feb. 9, 1972, Ser. No. 224,726
Int. Cl. B41l 9/04
U.S. Cl. 33—27 C 3 Claims

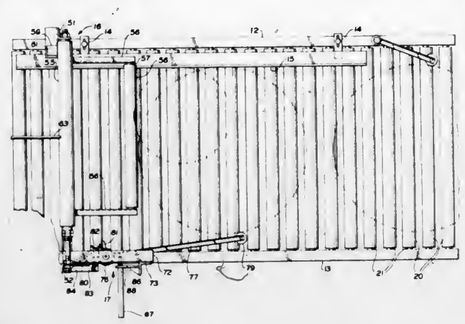


A portable drafting instrument for drawing horizontal and vertical lines, specific angles and circles with pencil, ink, chalk on various surfaces, including paper and blackboards. The instrument comprises a pair of slotted rulers and a protractor secured by a thin bolt extending through the slots. One of the rulers is swingable about the bolt and secured to the other by a nut on the bolt at a desired angle relative to the other, for marking an angle. The same ruler is provided wih a marking implement for drawing circles, and a centering pin extending through the bolt. Both rulers can be aligned to form a straight edge.

3,775,854
CHECKING STATION FOR TIRES OF DIFFERENT SIZES
Clarence Hofelt, Jr., and Francis C. Rongone, both of Cuyahoga Falls, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio
Filed Dec. 30, 1971, Ser. No. 214,091
Int. Cl. G01b 5/10
U.S. Cl. 33—174 R 12 Claims

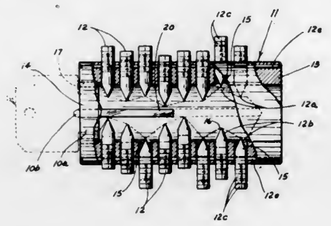
A method and apparatus for measuring automatically the diameter and axial width of a pneumatic tire while the tire is traveling continuously along a conveyor for example. The

measurments are represented by electrical signals, the respective levels of which may be used as parameters to check the size and load bearing classification of the tire and to program



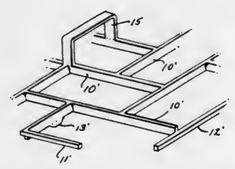
subsequent processing thercof. Mechanical sensors are used to engage and measure the respective dimensions and to generate the respective signals.

3,775,855
METHOD AND TUMBLER GAGE FOR MEASURING KEY CUTS
Noah S. Marmel, 1889 Alpha Rd., Glendale, Calif.
Filed Jan. 28, 1972, Ser. No. 221,507
Int. Cl. G01b 5/20
U.S. Cl. 33—174 F 2 Claims



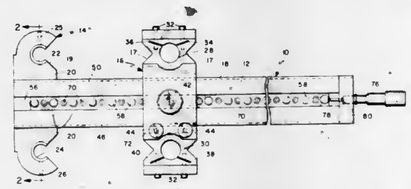
Key cuts are measured by inserting a key into a holder having tumblers provided with predetermined gage markings, said tumblers being adapted to move a distance corresponding to the depth of the key cut. The tumblers are on both sides of the holders and permit measuring the key cuts on both sides of the key simultaneously.

3,775,856
TILE SETTING TEMPLATE
Henry Schmidt, 1111 12th St., Santa Monica, Calif.
Filed Aug. 11, 1971, Ser. No. 170,703
Int. Cl. G01b 5/16
U.S. Cl. 33—180 R 3 Claims



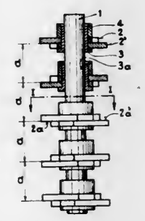
A template in the form of a rack, for setting tile expeditiously and with accuracy regardless of pattern complexity while minimizing "straightening up" procedures. This template is a time saving tool when made of moderate size for ease of handling, and multiple units thereof are cooperatively employed as distinguished from large and cumbersome units that are easily damaged with consequently developed imperfections. This template is of characteristic quadrilateral plan configuration having tile receiving pockets sized and shaped according to the tile to be set, and the pockets arranged according to the pattern thereof that is desired. The marginal members of interengaged templates are disposed so as to mate and jointly occupy the joints between the tile which are later grouted; and the rack members which space the tile are held positioned above the tile supporting floor or base by means of localized supports that depend within the confines of the said joints between the said tile.

3,775,857
SET-UP TOOL
Harry G. Handy, 1117 Mt. View Rd., El Cajon, Calif.
Filed Aug. 30, 1971, Ser. No. 175,919
Int. Cl. B23b 49/00; B27g 23/00; G01b 5/02
U.S. Cl. 33—185 R 11 Claims



A tool for layout and machining operations that incorporates an end plate for locating the tool with respect to a datum point, and beam means for slidably mounting a carriage for movement with respect to the datum point. The carriage is provided with means for fixing the carriage in relationship to a scale bar that contains a plurality of protruding locating balls. The carriage is located with respect to a ball thereby determining the incremental position of the carriage along the beam. Fine adjustment of the carriage position is accomplished by movement of the scale bar within the beam and thereby the movement of the carriage affixed thereto. This movement is measured by a standard micrometer. The carriage contains provision for receiving bushings or other means for locating a point at which machining is required and thereafter receiving a tool bit for accomplishing the machining operations.

3,775,858
GRADED GAUGE
Hans Meyer, Bugnon, 24, Renens (Vaud), Switzerland
Filed Apr. 13, 1971, Ser. No. 133,599
Claims priority, application Switzerland, Apr. 30, 1970, 6577/70
Int. Cl. G01b 3/38
U.S. Cl. 33—168 R 2 Claims



A graded gauge comprising a carrier body carrying a plurality of measuring contact blocks, the spacing between which

is accurately defined, each block providing a pair of oppositely facing measuring surfaces formed on cooperating superposed measuring members, the outline of each of which is recessed so as to uncover the measuring surface of the cooperating member. The assembly of the parts is performed by means of terminal plates and spacers, holding said parts in position during their fixing on the carrier body, preferably by means of an epoxy resin, introduced between the blocks and the carrier body.

3,775,859

METHOD AND APPARATUS FOR MEASURING THE INCLINATION OF A RAILWAY TRACK

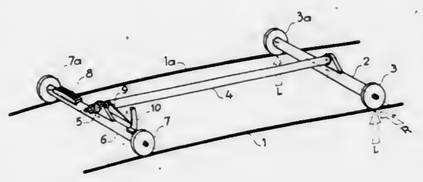
Gerard Sauterel, Pully, Switzerland, assignor to Matisa Material Industrial S.A., Grissier, Switzerland

Continuation of Ser. No. 5,279, Jan. 23, 1970, abandoned. This application June 27, 1972, Ser. No. 266,711

Claims priority, application Switzerland, July 24, 1969, 1040/69

Int. Cl. B61k *9/08*

U.S. Cl. 33—338 **4 Claims**



This invention relates to a method of and apparatus for measuring the transverse inclination of a railway track during levelling and aligning of the track by means of an inclination measuring instrument which is sensitive to the accelerations and vibrations which are transferred to the track by the track adjusting tools.

3,775,860

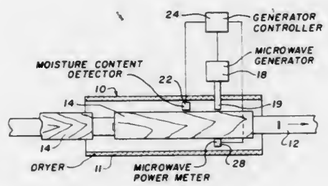
METHOD FOR DRYING MATERIALS WITH MICROWAVE ENERGY

Derek Barnes, and Vishwa N. P. Mathur, both of Vancouver, British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Filed June 3, 1971, Ser. No. 149,449

Int. Cl. F26b *3/34*

U.S. Cl. 34—1 **4 Claims**



Method for drying moisture-laden dielectric materials in individual pieces by directing microwave energy against each piece during relative movement between a microwave generator and the piece. The moisture content of the piece is detected throughout the length thereof, and the generator is controlled so as to adjust the microwave energy in accordance with the moisture content of the portion of the piece against which the microwave energy is being directed.

3,775,861

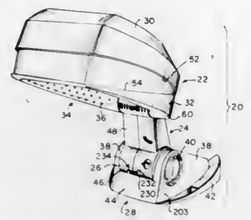
HAIR DRYER

Robert S. Waters, Lancaster; Edward J. Doyle, Hatboro, and Meyric K. Rogers, Lancaster, all of Pa., assignors to Schick Incorporated, Lancaster, Pa.

Filed Feb. 28, 1972, Ser. No. 229,763

Int. Cl. A45d *20/24*

U.S. Cl. 34—99 **39 Claims**



A portable hair dryer which includes a base, a head supporting assembly and a dryer head assembly. The dryer head assembly includes a generally annular air distribution plenum therein for receiving drying air and directing it radially inwardly, and a cover which is movably mounted in respect to the annular plenum. The cover may be raised to increase the volume within the head assembly for accomodating the head of the user, and may be lowered to a storage position closely overlying the plenum. A squirrel cage blower is contained in an impeller housing disposed at the bottom of the head supporting assembly, the lower portion of which is mounted for adjustable movement with respect to the base. The upper portion of the head supporting assembly terminates in a tube having means engageable with portions of the plenum to provide for passage of air through the head support and into the interior of the plenum, while also permitting adjustment of the position of the head assembly with respect to the head mounting assembly. The cover unit includes an adjustable vent assembly permitting air to be exhausted from the interior of the assembly to the atmosphere after the drying air has escaped from the plenum. Means is provided to direct the flow of air to particular portions of the hair which are ordinarily difficult to dry.

3,775,862

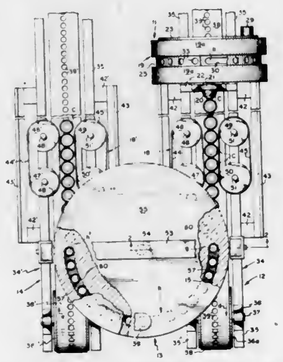
SELF CLEARING CONTAINER PART CONVEYOR SYSTEM

Gene F. Emge, Bay City, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Oct. 26, 1971, Ser. No. 192,471

Int. Cl. F26b *25/00*

U.S. Cl. 34—105 **4 Claims**



A plastic container part conveyor mechanism for use in conjunction with a printing machine which decorates the annular side walls of container parts. The conveyor mechanism is used to move parts leaving the printing machine past a series of dryers for drying the ink on the container parts prior to moving them to a container assembly machine wherein the parts are friction welded together to form containers. The mechanism includes a pair of oppositely directed conveyor sections, providing an interrupted path of travel, and a generally horizontally disposed rotary disc or turntable having openings communicating with a source of vacuum for lifting the parts off one conveyor section and transferring them to the oter conveyor section. A similar vertically disposed rotatably mounted section disc can be used to supply the container parts to the upstream conveyor section.

3,775,863

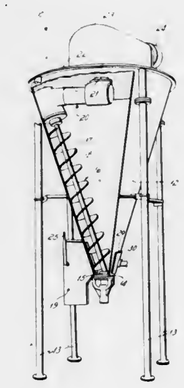
METHOD AND APPARATUS FOR DRYING PARTICULATE MATERIALS

Louis B. Updegrove, Terrace Park, Ohio, assignor to The J. H. Day Company, Cincinnati, Ohio

Filed July 20, 1972, Ser. No. 273,647

Int. Cl. F26b *17/12*

U.S. Cl. 34—166 **14 Claims**



A method and apparatus for drying a particulate material such as resin pellets, fine chemicals, pigments, cosmetic powders and the like. The method involves mechanically agitating the material while sweeping it with pre-dried, heated air. The preferred form of apparatus includes a frustoconical tank having an agitator screw which is rotated upon its own axis to lift material and is simultaneously orbited around the wall of the tank. Air or other gas which has been heated and dried is introduced at the bottom of the tank and flows upwardly through the material. The air, carrying with it moisture released by the material, is discharged at the top of the mixer. The material can be mixed, granulated and dried in a single operation.

3,775,864

RESPONSE-EVOKING APPARATUS

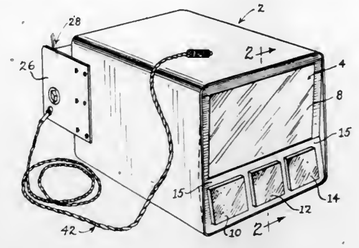
John M. Bisinger, Oak Park, and David H. Verwolf, Chicago, both of Ill., assignors to Multi-Channel Response Corp., New York, N.Y.

Continuation-in-part of Ser. No. 854,956, Sept. 3, 1969, abandoned. This application Feb. 1, 1971, Ser. No. 111,428

Int. Cl. G09b *7/08*

U.S. Cl. 35—9 A **10 Claims**

A machine for evoking responses from observers is provided by a display surface having discrete images projected upon discrete sections of the display surface. An observer may indicate his response to the images displayed or his response to an audible question by displacing one of the discrete sections. Control circuits responsive to data on the medium on which the images are stored for projection upon the display



surface condition means to indicate the reaction of the observer and control the various modes of operation of the machine.

3,775,865

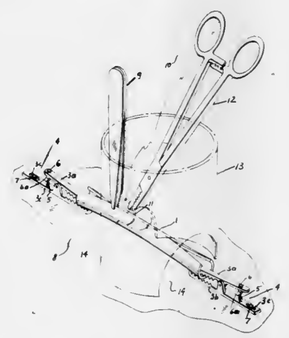
SIMULATOR FOR TEACHING SUTURING TECHNIQUES

Robert L. Rowan, 34 E. 67th St., New York, N.Y.

Filed July 24, 1972, Ser. No. 274,169

Int. Cl. G09b *23/28*

U.S. Cl. 35—17 **6 Claims**



A method and an arrangement for teaching suturing techniques in surgery. A tube of plastic material is adjustably mounted on a surface by means of two clamps, the positions of which are adjustable as well as their spring tensions. A portion of the tubular wall has been cut or removed. This plastic tube simulates various tissues of the human body. A cylinder having a pair of confronting cut-outs is placed on the supporting surface on top of the tube, this cylinder simulates a body cavity of the human body in which a surgical operation is to be carried out. The separated tubular walls of the plastic tube can be sewn together by means of known suturing tools and techniques thereby simulating a natural surgical operation and teaching various suturing techniques.

3,775,866

STABILIZER FOR BOOTS FOR CROSSCOUNTRY SKIING

Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany

Filed Mar. 14, 1972, Ser. No. 234,554

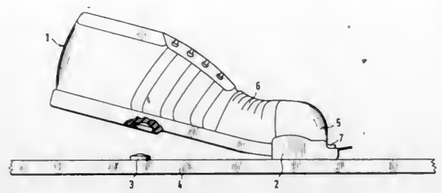
Claims priority, application Austria, Mar. 25, 1971, A 2571/71

Int. Cl. A43b

U.S. Cl. 36—2.5 AL **15 Claims**

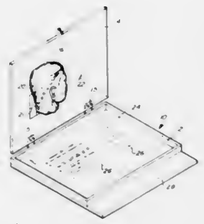
The stabilizer comprises a rigid soleplate, which transmits longitudinal forces and is disposed below the heel and extends

forwardly, at most, to the ball region of the foot. Two supporting elements extend upwardly from the longitudinal sides of the soleplate. At least one of said supporting elements is



hinged to the soleplate. The supporting elements embrace the ski like a bandage at least with their end portions. Means for bracing the supporting elements relative to each other are secured to the supporting elements.

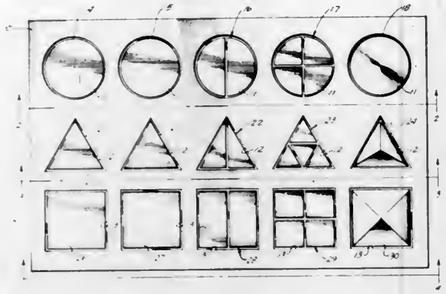
3,775,867
INSTRUCTIONAL DISPLAY DEVICE
Thomas T. Christenberry, Jr., 932 Henley Pl., Charlotte, N.C.
Filed July 18, 1972, Ser. No. 272,773
Int. Cl. G09b *23/30*
U.S. Cl. 35—17 **6 Claims**



An instructional display device for use in teaching and in operating teleorentgenography equipment, including a hollow rubber facsimile of a part of the human body attached to a support and a thin rod extending through the facsimile in a predetermined path. The hollow facsimile is arranged to assume an expanded position at which the rod simulates the path of an X-ray beam, and a compressed position at which the facsimile is conveniently stored in a box-like container or against the back surface of an adjacent support member. The support member may also include a representation of an actual X-ray photograph taken of such part of the human body along a line corresponding to the path of the rod through the expanded facsimile. Also, written materials may be provided for indicating the purpose and procedure for taking the particular X-ray indicated by the display device.

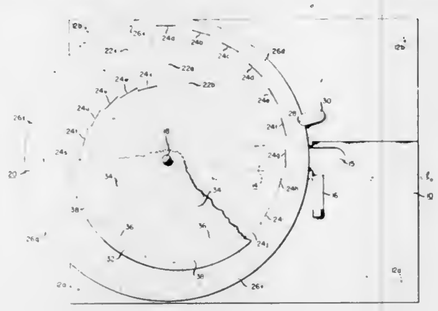
3,775,868
FORM BOARD FOR CHILD EDUCATION
H. Daniel Moore, 701 Orange Grove, Apt. 106, South Pasadena, Calif.
Continuation-in-part of Ser. No. 86,252, Nov. 2, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,807
Int. Cl. G09b *19/00*
U.S. Cl. 35—22 A **23 Claims**

A flat base has a first plurality of flat depressions, a second plurality of flat depressions, and a third plurality of flat depressions arranged in adjacent rows so the depressions form columns perpendicular to the rows. The first plurality of depressions have identical circular shapes; the second plurality of depressions have identical triangular shapes; and the third plurality of depressions have identical square shapes. A first set of geometric form blocks equal in number to the first plurality of depressions each have bases shaped to fit interchangeably into the first plurality of depressions. A second set of form blocks equal in number to the second plurality of depressions each have bases shaped to fit interchangeably into



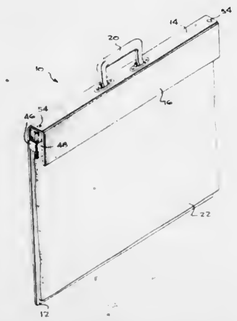
the second plurality of depressions. A third set of form blocks equal in number to the third plurality of depressions each have bases shaped to fit interchangeably into the third plurality of depressions. Each block of the first set has a characteristic in common with a block of the second set and a block of the third set. Some of these characteristics are height, profile, color, and fractionalization. The form blocks are hollow and open on one side.

3,775,869
APPARATUS FOR MANUALLY ENCODING A DATA RECORD
Calvin F. Opperthauser, New Providence, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y.
Filed May 25, 1972, Ser. No. 256,948
Int. Cl. G09b *1/00*
U.S. Cl. 35—48 R **9 Claims**



The apparatus comprises a base including a slot for accommodating an individual data record in a plane parallel to the upper surface thereof, and a disk rotatably mounted on the base so as to overlie the slot. The disk is divided into a multiplicity of segments, each of which includes a column of marking holes. The spacing between the marking holes in each column is the same as the spacing between rows of data locations on the data record, a first column of marking holes being located at the same distance from the axis of rotation as one of the columns of data locations on the data record when positioned within the slot in the base. Each successive column of marking holes is radially displaced from the adjacent column of marking holes a distance that corresponds to the spacing between columns of data locations on the data record.

3,775,870
CLAMP-TYPE FABRIC DISPLAY MEANS
Carl L. Griggs, Dalton, Ga., and George Hansman, Cleveland, Ohio, assignors to National Service Industries, Inc., Atlanta, Ga.
Filed Dec. 19, 1972, Ser. No. 316,569
Int. Cl. G09f *5/02*
U.S. Cl. 35—55 **10 Claims**



A carpet or fabric sample display means is disclosed including a base panel, a forwardly extending relatively narrow top panel connected to the top edge of the base panel and a downwardly extending front panel hingedly connected to the forward edge of the top panel opposite the connection to the base panel with first and second sample clamp means being attached adjacent the upper side edges of the base panel with each clamp comprising a cantilever spring plate depressable downwardly to clamp a sample in position, a slide latch is mounted in a base plate to which the spring plate is connected and is movable over the spring plate to hold the spring plate in clamping position so that samples can be inserted and removed easily without damage to the sample.

ERRATUM

For Class 36—2 see:
Patent No. 3,775,866

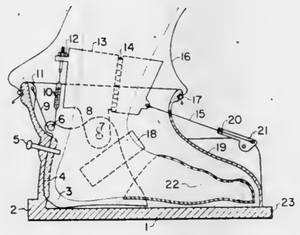
3,775,871
RAISED STOP FOR SKI BOOT OF THE PIVOTED ANKLE CUFF TYPE
Richard A. Serko, 26 Craig St., Jericho, N.Y.
Filed Aug. 31, 1972, Ser. No. 285,493
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **6 Claims**

A ski boot having a raised stop attachable thereto for limiting rearward movement, beyond that attainable in a conventional boot, of an ankle cuff which is pivotally attached in the region of a wearer's ankle to a lower shell of the boot. The lower shell has a raised back wall to which a quarter is secured, the top edge of the quarter being below the top edge of the back wall. Rearward pivotal movement of the ankle cuff normally is limited by abutment of the lower edge of this cuff against the top edge of the quarter. The stop has an arcuate thin tongue from the lower edge of which a perpendicular shoulder projects. When the tongue is inserted between the exterior surface of the back wall and the interior surface of the ankle cuff to such an extent that the lower surface of the shoulder seats on the top edge of this back wall, the stop



presents a raised surface to further restrict rearward pivotal movement of the ankle cuff, thereby enabling the wearer to maintain greater control over a ski attached to the boot which he could not do with the more extensive rearward movement inherent in the lower height of conventional quarters.

3,775,872
SKI BOOT WITH LATCHABLE ARTICULATED LEG HOLDER
Richard K. Rathmell, 12 Pine Tree Rd., Ramsey, N.J.
Filed Dec. 21, 1972, Ser. No. 317,286
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **13 Claims**



A ski boot with a leg-holding collar and constraining means to hold the skier's lower leg in a substantially fixed position relative to the ski, and means to release the constraints to allow the skier's heel to be raised and the skier's leg to pivot forward or backward relative to the ski.

3,775,873
DISPOSABLE PLASTIC SLIPPER
Donald I. Small, 60 Woodward Rd., West Springfield, Mass.
Filed Jan. 26, 1973, Ser. No. 326,887
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 **4 Claims**



A slide-on or step-in slipper or sandal of the disposable type to be formed from a flat blank, preferably of foamed

polyethylene sheet material, having a sole member with flat toe, heel and instep portions and a pair of opposed arch embracing strap members extending from the sides of the instep. The inner edges of the straps are foldably connected to the instep only at front and rear portions thereof, the material of the blank therebetween being severed along elongated arcuate slit lines. Conventional shoe laces join the strap outer edges to form a loop to embrace the foot. The slits provide expandable openings for adjustment of the loop on feet of varying shapes and an efficient slipper form for temporary or extended periods of use. The sole of the blank conforms to the normal curvature of a foot and the straps are laced to overlie either face of the sole for use on the right or left foot.

3,775,874

SPORTS SHOE SPIKES

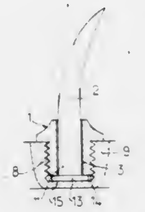
Jean Bonneville, Ronchamp, France, assignor to Nouvelle Societe Bruey S.A., Ronchamp, France

Filed Dec. 22, 1971, Ser. No. 210,941

Claims priority, application Switzerland, Dec. 22, 1970, 19034/70

Int. Cl. A43c *15/00*

U.S. Cl. 36—67 D **3 Claims**



A needle spike is secured in an axial hole in an externally threaded cylindrical support member having a collar by means of which it is screwed into an insert in the sole of a sports shoe.

3,775,875

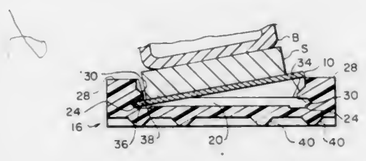
SKI BOOT BINDING PLATE PROTECTOR AND WALKING AID

Daniel A. Dvorsky, R. R. No. 3, Indian Lookout 77, Iowa City, Iowa

Filed Feb. 8, 1973, Ser. No. 330,699

Int. Cl. A43b *13/22*

U.S. Cl. 36—72 A **2 Claims**



A ski boot binding plate protector and walking aid especially designed for use with Spademan type boot plates. The protector takes the form of a one piece body of a molded flexible material, such as Neolite (trademark) having a boot plate receiving recess formed in the upper surface. Retaining shoulders project upwardly above the upper surface of the body along opposite sides and project inwardly to overlie the boot plate receiving recess along the opposed sides. The plate receiving recess is formed with side walls conformed in shape to the side edges of the boot plate, and when mounted on the boot plate, the retaining shoulders overlie and grip those portions of the plate which project beyond the side of the boot to retain the protector in position upon the boot plate. The upper edges of the shoulders are complementary in shape to the corresponding side edges of the boot plate and are beveled downwardly and inwardly to assist in mounting the protector on the plate.

3,775,876

TREE MOVING APPARATUS

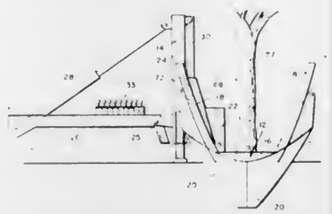
John D. May, P. O. Box 367, Conway, Ark.

Continuation of Ser. No. 66,498, Aug. 24, 1970, abandoned.

This application Sept. 18, 1972, Ser. No. 290,110

Int. Cl. A01g *23/02*

U.S. Cl. 37—2 R **1 Claim**



A tree moving apparatus mounted on a vehicle and having a plurality of reciprocal blades arranged for positioning thereof around the trunk of a tree and spaced therefrom. The blades are substantially spoon-shaped and pierce the earth surrounding the tree at an angle with respect to the horizontal resulting in an arcuate configuration for the sidewalls of the area being excavated by the blades, and in such a manner as to meet beneath the tree in the form of a substantially semi-spherical container. The earth surrounding the tree is thus severed by the blades and the major roots of the tree are balled or encased within the closed container formed thereby. An inner frame bears against the exposed surface of the ground surrounding the tree and circumscribed by the blades for securely retaining the balled roots in the closed container. The container housing the tree and balled roots may then be elevated from the normal growing position of the tree and tilted to a substantially horizontal position whereupon the tree and contained roots may be transported to a new site for transplanting of the tree. A leveling device facilitates transplanting of the tree in a substantially true vertical position at the new site.

3,775,877

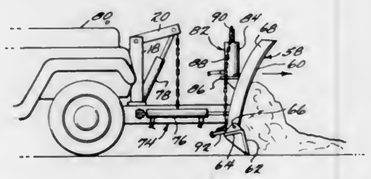
BACKPLOWING SNOWPLOW ATTACHMENT

Ernest J. Gove, Sr., Rt. 151, Newington, N.H.

Filed Sept. 28, 1972, Ser. No. 292,940

Int. Cl. E01h *5/04*

U.S. Cl. 37—42 VL **6 Claims**



A conventional snowplow attachment for the front of a small vehicle is provided with controllable means for overcoming the springs of the attachment's conventional safety-release mechanism, which permits at least the lower edge portion of the blade to pivot to the rear when it encounters an obstacle, to retain the blade's lower edge portion in such rearwardly and downwardly-inclined position for backplowing purposes.

3,775,878

SNOW REMOVAL ATTACHMENT DEVICE FOR ROTARY-TYPE MOWERS

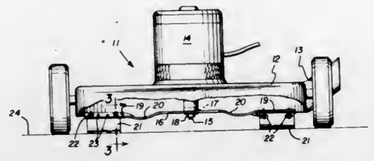
Charles E. Beckner, 2000 W. Custer Pl., Denver, Colo.

Continuation of Ser. No. 858,714, Sept. 17, 1969, abandoned.

This application Aug. 23, 1971, Ser. No. 174,226

Int. Cl. E01h *5/04*

U.S. Cl. 37—43 L **6 Claims**



A snow-removal attachment device for rotary-type mowers has resilient, flap-like wiper members secured in a dependent manner at each end of an elongated support member which in turn mounts on the rotary shaft of the mower motor. Each wiper member extends rearwardly of the direction of rotation of the support member and is inclined at a relatively small angle relative to the ground surface to dispose a trailing end portion of the wiper members in a firm engagement with the ground surfaces over which the mower is moved. One form of the device has the ends of a blade-like support member twisted in opposite directions and another form of the device has the wiper members hingedly supported and is provided with adjustable biasing means to change the angle of inclination of the wiper members and the extent of its contact against the ground surface.

3,775,879

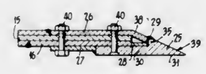
BUCKET FOR EARTH MOVING MACHINES

Donald Jonathan Quick, Highton, Australia, assignor to International Harvester Company, Chicago, Ill.

Filed July 28, 1972, Ser. No. 276,007

Int. Cl. E02f *3/00*

U.S. Cl. 37—118 R **3 Claims**



A bucket for an earth-moving machine made of aluminium alloy and having a cutting edge assembly fabricated from steel, enclosing the forward edge of the bottom of the bucket.

3,775,880

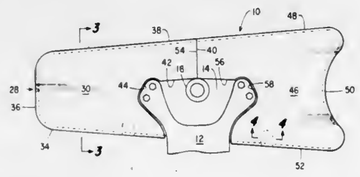
PRESS HEAD INSULATOR

James Thomas Gilstrap, P.O. Box 672, Waxahachie, Tex.

Filed Jan. 2, 1973, Ser. No. 320,646

Int. Cl. D06f *31/36*

U.S. Cl. 38—66 **3 Claims**



Disclosed is a two-piece insulator for a press head. Both pieces of the insulator are molded from low thermal transmission material. The pieces are formed with a uniform wall thickness adjacent to the heating areas of the head. The two pieces are made to conform to the exterior of the head and each is provided with edges which abut when the pieces are in position on the head. Clearance areas are provided on the pieces for the various supports and utility connections of the head.

3,775,881

INFORMATION DISPLAY DEVICE

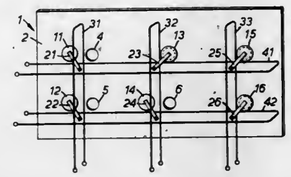
Hassan Paddy Abdel Salam, London, England, assignor to Universal Telewriters (Pty) Limited, Durban, Republic of South Africa

Filed Apr. 14, 1972, Ser. No. 243,950

Claims priority, application Great Britain, Apr. 14, 1971, 9,406/71

Int. Cl. G09f *9/30*

U.S. Cl. 40—2 C **9 Claims**



Information display apparatus includes an opaque member having a two-dimensional array of light-transmissive areas arranged in rows and columns. Each area has an individual shutter pivoted for movement between positions in which it has different effects upon light passing through the area by a magnetic actuator member coupled with the shutter. Magnetic field producing means in a first set each produce fields limited to all the actuators of a row while those of a second set each produce fields limited to actuators of a column. Predetermined changes in electric currents applied to the row and column field producing means uniquely associated with an actuator will produce reversal of the shutter position. The actuators may be soft-iron or permanent magnets. The field producing means for a row may either enable or inhibit actuator movement when energized.

3,775,882

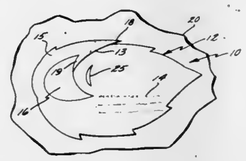
TAG

Philip T. Wheeler, Dewitt, Mich., assignor to The Hardy Company, Lansing, Mich.

Filed Dec. 22, 1971, Ser. No. 210,957

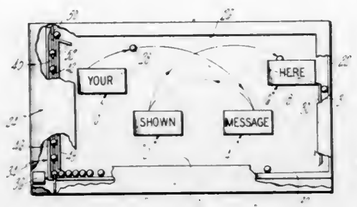
Int. Cl. G09f *3/18*

U.S. Cl. 40—10 C **6 Claims**



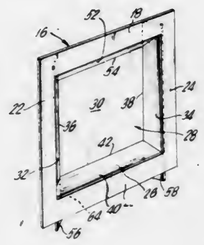
A tag for identifying or describing objects such as plants or other nursery stock is formed by stamping a pattern from a flexible sheet material and including in the pattern a crescent-shaped aperture adapted to receive a barbed tab. The tab is on the end of an arm formed in the body of the tag and forms an opening through which a stalk of the plant or the like passes when the tag is attached to the plant. The crescent-shaped aperture is uniquely shaped together with the barbed tab to securely hold the arm in place around the stalk when the tag is attached thereto.

3,775,883
MESSAGE ACCENTUATION DEVICE
Henry M. Atkins, 3 King Arthur Way, Newington, Conn.
Filed June 2, 1971, Ser. No. 149,221
Int. Cl. G09f 19/02
U.S. Cl. 40—106.25 2 Claims



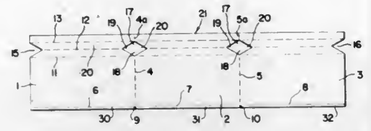
An active display technique which directs the viewer's eye sequentially to the several portions of an overall written message. In a preferred embodiment balls are serially directed through space to receiving-throwing mechanisms which support the several portions of the message and the viewer, following a single ball which is in motion, will be caused to scan the message in the proper order.

3,775,884
SELF-ERECTING DISPLAY BOX
Irving Smith, c/o Arrow Art Finishers, 1201 Evergreen Ave., Flushing, N.Y.
Filed June 23, 1972, Ser. No. 265,722
Int. Cl. G09f 1/00
U.S. Cl. 40—124.1 6 Claims



A self-erecting shadow box made of paperboard or the like, for example for use as a display means or a greeting card, includes an open front frame behind which is placed a foldable rigid sheet. An elastic member is used to urge toward each other like portions of side panels of the sheet which are adjacent the central portion of the sheet so that the central portion is moved rearwardly, thus creating a rearwardly extending box. When viewed from the front, the central portion of the sheet is rearward of the open frame, the side panels of the sheet converge and the top and bottom panels of the sheet converge or extend horizontally rearwardly, thus creating an illusion of additional depth. The shadow box is initially contained within an envelope which holds it flat. When it is removed therefrom, the elastic member automatically opens the shadow box.

3,775,885
SIGN BOARD OR POSTER HOLDER
John B. Shepherd, 560 Lake Forest Dr., Bay Village, Ohio
Filed July 28, 1972, Ser. No. 276,125
Int. Cl. G09f 1/00
U.S. Cl. 40—124.1 6 Claims



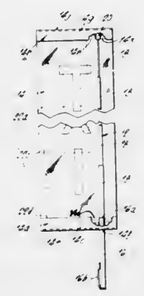
A sign board or poster holder which is preferably formed of a foldable material, such as corrugated paper board, fabricated board, foldable plastic material, or paper mache, is provided with three upper longitudinal score lines, the central score line of which passes through the apices of the acute angles of spaced cut-out parallelograms. Spaced vertical score lines are also provided which pass through the apices of the obtuse angles of the parallelograms and extend upwardly to the top edge of the foldable material. Acute angle cut outs are arranged between the upper and lower top score lines and short slits are cut from the bottom of the board or holder upwardly in alignment with the vertical score lines and lower longitudinal score lines are formed so that bottom flanges of the foldable material may be bent outwardly to support the sign board or poster holder. The foldable material may be bent downwardly successively on the upper score lines to provide a reinforcement for the upper portion of the panels. The sign board or poster holder is then bent on the vertical score lines. This causes the acute angles of each of the parallelograms to engage each other to forn two straight lines and the acute angles at the ends of the foldable material between the upper and lower score lines to form a third straight line. Pressure sensitive adhesive tape may be applied to the opposite ends of the panels to form the final board or holder and to lock the parts together. Pressure sensitive adhesive tape may also be applied to the outwardly extending bottom flanges to affix and support the sign board or poster holder.

3,775,886
ILLUMINATED SIGN
Ronald H. Anderson, Maxbass, N. Dak., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Nov. 7, 1972, Ser. No. 304,375
Int. Cl. G09f 13/00
U.S. Cl. 40—130 R 3 Claims



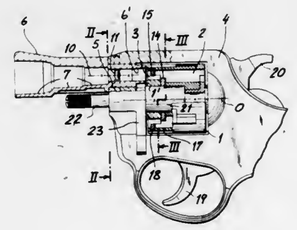
An illuminated sign comprises a pair of spaced wagon wheels having a plurality of spokes comprising elongated lighted tubes. A rustic log is provided at the tops of the rims of the wheels and another rustic log is provided at the bottoms of the rims of the wheels. Illuminated advertising material is provided in the area bordered by the wheels and the logs. Santa Claus extends from the waist up from the top one of the logs wearing a cowboy hat on his head and a buckskin glove on a hand.

3,775,887
COLLAPSIBLE AND PORTABLE SIGNALLING DEVICE
Virginia S. Precourt, Pine St., Dover, Mass.
Filed Sept. 11, 1972, Ser. No. 287,799
Int. Cl. G09f 17/00, 21/02
U.S. Cl. 40—125 G 7 Claims



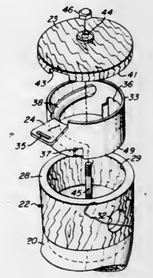
A collapsible and portable signalling device including a collapsible support member and a foldable sign attached thereto. The collapsible support member includes a base member, intermediate telescoping members received within the base member and a supporting end member. One end of the foldable sign is attached to the base member and the other end is attached to the supporting end member so that in a collapsed position the sign ends are adjacent to and abut each other. Transverse and longitudinal fold lines are formed within the foldable sign so that it may be folded into a small portable package.

3,775,888
HAND GUN FOR SIGNALING OR WARNING PURPOSES
Gunter Horst Rohm, Muhlstrasse 9, 7927 Sontheim/Brenz, Germany
Filed Oct. 16, 1972, Ser. No. 298,017
Claims priority, application Germany, Oct. 26, 1971, G 71 40 399.1
Int. Cl. F41c 3/04, 3/02, 3/06
U.S. Cl. 42—58 10 Claims



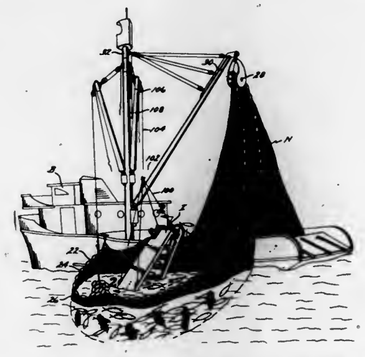
The drum of a blank-firing revolver, such as a starter gun, has axial bores divided into longer rear portions, serving as cartridge chambers, and shorter front portions, acting as venting channels, by a ring centered on the drum axis which projects partly into these bores from within. Another ring, coaxial with the first one but forwardly spaced therefrom, projects partly into the bores from without; the two rings are of substantially greater hardness than the drum material so as to deflect any drill bit into the bore wall if an attempt is made to widen any bore into a seat for a projectile to be fired by the detonation fumes. A muzzle in a discharge aperture of the gun body, with which the venting channels are successively alignable, is held in position by a spike passing generally radially through the muzzle bore so as to restrict the effective cross-sectional area thereof, thereby preventing the muzzle from giving guidance to any projectile lodged therein.

3,775,889
POWDER HORN
Karl E. Wilburn, Rt. 2, Cedarville, Ohio
Filed Apr. 17, 1972, Ser. No. 244,751
Int. Cl. F41c 27/00
U.S. Cl. 42—90 16 Claims



A powder horn or storage pouch in which a body installed as a plug in one end of the horn or pouch serves as a magazine receptacle for lead balls and explosive caps, the body being part of an assembly including a part adjustable to dispense the balls and caps separately and singly from respective areas of containment.

3,775,890
FISH IMPELLER
Mario J. Puretic, 259 6th Ave. N., Tierra Verde, Fla.
Continuation-in-part of Ser. No. 74,598, Sept. 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 51,160, June 30, 1970, abandoned. This application Feb. 23, 1972, Ser. No. 228,515
Int. Cl. A01k 79/00
U.S. Cl. 43—6.5 13 Claims



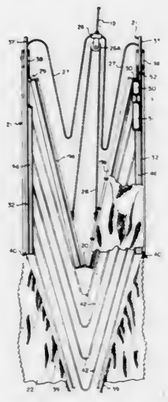
Fish handling apparatus for lifting fish may be used, for example, to transfer fish from a net alongside a fishing boat onto

a fishing boat. The apparatus includes an enclosure arranged in a loop and having a fish discharge aperture formed in its upper portion. When fish are to be removed from the net, the lower portion of the enclosure is positioned within the net. Power-driven chains are looped about the interior of the enclosure. A plurality of baskets are attached to the chains for propelling fish upwardly from the lower portion of the enclosure upwardly through the fish discharge aperture onto the deck of the fishing boat. A unique basket construction permits the water to be readily drained as the fish are moved upwardly. A modification employs a curved enclosure that affords a smooth, unbuckled and extremely rigid construction. A further modification of the apparatus employs an enclosure having a laterally offset upper portion for improved discharge of fish. Means for manipulating the enclosure between its stowed and operating positions aboard the fishing boat are provided.

3,775,891
SHRIMP TRAWL WITH ELECTRONIC EXCITATION DEVICE

John K. Holt, Clearwater, Fla., assignor to International Oceanographic Corporation, Greenwich, Conn.

Filed Dec. 17, 1971, Ser. No. 209,195
Int. Cl. A01k *73/02*
U.S. Cl. 43—9 **7 Claims**

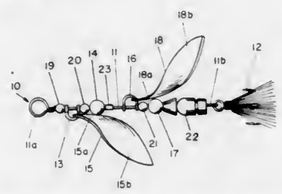


A shrimp trawl of the beam type including a frame which is collapsible for storage, side frame members mounting an array of electrodes extending transversely between said frame members and battery powered capacitors mounted on said frame members to transmit pulsed electrical current to said electrodes.

3,775,892
FISHING LURE

John F. Bennetts, Antigo, Wis.

Filed Apr. 27, 1972, Ser. No. 247,996
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.14 **1 Claim**

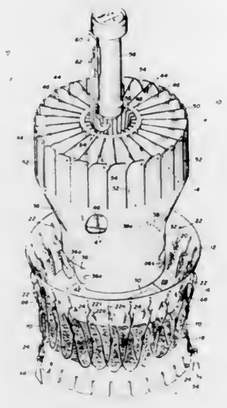


A fishing lure assembly having a pair of blades diagonally twisted in opposed directions and attached to an elongate shaft by rotatable clevises. When the lure is pulled through the water the blades rotate in opposite directions about the axis of the shaft. a graduated pair of beads received on the shaft rearwardly of each attaching clevis to cause the oppositely directed blade rotation to take place in close proximity to a body form toward the rear of the shaft. A spacer element is fixedly attached to the shaft between the blades for maintaining the blades in spaced relation during use.

3,775,893
TROTLINE DISPENSER

Roger V. McGee, Jr., 6011 Gaston, Apt. 216, Dallas, Tex.

Filed Aug. 19, 1971, Ser. No. 173,041
Int. Cl. A01k *97/06*
U.S. Cl. 43—54.5 A **10 Claims**



A trotline dispensing device includes a fixed spool having a recessed reel section for receiving a trotline wound thereupon, and a series of hook-retaining compartments positioned on one end of the spool and opening longitudinally of the spool for releasably retaining either unbaited or baited fishhooks of the trotline. A retaining member, such as a handle, is carried at the opposite end of the spool. The trotline is dispensed from the apparatus by pulling the trotline longitudinally from the reel (parallel to the axis of the reel), thereby removing hooks sequentially from the hook-retaining compartments.

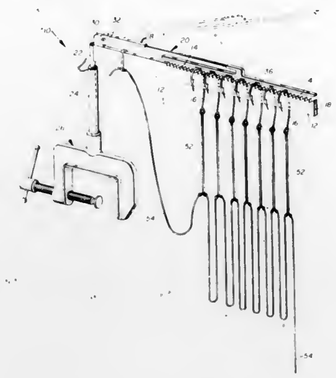
3,775,894
APPARATUS FOR ATTACHING HOOKS TO TROTLINE AND FOR SETTING TROTLINE

Robert V. Goddard, 8344 E. 11 St., Tulsa, Okla.

Filed Nov. 3, 1971, Ser. No. 195,125
Int. Cl. A01k *97/00*
U.S. Cl. 43—54.5 A **7 Claims**

An apparatus for attaching hooks to a trotline and for setting the trotline comprises a body portion having a vertical shaft received swivelably in a clamp member and a horizontally extending hook supporting arm. The hook supporting arm has a plurality of serrations along the upper edge so that each hook of a trotline may be positioned within each serration. A hook retaining member is pivotally attached to the hook supporting arm near the aforesaid shaft in a manner that

the lower surface of the hook retaining member may lightly hold each hook within its respective serration. Then, the trot-

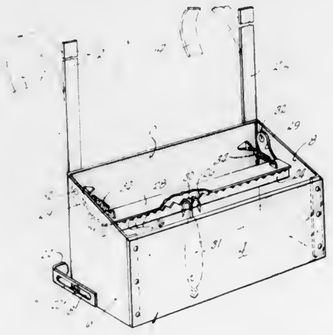


line may be played out as desired with each hook in turn moving along the serrated edge to the dispensing end of the arm without entanglement of any attachment line.

3,775,895
CONTAINER FOR FISH LURES

Frank J. Jachim, 1312 Summer St., Hammond, Ind.

Filed Sept. 26, 1972, Ser. No. 292,430
Int. Cl. A01k *97/04*
U.S. Cl. 43—54.5 R **2 Claims**



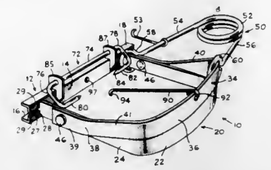
A holder for fish lures in the form of a box having supports for hooking over the gunwale of a boat and having a notched bar extending across the box near the top to receive the hooks on the lures so they may hang within the box, the hooks being engaged by a movable clamping member that in operative position holds the hooks in the notches.

3,775,896
ANIMAL TRAPS

Joseph Aldege Gauthier, and Louis Marcel Shank, both of R.R. 2, Sturgeon Falls, Ontario, Canada

Filed June 14, 1972, Ser. No. 262,459
Int. Cl. A01m *23/30*
U.S. Cl. 43—81 **9 Claims**

An animal trap of simple but sturdy construction having an elongated rigid spine to which a ground-engaging frame formed of strip material is secured. A movable frame of strip material is pivoted to the ground-engaging frame for pivotal movement between an upwardly extending open position and a forwardly extending closed position in which an undersurface of a cross-head of said movable frame abuts a top surface of a longitudinal section of said ground-engaging frame. At least one helically wound spring having tangentially extending arms terminating in loops is provided for urging the trap into its closed disposition. Both the loops encircle a side arm of the

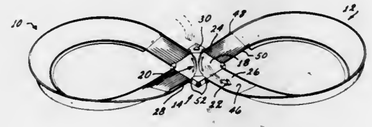


ground-engaging frame, while one abuts the spine and the other is urged by the spring against a side arm of the movable frame. A bait-holding frame pivotally mounted on the spine has a length less than that of the movable frame and includes an elongated member adapted releasably to engage the inner end of a retaining arm pivotally mounted on the cross-head of the movable frame so that, on movement of the bait-holding frame, the retaining arm is released in turn to allow the spring to force the trap into its closed disposition.

3,775,897
INTERSECTION DEFLECTOR FOR TOY VEHICLE TRACKS

George Soulakis, North Hollywood, and Jimmie L. Whittington, Manhattan Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 17, 1972, Ser. No. 281,570
Int. Cl. A63h *19/32*
U.S. Cl. 46—1 K **10 Claims**



A deflector apparatus which can be connected at the intersection of a track layout that forms a figure 8, including a deflector member which can be raised to make a toy vehicle turn a 90° corner so it repeatedly traverses only one loop of the figure 8 or which can be lowered to allow toy vehicles to move straight ahead through the intersection to traverse all of the layout. The deflector member is slideably mounted for up and down movement in the deflector frame and has concave surfaces on either side which are tangent to the outer walls of the tracks when the deflector member is raised to a deflecting position.

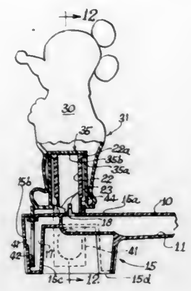
3,775,898
MULTIPLE STREAM BUBBLE BLOWER

Jerome Barton Kalish, Highland Park, Ill., assignor to Chemtoy Corporation, Chicago, Ill.

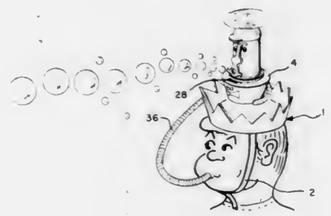
Filed Oct. 20, 1972, Ser. No. 299,242
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 **3 Claims**

A child's bubble blowing toy having its own reservoir for bubble-forming fluid and at least one member having an aperture to acquire a film of the fluid, the member being operable between a lower position whereat the aperture in the member

acquires a charge of fluid and a higher position whereat the child's breath blows the film out as a bubble. The member is raised by the pressure of air delivered to the toy and movement thereof occurs substantially concurrently with forming of the bubble. Cessation of blowing allows the member to descend.



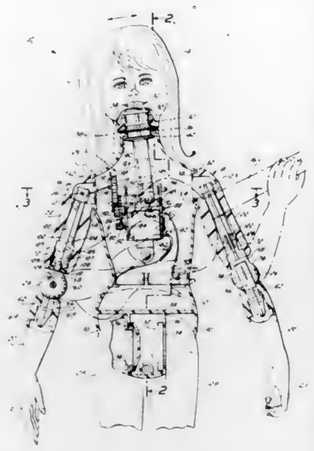
3,775,899
ANIMATED BUBBLE TOY
Tobin Wolf, 447 Essex Ave., Bloomfield, N.J.
Filed July 12, 1972, Ser. No. 271,121
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 **18 Claims**



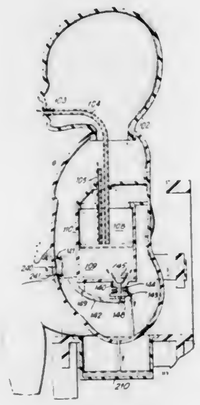
A bubble forming toy having a spill-proof container of inverted frusto-conical form for a bubble forming solution and having a cover provided with a slot through which a wall with an opening therethrough moves. The wall is moved out of the solution by an air powered device, the air then being blown through the opening to form bubbles.

3,775,900
TOY DOLL
Herbert Thorn, Flushing, and Michael Ieda, Fort Solanga, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed May 1, 1972, Ser. No. 248,996
Int. Cl. A63h *11/00*
U.S. Cl. 46—120 **13 Claims**

A toy doll having a torso and a pair of arms includes a selectively operable electric motor mounted in the torso and connected through a transmission to the forearm portion of one of the arms in order to oscillate that forearm portion in a selectable predetermined plane upon actuation of the drive means. The driven forearm is connected to its associated upper arm portion by an articulated joint which is rotatably mounted in the upper arm and drivingly connected to the transmission system so that the upper arm portion remains motionless while the forearm portion is oscillated. The electric motor also is operably connected to the doll's head to oscillate the head from side to side while simultaneously oscillating the forearm in order to simulate human movements while playing a musical instrument or the like.

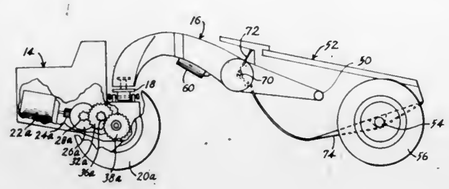


3,775,901
LIQUID ELIMINATING DOLL WITH VALVE MEANS ACTUATED BY EXTERNAL MAGNETIC DEVICE
Julius Ellman, 1672 E. 7th St., Brooklyn, N.Y., and George Lerner, 12 Prospect Ct., Freeport, N.Y.
Filed July 23, 1971, Ser. No. 165,497
Int. Cl. A63h *33/26, 3/24*
U.S. Cl. 46—239 **3 Claims**



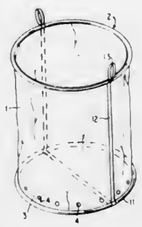
A child's doll is provided with an internal reservoir into which a liquid may be introduced through the mouth orifice of the doll. The reservoir is also provided with a discharge valve whose opening is effected by the close proximity of a permanent magnet; such a magnet being provided attached to a training seat with chamber-pot. The doll is provided with an orifice at its lower extremity through which it can eliminate fluid when placed on the training seat.

3,775,902
TOY TURNA-PULL
Robert A. Gagnon, Star Route 2, Box 944, Trail, Oreg.
Filed Feb. 22, 1972, Ser. No. 228,212
Int. Cl. A63h *33/26*
U.S. Cl. 46—244 A **4 Claims**



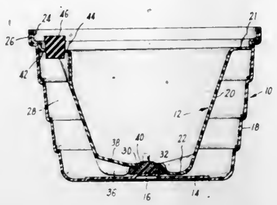
A toy dump truck (turna-pull) is provided which is adapted for electrical operation from a remote control station. The truck includes front and rear sections connected through a vertical pivot. The rear section includes a pair of supporting wheels which may be fast on a transverse shaft and a carrying tray which is tiltable back and forth between a level carrying position and a sharply tilted dumping position. The forward section includes traction wheels which may be selectively, individually driven forward or backward for setting the wheels to travel in a curved or straight path when both are subsequently, simultaneously operated in the same direction. Reversible motors are provided for each of the front wheels and for the rocking of the tray. The remote control station includes a current supply means, such as a dry cell or a rechargeable power unit, and all required switches, enclosed in a common housing. All conductors which run between the control station and the vehicle form parts of a single cable.

3,775,903
CONTAINERS
John Francis Pike, 57 Park Rd., Rydalmere, New South Wales, Australia
Filed Aug. 20, 1971, Ser. No. 173,591
Claims priority, application Australia, Sept. 9, 1970, 2478
Int. Cl. A01g *9/02*
U.S. Cl. 47—37 **4 Claims**



A container intended principally for use as a plant pot, made of flexible plastics material, of generally cylindrical shape and having a semi-rigid or flexible bottom and stiffening means around at least the upper periphery of the container; such features as drainage holes, reinforcing straps and carrying handles may optionally be provided.

3,775,904
SELF-WATERING FLOWER POT
James R. Peters, Chicopee, Mass., assignor to Universal Products Development Corporation, Simsbury, Conn.
Filed July 6, 1971, Ser. No. 160,009
Int. Cl. A01g *27/00*
U.S. Cl. 47—38.1 **7 Claims**

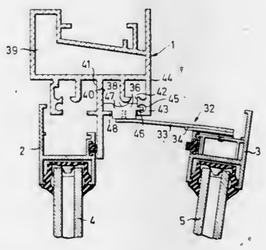


A self-watering flower pot has a unitary, double-walled construction comprising an outer shell, a potting receptacle therewithin, and a water-receiving chamber in the space therebetween. A cavity and a channel both of which open downwardly, are formed in the underside of the bottom wall of the inner reeptacle, and the channel slopes upwardly from the cavity toward the inside wall to define an air flow path. The container has a sealable opening for the introduction of water into the chamber, and the bottom wall of the potting receptacle has an aperture communicating with the cavity formed therein. Water passing by capillary action into the inner receptacle from the chamber creates a vacuum in the space between the double walls; the vacuum is relieved when the potting medium is sufficiently dry to permit air to permeate and to pass through the aperture and along the air path into the water chamber, thereby allowing an additional amount of water to flow.

ERRATUM

For Class 49—131 see:
Patent No. 3,775,912

3,775,905
CLOSURE ARRANGEMENT FOR A WINDOW OR DOOR OPENING EMPLOYING A SLIDABLE AND TILTABLE PANEL
Wilhelm Frank, Leinfelden, Germany, assignor to Wilh. Frank GmbH, Leinfelden, Germany
Filed Nov. 13, 1972, Ser. No. 306,008
Claims priority, application Germany, Nov. 12, 1971, P 21 56 175.1; Feb. 25, 1972, P 22 08 880.8
Int. Cl. E05d *15/52*
U.S. Cl. 49—153 **9 Claims**



The opening in a window casing assembled from four lengths of extruded aluminium channel is provided with two

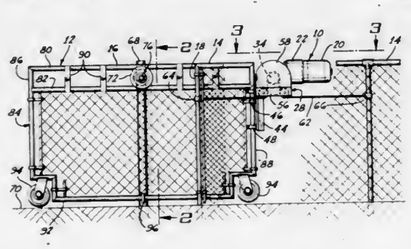
sliding sashes having frames of extruded aluminum. The lower horizontal frame member of one sash rides on wheels whose rim matches the semicylindrical top face of a guide rail on the lower horizontal casing member so that the sash may be pivoted about the axis of curvature of the guide rail face. Tilting of the sash is limited by brackets, each bracket including a slide guided along the upper casing member and a link pivotally connecting the slide to the top of the sash. When the sash is locked in the plane of the casing, sealing strips on the sash cooperate with sealing surfaces on the casing above the pivot axis while the engaged sealing strip is kept straight by abutting engagement of respective abutment faces on the lower casing member and the sash below the pivot axis.

3,775,906

SLIDING PORTAL AND OPERATING DEVICE THEREFORE

Earle T. Dougherty, 3420 N. 71st Ave., Phoenix, Ariz.

Filed Dec. 28, 1971, Ser. No. 213,000
Int. Cl. E05f 11/54, 15/14
U.S. Cl. 49—358 **11 Claims**



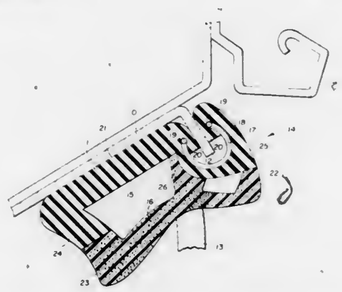
A sliding portal having an electrically actuated operating mechanism mounted thereon.

3,775,907

ROOF SIDE RAIL WEATHER SEAL

John L. Weaver, Rochester, and Edward H. Smoot, Holcomb, both of N.Y., assignors to The Schlegel Manufacturing Company, Rochester, N.Y.

Continuation of Ser. No. 84,735, Oct. 28, 1970, abandoned.
This application July 31, 1972, Ser. No. 276,453
Int. Cl. E06b 7/22
U.S. Cl. 49—491 **4 Claims**



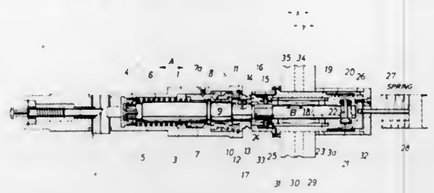
A roof side rail weather seal is mounted on a fin angled downward from the side rail and rests against a flat surface adjacent the fin. The base of the weather seal is formed of a dense, elastomeric material having a channel straddling the fin. A resilient wire framework in the channel squeezes the channel edges against the fin to support the weather seal in place. A relatively soft and compressible elastomeric sealing bridge integral with the base is formed of a cellular material engaging the top edge of a window glass approaching the flat surface to effect a seal between the glass and the rail.

3,775,908

MACHINE FOR GRINDING THE RIM OF A SPECTACLE LENS

Helmut Meckler, Dusseldorf, and Hans Gunter Barwasser, Norf, both of Germany, assignors to Wernicke & Co. KG, Dusseldorf, Germany

Filed Jan. 25, 1972, Ser. No. 220,618
Int. Cl. B24b 9/14
U.S. Cl. 51—72 R **9 Claims**



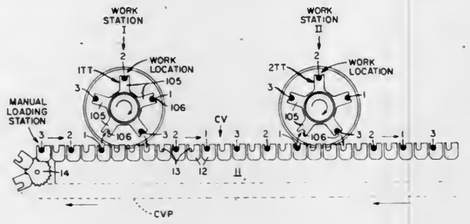
A machine for grinding the periphery of a spectacle lens, and the like, in which rough and fine grinding discs are mounted on a sleeve which is non-rotatably but axially moveably connected to a drive shaft. Abutment means on the sleeve and shaft determine one axial position of the sleeve relative to the shaft in which the rough grinding disc is effective while the sleeve is permitted to float axially of the shaft while the fine grinding disc is effective thereby to permit the disc to follow the contour of the periphery of the lens being ground.

3,775,909

SUCCESSIVE LENS POLISHING APPARATUS

Howard S. Best, Horseheads, N.Y., and Anthony A. Spycher, Wellsboro, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,315
Int. Cl. B24b 7/24; B23q 7/14
U.S. Cl. 51—110 **13 Claims**



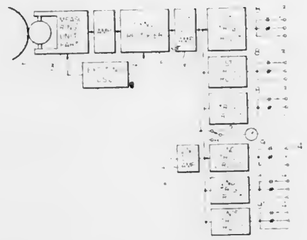
Apparatus for handling and conveying a plurality or succession of articles, such as workpiece holders or carrier blocks, from a loading station where the articles, workpiece holders or carrier blocks are manually loaded onto an intermittently moved conveyor and thence are moved from the loading station to and through a plurality of work stations and finally moved to a manual unloading station. The workpiece holders or carrier blocks may, for example, be so-called optical lens blank spot blocks each of which holds or supports a plurality of optical lens blanks which are workpieces that are to be ground to a desired shape and then polished. Under these conditions the plurality of work stations include in succession a rough grinding station, a fine grinding station, and first, second and third polishing stations. The intermittently moved conveyor extends past all of the stations and through an endless looped path of travel. The conveyor comprises a succession of evenly spaced-apart workpiece holder conveyor plates for conveying the workpiece carrier blocks or holders to and from the work stations. A rotatable workpiece holder support means or turntable is provided at each work station and, since it requires approximately three times as long to polish lens blanks as it does to rough grind or to fine grind the blanks, the workpiece holder support means or turntables at the grinding stations are intermittently moved through rotational or arcuate paths of motion or travel three times as often as the similar turntables at the polishing stations. Each of the succession of carrier blocks or workpiece holders are manually loaded in a recess in every other successive one of the conveyor plates of the conveyor and each workpiece holder or carrier block is transferred by such conveyor to and from the support means or turntables at the grinding stations for grinding operations of lens supported on the carrier blocks or workpiece holders. Every first, second and third carrier block or workpiece holder is transferred to and from the support means or turntables at the first, second and third polishing stations, respectively. The conveyor is intermittently moved through its looped path of travel in time relationships with the intermittent movement of the turntables or support means at the plurality of work stations. Automatic control means are provided for the grinding and polishing operations.

3,775,910

AUTOMATIC SIZING DEVICE FOR MEASURING APPARATUS

Kakuzo Kubo, Tokyo, Japan, assignor to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Filed June 17, 1971, Ser. No. 154,078
Claims priority, application Japan, June 19, 1970, 45/60284 (utility model)
Int. Cl. B24b 49/04
U.S. Cl. 51—165.77 **4 Claims**



The automatic sizing device of the present invention provides two amplifiers for low sensitivity range and for high sensitivity range and these amplifiers are used in the following manner. That is, the amplifier for the low sensitivity range is used in normal grinding for detecting a grinding limit for which the grinding speed and the amount of grinding are measured and the whole range of procedure of the grinding to an on size can be observed. During the above-mentioned normal grinding, the grinding speed is changed to the speed for precise grinding. And when the amplifier for high sensitivity range is used in a finishing grinding, a high accuracy for grinding can be obtained, and the signals for a spark out and for an on size can be precisely generated.

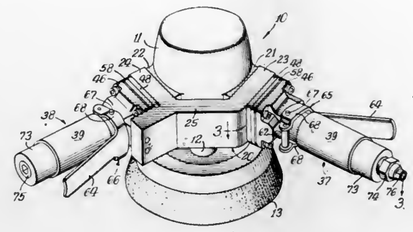
3,775,911

DUAL SAFETY CONTROL FOR A POWER TOOL

Andrew Flagge, Aurora, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Filed Jan. 24, 1972, Ser. No. 220,350
Int. Cl. B24b 23/02
U.S. Cl. 51—170 T **8 Claims**

A safety control for a portable power tool such as a pneumatically driven hand grinder. A pair of throttles are secured to the tool housing for guiding and controlling the operation of the tool when the latter is in use. A valve is mounted in each throttle and both valves are normally biased to their closed positions by springs. An operating lever is pivotally mounted on each throttle for moving its associated valve to an open position. The valves are arranged in series in a pair of connected passages which convey air under pressure from a remote source to the pneumatic drive motor of the tool. The tool is therefore rendered inoperative whenever one or the other or both of the throttle levers is intentionally or inadvertently released.

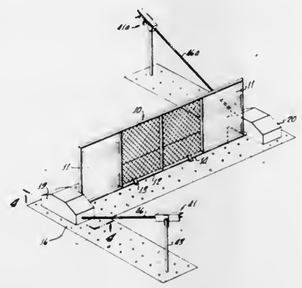


3,775,912

HORIZONTAL-AXIS VEHICLE GATE INCORPORATING LOCKING MECHANISM

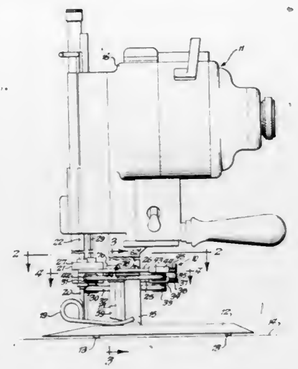
John H. Walls, Los Banos, Calif., assignor to Stang Hydronics Inc., Orange, Calif.

Filed Mar. 10, 1972, Ser. No. 233,471
Int. Cl. E06b 11/02
U.S. Cl. 49—131 **10 Claims**



A vehicle gate is mounted for pivotal movement about a horizontal axis which is generally coincident with the surface of the roadway, and counterweights are provided to normally maintain the gate in an upright position. A disc is nonrotatably associated with the pivot shaft for the gate, and has a notch therein adapted to receive a pivotally-mounted latch bar. A lock mechanism is so located that it is adjacent the passenger compartment of the vehicle when the vehicle is stopped on the approach side of the gate. Such mechanism is adapted to be operated by the vehicle driver to effect lifting of the latch bar out of the notch. The driver then drives the vehicle against and over the gate, following which the gate moves automatically to its upright condition and becomes locked without need for further action by the driver. The locking of the lock mechanism is effected by the driver while the vehicle is still near (but not at) the position at which it is located while the lock mechanism is being unlocked, but the gate does not actually lock until after the vehicle is driven therethrough.

3,775,913
KNIFE SHARPENING MECHANISM
Frederick G. Clark, Buffalo, N.Y., assignor to Eastman Machine Company, Buffalo, N.Y.
Filed Nov. 3, 1971, Ser. No. 195,122
Int. Cl. B24b 19/00
U.S. Cl. 51—246 4 Claims

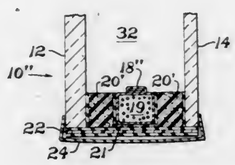


A knife sharpening mechanism for a cutting machine having an elongated knife comprising a grinder carriage having a pair of legs each mounting an endless abrasive belt, a drive for driving the belts, a belt guiding shoe on each of the legs with each shoe mounting belt guide elements including guide blocks for pressing each endless belt into engagement with the edge of the knife to thereby grind a bevel on the knife, each of the belt guide elements being bendable so as to adjust the angle which each of the guide blocks makes with the edge of the knife, the belt guide elements also being sufficiently rigid to hold the guide blocks in the position to which they were last adjusted.

ERRATUM

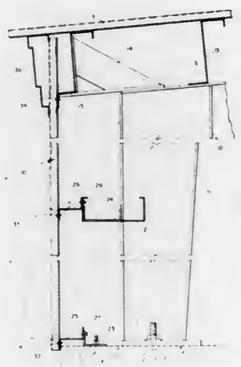
For Class 51—392 see:
Patent No. 3,775,923

3,775,914
MULTIPLE-GLAZED UNIT FOR HIGH SOUND TRANSMISSION LOSS
Pandit G. Patil, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 118,277, Feb. 24, 1971, abandoned. This application Apr. 18, 1972, Ser. No. 245,102
Int. Cl. E04c 2/34; E06b 3/66
U.S. Cl. 52—172 16 Claims



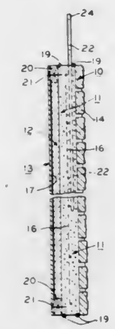
A multiple-glazed window unit comprising a plurality of glass sheets which are substantially parallel to each other and separated from each other at marginal portions thereof by a metallic spacing element and a plurality of resilient spacing elements. The resilient spacing elements are of substantial thickness and separate the metallic spacing element from said sheets. In one embodiment of the present invention, the resilient spacing elements are attached to each other by a thin web.

3,775,915
EXPLOSION VENTING WALL
Bruce B. Chambers, and Gary L. Radabaugh, both of Belpre, Ohio, assignors to Textron Inc., Providence, R.I.
Filed Nov. 3, 1972, Ser. No. 303,509
Int. Cl. E04h 9/02, 9/14
U.S. Cl. 52—1 2 Claims



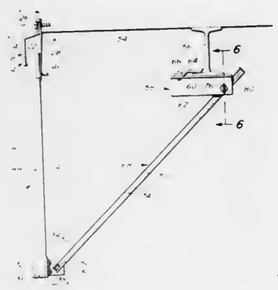
In a pre-engineered metal building a wall having an opening closed off by a panel connected by a number of fasteners which will insure weather, structural and wind load integrity under normal conditions but which will allow the panel to swing away upon the occurance of an interior explosion and thus provide a pressure relieving vent.

3,775,916
PREFABRICATED WALL PANEL
Scott S. Bair, Westminster, Md., assignor to Development Company of America, Westminster, Md.
Filed Mar. 20, 1972, Ser. No. 235,987
Int. Cl. E04b 2/04, 2/60
U.S. Cl. 52—125 15 Claims



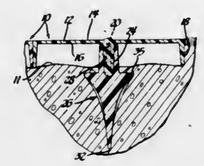
A multi-layer, wall panel is disclosed that is adapted by itself to form a complete structural wall of a building. In one form, the panel has a sandwich construction comprising an outer layer of masonry building units such as bricks, an internal, relatively lightweight, principally load-bearing layer of cementitious material, and an insulating layer adapted to receive fasteners by which an inner decorative layer may be fixed to the panel construction. Preferably, frame members are mounted about the edges of one or more panels to unify the structure.

3,775,917
SUSPENDED SKIRTING FOR BELOW DWELLING,
Francis L. Struben, Whitehall, Md., assignor to Silver Top Manufacturing Company, Inc., Baltimore, Md.
Continuation of Ser. No. 58,276, July 27, 1970, abandoned. This application July 15, 1972, Ser. No. 269,055
Int. Cl. E04c 2/38; E04f 19/04
U.S. Cl. 52—169 7 Claims



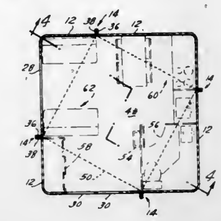
A generally U-shaped channel is supported from the underside of a mobile home and is spaced directly beneath the vertical walls of the home and slightly above the ground level to provide a lower channel. A similarly shaped channel configuration is formed by preshaped sections which are attached to the lower edge of the vertical walls and spacially above the U-shaped channel to form an upper channel. A plurality of preformed skirting panels are positioned between the spaced upper and lower channels with edge portions of the skirting panels located in the channels. The panels are fastened to the channels to provide a suspended, self-supporting skirting for below a dwelling.

3,775,918
OUTDOOR GROUND TILE
Arthur J. Johnson, 31436 Artesian, Warren, Mich.
Filed Oct. 30, 1972, Ser. No. 302,009
Int. Cl. E01d 27/00; E04f 13/08
U.S. Cl. 52—169 5 Claims



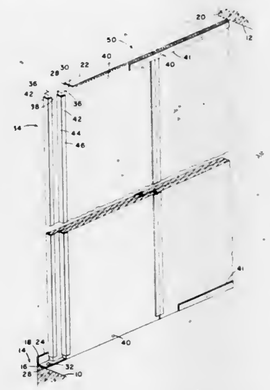
An outdoor ground tile having a load bearing portion with depending ground support walls about the periphery thereof and intersecting ribs underneath which reinforce and also provide ground support to the load bearing portion. Anchor pins depend from the underneath side and the ribs and anchors which have a press fit with both the anchor pins and ribs provide for anchoring the tile to a ground surface.

3,775,919
MODULAR STRUCTURES
James F. Fulton, Mamoroneck, N.Y., and Joseph A. Rinaldi, Oradell, N.J., assignors to Fulton & Partners, Inc., New York, N.Y.
Filed Apr. 13, 1972, Ser. No. 243,557
Int. Cl. E04h 1/02, 1/04
U.S. Cl. 52—236 4 Claims



Single and multi-modular structures suitable for use as living quarters or as office space are fabricated from a plurality of pre-formed basic construction sections. The basic construction sections may be assembled to provide a single or basic modular unit and two or more basic modular units may be assembled in various configurations to provide multi-modular units.

3,775,920
LAMINATED GYPSUM PARTITION
Joseph W. Schneller, Williamsville, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.
Filed June 19, 1969, Ser. No. 834,752
Int. Cl. E04b 2/08; E04c 2/14
U.S. Cl. 52—241 5 Claims

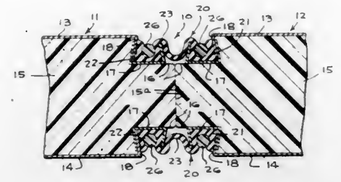


A laminated panel including at least two gypsum boards, laminated in offset relationship, with light gauge sheet metal wrapped around both side edges of each board, and wall structures thereof.

3,775,921
INSULATED PANEL JOINT ASSEMBLY
William W. Avera, Winston-Salem, N.C., assignor to The Bahnson Company, Winston-Salem, N.C.
Filed June 2, 1972, Ser. No. 259,229
Int. Cl. E04d 1/36; E04b 1/66
U.S. Cl. 52—471 11 Claims

A panel joint assembly including a pair of laminated sandwich type panels each having an insulative core and a pair of

facing sheets, a pair of channel members nested in rabbets in adjacnt edges of the panels having outwardly opening constricted entrances, and an elastomeric joining strip having a pair of truncated wedge shaped marginal flange formations seated in said channel and an interconnecting, integral web



portion of U-shaped cross-sectional configuration extending therebetween. The flange formations have outwardly opening re-entrant recesses having an enlarged inner portion filled with an elastomeric locking cord of like cross-section to maintain the flange formations tightly seated in the channel members.

3,775,922

RETAINER AND ATTACHMENT MEANS

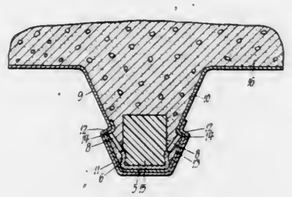
Reginald Lewis Myers, 8501 West Higgins Rd., Chicago, Ill.

Filed Dec. 16, 1970, Ser. No. 98,639

Claims priority, application Australia, Dec. 18, 1969, 65465/69

Int. Cl. E04c *2/32*; **E04d** *3/362*

U.S. Cl. 52—367 **4 Claims**



The invention provides formwork, for concrete structures, of the type capable of being interlocked with adjacent formwork members along adjacent longitudinal edges and to be left in position after the concrete has set so as to constitute cladding for the concrete, wherein there are retainer means for interlocking engagement with the formwork, said retainer means having a retainer member adapted to resist disengagement of adjacent formwork members and having void-forming means for providing a concrete void whereby a fastener may be engaged with the formwork without coming into engagement with the concrete.

3,775,923

FLEXIBLE TOOL HOLDER

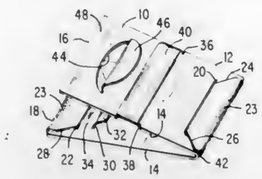
Robert W. Martin, 1057 Pennington Rd., Trenton, N.J.

Continuation-in-part of Ser. No. 205,999, Dec. 8, 1971, abandoned. This application Apr. 12, 1972, Ser. No. 243,179

Int. Cl. B24d *15/04*

U.S. Cl. 51—392 **16 Claims**

A flexible abrasive hand tool is herein described, comprising a generally planar sheet of a high density, flexible plastic material. The sheet may be formed with opposing end and side edges and transversely extending slots may be presented intermediate the edges for the engagement of a surface treating paper. A resilient band member may be disposed transversely entirely about the sheet of flexible plastic and may be held against movement relative to the plastic sheet by means of



notches presented in the side edges thereof. In one embodiment, the slots may be disposed between the band member and one end edge of the plastic sheet which may be folded along a transverse line extending intermediate at least two of the slots.

3,775,924

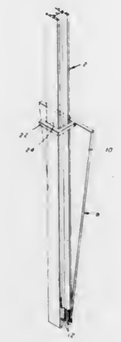
FENCE POST SPADE

Robert E. McClure, Jr., 824 Elm Spring Rd., Mt. Lebanon Twp., Allegheny County, Pa.

Filed Mar. 26, 1973, Ser. No. 344,982

Int. Cl. E04h *17/22*

U.S. Cl. 52—155 **10 Claims**



A spade for an H-beam fence post is made from a steel plate having a flat portion that engages the outside of one flange of the post. A pair of spaced apart tabs at the lower end of the plate extend upwardly from the flat portion so as to form two U-shaped members which fit over the lower end of the post one on each side of the web of the post. A pair of inwardly extending tabs at or near the top of the flat portion extends over the inside of the post flange toward its web. When the post is driven into the ground it carries the spade with it and the top tabs or other means hold the spade against the post.

3,775,925

ROOFING PANEL WITH DRAINAGE MEANS

Keiich Fujita, Kanagawa, Japan, assignor to Fujita Kenzo Kogyo Co., Ltd., Kawasaki City, Kanagawa, Japan

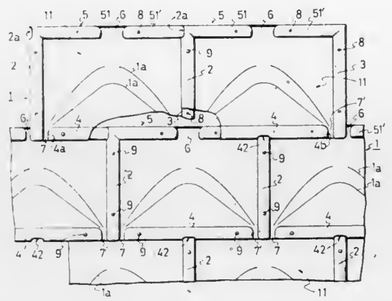
Filed Dec. 2, 1971, Ser. No. 203,984

Claims priority, application Japan, Dec. 2, 1970, 45/120019; Feb. 2, 1971, 46/4646; Feb. 22, 1971, 46/10384

Int. Cl. E04d *1/28*

U.S. Cl. 52—534 **13 Claims**

A roofing panel which is provided with long currugations formed respectively along both the right and left sides and both the front and rear sides of the roofing panel, whereby the front side corrugation of the roofing panel is overlapped on the rear corrugations of two other roofing panels which are arranged in parallel at the front side of the roofing panel when the roofing panel is coupled to other roofing panels so that the



front and rear sides of a roofing panel are joined with those of other roofing panels and the either of the right-and-left-side corrugations of the other roofing panel when the roofing panel is coupled to other roofing panels and which is provided with the water drains to prevent water or rain from intruding into joined portions and remaining on the roofing panels.

3,775,926

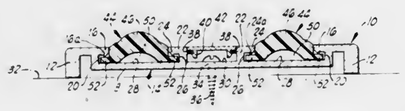
SHOCK ABSORBING CHAIR RAIL ASSEMBLY

Russell L. Brown, 1620 Kingsbury Ln., and Lemuel G. Brown, both of Oklahoma City, Okla., assignors to said Russell L. Brown, by said Lemuel G. Brown

Filed Sept. 10, 1971, Ser. No. 179,277

Int. Cl. E04f *19/02*

U.S. Cl. 52—717 **7 Claims**



A chair rail assembly which includes an elongated rigid supporting member having formed on one side thereof, a pair of bumper strip receiving channels. A pair of elongated flexible and resilient bumper strips are carried by said channels. The chair rail assembly may further include terminal caps secured to the opposite ends of the rigid supporting member and a plurality of fastener elements utilized for securing the assembly to a supporting surface which it is to protect.

3,775,927

SELF-RETAINING FASTENER

Engelbert A. Meyer, Union Lake, Mich., assignor to Warren Fastener Corporation, Mt. Clemens, Mich.

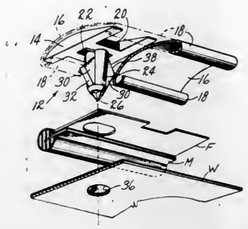
Filed May 26, 1972, Ser. No. 257,416

Int. Cl. E04f *19/02*

U.S. Cl. 52—718 **7 Claims**

A plastic one-piece fastener having a base, a body symmetrically tapering in one plane normal thereto, and a pointed end portion is transversely receivable in a decorative molding or other article to be mounted. A pair of lateral resilient retainer

wings of the body is deflectible together on entering an aperture of a mounting member, the wing portions having locking



shoulders projecting in angular relation to the base for retaining the article in relation to the base. The locking shoulders may be formed with work retaining teeth.

3,775,928

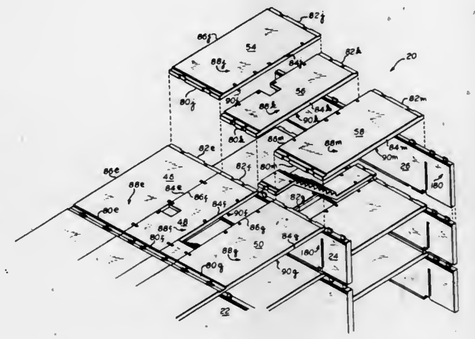
ERECTION METHOD FOR STRUCTURAL SYSTEM

William F. Dawson, and Milo Shemie, both of Montreal, Quebec, Canada, assignors to Descon Concordia Systems, Ltd. c/o Sage, Gray, Todd & Sims, New York, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,043

Int. Cl. E04b *1/35*

U.S. Cl. 52—741 **9 Claims**



A structural system includes a building unit comprising at least a pair of spaced apart concrete wall slabs which support a concrete floor slab thereon which is connected directly to the wall slabs by the use of bolting means and tie plates embedded in the wall and floor slabs. The end portions of the floor slab have recesses therein which have tie plates extending across at least a portion thereof. The top portions of the wall slabs have tie plates protruding therefrom. The wall and floor slab tie plates have apertures therein which are aligned to form through holes, the bolting means being connected through these through holes to form a self-supporting building unit. Adjacent building units in the structure share a common wall slab and the adjacent end portions of adjacent floor slabs associated therewith are directly connected to each other and to the common wall slab by aligning the apertures in the associated tie plates to form through holes, bolting means being connected therethrough. A plurality of floor slabs may be supported between a pair of common wall slabs with the end portions of the floor slabs connected thereto as above. Adjacent side portions of adjacent floor slabs have recesses therein which are in communication and which have flat plates having apertures therein extending thereacross. These adjacent side portions are connected to each other by connector plates hav-

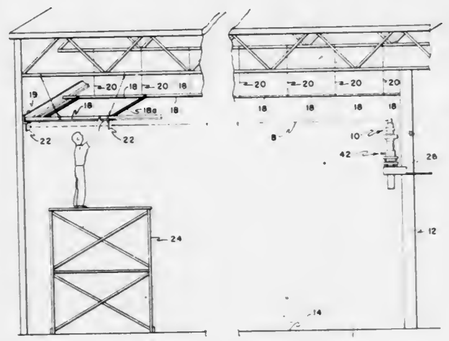
ing apertures therein which are aligned with the apertures in the flat plates to form through holes, a bolting means being connected therethrough. Concrete wall slabs normal to the floor supporting wall slabs may also be provided, such as along the longitudinal axis of the structure, to vertically transfer laterally applied loads such as shear transmitted across the floor slabs which are ultimately connected thereto. In constructing a structure, supporting wall slabs are anchored to the wall or foundation below by bolting, floor slabs are placed thereon and aligned and adjacent side portions thereof directly connected together by bolting, and thereafter end portions thereof are directly connected to the supporting wall slabs by bolting.

3,775,929

METHOD FOR INSTALLING CEILINGS

Roger J. Roodvoets, Grand Rapids, and Edward G. Nielsen, Wyoming, both of Mich., assignors to Laser Alignment, Inc., Grand Rapids, Mich.

Filed June 11, 1971, Ser. No. 152,298
Int. Cl. E04g *21/00, 21/10*
U.S. Cl. 52—747 **11 Claims**



A device which emits a rotating beam of collimated light, preferably a laser source assembly, is mounted at a level which has a predetermined relationship to the level desired for a suspended ceiling. A target is placed on a ceiling panel supporting member and the member is elevated until the target is intercepted by the light beam at a predetermined line on the target. At this point, the ceiling supporting member is fixed in place. When it is desirable to bend the supporting wires before the ceiling supporting members are installed, the target may be moved along adjacent the wire and the wire bent at a given distance from the point where the light beam intercepts the target.

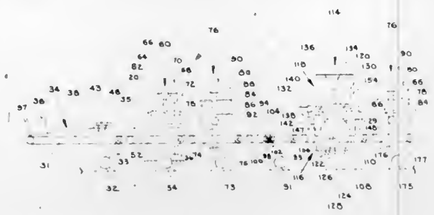
3,775,930

PAPER PULP BALING METHOD AND APPARATUS

Cecil S. Mercer, North Vancouver, British Columbia; Archibald D. Beveridge, West Vancouver, British Columbia, and Frederick A. McDowall, Richmond, British Columbia, all of Canada, assignors to Swift & Company, Chicago, Ill.

Continuation of Ser. No. 153,669, June 16, 1971, which is a continuation-in-part of Ser. No. 50,837, June 29, 1970. This application Feb. 5, 1973, Ser. No. 329,880
Int. Cl. B65b *11/02, 11/08*
U.S. Cl. 53—32 **12 Claims**

Method of baling bundles of paper pulp comprising overwrapping the bundle with top and bottom wrapper sheets, and thereafter forming side seams and end flaps about the bale by applying a repulpable adhesive to overlapping areas of the wrapper sheets and exerting a compressive force on these adhesive-carrying areas so as to obtain bonded side seams and end flaps. Apparatus is disclosed for baling bundles of paper



pulp, including means for applying a repulpable adhesive to overlapping areas of the wrapper sheets, means for forming side seams and end flaps, and means for exerting a compressive force on the side seams and end flaps.

3,775,931

METHOD AND APPARATUS FOR PACKAGING POULTRY UTILIZING CONTROLLABLY ACTUATED POSITIVE PRESSURE LIFTING MEANS

Kenneth A. Kraft, Milwaukee, Wis., assignor to John Mohr & Sons, Chicago, Ill.

Filed Feb. 10, 1972, Ser. No. 225,183
Int. Cl. B65b *31/06*
U.S. Cl. 53—22 B **9 Claims**



A bagged poultry vacuumizing and lifting machine in which lifting of the bagged poultry occurs by application of greater than atmospheric fluid pressure to the lifting mechanism, said lifting action being entirely independent of the vacuumizing action. A unique quick connect and disconnect system consisting of a minimum of parts is also disclosed.

3,775,932

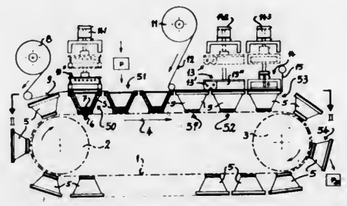
PACKAGING APPARATUS AND METHOD

Peter Jeney, Zug, Switzerland, assignor to Tourpac AG, Zug, Switzerland

Filed Mar. 1, 1972, Ser. No. 230,919
Claims priority, application Switzerland, Mar. 18, 1971, 4017/71
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 A **13 Claims**

Packaging apparatus and a method of packaging wherein a series of pocket members travel along an endless path through

a plurality of stations with a packaging film held at a first station and formed under pressure into a pocket, at a subsequent station a product is placed into the film pocket, at a further station a second film is superimposed over the first packaging film and the two films are heat sealed together to form a plurality of sides of a package, and at a final station the partially-sealed package is enclosed within an airtight chamber with a vacuum drawn in the package through the open side thereof followed by heat sealing of the two films together to completely seal the package. The packaging apparatus and the packaging method permit simple modification for making packages of different widths from films of different widths by the use of



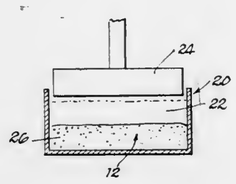
insert members filling a part of the cavities in the pocket members to reduce the over-all size of the cavities and with hold-down structure at the pocket-forming station and heat seal structure at the initial sealing station adjustable to coact with the films of different widths to insure hold-down and sealing of the films. The structure of the final sealing station need not be modified since the airtight chamber may have a dimension equal to the largest package to be made and the vacuum drawing and final sealing always operates through the open side of the package which is along a fixed predetermined line which is the same regardless of the width of the packaging films and the resulting package.

3,775,933

METHOD OF PACKAGING FRIABLE BALES OF ELASTOMERIC MATERIAL

E. Elsworth Prescott, and Edward F. Copus, both of Baton Rouge, La., assignors to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Filed July 9, 1971, Ser. No. 161,161
Int. Cl. B65b *63/02*
U.S. Cl. 53—24 **3 Claims**



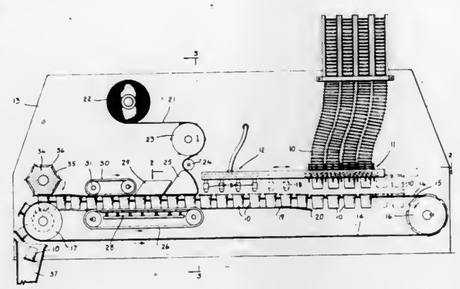
Friable bales of elastomeric crumb formed of porous crumb having a bulk density within the range of 16 to 30 pounds per cubic foot and compressed into bales having a bulk density within the range of 24 to 45 pounds per cubic foot and packaged in separated load-free compartments for storage or shipment without loss of friability.

3,775,934

METHOD OF AND APPARATUS FOR APPLYING CAPS TO CONTAINERS

Lewis W. Smith, Peterborough, Ontario, Canada, assignor to Purity Packaging Limited, Peterborough, Ontario, Canada

Filed Apr. 6, 1972, Ser. No. 241,734
Int. Cl. B65b *7/28*
U.S. Cl. 53—38 **10 Claims**



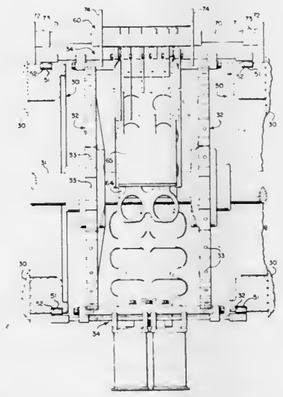
In the application of caps in interconnected strip form to cup-like containers, the containers and the caps are fed along respective feedpaths to a position at which the caps are applied to the containers in succession, the spacing of the caps being slightly greater (by about 0.3 percent) than the spacing of the containers, and the rate of feed being such as to ensure registration between each successive container and a respective cap at said position. The successive containers with applied caps are advanced from the capping position to a discharge point at which the applied caps are severed from the strip and the edges of the caps are crimped onto the rims of the containers.

3,775,935

CONTAINER AND CARRIER ASSEMBLING MACHINE

David F. Schlueter, and John Edward Morgan, both of Hoopeston, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Sept. 18, 1972, Ser. No. 289,908
Int. Cl. B65b *21/24*
U.S. Cl. 53—48 **3 Claims**



Improvements in container and carrier assembling machines wherein the carriers are a series of flat plastic carriers with longitudinally extending transversely arranged pairs

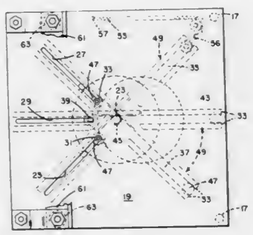
of apertures. The machine is a rotary machine which takes the carriers in succession, folds the longitudinally central and side edges, stretches the apertures over the containers delivered to the machine, and releases the carriers to embracingly engage the containers.

3,775,936

APPARATUS FOR CENTERING CIRCULAR ARTICLES

Carl R. Pepmeier, Fredericksburg, Va., and Edward G. Lowe, Gloucester, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed June 14, 1972, Ser. No. 262,675
Int. Cl. B65b *67/10*
U.S. Cl. 53—137 **12 Claims**



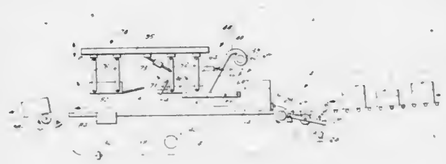
Apparatus for automatically centering circular articles which differ in diameter, as for example, a wrapping apparatus in which annular articles of varying circular dimensions are centered with respect to a sealing means. The invention described herein is applicable for use in a method of providing annular articles with a snug and substantially air-tight outer covering.

3,775,937

AUTOMATIC RANDOM SIZE BOX SEALER

Frank Devan, South Nyack, and Fred Devan, Palisades, both of N.J., assignors to Devon Tape Corporation, Carlstadt, N.J.

Filed May 10, 1972, Ser. No. 252,035.
Int. Cl. B65b *7/20*
U.S. Cl. 53—75 **16 Claims**



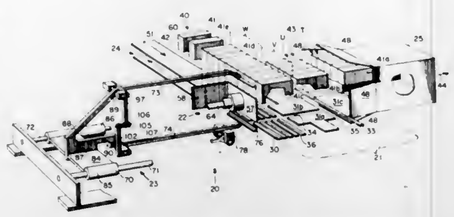
A machine for automatically folding and sealing boxes of various random heights, widths and lengths. The machine receives RSC (Regular Slotted Container) boxes of random dimensions whose upper flaps are open. It provides for automatically feeding these boxes one at a time into the machine, adjusting to the dimensions of the box, closing the inner and outer flaps, squaring the boxes, holding the upper flaps together and sealing the boxes and then transporting the sealed box out of the machine.

3,775,938

CASE LOADING MACHINE

Richard A. Sutphin, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 13, 1972, Ser. No. 234,230
Int. Cl. B65b *5/06, 35/40*
U.S. Cl. 53—164 **10 Claims**



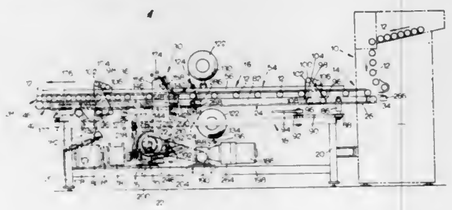
A case loading machine for loading a predetermined plurality of articles of substantially uniform size and shape into a generally rectangular case forming therein a predetermined pattern of uniform rows of the articles in side-by-side relation. Means are provided for receiving a file of articles along a first path of travel upon a platform and forming on a predetermined area thereof successive uniform rows of articles. Pushing means are provided to laterally move a row on the platform from the area where formed to fill a case indexed with the platform in a case loading position. The pushing means comprises an articulated reciprocating pusher including means for permitting infeed onto the predetermined area of the platform to form another row as soon as it has wholly removed the preceding row therefrom. The pushing means may also include a short stroke pusher which is independently operable from the articulated reciprocating pusher, the two pushers being configured and disposed for laterally forwarding rows along the same path. When used in combination, the two pushers are also configured to permit some degree of simultaneous operation. The two pushers can be operated so that operation of the short stroke pusher results in the formation of a column of a predetermined number of rows in side-by-side relation, and operation of the articulated reciprocating pusher forwards the column a predetermined distance to move an array of rows as a unit into a case. Productivity of the case loading machine is enhanced by permitting infeed during a portion of each cycle of the articulated reciprocating pusher, and by operating the two pushers simultaneously.

3,775,939

ROLL BANDING MACHINE

Bertram F. Elsner, and Frank Elsner, Jr., both of Hanover, Pa., assignors to Elsner Engineering Works, Inc., Hanover, Pa.

Filed Jan. 7, 1972, Ser. No. 216,012
Int. Cl. B65b *27/06, 13/02*
U.S. Cl. 53—198 R **28 Claims**



A machine to apply bands of heat-shrinkable, fusible material around coiled rolls of sheet material by feeding said

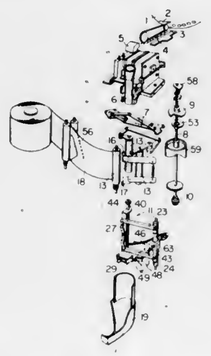
rolls intermittently along a path to provide stationary intervals during which one of a pair of clamping and sealing jaws moves between successive rolls to form at least one band of material around said rolls successively. Additional conveyor means move said banded rolls along heating means, while rotated continuously, to effect shrinking of said bands closely around said rolls.

3,775,940

COIN-GUIDING DEVICE IN COIN WRAPPER

Yoshihiro Hatanaka, Himeji-shi, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed June 15, 1972, Ser. No. 263,288
Claims priority, application Japan, June 18, 1971, 46/53037
Int. Cl. B65b *11/04*
U.S. Cl. 53—212 **3 Claims**



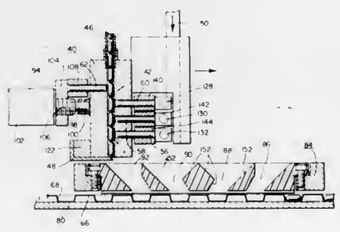
In a coin wrapper, a guide member receives and supports a stack of coins and guides the same into position between wrapping rolls to be rotated thereby as a wrapping paper strip is wound around the stack, and projecting upper and lower lateral edges of the paper are folded in over the ends of the stack, the guide member being actuated in horizontal and vertical movements by actuating means and being adjustably positioned in elevational height by positioning means in a manner such the projecting upper and lower lateral edges of the paper are substantially of equal width.

3,775,941

ARTICLE PACKAGING MACHINE

Charles Frederick Bross, Chicago, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 10, 1972, Ser. No. 225,084
Int. Cl. B65b *5/10, 39/00*
U.S. Cl. 53—246 **10 Claims**



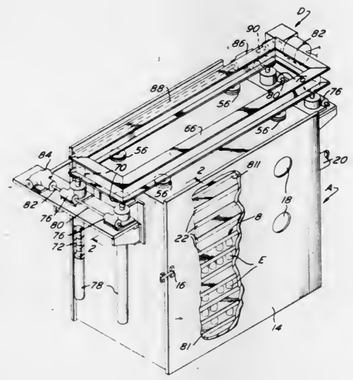
The present article packaging machine is particularly suitable for use in depositing capsules into rows of pockets formed in a web. As the web pockets are formed by separate apparatus, th web is periodically advanced a predetermined distance. The packaging machine includes a depositer which oscillates over the web pockets, the depositer moving forward with the advancing web. Shortly after the web movement stops, the depositer reaches the end of its forward stroke where the first capsules are discharged. Remaining capsules are sequentially discharged during the return stroke, the capsules being arranged in columns in vertically arranged passageways formed in the depositer. A plurality of vertically arranged pin gates in each passageway hold the capsules therein until the depositer reaches the proper discharge zone. When the depositer reaches the end of its rearward stroke, a top pin gate opens and a bottom gate closes in each of the passageways. This allows a column of capsules to drop within each of the passageways, and be held therein by the bottom gate. The depositer is thus ready to repeat the cycle when the web is once again advanced. A stationary transition member is mounted between the depositer and web, this member having a plurality of openings extending therethrough which openings are located over the web pockets to be filled; because the openings are suitably shaped, this member accepts the discharged capsules so as to allow them to clear the moving depositer, and at the same time guides the discharged capsules into the web pockets.

3,775,942

VACUUM STOPPERING APPARATUS WITH PEGBOARD SHELF ADJUSTMENT

Harold R. Powell, King of Prussia; Cornelius C. Dunn, Havertown, and John R. Burke, Philadelphia, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed June 8, 1972, Ser. No. 260,791
Int. Cl. B67b *1/04;* **B65b** *31/02*
U.S. Cl. 53—264 **2 Claims**



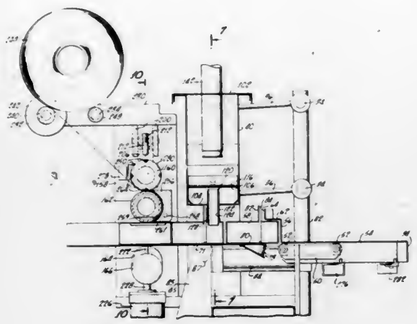
Vacuum drying and stoppering apparatus having multiple shelves permits variable shelf spacing by means of a pegboard type arrangement. Using an appropriate pattern of the pegholes, one or more shelves may be immobilized by seating them in the lowermost shelf and then redistributing the remaining shelves according to a predetermined coded hole sequence.

3,775,943

APPARATUS FOR FILLING AND SEALING CARTONS FOR HOLDING LIQUIDS

Charles Wright Jones, Los Angeles, Calif., assignor to Xepex Industries, Inc., Beverly Hills, Calif.

Filed Apr. 29, 1971, Ser. No. 138,623
Int. Cl. B65b *3/06*
U.S. Cl. 53—282 **6 Claims**



The apparatus disclosed herein is arranged to fill with liquid and seal a carton which has as its single means of access an orifice closable by a simple, flat flap punched from one side of the carton but remaining integral with that side. The cartons are delivered one by one and accumulated on a platform of the carton filling and sealing apparatus. After a predetermined number of cartons have been accumulated, they are moved into position beneath a storage tank for the liquid with which they are to be filled. The tank is lowered to bring spout-like appendages on the tank into penetrative relation to the orifices of the cartons. After the cartons have been so positioned, valve mechanism associated with the tank meters a quantity of liquid into the cartons. Each of the spout-like members has associated with it a suction tube for drawing off and returning to the liquid storage tank any froth that may develop during the pouring of the liquid into the cartons. After the cartons have been filled, the storage tank is raised, and the next group of cartons is moved into position to be filled, the cartons which have been filled being moved out of position by the newly presented cartons. As the filled cartons are moved out of position, the closure flap is deflected back generally into carton closing position and a sealing tape is applied over the flap.

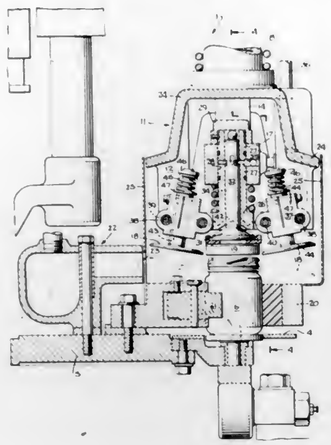
3,775,944

ROLLER SEALING MEANS FOR SEALING CONTAINERS WITH CLOSURE CAPS

Cecil P. Roberts, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Feb. 24, 1972, Ser. No. 228,922
Int. Cl. B67b *3/18*
U.S. Cl. 53—334 **6 Claims**

An improved sealing head is described for use on machines which seal containers by placing a metal closure cap over the container mouth and by then rolling portions of the cap skirt into engagement with the container rim. The improved sealing head utilizes a pair of rollers which are movably mounted on the sealing head so that downward movement of the head automatically swings the two rollers into operating position against the cap skirt forcing the skirt into engagement with the container. This improved roller mounting means is particularly useful with high speed multi-head sealing machines as the roller structure and its operating means is relatively simple



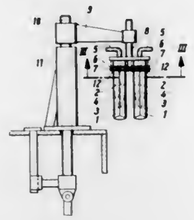
and compact so that it occupies a small space permitting the sealing heads using the rollers to be closely spaced to each other.

3,775,945

APPARATUS FOR INFLATING BAGS

Paul Kuhnle, Winnenden, Germany, assignor to Fr. Hesser Maschinenfabrik, Stuttgart, Germany

Filed Dec. 13, 1971, Ser. No. 207,436
Claims priority, application Germany, Dec. 16, 1970, G 70 46 342.2
Int. Cl. B65b *43/36*
U.S. Cl. 53—385 **7 Claims**



Apparatus for inflating a bag, as part of a process for automatically filling the bag, by inserting a mandrel, provided with an air outlet, into the bag and causing an elastomeric collar on the mandrel to engage the edges of the bag opening to provide a temporary seal therebetween.

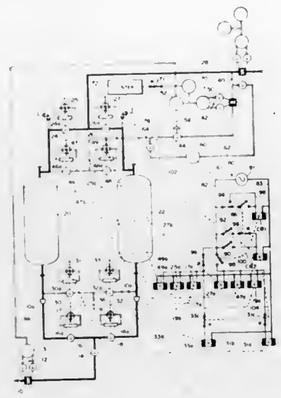
3,775,946

ADSORPTION CONTROL

Ronald D. Brazzel, Tyler, Tex., assignor to Howe-Baker Engineers, Inc., Tyler, Tex.

Filed Oct. 13, 1972, Ser. No. 297,176
Int. Cl. B01d *53/04*
U.S. Cl. 55—58 **11 Claims**

A gas stream is purified in a two adsorber system, each adsorber having valved input and output flow lines, a valved counterflow line and a valved vent line. Simultaneously actuated in a first sense are the valved input and output flow lines on the first adsorber and the valved counterflow and vent lines on the second adsorber. Simultaneously actuated in a second sense opposite the first sense are the valved input and output flow lines on the second adsorber and the valved counterflow



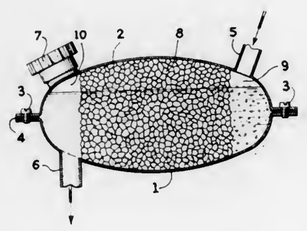
line and the valved vent line on the first adsorber. Responsive to counterflow of the predetermined gas volume after each actuation of the valved lines, any open valved vent line in the system is closed. Responsive to reaching a near minimum in each cycle of decreasing difference in pressure between the two adsorbers the simultaneous actuation of the valved lines is initiated.

3,775,947

GAS-REMOVING BOX FOR A LIQUID CIRCUIT

Michel Dupont, Mareil-Marly; Henri Lacroix, Neuilly, and Jacques Lagarde, Montbellard, all of France, assignors to Automobiles Peugeot, Paris and Regie National des Usines Renault, Billancourt, both of France

Filed Oct. 18, 1971, Ser. No. 190,003
Claims priority, application France, Oct. 30, 1970, 7039190
Int. Cl. B01d *19/00*
U.S. Cl. 55—159 **10 Claims**



A gas-removing box which may be incorporated in the cooling liquid circuit of an internal combustion engine.

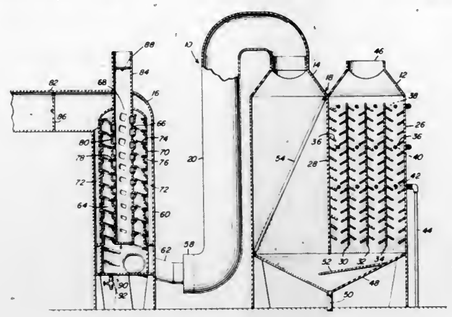
For the purpose of rendering the rates of flow of the liquid streams uniform, the box comprises a mass of synthetic foam or like material having open cells whereby it is possible to achieve an excellent separation of the gas or steam bubbles from the liquid notwithstanding the particularly low price of the box.

3,775,948

DEVICE FOR CLEANING EXHAUST PRODUCTS

Jimmie V. Beam, 1201 58th Ter., Fort Smith, Ark.

Filed Jan. 18, 1972, Ser. No. 218,692
Int. Cl. B01d *47/06*
U.S. Cl. 55—238 **16 Claims**



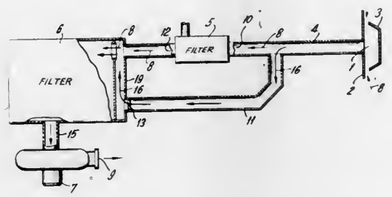
Apparatus for thoroughly cleaning the exhaust products of industrial processes includes a baffled, multi-level spray chamber, a heat exchanger and a spirally baffled, multi-compartmented separator. A gaseous exhaust medium, containing entrapped particles as well as condensible vapors, is wetted as it flows downwardly through the spray chamber and deposits moisture entrained contaminant particles on the baffles. The gas is then reduced in temperature, if above its vaporization point, in the heat exchanger with attendant condensation of vapors and further particle deposition. Finally, the gas is vectored upwardly in a spiralling counter-clockwise flow within the separator whereby its heavier constituents are collected in the outer compartments of the separator and its lighter constituents in the inner compartments thereof.

3,775,949

SAFETY AIR SUPPLY DEVICE

Karl-August Wachter, Lubeck, Germany, assignor to Dragerwerk AG, Lubeck, Germany

Filed Dec. 15, 1970, Ser. No. 98,389
Claims priority, application Germany, Dec. 23, 1969, P 19 64 898.7
Int. Cl. B01d *50/00*
U.S. Cl. 55—312 **2 Claims**

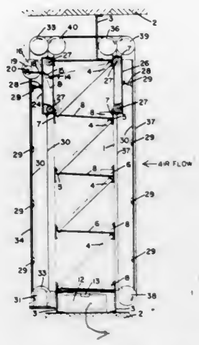


A safety air supplying device by means of which a room is supplied with air which is purified from poisonous substances includes an inlet connected to a coarse dust filter which, in turn, is connected to a suspended-matter filter, or gas filter and to an intake fan which discharges into the room. A by-pass line extends from the inlet to the coarse dust filter and to a line which connects into the outlet of the coarse dust filter at the location where it connects into the gas filter. This line is provided with a rapid closure valve. In those cases, in which the quantity of air which must be delivered must be considerably increased rapidly, this quick closure valve is opened, and, at the same time, the speed of the delivery of the fan can be increased.

3,775,950
PROCESS AIR AUTOMATIC SELF-CLEANING AIR FILTRATION SYSTEM

Alfred S. Hallamore, c/o 230 Arvin Ave., P.O. Box 190, Stoney Creek, Ont., Canada

Filed Apr. 27, 1971, Ser. No. 137,784
Claims priority, application Canada, July 6, 1970, 087350
Int. Cl. B01d *46/12*
U.S. Cl. 55—242 **7 Claims**

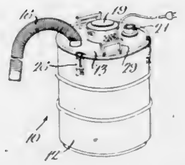


In a gas filtration system comprising a frame having an upstream side and a downstream side and adapted to support a bank of mechanical filters transversely in a gas stream to remove particulate solids therefrom and means for washing said particulate solids from said filters, the improvement in which said washing means includes isolator means adapted to isolate a portion of said filter bank from passage of gas therethrough and spray means arranged to spray washing liquid on the downstream side of said isolated portion of said filter bank, means being provided for moving said washing means over said bank of filters and means being provided for collecting the washing liquid from the upstream side of the isolated portion of the filter bank and discharging the liquid from the system without said liquid contacting the portions of the bank through which the gas may pass whereby the filter bank may be cleaned during operation of said system.

3,775,951
VACUUM CLEANER

Arthur H. Eicholz, and James E. McCambridge, both of Polo, Ill., assignors to Central Quality Industries, Inc., Polo, Ill.

Filed Oct. 20, 1971, Ser. No. 190,984
Int. Cl. B01d *50/00*
U.S. Cl. 55—417 **3 Claims**

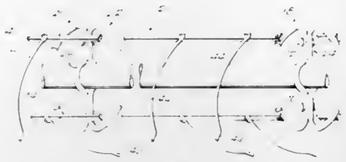


A heavy duty vacuum cleaner of the upright tank type having a cover with a motor impeller combination mounted therein that draws air from the container through a filter cartridge. A ball valve is freely received in the filter cartridge and closes under the buoyant force of water in the tank when filled to terminate the suction effect of the impeller at that time. Also provided is a straight intake tube mounted vertically in the cover that extends within the tank to a position below the filter so that it directs incoming materials or foreign matter to the bottom of the container and not directly to the filter.

3,775,952
RAKE ATTACHMENT FOR POWER SWEEPER

Francesco Aluppa, W.207 S8286 Hillandale Dr., Muskego, Wis.

Filed Sept. 5, 1972, Ser. No. 285,977
Int. Cl. A01d *51/00*
U.S. Cl. 56—16.4 **6 Claims**

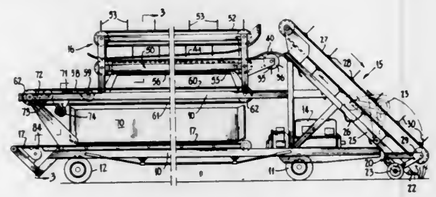


A power rake attachment for a power sweeper includes a rake assembly composed of rake half sections with each half section having two shaft clamping members with semi-circular loop portions. The half sections are assembled around the power shaft without removal of the shaft by securing the clamping members in opposed relationship around the shaft with bolts. The clamping members of each half section are interconnected by cross bars which carry spaced ground engaging tines.

3,775,953
MACHINE TO SEPARATE PODS OF SIMILAR DISCRETE FRUIT FROM ITS ASSOCIATE VINE OR PLANT

Tjeerd J. Poutsma, 11 Nobility St., Via Geelong, Moolap, Victoria, Australia

Continuation-in-part of Ser. No. 20,889, March 19, 1970, abandoned. This application Dec. 21, 1971, Ser. No. 210,501
Claims priority, application Australia, Mar. 21, 1969, 52299/69; May 25, 1971, 4983/71
Int. Cl. A01d *45/22, 45/24*
U.S. Cl. 56—126 **18 Claims**



Apparatus for separating pods or similar discrete fruit from a vine or plant comprising a grid to support the vine or plant in a distended condition, the openings in the grid being of the size to permit the free passage of the pods or fruit therethrough while the vine or plant is supported on the grid, cutter means to cut the pods or fruit projecting through the grid openings from the vine or plant and means to effect relative movement between the grid and the cutter means to present the pods or fruit to the cutter means.

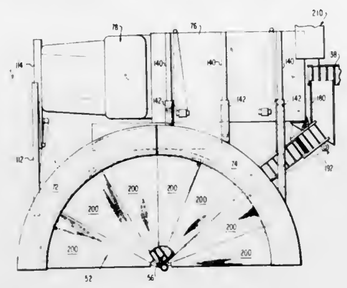
3,775,954
METHOD AND APPARATUS FOR FACILITATING THE HARVESTING OF FRUIT FROM FRUIT TREES

Quentin H. Van Schoyck, Christmas, Fla., assignor to Cylpik Incorporated, Winter Park, Fla.

Filed Jan. 4, 1973, Ser. No. 321,013
Int. Cl. A01g *19/06*
U.S. Cl. 56—329 **24 Claims**

An apparatus for facilitating the harvesting of fruit from fruit trees including support means operably positionable adjacent to a fruit tree. The apparatus comprises support means including a first arcuate platform and a second arcuate platform which may be operably combined to form a generally semicircular platform for at least partially surrounding the periphery of a fruit tree. A conveyor is connected at one end thereof to the support means and is operably positionable at the other end thereof adjacent to the base of the fruit tree at a horizontal elevation less than that of the first and second arcuate platforms. A collection means is operably extendible between the arcuate platforms and the other end of the conveyor positionable adjacent the base of the fruit tree whereby fruit dropped into the collection means may be funneled by gravity into the other end of the conveyor for delivery away from the fruit tree.

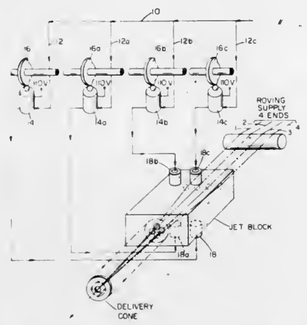
A method for facilitating the harvesting of fruit from fruit trees comprising the steps of positioning a support adjacent to a fruit tree, extending a conveyor from the support to the base of the fruit tree and deploying collection means between the inner periphery of the support and the end of the conveyor adjacent the fruit tree.



3,775,955
COMPOSITE FALSE-TWIST YARNS, METHODS AND APPARATUS

Jashwant J. Shah, Springfield, Mass., assignor to Bigelow-Sanford, Inc., Thompsonville, Conn.

Filed July 30, 1971, Ser. No. 167,641
Int. Cl. D01h *1/00, 7/92*
U.S. Cl. 57—34 AT **3 Claims**

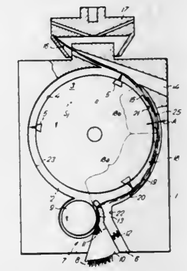


Composite false-twist yarns, method and apparatus, wherein continuous strand elements from their respective supply sources, for example, rovings, (at least three) and preferably four or more ends thereof while directly fed from their supply sources are air-jet spun and twisted simultaneously, whereby stable composite twisted yarns, with or without pairing and cabling, may be produced as end products, suitable, for example, for carpet and upholstery fabrics, the final yarn products being characterized by stabilized false twist zones, such stabilization being provided by interspersed or intermediate zones of opposite twist and, preferably, in addition, with intermingling (or interlacing) parts of (or whole) yarn elements including regular or irregular repeated interlacing of interchanged yarn elements to provide successively different pairing of said elements between (at least three) yarn elements, and preferably between pairs thereof; the apparatus for such operations including relatively high speed and high pressure air-jet means tangentially and successively applied to the individual yarn elements constantly and uniformly separately fed through converging air passages from their respective supply sources, with the converging passages terminating, for example, at a hollow truncated discharge cone, whereby the twisted yarn elements are assembled and combined to provide the final yarn products.

3,775,956
DEVICE FOR SEPARATING FIBROUS MATERIAL FOR USE WITH TEXTILE MACHINES

Jaroslav Rajnoha, Tyniste nad Orlici; Ladislav Bures, and Bohumir Burget, both of Usti nad Orlici, all of Czechoslovakia, assignors to Elitex, Zavody Textilniho Strojirenstvi Generalni Reditelstvi, Liberec, Czechoslovakia

Filed Dec. 20, 1971, Ser. No. 209,705
Claims priority, application Czechoslovakia, Dec. 23, 1970, 8731/70
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.91 **5 Claims**



A device for separating fibrous material, for use with textile machines, particularly open end spinning machines. The device includes a housing, a carding roller rotatable in the housing, and feed means for feeding fibrous silver to be separated to the carding roller. A first guide wall portion is located downstream of the feed means and defines with the peripheral surface of the carding roller a first clearance whose width tapers in downstream direction. The first clearance extends circumferentially of the carding roller and communicates with a second clearance, located further downstream. The second clearance is defined between the peripheral surface of the carding roller and a second guide wall portion. The width of the second clearance is substantially constant. An outlet passage is provided for fibers which have been separated.

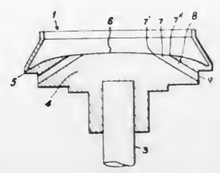
3,775,957
ROTARY SPINNING CHAMBER FOR AN OPEN-END SPINNING MACHINE

Hidetoshi Kihara, Fukui, and Kanemitsu Tsuzuki, Kariya, both of Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 10, 1972, Ser. No. 242,369
Claims priority, application Japan, Apr. 30, 1971, 46/29269
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 **4 Claims**

A rotary spinning chamber for an open-end spinning machine. The chamber has a bottom wall secured to a shaft

for rotatably driving the spinning chamber, the bottom wall extending substantially perpendicularly to the shaft. A collecting surface is formed adjacent to and surrounding the outer periphery of the inner surface of the bottom wall for collecting fibers fed into the spinning chamber through a fiber feeding conduit. A plurality of air exhaust channels is provided for exhausting the air inside the spinning chamber for reducing the air pressure inside the spinning chamber to create an air flow

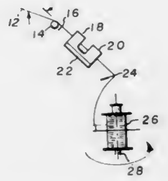


through the fiber feeding conduit toward the interior of the spinning chamber. The inner surface of the bottom wall gradually bulges in the axial direction of the shaft toward the interior of the spinning chamber as the center of the inner surface is approached, and each of said exhaust channels has the air inlet opening thereof located in the inner surface and the air outlet opening thereof located in an outer peripheral surface of the spinning chamber at a position located radially outwardly of the air inlet opening.

3,775,958
PNEUMATIC FALSE TWISTING INTERLACER

Neil E. Lloyd, and Walter B. Mather, both of Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,404
Int. Cl. D02j 1/08; D01h 7/92
U.S. Cl. 57—77.3 **19 Claims**



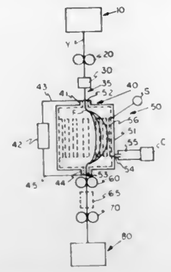
Apparatus for interlacing a filament yarn to give it compactness and other characteristics of a twisted yarn comprising a pair of spaced oppositely functioning pneumatic false twisters with the downstream twister having a smaller yarn passage than the upstream twister.

3,775,959
ELECTROSTATIC TEXTURING PROCESS AND APPARATUS THEREFOR

James R. Bond, Spartanburg, S.C., assignor to Hoechst Fibers Incorporated, Spartanburg, S.C.

Filed Mar. 27, 1972, Ser. No. 238,061
Int. Cl. D02g 1/04; D01h 7/92
U.S. Cl. 57—77.3 **16 Claims**

A process and apparatus are claimed for electrostatically texturing a multistrand textile material. The textile material is given sufficient charge density to cause the strands thereof to flare and while in the flared state the strands are electrostatically attracted and driven around a closed path, imparting a flase twist thereto. Apparatus is also disclosed and claimed for a twist means including a twist chamber, a plurality of electrodes disposed about the chamber and means for generating a driving charge on the electrodes and moving same therearound. Particularly, pairs of electrodes define a closed path about the chamber and a voltage potential is created



across each pair while a maximum potential is created across one pair. The flared strands are attracted by one of the maximum potential pair of electrodes and repulsed by the other and driven by sequentially moving the maximum potential from pair to pair around the path.

3,775,960
SEWING THREAD AND A METHOD OF PREPARING SAME

Yasuhiro Ogawa; Kazuo Nooya; Norio Awata, and Yukio Yamakawa, all of Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1970, Ser. No. 78,457
Claims priority, application Japan, Oct. 8, 1969, 44/80993; Nov. 13, 1969, 44/91225; Dec. 8, 1969, 44/98772; Dec. 8, 1969, 44/98773; Apr. 4, 1970, 45/28854; June 25, 1970, 45/55839
Int. Cl. D02g 3/44, 3/02
U.S. Cl. 57—140 R **8 Claims**

Improved sewing threads having an initial modulus of elasticity in tension of no less than 0.5 g/d, preferably no less than 5 g/d, a breaking elongation of no less than 30 percent and an elastic recovery at 25 percent elongation of no less than 70 percent are described as to their preparation and use. The threads are suitable for machine sewing of stretch fabrics.

3,775,961
YARN PROCESS

Walter D. Womer, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C.

Filed Nov. 22, 1971, Ser. No. 201,053
Int. Cl. D02j 1/22; D01h 7/86
U.S. Cl. 57—157 S **11 Claims**

A coherent continuous filament yarn substantially free of barre' is produced at a high production rate by introducing true twist into an undrawn feed yarn free of twist and then drawing the yarn. The true twist can be introduced into the undrawn yarn by the utilization of a 2-for-1 twister. The use of

a Godet roll as the feed roll minimizes filament breakage upon a start-up of the 2-for-1 twister. The Uster of the drawn yarn is minimized by wrapping the twisted yarn around the snubbing pin in the draw zone in the same direction as the direction of

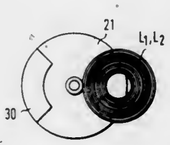


twist in the yarn. The drawn yarn can be simultaneously thermally stabilized and relaxed to provide the desired degree of residual shrinkage while maintaining the desired initial modulus of the yarn. The relaxed and stabilized yarn can be wound into a package without further twisting of the yarn.

3,775,962
CIRCUIT ARRANGEMENT FOR THE DRIVE OF A CLOCKWORK MECHANISM REGULATOR-OSCILLATOR OF A TIMEPIECE

Wolfgang Ganter, Schramberg-Sulgen, and Friedrich Assmus, Schramberg, both of Germany, assignors to Firma Gebruder Junghans G.m.b.H., Schramberg, Germany

Filed July 26, 1972, Ser. No. 275,295
Claims priority, application Germany, July 28, 1971, P 21 37 813.2
Int. Cl. G04c 3/00, 3/04
U.S. Cl. 58—23 A **9 Claims**



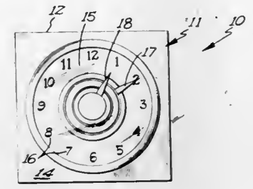
A constant current source is utilized in the bias circuit to prevent variations in the driving impulses of an electronic timepiece resulting from battery voltage decay.

3,775,963
MAGNETIC CLOCK

Thomas J. Clapham, 2823 18th Ave. North, Minneapolis, Minn.

Filed Jan. 12, 1973, Ser. No. 323,232
Int. Cl. G04c 3/00; G04b 45/04
U.S. Cl. 58—23 D **3 Claims**

A magnetic clock comprises an inner revolvable magnetic member and an outer revolvable magnetic member, each being of generally hour glassed shaped and being arranged concentrically with respect to each other. An hour glassed shaped bearing is positioned concentrically between and exerts a repulsive force on the inner and outer members. The inner and outer revolvable magnetic members each have a plurality of circumferentially spaced apart peripheral elements integrally formed therewith which project radially outwardly therefrom. The outer revolvable member has a minute hand secured thereto for movement therewith and the inner revolvable member has an hour hand secured thereto for rotation therewith. An electro-magnet is positioned adjacent the periphery of the outer member and when energized causes the outer magnetic member to rotate through a predetermined arc of approximately 30°. An electrical pulse mechanism is connected to the electro-magnet and is operable to momentarily energize the electro-magnet which causes movement of the

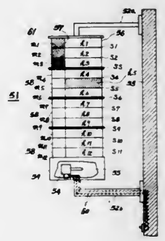


minute hand through the arc which corresponds to a 5 minute increment. The outer revolvable member is also provided with shiftable locking lugs which are shifted for engagement with the inner revolvable member when the outer revolvable member has revolved through an arc of 360°. With this arrangement, the inner revolvable member rotates with the outer member through an arc of 30° and this corresponds to the normal hour hand movement. Suitable magnetic holding means are provided for holding the inner and outer member against movement while the electro-magnet is in an unenergized condition.

3,775,964
TIME INDICATING APPARATUS

Shigeru Fukumoto, Nishinomiya, Japan, assignor to Kabushiki Kaisha Suncrux Research Office, Higashinada-ku, Kobe, Japan

Filed Aug. 13, 1971, Ser. No. 171,434
Int. Cl. G04b 19/30, 19/06
U.S. Cl. 58—50 R **11 Claims**



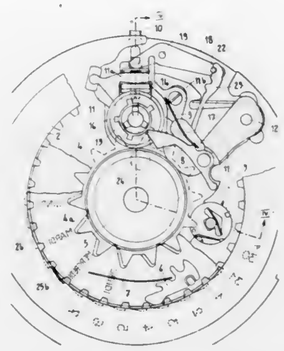
This invention relates to a time-indicating apparatus using neither figures nor pointers, wherein the time-indicating plane is divided into the hour, minute and second indicating sections of a multiple of twelve and electric lamps or the like provided inside said sections are turned on or off by means of a switch connected to the clock mechanism to indicate the time by illuminating said sections successively.

3,775,965

CALENDAR TIMEPIECE

Rene Besson; Ali Schneiter, and Rene Meister, all of Neuchatel, Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed May 3, 1972, Ser. No. 249,816
Claims priority, application Switzerland, May 5, 1971, 6678/71
Int. Cl. G04b 19/24
U.S. Cl. 58—58 10 Claims



A calendar timepiece, with indicators of the days of the week and of the dates, comprising a control stem capable of disposition in at least two axial positions, in one of which positions it permits the setting of the timepiece and in the other of which positions it permits the correction of the days and dates indicators, the control stem in the last-named position being connected to one of the indicators of the dates and of the days so that it operates in the two directions, a one-way coupling mechanism being interposed between these two indicators in such a way that, in one direction of rotation of the stem, only one of the indicators is driven while, in the other direction of rotation of the stem, the two indicators are driven, one being driven by the other through the intermediary of the coupling mechanism.

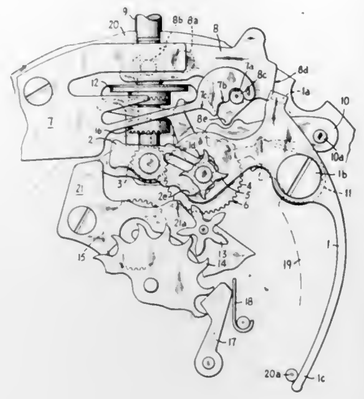
3,775,966

DAY-AND-DATE CHANGING DEVICE FOR A WRIST WATCH

Eiichi Matsuura, Chiba, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,193
Claims priority, application Japan, July 8, 1971, 46/59903
Int. Cl. G04b 19/24
U.S. Cl. 58—58 10 Claims

A wrist watch is provided with a rotatable day wheel containing indicia denoting the different days of the week and a date ring containing indicia denoting the date. A clutch member is axially slidable along the watch winding stem through a lever system in response to axial movement of the winding stem, and the clutch member is moved into engagement with a winding pinion or a gear system to respectively effect winding of the watch mainspring or changing of the day and date settings in dependence upon the extent of said movement of the winding stem and its direction of rotation. The lever system includes a pivotal setting lever connected to the winding stem and a pivotal clutch lever engageable with and driven by the setting lever to effect axial movement of the clutch member. The clutch lever has a recess therein which cooperates with a projection on the setting lever to disengage the two levers during axial movement of the winding stem



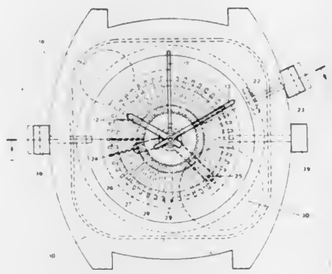
thereby preventing unintentional changing of either the day or date settings during axial movement of the winding stem.

3,775,967

WATCH WITH ADJUSTABLE TIME-DEPENDENT SIGNAL TRANSMISSION

Paolo Spadini, 78 av. Leopold Robert, La Chaux-de-Fonds, Switzerland

Filed Sept. 5, 1972, Ser. No. 286,815
Int. Cl. G04b 23/12; G04c 21/16, 21/34
U.S. Cl. 58—57.5 7 Claims



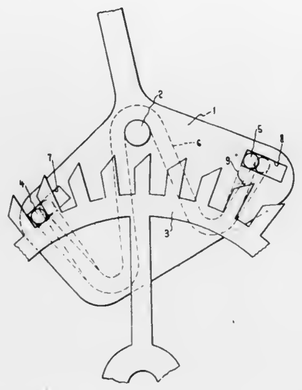
A watch, especially a wristwatch, with adjustable time-dependent signal transmission and an indicator adjustable to random time positions of the watch dial for determining or fixing the signal time point. An electronically operated storage is provided which has individual storage elements each associated with a predetermined time position. Upon actuation of a switch the time position indicated by the indicator can be extinguishably registered at the relevent or corresponding storage element and when the watch movement reaches the time position associated with such storage element there is triggered transmission of the signal.

3,775,968

DRIVE MECHANISM FOR A WATCH HAVING A BALANCE MOTOR

Paul Tuetey, Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Neuchatel, Switzerland

Filed June 29, 1971, Ser. No. 157,989
Claims priority, application Switzerland, July 13, 1970, 10566/70
Int. Cl. G04b 15/00
U.S. Cl. 58—116 R 7 Claims



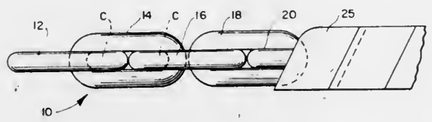
Anomalous operation of a lever-driven escapement type wheel driving the hands of a watch is prevented by mounting the two pallets on springs or forming them from a spring, the pallets having free resilient but limited movement in slots formed in the lever, which itself is driven from a balance wheel motor. The dimensions of the parts are such that while one pallet is engaged with the drive face of one tooth of the escapement wheel, the other pallet, engaged with one end of its slot, lodges between two teeth, providing spring-loaded locking of the wheel against reciprocating movement while enabling it to be driven.

3,775,969

CHAIN WITH ELASTOMERIC MATERIAL

Paul F. Vasterling, Westminster, Calif., assignor to Hitco, Irvine, Calif.

Filed June 9, 1971, Ser. No. 151,326
Int. Cl. F16g 13/24
U.S. Cl. 59—78 3 Claims



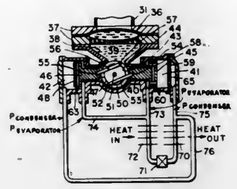
A chain of metal links has an elastomeric material covering the links and substantially filling the clearance spaces between the links. The chain may be in either contracted condition, or in extended condition. All links may be covered, or intermediate link or links may be uncovered, and extend at a angle to the chain axis, and/or end links may be uncovered. The chain is prepared by wrapping a metal chain in helical, overlap fashion with a strip of raw butyl rubber, after which it is heated uner pressure to cause the rubber to fill the clearance spaces in the chain, to cover the links and to become cured.

3,775,970

PRESSURE TRANSLATING APPARATUS AND PROCESS

Jaroslav Wurm, Cicero, Ill., assignor to The Institute of Gas Technology, Chicago, Ill.

Filed June 14, 1972, Ser. No. 262,464
Int. Cl. F25b 27/00; F02g 1/04
U.S. Cl. 60—6 5 Claims



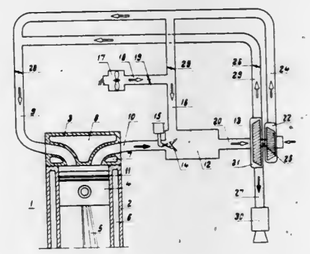
An apparatus and process for conversion of thermal energy into mechanical energy wherein the working fluid of a heat engine is in contact with one side of a pressure sensitive means such as a piston or diaphragm, the other side of the pressure sensitive means being in contact with an incompressible fluid which in turn is in contact with the first ends of a pair of opposing pistons, the pistons being linked by mechanical linkage, the second end of one piston being in contact with a fluid to be pumped and the second end of the second piston being in contact with a cushion chamber, providing a quiet running thermal engine without dynamically unbalanced forces, with substantially reduced influence on the performance and smooth running of the dynamic instability inherent to free-piston systems generally, and with a positive control of the piston travel. The apparatus is particularly advantageously used in connection with a refrigeration system wherein the backside of the second end of each piston is in contact with the refrigeration fluid at evaporator pressure and the face of the second end of each piston is in contact with the refrigeration fluid at condenser pressure.

3,775,971

SYSTEM FOR CONTROLLING THE SUPPLY OF AIR TO AN INTERNAL COMBUSTION ENGINE

Bengt Georg Gadefelt, Sodertalje, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

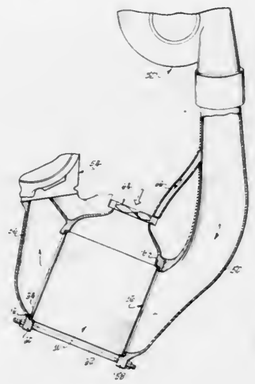
Filed Mar. 28, 1972, Ser. No. 238,770
Claims priority, application Sweden, Apr. 5, 1971, 4410/71
Int. Cl. F02b 37/04, 41/10
U.S. Cl. 60—13 N 4 Claims



The present invention relates to a system for controlling the supply of air to an internal combustion engine having a supercharging unit which includes an exhaust turbine and a compressor driven thereby, there being arranged in an exhaust line between the engine and the supercharging unit an afterburner to which is fed fresh air from the compressor of the supercharging unit and fuel supplied from a fuel pump. Accord-

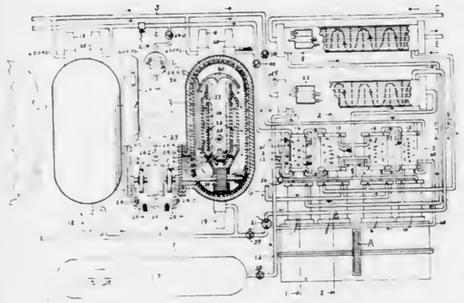
ing to the present invention an electrically driven air pump is arranged to feed supplementary air to the afterburner, and also recirculation means are provided for returning a portion of the exhaust gases from the afterburner to the engine via the exhaust turbine. In this way the torque characteristic of the engine is improved, and also the content of contaminating solid products in the exhaust gases is reduced.

3,775,972
HEAT EXCHANGER MOUNTING
Robert C. Perpall, Palos Verdes Peninsula, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Jan. 31, 1972, Ser. No. 222,125
Int. Cl. F02b *37/04*; **F28f** *7/00*
U.S. Cl. 60—13 R **30 Claims**



Resilient elements are provided for the mounting of a heat exchanger core between structurally joined inlet and outlet ducts.

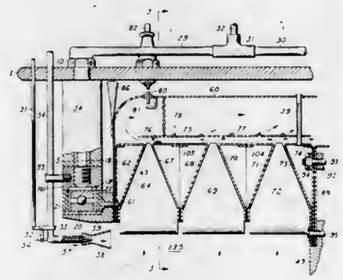
3,775,973
COMBUSTION PRODUCTS PRESSURE GENERATORS INTERMITTENT BURNER CYCLE AND ENGINES
Perry D. Hudson, 515 Delaine Drive, Corpus Christi, Tex.
Filed May 4, 1970, Ser. No. 34,302
Int. Cl. F02g *1/02*
U.S. Cl. 60—39.25 **10 Claims**

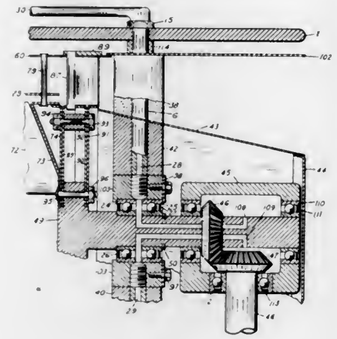


This invention comprises improvements in combustion products pressure generators of the intermittent cycle, two stage type, and reciprotating piston engines which use the combustion products the pressure generators produce for power and to drive the air compressors which supply combustion air to the pressure generators. Improvements of the pressure generator include an improved type burner with forced air circulation and dilution of the hot gases with cooler air making for minimum air pollution. Improvements of the reciprocating piston engines are carbon or other anti-friction material in power piston rings and rod seals. A system of maintaining the power cylinder wall at the highest possible working temperature to cut down on the heat loss from the hot gases to the working parts of the power cylinders. Also, poppet type valves in the cylinder heads to make for minimum clearance. Also, a automatic variable speed governor controlling precision cutoff valve action on the charge valves to the power cylinders. This cutoff action is reversible. Also, an automatic changeover mechanism which changes the automatic governor control to manual throttle control when engine speed falls below predetermined speed, and at the same time changes the engine from compound operation to simple throttle speed. If it again exceeds the predetermined speed, the operation is automatically changed back to the automatic variable speed governor and valve cutoff. The variable speed adjustment is controlled by the manual throttle lever or accelerator pedal which also control the engine throttle valves at low speed.

There are mechanical seals on the fan drive shaft where it comes out of the pressure vessel, which is the pressure generator and a cool air blocking system which blocks the hot gases from the area around the seal. This same seal system is also used on the throttle valves.

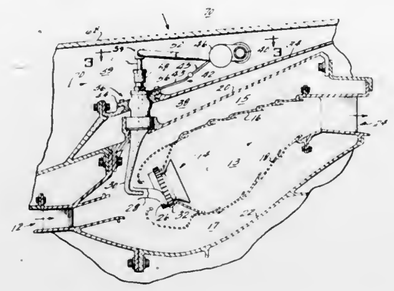
3,775,974
GAS TURBINE ENGINE
Jack Silver, 12052 Blackmer St., Fountain Valley, Calif.
Filed June 5, 1972, Ser. No. 259,550
Int. Cl. F02c *3/14*
U.S. Cl. 60—39.34 **7 Claims**





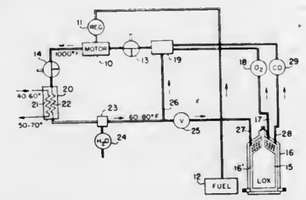
A high speed rotating unit which combines the Brayton cycle functions of mixing fuel and air, centrifugal compression of the combustible mixture, ignition of the said combustible mixture, containment of the products of combustion and utilization of the kinetic energy developed through a unique turbine blading and power take-off.

3,775,975
FUEL DISTRIBUTION SYSTEM
Richard E. Stenger, Cincinnati, and John M. Richey, Fairfield, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Sept. 5, 1972, Ser. No. 286,433
Int. Cl. F02c *7/20, 7/22*
U.S. Cl. 60—39.32 **8 Claims**



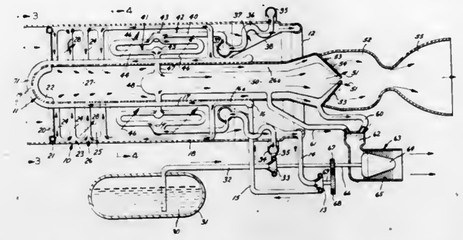
A fuel distribution system for accurately metering the amount of fuel delivered to each of a plurality of fuel injection points associated with a gas turbine engine is shown to include a fuel manifold surrounding and separated radially from the engine casing by a number of hinge-type mounts. A plurality of metering valve housings are mounted directly to the fuel manifold, and a fuel distribution valve is contained within each housing. Fuel is delivered from each housing to an appropriate point on the engine casing via a single pigtail-type fuel delivery tube. Individual tubes and valves and sectors of the fuel manifold are removable without tearing down the entire fuel distribution assembly.

3,775,976
LOX HEAT SINK SYSTEM FOR UNDERWATER THERMAL PROPULSION SYSTEM
Horace E. Karig, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 26, 1972, Ser. No. 257,263
Int. Cl. F02g *1/04*; **F02m** *25/06*; **B01d** *7/00*
U.S. Cl. 60—39.33 **9 Claims**



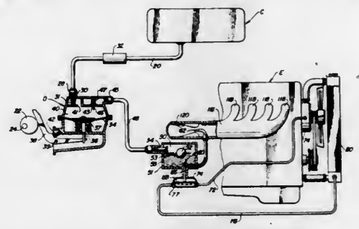
A closed thermal power system ideally suited for submersibles includes an internal combustion engine or turbine connected to feed its exhaust gases to a water cooled condenser for condensing and purging water from the system. Next, a cryogenic source of liquid oxygen receives the gases and carbon dioxide is sublimated to the solid state and stored at low pressure. As carbon dioxide is cooled, oxygen is boiled off and fed to the engine where it is mixed with fuel and recycled portions of the exhaust gases. Because the system is operated at near atmospheric pressures, heavy duty pressure lines and fittings are unnecessary. When the system is operated as an open system in the atmosphere, more liquid oxygen is generated to extend the system's operational range.

3,775,977
LIQUID AIR ENGINE
Carl H. Builder, Sepulveda, and Carl W. Sessler, Reseda, both of Calif., assignors to The Marquardt Corporation, Van Nuys, Calif.
Filed Aug. 23, 1961, Ser. No. 133,445
Int. Cl. F02k *9/02*
U.S. Cl. 60—260 **13 Claims**



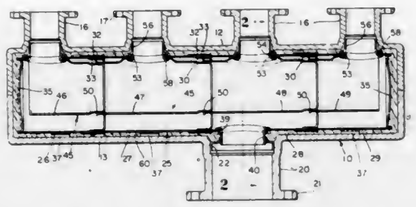
1. A liquid air engine comprising a casing, a centerbody located centrally of the casing and extending along the axis thereof, a plurality of precooler heat exchanger cores extending longitudinally and radially from said centerbody at the entrance to said casing in order to precool incoming air, a plurality of deflector plates extending between adjacent sections of said precooler to impart to said incoming air a partially circumferential direction in order to present the full longitudinal face area of the said heat exchanger sections to the incoming air, a plurality of main cooler heat exchanger cores extending longitudinally and radially from said centerbody, means for directing the air discharged from said precooler sections through the full longitudinal face area of said main cooler cores and a single condenser heat exchanger core of circular configuration located aft of said main cooler sections for liquefying the incoming air, said liquid air being utilized as the coolant in said precooler sections and the warmed air discharged from said precooler cores being fed into said centerbody, a source of liquid hydrogen connected to said condenser sections and then to said main cooler sections for use as the coolant, an inner body within said centerbody for receiving the hydrogen discharged from said main cooler cores, a combustion chamber located at the aft end of said centerbody, and means at the end of said centerbody for ejecting the hydrogen from said inner body into a thrust chamber and for ejecting the air into said thrust chamber through said hydrogen for combustion therein.

3,775,978
WASTE DISPOSAL SYSTEM AND METHOD
Alfred C. Body, Cuyahoga, Ohio, assignor to The Standard Products Company, Cleveland, Ohio
Continuation of Ser. No. 843,585, July 22, 1969, abandoned. This application Jan. 31, 1972, Ser. No. 222,129
Int. Cl. F01n *3/02*; **B01d** *3/00*
U.S. Cl. 60—317 **8 Claims**



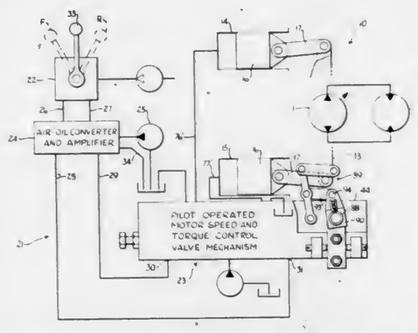
A human conveyance having a toilet and a fuel burning engine is provided with an arrangement for feeding waste from the toilet to the fuel burning engine where the waste is burned and vaporized.

3,775,979
EXHAUST GAS MANIFOLD
George E. Scheitlin, c/o Arvin Industries, Inc., 1531 E. 13th St., Columbus, Ind., and David Ray Bentley, 6040 Acres Rd., Sylvania, Ohio
Filed Dec. 3, 1971, Ser. No. 204,494
Int. Cl. F01n 3/10
U.S. Cl. 60—322 14 Claims



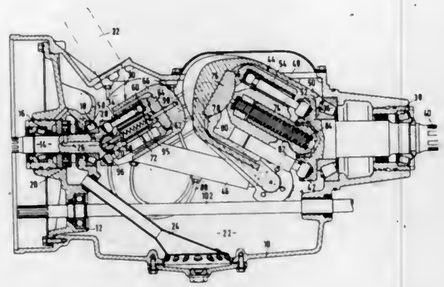
An exhaust gas manifold for an internal combustion engine having an outer shell provided with a plurality of inlets adapted to be connected to the engine and an outlet adapted to be connected to an exhaust pipe. A closed intermediate shell is carried within the outer shell and is provided with an outlet carried in the outer shell outlet. An inner shell is carried within the intermediate shell in open communication therewith. A plurality of inlets carried in the outer shell inlets are open to the inner shell so that the exhaust gases enter said inner shell and pass therefrom into said intermediate shell from which they are discharged through the intermediate and outer shell outlets.

3,775,980
HYDROSTATIC TRANSMISSION
Jack P. Spirdco, New Berlin, Wis., assignor to Koehring Company, Milwaukee, Wis.
Filed Sept. 13, 1972, Ser. No. 288,650
Int. Cl. F16h 39/46
U.S. Cl. 60—462 13 Claims



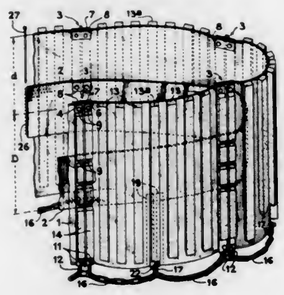
A hydrostatic transmission including a fluid motor driven by a variable displacement pump under the control of a pilot operated valve means. The valve means comprises a first control valve which is operable to effect hydraulic adjustment of the pump displacement control member to thereby govern motor speed, and a second control valve which governs pump output pressure and hence motor torque. The position of the displacement control member is translated into a feedback force on the speed control valve tending to return it to closed position; and the pressure in the hydraulic actuator for the displacement control member is translated into a feedback force on the second control valve tending to return it to its null position.

3,775,981
HYDROSTATIC DRIVE UNIT
Hans Molly, Dr. Eugen-Essig-Strasse 48, Malsch, Germany
Filed Feb. 1, 1972, Ser. No. 222,604
Claims priority, application Germany, Feb. 4, 1971, P 21 05 119.4
Int. Cl. F16h 39/46
U.S. Cl. 60—490 9 Claims



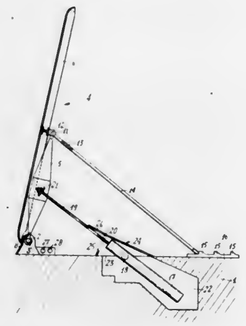
A hydrostatic drive unit comprises a pump driven by a prime mover and having constant delivery during normal operation, and at least one variable stroke axial piston-type motor fed by the pump. The intake volume per revolution of the motor is variable by pivoting the cylinder block about an off-center pivot axis through an angle of more than 30° such that the dead space in the cylinders is kept as small as possible. The intake volume per revolution of the motor at maximum pivot position is a multiple of the delivery volume per revolution of the pump. The cylinder block of the motor is carried along by the drive flange through peripherally arranged teeth in mesh in the region of the pivot axis and permitting the pivoting movement of the cylinder block.

3,775,982
ANTI-POLLUTION BARRIER
Gilbert Andre Lamboley, Sartrouville, France, assignor to Etablissements Hutchinson Compagnie Nationale du Caoutchouc, Paris, France
Filed Apr. 18, 1972, Ser. No. 245,161
Claims priority, application France, Apr. 21, 1971, 7114187
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F 10 Claims



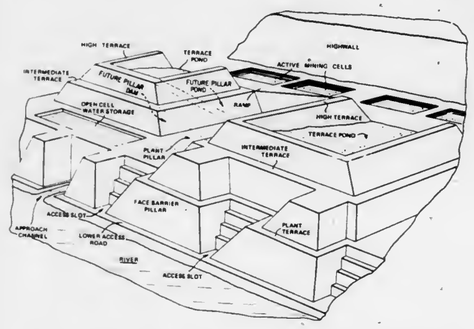
Anti-pollution barrier for aquatic regions comprising a watertight skirt and floats and ballast connected to the skirt. A longitudinal semi-rigid tension strip is rigidly fastened to the skirt at spaced apart points so as to form skirt segments which are longer than corresponding segments of the tension strip and constitute arch-shaped skirt portions. The strip is located substantially midway between the top and bottom edges of the skirt and is fastened to the skirt by a plurality of stiffening means at said points. Each stiffening means defines faces between which the strip is clamped against the skirt.

3,775,983
MOVABLE GATE SYSTEM FOR A HYDRAULIC DAM
Jean Aubert, 8, rue La Boetie, Paris, France
Filed Aug. 1, 1972, Ser. No. 277,111
Claims priority, application France, Aug. 5, 1971, 7128734
Int. Cl. E02b 7/40
U.S. Cl. 61—26 12 Claims



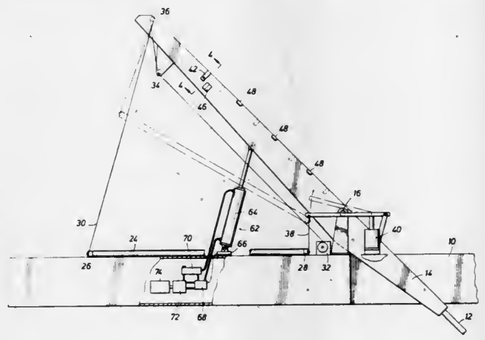
A device for operating at least one shutter of a movable dam comprises an oscillating guide pivoted on a horizontal pin which is attached to the body or floor of the dam, a push-rod capable of translational motion with respect to the oscillating guide and an abutment member which is orientable about a horizontal shaft attached to the shutter, the abutment member being adapted to receive the extremity of the push-rod which is applied against the abutment member during operation of the shutter.

3,775,984
MINING METHOD AND METHOD OF LAND RECLAMATION
Clifton W. Livingston, 624 Panorama Dr., Grand Junction, Colo.
Division of Ser. No. 14,166, Feb. 25, 1970. This application Aug. 18, 1971, Ser. No. 172,711
Int. Cl. E02b 1/00; E02d 3/00
U.S. Cl. 61—35 20 Claims



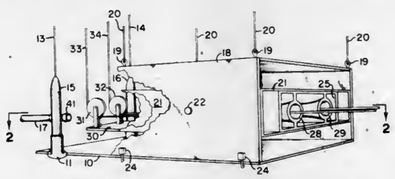
A mining method including land reclamation and hydropower and water resources development including removing the ore from the ore body in a predetermined pattern so that the remaining ore body defines a grid network of cellular units, the ore removal being performed progressively such that adjacent cellular units are in various stages of development simultaneously and filling the mined-out cells with overburden from adjacent ore body; constructing terrace ponds above the elevation of the top of the mined-out cells, the terrace ponds being constructed from overburden material; constructing dams between adjacent terrace ponds, the dams overlying an elevated portion of the ore body previously used as a plant pillar or access entry pillar; and selectively filling the terrace ponds and pillar ponds with mill tailing slurry to a predetermined reclaimed surface elevation so that the reclaimed surface consists predominantly of a slime fraction suited to agricultural re-use of the land.

3,775,985
APPARATUS FOR LAYING SUBMARINE PIPELINES
Clarence W. Shaw, Metairie, La., assignor to J. Ray McDermott & Co., Inc., New Orleans, La.
Filed Apr. 20, 1971, Ser. No. 245,856
Int. Cl. F16l 1/00
U.S. Cl. 61—72.1 7 Claims



On a submarine pipeline laying barge having a pivoted inclined ramp for paying out the pipe string in a single catenary manner, a dampener is provided to reduce the movement of the ramp relative to the barge. Means are also provided to lock the ramp relative to the barge when a new section of pipe is on the ramp. The new sections of pipe are handled by means of cables secured to removable swivel caps on each end and controlled from a single operator's console.

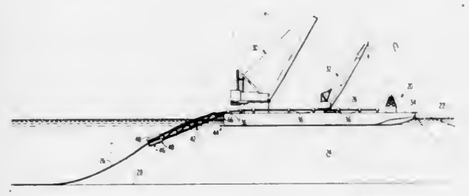
3,775,986
METHOD AND APPARATUS FOR MAKING REMOTE PIPELINE CONNECTIONS
Arthur C. Daughtry, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.
Filed Apr. 27, 1972, Ser. No. 248,077
Int. Cl. F16l 1/00; E02b 3/16; F16l 35/00
U.S. Cl. 61—72.3 19 Claims



An underwater pipeline is connected to a submerged production system or other underwater equipment by pulling

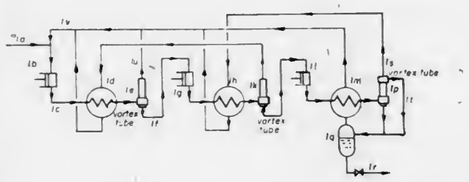
the end of the pipeline into a manipulating structure installed adjacent the underwater equipment, moving the end of the pipeline into a predetermined position with respect to a corresponding pipe to which the pipeline is to be connected, lowering a remote connector into place adjacent the ends of the pipeline and corresponding pipe, and thereafter actuating the remote connector.

3,775,987
METHOD AND APPARATUS FOR LAYING A SUBMERGIBLE ELONGATE STRUCTURE
William R. Rochelle, and Leif H. Smith, both of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.
Filed July 11, 1972, Ser. No. 270,736
Int. Cl. B63b *35/04*; **F16l** *1/00*
U.S. Cl. 61—72.3 **11 Claims**



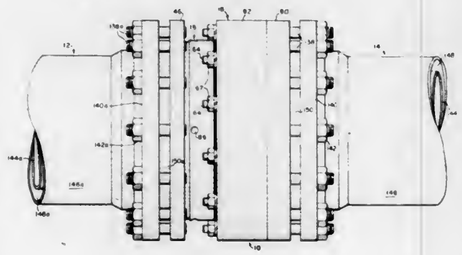
A method and apparatus for laying a submergible elongate structure upon the bed of a body of water including a floating vessel having a generally planar deck, a first cable tensioning system connected to the deck and selectively connectable to a submergible elongate structure for applying an approximately constant axial tension upon the submergible elongate structure when the barge is being advanced along a desired laying route, and a second cable tensioning system connected independently of the first cable tensioning system to the deck of the floating vessel and selectively connectable to the submergible elongate structure when the floating vessel is maintained in a generally nonadvancing mode with respect to the intended pipelaying route. A unitary submergible ramp is pivotally connected to the stern of the floating vessel and includes a plurality of vertically adjustable supporting rollers for supporting the submergible elongate structure within the body of water aft of the floating vessel.

3,775,988
CONDENSATE WITHDRAWAL FROM VORTEX TUBE IN GAS LIQUIFICATION CIRCUIT
Lancelot A. Fekete, 1632 Colquitt, Houston, Tex.
Continuation-in-part of Ser. No. 585,213, Oct. 7, 1966, abandoned. This application May 23, 1969, Ser. No. 828,111
Int. Cl. F25j *1/00, 3/02*
U.S. Cl. 62—23 **7 Claims**



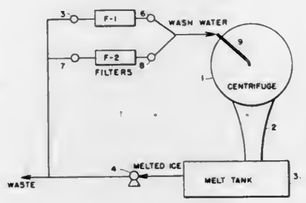
The diclosure is directed to methods of gas separation wherein controlled flow vortex tube expansion principles are employed in liquefaction and cold producing processes; a multi-stage low pressure and a multi-stage high pressure process being involved. The vortex tube is introduced in the parent application as being employed in cases with more efficiency than the expansion turbine. Herein, by addition, support figures are supplied for these cases, and also vortex tube separation processes are shown capable of replacing rectification column processes; liquefaction and separation processes using controlled flow vortex tubes with double purpose being submitted herein as new.

3,775,989
ROTARY CRYOGENIC COUPLINGS
Richard C. Mursinna, San Diego, and David L. Martindale, La Mesa, both of Calif., assignors to Amtek, Inc., New York, N.Y.
Filed Mar. 31, 1971, Ser. No. 129,901
Int. Cl. F17c *7/02*
U.S. Cl. 62—55 **28 Claims**



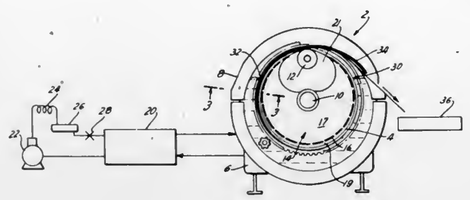
Cryogenic liquid handling components connected for relative rotational movement by a coupling which includes two relatively rotatable sub-assemblies connectable to the cryogenic components, components forming a liquid flow path through the sub-assemblies, and components for reducing the transfer of heat through the coupling and the coupling-cryogenic component interfaces to liquid flowing through the coupling and the cryogenic components.

3,775,990
ALTERNATING FILTERS FOR ICE WASH WATER IN COFFEE CONCENTRATION
Yudkoff Norman Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Patent Corporation, Huntsville, Tex.
Filed Sept. 24, 1970, Ser. No. 75,036
Int. Cl. A23f *1/08*
U.S. Cl. 62—58 **1 Claim**



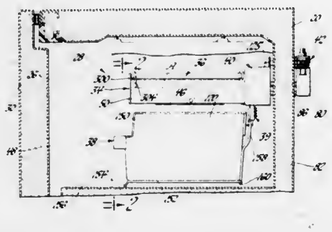
In the process of concentrating a comestible extract, such as a coffee or tea extract, by partially freezing the extract to grow ice crystals therein and then removing the ice crystals by centrifugation of the ice-extract mixture, the ice crystals separated by the centrifugation are melted, filtered, and used as a wash liquid sprayed over the ice crystals in the centrifugation step.

3,775,991
ICE MAKING MACHINE AND METHOD
Crosby Field, 8029 Harbor View Ter., Brooklyn, N.Y.
Filed Feb. 23, 1972, Ser. No. 228,554
Int. Cl. F25c *1/14*
U.S. Cl. 62—72 **10 Claims**



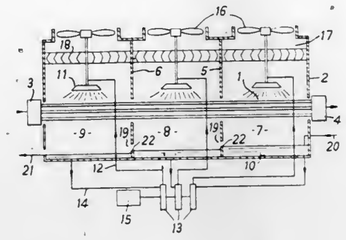
A method and apparatus for congealing liquids wherein a refrigerating fluid carries heat away from one side of a heat-conducting wall and a congealed layer is formed on the other side of the wall. The amount of refrigerating liquid supplied to the wall surface is reduced when the congealed layer builds up sufficiently to produce a major heat transfer bottleneck. The apparatus has a freezing cylinder drum which rotates in a body of water with its top portion above the water surface where an internal roller deflects the cylindrical drum and peels the ice free. The ice contains a low concentration of boron which is substantially identical with the concentration of boron in the water.

3,775,992
METHOD AND APPARATUS FOR MAKING CLEAR ICE
James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 17, 1972, Ser. No. 272,410
Int. Cl. F25c *5/08*
U.S. Cl. 62—73 **14 Claims**



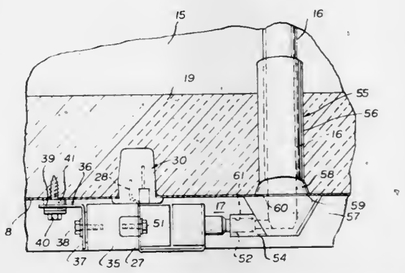
A clear ice maker has a stationary open-top tray for containing a predetermined quantity of water. A grid has a plurality of open-bottom, open-top ice mold cavities and flexible filler means between the cavities to displace substantially all of the water into the cavities when the grid is in the tray. The side and bottom walls of the tray are heated to keep the water adjacent thereto from freezing. Air at below-freezing temperatures is directed over the open top of the tray and grid to freeze water into clear ice starting at the interface between the air and the water in the cavities and continuing downwardly toward the bottom wall of the tray. Harvesting mechanism periodically removes the grid and clear ice from the tray before the air has frozen the water in the cavities to the bottom wall of the tray; and then twists the grid to release the clear ice into a storage bucket.

3,775,993
ART OF EVAPORATIVE COOLING
Edmund Murphy, Ortonovo, Italy, assignor to Ruckluft Patent AG, Luzern, Switzerland
Filed May 31, 1972, Ser. No. 258,364
Claims priority, application Great Britain, June 4, 1971, 18,973/71
Int. Cl. F25d *17/06*
U.S. Cl. 62—95 **8 Claims**



Fluid is cooled by passing it through a horizontally or substantially horizontally elongated coil or tube-bundle heat exchanger unit and flowing cooling water over the surface of the said coil or tube-bundle from a plurality of distribution points spaced from one another along the length of the said coil or tube-bundle, each distribution point supplying water to cover only a predetermined limited portion of the length of the said coil or tube-bundle and recirculating the water from each distribution point over the said limited portion only.

3,775,994
REFRIGERATOR OR THE LIKE WITH EXTERNALLY MOUNTED WATER VALVE
William J. Linstromberg, and Duane C. Nichols, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Sept. 3, 1971, Ser. No. 177,639
Int. Cl. F25d *17/06*
U.S. Cl. 62—177 **11 Claims**

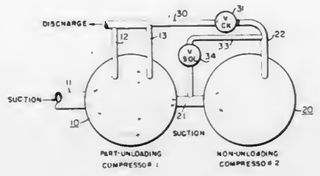


An appliance, such as a refrigerator, having means requiring the delivery of water thereto, such as an automatic ice maker. Means are provided for delivering water to the water requiring means through a control valve mounted externally of the cabinet of the appliance. Quick connect means are provided for facilitated installation of the valve means both as to connection thereof to electrical control means of the appliance and to the water requiring means. The valve may be mounted in a suitable recess in the cabinet which may be provided in the rear wall adjacent the water requiring means for simplified connection therebetween.

3,775,995
VARIABLE CAPACITY MULTIPLE COMPRESSOR REFRIGERATION SYSTEM

Thomas F. Conley, Staunton, and Ernest F. Gylland, Jr., Waynesboro, both of Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 17, 1972, Ser. No. 272,704
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 **6 Claims**



A variable capacity multiple compressor refrigeration system having first and second compressors with the first compressor to be always running when the system is operating and the second compressor to be cycled off or to vary the capacity of the system on while the first compressor continues to run. The discharge lines of both compressors are connected together in parallel to the system and a check valve is provided in the discharge line connection between the compressors to prevent discharge pressure from the operating compressor from entering the discharge port of the non-running compressor. A by-pass line connects the suction of the system at the inlet of the second compressor to its discharge line between the check valve and its discharge port and a solenoid valve in the by-pass line is arranged to be closed when the second compressor is running and open when it is cycled off.

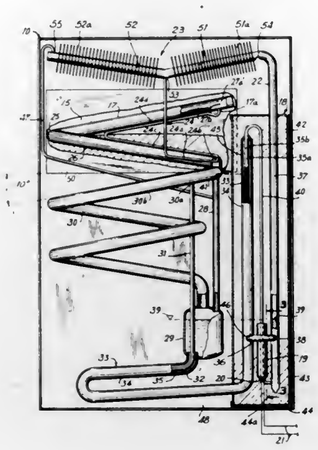
In one form of the invention, both compressors are multiple cylinder hermetic shell compressors and the inlet of the second compressor is connected to the system through the shell of the first compressor. Also, the first compressor is provided with unloading mechanism to unload some of its cylinders for part unloaded operation, so that four steps of different capacity may be obtained by running the first compressor either loaded or partly unloaded while the second compressor is cycled off or on and therefore, with the aforementioned inlet arrangement, effectively high saturated gas discharge temperatures may be obtained without over heating either compressor for any of the capacity steps of operation.

3,775,996
TILTABLE AIR-COOLED ABSORPTION REFRIGERATION APPARATUS OF THE INERT GAS TYPE

Peter Erik Blomberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Mar. 16, 1972, Ser. No. 235,366
Int. Cl. F25b *15/10*
U.S. Cl. 62—490 **1 Claim**

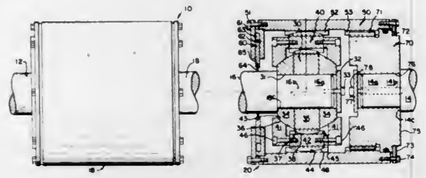
Absorption refrigeration apparatus of the inert gas type is disposed in a vertically extending plane when it is being operated to produce useful refrigeration. Vapor and liquid flow at the same time in parts of the apparatus formed of piping which, when the apparatus is upright, is inclined to the horizontal at an angle greater than 4° and within a range of 20°. By introducing liquid to a supply line at a sufficient height for gravity flow to the piping during operation of the apparatus liquid will always flow to the piping when the apparatus is tilted to either side from the vertical in the vertically extending plane through an angle not exceeding the angle at which the piping is inclined to the horizontal when the apparatus is upright.



3,775,997
GEAR TYPE COUPLING

Kenneth K. Carman, Ellicott City, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 18, 1972, Ser. No. 254,396
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 **12 Claims**

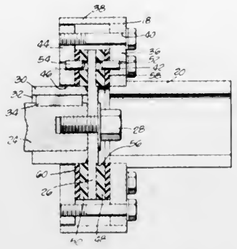


A gear type coupling provides for misalignment between the axes of substantially co-axial interconnected shafts. An outer sleeve encloses coupling components and includes radially inwardly extending gear teeth. An outer hub member, within the sleeve, has radially outwardly extending gear teeth for meshing with the sleeve gear teeth and also includes radially inwardly extending gear teeth. An inner hub member, within the outer hub member, has radially outwardly extending gear teeth for meshing with the inner gear teeth of the outer hub. The inner and outer hubs are angularly pivotable relative to each other and relative to the sleeve to compensate for shaft misalignment. Pilot means comprising special bearing surfaces on the outer hub engage corresponding bearing surfaces on the inner hub for maintaining radial concentricity between the inner and outer hubs and to limit angular deflection to a common point along the axis of the coupling.

3,775,998
SAFETY CLUTCH

Bernard A. Century, Cleveland Heights, and Michael Linsay, South Euclid, both of Ohio, assignors to Allied Steel & Tractor Products, Incorporated, Cleveland, Ohio

Filed Apr. 14, 1972, Ser. No. 244,023
Int. Cl. F16d *7/02*
U.S. Cl. 64—30 D **17 Claims**

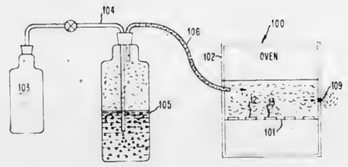


A safety clutch to be used in conjunction with a horizontal earth boring machine. The clutch is located between the boring machine and the auger. The clutch acts as a safety device to prevent over-turning of the boring machine when the auger becomes bound in the earth, prevents stalling of the drive unit, and limits the loadings on the power-train elements and the auger. The safety clutch comprises a drive plate compressed between friction disks having resilient backing elements. These friction disks and backing elements are fixed to the driven side of the clutch.

3,775,999
METHOD OF SEALING ELECTRODES TO GLASS WITH A GLASS FRIT

Betty J. Foster, and Rao R. Tummala, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 8, 1972, Ser. No. 260,788
Int. Cl. C03c *17/04*
U.S. Cl. 65—50 **11 Claims**

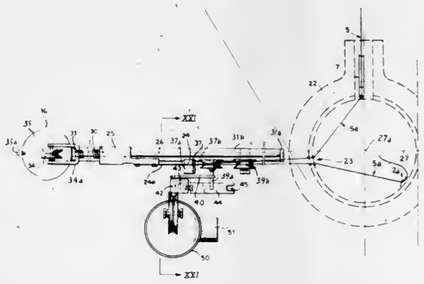


A method of making a gaseous discharge display and/or memory device in which no separate passivation step is required to protect the electrical conductors formed on a glass substrate. After a dielectric glass frit slurry is sprayed over the conductors and dried, the assemblage is fired in an oven to cause the dielectric to reflow and, when later cooled, to provide a smooth protective dielectric layer over the conductors. Applicants found that firing in a very wet atmosphere with neutral or oxidizing ambients causes the dielectric to reflow at a substantially lower temperature than it would in a similar but dry atmosphere. This desirably permits dielectrics of higher viscosity and consequently higher softening temperatures to now be used because the requisite firing temperature is reduced in the wet atmosphere. High viscosity dielectrics are preferred to minimize crazing of the magnisium oxide coating that is currently placed over the dielectric coating after the dielectric-substrate is cooled. Except for this reduction in firing temperature, these high viscosity dielectircs would have to be fired at temperatures over 600° C., which undesirably causes warping of the soda-lime silica glass substrates currently available.

3,776,000
KNITTING OF STOCKING TOES ON CIRCULAR KNITTING MACHINES

Franco Gariboldi, Condove, Italy, assignor to Officine Moncenisio gia Anonima Bauchiero, Condove, Turin, Italy

Division of Ser. No. 851,265, Aug. 19, 1969, abandoned. This application June 2, 1971, Ser. No. 149,322
Claims priority, application Italy, Sept. 5, 1968, 53050 A/68; Feb. 1, 1969, 50390 A/69
Int. Cl. D04b *9/16, 9/56*
U.S. Cl. 66—9 R **20 Claims**



A circular hosiery knitting machine closes the toe pocket of hose during its formation, the toe closure is accomplished by holding the starting end of suitable yarn, forming a selvage course of the yarn spaced needles by rotary knitting, forming a plurality of following courses of the yarn upon progressively increasing numbers of needles by rotary knitting until all of the needles are so used, exerting yieldable tension upon the starting end of the yarn during the formation of the courses thereby diametrically constricting the same, the so constricted courses progressively increasing in size and in number of wales to form a circularly shaped fabric area extending across the bore of the needle cylinder, discontinuing the tension on the starting end of the yarn and knitting the remainder of the hose on the needles, the circular fabric constituting the closed toe pocket. Apparatus on the machine including a hook to engage and to pull the yarn, extending from its guide to a first clamp on the machine, to transfer the starting end of the yarn from the first clamp to be held in a second clamp spaced from the needle cylinder and a spring mounted roller to deflect the yarn extending between the second clamp and the needle cylinder to tension the starting end of the yarn.

3,776,001
SELF-LUBRICATING COMPOUND FOR USE IN HYGIENIC AND MEDICAL APPLICATIONS, AND SUPPOSITORIES MADE THEREFROM

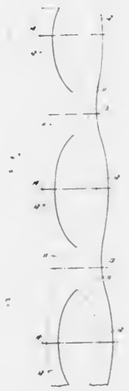
David E. Hanke, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 127,818, March 24, 1971. This application Jan. 16, 1973, Ser. No. 324,092
Int. Cl. A61f *15/00*
U.S. Cl. 128—271 **14 Claims**

A self-lubricating compound especially suitable for hygienic and medical applications, such as for coating tampons and as suppository structures. The compound contains a ther-

moplastic film-forming water-soluble polymer, a compatible plasticizer for the polymer, and a lubricant. The lubricant is characterized by the ability to form a homogeneous blend, an intimate physical mixture, or a solution with the polymer at elevated temperatures when the blend or solution is in a fluid state while being incompatible therewith at lower temperature when the blend solidifies. In the solidified state of the compound the lubricant may exist as discrete globules dispersed throughout the compound, and the globules which are disposed on and close to the exposed surface of the solidified blend tend to merge whereby a lubricous film is provided on that surface. The compound is thermoplastic and may be cast, thermoformed, hot melt dip-coated, or transfer molded.

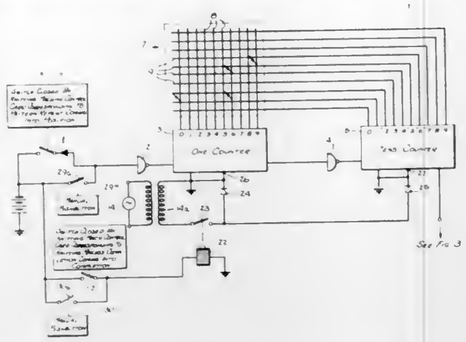
3,776,002
FURCATED GARMENT
Robert C. Howard, Wyomissing, Pa., assignor to Wyomissing Corporation, West Reading, Pa.
Filed Nov. 9, 1967, Ser. No. 681,818. The portion of the term of this patent subsequent to June 4, 1990, has been disclaimed.
Int. Cl. D04b *23/02*
U.S. Cl. 66—87 **1 Claim**



Tubular furcated garments having a unitary, seamless construction are knitted continuously on raschel warp knitting machines. If desired, the garments may be knitted with laid-in patterns that are different in the body portion from the laid-in patterns of the furcated portions of the garment.

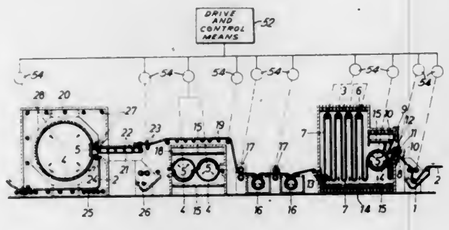
3,776,003
SAVING MOTION FOR CONTROL MEANS ON KNITTING MACHINES
Erich Krause, Bopfingen, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber KG
Filed Feb. 25, 1972, Ser. No. 229,523
Int. Cl. D04b *15/66*
U.S. Cl. 66—154 A **4 Claims**

A control circuit for producing signals which change the normal movement of control cards, and the like, in knitting machines. The circuit includes a pair of decade counters with the count terminals of one sewing as output terminals and



cross connected via a distributor with the count terminals of the other, serving as input terminals.

3,776,004
APPARATUS FOR THE CONTINUOUS TREATMENT OF THICK, VOLUMINOUS TEXTILE MATERIALS
Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Schweiz, Switzerland
Division of Ser. No. 662,084, Aug. 21, 1967, abandoned. This application Mar. 20, 1972, Ser. No. 235,906
Claims priority, application Germany, Aug. 20, 1966, V 31756
Int. Cl. B05c *3/12, 9/14*
U.S. Cl. 68—5 E **30 Claims**

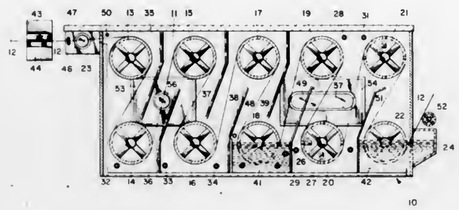


The present disclosure relates to a process and apparatus for the treatment of thick, voluminous textile materials such as carpets, plushes, needled felts, and the like, made, for example, of wool, polyamides and polyacrylonitrile fibers. More particularly, the present disclosure is directed to a process and apparatus for dyeing or printing large widths of thick, voluminous textile materials which comprises applying the dyestuffs and auxiliary agents to the textile material, heat-treating said textile material in a heating-up zone, steam-treating the textile material to set the dyestuffs in a dwell zone, washing the textile material and drying the textile material with hot air.

3,776,005
APPARATUS FOR DYEING AND/OR WASHING FABRIC
Robert Kenneth Rogers, 4109 Glen Laurel Dr., Raleigh, N.C.
Filed Oct. 13, 1971, Ser. No. 188,870
Int. Cl. D06f *37/02*
U.S. Cl. 68—5 E **14 Claims**

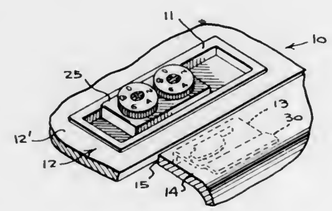
A machine is disclosed for continuously washing and/or dyeing a moist web of fabric while the web of fabric passes

therethrough. The machine comprises a processing chamber in which a plurality of drums define a path of travel therethrough for the web of fabric. Steam is introduced into the chamber to provide a humid atmosphere therein to heat the fabric. At least some of the drums are heated to a temperature above the ambient temperature to apply heat directly to the fabric raising it above the temperature obtainable by use of a steam chamber alone. Additional heat is introduced into the chamber by heated panels mounted adjacent to the path of



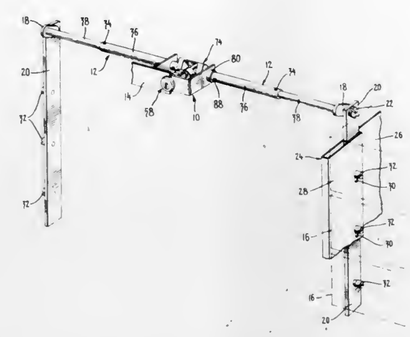
travel of the fabric between adjacent drums which serves to maintain the temperature of the fabric as it passes from one heated drum to the next. The path of travel of the fabric passes through at least one trough which may contain water or other cleaning fluids therein to wash the fabric at elevated temperatures. The cleaning fluid (water) is also sprayed onto the fabric as it moves along its path to aid in the washing operation. Particular constructional features of the machine are disclosed which aid in washing and/or dyeing the fabric passing therethrough.

3,776,006
COMBINATION LOCK CONSTRUCTION
Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.
Filed May 20, 1971, Ser. No. 145,310
Int. Cl. A45c *13/10*; **E05b** *65/48*
U.S. Cl. 70—74 **12 Claims**



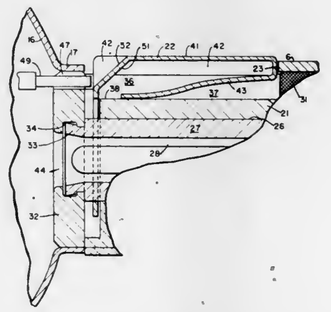
A combination lock structure for luggage cases and the like, having a cup member defining a forwardly opening well and a lock housing nested in the well and movable between latching and release positions. A pair of manually adjustable dial wheels carried on the front of the lock housing control hub members which extend through specially shaped openings in a fence plate or slide plate which normally locks the housing against movement from latching position. When the dial wheels are turned to the proper lock combination, the hub members permit movement of the fence plate or slide plate to a position releasing the housing for unlatching movement. The dial wheels are releasibly coupled to their associated hub members to permit relative movement for changing the combination when the lock is unlocked and in unlatching position.

3,776,007
LOCKING MECHANISM
Ernst G. Himsl, Kitchener, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Sept. 7, 1972, Ser. No. 287,148
Int. Cl. E05b *65/46*
U.S. Cl. 70—86 **6 Claims**



A crank centrally located on a desk has an opening in its offset portion engaged by a pin eccentrically mounted on a tumbler lock to translate the rotational motion of the lock directly to rotational motion of a shaft on which the crank is mounted. The shaft extends to either side of the crank to actuate other locking means on each side thereof.

3,776,008
REMOVABLE CYLINDER FOR A LOCKSET
Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.
Filed May 11, 1972, Ser. No. 252,487
Int. Cl. E05b *9/04*
U.S. Cl. 70—368 **9 Claims**

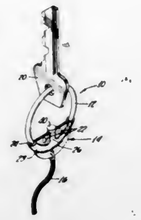


A lockset includes a spindle tubular about an axis and having a wall opening. A knob is fastened on the spindle and has an aperture in axial alignment with the spindle. A cylinder body having a radially projecting tongue is disposed to slide in the spindle and move through the aperture except as obstructed by the tongue situated in the opening and confined by the marginal walls of the spindle and of the knob. The tongue can be cammed into a non-obstructing position by a tool moved in an axial direction against the tongue. A key-actuated plug is rotatable within the body between a locked position blocking access by the tool to the tongue and another position affording access by the tool to the tongue.

3,776,009
KEY RING

Paul V. MacGlashan, Poway, Calif., assignor to Paul Engel and James C. Armstrong

Filed May 19, 1972, Ser. No. 254,959
Int. Cl. A44b 15/00
U.S. Cl. 70—459 1 Claim

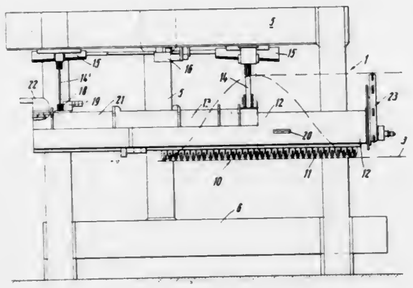


Key ring comprising a circular ring that is split at one point to provide a gap of sufficient width to pass a key. The ring is engaged on one side by a retainer shell made up of two facing halves of sheet metal formed to define an arcuately curved bore of the same radius as the ring, within which the ring is slidably received. The ring can revolve about its axis by sliding lengthwise through the arcuate bore, so as to expose the gap for the purpose of inserting a key on the ring or removing same, or it can be turned to retract the gap into the retainer shell, where it is engaged by a spring-loaded locking detent having an end that drops down into the gap to prevent the ring from turning.

3,776,010
DEVICE FOR HELICALLY DEFORMING A BAND TO FORM A TUBE

Heinz Krakow, Hamburg, Germany, assignor to Blohm & Voss AG, Hamburg, Germany

Filed Oct. 26, 1971, Ser. No. 192,135
Claims priority, application Germany, Oct. 30, 1970, P 20 53 266.5
Int. Cl. B21b 37/00; B21d 5/14
U.S. Cl. 72—12 22 Claims

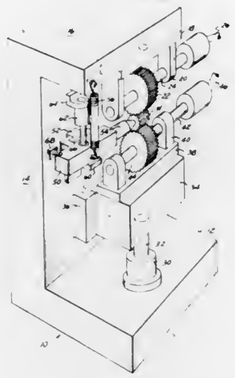


A device for helically deforming a sheet metal band into the form of a tube comprising an inner bending roll and two outer bending rolls, the axes of all of which during the deformation procedure of the sheet metal band may be displaced axially and parallel to each other. In addition, the inner bending roll is vertically adjustable and the two outer bending rolls are each individually vertically and laterally adjustable, and the curvature of the tube while being formed is measured by a scanning device which upon deviations of the tube curvature from a predetermined dimension produces electric impulses which effect an adjustment of the vertical position of the inner bending roll.

3,776,011
DOUBLE DIE GEAR ROLLING MACHINE

Richard W. Tersch, Grosse Pointe Woods, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed May 10, 1972, Ser. No. 252,312
Int. Cl. B21h 5/02
U.S. Cl. 72—94 6 Claims

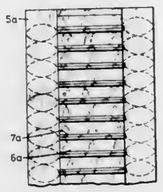


A gear rolling machine has circular gear-like dies, one of which rotates in a fixed position and the other of which moves radially toward and away from the stationary die. A work gear is mounted on a spindle and floats between the dies during the rolling operation, but moves to an intermediate position when the dies are separate.

3,776,012
METHOD OF ROLLING CUTLERY PIECES

Walter Berg, Daaden; Gottfried Hanel, and Heinz Elster, both of Dusseldorf, all of Germany, assignors to Walzmaschinenfabrik August Schmitz GmbH, Dusseldorf-Rath, Germany

Filed May 11, 1971, Ser. No. 142,286
Int. Cl. B21b 1/00
U.S. Cl. 72—203 2 Claims

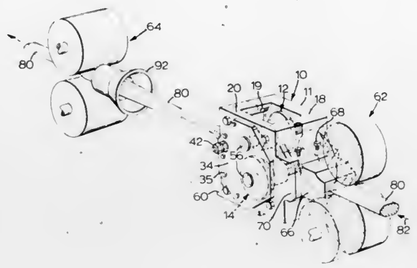


A method of making cutlery articles, especially spoons, forks, and cake servers, of semi-finished sheet metal material, according to which form a web of sheet metal there is punched out a plurality of relatively narrow cutouts extending transversely to the longitudinal direction of said web and one behind the other in the longitudinal direction of the web while each of said cutouts is closed at least at one end thereof with said closed end in spaced relationship to the adjacent side edge of said web, whereupon the thus prepared sheet metal web is rolled so as to widen the width of said cutouts, and cutlery blanks in conformity with the article to be made are punched out of said web.

3,776,013
BAR TWISTER GUIDE

Louis Groh, Bay Ridges, Ontario, and Harry Joseph Jones, Bowmanville, Ontario, both of Canada, assignors to Ferroco Engineering Limited, Whitby, Ontario, Canada

Filed May 25, 1972, Ser. No. 256,747
Int. Cl. B21b 39/26
U.S. Cl. 72—231 3 Claims

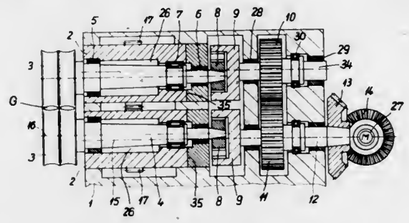


A bar twister guide for use between mill stands, in which a pair of guide rollers are journally mounted on shafts movably axially in a frame. Each roller has an outwardly sloping circumferential shoulder and the two shoulders are in opposed spaced relationship whereby on moving the shafts in opposite directions the gap between the shoulders is adjusted.

3,776,014
DRIVEN ROLLING ASSEMBLY WITH ADJUSTABLE ROLLING GAP

Gerd Artz, Ratingen; Alfred Schumacher, Essen; Rene Marzinkewitsch, Mulheim/Ruhr; Horst-Dieter Hirschfelder, Langenfeld, and Kalus Vortkamp, Neuss, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Jan. 13, 1972, Ser. No. 217,452
Claims priority, application Germany, Jan. 27, 1971, P 21 03 734.3
Int. Cl. B21b 31/26
U.S. Cl. 72—240 7 Claims

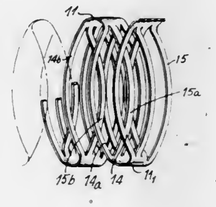


A pair of rolling-mill rolls are mounted on respective shafts each journaled in an eccentric sleeve in turn journaled in a housing. The sleeves are rotatable about sleeve axes which are parallel to but offset from the axes of the rolls so that rotation of these sleeves changes the rolling gap width. Each shaft carries, on its end opposite the roll, a pinion received in a ring gear journaled in the housing for rotation about a fixed axis coinciding with the axis of the respective sleeve. The gear connection to the shaft, consisting of inner gear and orbiting gear, is cantilevered to enable one to have a fixed axis while the other orbits. Each ring gear is carried on a shaft which in turn carries a gear wheel meshing with the gear wheel of the other ring-gear shaft. One ring-gear shaft is rotated to thereby drive the rolls, whose pinions orbit within the ring gears on rotation of the sleeves. A knob rotationally coupled to a worm is openable to rotate intermeshing gears formed on the sleeves through a step-down self-blocking gear train. A belleville washer frictionally engages the knob to prevent the rolls from going out of adjustment.

3,776,015
PROCESS FOR MANUFACTURING EXPANDED AND CORRUGATED HEAT EXCHANGER CORES FROM METAL STRIP MATERIAL

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Division of Ser. No. 94,238, Dec. 1, 1970, Pat. No. 3,695,347.
This application Jan. 11, 1972, Ser. No. 217,045
Int. Cl. B21k 27/06; B21d 31/04
U.S. Cl. 72—324 8 Claims

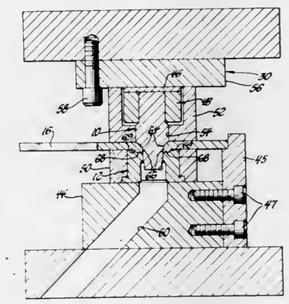


A process for producing a corrugated heat exchanger dissipator for a tube and dissipator core, comprises forming in an elongate metal sheet material a plurality of longitudinally spaced sets of longitudinally extending slots with the slots of successive sets longitudinally aligned to form a plurality of parallel straps with the straps of successive sets in alignment, bending the straps of each set and the corresponding straps of successive sets alternately in opposite directions relative to the plane of the sheet, and bending the solid areas between the sets transversely in alternate opposite directions to corrugate the sheet and interfit the straps of adjacent sets.

3,776,016
PUNCHING AND EXTRUSION DIE

Lawrence R. Quinn, Bloomfield Hills, and Max J. Bielenberg, Detroit, both of Mich., assignors to Roura Iron Works, Inc., Detroit, Mich.

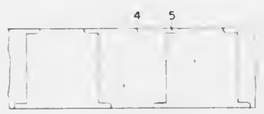
Filed June 20, 1972, Ser. No. 264,652
Int. Cl. B21d 31/02
U.S. Cl. 72—327 9 Claims



Hole forming apparatus comprising a punch having a cutting portion at its leading end for cutting and punching a hole in a metal sheet, and a forming portion following said cutting portion for shaping the material of the metal sheet sur-

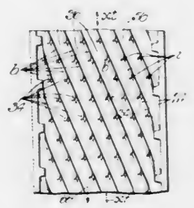
rounding the hole, the cutting portion comprises a cutter extending from the leading end of the punch and the forming portion includes a flared section providing a material deforming shoulder, a cylindrical section having a greater lateral dimension than the cutter, and an outwardly radiused section, and a die which cooperates with the punch for shaping the material of the metal sheet surrounding the hole. Also disclosed is a tooth guided rocker and platform assembly for self dumping hoppers and the like wherein the teeth of the rockers are guided into and out of holes formed by the hole forming apparatus.

3,776,017
SYSTEM FOR CONTINUOUS MANUFACTURE OF COPPER ANODES FOR ELECTRO-REFINING
Hiroshi Ikeda; Motoaki Yoneda, and Minoru Ishii, all of Iwaki, Japan, assignors to Onahama Seiren Kabushiki Kaisha, Tokyo-to, Japan
Filed Oct. 17, 1972, Ser. No. 300,418
Claims priority, application Japan, Jan. 10, 1972, 47/4753
Int. Cl. B21d *28/00*
U.S. Cl. 7—338 **4 Claims**



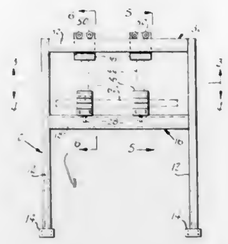
System for continuous manufacture of copper anodes for electro-refining which is constructed with a mechanism for receiving and storing continuous strip of copper plate in a loop form, a device for intermittently feeding the copper strip from the looper, while correcting fins, warps, etc. of the strip, a press to cut out a plurality of anodes in a predetermined pattern, a device to diverge such severed anodes in each designated direction, a sorting conveyor to inspect and sort out defective anodes, and a receiving and stacking device to receive and temporarily stack the sorted anodes for further handling.

3,776,018
TUBING WITH INNER BAFFLE FINS AND METHOD OF PRODUCING IT
Fred W. French, Morris, Conn., assignor to Noranda Metal Industries, Inc., Bellingham, Wash. **The portion of the terms of this patent subsequent to May 16, 1989 has been disclaimed.**
Filed Feb. 29, 1972, Ser. No. 230,220
Int. Cl. B21d *53/06*
U.S. Cl. 72—367 **12 Claims**



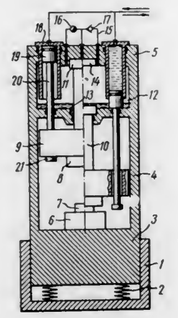
Tubing with a longitudinal axis and inner fins extending inclined to the axis and being indented to form multitudinous baffles on the fins, and a method of producing such tubing from a round inner-fin tube blank, by partially flattening the blank for interpress of opposed fins, and subsequently expanding the partially flattened blank by internal fluid pressure.

3,776,019
FRONT AXLE BEAM PRESS
Clifford D. Shaw, 8854 Oak Ave., Orangevale, Calif.
Filed Aug. 19, 1971, Ser. No. 173,309
Int. Cl. B21j *11/00*
U.S. Cl. 72—404 **1 Claim**



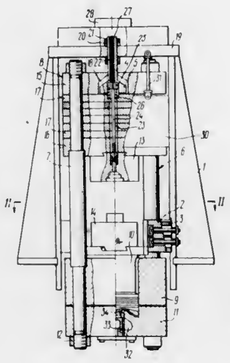
Two pairs of complementary semi-circular elements are arranged one above the other with the lower members stationary and the upper members movable vertically downwardly by any suitable type of press to straighten deformed tubular front axle beams, for example, those used on present types of Volkswagens.

3,776,020
HIGH-SPEED PRESSING MACHINE
Igor Grigorievich Fedosenko, 602 Mikroraion, 51, kv. 206; Vadim Grigorievich Kononenko, ul. Chkalova, 15, kv. 12; Anatoly Sergeevich Morgolenko, and Gennady Dmitrievich Selivanov, both of ul. Chkalova, 15, all of Kharkov, U.S.S.R.
Filed June 27, 1972, Ser. No. 266,738
Int. Cl. B21j *9/12*
U.S. Cl. 72—445 **2 Claims**



A high-speed pressing machine comprises a receiver filled with compressed gas. A piston with the piston rod at which end there is fixed a crossbeam with the working tool, and the piston moves in a central portion of the receiver space. Power cylinders are provided to return the crossbeam with the working tool to the initial position and are rigidly fixed within the receiver space. This permits cutting the time between the tool operations and raising the number of work cycles of the machine per time unit.

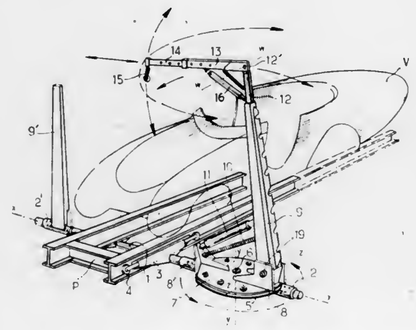
3,776,021
HIGH-SPEED HAMMER
Vadim Grigorievich Kononenko, ulitsa Chkalova, 15, kv. 12; Sergei Grigorievich Kushnarenko, ulitsa Chkalova, 13, kv. 7; Vyacheslav Viktorovich Kollerov, prospekt Gagarina, 38, kv. 60; Vyacheslav Dmitrievich Guly, ulitsa Sapernaya, 12a, kv. 2; Viktor Alexievish Stelamakh, ulitsa Kirova, 18, kv. 2, all of Kharkov; Mikhail Nikitovich Fedotov, ulitsa Chalkovskogyo, 10, kv. 1, and Nikolai Nikiforovich Lysov, ulitsa Pushkina, 50, both of Stupino Moskovskoi oblasti, all of U.S.S.R.
Filed Aug. 1, 1972, Ser. No. 277,039
Int. Cl. B21j *9/18*
U.S. Cl. 72—453 **1 Claim**



A high-speed hammer wherein the working tools secured, respectively, on the anvil block and crosshead of a frame perform a working stroke being acted upon by a power unit mounted on the frame, and are returned to the initial position by compressed gas contained in a space in the anvil block.

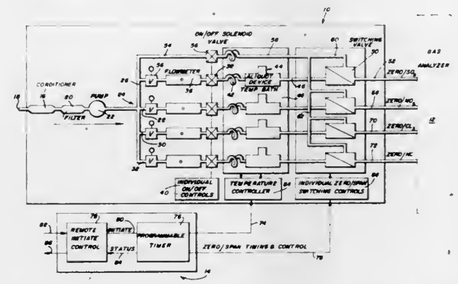
Said space accommodates a piston whose rod is adjustably connected with a bed for adjusting the position of the frame relative to said bed.

3,776,022
APPARATUS FOR ACTING OF AND RESHAPING THE DAMAGED BODYWORK OF AUTOMOBILE VEHICLES
Marini Lionello, via Villafranca, Sommacampagna, Verona, Italy
Filed July 23, 1971, Ser. No. 165,685
Int. Cl. B21d *37/12*
U.S. Cl. 72—455 **2 Claims**



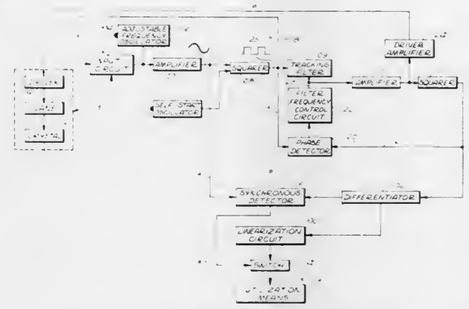
In apparatus for repairing the damaged body of an automobile there is provided an elongated bar that supports a carriage assembly which is movable relative to the damaged body of the vehicle. The elongated bar further supports a rod that is adapted to receive a tool for working on the body of the vehicle. The rod is movable about three mutually perpendicular axes in addition to being longitudinally displaceable by the carriage assembly with respect to the automobile body. Further, a portion of the rod is telescoped and hinged in order to provide additonal flexibility.

3,776,023
CALIBRATION SYSTEM FOR GAS ANALYZERS
Allan L. Budd, San Diego, Calif., and Paul E. Wilkens, Fairfax, Va., assignors to Monitor Labs Inc., San Diego, Calif.
Filed Dec. 22, 1971, Ser. No. 210,936
Int. Cl. G01n *31/00*
U.S. Cl. 73—1 R **11 Claims**



Purified air is mixed with a source gas generated by a permeation tube to form a mixture of precise concentration. The mixture is used for calibrating a gas analyzer. Solenoid actuated valves selectively furnish the analyzer with either one gas, or a plurality of gases simultaneously. Means within the invention system maintain the gases delivered to an analyzer at constant humidity and temperature to insure reproducibility of calibration results.

3,776,024
DENSITOMETER COMPONENTS
Gerald Lance Schlatter, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed July 9, 1971, Ser. No. 161,025
Int. Cl. G01n *9/00*
U.S. Cl. 73—32 **10 Claims**



A vibration densitometer including a vane adapted to be vibrated, a driver coil located around a magnetostrictive body to vibrate the vane, and a piezoelectric crystal to detect the vane vibrations. A loop connects the crystal to the coil, the loop having a tracking filter to pass tbe resonant frequency of

the crystal output. A linearization circuit is connected from the filter output to produce an analog voltage directly proportional to the density of the fluid in which the vane is located. A switch is actuable to clamp the circuit output to a constant magnitude to indicate the lack of resonance. The switch is actuated by a synchronous detector connected from the input and output of the tracking filter. An alternating signal is transformer coupled to an input circuit with rectification to provide an isolated source of potential without the use of a power supply.

3,776,025

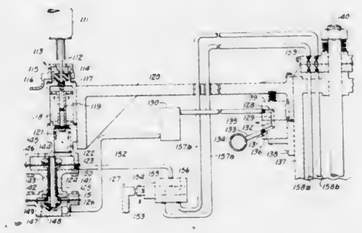
EXHAUST MACHINE LEAK DETECTOR AND SHUT OFF

Joseph J. Plescia, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 103,564, Jan. 4, 1971, abandoned. This application Oct. 6, 1972, Ser. No. 295,645

Int. Cl. G01m *3/04*

U.S. Cl. 73—45.1 **7 Claims**



A leak detector, used in conjunction with an exhausting apparatus of a multiple head variety, which is responsive to a change in pressure in the evacuation system of the exhaust apparatus so that it terminates the evacuation process of the device when the device is leaking to the atmosphere. The leak detector apparatus is built into each head of the multiple head exhaust machine and operates with a variable reference pressure which is compared to the pressure of the evacuation system. Preferably, the reference pressure is varied throughout the process as the pressure in the evacuation system is similarly varied.

3,776,026

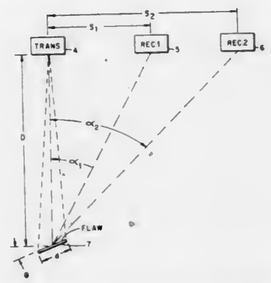
ULTRASONIC FLAW DETERMINATION BY SPECTRAL ANAYLSIS

Laszlo Adler, Knoxville, and Hubert L. Whaley, Powell, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 8, 1972, Ser. No. 278,843

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.7 **6 Claims**



A method of quantitatively determining the size and orientation of flaws within a material. A broadband pulse having a frequency width of at least several MHz is used for an input pulse from an ultrasonic transducer which is directed toward the immersed test material which may contain a flaw, and the frequency interval between two consecutive frequency maxima of the reflected spectrum due to the difference in distance between each end of the flaw and a receiving transducer is relatable to both the size and orientation of the flaw.

3,776,027

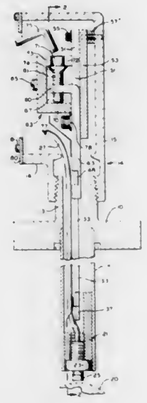
PROBE MOUNTING STRUCTURE

John M. Campbell, Jeannette, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 24, 1972, Ser. No. 274,155

Int. Cl. G01h *1/00*

U.S. Cl. 73—70 **5 Claims**



A probe support structure fixed to the machine casing includes a base member having an enclosure and a tubular member extending inwardly of the casing toward a rotating member journaled for high speed rotation in the casing. The tubular member has communication with the enclosure and a probe holder is mounted in the inner end of the tubular member for axial movement therein toward and from the rotating member. Mechanism is mounted in the enclosure and is operable to adjust the probe holder axially of the tubular member. The adjusting mechanism includes a resilient member attached to the probe holder and extending lengthwise of the tubular member. The resilient member is normally of linear form but is deflectable to curved form for withdrawal from the enclosure together with the probe holder.

3,776,028

THREE-AXIS, ADJUSTABLE LOADING STRUCTURE

Edward J. Lynch, Lancaster, and Darwyn T. Gray, Palmdale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

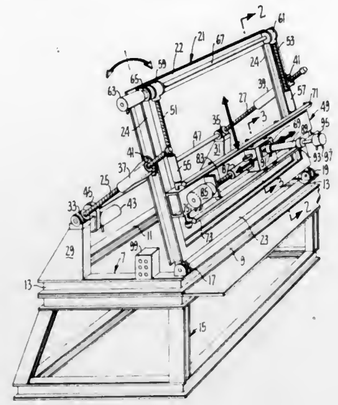
Filed May 16, 1972, Ser. No. 253,725

Int. Cl. G01n *3/00*

U.S. Cl. 73—88 R **4 Claims**

A three-axis, adjustable loading structure is provided for test equipment wherein it is desired to exert pressure against the structure which is to be tested. The device of the present invention is provided with three electric drives whereby the wall angle, horizontal position, and vertical position of the test device can be rapidly and accurately positioned.

The invention described herein was made by employees of the United States Government and may be manufactured and used by or for the Government for Governmental purposes without the payment of any royalties thereon or therefor.



3,776,029

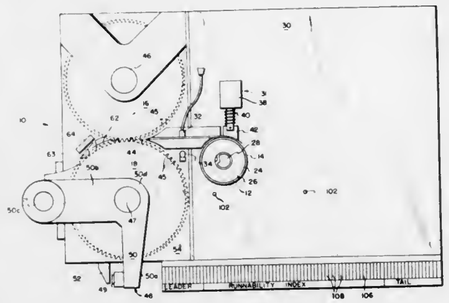
APPARATUS AND METHOD FOR TESTING THE RUNNABILITY OF CORRUGATING MEDIUM

Robert C. McKee, Appleton, Wis., assignor to The Institute of Paper Chemistry, Appleton, Wis.

Filed Dec. 10, 1971, Ser. No. 206,672

Int. Cl. G01b *5/30*

U.S. Cl. 73—88 R **11 Claims**



Apparatus and method for testing the runnability of corrugating medium in the manufacture of corrugated paperboad involving fluting an elongated strip of the medium as it is fed between a pair of coacting corrugating rolls rotating at constant speed. As the medium is passed between the rolls, the stress-strain on the medium is progressively increased and the medium is subjected to increasing stress-strain until a critical level is reached.

3,776,030

EXTENSOMETER

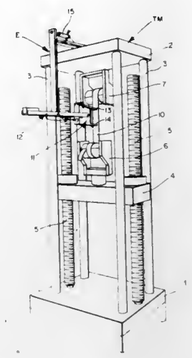
Robert S. Strimel, Penllyn, Pa., assignor to Tinius Olsen Testing Machine Co., Inc., Willow Grove, Pa.

Filed Oct. 5, 1972, Ser. No. 295,352

Int. Cl. G01n *3/06*

U.S. Cl. 73—93 **14 Claims**

An extensometer unit for detecting the strain in a specimen mounted on a universal testing machine. The strain sensor of the unit being supported by a mechanical system that can swing the sensor against the specimen and hold it in place during the test and then swing the unit away from the specimen after the test is completed.



3,776,031

TENSILE MEMBER WITH TENSION INDICATOR

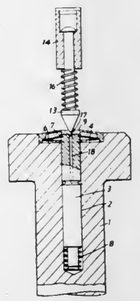
Jack Victor Haig Trigg, Odiham, England, assignor to International Engineering Concessionaries Limited, Walton-on-Thames, Surrey, England

Filed Aug. 16, 1971, Ser. No. 172,019

Claims priority, application Great Britain, Aug. 19, 1970, 39,995/70

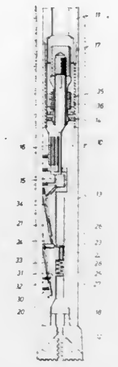
Int. Cl. G01n *3/08*

U.S. Cl. 73—95 **8 Claims**



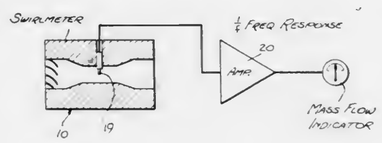
A tensile member adapted to indicate the tension on it has a pin reciprocable in a bore in the tensile member the bottom of which constitutes a stop for the pin. A disc spring is coupled to the pin. The disc spring is urged into contact with a surface of the tensile member surrounding the entrance to the bore when the pin is pressed into the bore. The disc spring becomes distorted and snaps through when the distance between the bottom of the bore and the entrance of the bore increases by a given amount as a result of elongation of the tensile member caused by tensioning it.

3,776,032
METHOD AND APPARATUS FOR DETECTING AN INFLOW OF FLUID INTO A WELL
Charles B. Vogel, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed July 3, 1972, Ser. No. 268,369
Int. Cl. E21b 47/10
U.S. Cl. 73—155 13 Claims



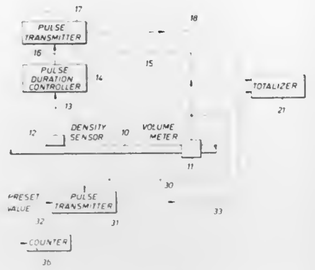
A method and apparatus for detecting an inflow of fluid into a well during rotary drilling of the well wherein an inflow of gas is detected by acoustic means and an inflow of water is detected by resistivity means, the resulting information being transmitted to the surface by means of pressure pulses produced in the drilling fluid circulated during drilling.

3,776,033
VORTEX-TYPE MASS FLOWMETERS
Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.
Filed Mar. 6, 1972, Ser. No. 232,058
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B 6 Claims



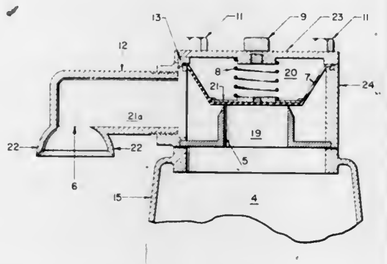
A vortex-type mass flowmeter for measuring the mass of fluid passing through a flow tube as well as the density thereof. A bluff body, swirl blades or other means disposed within the tube acts to create a pulsatory fluidic vortex therein whose frequency varies as a function of the volumetric flow rate of the fluid being measured. Placed within the flow tube is a pressure-responsive transducer adapted to generate an electrical signal whose frequency is proportional to the fluidic pulse rate and whose amplitude is a function of the kinetic energy contained in the vortex. The transducer signal is processed by an operational amplifier, the gain of which is inversely proportional to frequency, thereby effectively dividing the transducer signal by frequency throughout the operating range of the meter to yield an output signal whose amplitude is indicative of mass flow. By additionally dividing this output signal by frequency with a second amplifier having a gain which is inversely proportional to frequency, a signal indicative of the fluid density is produced.

3,776,034
METHOD FOR MEASURING FLUID FLOW IN UNITS OF MASS
Robert H. Kolb, Cypress, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Apr. 13, 1971, Ser. No. 133,657
Int. Cl. G01f 1/04
U.S. Cl. 73—194 M 2 Claims



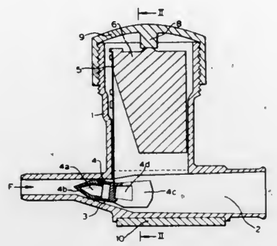
A method and apparatus for simultaneously measuring the volume and the density of a fluid stream and totalizing the product of the two measurements to provide the mass units of fluid delivered by the stream. The apparatus also includes means to accommodate zero suppression of the density measurements so that the final product is a numerical indication of the actual number of mass units delivered.

3,776,035
METER OVERPRESSURE PROTECTION DEVICE
Joseph P. Lofink, Hebron, Ohio, assignor to Universal Lancaster Corporation, Dallas, Tex.
Filed Apr. 5, 1972, Ser. No. 241,346
Int. Cl. G01f 1/00
U.S. Cl. 73—199 14 Claims



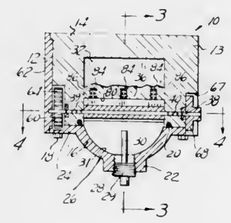
Disclosed is a gas meter-relief pressure device combination that maintains a predetermined pressure level in the meter and at a downstream combustion locus. The protection device, mounted on the gas meter itself, has: (1) an inlet orifice in communication with the interior of the gas meter; (2) a valve means normally closing the orifice; and (3) a vent, in communication with the orifice when the valve means is open. The diameter of the orifice is larger than the diameter of the gas vent. When a predetermined pressure is present in the meter, the valve begins to open and gas flows through the orifice and out the vent. Because the vent is smaller in diameter than the orifice, discharging gas builds up a back pressure that ultimately acts in tandem with the meter pressure to open the valve further than it would otherwise be opened if only the original meter gas pressure at the discharge end of the orifice was acting upon the valve.

3,776,036
FLUID FLOWMETERS
Lionel Ivor Alfred Taylor, Copythorne House, Copythorne, Southampton, England
Filed Feb. 29, 1972, Ser. No. 230,381
Int. Cl. G01f 1/00
U.S. Cl. 73—210 11 Claims



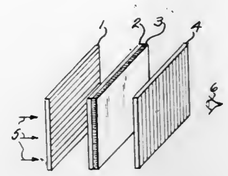
A fluid flowmeter for converting a fluid flow into an electrical output signal, includes a float which is moved by the fluid flow against the actio of a spring, to vary the amount of light transmitted for a light source to a photosensitive device. The flowmeter is primarily for use in a miles-per-gallon meter for an automobile, the output signal from the flowmeter being processed with a signal indicative of the speed of an automobile to provide a miles-per-gallon indication.

3,776,037
FLOW INDICATOR DEVICE WITH SEALING MEANS
Nils O. Rosaen, 3774 Quarton Rd., Bloomfield Hills, Mich.
Continuation-in-part of Ser. No. 50,651, June 29, 1970, Pat. No. 3,724,269. This application Oct. 30, 1972, Ser. No. 301,861
Int. Cl. G01f 1/00
U.S. Cl. 73—228 4 Claims



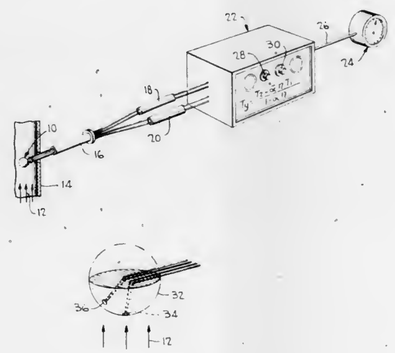
A flow indicator device having a housing with inlet and outlet ports respectively adapted to be connected with a source of fluid pressure and a fluid user. A semi-circular vane member mounted within the housing is movable in response to a change in the flow rate between the inlet and outlet ports to rotate a shaft to which the vane member is attached. The shaft, in turn, extends externally of the housing and is operatively coupled to an indicator for providing an external visual indication of the rate of flow through the device. A spring balanced seal is provided between the vane member and an internal wall of the housing separating the inlet and the outlet.

3,776,038
VISUAL-TYPE HYGROMETER
Stanley B. Elliott, 7125 Conelly Blvd., Bedford, Ohio
Continuation-in-part of Ser. No. 18,921, March 12, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,573
Int. Cl. G01n 19/10
U.S. Cl. 73—335 49 Claims



A visual type hygrometer including (1) a source of illumination that provides a light beam, (2) means for providing observable changes in relative humidity which is a chemical composition such as the sodium salt of 1,1′ binaphthyl 8-8′ dicarboxylic acid that of itself senses changes in relative humidity by being abruptly triggered at a predetermined relative humidity, and (3) light detecting means for detecting observable changes in the brightness and intensity of the light coming from the composition when the light beam contacts the composition.

3,776,039
APPARATUS AND METHOD FOR DETERMINING THE TEMPERATURE OF A FLOWING GAS
Mack D. Bowen, Smyrna, Ga., assignor to Tech-Air Corporation, Albany, Ga.
Filed Nov. 30, 1970, Ser. No. 93,719
Int. Cl. G01k 13/02, 1/16, 7/14
U.S. Cl. 73—341 7 Claims



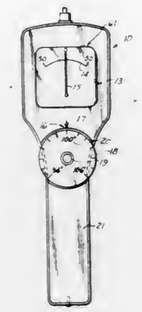
Apparatus for determining the temperature of a flowing gas including a first thermocouple disposed on the surface of a probe at the stagnation point, a second thermocouple disposed on the surface of the probe at a position spaced from the stagnation point, and equipment for calculating the actual temperature of the flowing gas from the temperatures sensed by the thermocouples independent of convective heat transfer and emmissivity of the probe.

3,776,040

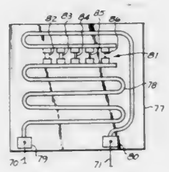
ELECTRICAL THERMOMETER SYSTEM AND SENSOR THEREFOR

Edson B. Gould, III, Newport Beach, Calif., assignor to Robert V. Gibson and Thurston H. Ross, Jr., Los Angeles, Calif., part interest to each

Filed Sept. 30, 1971, Ser. No. 185,280
Int. Cl. G01k 7/20; H01c 3/00
U.S. Cl. 73—362 AR **12 Claims**







An electrical clinical thermometer system including a probe for insertion into a body cavity. A temperature sensor is carried by the probe whose electrical resistance changes with temperature. This probe is connected into a wheatstone bridge circuit which is restored to a balanced condition by an adjustable resistor which is mechanically connected to a readout device that indicates the temperature at the sensor when a meter in the bridge circuit is at its reference setting. The system is insensitive to voltage changes such as from a battery whose voltage declines. The readout device holds its reading when the probe is removed from the cavity, and may be either mechanical or digital. A sensor for this system comprises an elongated metal body with a discontinuity which is bridged by a plurality of fuse-like resistances of different values which can selectively be destroyed so as finely to adjust the resistance of the sensor. Calibration means for the adjustable resistor enable the use of inexpensive, relatively low-tolerance components to secure a very accurate measurement.

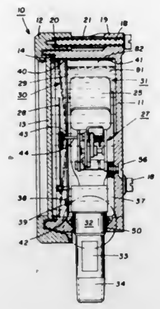
3,776,041

OIL FILLED PRESSURE GAUGE

Richard H. Wetterhorn, Fairfield, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 18, 1971, Ser. No. 154,539
Int. Cl. G01l 7/04
U.S. Cl. 73—414 **14 Claims**

An oil receptive casing of a pressure gauge affording improvements for oil fill. Improvements include complete oil coverage over the dial face for undistorted readability and uninterrupted pointer dampening. A gasket seal construction at the casing and Bourdon tube socket joint maintains leak-



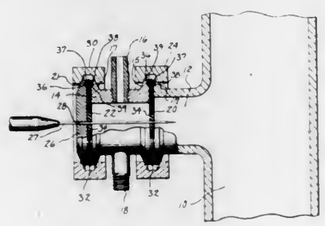
tight reliability of the casing. An air cushion of controlled volume readily trapped behind the dial face, receives a removably secured safety plug enabling atmospheric venting in event of excessive internal overpressure.

3,776,042

ASEPTIC SAMPLER FITTING

Bruno H. Werra, Waukesha, Wis., and Patrick J. Duffy, Winchester, Mass., assignors to Ladish Co., Cudahy, Wis.

Filed Mar. 22, 1972, Ser. No. 237,055
Int. Cl. G01n 1/12
U.S. Cl. 73—421 B **16 Claims**



An aseptic medium such as steam or the like is contained within a tubular body member between two opposing covers each of which has a self-closing pierceable portion. Th tubular body member is adapted for attachment to a container or conduit for sampling the contents of the container or conduit with a sterile hypodermic needle. The contents of the container are sampled by inserting a sterile hypodermic needle through the pierceable portion of both covers into the material contained within the conduit or container, then withdrawing a sample through the needle, and finally removing the needle, whereupon the self-closing pierceable portions close and seal the body member again. The pierceable covers also serve as gaskets.

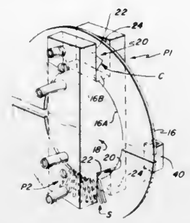
3,776,043

FLUIDIC ANGULAR DISPLACEMENT SENSOR

Horace B. Welk, Jr., Churchville, Pa., assignor to Casco Products Corporation, Bridgeport, Conn.

Filed Mar. 31, 1972, Ser. No. 240,153
Int. Cl. G01p 3/26; G01b 13/18
U.S. Cl. 73—490 **5 Claims**

Fluidic sensor arrangement for monitoring amount of and incremental frequency of angular displacement includes fluidic interruptable output signals and a corresponding pair of fluidic barrier sets arranged to move in unison in interrupta-



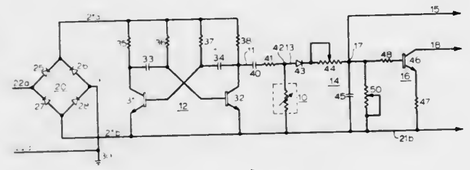
ble relation with the fluidic elements in response to angular displacement of the monitored body.

3,776,044

ELECTRONIC ACCELEROMETER SYSTEM

Ronald L. Syria, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 6, 1972, Ser. No. 215,862
Int. Cl. G01p 15/12
U.S. Cl. 73—516 LM **9 Claims**



To measure acceleration of a vehicle or other moving unit, a system installed in the vehicle includes an electrolytic gravity sensor coupled with at least one other component in a voltage divider arrangement. An a-c signal generator develops a signal across the voltage divider arrangement, so that the gravity sensor provides a signal which varies as a function of vehicle acceleration. This varying signal is rectified, integrated and utilized as an analog voltage signal representing the actual deceleration. The system includes a further stage for providing a variable resistance or analog current signal output. A polarity reversal protector is coupled to the input stage so that the electronic components of the system will not be damaged by connection to vehicle batteries of different polarity arrangements.

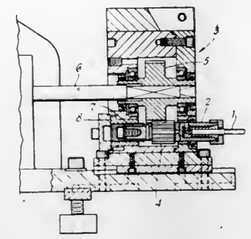
3,776,045

TOOL DRIVING UNIT

Frederick Arthur Faulkner, High Easter, England, assignor to Faulkner Engineering Limited, Waltham Abbey, Essex, England

Filed Mar. 15, 1972, Ser. No. 234,883
Claims priority, application Great Britain, Oct. 21, 1970, 49,064/70
Int. Cl. F16h 21/00
U.S. Cl. 74—20 **3 Claims**

A unit for driving a tool, comprising a tool carrier supported for rotational and translational movement, first means for transmitting rotational drive to the carrier along a main power path, and second means branch-connected with this main



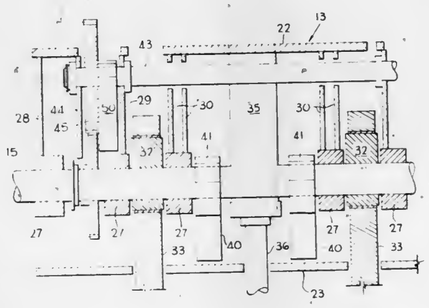
power path and arranged to impress translational movement on the carrier upon flow of rotational drive along the main power path.

3,776,046

INERTIA BALANCING MEANS FOR POWER PRESSES

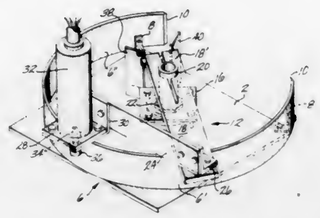
Clarence O. Jones, Jr., Eggertsville, N.Y., assignor to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,040
Int. Cl. F16h 21/18
U.S. Cl. 74—50 **4 Claims**



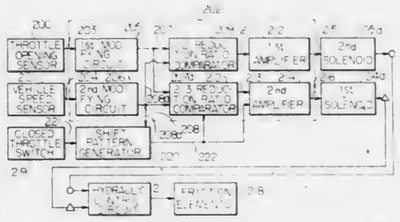
In power presses such as are used for stamping sheet metal and the like, the inertia forces of the reciprocating slide of the press and its attached parts set up very heavy and objectionable vibrations, particularly in high speed presses. The present invention provides primary and secondary counterweights. The primary counterweights rotate with the crankshaft or eccentric shaft of the press but with the center of gravity of the counterweight moving in a direction opposite to the direction of movement of the slide to neutralize at least a portion of the inertia forces of the slide and its connected parts. The secondary counterweight rotates opposite to the first counterweight but with its center of gravity moving in the same direction with respect to the vertical, so that the second counterweight has a cumulative effect with respect to the primary counterweight in neutralizing vertical inertia forces but has a subtractive effect with respect to lateral inertia forces produced by rotation of the primary counterweight.

3,776,047
MEANS FOR OSCILLATING ONE OF A PAIR OF RELATIVELY ROTATABLE MEMBERS
Howard E. Rothenbuhler, Acme; Robert C. Meider, Sedro Woolley, and John Lawrence Cotter, Mt. Vernon, all of Wash., assignors to Rothenbuhler Engineering Company, Sedro Woolley, Wash.
Filed Apr. 3, 1972, Ser. No. 240,647
Int. Cl. F16h *21/40*
U.S. Cl. 74—70 **24 Claims**



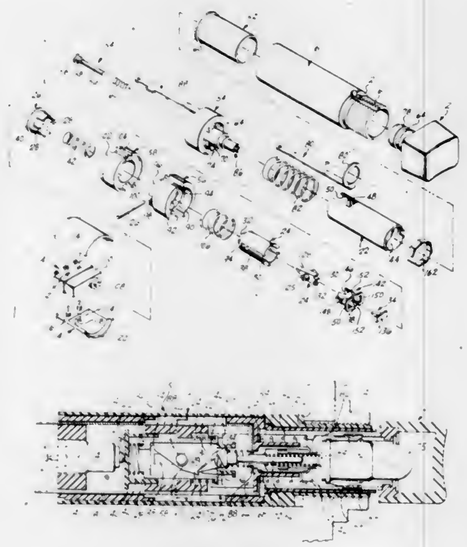
One of the members has a track raised thereon which is equipped with arcuate surfaces on opposite sides thereof, that are concentric with the rotational axis of the members, and joined to one another at the corresponding ends thereof. The other member extends transversely of the track between the aforesaid opposite sides thereof, and has a wheel rotatably carried threreon, the rotational axis of which is parallel to the axis of the members but transversely shiftable in relation thereto. The wheel is yieldably biased into engagement with the surface of the track, on each side thereof, and the members are rotated in relation to one another by driving the wheel in one rotational direction thereof, so as to cause either the wheel or the track to undergo rotation about the axis of the members, there being yieldable biasing means for retaining the wheel in engagement with the track as it crosses the junctures between the surfaces at their ends.

3,776,048
AUTOMATIC POWER TRANSMISSION CONTROL SYSTEM
Koji Enomoto; Takayuki Akaishi, and Wataru Ishimaru, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Sept. 3, 1971, Ser. No. 177,603
Claims priority, application Japan, Feb. 8, 1971, 46/4730
Int. Cl. B60k *21/02*
U.S. Cl. 74—866 **3 Claims**



An automatic power transmission control system for a vehicle driven by an engine having a carburetor throttle valve which control system comprises a shift control unit to cause shifting of different gear reduction ratios in accordance with a signal representative of an effective opening area of the throttle valve and a signal representative of a vehicle speed, and a shift pattern generator circuit associated with the shift control unit and responsive to a signal representing a closed condition of the throttle valve for modifying the shift pattern whereby a downshift is effected from a lower gear reduction ratio to a higher gear reduction ratio regardless of the vehicle speed to provide sufficient engine braking action when the closed condition of the throttle valve is sensed.

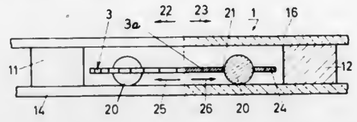
3,776,049
ALTERNATELY RELEASED AND DETAINED RECIPROCABLE ACTUATING MECHANISM
William B. Emery, Seattle, Wash., assignor to Korry Manufacturing Company, Seattle, Wash.
Filed May 19, 1971, Ser. No. 144,825
Int. Cl. F16h *21/44*
U.S. Cl. 74—110 **27 Claims**



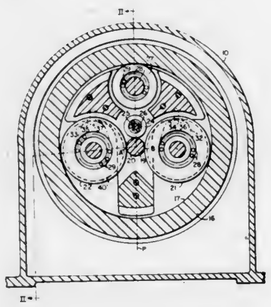
The mechanism comprises a pair of relatively reciprocable operating members, one of which is reciprocable in a course of translation, and the other of which is reciprocable about an axis crosswise of said course; and reciprocable latch means which are engageable and disengageable with and from the one operating member at a predetermined juncture in the course thereof. The mechanism also comprises first operating means which are responsive to reciprocation of the one operating member on one side of said juncture, to reciprocate the other operating member between points on opposite sides of said course, and second operating means which are responsive to successive reciprocation of the one operating member on the other side of said juncture, when the other operating member is reciprocated between said points, to cause the latch means to alternately latch and unlatch the one operating member against reciprocation on the one side of said juncture.

3,776,050
MOTION TRANSFORMER
Max Hetzel, Bienne, Switzerland, assignor to Omega Louis Brandt Et Freres, S.A., Bienne, Switzerland
Filed May 25, 1972, Ser. No. 256,994
Claims priority, application Switzerland, June 14, 1971, 8622/71
Int. Cl. F16h *27/02*
U.S. Cl. 74—142 **6 Claims**

In a motion transformer for converting oscillatory to rotary motion, comprising (a) an enclosure including a base plate and a cover plate, (b) a ratchet wheel structure within the enclosure mounted for both oscillatory and rotary motion, (c) a pair of stops limiting the amplitude of such oscillatory motion, (d) a ratchet pawl and a restraining member coacting with the ratchet wheel to convert oscillatory motion thereof to unidirectional rotary motion, (e) magnetic coupling means attracting the ratchet wheel structure toward the enclosure base member, and (f) at least three and preferably four hard support members for supporting the ratchet wheel in spaced relation with the base plate, the support members, which preferably are of jewel stone or equivalent hard material, are balls firmly secured as by a press fit in openings symetrically disposed adjacent the periphery of the ratchet wheel structure. The magnetic coupling may be provided by magnetizing the ratchet wheel structure, preferably with four symetrically spaced poles coinciding substantially with the ball support members.



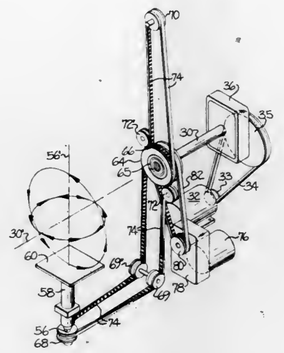
3,776,051
ROTARY MOTION TRANSMITTING DEVICE
Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc.
Filed July 7, 1972, Ser. No. 269,531
Int. Cl. F16h *13/14*
U.S. Cl. 74—208 **13 Claims**



A rotary motion transmitting device including traction rollers for the transmission of motion from an input to an output shaft. One of the shafts carries a traction ring and the other shaft whose axis is parallel to, but spaced from, the axis of the one shaft has an end portion extending into the traction ring, so that between the traction ring and the end portion of said one shaft an annular space is formed in which traction rollers are disposed which are forced into firm engagement with the traction ring and the end portion of the other shaft by the torque transmitted through the device.

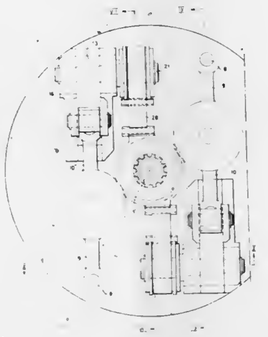
3,776,052
APPARATUS FOR MOLDING HOLLOW PLASTIC ARTICLES
Robert L. Campbell, Jr., Hickory, N.C., assignor to Automated Manufacturing Systems, Inc., Hickory, N.C.
Continuation-in-part of Ser. No. 108,416, Jan. 21, 1971, Pat. No. 3,683,416. This application Aug. 3, 1972, Ser. No. 277,914
Int. Cl. F16h *55/22, 1/28*
U.S. Cl. 74—230.17 A **11 Claims**

An apparatus for rotating a hollow mold about a pair of mutually perpendicular axes to cast a hollow plastic article. The apparatus includes a rotatable shaft defining a first axis and which carries an L-shaped bracket at one end, with one leg of the bracket extending radially from the shaft and the second leg extending generally parallel to the shaft. A mold support member is connected to the second leg and is rotatable about a second axis which perpendicularly intersects the axis of the shaft. A first electric motor is provided for rotating the shaft,



bracket, and thus a supported mold about the shaft axis, and a second electric motor independently rotates the mold about the second axis. The interconnection between the shaft and bracket is radially adjustable such that the center of the mold can be positioned at or closely adjacent the intersection of the two axes to thereby permit an essentially balanced rotation of the bracket and mold about the first axis of the apparatus.

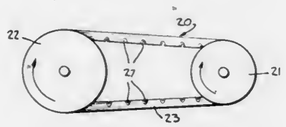
3,776,053
DEVICE IN V-BELT TRANSMISSIONS
Carl Gustaf Hard Af Segerstad, Karasgarden, 795000 Rattvik, Sweden
Filed Oct. 19, 1971, Ser. No. 190,554
Claims priority, application Sweden, Feb. 22, 1971, 2228/71
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 E **10 Claims**



The present invention relates to V-belt transmission devices, comprising at least one driving V-belt pulley and one driven V-belt pulley for variation of the exchange ratio in dependence upon the speed or number of revolutions per time unit, wherein the driving pulley comprises a first body which is

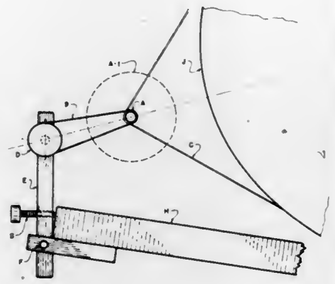
axially movable along the shaft of the driving V-belt pulley to and fro a second body which is fixed on the shaft, and wherein the first mentioned body is in connection with the second body through one or more members sensible to the centrifugal force and adapted to adjust the axial distance between the said body in dependence upon the magnitude of the centrifugal force, the driven V-belt pulley being composed by two V-belt pulley sheave halves which by springs are urged in direction towards each other.

3,776,054
POWER TRANSMISSION BELTS
Daniel Shichman, Trumbull, Conn.; Henry F. Miller, Clifton, and Nann Ren, Wayne, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 214,573, Jan. 3, 1972. This application Dec. 11, 1972, Ser. No. 314,247
Int. Cl. F16g *5/16*
U.S. Cl. 74—233 **16 Claims**



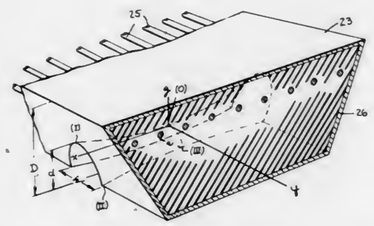
Molded "V" or variable speed power transmission belts, made of elastomeric material and reinforced by an array of longitudinal tension cords at their wider or top faces, and having generally saddle-shaped stress concentration-reducing and flexibility-enhancing notches on their narrower faces, are disclosed. Each notch decreases in both depth and width from respective maximum values of those dimensions at the lateral belt edges to respective minimum values in the middle region of the belt. In each notch, therefore, the belt has more rubber in its middle region that at its sides, so that extra support is provided for the tension cords in the middle region of the belt. The extra support contributes to a reduction in the deviation of the strain ratio between the center tension cord and the laterally outermost tension cords from unity when the belt is running, and thereby minimizes "dishing" of the belt in a transverse direction. Belts having notches of the disclosed saddle-shaped configuration thus are characterized by longer service life and/or higher horsepower capacity. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

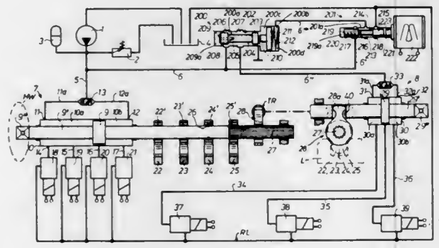
3,776,055
SPINNING WHEEL
Jules Kliot, 2150 Stuart St., Berkeley, Calif.
Filed May 19, 1972, Ser. No. 255,132
Int. Cl. F16h *7/10*
U.S. Cl. 74—242.15 R **5 Claims**



A unique arrangement of the spindle head of a spinning wheel which permits insertion and removal of a straight spindle as well as a drop spindle, i.e., a spindle with an attached whorl.

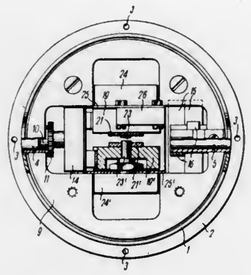
3,776,056
GEAR SHIFTING ASSEMBLY FOR CHANGE-SPEED TRANSMISSION
Helmut Espenschied, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 4, 1972, Ser. No. 277,928
Claims priority, application Germany, Aug. 6, 1971, P 21 39 346.4
Int. Cl. F16h *3/08, 5/06*
U.S. Cl. 74—364 **10 Claims**

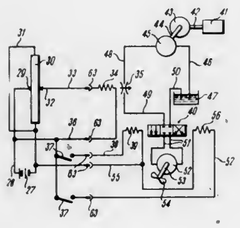




A gear shifting assembly for changing the speed positions of transmissions in automotive vehicles has a double-acting gear shifting cylinder receiving oil by way of a directional control valve which is actuatable by oil in dependency on a pressure differential between the cylinder chambers. The directional control valve receives oil from a pump by way of an adapter valve which is controlled by an adjustable pressure regulating valve. The pressure of oil which moves the piston in the double-acting cylinder depends on the selected speed position of transmission and such pressure develops when the piston encounters a resistance to its movement in the cylinder.

3,776,057
CONTROL DEVICE FOR ONE-HAND OPERATION
Jorg Haas, Neureut, Germany, assignor to Bruker-Physik AG, Karlsruhe-Forchheim, Germany
Filed Jan. 19, 1972, Ser. No. 219,031
Claims priority, application Germany, Nov. 6, 1971, P 21 55 190.6
Int. Cl. G05g *9/00*
U.S. Cl. 74—471 **19 Claims**

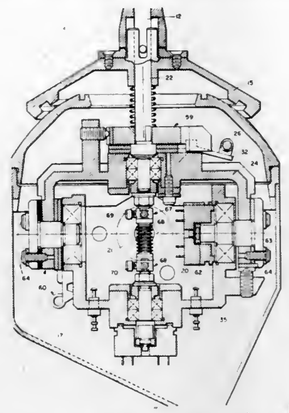




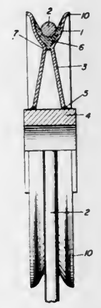
A control device for one hand operation to control propulsion units of a submarine craft. A pivotally mounted spherical support member adjusts by its pivotal movement several control members to influence the speed and sense of rotation of a main propeller assembly. A pair of control elements pivotally supported at the spherical support member adjust by their pivotal movement other control members and influence speed and sense rotation of additional propeller assemblies.

3,776,058
MULTI-AXIS HAND CONTROLLER
Dana French, Belmont, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 17, 1972, Ser. No. 254,126
Int. Cl. G05g *9/04*
U.S. Cl. 74—471 XY **16 Claims**

A precision mechanical centering device is provided in which a single spring controls the return of two oppositely formed spring plates to a positive stop in each of the three axes of motion. Null adjustment is made by separating the tines of a tuning fork mounted on the same axis as each pair of spring plates until the tines contact the end surface of the spring plates. These end surfaces are positioned apart and prevented from closing by a tab of appreciable thickness which is either securely attached to or an integral part of a centrally located ground block.



3,776,059
WELDED CABLE PULLEY
Rudi Habermann, Kirchstrasse 58, D-4006 Erkrath near Duesseldorf, Germany
Filed May 9, 1972, Ser. No. 251,714
Int. Cl. F16h *55/36*
U.S. Cl. 74—230.5 **4 Claims**



A welded cable pulley has two concentrically kinked disc-shaped rings, connected with each other along the kinking line with the outer surface forming the groove for the cable, and the inner surfaces forming two webs extending in the direction of the pulley hub.

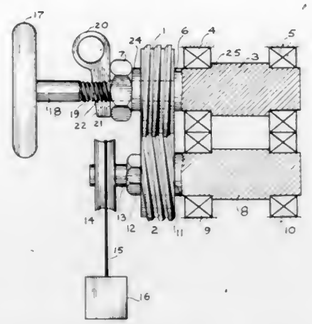
The weld connecting the disc-shaped rings along the kinking line is so dimensioned that it can be machined to suit the diameter of the respective cable, thus forming the cable groove.

The kinked surfaces of the disc-shaped rings which form the cable groove are filled with weld metal and are given an outward curvature.

The connection between the disc-shaped rings along the kinking line is effected by weld metal adapted to the strength of the cable pulley material. For the information of the cable groove and to provide the necessary machining allowance a weld metal is used which is adapted to the strength of the cable groove, and which is homogenously connected with the basic weld.

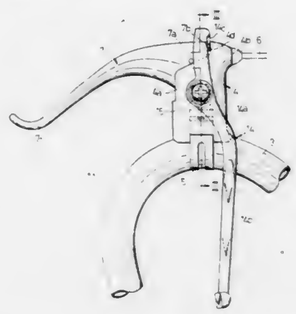
The outer edges of the disc-shaped rings are given an outward curvature.

3,776,060
QUICK-RELEASE MECHANISM FOR SELF-LOCKING MATING WORMS
David W. Pessen, 33 Aviv St., Mt. Carmel, Haifa, Israel
Filed Oct. 2, 1972, Ser. No. 293,771
Int. Cl. F16h *1/08, 1/18*
U.S. Cl. 74—424.7 **5 Claims**



The invention is a modification of a self-locking mating worm drive, such as the drives described in U.S. Pat. Nos. 2,973,660 and 3,343,426. The modification consists of a nut mounted on one of the worm shafts with a very large pitch angle, such that it is not self-locking. This nut keeps the two worms in mesh, and axial motion of the nut is prevented by a tapered key. When this key is removed, the axial pressure of the worm pushes the nut sideways, until the two worms disengage. The self-locking property of the worm drive can thus be removed at will.

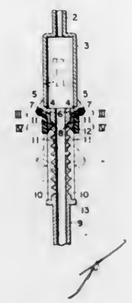
3,776,061
BRAKE APPARATUS FOR BICYCLE
Yoshigai, Kiyokazu, Osaka, Japan, assignor to Yoshigai Kikai Kinzoku Co., Ltd., Osaka, Japan
Filed Nov. 15, 1972, Ser. No. 306,906
Claims priority, application Japan, June 14, 1972, 47/71138
Int. Cl. B62k *23/06;* **B62l** *3/02*
U.S. Cl. 74—480 R **2 Claims**



A brake apparatus for bicycle having a drop handle including a straight bar portion and bent bar portions to be mounted on the bent bar portion. The apparatus comprises a clip band for embracing the bent bar portion, a mounting bracket having an opening, a brake lever having a head inserted into the bracket from the opening and connected to one end of an actuating wire, and an auxiliary lever mounted on the inner side wall of the bracket and having portions extending in an L-form in parallel to the bent bar portion and straight bar portion respectively, with a coupling piece formed in the head of the auxiliary lever.

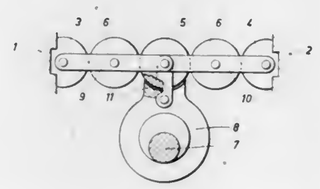
Also disclosed are technique for pivotally supporting and assembling the bracket, brake lever and auxiliary lever by a lever pin and a fastening screw and a device for retaining the fastening screw in the lever pin against loosening.

3,776,062
SHOCK ABSORBING STEERING SHAFT ASSEMBLY
Kiyoji Ito, 8, Nisshin-cho, 2-chome, Kawasaki, Japan
Filed Apr. 19, 1972, Ser. No. 245,553
Int. Cl. B62d *1/18;* **G05g** *5/06*
U.S. Cl. 74—492 **9 Claims**



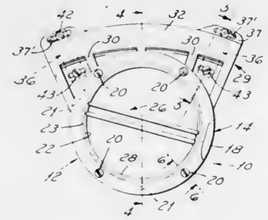
A shock absorbing steering wheel assembly having a plurality of detent elements each provided with a proturberance and pivotally secured to a part of the steering wheel shaft and a torque shaft having along its external surface vertical slots in which the detent elements are slidable and the bottom wall of such slots formed with recesses to be engaged by the protuberances of the detent elements. An elastic ring is fitted around the detent elements so that the protuberances are elastically engaged with certain recesses in the torque shaft. In the event of a strong shock or impact force the protuberances are forced out of the recesses in the torque shaft and slide along the vertical slots against the resident holding force of the elastic ring.

3,776,063
ARRANGEMENT FOR FORCING TWO ABUTMENTS APART
Gustav Scherb, Linz; Norbert Auer, Traun; Horst Obereder, Oftering, and Nikolaus Stollmayer, Hart, all of Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Feb. 8, 1972, Ser. No. 224,575
Claims priority, application Austria, Feb. 26, 1971, 1645/71
Int. Cl. G05g *1/04*
U.S. Cl. 74—520 **8 Claims**



Two abutments are adapted to approach each other and to be forced apart in a predetermined direction. Each of said abutments has a confronting surface, which faces the other abutment. An arrangement for forcing said abutments apart comprises two outer rolling elements, each of which is rigidly connected to one of said abutments at said confronting surface thereof and extends transversely to said predetermined direction, a central rolling element which is movable transversely to its axis and to said predetermined direction, two intermediate rolling elements, each of which connects one of said outer rolling elements to said central rolling element, and drive means operable to displace said central rolling element transversely to its axis and to said predetermined direction. All said rolling elements have parallel axes. The arrangement is such that any two adjacent ones of said rolling elements roll one on the other in response to a displacement of said central rolling element.

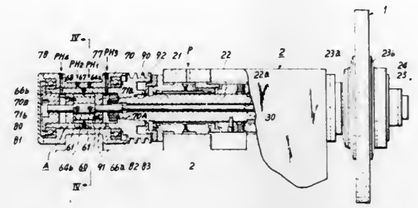
3,776,064
STEERING WHEEL CONTROL DEVICE
Jack B. Rose, Southfield, Mich., assignor to Rowin, Incorporated, Warren, Mich.
Filed Aug. 2, 1972, Ser. No. 277,479
Int. Cl. B62d *1/06*
U.S. Cl. 74—557 **4 Claims**



The device, as applied to a conventional automobile steering wheel, essentially comprises a rigid upper molded plastic mounting plate member of generally segmental outline at a portion thereof which is contoured in section to nest over a corresponding segmental portion of the wheel facing the driver; a lower, opposite side plastic member mated to the upper at generally circular portions of said members, which portions are fixedly screw-secured together; and a hand grip member of the same plastic material which is cross sectioned to afford a circular, radially outward guide rib. This rib fits for rotative running action in a circular, radially internal guide groove defined between annular shoulders of the respective mated upper and lower members. The hand grip member provides a diametral cross bar to be grasped by the driver; and the assembly of members and grip has means to rigidly apply it to the steering wheel, in the form of a pair of like, arcuately spaced and semi-circular clamp straps applied in encircling relation to the wheel cross section and tightly screw-connected to the upper mounting plate member. Plate, grip and strap components of the device are of a glass-filled mylon plastic composition requiring no lubrication for a free running action of its hand grip in the guide way afforded by the two plate members.

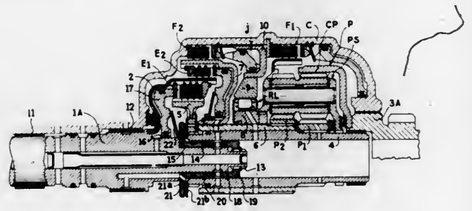
3,776,065
AUTOMATIC BALANCING APPARATUS FOR A ROTATING BODY
Kunihiko Unno, Kariya, and Kazuhiro Sugita, Anjo, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan
Filed Sept. 14, 1972, Ser. No. 289,123
Claims priority, application Japan, Sept. 14, 1971, 46/71576
Int. Cl. F16f *15/10*
U.S. Cl. 74—573 **6 Claims**

An automatic balancing apparatus for a rotating body in a machine tool such as, for example, a grinding machine, having two co-axial operating shafts disposed within a spindle which are axially and rotatably movable by a pressure differential in a fluid bearing, due to the existence of an unbalanced condition in the rotating body. A pair of balancing pieces are moved



at right angles with respect to each other by the operating shafts so as to compensate for the unbalanced condition in the rotating body.

3,776,066
AUTOMATIC TRANSMISSIONS
Jean Piret, Bougival, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, both of France
Filed Nov. 22, 1971, Ser. No. 200,985
Claims priority, application France, Dec. 2, 1970, 7043298
Int. Cl. F16h *57/10*
U.S. Cl. 74—763 **10 Claims**

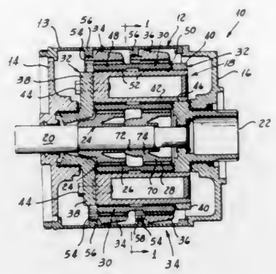


Automatic transmission having an input shaft and output shaft which may be disposed on the same side or opposite sides of the transmission. A planetary gearset has its ring gear, two coaxial sun gears and a planetary gear carrier respectively integral with the output shaft, a brake mechanism and a clutch mechanism the selective actuation of which determines the engagement of the suitable transmission ratio. An inner shaft portion and an outer shaft portion are coaxial and relatively rotatable. The inner shaft portion is integral with a hub of the first clutch mechanism and the first sun gear and the outer shaft portion is integral with a drum of the second clutch mechanism and the second sun gear. Means are provided for respectively affording in both types of transmission, a bearing between the input shaft and the end of the inner shaft portion opposed to the first sun gear end thereof, and an axial abutment for resiliently yieldable return means for the first clutch mechanism and an axial abutment for the two shaft portions.

3,776,067
PLANETARY GEAR TRANSMISSION
Neil A. DeBruyne, Little Falls, and Henry H. Ryffel, Allendale, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.
Filed Sept. 19, 1972, Ser. No. 290,414
Int. Cl. F16h *1/36*
U.S. Cl. 74—801 **17 Claims**

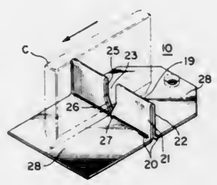
The planetary gear-speed reduction transmission comprises a housing and a planetary gear train in the housing intercon-

necting an input shaft and an output shaft. The sun gears and ring gears are of cantilever construction so that the teeth of the sun and ring gears can deflect in response to the twisting of the planetary gears and their carrier under torsional loads and thereby maintain substantial line contact between the meshing teeth and prevent load concentration on one or more gear teeth. All of the gear teeth are so constructed that the clearance space between adjacent gear teeth roots is deeper and wider than in conventional gear teeth construction so that



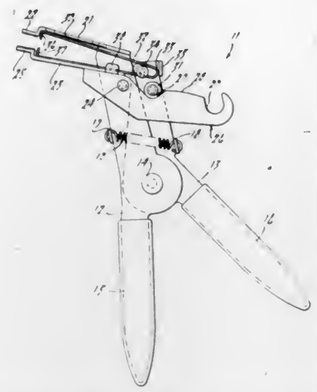
the gear teeth have increased resiliency. To provide further flexibility in the assembly, the ring gear may be connected to the housing in such a manner that it is held against axial movement but allowed limited radial movement relative to the housing. Also, a lubricant cooling means, cooperating with gear teeth formed with the relatively large clearance spaces between the adjacent root portions of the teeth, is provided which permits the gears to operate at very high angular velocities.

3,776,068
DRESSMAKER CHALK SHARPENER
Immacolata Pisciotta, 2387 Morris Ave., Bronx, N.Y.
Continuation of Ser. No. 160,325, July 7, 1971. This application Apr. 19, 1973, Ser. No. 352,684
Int. Cl. B21k *5/12*; **B26b** *23/00*
U.S. Cl. 76—82 **10 Claims**



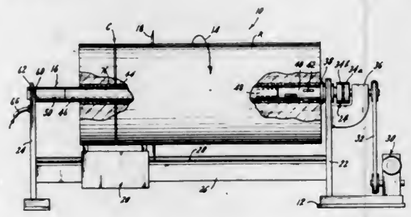
A device for sharpening a tailor's chalk is formed from a unitary sheet having a longitudinal medial slot terminating at one or both ends in side edges converging to a sharp apex and includes a flat horizontal base panel and a first vertical panel between the ends of the base panel and a second panel extending between the top of the first panel and either the bottom of the first panel or an end edge of the base panel. The first panel has a vertical slot extending from its top edge and terminating in side edges terminating in an apex at the base panel. The second panel is either flat and superimposed on and similar to the first panel or an inclined slotted panel extending between the first panel top edge and the base panel and edge or of angular configuration including a horizontal slotted top section and a vertical end section joining the base panel and edge.

3,776,069
WIRE STRIPPER
Lucien Mugnier, Nice, France, assignor to Utica Tool Company, Inc., Orangeburg, S.C.
Filed Jan. 5, 1972, Ser. No. 215,501
Claims priority, application France, Jan. 6, 1971, 7101042
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 A **14 Claims**



A wire stripper comprising a pair of pivoted arms with hand grips at one end, one arm carrying fixed and movable clamps with outer wire gripping jaws. The clamps are resilient to accommodate different wire sizes. A hairpin-shaped spring between the clamps carries a pair of stripping knives. A cam connected to the movable clamp is actuated by the first stage of hand grip squeezing movement to close the jaws and knives, the second stage of squeezing movement retracting the knives to strip the insulation from the wire. In the third and last stage of squeezing movement the cam releases the jaws and knives, a spring returning the parts to their original position.

3,776,070
ROLL SLITTING MACHINE WITH AIR-SUPPORTED ROLL
Carl A. Stoffels, Flemington, N.J., assignor to Judelshon Industries, Inc., Jersey City, N.J.
Filed Oct. 4, 1972, Ser. No. 295,293
Int. Cl. B23b *5/14*
U.S. Cl. 82—52 **6 Claims**



In a slitting machine for cutting elongated rolls of web material into rolls of narrower widths, a mechanism for supporting the roll to be cut including a mandrel having a rotating chuck at one end, the remainder of which mandrel is a stationery hollow mandrel. As the roll is rotated by the chuck, the core of the roll rotates on, and is supported by, the stationery mandrel. Air is delivered to the interior of the stationery mandrel and is forced through air ports along the top of the mandrel; which forms a thin layer of air between the mandrel and the hollow core. The air layer supports the roll, reduces friction, cools the parts and carries away any loose debris.

3,776,071
PLIER
Josef Krampe, Werner Strasse 4, Herbern/Westf., Germany
Filed Aug. 20, 1971, Ser. No. 173,608
Claims priority, application Germany, Aug. 22, 1970, P 20 41 742.9
Int. Cl. B25b *7/00*
U.S. Cl. 81—415 **6 Claims**

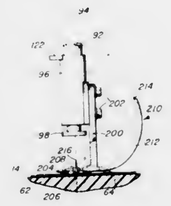


A plier comprising a pair of crossed arms each of which is provided with two overlying sections composed of a synthetic plastic material. The overlying sections form a recesses in each arm in which a part of the other arm is received and pivotably guided.

ERRATUM

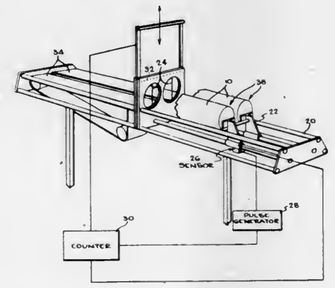
For Class 82—52 see:
Patent No. 3,776,070

3,776,072
METHOD AND APPARATUS FOR CUTTING SHEET MATERIAL
Heinz Joseph Gerber; David R. Pearl, and Robert J. Oswell, all of Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.
Filed Feb. 26, 1971, Ser. No. 119,151
Int. Cl. B26d *1/18*
U.S. Cl. 83—34 **19 Claims**



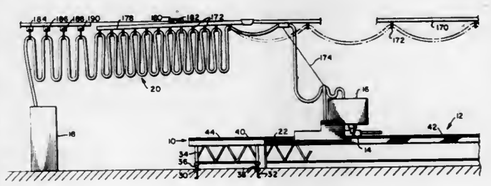
A method and apparatus for cutting parts, patterns, or the like from fabrics, paper or other thin sheet material employing a rotary cutting tool which is supported for movement above a work surface of a penetrable supporting bed. The rotary cutting tool is carried by a numerically controlled translating mechanism which moves it over the work surface in two orthogonal coordinate directions. The tool is rotated at a peripheral speed substantially greater than the translation speed and has a peripheral cutting edge which performs the cutting operation while the tool is translated with a segment of the peripheral cutting edge penetrating through the sheet material supported on the work surface and into the penetrable supporting bed. The rotation of the tool is coordinated with the translation of the tool so that the leading edge of the tool rotates downwardly into the sheet material during the cutting operation. The cutting tool is suspended from the translating mechanism by an adjustable mount and a follower guide or foot that travels over the sheet material with the tool is connected to the adjustable mount and positions the mount so that the segment of the peripheral cutting edge penetrating through the sheet material into the penetrable supporting bed maintains a substantially constant penetration depth regardless of uneveness or variation in height of the penetrable bed.

3,776,073
METHOD AND APPARATUS FOR PREPARING CHEESE CUTS
Heinz Runge, Niles, Ill., assignor to Kraftco Corporation, New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,459
Int. Cl. B26d *5/24*, *7/28*
U.S. Cl. 83—47 **9 Claims**



A method and apparatus for preparing cuts from a food product such as cheese is provided. The method includes advancing a block of cheese upon a support and sensing the advancement of the block. A succession of signals are generated upon sensing the advancement and these signals are counted. The counts are accumulated by a counter until preselected values are reached. The counter initiates a timed sequence each time a desired accumulated preselected value is reached. The timed sequence stops the advancement of the cheese block and initiates a cutting device which divides the cheese into a cut of cheese. The counter may be set to accumulate unequal values so that cuts of cheese are prepared of unequal size.

3,776,074
TRANSFER APPARATUS FOR AN AUTOMATED TOOL CARRIAGE
David R. Pearl, and Lawrence S. Wolfson, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.
Filed Aug. 2, 1972, Ser. No. 277,477
Int. Cl. A41h *43/00*; **B26d** *1/10*
U.S. Cl. 83—71 **29 Claims**



A transfer table is provided for transferring an automatically controlled cutting tool carriage and the cutting tool from

one cutting table to another so that the same tool can be utilized on a plurality of cutting tables. The transfer table engages a cutting table so that the tool carriage can be driven or rolled off of one cutting table onto the transfer table and transported to another cutting table on which the cutting tool is to be operated. The transfer table is provided with a latch mechanism for securing the tool carriage on the transfer table during the transferring operation and may also include a mechanical catch which assists in holding mechanical and electrical limit stops on the cutting tables inoperative whenever the tool carriage is driven on or off of the transfer table. A lock mechanism may be used to hold the cutting and transfer tables together when the tool carriage is not latched in the travelling position. For cutting systems in which the tool carriage and cutting tool are operated from a central computer by means of overhead cabling, a cable support boom may be connected to the transfer table to carry a segment of the cabling during the transfer operation.

3,776,075

MANUFACTURE OF TILES

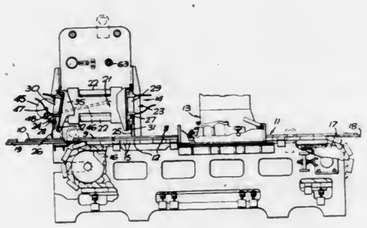
Douglas Frederick Matthews, Reigate, England, assignor to Redland Tiles Limited, Reegate, England

Filed Oct. 2, 1972, Ser. No. 293,949

Claims priority, application Great Britain, Oct. 25, 1971, 49,541/71

Int. Cl. B23d *25/04*

U.S. Cl. 83—110 **10 Claims**



Apparatus for cutting a continuously moving ribbon of tile forming material into discrete tiles of equal length and subsequently trimming the leading edge of each tile, comprises means for moving the ribbon past a cutting station and then a trimming station. At at least one of said stations there is provided a knife mounted on a knife holder reciprocable longitudinally of the direction of travel of the ribbon or tiles. The means for reciprocating the knife holder include a crank member adapted to be rotated once for each length of tile that passes said one station, the throw of the crank member being selected so that during the cutting action of the knife the forward linear speed of the knife is first less than, then greater than, and then finally less than the speed of the ribbon or tile being cut.

3,776,076

WIRE ROD DIVIDING APPARATUS

Albert Hauck, Friedrichstrasse 84, Siegen, Germany

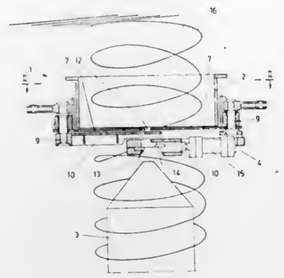
Filed Aug. 4, 1972, Ser. No. 278,069

Claims priority, application Germany, Sept. 21, 1971, P 21 41 972.7

Int. Cl. B21f *11/00*

U.S. Cl. 83—167 **16 Claims**

An apparatus for dividing a continuous series of rings dropping vertically in a helical formation from a delivery mechanism to an underlying collecting device in which the rings accumulate in coil form. The apparatus includes a plurality of pivotal elements which are movable from inoperative positions outside of the path of ring descent to operative positions extending into said path. When thus operatively positioned, the pivotal elements interrupt the further descent of rings into the underlying collecting device. A portion of the strand connecting the rings continuing to accumulate above the pivotal elements to those accumulated in coil form



therebelow is located centrally by the operatively positioned elements in the path of ring descent. A cutting mechanism carried by and movable with the pivotal elements then operates to sever the centrally located portion of the connecting strand, thereby permitting the underlying coil to be removed from the collecting device.

3,776,077

MACHINE FOR SLITTING TUBULAR FABRICS

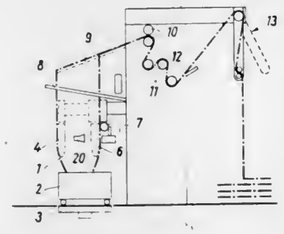
Hermann Letsche, Genkingen, Germany, assignor to Maschinenfabrik Arbach, G. Grozinger, Reutlingen, Germany

Filed June 20, 1972, Ser. No. 264,471

Claims priority, application Germany, June 21, 1971, P 21 30 721.1

Int. Cl. B26d *5/00*

U.S. Cl. 83—175 **14 Claims**



A machine for slitting a tubular knit fabric while traveling in its longitudinal direction along a substantially longitudinal marking line in or on the fabric which may deviate considerably from a straight course. The cutting device is mounted on a carriage which carries an optical tracing device which traces the marking line and causes the carriage together with the cutting devices to be shifted in a direction substantially transverse to the direction of travel of the fabric toward one or another spreading device which hold the tubular fabric distended for being slit. The time required for this transverse movement of the carriage is compensated by automatically reducing the speed of travel of the fabric. If the marking line deviates excessively from a straight course, the carriage will actuate suitable means for twisting the tubular fabric about its axis so as to move the marking line to its proper position.

3,776,078

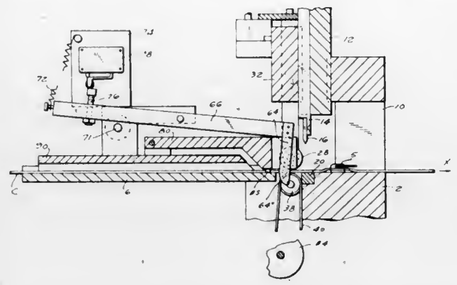
APPARATUS FOR CUTTING CONTINUOUS SLIDE FASTENER CHAINS INTO SLIDE FASTENERS OF PREDETERMINED LENGTH

Morris Perlman, Brooklyn, N.Y., assignor to Carbide Form Grinding, Inc., Brooklyn, N.Y.

Filed Aug. 15, 1972, Ser. No. 280,900

Int. Cl. B26d *5/38*

U.S. Cl. 83—210 **17 Claims**



Apparatus for cutting a continuous slide fastener chain in transverse direction at successive portions of the chain which are not provided with coupling elements and in which a gap is formed between inner edges of the two stringers forming the chain to thereby produce individual fasteners from the chain. The apparatus comprises means for moving the chain in longitudinal direction and a stop finger arranged to ride on the engaged coupling elements and to drop into a gap between the edges of the stringers to thereby engage a bottom stop connecting the two stringers at the end of each gap. The stop finger is temporarily maintained in the dropped position to thereby stop further feeding of the chain and to initiate movement of a cutting blade to cut the chain downstream of the finger in transverse direction, whereafter the finger is released and the cycle repeated at the next gap.

3,776,079

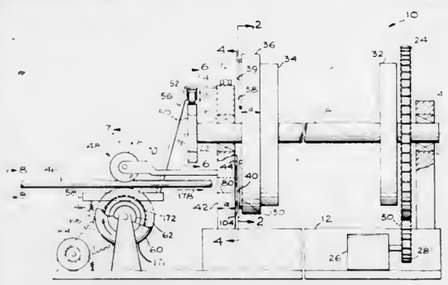
GUILLOTINE CHOPPER ARRANGEMENT

Morris Steinberg, 28318 S. Golden, Palos Verdes Peninsula, Calif., and Mitchell Libow, Beverly Hills, Calif., assignors to said Steinberg, by said Libow

Filed Jan. 17, 1972, Ser. No. 218,064

Int. Cl. B26d *5/22*

U.S. Cl. 83—225 **10 Claims**



An improved guillotine chopper arrangement particularly adapted to chopping heterogenous stranded materials such as transmission lines into short preselected lengths. A high mass inertia wheel is mounted on a shaft for rotation in a preselected direction and at a preselected rotational rate and has pockets cut therein and rotating blade means are coupled in the pockets. Peripheral surfaces of the rotating blade means other than the cutting surface are tightly abutted against matching walls in the blade supporting pockets of the inertia wheel to absorb the impact energy during chopping and transmits same from the blade directly to the intertia wheel. A fixed blade is mounted in a pocket cut in a fixed blade support and the peripheral surfaces of the fixed blade are tightly abutted against matching peripheral walls of a pocket cut into the fixed blade support to absorb the impact energy during the chopping operation and transmits the forces directly to the fixed blade support. The rotating blade means passes in material chopping relationship to the fixed blade and material to be chopped is synchronously fed through an aperture in the fixed blade support, past the fixed blade a preselected distance where it is engaged by the rotating blade means during each rotation and is severed. The feed means is synchronously operated so that feeding is terminated during the chopping operation and feed occurs when the rotating blade means are rotated away from positions adjacent the fixed blade.

3,776,080

CUTTING APPARATUS

Toni Reifenhaeuser, Burglahr, and Helmut Maus, Oberlahr, both of Germany, assignors to Toni Reifenhaeuser, Ritterstrasse, Germany

Filed May 9, 1972, Ser. No. 251,811

Claims priority, application Germany, May 14, 1971, P 21 23 905.4

Int. Cl. B26d *5/20, 4/48*

U.S. Cl. 83—262 **11 Claims**



The present cutting apparatus includes a rotatable knife having an arc-shaped cutting edge extending over an angle of approximately 270° for cutting transversely in a pulling manner through an intermittently fed stream of material, and a rear portion having a shape adapted for covering the portion of the material stream cut off by the cutting portion.

3,776,081

WRAPPER SELECTOR AND DISPENSER

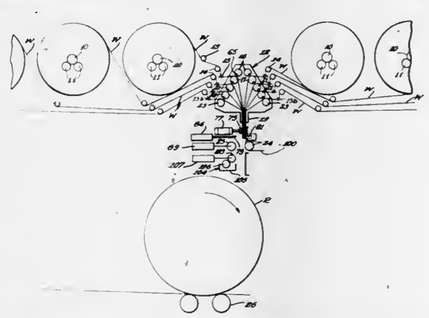
James F. Becker, Wilmington, Del., assignor to Downingtown Division, Beloit Corporation, Downingtown, Pa.

Division of Ser. No. 112,686, Feb. 4, 1971, Pat. No. 3,688,961.

This application Aug. 28, 1972, Ser. No. 284,252

Int. Cl. B26d *7/06;* **B65b** *11/04*

U.S. Cl. 83—272 **8 Claims**



Wrapper selector and dispenser enabling the selection of any one of a plurality of widths or grades of wrapper sheets to

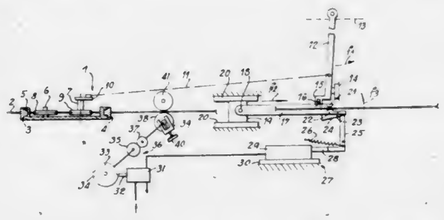
be wrapped about a roll of paper. The selector is in the form of a carriage guided for vertical movement relative to a pair of feed rolls. The carriage is provided with guides guiding the wrapper sheets toward a common throat at the bottom of the carriage, and a gripper is associated with each guide, to advance a selected sheet of paper to the feed rolls upon lowering movement of the carriage. A sheet holder which may be energized to engage all of the wrapper sheets projecting beneath the throat of the carriage is provided to hold the sheets upon return movement of the carriage, to maintain the wrapper sheets under tension and prevent disturbance of the wrapper sheets as the carriage moves in a return direction. The selector further includes a cut-off knife operable to cut the wrapper sheets to length, and sheet take up devices to retract the wrapper sheets from the knife after cutting, and a pressure nip between the take up devices and sheets to prevent the sheets from feeding back to the unwind stands by their own weight.

3,776,082

APPARATUS FOR CUTTING A TUBE INTO SEGMENTS

Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

Filed Oct. 19, 1971, Ser. No. 190,587
Claims priority, application France, Oct. 22, 1970, 7038157
Int. Cl. B23d *25/02*
U.S. Cl. 83—304 **5 Claims**



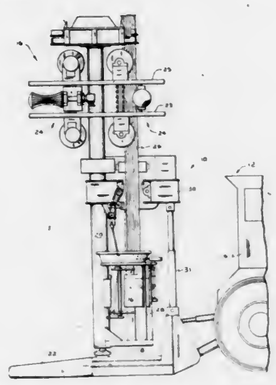
The apparatus comprises a guide for guiding a tube to be cut off by a cutting device, a retractable stop component for alternately pivoting the guide in order to engage the tube under the cutting device and means for the control of said retractable stop component.

3,776,083

LOG CUTTING APPARATUS

Robert L. Propst, 2347 Londonderry Ave., Ann Arbor, Mich.

Filed Apr. 10, 1972, Ser. No. 242,731
Int. Cl. A01g *23/08, 23/08*
U.S. Cl. 83—324 **9 Claims**



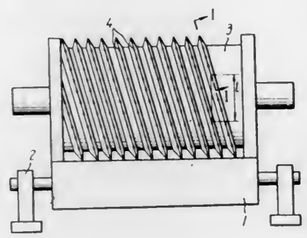
Apparatus for cutting logs, such as tree trunks, into lengths comprising a frame, a pair of spaced substantially parallel shafts rotatably mounted on the frame, and a pair of blade members mounted on the shafts so that a log can be fed between the blades. The blades are rotated in relatively opposite directions so that during a log cutting stroke, the blades move toward each other and into a log therebetween so as to cut substantially entirely through the log. fluid actuated cylinder assembly drives the blades through the cutting stroke. The blades are configured so that they will follow the path of least resistance during cutting movement into a log and the apparatus is particularly adapted for inclusion in a tree harvesting machine which converts standing trees into logs of predetermined length.

3,776,084

DEVICE FOR CUTTING BRAIDED CHEMICAL FIBERS

Vladimir Egorovich Slyvakov, Bolotnikovskaya ulitsa, 46, korpus 3, kv. 25, Moscow, U.S.S.R.

Filed Apr. 24, 1972, Ser. No. 246,544
Int. Cl. D01g *1/10*
U.S. Cl. 83—342 **2 Claims**



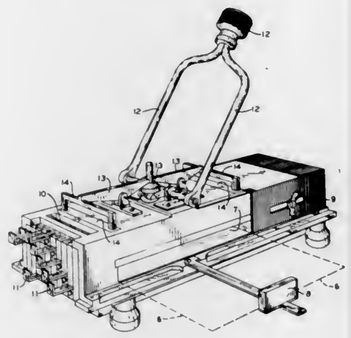
The device is provided with a cylindrical cutter shaft with a sharp helical cutting edge. Rectangular slots with a constant angular pitch are provided on the cutter shaft along the generatrices of the cylinder. Owing to the provision of slots, part of the fibers in the braid remain uncut. This makes it possible to produce a comparatively strong staple sliver wherein upon subsequent drawing differential displacement of the fibers with respect to one another is possible.

3,776,085

PAPER CUTTER FOR CUTTING SPECIALLY CODED STATIONERY FORMS

Daniel Gamez Camacho, Tehuacan, Pueblo, Mexico

Filed Feb. 16, 1972, Ser. No. 226,836
Int. Cl. B26f *1/12*
U.S. Cl. 83—449 **7 Claims**



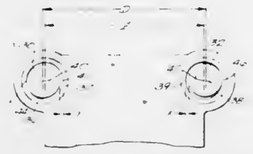
A paper cutter in which special coded forms can be placed in which the cutter has an adjustable knife arrangement for cutting the inserted stationery forms in such manner as to indicate, for example, sums of money. The special form is coded, for example, by imprinting thereon columns in which money amounts are designated, and when the forms are placed in the cutter in a certain manner knives can be adjusted for severing the form at a predetermined point along each of the columns, thereby indicating a sum of money and which can be read either from the cut off form or from the stub or coupon removed therefrom in the cutting operation.

3,776,086

DIE SET

Kasimir Janiszewski, 5426 W. Andover Rd., Milwaukee, Wis.

Filed July 21, 1972, Ser. No. 273,893
Int. Cl. B26d *5/08*
U.S. Cl. 83—637 **5 Claims**



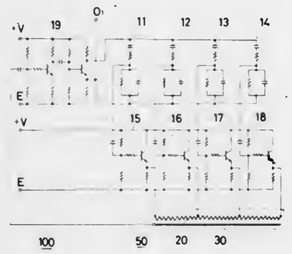
A die set includes a die shoe with upstanding pins and a punch holder having a depending punch and bushings which reciprocally receive the pins of the die shoe with the center distance of the pins greater than the center distance between the bushings to cause line contact of a portion of the circumference of the pins with the bushings. This engagement of the pins and bushings minimizes tilting of the punch holder and facilitates removal of the punch holder and also allows greater deflection of the die shoe in use before the pins contact the walls of the bushings thus reducing wear and galling of the pins and bushings.

3,776,087

ELECTRONIC MUSICAL INSTRUMENT WITH VARIABLE IMPEDANCE PLAYBOARD PROVIDING PORTAMENTO

Miklo Ogi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Continuation of Ser. No. 35,619, May 8, 1970, abandoned. This application Dec. 7, 1971, Ser. No. 205,588
Claims priority, application Japan, May 14, 1969, 44/44498; May 14, 1969, 44/44499; May 14, 1969, 44/44500; May 14, 1969, 44/44501; May 14, 1969, 44/44502
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 **5 Claims**



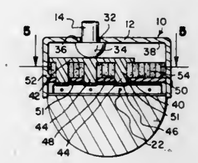
An electronic musical instrument is disclosed in which a musical scale keyboard and a portamento playboard are arranged parallel and close to each other. Associated with the portamento playboard, there is provided a continuously variable frequency oscillator covering several octaves. The portamento playboard includes a manually controllable variable impedance element which is normally open circuited to render the oscillator normally nonoperative. The variable impedance element is manually actuated so that the circuit is closed providing an impedance to control the frequency of the oscillator. The impedance element is so arranged that the position thereof actuated produces the same named note as the nearest key in the musical scale keyboard.

3,776,088

CHORD PLAYING ATTACHMENT FOR STRING MUSICAL INSTRUMENTS

Cecil E. P. Jones, 3782 Oseola St., Denver, Colo.

Filed Sept. 20, 1972, Ser. No. 290,628
Int. Cl. G10d
U.S. Cl. 84—317 **7 Claims**



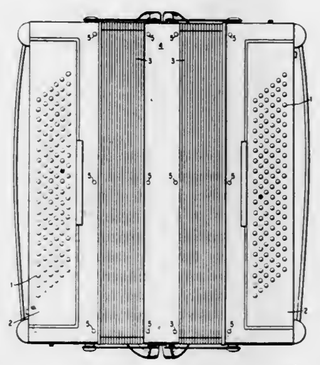
A chord playing attachment for fastening onto the neck of a string musical instrument, which attachment utilizes a plurality of weighted pressure feet actuated by buttons and disposed in proper relationship to one another in biased condition away from the strings of the musical instruments when in their static position. When the buttons are actuated by manually depressing them they mechanically provide a plurality of different chords in such a manner that all of the feet of a given button strike the strings of the instrument simultaneously.

3,776,089

MUSICAL INSTRUMENT, SIMILAR TO THE ACCORDION AND THE LIKE, FOR EASILY PRODUCING RAPID HARMONIC SEQUENCES

Arthur Eslon Cohen, c/o S. Cooke, 1504 Upshire Rd. Apt. 2C, Baltimore, Md.

Filed May 12, 1971, Ser. No. 142,636
Int. Cl. G10d *11/00*
U.S. Cl. 84—376 **2 Claims**



A musical instrument, similar to the accordion and the like, containing two standard accordion bass section devices, on

each of which preset chords can be produced by depressing single buttons, and on each of which individual bass tones can be produced by depressing other single buttons, such that a wide variety of rapid harmonic sequences can be easily produced.

3,776,090

SOUND PRODUCING PASSAGE FOR MUSICAL WIND INSTRUMENTS

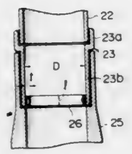
Yasuharu Ihara, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Sept. 11, 1972, Ser. No. 287,875

Claims priority, application Japan, Sept. 10, 1971, 46/82484

Int. Cl. G10d *7/00*

U.S. Cl. 84—380 **7 Claims**



In a musical wind instrument, an annular projection such as an annular ring is provided on the inner wall of the tubular neck section, or tubular body section contiguous thereto, or cylindrical joint member connecting the neck and body sections. The annular projection narrows the air passage at the portion in which the projection is provided, and serves to obtain sharp and clear tones which are very quick in rising or building-up thereof.

3,776,091

FOLDABLE PERCUSSION MUSICAL INSTRUMENT

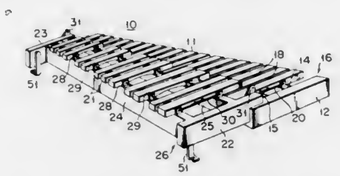
Shigeo Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Aug. 11, 1972, Ser. No. 279,760

Claims priority, application Japan, Aug. 12, 1972, 46/71671; Aug. 12, 1971, 46/71672

Int. Cl. G10d *13/08*

U.S. Cl. 84—403 **22 Claims**



A percussion musical instrument includes a first support frame for holding one group of tone bars and a second support frame for carrying another group of tone bars. The second support frame has both of its longitudinal ends connected rotatably to the corresponding longitudinal ends of the first frame in such a manner that the tone bars carried on the second support frame are made collectively to rotate between the first position horizontally aligned with the tone bars of the first support frame and the second position where the tone bass of the second support frame spatially face those of the first support frame, whereby the instrument can be easily set in the first position for performance and to the second position convenient for the whole musical instrument to be carried by the player himself.

3,776,092

FASTENER

Clifford A. Seckerson, Iver Heath, England, assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 16, 1971, Ser. No. 208,723

Claims priority, application Great Britain, Dec. 23, 1970, 6,113/70

Int. Cl. F16b *13/04, 19/00*

U.S. Cl. 85—5 R **8 Claims**



A resilient synthetic plastics fastener having a head and a shank extending outwardly from the undersurface of the head and comprising a longitudinal stem and two longitudinal flanges lying one on each side of the stem. The flanges are joined to the stem by resilient webs and are compressible inwardly of the shank towards the stem. Each flange has a longitudinal edge remote from the web and an outer surface which comprises a longitudinal operative face adjacent the said edge and a longitudinal inoperative face between the operative face and the web. The operative face of each flange is convexly curved in section and is adapted to engage the rim of a circular aperture when the shank is inserted through the aperture and the inoperative face is adapted to clear the rim of the aperture so as to substantially reduce the area of interference between the flanges and the rim of the aperture.

3,776,093

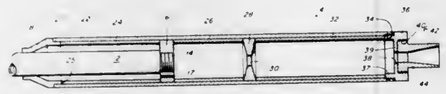
MUZZLE BLAST SUPPRESSOR

Robert A. Leverance, College Park, and Morrison B. Moore, III, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 13, 1969, Ser. No. 876,519

Int. Cl. F41c *21/18*

U.S. Cl. 89—14 D **1 Claim**



A muzzle blast suppressor having an elongate hollow body closed at its rearward end by a rearwardly tapering closure, centrally apertured to receive the barrel of a firearm, and having an internally disposed centrally apertured and threaded disc to which the muzzle of the firearm is threadedly secured. The forward end of the hollow body is closed by a centrally apertured closure, and a single internal baffle is positioned intermediate the forward closure and the threaded disc.

3,776,094

FLEXIBLE STRUCTURAL MEMBER FOR A VEHICLE CASING

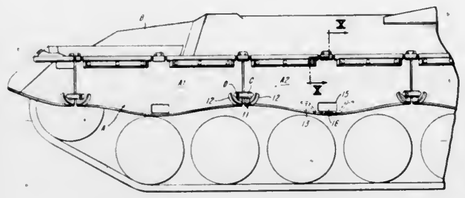
Martin Gilles, Cologne, and Anton Thiel, Garching/Alz, both of Germany, assignors to Clouth Gummiwerke AG, Cologne, Germany

Filed Sept. 29, 1971, Ser. No. 184,874

Claims priority, application Germany, Oct. 1, 1970, P 20 48 205.7

Int. Cl. F41h *5/06*

U.S. Cl. 89—36 A **13 Claims**



A vehicle casing is made up of interconnected structural members with each structural member comprising a plurality of flat plates arranged in adjacent spaced coplanar relation and encased in elastic material which holds the plates in flexibly interconnected relation. Fabric embedded in the elastic material on at least one side of the plates provides reinforcing for the structural member.

3,776,095

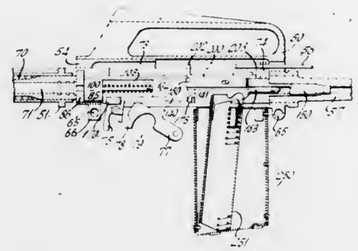
WEAPON CONVERSION BOLT ASSEMBLY DEVICE

Maxwell G. Atchisson, Bldg. 14, Apt. 1, Sussex Clr., Marietta, Ga.

Filed Nov. 5, 1971, Ser. No. 196,087

Int. Cl. F41d *11/00*

U.S. Cl. 89—128 **31 Claims**



A conversion bolt assembly for a hand carried weapon having automatic and semi-automatic or semi-automatic only modes of operation. The bolt assembly includes a tube having a fixed back plate on one end and longitudinally extending slots to permit spreading of the other end of the tube for assembly of the internal components. The internal components include a bolt having a firing pin and ejector assembled thereon, a recoil mechanism, an extractor affixed to the tube, and a trip for automatic operation actuable by the bolt. An external gas deflector is affixed to the bolt on a guiding projection extending through one of the slots in the tube. A removable cartridge barrel is provided at the other end of the tube.

3,776,096

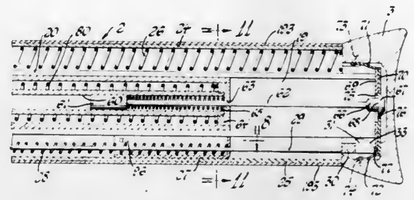
GAS OPERATED FIREARM

John S. Donovan, 16503 Santa Rosa, Detroit, Mich.

Filed Oct. 21, 1971, Ser. No. 191,297

Int. Cl. F41d *5/08*

U.S. Cl. 89—174 **20 Claims**



A belt fed, gas fired machine gun has its gas port located just forward of the firing chamber so that the weight of its associated cylinder and piston is concentrated towards the rear of the gun. Power for operating the bolt, firing pin hammer and ammunition feed is stored in springs opposing movement of the piston in response to the gas firing pressure. The bolt has longitudinal movement only and is locked in chambered position by a cam actuated rotary latch which also performs the triggering function when the gun is operated in the full automatic setting. Interlinked ammunition is fed transversely through the gun by reciprocal tray pieces which are actuated by leaf springs whose return movement is imparted by return of the bolt to its chambered position. Vertically slidable sear plates latchably control the firing pin hammer, which is mounted telescopically within the bolt. The gun is assemblable for either right or left hand operation.

3,776,097

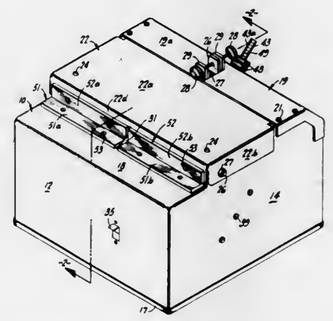
BEVELING MACHINE AND METHOD

Gerald T. Rooks, San Francisco, Calif., assignor to Circuit Equipment Corporation, San Bruno, Calif.

Filed Jan. 21, 1972, Ser. No. 219,636

Int. Cl. B27c *5/04*

U.S. Cl. 90—16 **6 Claims**

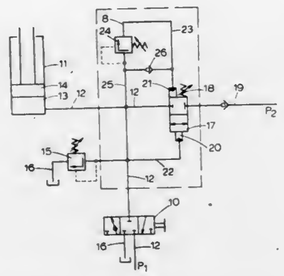


Beveling machine and method in which a workpiece is passed over a small portion of the cutting edge of a circular cutting blade. Guides are provided for positioning the workpiece, and means is provided for adjusting the relative positions of the guides and blade to adjust the depth and angle of cut.

3,776,098
CONTROL ARRANGEMENTS FOR MINE ROOF SUPPORT PROPS

Volker Behrens, Dortmund-Scharnhorst; Walter Weirich, Dortmund, and Harry Rosenberg, Ludinghausen, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Sept. 15, 1972, Ser. No. 289,711
Claims priority, application Germany, Sept. 17, 1971, P 21 46 502.1
Int. Cl. F15b *13/042*
U.S. Cl. 91—29 **14 Claims**



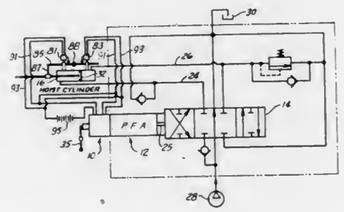
A control arrangement for a mine roof support prop which arrangement has a setting valve which can connect the working chamber of the prop to a pressure fluid source to extend the prop or to a storage vessel to retract the prop. A further valve device incorporates a slide valve which is automatically moved against the force of a spring when the prop is set and the pressure in the working chamber reaches the pressure of the source to connect a further pressure fluid source to the working chamber.

The further source supplies fluid at a higher pressure than the first source and the valve device has a further spring-loaded slide valve which opens to effect closure of the first slide valve when the pressure in the working chamber reaches the pressure of the further source.

3,776,099
AUTOMATIC RELEASE AND CENTERING DEVICE

Dale A. Knutson, Oconomowoc, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Dec. 6, 1971, Ser. No. 204,902
Int. Cl. F15b *13/16, 13/044*
U.S. Cl. 91—358 A **8 Claims**

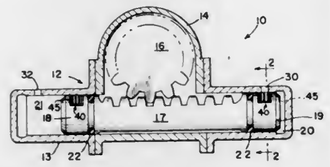


An automatic release and centering device for a double acting hydraulic cylinder, the device includes a housing, an actuating rod mounted for axial motion within the housing and being connected to the control valve for the hydraulic cylinder, the actuating rod being movable in either direction from a neutral position to an actuated position, a pair of detent members mounted on the rod, each detent member being connected to move in one direction with the rod, a detent assembly positioned to engage and hold a detent member in an actuated position, a spring positioned to bias the detent members and the rod to the neutral position and a pressure actuated release system to release the detent assembly from the detent member.

3,776,100
CUSHION DEVICE

Rudolph E. Yeh, Elmhurst, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 80,366, Oct. 13, 1970, abandoned.
This application May 1, 1972, Ser. No. 249,047
Int. Cl. F15b *15/22*
U.S. Cl. 91—409 **5 Claims**

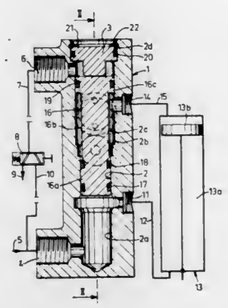


A cushion device for a contractible chamber formed by a housing and a piston movable therein with an exhaust port normally permitting fluid to exhaust from said chamber, said cushion device comprising a recess within a wall of the piston unit, a decelerating member movable within said recess and having a surface complementary to the wall of the housing adjacent to the exhaust port, with interruptions therein for metering fluid from the interior of the chamber as the piston approaches the end of its stroke.

3,776,101
CONTROL DEVICE FOR CONTROLLING A PNEUMATIC PISTON

Thomas Nussbaumer, Ammannsmatt 13, Zug, Switzerland

Filed July 13, 1972, Ser. No. 271,215
Claims priority, application Switzerland, July 23, 1971, 10863/71
Int. Cl. F15b *13/42*
U.S. Cl. 91—420 **5 Claims**

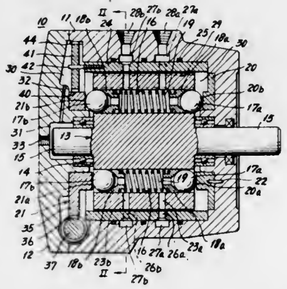


A control device for controlling a pneumatic piston and cylinder type actuator in conjunction with a 2-position 3-port valve comprises a differential piston mounted in a stepped cylinder bore for sliding movement into one or the other of two end positions according to whether compressed air is admitted under the control of the valve to the smaller diameter end of the bore or to both the smaller and larger diameter ends of the bore. Two ports opening respectively to the smaller and larger parts of the bore are controlled by the differential piston and each acts as a combined flow-and-return passage for pressure fluid for one end of the motor cylinder. A by-pass passage having both ends opening to the larger diameter portion of the bore permits air exhausting from the motor into this portion of the bore, during part of the travel of the differential piston, to by-pass the larger diameter part of the piston and to exhaust to atmosphere via an exhaust port which is in permanently open communication with a part of the bore between the larger and smaller diameter ends of the piston.

3,776,102
VARIABLE-DISPLACEMENT TYPE FLUID PUMP OR MOTOR

Masayoshi Katayama, Yokohama, Japan, assignor to Tokico Ltd., Kanagawa-ken, Japan

Filed Mar. 2, 1972, Ser. No. 231,172
Claims priority, application Japan, Mar. 3, 1971, 46/10596
Int. Cl. F01b *13/04*
U.S. Cl. 91—483 **7 Claims**

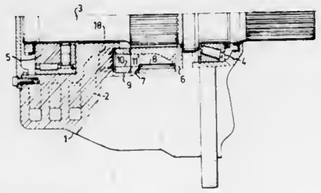


A variable-displacement type fluid pump or motor comprises, essentially, a rotor having ball pistons movable in the axial direction, a pair of cam members against which the ball pistons abut, ports for supplying hydraulic fluid into and discharging the same out of spaces between the ball pistons within cylindrical bores, a valve sleeve having ports for determining the timing of supply and discharge of the hydraulic fluid, and means for transmitting the rotation of the cam member to the valve sleeve. One of the pair of cam members is fixed, while the other is rotatably supported to a casing. The valve sleeve is also rotatably supported and is rotated by an angle equal to one-half of the rotational angle of the movable cam member in the same direction by the rotation of the movable cam member transmitted by way of the rotation transmitting means.

3,776,103
HYDRAULIC ENGINE HAVING A FLAT SLIDE

Olof Gunnar Kjellqvist, Ornskoldsvik, Sweden, assignor to AB Hagglund & Soner, Ornskoldsvik, Sweden

Filed Mar. 2, 1972, Ser. No. 231,103
Claims priority, application Sweden, Mar. 9, 1971, 2998/71
Int. Cl. F01b *1/00, 3/00*
U.S. Cl. 91—487 **6 Claims**

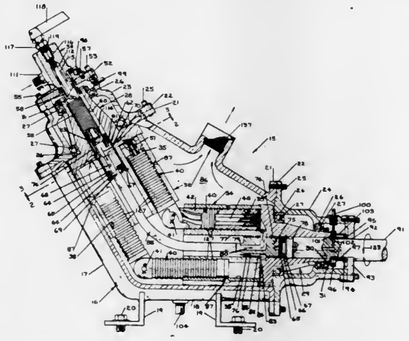


The present invention relates to a radial piston type hydraulic engine comprising a flat slide attached to the engine housing, said slide being provided with bores arranged to connect the pressure medium inlet passages and outlet passages of the engine in the engine housing with cylinder chambers of said engine. These chambers are located in a cylinder block which abuts the slide and is rotatable in relation thereto. Displaceable bushings are arranged in the engine housing and abut the slide and are subjected to the pressure prevailing in respective inlet and outlet passages to urge the slide towards the cylinder block with a force dependent on the pressure in said passages. The invention is mainly characterized in that passages are arranged between respective inlet and outlet bores in the slide in order to supply pressure medium from the space between the slide and the cylinder block to pressure chambers located in the engine housing. The pressure in the pressure chambers is arranged to act on displaceable balancing means which bear against the slide so that said balancing means, under the influence of the pressure in the chambers, urge the slide against the cylinder block with a force which varies in dependence on the pressure variations in the space between the slide and the cylinder block in the region of the discharge orifices of the passages while the engine is running.

3,776,104
FLUID OPERATED POSITIVE DISPLACEMENT ROTATING ENERGY CONVERTER

James E. Oliver, 520 Riverside Dr., Holly Hill, Fla.

Filed June 22, 1971, Ser. No. 155,505
Int. Cl. F04b *1/02, 3/00*
U.S. Cl. 91—500 **9 Claims**

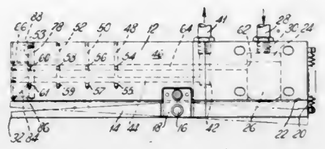


An engine constructed to operate on steam or other compressed gases obtained from boiling liquids such as water, freon, or the like, and utilizing a closed system wherein the expanded gases are condensed and recycled. The engine includes two clusters of cylinders mounted for rotation about axes disposed at an obtuse angle to one another and which are connected by double ended pistons, the ends of which are likewise disposed at an obtuse angle to one another and operate in complementary cylinders of the two cylinder clusters, so that as the two cylinder clusters revolve as a unit, the cylinders engaged by the two ends of each double ended piston will move toward and away from one another so that said cylinders reciprocate on the piston ends, as the pistons revolve with the cylinders. A valve system supplies gas under pressure to complementary cylinders of the two cylinder clusters which are located in close proximity to one another and which are at a minimum volume, due to the pistons thereof being in close proximity to the cylinder heads. This causes the cylinder clusters to revolve by forcing the cylinders to which the gas is being supplied, to move away from one another in order to increase the volume of said cylinders and accommodate more gas as it enters the cylinder chambers. An output shaft is connected to one of the cylinder clusters and rotates therewith.

3,776,105
PACKET FORMING

John Robert Coates, Deptford, London, England, assignor to Molins Limited, London, England

Filed July 7, 1971, Ser. No. 160,380
Claims priority, application Great Britain, July 17, 1970, 34,755/70
Int. Cl. B31b 1/28
U.S. Cl. 93—12 R 18 Claims

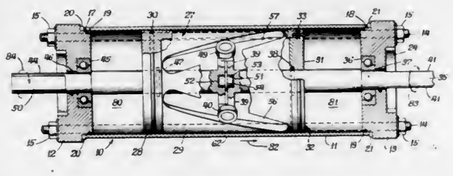


A method of and apparatus for making packets, the method comprising folding the packet material round a former, securing the packet material to form an open-ended packet, collapsing the former so as to allow easy removal of the packet from it, and blowing the formed packet off the former by means of one or more jets of air.

3,776,106
LINEAR TO ROTARY MOTOR

Paul J. Pish, 155 Bedford Rd., Hoffman Estates, Ill.

Filed Apr. 7, 1972, Ser. No. 242,078
Int. Cl. F01b 3/00
U.S. Cl. 92—33 19 Claims



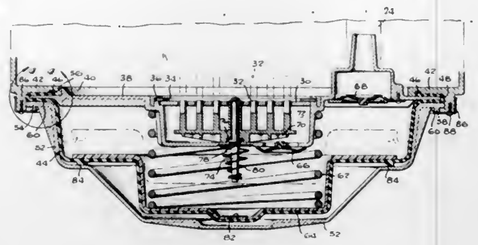
A rotary apparatus has a variety of applications as, for example, a shock absorbing coupling between driving and driven shafts, an apparatus for converting fluid inputs to the rotation of one or two shafts, an integrator for algebraically adding mechanical input signals and fluid input signals, etc. The apparatus comprises a piston within a fluid cylinder. The piston has two heads spaced apart with a skirt connecting the heads. One rotatable shaft extends through one end of the cylinder and one of the heads. A second rotatable shaft coaxial with the first extends through the other end of the cylinder and the other of the heads. Each shaft is connected by cam followers to cam slots to the piston skirt so that as the piston moves one direction in the cylinder it tends to rotate one shaft in one direction and the other shaft in the opposite direction and vice versa.

3,776,107
DIAPHRAGM PUMP FOR A RECIRCULATING TOILET

Michael R. Molus, Chatsworth, Calif., assignor to Monogram Industries, Inc., Chatsworth, Calif.

Filed July 3, 1972, Ser. No. 268,928
Int. Cl. F01b 19/00; F16j 3/00
U.S. Cl. 92—99 4 Claims

An improved pump filter for a recirculating toilet system includes a one-piece elastomeric diaphragm that is retained by a cover plate which is captured by a yieldable clamping ring. Normal pump operation is achieved through application of a pneumatic fluid such as compressed air. Potentially dangerous pressure excesses between the cover and the diaphragm can escape when the clamping ring holding forces are exceeded, and excess pressures tend to increase pressure to the "O" ring



seal section thereby improving the liquid seal while relieving the excess or overpressure as the cover plate clamping ring yields in the preferred direction. A bead on the diaphragm periphery functions as an "O"-ring seal when the pump is mounted below the waste tank.

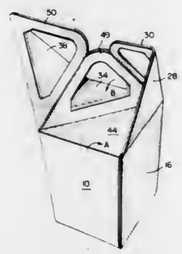
ERRATUM

For Class 93—39 see:
Patent No. 3,776,105

3,776,108
METHOD FOR FORMING A CARTON WITH INTEGRAL HANDLE

John M. Nock, New Castle, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 4, 1972, Ser. No. 277,880
Int. Cl. B65d 5/46
U.S. Cl. 93—39 R 4 Claims

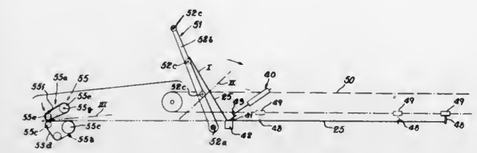


A carton formed from a single blank of material comprising pairs of top flaps foldably attached to adjacent side walls, with integral handle flaps foldably attached to each other and to the top flaps, wherein by proper manipulation of the top flaps and handle flaps, the carton is closed to automatically align the handle flaps in an upright position.

3,776,109
FOLDER FOR LARGE BOX BLANKS

Kenneth G. Clark, Pennington; Ernest T. DePass, Bound Brook; Abraham J. Manfredonia, Hillsdale, all of N.J., and Eugene A. Reiter, Morrisville, Pa., assignors to Union Camp Corporation, Wayne, N.J.

Filed Apr. 6, 1972, Ser. No. 241,777
Int. Cl. B31b 3/26
U.S. Cl. 93—49 R 8 Claims

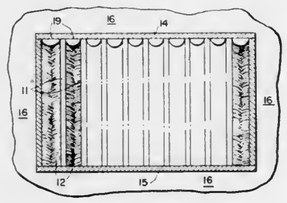


Apparatus for picking up a large size box blank from a stack, feeding it into a folding mechanism which folds one end of the blank along a pre-scored line, and then transferring such partially folded blank to a section where one man can fold the other end of the blank along a pre-scored line and feed the folded blank into a conventional piece of equipment, such as a stitcher or taper, to secure together the end of the blank and form a tube.

3,776,110
DOORLESS PASSBOX FOR X-RAY CASSETTES AND THE LIKE

Ralph S. Clayton, 3044 Fillmore Ave., El Paso, Tex.

Filed Jan. 21, 1972, Ser. No. 219,735
Int. Cl. G03d 17/00
U.S. Cl. 95—1 11 Claims

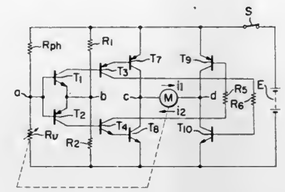


A passbox between light and dark rooms for X-ray cassettes or the like. A plurality of slots are provided in the common wall between the light and dark rooms, each slot of sufficient dimensions for an X-ray cassette or the like to be passed completely through the slot from the light room to the dark room. A suitable material including tough resilient fibers extends from one or both walls of each slot across the slot in sufficient volume to form a light seal. The fibers are sufficiently stiff to form the light seal in the absence of an object located in the slot and yet smooth, strong and flexible enough to be pushed aside to permit an object such as an X-ray cassette or the like to pass through the slot and then to return to its original light tight position.

3,776,111
AUTOMATIC EXPOSURE DETERMINING DEVICE

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 17, 1972, Ser. No. 307,346
Claims priority, application Japan, Nov. 30, 1971, 46/111757
Int. Cl. G03b 7/08, 9/02; H02p
U.S. Cl. 95—10 CD 6 Claims

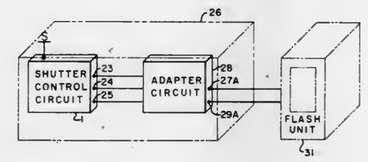


A motor driven automatic exposure determining device for a camera in which the motor is operated in forward or reverse direction from a single voltage source. In addition to driving an exposure control element, such as a shutter speed control mechanism or a diaphragm aperture control mechanism, the motor drives a variable impedance of a bridge circuit for balancing the bridge circuit. Another impedance of the bridge circuit is a photoelectric element responsive to light from the scene to be photographed. A transistor switching circuit, comprising four transistors, is employed to control the connection of the motor terminals to the terminals of the single voltage source by providing circuits for energizing the motor for forward or reverse rotation depending upon which of two pairs of the transistors is rendered conductive by a detecting transistor circuit responsive to bridge unbalance and to the direction of unbalance. By a unique interconnection of the detecting circuit and the switching circuit, a single transistor of the detecting circuit renders a pair of transistors of the switching circuit conductive simultaneously and with low power consumption.

3,776,112
ADAPTER CIRCUIT FOR USE WITH AUTO EXPOSURE CAMERA

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 11, 1972, Ser. No. 279,989
Int. Cl. G03b 15/05, 9/70, 7/16
U.S. Cl. 95—10 CE 7 Claims

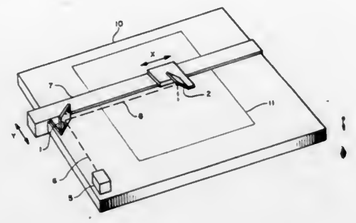


An adapter circuit is coupled to a light integrating automatic exposure control circuit of a camera to effect Flashing and Quenching operations of an associated Electronic Flash unit over a two wire connection therebetween. The adapter circuit precludes the transmission of a quench control signal from the camera to the Flash unit until a return signal, representative of a firing of the Flash unit, is received from the Flash Unit.

3,776,113
OPTICAL ARRANGEMENT FOR GRAPHICAL PLOTTERS

Robert G. Parks, Azusa, and Bruce D. Jimerson, San Pedro, both of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.

Filed Aug. 31, 1972, Ser. No. 285,202
Int. Cl. G03b 29/00
U.S. Cl. 95—12 **2 Claims**

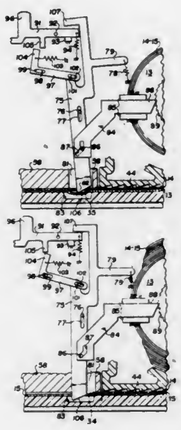


A collimated light source may be mechanically deflected in a cartesian reference frame to record graphical data on photosensitive media. Conventional or special high speed electromechanical plotting apparatus may be used to implement deflection.

3,776,114
PHOTOGRAPHIC APPARATUS

Evan A. Edwards, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 25,848, April 6, 1970, Pat. No. 3,684,206. This application Mar. 2, 1972, Ser. No. 231,438
Int. Cl. G03b 19/04
U.S. Cl. 95—31 FM **8 Claims**

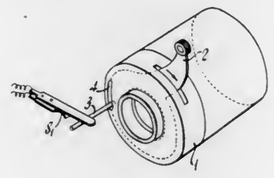


In a double compartment roll film cartridge loaded with an elongate strip of film protected by a strip of backing paper, the leading end of the paper extends from a roll of film and paper in the film supply compartment into the film take-up compartment where it is connected to a winding core. The leading end of the film lies along the corresponding portion of the paper but is not fixed or otherwise positively attached to the paper. As the core is rotated, the film is moved by frictional engagement with the paper and is wound about the core between alternate convolutions of the paper. The backing paper has a camera lock up perforation, and a metering system in a camera for receiving the cartridge arrests advancement of the film by sensing the perforation while the trailing ends of both the film and paper are in the film passageway leading into the take-up compartment, thereby improving light-tightness of the passageways leading into the two compartments.

3,776,115
CAMERA SHUTTER SYSTEM

Kyusei Kanno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 22, 1971, Ser. No. 210,697
Claims priority, application Japan, Apr. 17, 1971, 46/24685
Int. Cl. G03b 9/02
U.S. Cl. 95—53 EB **4 Claims**

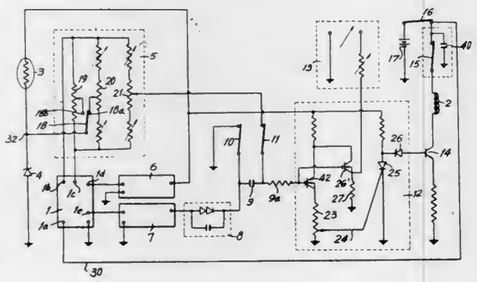


A camera includes a focal plane shutter with an electrical timing network and a lens shutter. The timing network includes an RC timing circuit connected through a first switch to a battery and a second switch shunting the RC capacitor and opened with the opening of the focal plane shutter. The first switch is opened and closed with the charging and discharging of the lens shutter, and a solenoid controlled by a solid state switch whose input is connected across the capacitor controls the shutting of the focal plane shutter.

3,776,116
ELECTRIC CAMERA SHUTTER WITH ENERGY CONTROLS

Seinan Miyakawa, Tokyo, and Mitsuhiko Shimoda, Niiza, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 9, 1972, Ser. No. 251,764
Claims priority, application Japan, May 13, 1971, 46/37734; May 19, 1971, 46/39721; May 19, 1971, 46/39722
Int. Cl. G03b 9/62, 7/08; G01j 1/46
U.S. Cl. 95—53 EB **4 Claims**

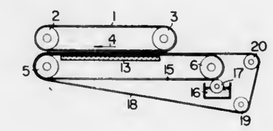


A camera which is capable of automatically determining the extent to which film in the camera is exposed. In order to terminate an exposure an electromagnet is deenergized in order to release a trailing shutter curtain. The circuitry provides for the electromagnet when it is deenergized an operation which will prevent any delay due to counter electromotive force generated when the electromagnet is deenergized. Also the circuitry has a voltage source which is capable of being checked. This checking of the condition of the voltage source takes place by way of a checking circuit which includes a resistor and series-connected diode connected to a meter which indicates the condition of the voltage source. A switch is capable of connecting the voltage source to this circuit when the voltage source is to be checked. The diode is connected between the meter and the remainder of the checking circuit in a forward direction so that the meter will not be influenced in any way by the checking circuit when the latter is not operated. Furthermore, the circuitry includes a light-responsive circuit and a signal-transmitting circuit for participating in the determination of the extent of exposure, and a constant voltage is supplied by the circuitry to both of these latter circuits for controlling them with compensation also for any thermal variations which may occur.

3,776,117
METHOD AND APPARATUS FOR DEVELOPING FOR DIAZO TYPE COPYING MACHINES

Yugoro Kobayashi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1972, Ser. No. 226,713
Claims priority, application Japan, Feb. 22, 1971, 46/8506
Int. Cl. G03d 7/00, 5/00
U.S. Cl. 95—89 G **5 Claims**

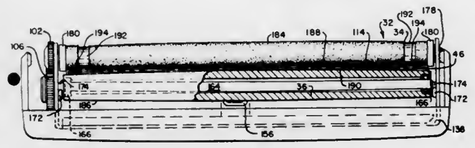


A method and an apparatus wherein a conveyer device capable of holding liquid is supplied with a developing liquid and heated to vaporize the developing liquid. Photosensitive sheets of the diazo type are exposed to the vaporized developing fluid after being exposed to an optical image of an original, so that latent images formed on them can be rendered visible.

3,776,118
PHOTOGRAPHIC FILM PROCESSING APPARATUS

John J. Driscoll, Andover, and James M. Whall, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,897
Int. Cl. G03d 9/02
U.S. Cl. 95—89 L **9 Claims**

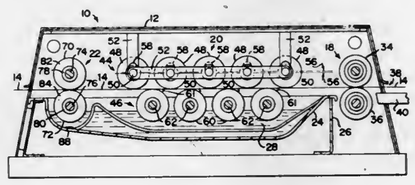


Apparatus for spreading a photographic processing fluid between a pair of elements, at least one of which forms part of a film unit. A pair of spreader rollers having juxtaposed sheet-contacting facing surfaces are rotatably mounted between ears of a mounting bracket. In this context, each end of one roller is rotatably mounted in a respective bracket ear. The other roller is hollow and rotatably mounted on an elongated shaft extending therethrough by a pair of spaced apart bearing assemblies located within that roller. Each end of the shaft is slideably disposed is an elongated slot of a respective bracket ear. A spring arrangement acts against the shaft intermediate each end of the hollow roller and the adjacent bracket ear to yieldably urge the roller mounted thereon towards the other roller. Typically, the aforementioned pair of elements have an increased thickness along respective longitudinal edges thereof and each bearing assembly is located to be disposed adjacent one such longitudinal edge as the elements are advanced between the sheet-contacting facing surfaces of the rollers. Also preferably the sheet-contacting facing surfaces are initially configured to provide a layer of such fluid having a substantially uniform thickness widthwise of such pair of elements as they are advanced therebetween.

3,776,119
DIFFUSION TRANSFER PRINTING PLATE PROCESSOR

Thomas W. Slingsby, Old Saybrook, Conn.; Hugh C. Neville, Barrington, and Karl A. Heise, Warwick, both of R.I., assignors to Richmond Graphic Systems, Inc.

Filed June 22, 1972, Ser. No. 265,146
Int. Cl. G03d 3/00
U.S. Cl. 95—89 A **15 Claims**



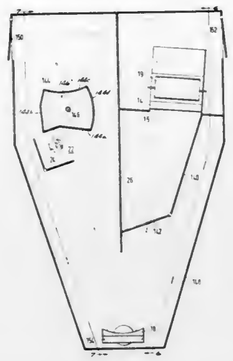
A developing and processing machine used for processing diffusion transfer printing plates and the like comprising a casing in which is located a transport means which at least partially defines a path of travel for the positive plate wherein this path is specifically defined and configured to be substantially planar thereby preventing the bending or curving of the positive plate. A second path of travel is also defined within the casing through a tank portion designed to hold developer fluid within said casing. The transport means include a set of infeed rolls located at the entrance to the casing, an applicator means including two applicator roll assemblies at least one of which is arranged in intercommunicating relation between the tank portion and the positive plate, and exit rolls which may be disposed in cooperative relation with a wash means. A separating means in the form of a pivotally mounted deflector plate may also be mounted adjacent the infeed roll so as to separate the positive and negative members as they are channeled along their individual paths of travel. One or more of the applicator rolls may also be movably mounted in a direction substantially transverse to the path of travel of the positive member so as to allow said movable roll to be floatingly mounted thereon as the positive member passes through the casing.

3,776,120
LARGE-PICTURE CAMERA

Warner Kraus, 31 Bauerstrasse, Munich, Germany

Filed Aug. 6, 1971, Ser. No. 169,633
Claims priority, application Germany, Aug. 7, 1970, P 20 39 373.1
Int. Cl. G03b 15/06
U.S. Cl. 95—82 **15 Claims**

A large-picture camera for producing a positive photographic picture of an object especially a human being, in essentially natural size, comprises means for supporting a positive photographic material at an image plane which is adjacent



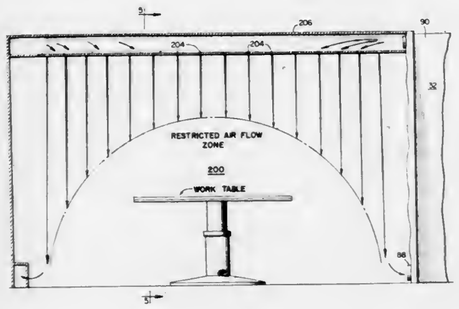
and the adjacent first supporting means such that an object at the pick-up area is imaged by the reflective objective at the image plane. Screen means prevent any substantial amount of light stemming from the illuminating means from arriving at the image plane via any other path than via the reflective objective.

3,776,121

CONTROLLED ENVIRONMENTAL APPARATUS FOR INDUSTRY

Andrew Truhan, R.D. No. 3, Box 392T, Somerset, N.J.

Filed June 23, 1972, Ser. No. 265,728
Int. Cl. F24f *13/06, 9/00*
U.S. Cl. 98—33 R **5 Claims**



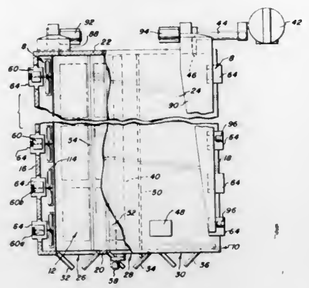
Apparatus is provided for controlling the environment in localized areas or zones of manufacturing and/or assembly plants and the like. A gas or air treating apparatus is connected to an outlet plenum positioned above the space or zone to be controlled. The plenum is provided with a plurality of controlled outlets for directing the treated air, generally downward at a rate progressively increasing in volume from the center of the controlled zone outwardly. The system also includes a plurality of inlet plenums spaced at floor level or slightly thereabove at controlled points adjacent but outside of the area or zone to have the controlled environmental conditions.

3,776,122

ATMOSPHERE CIRCULATION SYSTEM

John A. Julian, Chicago, Ill., assignor to Julian Engineering Company, Chicago, Ill.

Continuation-in-part of Ser. No. 124,313, March 15, 1971, abandoned. This application June 15, 1972, Ser. No. 263,152
Int. Cl. F24f *13/00*
U.S. Cl. 98—33 **14 Claims**



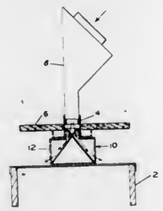
A system for circulating atmosphere within a chamber such as a smokehouse is disclosed. The system comprises a plurality of fans mounted on carriages which are reciprocally movable relative to the chamber along predetermined paths, preferably along the side walls or ceiling of the chamber, transverse to the axis of rotation of the fan blades, and means is provided for reciprocally moving the fan carriages along said predetermined paths while the fan blades are being rotated.

3,776,123

PARTITION ADAPTOR AND VENTILATING AIR DIVIDER

George E. Ehle, and James S. Peraro, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 14, 1972, Ser. No. 244,125
Int. Cl. F24f *7/06, 13/06*
U.S. Cl. 98—40 D **3 Claims**



A header assembly is adapted to be mounted on top of a partition wall and connected to an air outlet opening in a suspended ceiling system. The header has air divider means which will direct air to either side of the partition. The air divider is a simple X-shaped air deflector which alternately directs air to either side of the X-shape.

3,776,124

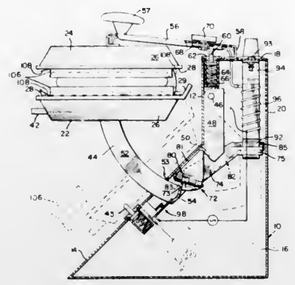
AUTOMATIC SANDWICH GRILL

Fred W. Morley, 4519 Jamestown Ct., Indianapolis, Ind.

Filed Feb. 14, 1972, Ser. No. 225,906
Int. Cl. A47j *37/06*
U.S. Cl. 99—335 **15 Claims**

An automatic sandwich grill in which upper and lower heated platens engage one or more sandwiches or bread slices

with regulated continuous pressure, and a timer acts at the end of a variable cooking time to separate the platens and steeply tilt the lower platen to discharge the cooked product. The upper platen is yieldingly counterbalanced so as to press the sandwich with a regulated continuous pressure throughout the



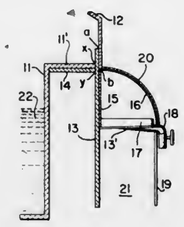
toasting. The lower platen is tiltable. A timer acts at the end of a cooking period to release a latch or actuate other mechanism to cause the platens to automatically separate and the lower platen to tilt to about 45° to discharge the toasted sandwich by gravity.

3,776,125

DEVICE FOR RECOVERING COOKING OIL SEPARATELY FROM THE HEATING FURNACE OF A DEEP FRYER

Yoshitomo Yoshioka, 23-23, 2-chome, Naka-Ikegami, Ohta-ku, Tokyo, Japan

Filed Dec. 28, 1971, Ser. No. 212,931
Claims priority, application Japan, Feb. 26, 1971, 46/9588
Int. Cl. A47j *37/12*
U.S. Cl. 99—403 **7 Claims**



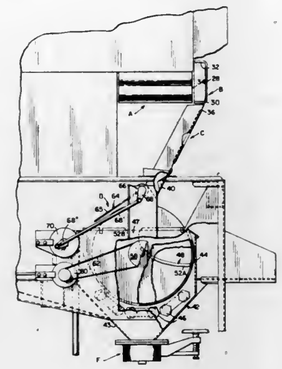
A device for deep frying particularly a device for frying potato chips in oil comprises a trough for the frying oil having a ledge on at least one side thereof. A furnace casing encloses the furnace heating space below the trough and it includes a vertical wall which abuts against the edge of the ledge and which is sealed to the ledge such as by welding. A cover encloses the top of the trough and overlaps the exterior surface of the vertical wall. The cover is secured to the vertical wall such as by securing bolts in a manner defining a drip space for the cooking oil which collects on the cover and runs down along the side thereof through the drip space. A drain device is provided on the exterior of the vertical wall in a position to receive the drip oil which may be recycled to the cooking trough.

3,776,126

AUTOMATIC DEEP FAT FRYER

John L. Veeneman; Marion E. Thomas, and Harry R. Deveraux, all of Idaho Falls, Idaho, assignors to American Potato Company, San Francisco, Calif.

Filed May 8, 1972, Ser. No. 251,611
Int. Cl. A47j *37/12*
U.S. Cl. 99—404 **7 Claims**



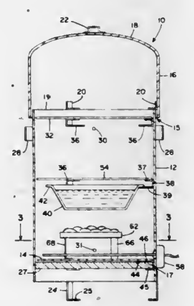
Apparatus for automatically frying potato pieces in a hot oil bath. The apparatus is arranged to receive french fry type potato pieces, subject the pieces to a pre-determined interval of cooking in a hot oil bath, thereafter allow the pieces to drain of excess hot oil and transfer the drained pieces to a holding basket for subsequent distribution. A process for automatically preparing french fries including the steps of subjecting french fry shaped pieces of potato dough to a pre-determined term of cooking in a hot oil while tumbling the pieces to insure uniform contact with the hot oil and thereafter draining any excess oil therefrom prior to transferring the drained cooked dough pieces to a holding area.

3,776,127

ELECTRIC MEAT SMOKER

Edward T. Muse, Dallas, Tex., assignor to Smoker Products, Inc., Dallas, Tex.

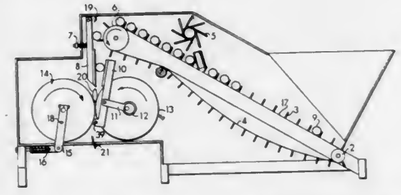
Filed June 16, 1972, Ser. No. 263,634
Int. Cl. A23b *1/04*
U.S. Cl. 99—482 **6 Claims**



A smoker type cooking apparatus having a cylindrical housing containing an electric heating element supported from the housing side wall beneath a cooking rack and a drip pan. A

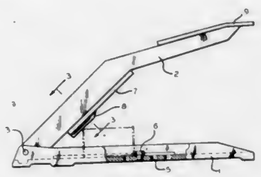
nestable tray is supported on the floor in cooperation with the heating element adapted to contain a combustible smoke generating material such as hickory. The grill and pan are commonly supported on a set of brackets affixed to the housing interior to permit easy removal, installation and cleaning. The housing is provided with means to provide upward ventilation through the unit to maintain the proper cooking atmosphere.

3,776,128
APPARATUS FOR CRUSHING CANS
Drew W. Morris, P.O. Box 515, Hampton, N.H.
Filed Feb. 29, 1972, Ser. No. 230,302
Int. Cl. B30b *7/04*
U.S. Cl. 100—53 **7 Claims**



An apparatus for crushing cans into flat plate-like form. The cans are inserted into a hopper where they are transported by a compartmented conveyor to a position where they are released into a jaw mechanism which operates in timed relation to the conveyor. The cans are partially collapsed in the jaw mechanism and then are fed into a pair of counter-rotating rollers which further compress them. Synchronization is maintained by use of timing belts and a common power source.

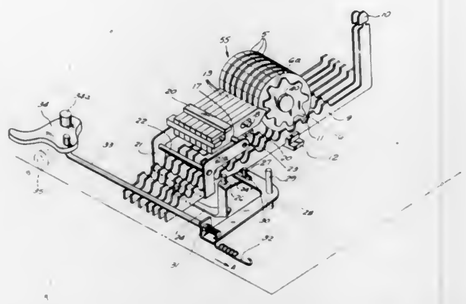
3,776,129
CONTAINER CRUSHER
Duane E. Carlson, 3709 4th Ave., South Milwaukee, Wis.
Filed Feb. 18, 1972, Ser. No. 227,430
Int. Cl. B30b *9/32*
U.S. Cl. 100—98 R **4 Claims**



A base providing a platform on which a container to be crushed rests in a fixed position and a spring-supported lever pivotally connected at one end of said base. Force applied to the free end of the lever to overcome the support provided by the spring moves the lever into parallel alignment adjacent the top of said base thereby flattening the container.

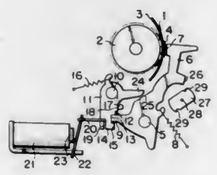
3,776,130
LOCKING ARRANGEMENT FOR MANUALLY SET PRINTING WHEELS
Yoshimichi Tamiya, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Oct. 6, 1972, Ser. No. 295,496
Claims priority, application Japan, Oct. 9, 1971, 46/93153
Int. Cl. B41j *1/28*
U.S. Cl. 101—45 **10 Claims**

A set of printing wheels with circumferentially spaced types and arresting recesses, can be set to digital printing positions by manual setting means. An axial row of spring biassed arresting pawls engages a row of the arresting recesses, and yield resiliently while the printing wheels are turned during setting to a selected number. The pawls have locking recesses cooperating with a locking bar extending at right angles to the direction of movement of the pawls to the arresting position. A carriage with a platen roller is manually moved out of an



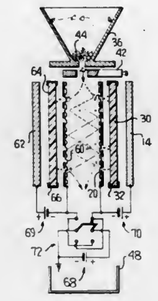
end position along a path over the printing wheels. The carriage is operatively connected with the locking bar so that the locking bar is ineffective in the end position of the carriage while the printing wheels are set, and engages the locking recesses in the pawls when the carriage moves out of the end position so that the wheels cannot be displaced by the platen roller during printing.

3,776,131
PRINTER
Tadashi Ochiai, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Aug. 29, 1972, Ser. No. 284,681
Claims priority, application Japan, Aug. 31, 1971, 46/78474
Int. Cl. B41j *47/46*
U.S. Cl. 101—93 C **9 Claims**



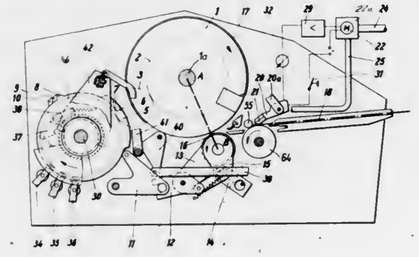
A printer comprising a typewheel, typebar and position determining device. The typewheel is made with raised characters on its periphery and rotates at constant speed. The typebar is rockably supported on a shaft and has a portion for striking a selected character through paper, etc. in its printing position. The position determining device is associated with the typebar to swing it from the rest position to the driving position. The typebar in its driving position is impulsively rocked by engaging a hammer rotating in synchronism with the typewheel, and then returns to its rest position. The typebar in its rest position engages the position determining device without rocking so as to prevent double or repeated printing.

3,776,132
FALLING DEVELOPER CURTAIN PRINTING AND COATING
Kenneth W. Rarey, South Holland, and John B. Kennedy, Jr., Oak Forest, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,233
Int. Cl. B41m *1/12*; **B41f** *15/00*
U.S. Cl. 101—129 **4 Claims**



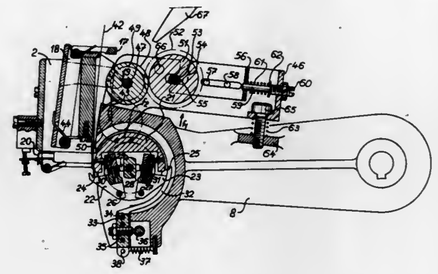
Method and apparatus for creating a falling curtain of toner adjacent to a vertically disposed stencil screen for printing or coating a vertically disposed surface of a substrate. By creating the falling curtain between a pair of spaced stencil screens, two substrates can be simultaneously coated or printed. Nonplanar objects can be printed or coated by providing a nonplanar stencil screen.

3,776,133
MOISTENING APPARATUS AND METHOD FOR DUPLICATOR SHEETS
Gerhard Ritzerfeld, Schloremer Allee 14, 1000 Berlin 33, Germany
Filed Jan. 17, 1972, Ser. No. 218,380
Claims priority, application Germany, Jan. 18, 1971, P 21 03 495.7; Nov. 13, 1971, P 21 57 225.8
Int. Cl. B41l *23/12*; **B41f** *31/02*; **B05c** *1/06*
U.S. Cl. 101—147 **14 Claims**



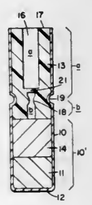
A liquid absorbent applicator for applying a liquid to the copy sheets of a duplicating machine, is maintained at a constant moisture content. Two sensing electrodes engage the applicator and are connected with control means for a motor driving a supply means for the liquid, such as a pump or liquid elevator roller. When high resistance between the electrodes, and consequently low current between the same, indicates that the applicator is too dry, the control means actuate the electric motor which drives the pump or elevator roller to increase the moisture content of the applicator to a desired constant value. When the moisture content is too high, the control means respond to the sensing means to stop the motor and the supply of moistening liquid.

3,776,134
APPARATUS FOR PRINTING TICKETS
Claude Wenger, Geneva, Switzerland, assignor to Sodeco Societe des Compteurs de Geneve S. A., Geneva, Switzerland
Filed May 6, 1971, Ser. No. 140,908
Claims priority, application Switzerland, May 11, 1970, 6943/70
Int. Cl. B41f *13/56*
U.S. Cl. 101—226 **6 Claims**



Apparatus for printing and forming tickets, consisting of a rotatable arm carrying a cylindrical platen whose surface describes an interior epicycloidal path so that printing stations arranged around the fundamental circle of the epicyloid can print information on a ticket held on the platen without the printing device skidding on the ticket; a cutting station and discharge station also being arranged on the fundamental circle so that a strip of ticket material being fed to the cutting station can be caught by a gripper on the platen, the strip being wound around the platen and cut to form a separate ticket; an inking roller is provided on the rotatable arm to ink printing devices at the printing stations before the platen reaches the printing stations.

3,776,135
NON-ELECTRIC BLASTING CAP ASSEMBLY
David T. Zebree, Kingston, N.Y., assignor to Hercules Incorporated, Wilmington, Del.
Filed June 29, 1972, Ser. No. 267,327
Int. Cl. F42b *3/10*
U.S. Cl. 102—29 **20 Claims**



Non-electric blasting caps, preferably of the delay type, containing a shell closure plug of new configuration, including a perforation extending through the shell and a constriction in the perforation intermediate the ends thereof to divide the perforation into upper and lower sections. The constriction is cross-sectionally dimensioned to retard egress of heat and pressure from the lower perforation section passed thereinto from combustion of one or more of the charges in the ignition area, when the combustion is initiated by action of a detonator cord positioned in the perforation. The volume of the lower perforation section is correlated with the cross-sectional dimension of the constriction to permit egress of sufficient

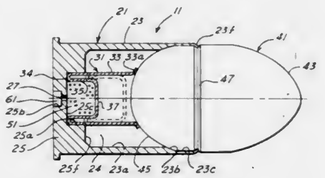
heat and pressure from the combustion for maintaining integrity of the shell while retaining sufficient heat and pressure for the combustion to propagate the resulting burning front for subsequent detonation of the base charge. A further feature of the invention is means, such as a web, or diaphragm, at least partially closing the perforation intermediate the constriction and the ingress end of the perforation for the detonator cord, as a blocking member for spacing the cord in the perforation, albeit the constriction, per se, can serve, without further means, as that stopping means.

3,776,136

AMMUNITION ARRANGEMENT

Michael P. Dix, Williston, Vt., and Nicholas J. LaCosta, Phoenix, Md., assignors to AAI Corporation, Cockeysville, Md.

Filed Dec. 30, 1971, Ser. No. 214,191
Int. Cl. F42b *9/00*
U.S. Cl. 102—38 **15 Claims**



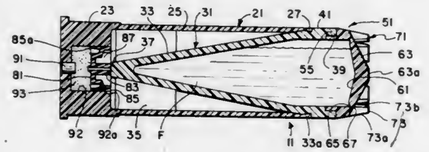
A cartridge arrangement having a longitudinally plastically deformably expandable propellant-burning-control cup formed of malleable material, which is initially retained in place to assist in propellant burning and is subsequently forwardly expelled as a function of its longitudinal expansion through reverse bend rolling action.

3,776,137

PROJECTILE AND CARTRIDGE ARRANGEMENT

David D. Abbott, Baltimore, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Sept. 24, 1971, Ser. No. 183,487
Int. Cl. F42b *11/18, 11/36*
U.S. Cl. 102—41 **23 Claims**



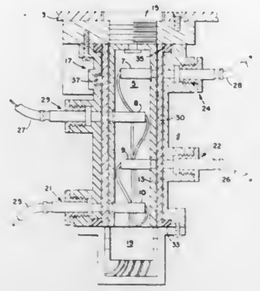
A projectile having a guard ring of circumferentially spaced posts encompassing a convex nose rupture disc and web. The projectile is mounted in a case with the nose extending in exposed condition beyond the open case end. A dual diameter chamber high-low propellant firing and gas expansion arrangement is utilized in the cartridge in conjunction with the reduced diameter tapered and finned rear end of the projectile.

3,776,138

GANGED ARMING DEVICE

Sidney A. Moses, Culver City, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 7, 1972, Ser. No. 216,113
Int. Cl. F42c *7/00, 9/02, 15/26*
U.S. Cl. 102—70.2 R **3 Claims**



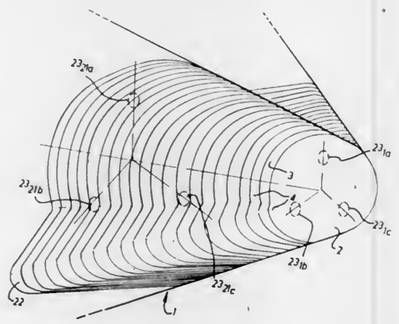
A plurality of detonators are separated from confined detonating fuses by a rotating, cylindrical shield. A gravity operating device causes this shield to rotate upon acceleration so as to align holes in the shield with the detonators and the fuses.

3,776,139

PYROLYTIC CARBON NOSE FOR HYPERSONIC VEHICLES

Gerard C. Leomand, Chaville, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed June 7, 1972, Ser. No. 260,363
Claims priority, application France, June 11, 1971, 7121386
Int. Cl. F42b *13/00*
U.S. Cl. 102—105 **6 Claims**



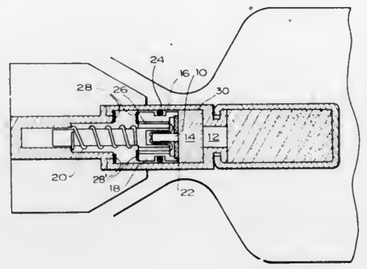
The present invention provides a spacecraft re-entry nose which makes use of the very marked anisotropy of pyrolytic graphite, which pyrolytic graphite is arranged in slices which are orientated so that the direction of least thermal conductivity is along the main axis of the nose whereas the direction of greatest thermal conductivity is at right angles to the surface of each slice. The slices are interconnected in pairs by three traversing pins of tungsten offset by a certain angle every two slices.

3,776,140

SHOT VORTEX ARMING DEVICE

Jerry O. Jones, Ventura, and Michael R. Osburn, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 22, 1971, Ser. No. 201,232
Int. Cl. F42c *15/26*
U.S. Cl. 102—70.2 R **2 Claims**



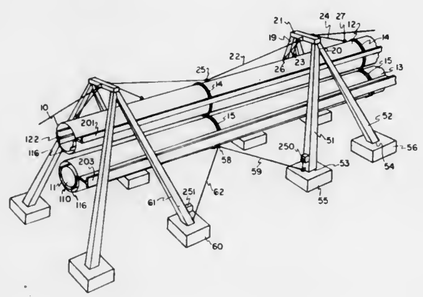
A safety-arming mechanism which senses spin and acceleration. The mechanism has a particulate material as a barrier between initiator and acceptor explosive charges. The particulate material is freed by acceleration causing set back of a piston, whose travel is retarded by pressure build up on one side of the piston. Spin forces the particulated material outwardly creating a cavity or vortex through the center and allowing transmission of an explosive reaction.

3,776,141

TRANSPORTATION SYSTEM PARTICULARLY USEFUL IN HOSTILE ENVIRONMENTS

Egon Gelhard, Mehlemer Strasse 28, Cologne, and H. Rudolf Gunkel, Egerlander Strasse 5, Usingen, both of Germany

Filed Feb. 22, 1972, Ser. No. 227,856
Claims priority, application Germany, Feb. 20, 1971, P 21 08 150.5
Int. Cl. B61b *3/02*
U.S. Cl. 104—123 **44 Claims**



A transportation system is disclosed for transporting petroleum products, mineral ores and the like in hostile climates in an economical manner and without the imposition of adverse effects on the material being transported or to the surrounding environment.

In the system, at least one pipe conduit is suspended from a plurality of supports along the path of travel with means, preferably another conduit, providing a return path to the point of origin to thus form a closed system. The conduit has a vehicular trackway contained therein and extending therealong and has means for supplying power to the vehicles passing through the conduit. A plurality of containers are removably connected to wheel sets at opposite ends thereof, with at least one of the wheel sets being driven by power means received therein.

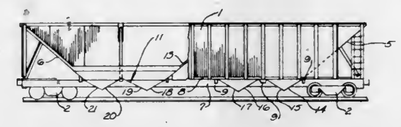
Additionally, one or more exterior tracks may be secured to the conduit to permit transportation of freight as well as passengers along the conduit line of the system.

3,776,142

SPRING LOADED RAILWAY CAR HOPPER CAR DOOR

Robert E. Molloy, and John A. Ritter, both of Cincinnati, Ohio, assignors to Ortner Freight Car Company, Cincinnati, Ohio

Filed Aug. 2, 1972, Ser. No. 277,298
Int. Cl. B61d *7/18, 7/26, 43/00*
U.S. Cl. 105—253 **15 Claims**



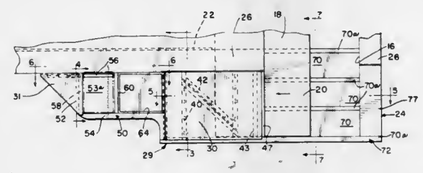
A spring assist unit for a discharge door of a hopper car or the like serving both as a spring loaded retaining door stop and an assist means for the closing of the door. The unit comprises an elongated spring support and a support guide assembly. The forward end of the spring support is pivotally affixed to a portion of the hopper door. The rearward end of the support guide assembly is pivotally affixed to an appropriate brace member of the hopper car. The rearward end of the spring support is slidably mounted in an opening in the forward end of the support guide assembly. A helical spring surrounds the spring support with one end of the spring in abutting relationship with the forward end of the spring support and the other end of the spring in abutting relationship with the forward end of the support guide assembly. The spring support has abutment surfaces thereon adapted to cooperate with the forward end of the support guide assembly to determine the open-most position of the hopper door. The spring assist unit may also be provided with means to adjust the open-most position of the hopper door.

3,776,143

RAILWAY PASSENGER VEHICLE STEP AND DOOR CONSTRUCTION

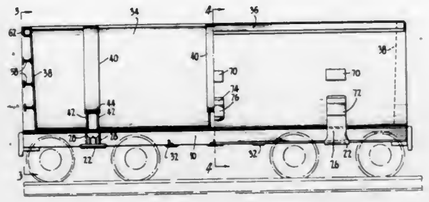
John M. Cox, Calumet Park; Robert J. Kunst, Chicago, both of Ill., and Norman M. Szala, Hammond, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 14, 1971, Ser. No. 189,303
Int. Cl. B61d *19/00, 23/02*
U.S. Cl. 105—343 **8 Claims**



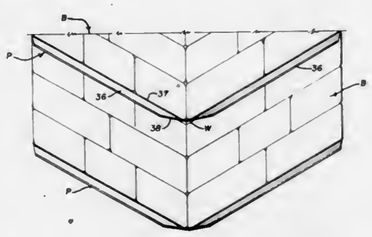
A railway passenger vehicle step and side skirt arrangement including a door receiving portion and having beam members secured to the corner posts and side sill of the vehicle body to form a reinforced corner structure wherein the steps are concealed completely from the elements when the door is in a closed position thereby keeping the stairs free of debris.

3,776,144
RAILWAY WAGON
Visvaldis Eislers, Denistone, New South Wales, Australia, assignor to Comalco Limited, Melbourne, Victoria, Australia
Filed Feb. 28, 1972, Ser. No. 229,982
Claims priority, application Australia, Mar. 2, 1971, PA 4187
Int. Cl. B61d 17/00
U.S. Cl. 105—406 R 5 Claims



The invention consists of a railway wagon body made of metal which has curved sides suspended from longitudinal stringers to eliminate side stiffeners and heavy floor plates to effect a saving in manufacturing cost and in tare weight to increase the pay load. The body is supported on curved bolsters adjacent each end and is internally strengthened by means of bulkheads.

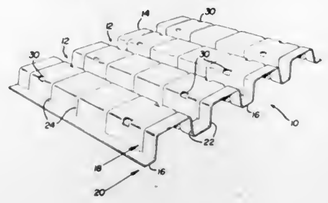
3,776,145
SLIP PALLET
Raymond F. Anderson, Evergreen, and Ronald C. Mackes, Northglenn, both of Colo., assignors to Best Quality Plastics, Inc., Denver, Colo.
Filed Mar. 27, 1972, Ser. No. 243,507
Int. Cl. B65d 19/00
U.S. Cl. 108—51 10 Claims



A slip pallet formed as a square or rectangular sheet of a synthetic resin of selected types of polyolefin. The sheet is proportioned to fit upon a platen lift and includes tabs at each edge to be gripped when the platen is thrust underneath the sheet or the sheet is pulled upon or pushed off from the platen. The slip pallet will ordinarily carry loads of boxes formed as interlocking layers and an important feature of the invention resides in providing a sheet having a greater coefficient of friction at the upper surface whereon the boxes are placed, than at the undersurface which is contacted by the platen.

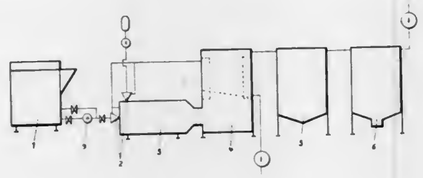
3,776,146
PALLET AND METHOD OF MANUFACTURE
James J. Morrison, Windsor, Ontario, Canada, assignor to Kasle Steel Corporation, Detroit, Mich.
Filed Dec. 21, 1972, Ser. No. 317,261
Int. Cl. B65d 19/00
U.S. Cl. 108—51 2 Claims

A one-piece pallet having parallel corrugations and parallel reinforcing ribs transverse to the corrugations. The tops of the corrugations define a load supporting surface and the bottoms of the corrugations define a pallet supporting surface parallel to and below the load supporting surface. The reinforcing ribs project below the load supporting surface and above the pallet



supporting surface. Thus, the reinforcing ribs do not substantially reduce the area for supporting either the load or the pallet. Both support surfaces provide maximum contact area for better weight distribution.

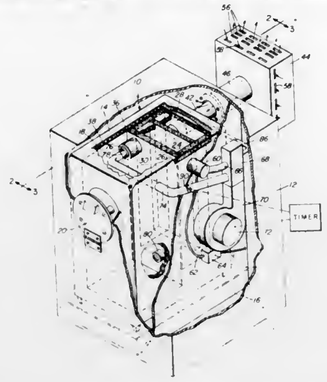
3,776,147
DISPOSAL OF PLASTICS
Fritz Ensslin, Bad Harzburg; Gerhard Frenzel, Astfeld, and Erich Lobermann, Oker, all of Germany, assignors to Preussag Aktiengesellschaft-Metall, Goslar, Germany
Filed Feb. 8, 1972, Ser. No. 224,571
Claims priority, application Germany, Feb. 19, 1971, P 21 08 008.0
Int. Cl. F23g 7/00
U.S. Cl. 110—7 S 11 Claims



To eliminate plastics waste and recover the metals and metal compounds contained in the waste, the plastics waste, whether in a solid, pasty or liquid form, is converted into a combustible fluid-like form and is directed through a burner into a combustion chamber. The combustion of the waste results in combustion gas and fly ash which is cooled and directed through a separator to obtain the metals and metal compounds from the fly ash in the form of oxides.

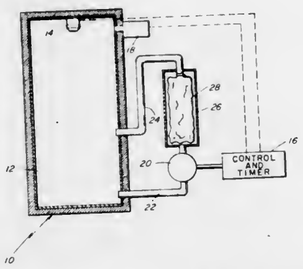
3,776,148
INCINERATOR
William H. Hapgood, Brookline, and Robert D. Di Nozzi, Dedham, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed June 2, 1972, Ser. No. 259,324
Int. Cl. F23g 5/00
U.S. Cl. 110—8 A 21 Claims

An incinerator particularly suitable for in-house undercounter installation and use comprising a well heat-insulated structure including combustion or trash chamber and a second or afterburner chamber divided into two volumes, one being a volatiles combustion chamber containing the burner and the other being an exhaust flue, and recirculating means whereby combustion products and smoke are directed out of the combustion chamber through the burner flame for incineration. Included also is a novel air flow system for providing circulating air for combustion simultaneously with jacket cooling, means for delaying the combustion process until the after-



burner has become sufficiently preheated, and means for providing automatic combustion rate control whereby rate of combustion is automatically kept constant despite large variations in the type, heat content, and size of the charge being incinerated.

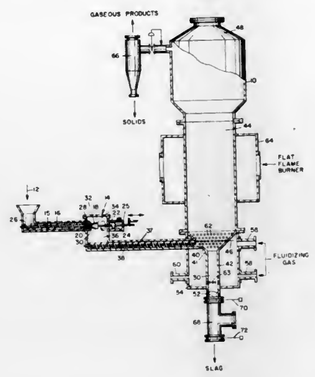
3,776,149
INCINERATOR ASH DISPOSAL SYSTEM
Wesley W. Teich, Wayland, and William H. Hapgood, Brookline, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed June 9, 1972, Ser. No. 261,182
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 11 Claims



An incinerator having a chamber in which combustion of miscellaneous products occurs to leave a residue in the form of particulate inorganic matter small in weight and volume, and a cleaning system which includes a compressor having a first connection to the chamber for directing air into the chamber for stirring up the dustlike residue and a second connection to the chamber for drawing off the dust-laden air into a cyclone filter or dust separator.

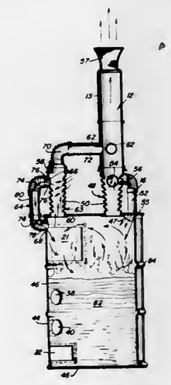
3,776,150
FLUIDIZED BED SYSTEM FOR SOLID WASTES
Paul R. Evans, Fort Ashby, W. Va., and Donald H. Graham, Salt Lake City, Utah, assignors to AWT Systems, Inc., Wilmington, Del.
Filed Mar. 6, 1972, Ser. No. 231,982
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 13 Claim

A fluidized bed system for pyrolysis or incineration of solid wastes is provided. The solids feed is force fed to a fluidized bed apparatus having a conically shaped distributor plate and a first internal chamber above the distributor plate and a smaller second internal chamber connected to the first chamber and positioned directly below the first chamber. Solid waste is fed into the apparatus by a feeder which seals the feeder from the apparatus at a point spaced from hot-zone



of the apparatus. The system has fluidizing gas inlets which are designed so that fluidized bed in the first internal chamber is more highly fluidized than the fluidized bed in the second internal chamber. A lock in the second internal chamber permits removal of non-reacted materials without interruption in operation of the system.

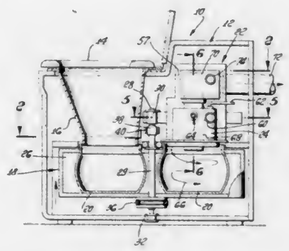
3,776,151
METHOD AND APPARATUS FOR ELIMINATING SMOKE EMISSIONS FROM INCINERATORS
Wallace C. Wilson, 1314 E. Viola Ave., Yakima, Wash.
Filed Feb. 28, 1972, Ser. No. 229,659
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 4 Claims



Smoke emissions are eliminated from an incinerator by admitting cool air into a stack arranged to receive smoke from a combustion chamber for inducing a draft in the stack which opposes a natural draft therein. Smoke is carried along by the induced draft and returned to the combustion chamber, so that only gases free of particulate matter are emitted from the stack. The induced draft returning to the combustion chamber as overfire air has sufficient pressure for creating turbulence in the combustion chamber for retaining the smoke in the

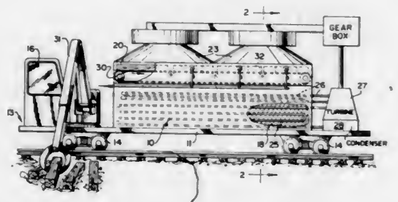
combustion chamber a time sufficient to ensure complete combustion thereof. The cool air is admitted into the stack by a louvered portion provided in the stack and arranged adjacent the combustion chamber, and, alternatively, one or more louvered elements connected to the combustion chamber and the stack so as to be in parallel with the louvered portion. Ducts are connected to the louvered portion and louvered elements to return smoke to the combustion chamber.

3,776,152
INCINERATOR TOILET
Victor A. Gill, Corona Del Mar, Calif., assignor to Nasco Engineering Incorporated, El Segundo, Calif.
Filed Feb. 3, 1972, Ser. No. 223,193
Int. Cl. A47k *11/02*
U.S. Cl. 110—9 R **12 Claims**



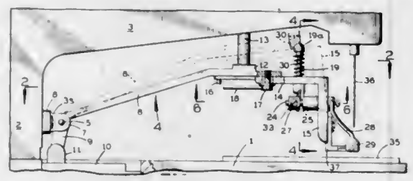
An incinerator toilet comprising a rotary carriage having thereon upwardly facing waste receptacles successively positionable below a toilet seat and a combustion means adapted to direct a burning mixture of gas and air downwardly into each receptacle at a burning station with a whirling motion. The combustion means includes a downwardly facing combustion chamber, means for introducing gas into the upper end of the chamber, and means for introducing air tangentially into the upper end of the chamber. A central vertical exhaust duct in the combustion chamber leads to an afterburner to which additional air is supplied.

3,776,153
SELF-PROPELLED TIE DESTROYING MACHINE
John Kenneth Stewart, Columbia, S.C., assignor to Cannon, Inc., Phillipsburg, N.J.
Continuation-in-part of Ser. No. 204,611, Dec. 3, 1971, abandoned. This application Nov. 9, 1972, Ser. No. 304,925
Int. Cl. F23g *7/00*
U.S. Cl. 110—10 **8 Claims**



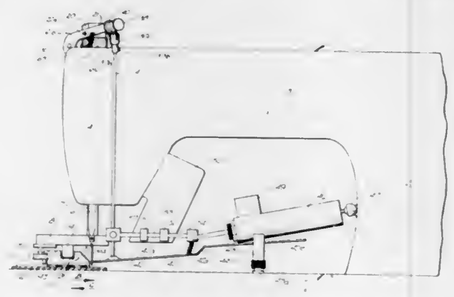
A device for destroying railroad ties which comprises fire brick insulated open-topped fire box mounted on a self-propelled track-travelling vehicle. The device is provided with at least one plenum chamber from which extends, along the top of one side of the fire box, a series of nozzles which are downwardly and inwardly directed into the box. These nozzles deliver air for combustion across the top of the box so as to form an air curtain which inhibits the escape of particles of ties being burned in the box. An endless conveyor is located adjacent the open top of the box on the side remote from the nozzles and ties are loaded onto this conveyor by means of a crane. The conveyor has a series of hydraulically operated pusher plates arranged longitudinally thereof which are operated by temperature sensitive elements within the fire box to distribute ties from the conveyor into area in the box where the combustion of ties already therein is substantially complete. The device also envisages the provision of a water wall boiler within the box which generates steam to drive a turbine which in turn drives air compressor motors to pressurize the air for the nozzles. An alternative embodiment includes a blower and a ducting system which will preheat ambient air and utilize the air to form the air curtain.

3,776,154
CLAMP ARM ON A SINGLE THREAD SEWING MACHINE FOR HOLDING FABRIC FASTENERS
Martin Weiss, 2100 S.W. 20th St., Miami, Fla.
Filed Mar. 19, 1973, Ser. No. 342,597
Int. Cl. D05b *3/00*
U.S. Cl. 112—114 **4 Claims**



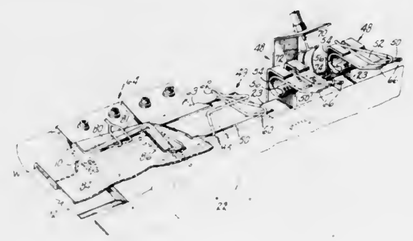
A fastener clamp arm assembly for a power driven single thread sewing machine having a transverse two path needle for stitching multi-thread loops on a fabric for securing each of a variety of flat or shank and eyelet buttons, snaps, hooks and eyes on fabrics, including a laterally adjustable calmp arm adapted to be transversely vertically pivoted on a driven member for backward and forward movement to stitch pluralities of spaced loops through opposite pairs of holes in buttons held thereon or manually transferring the arm for pivotal movement on a fixed support for stitching pluralities of single loop fasteners.

3,776,155
SEW-OFF MEANS FOR AUTOMATIC SEWING MACHINES
Jack M. Gratsch, Cincinnati, Ohio, assignor to Cutters Exchange, Inc., Nashville, Tenn.
Filed Jan. 4, 1973, Ser. No. 320,992
Int. Cl. D05b *2 1/00*
U.S. Cl. 112—121.15 **15 Claims**



In an automatic sewing machine of the type having an elongated guide rail for advancing the material being sewn in the sewing direction and guiding the material at the sewing station to produce an elongated seam of predetermined straight or curved contour, means are provided to engage the material being sewn, to lift the guide rail from the material and to shift the material transversely of the sewing direction at a predetermined angularity thereto, whereby at the end of the desired seam sew-off stitches may be formed in the material to the edge thereof at substantially any desired angle to the sewing direction.

3,776,156
AUTOMATIC PROGRESSIVE HEM FORMING MECHANISM
Paul E. Morgan, Melrose, Mass., assignor to USM Corporation, Flemington, N.J.
Filed Mar. 14, 1972, Ser. No. 234,577
Int. Cl. D05b *35/02*
U.S. Cl. 112—141 **20 Claims**

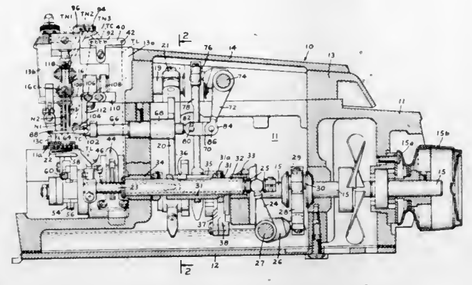


Novel pneumatic means is employed for marginally forming flexible sheet material as in over or under-edging fabric being fed into a sewing machine for hemming. One or more roll-shaped preformers are each provided with an air jet channel extending normal to the direction of work feeding as determined by perforated inner, aligned edge gage portions of the formers. The latter are preferably laterally movable to urge the semi-formed margin progressively through a final, stationary, open-ended former which is tapered in the direction of feeding to a relatively flat section arranged to project the fully formed hem into the stitching zone. Accuracy in "square" folding the leading edge is attianed, and a large range of work varying from very flimsy to relatively stiff can be handled in automatic manner.

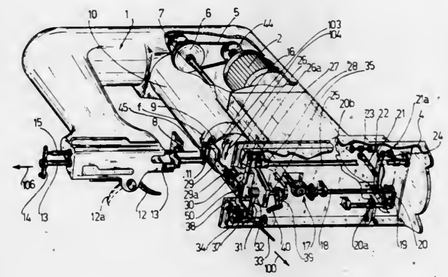
An optional vibrator facilitates forming the stiffer material but, with the same air flows does not increase the tendency of limp material to collapse and clog.

3,776,157
FLAT STITCH FORMING AND COVER THREAD LAYING MECHANISMS FOR SEWING MACHINES
Henryk Szostak, Oak Park, Ill., assignor to Union Special Machine Company, Chicago, Ill.
Filed Apr. 18, 1972, Ser. No. 245,104
Int. Cl. D05b *1/20*
U.S. Cl. 112—162 **18 Claims**

A compact, lightweight, high-speed machine of low-silhouette frame construction for forming flat seams such as those of stitch type 605 used, for example, for attaching elastic waistbands, borders, cuffs and collarettes to knit undergarments, athletic shirts and the like. The machine utilizes two or more needles each carrying a needle thread, to form, in cooperation with a looper, parallel rows of chain or double-lock stitches. A spreader which reciprocates in a straight line path and which cooperates with a special cover thread guide, places a cover thread in proper relation with all of the needle threads on the upper surface of the work piece. The looper is carried by an oscillating and horizontally reciprocating shaft and cooperates beneath the work piece with all of the needles to supply the looper thread for the chain stitches aforesaid. A single take-up is provided for all of the needle threads and the cover thread while a separate take-up is provided for the looper thread.



3,776,158
SEWING MACHINE, IN PARTICULAR FOR MAKING THE EDGE ON THE TYPE OF SHOES COMMONLY KNOWN AS MOCASSINS
Antonio Zechini, Via Medaglie d'Oro, Fermo, Italy
Filed Nov. 8, 1972, Ser. No. 304,658
Claims priority, application Italy, Nov. 8, 1971, 3560 A/71
Int. Cl. D05b *27/02*
U.S. Cl. 112—216 **4 Claims**



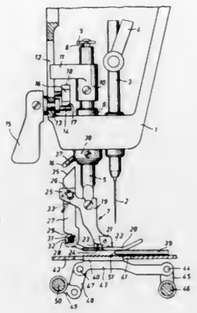
A machine for sewing a binding to a vamp in making mocassins has a throat plate on which the pieces to be joined rest, a reed dog engageable with the work and having a rotary motion in the exit direction of the work and a second feed dog having an oscillating movement about an axis approximately perpendicular to the axis of the needle and synchronized with the movement of the first feed dog. The second feed dog cooperates with the first feed dog in moving the pieces to be joined and in penetrating between the folds so as to regulate the depth and width of the edge made on the mocassin. A further feature is that means operating in synchronism with the reciprocation of the needle is provided for lifting the presser foot from the work while it is being moved.

3,776,159

MATERIAL PRESSURE FOOT FOR SEWING MACHINES

Eugen Angele, Kaiserslautern/Pfalz, Germany, assignor to Pfaff Industriemaschinen GmbH, Kaiserslautern/Pfalz, Germany

Filed June 13, 1972, Ser. No. 262,188
Claims priority, application Germany, Mar. 10, 1972, P 21 30 719.7
Int. Cl. D05b 29/02
U.S. Cl. 112—235 3 Claims



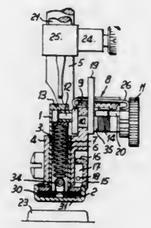
A pivotally mounted apron or sole for applying pressure to a material being sewed is provided with locking means which temporarily locks the apron in substantially horizontal position until the initial edge of the material-to-be-sewed has passed beyond the needle in order to prevent partial or total blocking of the edge of the material by a slanted sole. Once the material to be sewn passes a predetermined point, the locking means is released so that the pivotable apron operates in its normal desirable way.

3,776,160

PRESSER FOOT FOR A SEWING MACHINE

Ramon Casas-Robert, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed May 3, 1972, Ser. No. 249,776
Claims priority, application Switzerland, May 17, 1971, 7244/71
Int. Cl. D05b 29/00
U.S. Cl. 112—235 6 Claims



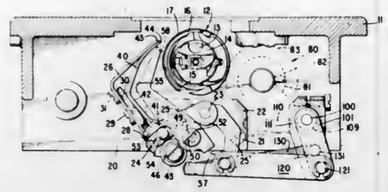
A presser foot for a sewing machine comprises a part provided with a presser member, movable with respect to an attaching part for securing the foot to a presser bar of the machine, an actuating member mounted on one of said parts for the relative movement of said parts between two end positions, and an elastic linking element mounted between said actuating member and the other said part. The actuating member may be a manual driving device or driven by a part rigid with a movable member of the machine.

3,776,161

THREAD TRIMMING DEVICE FOR LOCKSTITCH SEWING MACHINES

Reinhold Papajewski, and Johann O. Kleinschmidt, both of Buechig, Germany, assignors to Singer-Werke GmbH, Blankenloch, Germany

Filed Aug. 9, 1972, Ser. No. 278,906
Int. Cl. D05b 65/02
U.S. Cl. 112—252 4 Claims



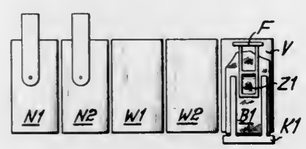
A thread trimming device for a lockstitch sewing machine in which a thread pull-off arm, a thread catching arm, and a thread cutting blade are swung at different distances back and forth transversely of the face of a lockstitch forming loop taker by a novel arrangement of cam means on the sewing machine whereby the trimmer elements may move across the paths of prominences of the loop taker but without interference with the loop taker.

3,776,162

METHOD FOR PRODUCING PATCH POCKETS ON ARTICLES OF CLOTHING

Hans Scholl, Bielefeld, Germany, assignor to Koch Adler AG, Bielefeld, Germany

Filed Nov. 15, 1972, Ser. No. 306,737
Claims priority, application Germany, Nov. 17, 1971, P 21 57 042.3
Int. Cl. D05b 1/00
U.S. Cl. 112—262 3 Claims



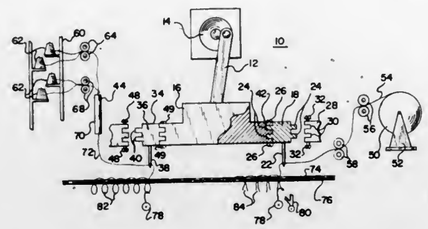
Methods for rationally producing patch pockets on articles of clothing, in which the pocket cuts are attached to the clothing by means of two parallel running or side by side arranged seams. The seams are sewn by single needle sewing machines at automatic sewing stations in connection with a preparing station and waiting stations. This reduces the operator's waiting time caused by the sewing time of the sewing machine and the time for inserting the pocket cuts and positioning of the garments. Patch pockets of the same or different size and shape in a continuous sequence may thus be produced.

3,776,163

METHOD OF CHANGING YARN SUPPLY IN A TUFTING MACHINE

Alan H. Norris, Simpsonville, and William R. Lacy, Greenville, both of S.C., assignors to Bigelow-Sanford, Inc., New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,935
Int. Cl. D05c 3/00, 15/12
U.S. Cl. 112—266 7 Claims



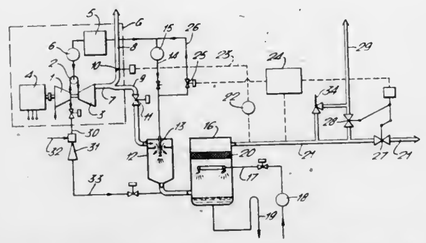
A method of changing the yarn supply in a fabric material tufting machine wherein the needle bars of the machine are selectively detachable so that the machine can continue operation while one of the needle bars receives a replacement yarn supply. The chaging of the yarn supply by this method involve stopping of the tufting machine only during actual detaching and re-attaching of the needle bars.

3,776,164

APPARATUS FOR FILLING AND, IF DESIRED, EMPTYING INERT GAS POOR IN OXYGEN INTO OR FROM HOLDS IN SHIPS, RESPECTIVELY

Thorbjorn Westrum, Kongsberg, Norway, assignor to A/S Kongsberg Vapenfabrikk, Konsberg, Norway

Filed Oct. 1, 1971, Ser. No. 185,597
Claims priority, application Norway, Oct. 3, 1970, 3750/70
Int. Cl. B63b 17/00
U.S. Cl. 114—0.5 R 4 Claims



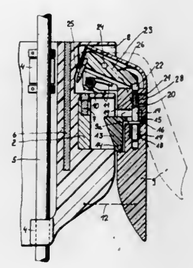
Exhaust gases from an emergency or auxilliary gas turbine/generator set are passed to an afterburner in which the rather high oxygen content of said exhaust gases is reduced to an acceptable level for use of the resulting gas as an inert explosion-proof gas for empty oil tanks. Before the gas is supplied to the tanks it is cooled by water supplied by a pump driven by the electric current produced by the generator. No blowers are required, since the turbine may operate against the pressure required for feeding the gas through the afterburner and the cooler and into the tanks. For displacing the inert gas from the tanks when desired, compressed air from the compressor unit of the turbine/generator set is tapped off and passed through an injector in which additional air from the atmosphere is entrained. The combined air is passed through the cooler and fed to the tanks through a suitable distribution system.

3,776,165

DEVICE FOR CUTTING STEEL ROPES, HAWSERS, CHAINS, CABLES AND THE LIKE UNDER THE WATER SURFACE

Udo Sabranski, Schiefbahn; Theodor Weber, and Wolfram Werner, both of Dusseldorf, all of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Oct. 20, 1971, Ser. No. 190,923
Claims priority, application Germany, Nov. 13, 1970, P 20 55 843.4
Int. Cl. B63g 7/04
U.S. Cl. 114—221 A 30 Claims



Apparatus adapted for movement underwater to partially surround and cut underwater anchoring means such as steel ropes, hawsers, chains, cables and the like including a housing carrying an explosive cutting charge and having an arm pivotally mounted in the housing and extending therefrom. The arm is biased for movement to an open position and carries charge igniting means responsive to contact by the anchoring means to be cut in the open position of the arm for detonating the charge and severing the anchoring means. The charge igniting means is provided with several safety devices including a shear pin which is ruptured by contact with the anchoring means and a piston chamber which must be filled with water to enable detonation of the charge, thereby requiring the apparatus to be submerged. The arm may also be restrained from assuming the open position by a wire connecting the arm and the housing which is broken by contact with the anchoring means to be cut. The apparatus is adapted to be disposed of after a single use.

3,776,166

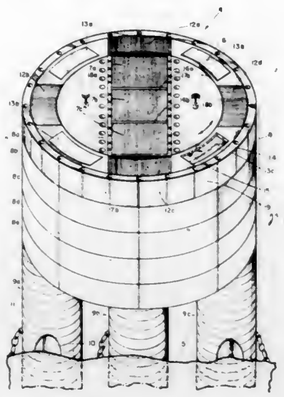
AIRCRAFT-LANDING STRIP DEVICE

Leon Mednikow, 290 9th Ave., New York, N.Y.

Continuation-in-part of Ser. No. 158,893, July 1, 1971. This application Nov. 23, 1971, Ser. No. 201,338
Int. Cl. B63b 35/50
U.S. Cl. 114—43.5 5 Claims

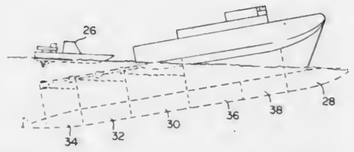
A floating landing strip of miniature size having floating supporting legs of a shape and spaced sufficiently from one another to withstand violent ocean currents, with the supporting legs long enough to impart buoyancy to the entire structure while concurrently including a large amount of water in the base of the legs imparting stability to the entire structure even during violent storms, the upper pier structure including a turntable air-strip having a series of aligned variable speed surfaces for facilitating take-off and landings of aircraft, together with series of blowers and a series of baffles aligned

along the series of variable speed air-strip surfaces such that the blowers and baffles are produceable of air currents further facilitatable of take-off and landings of air craft by directing



the air current in the path and/or against lift surfaces of the aircraft, such as an airplane particularly of the jet plane variety.

3,776,167
SEMI-SUBMERSIBLE TENDER
Fendall Marbury, Jr., North Chevy Chase, Md., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Dec. 2, 1971, Ser. No. 204,257
Int. Cl. B63b *35/50*
U.S. Cl. 114—43.5 **1 Claim**



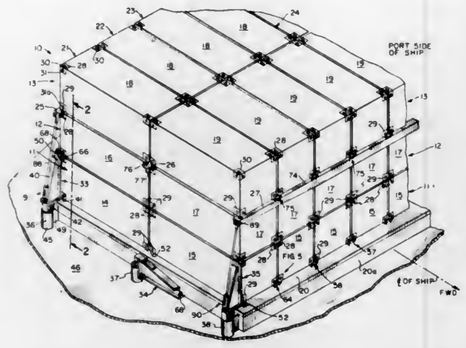
A multi-hull vessel having a grid for launching and retrieving watercraft supported between its sterns. A method for launching and retrieving watercraft from the vessel by ballasting the sterns down to immerse the watercraft-carrying grid and de-ballasting the sterns up to the normal operating draft.

3,776,168
HIGH SPEED BOAT HULL
Smith Weeks, Fresno, Calif., assignor to Belmont Boats, Inc., Fresno, Calif.
Filed June 9, 1972, Ser. No. 261,300
Int. Cl. B63b *1/34*
U.S. Cl. 114—56 **8 Claims**



A high-speed boat hull for preferred use with a hydrojet engine having a plurality of substantially parallel strakes on the surface of the hull commencing from aft of the bow and all but the two center-most strakes running to the stern, the cross section of the strakes presenting a series of inwardly sloping steps to raise the hull in the water, direct the water flow inward toward the center of the hull and assist in turning the hull when operating at high speeds.

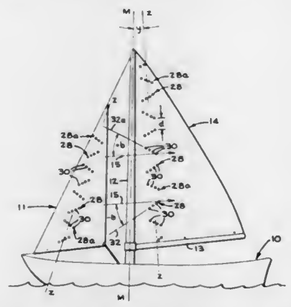
3,776,169
CONTAINER STOWING SYSTEM
William V. Strecker, West Islip, N.Y., assignor to Peck & Hale, Inc., West Sayville, L. I., N.Y.
Filed July 2, 1971, Ser. No. 159,447
Int. Cl. B63b *25/00*
U.S. Cl. 114—72 **14 Claims**



A freight container stowage system employing bracket member and post combinations secured to the ship and adjacent containers, and cross beams between specified tiers of the containers with their opposite ends lashed to the brackets, thereby reducing the number of connections required to secure the load, eliminating climbing along the face of the containers to position the lashings and reducing the number of men and the time required to secure an assemblage of containers arranged one, two or three tiers in height and placed either on a hatch cover or on the deck of the ship

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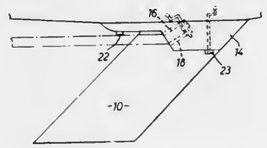
3,776,170
AIR FOIL WITH VORTEX GENERATORS
Arthur J. Slemmons, 19655 Redberry Dr., Los Gatos, Calif.
Filed Feb. 23, 1973, Ser. No. 334,978
Int. Cl. B63h *9/06*
U.S. Cl. 114—103 **16 Claims**



A sail is provided with short rows of closely spaced holes, with the axes of the rows converging and being inclined at an acute angle to the path of the free air past the sail. The converging ends of individual rows are relatively widely spaced and the rows are arranged in an array from the head to the foot of the sail. The angle between the axis of each row of holes and the direction of the free air flow path is alternated along the array from a positive to negative angle. The rows of holes, in turn, produce a row of discrete air jets on the convex,

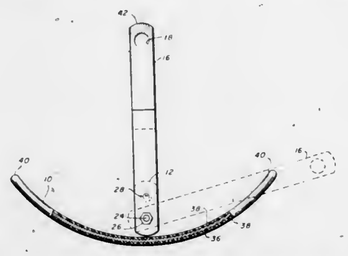
low pressure side of the sail, forming angled aerodynamic "fences." These fences present a partial obstruction to the flow of the free air past the sail, causing the air to form twisted streams when spilling over the aerodynamic fences. These streams form continuous, helical trailing vortices that mix the free air stream with the slower moving boundary layer of air next to convex surface of the sail. The resulting mixing action continually re-energizes the boundary layer of air, thus preventing stall and improving the driving force of the sail. The principle is also useful in the control of parachutes and other thin air foils.

3,776,171
VESSEL HAVING A CONTROL FIN, FOR EXAMPLE, A KEEL OR RUDDER, AND MECHANISM FOR USE THEREIN
Anthony M. Sibthorpe, 24 Browning Ave., Boscombe, Bournemouth, Hampshire, England
Filed Oct. 12, 1971, Ser. No. 188,001
Claims priority, application Great Britain, Oct. 21, 1970, 49,982/70; Jan. 25, 1971, 3,105/71; Apr. 13, 1971, 9,278/71
Int. Cl. B63b *41/00*
U.S. Cl. 114—141 **4 Claims**



This invention relates to a vessel having a control fin which is fixed to or integral with a shaft rotatable about its longitudinal axis in a bearing attached to the vessel, the shaft being operable to rotate the fin through at least 100° in order to move it between an extended operating position and a retracted position in which the draught of the vessel is substantially reduced with respect to its maximum value, and in order to allow variation of the angle of attack of the fin.

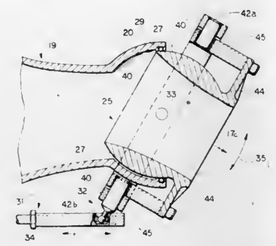
3,776,172
ANCHOR
Lucian T. Lambert, 6004 E. 18 St., Tulsa, Okla.
Filed Oct. 15, 1971, Ser. No. 189,691
Int. Cl. B63b *21/36*
U.S. Cl. 114—208 **6 Claims**



This invention describes an anchor for use with small boats which comprises a fluke in the shape of a rectangular sheet or plate of metal formed into a cylindrical form. A short strip is welded to the plate in a radial direction. A shank is mounted on this strip by means of a bolt which permits rotation about an axis parallel to the axis of the cylinder. Detent means are provided so that when the shank is in a radial direction with respect to the fluke, it is locked in that position. However, by applying a lateral force to overcome the grip of the detent, the shank then can be hinged so it is essentially parallel to the fluke.

All sharp edges and corners of the plate are rounded and the plate is hot dipped in a protective plastic, such as polyethylene. The coating is then baked.

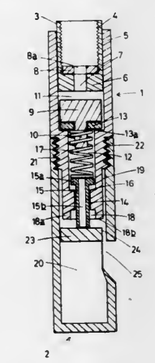
3,776,173
PROPULSION SYSTEM FOR A BOAT
Robert P. Horwitz, P.O. Box 2063, Newport Beach, Calif.
Filed Oct. 29, 1971, Ser. No. 193,761
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R **6 Claims**



The present invention relates to a propulsion system for a boat; and more particularly discloses a propulsion system that not only provides forward movement and directional control, but also provides means for controlling the attitude of the boat.

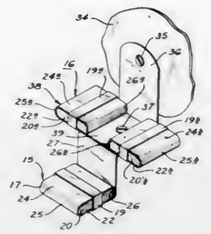
The disclosed system accomplishes this dual result by the use of a novel jet nozzle mounting structure that permits the nozzle to pivot in a horizontal direction and/or in a vertical direction. Pivoting in either direction is independent of the other, but may still be combined with the other one when so desired, so that any combination of boat heading and attitude may be provided.

3,776,174
GAS PRESSURE OPERATED WARNING DEVICES
Kenneth Henry Kunoth, 40 Hinelnoa St., Rotorua, New Zealand
Filed Mar. 13, 1972, Ser. No. 234,133
Claims priority, application New Zealand, Mar. 12, 1971, 163059
U.S. Cl. 116—34 R **5 Claims**



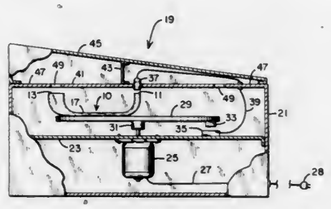
A gas pressure operated warning device which is particularly suitable for attachment to the valve stems of pneumatic tires of motor vehicles and which produces an audible noise when the gas pressure falls below a critical value.

3,776,175
AUDIBLE FIRE ALARM AND METHOD OF MAKING THE SAME
Bernard G. Peretz, 3938 Robley Ter., Oakland, Calif.
Filed Apr. 19, 1971, Ser. No. 135,279
Int. Cl. G08b 17/00, 17/08
U.S. Cl. 116—105 2 Claims



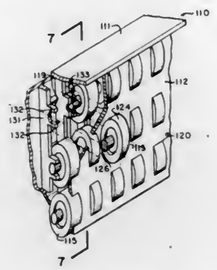
An audible fire alarm and method of making the same. The apparatus is operative to provide one or more sharp reports signaling exposure of the alarm to a temperature exceeding a predetermined value for a time period sufficient for the alarm to attain such temperature value. It includes a casing defining a chamber within which is located a packet comprising a heat-ignitable explosive charge and a wrapper folded tightly thereabout to encapsulate the charge therein. Both the casing and wrapper are formed from a material having relatively good heat conductivity, such as aluminum, so that ambient temperatures to which the alarm and casing thereof are exposed are transmitted rapidly to the explosive charge to effect ignition thereof. The method includes the steps of bending a casing blank into a chamber-defining casing, of folding a measured explosive charge into an inner wrapper element, encapsulating the folded charge-equipped inner wrapper element into an outer wrapper element, of providing a substantially moisture impervious coating about the packet defined by the wrapper elements and charge therein, and of assemblying the packet with the casing.

3,776,176
INDICATOR DEVICE WHICH CAN BE ILLUMINATED
Joseph E. Doyle, King of Prussia, Pa., assignor to Master Electronics Corporation, Huntingdon Valley, Pa.
Filed Mar. 15, 1972, Ser. No. 234,828
Int. Cl. G09f 9/00
U.S. Cl. 116—129 L 3 Claims



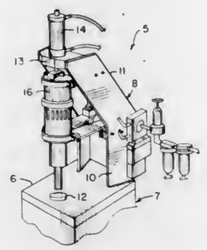
The present device provides a fiber optic member, particularly shaped so that light from a light source can be virtually completely captured at one end and is directed to the other end where the viewer sees the light as a fine line. The fiber optic member is secured to a turntable or a beam, which is mounted on the shaft of a motor or shaft driving means. The illuminated fine line end of the fiber optic member is mounted so that it can be rotated under the face of a meter dial whereby the position of the illuminated fine line with respect to the graduations or marks on the face of the meter.

3,776,177
SERVICE REMINDER APPARATUS
Spurgeon Q. Bryant, 1139 Ninth St., Apt. G., Albany, Calif., and Samuel S. Keith, 4145 Punta Alta Dr., Los Angeles, Calif.
Continuation-in-part of Ser. No. 105,438, Jan. 11, 9171, abandoned. This application June 13, 1972, Ser. No. 262,321
Int. Cl. G09f 9/00
U.S. Cl. 116—133 1 Claim



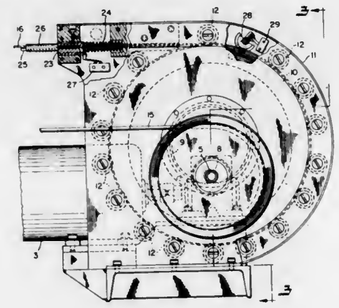
An apparatus for indicating mileage for various automotive maintenance periods is provided having numerical indicia carrying wheels arranged in rows and columns, each wheel rotatable by an operator's fingers from the rear of the apparatus and visible individually from the front. Indicia adjacent each row indicates the type of maintenance to be performed with a blank space for one row having a writing surface for special notations by an operator. A magnet is included for attaching the apparatus to the automobile — also a clip for the sun visor.

3,776,178
MACHINE FRAME STRUCTURE
William D. Colianni, 4179 Way Barry Ave., Chicago, Ill.
Filed Sept. 11, 1972, Ser. No. 287,904
Int. Cl. B06b 3/00
U.S. Cl. 116—137 A 5 Claims



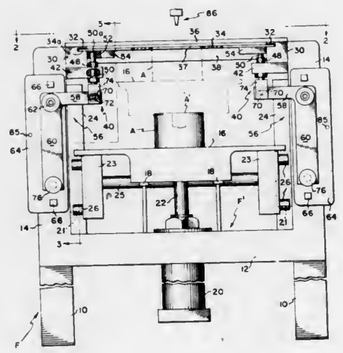
Improved means for supporting and guiding superposed or vertically aligned and coupled converter and resonator or horn in apparatus for applying sonic or ultrasonic energy with precise and accurate reciprocatory movement with respect to a workpiece disposed on an anvil. The improved support and guide means includes a pair of spaced upright support and guide rods carried on cantilever frame means. A pair of vertically space bushings or an elongated bushing is slidably mounted on each support and guide rod so as to provide at least spaced two-point support on each rod. The converter is suitably mounted or supported on the bushings so as to be vertically reciprocable toward and away from the anvil in an accurate and precise path. A double acting cylinder, a single acting cylinder in combination with a compression spring, or other suitable power means is operatively connected for controllably raising and lowering the converter together with the resonator or horn coupled thereto toward and away from the anvil. The vertical guide and support rods are mounted on a cantilever frame together with the power means for reciprocating the coupled converter and resonator.

3,776,179
DEVICE FOR PUSHING AND PULLING IMPLEMENTS, INCLUDING CABLES, INTO AND FROM CONDUITS AND THE LIKE
William E. Raney, 511 Morewood Pkwy., Rocky River, Ohio, and Milan J. Siebert, 5617 Onaway Oval, Parma, Ohio
Continuation of Ser. No. 762,061, Sept. 24, 1968, Pat. No. 3,612,487. This application Apr. 21, 1971, Ser. No. 136,189
Int. Cl. B05c 7/02, 11/00
U.S. Cl. 118—8 4 Claims



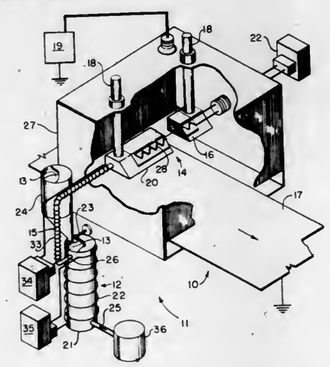
Device for pushing and pulling implements (e.g. pipe coating testers, pipe markers, pipe cleaners, pipe spray guns) along pipes or like elongated workpieces, said device having adjacent spools or reels with spirally coiled implement feeding and operating elements wound on the respective reels, the feeding element being operative to push and pull the implement into and from the pipe (or along the pipe) while the implement operating element is unwound from or rewound onto its reel.

3,776,180
PAINT SPRAY MASK LOCATING ASSEMBLY
Edward L. Rich, 3980 Peppermill Ln., Bay City, Mich.
Filed Mar. 23, 1972, Ser. No. 237,468
Int. Cl. B05c 5/00
U.S. Cl. 118—301 6 Claims



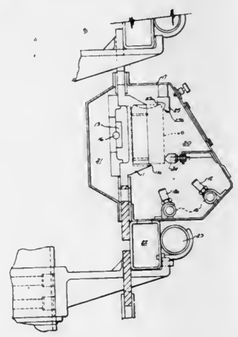
Apparatus useful in spraying a spray material on the surface of an article including a spray mask supported on a frame; a carriage for moving an article toward and away from a masking position adjacent the mask, and apparatus for precisely locating the spray mask on the support frame including a reciprocable locating pin receivable in a locating aperture provided in the underside of the spray mask and a pivotal actuator, connected to the locating pin via a lost motion connection, for moving the pin in a linear path of travel, into and out of the aperture as the actuator is swung about its fulcrum.

3,776,181
DEPOSITION APPARATUS FOR AN ORGANOMETALLIC MATERIAL
Emery P. Miller, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Division of Ser. No. 7,589, Feb. 2, 1970, Pat. No. 3,699,027. This application July 28, 1972, Ser. No. 276,113
Int. Cl. C23c 13/12
U.S. Cl. 118—49.5 1 Claim



Means to electrostatically coat a moving substrate includes a liquid source; heated means to vaporize the liquid and to communicate the vapor to a heated, longitudinally slotted dispenser overlying and transversely coextensive with the substrate; and means to establish an electric potential between the slotted dispenser and the substrate whereby to electrostatically effect deposition of the vapor.

3,776,182
CAN TREATING APPARATUS
Ralph J. Stolle, Lebanon, Ohio, assignor to The Stolle Corporation, Sidney, Ohio
Filed July 31, 1972, Ser. No. 276,393
Int. Cl. B05c 11/14, 7/02, 11/16
U.S. Cl. 118—62 8 Claims



The application discloses an apparatus in which newly manufactured empty cans are prepared for filling with food-

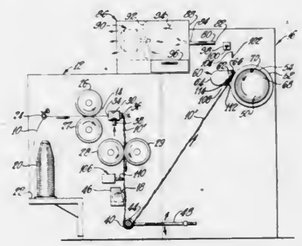
stuffs or beverages. The cans are sequentially washed, rinsed, treated, again rinsed, and finally dried, and if desired, subsequently coated and cured. The cans are individually transported through the apparatus by means of carriers which move them in a spiral path, while they are loosely retained in said carriers. A series of spray nozzles discharge against the cylindrical surfaces of the can, and the carriers are arranged to eliminate buff bodies and vortices at the back surfaces of the can. Uniform action of the sprayed material on the can bodies is further enhanced by providing negative pressure at the discharge from the carriers. Another series of spray nozzles discharge upwardly into the interior of the can body to treat the inner surfaces thereof, and to slightly lift the can bodies so they are free to rotate by virtue of contact with a rail member while being advanced at right angles to their axes.

3,776,183

APPARATUS FOR TREATING AND COLLECTING YARN

Gustav E. Benson, Edgewood, and Everett W. Taylor, Cumberland, both of R.I., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 5, 1972, Ser. No. 241,173
Int. Cl. B05c *1/14*; **D02g** *3/24*, *1/16*
U.S. Cl. 118—235 **14 Claims**



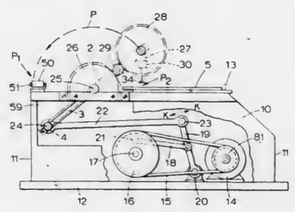
Method of and apparatus for treating and collecting yarn that includes a yarn coating device; an interim yarn take-up; automatic start-up of yarm collection by the primary yarn collector from the interim take-up; and means preventing yarn coating during yarn take-up by the interim yarn take-up.

3,776,184

APPARATUS FOR APPLYING LIQUID SAMPLES TO A SURFACE

Arthur Denwood Richard Harrison, Leatherhead, England, assignor to The University of Surrey, Guilford, Surrey, England

Filed Mar. 2, 1972, Ser. No. 231,255
Int. Cl. B67d *5/62*
U.S. Cl. 118—243 **14 Claims**



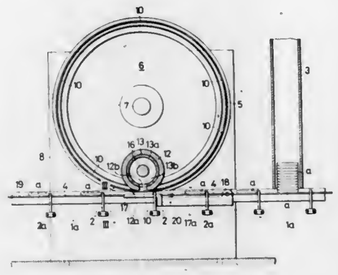
An apparatus for automatically applying deposits of a liquid sample to a surface for chromatographic analysis. The apparatus employs a dispensing device which employs a plurality of separate dispensing elements such as shaped components with looped portions, small brushes or micro-pipettes, which are arranged in an elongate row. The dispensing device is bodily moved in an arc between the surface and vessels containing the liquid samples. Each of the elements is dipped into one of the vessels to pick up a charge of liquid and then moved into contact with the surface to transfer the liquid to the surface as a defined deposit. Means, such as gearing, is provided to ensure that the dispensing elements are moved perpendicularly in relation to the surface when the latter are about to transfer the liquid to the surface.

3,776,185

CREAM FEEDER FOR APPARATUS FOR PRODUCING CONFECTIONERY

Kaoru Kawasaki, Sakai, Japan, assignor to Tenchi Kikai Kabushiki Kaisha, Sakai, Osaka Prefecture, Japan

Filed July 3, 1972, Ser. No. 268,895
Int. Cl. B05c *3/00*
U.S. Cl. 118—406 **3 Claims**



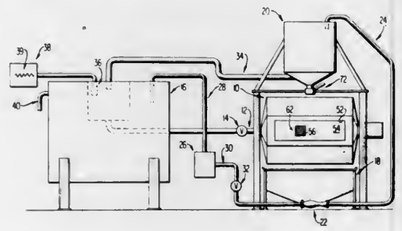
An apparatus comprises a conveyor for transporting confectionery pieces in an equidistant arrangement along a guide path, a rotary cylinder rotatable at a circumferential speed equal to the travelling speed of the confectionery pieces so as to come into contact with the travelling confectionery pieces at a predetermined position and formed with a number of apertures spaced apart by a distance equal to the space between the travelling confectionery pieces, and a cream feeder disposed within the cylinder and having outlets for supplying cream onto confectionery pieces through the apertures which cream is forced into the feeder, whereby the area over which the cream is deposited on the confectionery pieces and the amount of the cream are controlled.

3,776,186

SYSTEM FOR WET IMPACT PLATING

Lester Coch, Northport, N.Y., assignor to Waldes Kohinoor Inc., Long Island City, N.Y.

Division of Ser. No. 53,123, July 8, 1970, Pat. No. 3,690,935.
This application May 23, 1972, Ser. No. 256,191
Int. Cl. B05c *3/08*
U.S. Cl. 118—603 **12 Claims**



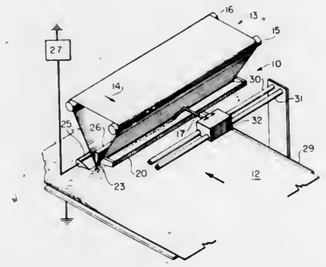
A system for wet impact plating of metal parts utilizing single tumbling barrel for independent parts rinsing and impacting operations respectively when interchangeable, smaller perforate and imperforate barrel doors are secured to a larger door of the barrel. Rinsing water is supplied to the barrel while rotating with the perforate door in position. Water expenditure is thereby minimized and the rinsing effluent is thereby effectively separated from the impacting medium. A stationary bin with a screen for separating parts from the impacting medium and aqueous solutions is positioned beneath the barrel. Communicating with the bin in selectively operable relationship is a venturi eductor which, together with a pump communicating with a water storage tank, is operable to rapidly transfer the impacting medium to a hopper positioned over the barrel for reuse while generating sufficient turbulence to tend to cleanse the impacting medium of spent plating material and promoter chemicals. These spent materials pass, with overflow water, through an overflow strainer in the hopper to the water storage tank where they settle and are subsequently removed. Substantially all water is thereby recovered and reused, and the frequency of impacting medium rectification is materially lessened. Two separate charges of impacting medium are used in the system, and several tumbling barrel units may be supported by a single water storage tank where the water level and temperature are controlled.

3,776,187

ELECTROSTATIC DEPOSITION APPARATUS

Richard O. Probst, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Division of Ser. No. 061,308, Aug. 5, 1970, Pat. No. 3,676,194.
This application May 3, 1972, Ser. No. 249,867
Int. Cl. B05b *5/02*
U.S. Cl. 118—626 **3 Claims**



Apparatus for providing the charged particles includes an electrically insulative belt having a surface upon which the organoplastic material is placed and transported to an electrical charging and atomizing zone. Positioned within the charging and atomizing zone is means having an extended or elongated edge at high electrical potential. The extended edge is so positioned as to be substantially transverse of and in close proximity with the surface of the insulative means transporting the organoplastic material. A high intensity electric field extends from the extended edge to, or in some instances, through the substrate if the substrate is porous and fabricated from an insulative rather than a conductive material. The position of the extended edge at high electrical potential relative to the organoplastic material causes the organoplastic material to be formed into charged particles that are projected toward and deposited upon the substrate.

3,776,188

METHOD FOR INHIBITING THE FORMATION OF MALODORS FROM POULTRY FARMS

Chukei Komakine, 6-1, 3-chome, Taira Aza, Iwaki-shi, Fukushima-ken, Japan

Filed June 29, 1971, Ser. No. 158,077
Int. Cl. A01k *31/04*
U.S. Cl. 119—1 **2 Claims**

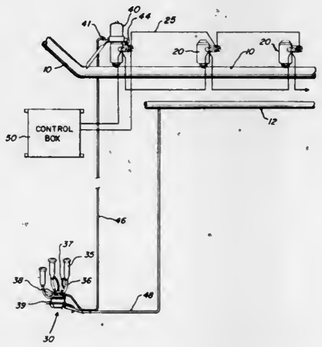
It has been discovered that evolving of offensive stench from the accumulation of droppings in fowl houses is substantially eliminated by means of coarse powders of dried ferrous sulfate hepta-hydrate. The powder is preferably used in the form of a mixture with some fly ash or dried fine powders of zeolite for the ease of dusting, and generation of the offensive odor is substantially inhibited by dusting the floor of fowl houses with said powder in advance. The thus treated droppings can be effectively utilized as an excellent fertilizer or feedstuff for fowl, fish and domestic animals.

3,776,189

AUTOMATIC MILKING APPARATUS

Arnold R. Fjermestad, Albert Lea, and William M. Nellis, St. Paul, both of Minn., assignors to National Cooperatives, Inc., Albert Lea, Minn.

Continuation-in-part of Ser. No. 219,384, Jan. 20, 1972, abandoned. This application Apr. 17, 1972, Ser. No. 244,741
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.28 **12 Claims**



A milking apparatus in which vacuum air pressure is applied to the milker units in a cyclically controlled sequence with a controlled time on and time off to provide an improved milking operation which requires only a single moving part in the form of the armature of the valve controlled by an electromagnet, the latter being controlled by a timing circuit completely of the solid state type.

3,776,190

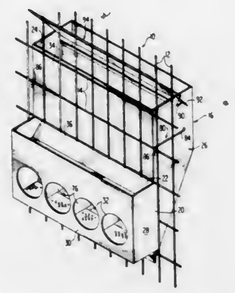
ATTACHMENT TYPE RABBIT FEEDER

Lawrence Hurlbert, P. O. Box 818, Sandpoint, Idaho

Filed Jan. 30, 1973, Ser. No. 327,912
Int. Cl. A01k *31/06*
U.S. Cl. 119—18 **14 Claims**

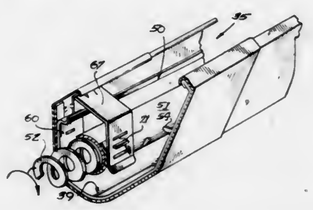
An attachment type rabbit feeder is generally trapezoidal in vertical elevation and is provided with a front projecting feed portion which conforms to and projects through an opening in a rabbit cage, the projection creating an offset, upper front wall coplanar with and external of the cage and a lower front wall within the cage. A Z-shaped separator baffle in one form of the feeder, separates the feeder into front and rear chutes cooperating with the upper and lower front walls and the unbroken side and rear walls. The projection of the side walls

forms in conjunction with the upper and lower front walls, an open top feed opening. A first screen member extends horizontally from the lower front wall intermediate the top and the bottom edges thereof to the separator wall and defines an upper feed bin permitting the more mature rabbits to feed therefrom. the rear wall terminates at its bottom coplanar with the upper front wall, and a second screen member extends horizontally from the bottom edge of the lower front wall to the rear wall to define a lower feed bin. A plurality of laterally spaced circular openings permit access to the lower feed bin and permit feeding by the less mature rabbits therefrom. A pivotable selector gate mounted at the top of the feeder and



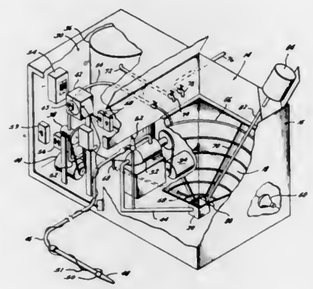
pivoting about an axis extending between the side walls and in line with the upper end of the separator baffle shields one of the chutes and facilitates access to the other chute to facilitate filling of the chutes and associated feed bins. Wire hooks extending through the upper side walls of the feeder cooperate with a lip at the bottom of the rear wall to readily permit attachment of the feeder to the cage with the feed bins projecting into the cage interior. In a second embodiment, a "creep" feeder consisting essentially of the lower half of the two-part feeder and attaches to the cage below an existing "doe" feeder and a pivotable gate at the top of its chute moves into inclined guide position to facilitate filling of the chute and underlying feed bin.

3,776,191
CONVEYOR AND TROUGH FEEDER FOR POULTRY AND THE LIKE
Robert A. Murto, Goshen, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.
Filed Aug. 29, 1972, Ser. No. 284,615
Int. Cl. A01k *5/00*
U.S. Cl. 119—18 **6 Claims**



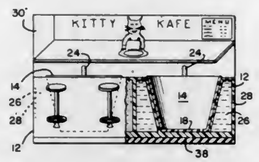
A novel poultry feeding trough and channel feed conveyor is described. The conveyor channel is provided with two series of circumferentially offset dispensing slots arrayed in a herringbone pattern to encourage equalized feed distribution along the trough length. Equalized feed distribution is further encouraged by orienting the conveyor channel in a diagonal position relative to the trough bottom. To move the feed along the channel conveyor, an auger having a series of spiral flights is included, the flights being formed with either a right hand or a left hand spiral. The elongate edges of the first series of the dispensing holes are oriented substantially parallel to the auger flights, if the auger flights have a right hand spiral. The elongate edges of the second series of holes are oriented parallel to the auger flights, if a left hand spiral auger is used.

3,776,192
ANIMAL FEEDING APPARATUS
Otis C. Stamps, and David W. Nelkirk, both of Clovis, N. Mex., assignors to Iject-O-Meter Manufacturing Co., Inc., Clovis, N. Mex.
Filed Aug. 17, 1972, Ser. No. 281,513
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.11 **11 Claims**



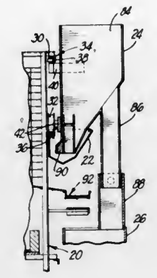
An apparatus for delivering a measured amount of fluid feed to animals having a housing with a feed chamber therein, a pump with its inlet connected to the feed chamber and its outlet connected to deliver feed to a feed line, a timer connected to control the operation of the pump to cause the pump to pump for a preset period of time and thus deliver a preselected quantity of feed, means for stirring feed within said chamber, means for heating feed within said chamber, and a wheeled vehicle on which said housing is mounted.

3,776,193
ANIMAL FEEDER
Robert L. Post, Sr., 3579 Rt. No. 46, Apt. 24A, Parsippany, N.J.
Filed May 26, 1972, Ser. No. 257,361
Int. Cl. A01k *5/00*
U.S. Cl. 119—51.5 **5 Claims**



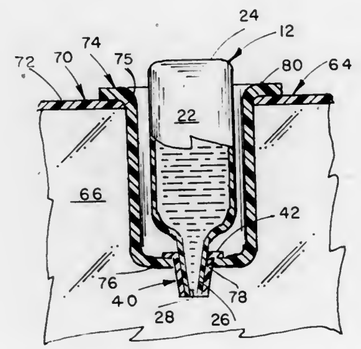
The feeder comprises a holder for food or water receptacles, in which the receptacles are of the disposable type. The holder is a pre-formed unit of plastic or similar construction having a conical recess for replaceably receiving a conical-shape receptacle, and has a locating key, of a dowel form, extending therefrom for the engagement thereof by an apertured handle which projects from one side of the disposable receptacle. The receptacle holder is hollow and has a filler plug threadedly fixed in a wall thereof to facilitate a weighting of the holder by the introduction of water, sand, and the like, and to effect a sealing of the water or sand weighting vehicle. A plurality of holders can be fixed together, in juxtaposition, by the means of bosses formed in a wall surface thereof, the bosses being configured to receive pin retainers which project from a decorative backboard.

3,776,194
AUTOMATIC FEEDER
John L. Conley, 3870 Chino Ave., Chino, Calif.
Filed May 12, 1971, Ser. No. 142,519
Int. Cl. A01k *05/02*
U.S. Cl. 119—52 B **8 Claims**



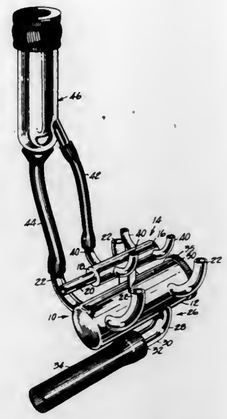
An automatic feeder for an automated poultry handling system and other automated animal handling systems having a number of spaced blocks of cages each including two banks of cages disposed back to back with several tiers of cages in each bank. The feeder has feed troughs to be mounted along the cage tiers of each cage block and a set of interconnected feed hoppers movable in unison along the feed troughs at each side of each block. The two sets of interconnected feed hoppers of each cage block are driven back and forth periodically in unison along their feed troughs to dispense feed into the troughs along the entire lengths of the troughs. The hoppers of each hopper set are interconnected by chutes to permit filling of all the hoppers of the set through a filler opening in the upper hopper.

3,776,195
FEED-BOTTLE
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed June 28, 1972, Ser. No. 267,148
Int. Cl. A01k *07/00*
U.S. Cl. 119—72.5 **15 Claims**



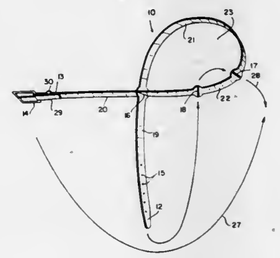
A fluid feed-bottle for animals which is entirely elastomeric and includes a spout at the open end thereof which has an internal dimension of sufficiently small nature for resisting outflow of fluid therethrough when the feed-bottle is inverted.

3,776,196
CLAW ASSEMBLY FOR MILKING MACHINES
Joseph W. Luiz, 5482 Bodega Ave., Petaluna, Calif.
Filed Apr. 19, 1972, Ser. No. 245,372
Int. Cl. A01j *05/16*
U.S. Cl. 119—14.36 **8 Claims**



A claw assembly for a milking machine has a tubular shaped milk receiving member provided with two pair of milk stems spatially arranged to project upwardly and outwardly therefrom and a milk outlet located on the bottom surface of the rear portion thereof. The length of the milk outlet is substantially less than that of the receiving member. The location of the milk outlet in combination with the location and spacing of the milk stems provides a unique claw structure whereby during a milking operation greater weight is applied to the rear portion of the milk receiving member than to the front portion of said member resulting in faster milking with less chance of injury to the sensitive portions of a milk cow. This claw assembly enables the front and rear quarters of the cow's udder to be drained in substantially the same length of time.

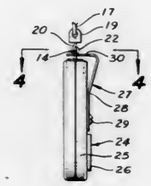
3,776,197
TONGUE STRAP
Richard E. Hughes, Frederick St., Jeffersonville, Ind.
Filed Jan. 22, 1973, Ser. No. 325,947
Int. Cl. H01k *29/00*
U.S. Cl. 119—96 **4 Claims**



A tongue strap for animals comprising a long, narrow flexible band, preferably of rubberoid material, formed with a first transverse slot near one end, a second transverse slot farther from that end and a third transverse slot still farther from that end, the other end of the band being threaded through the first

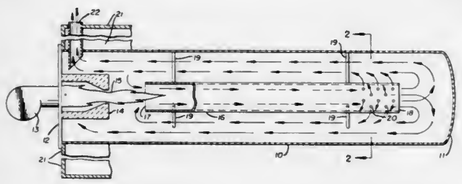
slot from the inside to the outside to form a first adjustable loop to enwrap the animal's tongue, and the one end of the band being threaded through the third slot from the outside to the inside and then through the second slot from the inside to the outside and then being brought into and secured in mating relation to the other end of the band to form a second adjustable loop to enwrap the lower jaw of the animal.

3,776,198
ANIMAL LEASH
Ronald L. Gehrke, 2201 Partridge Way, Union City, Calif.
Filed May 4, 1972, Ser. No. 250,268
Int. Cl. A01k *27/00*
U.S. Cl. 119—109 **3 Claims**



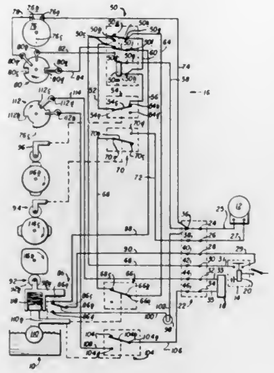
A leash for a household pet such as a dog, cat, or the like. The leash is intended to remain secured to the animal continuously so that it is always handy and available when it is desired to walk the animal. The leash includes a collar or other strap encircling the neck of the animal and secured thereto. A flexible tether is permanently attached adjacent one end to the collar by means of fastener structure accommodating relative movement therebetween, and adjacent its opposite end the tether is secured to retractable reel mechanism operative to retract the tether completely so that the reel mechanism is then disposed in very close proximity to the collar. Selectively operable stop means arranged with the reel mechanism and tether enables the latter to be constrained against retraction at any convenient length.

3,776,199
REGENERATIVE HEAT EXCHANGER
John H. Miller, Youngstown, Ohio, assignor to Hy-Way Heat Systems, Inc., Youngstown, Ohio
Filed May 5, 1972, Ser. No. 250,796
Int. Cl. F22b *7/00*
U.S. Cl. 122—33 **5 Claims**



A heat exchanger comprises a cylindrical body having closed ends with means in one end for introducing the products of combustion thereinto and venting the same therefrom. The introduction is by means of a directional nozzle positioned axially of the cylindrical body. A tubular baffle is positioned axially of the cylindrical body in spaced relation to the directional nozzle and the cylindrical body so that the action of the jet-like introduction of the products of combustion into the tubular baffle will recirculate gases from within the cylindrical body in a regenerative effect so as maintain an even temperature on the surface of the cylindrical body which is emerged in a tank of liquid to be heated.

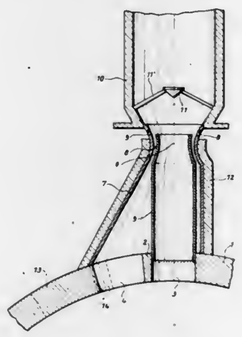
3,776,200
AUTOMATIC SELF-TESTING LOW-WATER CUT-OFF
Sebastian David Tine, Lawrence, and Calvin Rushforth, Andover, both of Mass., assignors to Watts Regulator Company, Lawrence, Mass.
Filed Sept. 1, 1972, Ser. No. 285,638
Int. Cl. F22b *37/42*
U.S. Cl. 122—504 **12 Claims**



A system for preventing "dry-boiler" failures which includes a float mechanism for detecting the water level in a heated reservoir and a device for testing the float mechanism to determine if it is operating properly and for preventing activation of the burner if improper operation is detected.

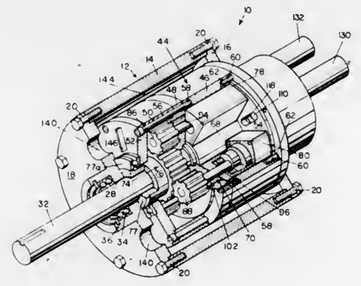
If the float mechanism is operating properly but the water level is below a pre-determined safety level, then activation of the burner can be prevented and various alarms actuated to notify the operator.

3,776,201
EXHAUST ARRANGEMENT IN A ROTARY-PISTON INTERNAL COMBUSTION ENGINE
Huschang Sabet, Eduard-Pfeiffer-Strasse 67, Stuttgart, Germany
Continuation-in-part of Ser. No. 137,870, April 27, 1970, Pat. No. 3,736,080. This application Aug. 30, 1972, Ser. No. 284,897
Claims priority, application Germany, Oct. 19, 1971, P 21 51 988.0
Int. Cl. F02b *53/04*
U.S. Cl. 123—8.13 **5 Claims**



In a rotary-piston, internal combustion engine in which pistons rotate about the axis of a cylindrical casing in circumferentially consecutive relationship in sealing engagement with the casing and move angularly relative to each other in such a manner that each pair of circumferentially consecutive pistons defines a combustion chamber of the engine which expands and contracts during rotation, the casing is formed with an intake port for admitting a fuel mixture to the expanding chambers and with an exhaust port and an auxiliary port juxtaposed circumferentially in the direction of piston movement for releasing the spent fuel mixture as combustion gases from the contracting chambers. A conduit extends from the exhaust port outward of the casing and terminates in a tapering, open nozzle. Another conduit extends from the auxiliary port and has a throat portion spacedly enveloping the nozzle so as to form a jet pump or ejector pump therewith, the pressure of the combustion gas discharged from the nozzle drawing additional gas at lower pressure from the combustion compartment.

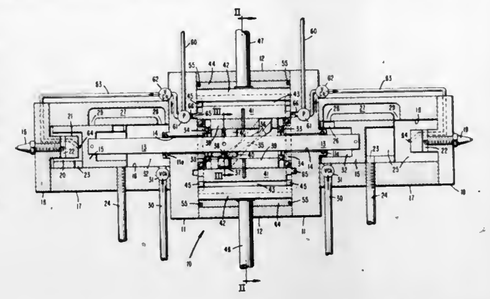
3,776,202
ROTARY ENGINE WITH SUN GEAR DRIVE
Bernardo E. Mesa, 5912 N. Tuxedo St., Indianapolis, Ind.
Filed May 25, 1972, Ser. No. 256,698
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.47 **21 Claims**



An engine comprising a cylindrically shaped rotor, a support frame defining an axis for the rotor, a sun gear concentric with the said axis, a shaft for journal mounting the rotor for concentric rotation about the said axis on the frame and relative to the sun gear, the rotor providing a toroidal chamber concentric with the said axis, and conformingly shaped pistons disposed in the chamber for oscillatory movement about the axis relative to the rotor to define variable volume combustion chambers within the rotor. Planet gears are journal mounted on the rotor and meshed with the sun gear to be driven when there is relative rotation between the rotor and sun gear, and eccentrics drivingly connect each piston to one of the planet gears whereby such relative rotation produces such oscillation of the pistons relative to said chamber.

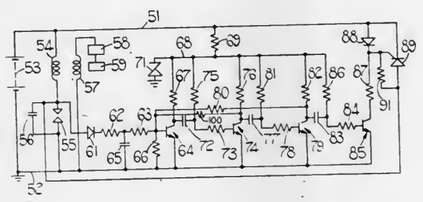
3,776,203
VARIABLE VOLUME ROTARY VANE PUMP HAVING AN INTEGRAL OPPOSED RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE
Benjamin Norman Joyce, Sr., Rt. 6, Box 226, Bassett, Va.
Filed Sept. 1, 1972, Ser. No. 285,650
Int. Cl. F02b *75/24, 75/26, 75/32*
U.S. Cl. 123—56 C **9 Claims**

The invention comprises variable volume rotary vane pump and integral opposed reciprocating piston internal combustion engine, which comprises a central housing through the ends of which pass a shaft, to each end of which is connected a piston housed within a cylinder, which together form an internal combustion engine. On the reciprocating shaft is rigidly mounted a cam follower engaging a cylindrical camming device coaxial with the shaft and having an endless camming groove in its internal cylindrical surface. To this camming device is attached a cylindrical sleeve which forms the inner ring of a variable volume rotary vane pump. The vane pump also comprises a unitary volume adjustment block slidably



mounted within the ends of the central housing, with fluid inlet and outlet orifices in the top and bottom thereof. The internal combustion engine includes improved piston and cylinder head designs, and a secondary fluid injection system.

3,776,204
SPEED LIMITING SYSTEMS FOR INTERNAL COMBUSTION ENGINES
Paul Anthony Harris, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed June 28, 1971, Ser. No. 157,252
Claims priority, application Great Britain, June 27, 1970, 31,287/70
Int. Cl. F02d *17/00*
U.S. Cl. 123—102 **7 Claims**

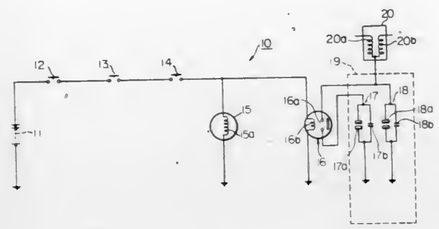


A speed limiting system for an internal combustion engine has a switching device in series with the primary winding of an ignition coil, a spark being produced when the switching device is turned off. The speed limiting system comprises a thyristor connected in a circuit across the primary winding and a transistor which is coupled to the switching device and is turned on as a result of opening of the switching device. Current flow is initiated to the gate of the thyristor at a predetermined instant of time after the transistor has been turned on, and is maintained for a predetermined period of time. The thyristor prevents production of a further spark if the switching device is turned off during the predetermined period of time.

3,776,205
IGNITION TIMING CONTROL SYSTEM
Hiroyuki Maruoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan
Filed Jan. 20, 1972, Ser. No. 219,400
Claims priority, application Japan, July 29, 1971, 46/57013
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 R **3 Claims**

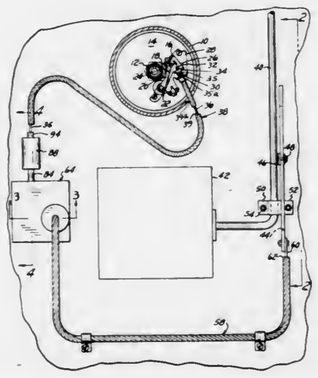
An ignition timing control system for a spark ignited internal combustion engine of an automotive vehicle which engine

includes a carburetor throttle valve. The system includes a d.c. voltage source, a throttle opening device connected to the voltage source for opening the carburetor throttle valve when it is energized. The throttle valve opening device is energized during neutral condition of the automotive vehicle when the engine is cold. The system further includes a relay connected to the voltage source, an ignition coil connected to the relay,



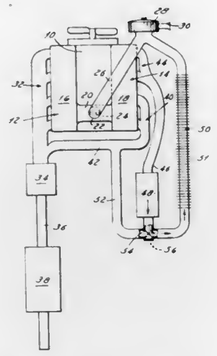
and a distributor including an advancing breaker point connected through the ignition coil to the relay and a retarding breaker point connected to the relay, whereby an electric current path from the voltage source through the relay to the retarding breaker point is established while the carburetor throttle valve is opened by the actuation of the throttle valve opening device for thereby effecting faster warm up of the engine to prevent air pollution.

3,776,206
DISTRIBUTOR ADJUSTING MECHANISM
Duane A. Hunt, East Lansing, Mich., assignor to Donnell R. Matthews, Jr., East Lansing, Mich.
Filed May 10, 1972, Ser. No. 252,311
Int. Cl. F02p *5/06*
U.S. Cl. 123—117 R **10 Claims**



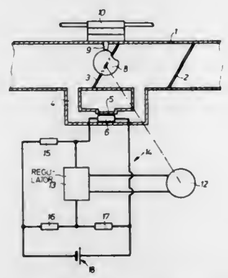
Mechanism for adjusting the location of the stationary contact of the breaker points of a distributor in accordance with engine speed during operation of the engine, either automatically in response to speed or throttle opening, or manually by a remote operation from the driver's seat in an automobile.

3,776,207
ENGINE CONSTANT RATE EXHAUST GAS RECIRCULATION SYSTEM
Aladar O. Simko, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 3, 1972, Ser. No. 303,660
Int. Cl. F02m *25/00*
U.S. Cl. 123—119 A **10 Claims**



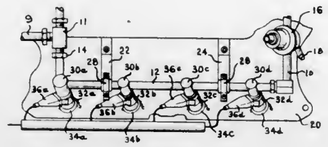
An engine has a portion of the exhaust manifolding connected at times to the intake system for directing at times a predetermined percentage of the exhaust gases into the engine, while the remainder of the manifolding is connected to a conventional exhaust system, to maintain a constant exhaust gas recirculation rate at times, a diverter valve operable at engine wide open throttle conditions to discharge all of the exhaust gases to the exhaust system, for greater power.

3,776,208
FUEL INJECTION APPARATUS FOR SPARK PLUG-IGNITED INTERNAL COMBUSTION ENGINES
Gerhard Stumpp, Stuttgart-Vaihingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 28, 1971, Ser. No. 213,101
Claims priority, application Germany, Dec. 28, 1970, P 20 63 963.8
Int. Cl. F02m *7/22*
U.S. Cl. 123—119 R **10 Claims**



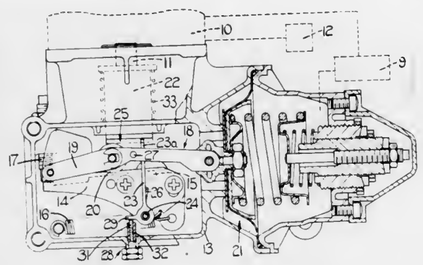
In a fuel injection apparatus the fuel quantities injected in the associated internal combustion engine are determined as a function of the angular position of a throttle member disposed in the air intake tube of the engine. The angular position of the throttle member, in turn, is variable by an electric follower regulator circuit that includes, in a bridge circuit, a temperature-dependent resistance which is disposed in a channel bypassing the throttle member and which changes its resistance as a function of the velocity and density of the intake air passing through said channel.

3,776,209
FUEL INJECTOR MANIFOLD AND MOUNTING ARRANGEMENT
Harry P. Wertheimer, Horseheads, and William A. Peterson, Jr., Corning, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.
Continuation of Ser. No. 181,680, Sept. 20, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,360
Int. Cl. F02m *55/00*
U.S. Cl. 123—119 R **1 Claim**



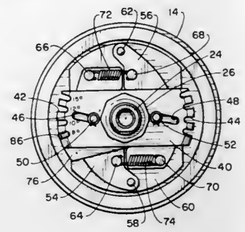
A liquid injector manifold and mounting arrangement wherein the fuel injector is supported in the engine at one end in a cylindrical bore with the aid of a circular seal. The injector extends from the engine and is supported at its other end by an extending fitting which tees off from a tubular common rail liquid fuel manifold. The tubular liquid fuel manifold is supported by brackets at a raised elevation. The connection between manifold fitting and fuel injector also employs a cylindrical surface and circular seal connection.

3,776,210
CONTROL APPARATUS FOR FUEL INJECTION SYSTEM
Gordon Frank Beasley, Birmingham, and George Whitehurst, Solihull, Warwickshire, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Feb. 4, 1972, Ser. No. 223,438
Claims priority, application Great Britain, Feb. 3, 1971, 5,857/71; May 2, 1971, 4,094/71
Int. Cl. F02m *41/00*
U.S. Cl. 123—139 AM **6 Claims**



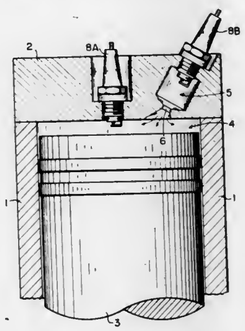
A control apparatus for an internal combustion engine fuel injection system has a cam rotatable between a normal position and a cold-starting position, a cam follower movable in response to engine intake manifold pressure to vary the position of a metering valve control stop in accordance with said pressure and with the cam position, and a latch pivotally mounted on the cam and biased so as to limit movement of said control stop, and hence fuel flow, when the engine is started with the cam in its normal position. The latch is moved by the cam follower to an inoperative position when the engine is running. A damping arrangement slows movement of the latch in response to its biasing means.

3,776,211
ADJUSTABLE LIMIT FOR THE ADVANCE OF AN IGNITION DISTRIBUTOR
Darrell W. Droke, Newport; Donald R. Ochampaugh, Bell, and Andrew G. Krumm, Los Alamitos, all of Calif., assignors to Cragar Industries, Inc., Compton, Calif.
Filed July 22, 1971, Ser. No. 165,243
Int. Cl. F02p *1/00, 5/04*
U.S. Cl. 123—146.5 A **5 Claims**



An ignition distributor wherein a drive plate is fixed to the distributor input shaft; a pair of centrifugal weights are pivotally connected to the drive plate and normally biased to the retard position: an advance plate is pivoted with respect to the distributor shaft with the pivoting movement controlled by the centrifugal movement of the weights, the advance plate being connected to the distributor cam which is fixed to the output shaft: a stop plate movable with respect to the advance plate is locatable in various positions with respect thereto, each position establishing a different maximum outward movement of the centrifugal weights.

3,776,212
METHOD FOR EMISSION CONTROL FOR SPARK IGNITION ENGINES
Bela Karlowitz, 1510 Scenery Ridge Dr., Pittsburgh, Pa.
Continuation of Ser. No. 798,716, Feb. 12, 1964, abandoned. This application Oct. 22, 1970, Ser. No. 83,163
Int. Cl. F02b *19/00*
U.S. Cl. 123—191 SP **16 Claims**



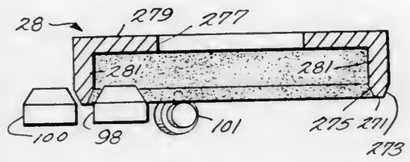
Method and apparatus for operating internal combustion spark ignition engines in a manner to reduce the harmful constituents of the exhaust of the engine. The engine is operated, except during peak power requirement, with very lean air-fuel mixtures. The loss of power generally accompanied by lean air-fuel mixtures due to slow burning is avoided by supplying turbulence of proper intensity to the burning mixture. The turbulence is supplied by constructing a combustion chamber divided into main and auxiliary sections joined by an orifice. By selecting the proper orifice size and the proper ratio of the

volumes of the main and auxiliary sections sufficient turbulence can be provided to burn the lean air-fuel mixture within normal crank angles.

3,776,213
APPARATUS FOR GRINDING TOOTHED FACE MEMBERS

James F. Clarke, and Thomas A. Deprez, both of c/o Gleason Works, 1000 University Ave., Rochester, N.Y.

Continuation of Ser. No. 90,441, Nov. 17, 1970, which is a division of Ser. No. 803,683, March 3, 1969, Pat. No. 3,640,030. This application Nov. 10, 1972, Ser. No. 305,291
Int. Cl. B24b *53/08*
U.S. Cl. 125—11 CC **13 Claims**



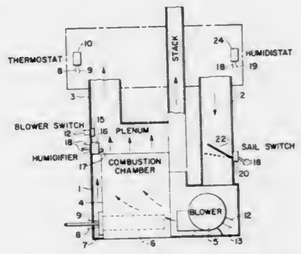
Provision is made for an automatic, oscillating feeding motion between cup-shaped grinding wheel and a dresser assembly including rotary dresser wheels, to impart a special undulating or scalloped configuration to the cutting surfaces on the grinding wheel whereby the flow of coolant to and of waste material from the cutting regions will be facilitated, during actual cutting operations.

The present invention further comprises novel structures for an automatic sequence of dressing operations wherein during the dressing steps, an oscillatory feed motion will be automatically provided between the grinding wheel and the dresser assembly through the use of a DCDT (a direct current displacement transducer) connected through a feedback arrangement to a hydraulic drive, and operating in conjunction with mechanical structure. The mechanical structure includes a clutch drive and a cam arrangement, drivingly connected to the spindle for the grinding wheel and operating in conjunction with rotation of the grinding wheel to impart an oscillating or reciprocating motion to the core or armature of the DCDT coil thereby effecting through the feedback arrangement and the hydraulic drive an automatic movement of the grinding wheel by reason of the DCDT coil trying to return to a null position thereof relative to the reciprocating core.

3,776,214
COMBINATION HEATING AND HUMIDIFYING SYSTEM

John R. Coffman, Scottdale, Pa., assignor to Lewbill Industries, Inc., Scottsdale, Pa.

Filed Nov. 16, 1971, Ser. No. 199,258
Int. Cl. F24f *3/14*
U.S. Cl. 126—113 **1 Claim**

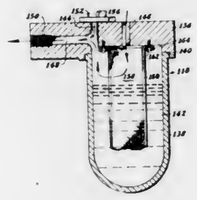


A normally shut off, electrically operated, spray humidifier is provided for humidifying a flow of air produced by a furnace blower controlled by a heat-responsive switch that is independent of the thermostat circuit which controls the furnace burner. The humidifier is connected in the thermostat circuit through a normally open switch that is closed only when a sail, operatively connected with the switch, is moved by the flow of air produced by the blower. Consequently, the humidifier does not start to operate until the flow of air begins, but the humidifier is shut off when the burner is turned off.

3,776,215
HUMIDIFIER MEANS

Arthur G. Howard, and John P. McHugh, both of Indianapolis, Ind.

Filed Nov. 1, 1971, Ser. No. 194,191
Int. Cl. F24h *3/00*
U.S. Cl. 126—113 **16 Claims**



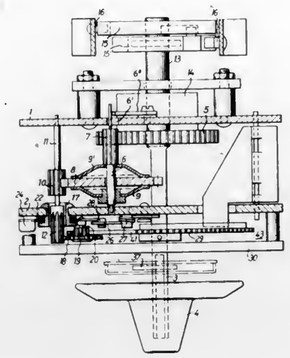
A humidifier installation which projects water in minute droplet form into the associated air stream duct, without prior evaporation of the water, and permitting all components except the discharge nozzle to be spaced away from the air duct and away from all the heated air, thus avoiding a main source of humidifier clogging and/or other inefficiency and ineffectiveness. Additional features include an adjustable means for getting liquid deodorant or disinfectant into the air stream which is used to draw the humidifying water into the duct; and the nozzle assembly, which achieves the flow of humidifying water under vacuum in response to flow of air through the nozzle assembly, provides a parallel arrangement of the air and water ducts into a downstream mixing chamber from which the humidifying water is discharged under pressure of that air into the air stream duct whose air is to be moistened or otherwise treated by the overall humidifier means. Other features add to the overall operativity, the overall housing of the humidifying unit being compartmentalized, achieving maximal separation of water, compressed air, and electrical features.

3,776,216
SELF-CLEANING OVEN

Rudolf Pirker, Noremberg, and Roland Kelchner, Furth/Bayern, both of Germany, assignors to Licentia Patent-verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 9, 1972, Ser. No. 304,951
Claims priority, application Germany, Nov. 9, 1971, P 21 55 570.4
Int. Cl. F24c *15/02*
U.S. Cl. 126—197 **4 Claims**

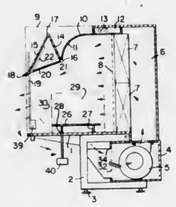
In apparatus for automatically heat-cleaning the interior surfaces of an oven having a locking member for locking the oven door during the cleaning process; a timer for controlling the cleaning operation; a blocking device for maintaining the door in its locked position during the operation; and a bimetal control device connected to the timer and the blocking device for actuating the blocking device and for preventing the timer from being reset after the cleaning operation has begun and while the temperature in the oven remains above a certain value.



3,776,217
NURSING BOX FOR BABIES OR SIMILAR PURPOSES

Piet van Galen, and Johannes G. Th. van Nes, Jr., both of Heerhugowaard, Netherlands, assignors to Pielkenrood-Vinitex N.V., Assendelft, Netherlands

Filed Dec. 4, 1970, Ser. No. 95,035
Claims priority, application Netherlands, Dec. 18, 1969, 6918989
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 B **12 Claims**



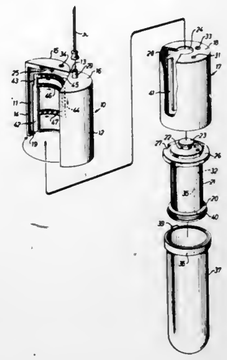
A dust-free box for babies or similar purposes comprising a blower assembly and air filters for producing a substantially horizontal, non-turbulent and dust-free air flow in the interior space of the box proper, which flow is directed through a front opening. When the front wall is in a closed position, a relatively small slot remains open to provide this opening. When the front wall is in an open position, the inner surfaces thereof are kept out of contact with the outside air. Auxiliary means inside the box do not disturb the dust-free condition therein and/or are maintained dust-free during use and when not in use.

3,776,218
APPARATUS FOR DRAWING LIQUID SUCH AS BLOOD

Jan Axel Svensson, Bredbacks vag 7, Bjarred, Sweden

Filed Dec. 27, 1971, Ser. No. 212,542
Int. Cl. A61b *5/14*
U.S. Cl. 128—2 F **5 Claims**

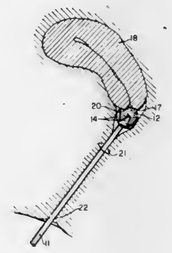
In an apparatus for drawing liquid, especially for drawing blood, there is provided a stationary piston and a longitudinally extending container, open at one end, which receives the piston and is axially displaceable in relation to the piston to form a pump together therewith. A communication is provided through the piston from an inlet pipe to the space in the container closed off by the piston.



3,776,219
CERVICAL SCRAPER

Paul A. Brown, Ridgewood, N.J., assignor to Metpath Inc., Hackensack, N.J.

Filed Sept. 15, 1972, Ser. No. 289,674
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **4 Claims**



A cervical scraper unit is provided and particularly for utilization by the female herself for collecting a cytological sample, including endocervical and exocervical cells as well as exudate, from the vagina or cervix, which unit is arranged to protect the sample as it is withdrawn from the vagina, thus avoiding unnecessary exposure of the sample to contaminants. An improved method of making Pap smear slides is also disclosed herein. The unit comprises an insertion tube containing an elongated sample handle holding a generally conically shaped, rounded apex collector portion made of a soft, resilient, fluid-resistant, porous material, such as polyurethane foam, and having a plurality of flexible petal-like appendages which serve to protect the collector portion prior to and after the sample is obtained.

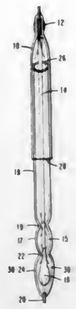
3,776,220
DIAGNOSTIC SWAB WITH STORED CULTURE MEDIUM

Frank Monaghan, 591 South St., Glendale, Calif.

Filed May 9, 1972, Ser. No. 251,658
Int. Cl. A61m *35/00*
U.S. Cl. 128—2 W **4 Claims**

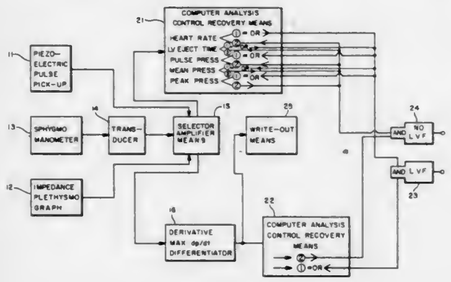
This invention relates to a disposable device for housing diagnostic swabs or similar devices comprising a plastic tube

containing medium in a breakable sealed section, a swab in a second section adapted so that the swab can break the seal



separating it from the medium and a third seal located on the opposite side of the swab from the medium.

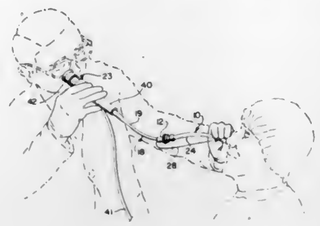
3,776,221
DETECTING IMPAIRED HEART MECHANICAL PERFORMANCE AND APPARATUS THEREFOR
Kevin M. McIntyre, 1400 V.F.W. Pky., Jamaica Plain, Mass.
Filed Apr. 2, 1971, Ser. No. 130,572
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R **7 Claims**



A pressure-sensitive device contacts the skin of a patient near an artery noninvasively to provide a signal representative of systemic arterial blood pressure both before and after a Valsalva Manoeuvre. This blood pressure signal is differentiated, and the changes in amplitude before and after the Valsalva Manoeuvre detected to indicate potential left ventricle failure when the change is less than a predetermined value. Signals representative of pulse pressure, the means systemic arterial blood pressure, heart rate and left ventricular ejection time are also provided to facilitate detection of impaired mechanical performance of the heart.

3,776,222
FIBER OPTIC ENTUBATOR AND METHOD OF ENTUBATION OF THE TRACHEA THROUGH THE NASOPHARYNX
Joseph F. Smiddy, Bethesda, Md., assignor to Anthony M. Lurosso, Bethesda, Md., a part interest
Filed Dec. 23, 1971, Ser. No. 211,388
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **10 Claims**

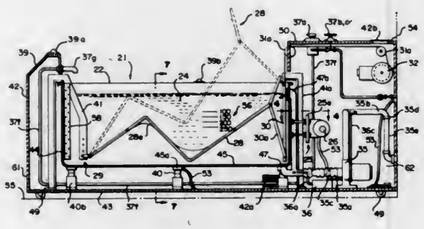
An entubator for an endotracheal tube which includes a coherent flexible fiber optic bundle which can be positioned within the central cavity or lumen of the endotracheal tube for viewing the anatomy of a patient as the endotracheal tube advances through the patient during the insertion procedure. The entubator also includes a means for directing the course of travel of the endotracheal tube which enables the operator to navigate the endotracheal tube through anatomical



passageways made visible by the fiber optics bundle. The fiber optic bundle and the means for directing the course of travel enable the entubation of an endotracheal tube through the nasopharynx of the patient.

Method of entubing an endotracheal tube through the nasopharynx.

3,776,223
HYDROTHERAPY BATH WITH WAVE ENERGY PRODUCING MECHANISM
Harold Everett Yeager, 4214 Central Ave., Sioux City, Iowa; Richard F. Krage, 47 W. Geary St., Stockton, Calif., and Benjamin Melvin Wilhite, San Mateo, Calif.
Filed Sept. 21, 1971, Ser. No. 182,395
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **16 Claims**

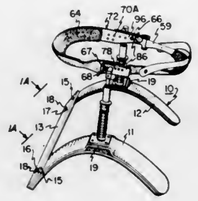


A hydrotherapy bath for treatment of a patient by immersion. The bath includes a tank of sufficient volume to hold a treating liquid in which an arm, leg, or the entire body of a patient may be immersed. The tank may be either free floating or mounted at a fixed position. The patient is suspended in the treating liquid by a device which is supported independent of the tank and is therefore free floating with respect to the tank.

3,776,224
DYNAMIC CERVICAL SUPPORT
Harold A. McFarland, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah
Filed Feb. 24, 1972, Ser. No. 228,941
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **8 Claims**

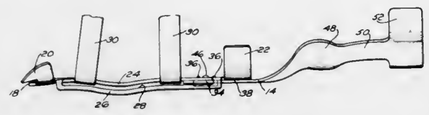
An improved dynamic cervical support supplying constantly sustained traction to a patient's head, yet insuring essentially full normal mobility of the head. The shoulder harness of the

device include rigid shoulder straps or arcuate shoulder members which, though made of rigid material, can be adjusted about points of attachment to accommodate a variety of shoulder configurements. The head frame or support itself is of hinged construction and can be easily altered as to longitudinal dimension for the comfort of the user. Compression spring means provides the needed traction, and spring guides and/or mounts maintain ball-and-socket connection to their mountings, to insure axial deflection of the compression



springs used in an advantageous manner. Larger spring members journal interior support structure and provide for a degree of lateral flexibility, as well as offering a restoring force to such interior support structure. Articulative joints at selected points in the structure insure wide versatility of use and mobility even though traction is constantly maintained. A side hinge and hook construction provide for selective opening and closure of the lower jaw member of the head frame to the rear head support thereof.

3,776,225
ARM SPLINT
Robert Lonardo, 20 Flore St., Providence, R.I.
Filed July 12, 1971, Ser. No. 161,749
Int. Cl. A61f *5/10*
U.S. Cl. 128—77 **2 Claims**



An arm splint for supporting and maintaining a patient's forearm immobile when desired, such as, for example, when receiving an intravenous injection, said splint comprising an elongated strip terminating below but adjacent the elbow at one end and terminating adjacent the middle phlangeal joint of the fingers at the other end and having upwardly extending side walls at said opposite ends to prevent undesirable lateral movement of the arm and fingers. Means for securing the splint to the arm of the user are provided, said means being adjustable lengthwise with respect to the splint on a sliding track. The splint further comprises a second strip that may be adjustably and removably secured to the elbow end of the first strip when it is desired to maintain the user's arm completely straight.

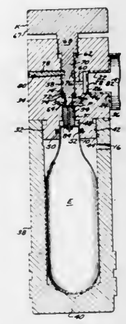
3,776,226
SPRAY APPLICATOR
Frank Lewis Triplett, 227 Upshur St., N.W., Washington, D.C.
Filed Nov. 21, 1972, Ser. No. 308,572
Int. Cl. A61m *35/00, 11/00;* **B05b** *17/00*
U.S. Cl. 128—172 **7 Claims**

An applicator for liquid spray to the crotch between two toes comprises in one embodiment a spray can and a spring instrument for holding the toes apart to concentrate the spray in and confine it to the crotch region. The spring instrument may



be attached to the spray can near the spray spout, thus establishing the desired distance for confining the spray to the crotch region.

3,776,227
PORTABLE HYPERVENTILATION RELIEVING DEVICE
Isadore Pitesky, 4001 Linden Ave., Long Beach, Calif., and James B. Barsby, 6477 Atlantic Ave., Long Beach, Calif.
Filed Jan. 31, 1972, Ser. No. 222,048
Int. Cl. A61m *15/00*
U.S. Cl. 128—203 **5 Claims**

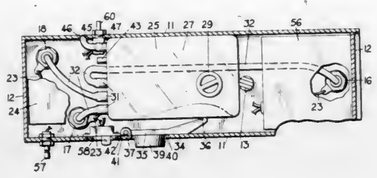


The hyperventilation relieving device includes a carbon dioxide cartridge holding housing and an inhaler tube and valve-supporting head in threaded engagement in such a manner that as they arerotated relative to one another an orifice-defin1ng prong may be forced to puncture the cartridge. Puncturing of the cartridge results in the flow of carbon dioxide to the inhaler tube at a metered rate, which rate is determined by the transverse cross section of the orifice. A manually operated valve mounted on the head may be selectively placed in a first position to permit metered flow of carbon dioxide to the inhaler tube or in a second position to obstruct flow of carbon dioxide from the cartridge. The housing includes safety vent means to automatically bleed all carbon dioxide from the cartridge prior to the housing and head being separated from one another.

3,776,228
PORTABLE SELF-CONTAINED ELECTRICAL CARDIOMETRIC DEVICE WITH THREE FIXED-POSITION NONUNIFORMLY SPACED INPUT PROBES
Herbert J. Semler, 2330 N.W. Flanders, Portland, Oreg.
Continuation of Ser. No. 36,065, May 11, 1970, abandoned. This application Sept. 20, 1971, Ser. No. 181,862
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **5 Claims**

A portable self-contained electrical cardiometric device employable for the quick monitoring and indicating of a heart-

produced electrical signal in a person's body. The device includes three specially positioned electrical probes which are for electrically contacting a person's body to detect such a signal, a battery-powered electronic amplifier connected to these probes for amplifying a detected signal, and a suitable



display or indicating unit for following the instantaneous amplitude of an amplified signal. The probes include fluid passages that communicate with a pump and a fluid reservoir in the device from which a conductive fluid may be ejected to enhance the electrical contact between the probes and a person's skin.

3,776,229

MEDICAL LIQUID ADMINISTRATION SET FOR RATE OR VOLUME DELIVERY

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Corporation, Evanston, Ill.

Filed Nov. 26, 1971, Ser. No. 202,505
Int. Cl. A61m *05/16*
U.S. Cl. 128—214 C **14 Claims**



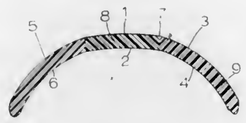
A parenteral liquid administration set which is readily changeable between delivering liquid at measured "rate" through a drip chamber that has a constant liquid level, and delivering liquid from the chamber in a measured "volume" with a progressively lowering liquid level. A valve system on a top of an enlarged semi-rigid measuring chamber functions to selectively change between "rate" and "volume" delivery. In one version there is also a secondary drip chamber below the enlarged semi-rigid measuring chamber so the set can simultaneously indicate "rate" and "volume" delivery.

3,776,230

METHOD OF RAPIDLY RESHAPING THE CORNEA TO ELIMINATE REFRACTIVE ERRORS

Charles W. Neefe, Box 429, Big Spring, Tex.

Continuation-in-part of Ser. No. 24,904, April 7, 1972, which is a continuation-in-part of Ser. No. 45,333, June 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 562,002, May 16, 1966, abandoned. This application Apr. 18, 1973, Ser. No. 352,227
Int. Cl. A61m *7/00*
U.S. Cl. 128—260 **9 Claims**



A method of correcting refractive errors of the eye by changing the shape of the cornea by softening the corneal tissue by the application of heat and reshaping the convex cornea to the curvature of the surface of a concave mold applied to the cornea.

ERRATUM

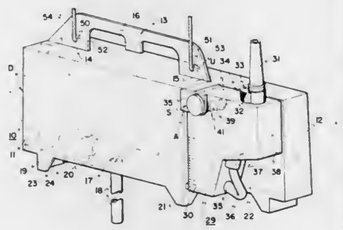
For Class 128—271 see:
Patent No. 3,776,001

3,776,231

URINARY DRAINAGE APPARATUS

Le Grand K. Holbrook, and Ronald D. Rowley, both of Salt Lake City, Utah, assignors to Medical Development Corporation, Salt Lake City, Utah

Filed May 22, 1972, Ser. No. 255,767
Int. Cl. A61f *5/44*
U.S. Cl. 128—275 **10 Claims**



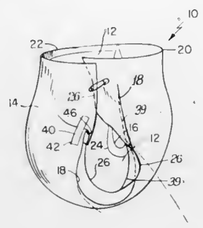
A urinary drainage system and structure providing an initial or receiving container and also a sump or storage container. The two containers are inter-connected, with the first being pivotal relative to the second so that the contents of the receiving container may be emptied into the storage container. Pivotal structure cooperating with the containers serves as journaling means and also inter-communication means to accommodate fluid flow, whether the receiving container is in its normal or tilted condition. Self-adjusting securement means is provided so the structure may be leveled regardless of the supporting structure. Independent drainage means for the containers are provided.

3,776,232

DIAPER WITH THIGH-OPENING CLOSURE MEANS

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed June 21, 1971, Ser. No. 155,008
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **19 Claims**



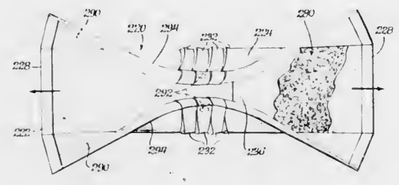
A diaper having a pair of end edges and a pair of sides connecting the end edges, and including, front and back waistband portions at the end edges with a crotch portion therebetween. The diaper has adhering means positioned below the waistband portion but above the bottom of the crotch section of the diaper and adjacent both of the connecting sides to tighten the diaper about an infant's legs after placement of the diaper about the infant.

3,776,233

EDGE CONTOURABLE DIAPER

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 17, 1971, Ser. No. 144,032
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **6 Claims**



A contourable diaper including, a pleated fluid pervious cover sheet and a pleated fluid impervious back sheet secured to each other adjacent the lateral and longitudinal edges of the diaper. An absorbent pad is positioned intermediate the cover and back sheets and extends at least throughout the crotch region of the diaper. The diaper is transformed from a generally planar and rectangular shape to an arcuate configuration responsive to longitudinal expansion of the cover and back sheets, and the longitudinal edges of the sheets bow inwardly in at least the central region of the diaper to generally conform to the contour of an infant's body.

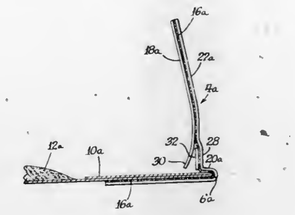
3,776,234

DISPOSABLE DIAPER WITH ADHESIVE TAPE TAB FASTENERS

Raymond M. Hoey, Barrington, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,036
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **11 Claims**

A disposable diaper having adhesive tape tab fasteners affixed thereto to secure the diaper around an infant. Each tape tab comprises a strip of adhesive tape affixed along an edge of the diaper. At least a portion of each tape strip extends inwardly from that edge to overlie the inside surface of the diaper, with the adhesive side of the strip of tape facing the inside surface of the diaper. A first part of the portion of the tape strip overlying the inside surface of the diaper is adhesively attached thereto to hold the tape tab relatively flat



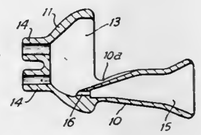
against the inside surface of the diaper, so the tab will not protrude from the diaper and interfere with manufacturing, folding, and packaging the diaper. A second part of the portion of the tape strip overlying the inside surface of the diaper is free of attachment to the diaper, the adhesive on the second part being normally covered by a release sheet prior to use of the tab in fastening the diaper around an infant.

3,776,235

PORTABLE FEMALE URINAL

Harry Ratcliffe, and Elsie Ratcliffe, both of Ightenhill Farm, Park Ln., Burnley, England

Continuation of Ser. No. 77,025, Sept. 30, 1970, abandoned, which is a continuation of Ser. No. 710,889, March 6, 1968, abandoned. This application Dec. 27, 1971, Ser. No. 211,905
Claims priority, application Great Britain, Mar. 9, 1967, 11,103/67
Int. Cl. A61f *5/44*
U.S. Cl. 128—295 **7 Claims**



The device for female incontinence comprises a collection and funneling container, a retaining member fixed to said container and adapted for removable vaginal insertion. The retaining member is positioned with respect to said container in a manner such that when the member is inserted into the vagina, the container is disposed at the urethral orifice so as not to contact said orifice. The container serves to collect and funnel urine discharged from said orifice.

3,776,236

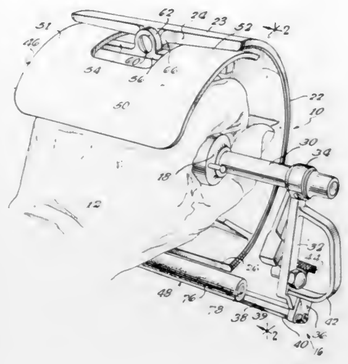
SAFETY GUARD FOR DERMATOME INSTRUMENT

Burton David Brent, 1110 Cleveland St., Evanston, Ill.

Filed Feb. 25, 1972, Ser. No. 229,390
Int. Cl. A61b *17/322*; **B26b** *29/02, 1/00*
U.S. Cl. 128—305 **7 Claims**

A surgical instrument for skin grafting or a dermatome having a safety guard means on the shoe or drum thereof located

to protect a surgeon's hand from the cutting blade during use of the instrument. The safety guard means is operative to protect the operator's exposed wrist tendons or tendons and skin across the knuckles and dorsum of the hand grasping the grip or handle of the instrument.

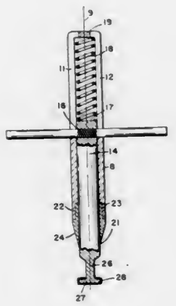


3,776,237

SURGICAL TOOL AND METHOD OF PROVIDING A SURGICAL OPENING

J. Donald Hill, and Thomas C. Robinson, both of San Francisco, Calif., assignors to Tecna Corporation, Emeryville, Calif.

Filed May 11, 1972, Ser. No. 252,482
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **5 Claims**



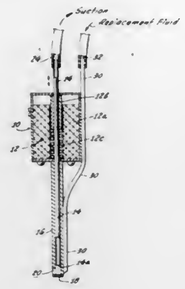
A surgical tool especially for providing a circular opening in a wall such as that of a blood vessel has an outer, circular-cylindrical casing having a longitudinal axis and having a circular knife edge at one end. A plunger is axially movable within the casing by a rod extending transversely through the plunger and through longitudinal slots in the casing. A spring, abutting the end of the plunger and an end of the casing, urges the plunger toward the one end of the casing. A reduced stem at an adjacent end of the plunger carries a circular disk anvil of greater diameter than the knife edge and in the path thereof.

3,776,238

OPHTHALMIC INSTRUMENT

Gholam A. Peyman, Chicago, Ill., and Nicholas A. Dodich, Marina Del Rey, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 24, 1971, Ser. No. 174,349
Int. Cl. A61f *9/00*; **A61b** *17/32*; **A61m** *1/00*
U.S. Cl. 128—305 **3 Claims**



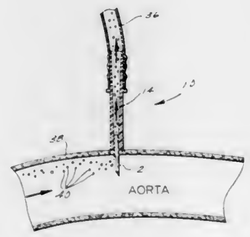
An ophthalmic instrument is provided for removing vitreous and fibrous bands from the retina of an eye. The instrument consists of two tubes mounted coaxially within one another, and with an opening adjacent the end of the outer tube. Cutting of the vitreous and fibrous bands is performed by a chopping action set up by the sharp end of the inner tube against the inner surface of the end of the outer tube. The vitreous and fibrous bands which are trapped in the mouth of the instrument are chopped and removed by suction by way of the inner tube. In the instrument to be described, the vitreous is replaced continuously by a saline solution, for example, which is introduced into the instrument by way of a small infusion tube.

3,776,239

ASPIRATOR NEEDLE

Denton A. Cooley, Houston, Tex., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed May 17, 1972, Ser. No. 254,195
Int. Cl. A61b *17/34*
U.S. Cl. 128—347 **7 Claims**



An aspirator needle for use in open-heart surgery during cardiopulmonary bypass to reduce the risk of air entrapment in the aorta. The needle consists of a cannula provided with a pointed end and an axial slot in the wall thereof extending substantially the length of the cannula, and a hub configured to connect to a source of suction via a connecting tube.

3,776,240

OBSTETRICAL INSTRUMENT

Edgar F. Woodson, 2229 St. Louis Ave., St. Louis, Ill.

Filed Feb. 4, 1972, Ser. No. 223,459
Int. Cl. A61b *17/42*
U.S. Cl. 128—361 **2 Claims**



An instrument for obstetrical and surgical use being of general dipper form having a relatively short handle, a thin, rounded edge plate-like head and an intermediate narrow section between said head and said handle; said head being longitudinally arcuated and tapering rearwardly toward said intermediate section.

3,776,241

SYSTEM AND METHOD FOR CONTROLLING VASCULAR RESPONSES

James H. Magilton, and Curran S. Swift, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 13, 1971, Ser. No. 171,575
Int. Cl. A61f *7/00*
U.S. Cl. 128—400 **5 Claims**



A method and a system are disclosed for producing changes in systemic arterial blood pressure, cerebrospinal fluid pressure and heart rate; as well as producing selective brain hypothermia in animals by irrigating the nasal mucosa.

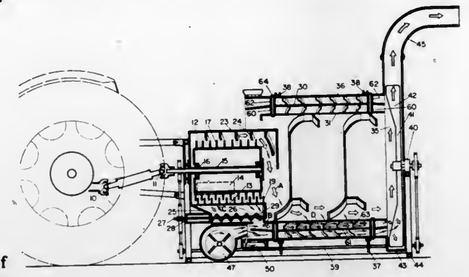
3,776,242

COMBINATION THRESHING AND SEPARATING MACHINE

Amir U. Khan, Okemos, Mich., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 26, 1971, Ser. No. 202,119
Claims priority, application Philippines, Dec. 2, 1970, 12001
Int. Cl. A01f *12/20*
U.S. Cl. 130—27 T **5 Claims**

This invention relates to a combined threshing machine and rotary separator for grain crops. The threshing and separator sections are disposed in axial alignment, with the proximal ends in substantial overlapping relation. Straw disposal means is located adjacent the distal end of the rotary separator section. Grain is removed on a conveyor at the bottom of the threshing section adjacent the proximal end of the separator. A blower is located below the conveyor outlet. The rotary separator section comprises three concentric cylindrical shells rigidly connected together for unitary rotation, the innermost shell being wholly perforated and provided with tumbling louvers on its inner surface. The intermediate shell is partially



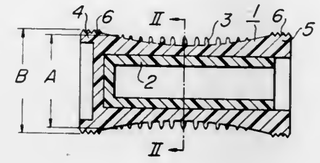
perforated and provided with deflecting louvers oriented to move threshed materials towards the perforated portion. The outermost shell is imperforate and has louvers on its inner surface oriented to move grains towards the blower and the grain trough disposed below the bottom side of the end of the outermost shell adjacent to the blower.

3,776,243

HAIR CURLER

Tomomi Oshita, and Minoru Suzuki, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 9, 1972, Ser. No. 251,789
Claims priority, application Japan, May 14, 1971, 46/38260
Int. Cl. A45d *2/12*
U.S. Cl. 132—33 R **5 Claims**



A hair curler has curler bobbins each adapted to accumulate heat from heating means for radiating accumulated heat to hair wound on the bobbin so that hair is set in curled state. The curler bobbin includes an inner sleeve and an outer sleeve which has its minimum outer diameter at longitudinal intermediate portion which gradually increases toward opposite ends. A plurality of projections are formed on peripheral outer surface of the outer sleeve to facilitate winding of hair thereon and prevent hair from becoming loosened.

3,776,244

NON-SLIP RETENTION MEANS FOR USE ON A WEARER'S HEAD

Willis Ema Morgan, 4225 Buchman Ave., Forth Worth, Tex.

Division of Ser. No. 58,435, July 27, 1970, abandoned. This application Oct. 19, 1971, Ser. No. 190,648
Int. Cl. A45d *8/00*
U.S. Cl. 132—46 R **7 Claims**

A non-slip head gear and a retainer employing the same, the head gear being characterized by a cap means having a hook strip on its interior surface with its tiny hooks protruding interiorly for engagement with the hair of the wearer and having

an exterior strip of pile strap with its loops protruding exteriorly for receiving mating hook strips that are connected with other elements such as a retainer body. The retainer body is characterized by net material that is elastic along the fiber of the net and is even more elastic along the bias of the fiber for conforming to irregular contours. Also disclosed are preferred embodiments in which the exterior strips of pile strap are extensive enough to allow attachment of a wide variety of hook strip configurations; wherein a plurality of hook strips are fixedly disposed at predetermined locations for a predetermined hook strip configuration; and wherein neck straps are attached to the retainer body for tensioning it rearwardly toward the rear of the neck, the neck straps having mating hook strips and pile straps on their respective free ends.

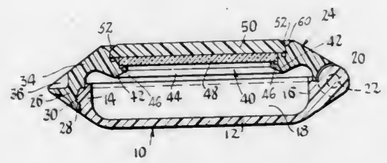


3,776,245

MOLDED PLASTIC COMPACT WITH MIRROR MEMBER

Thomas A. Hayes, Westport, Conn., and Theodore R. Krause, Ridgewood, N.J., assignors to VCA Corporation, Greenwich, Conn.

Filed Mar. 22, 1972, Ser. No. 237,118
Int. Cl. A45d *33/00*
U.S. Cl. 132—83 R **5 Claims**



A compact for holding a cosmetic product, said compact including a molded plastic case having a cover which is provided with an opening of appreciable expanse. The cover is molded with a sloped, outwardly-facing thin-walled yieldable shoulder which extends along the inside of inner edge portions of the opening so as to engage marginal portions of a mirror member which is disposed in the cover opening. The thin-walled shoulder positions of the mirror member, and can yield inward slightly in response to inward force applied to the member. This force is exerted by an ornamental cover plate that is also disposed in the opening of the cover and against the outside of the mirror member, being secured to the cover by a sonic welding operation. During such operation the mirror member is tightly clamped against the positioning shoulder of the cover, which yields slightly as a consequence of the assembly operation. By the above construction, all looseness of the mirror member is prevented, as well as the likelihood of breaking or damage to the latter.

ERRATUM

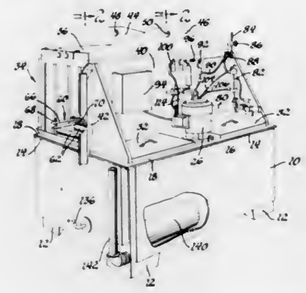
For Class 132—89 see:
Patent No. 3,775,848

3,776,246

WASHING MACHINE WITH OSCILLATING WORK SUPPORT

Thomas B. Ballard, 2550 Mulberry Dr., Southfield, Mich.

Filed Oct. 14, 1971, Ser. No. 189,419
Int. Cl. B08b *3/02*
U.S. Cl. 134—153 **9 Claims**



A washing machine for workpieces includes a heated fluid sump tank having sides formed of inclined plates which meet at their lower edge and a manually rotatable screw conveyor disposed above the bottom edge to force sludge up a standpipe to clean the tank. The cover for the tank is hinged to the tank at one edge and supports a submersible pump so that it projects downwardly into the fluid in the sump. A washing compartment formed on the upper side of the cover includes a plurality of spray pipes through which wash fluid is forced by the pump. A work support consists of a plurality of rollers arrayed parallel to one another to form a roller conveyor section. The conveyor section is pivoted about a horizontal line and an oscillatory mechanism causes the support to reciprocate so that a workpiece is moved back and forth under the spray.

3,776,247

PROCESS FOR THE PREPARATION OF A CRUDE-OIL COMPOSITION WITH A DEPRESSED POUR POINT

Johannes H. Choufoer; Willem J. Van Kerkvoort; Pieter H. Van der Meij, and Thomas Schrueder, all of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed July 1, 1968, Ser. No. 741,317
Claims priority, application Netherlands, July 7, 1967, 6709453
Int. Cl. F17d *1/16*; **C10l** *1/18*
U.S. Cl. 137—13 **6 Claims**

A method of transporting waxy crudes through conduits at reduced friction and preventing wax separation or precipitation so as to inhibit plugging and flow restriction and improve the pour point properties of the crude by adding to such waxy crudes a small amount of a polymeric material containing aliphatic hydrocarbon side chains of at least 14 carbon atoms.

This invention relates to decreasing friction loss in flowing waxy crudes through conduits, generally over great distances but also over short distances such as in well fracturing processes and also to improving the pour point of waxy crudes. More particularly, the invention is directed to crude oil compositions comprising a waxy crude oil and fractions thereof and polymers having aliphatic hydrocarbon side chains with at least 14 carbon atoms, so as to reduce the pour point, prevent wax separation and reduce its friction loss due to flow through pipelines over great distances and short distances.

3,776,248

PIPELINE TRANSPORTATION OF WAXY PRODUCTS

Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 10, 1971, Ser. No. 170,563
Int. Cl. F17d *1/16*; **B65g** *53/04*
U.S. Cl. 137—13 **4 Claims**

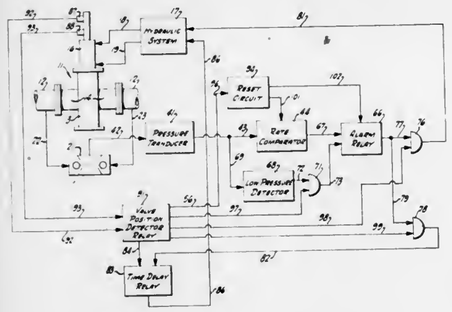
An improved method of pipeline transporting highly waxy crude oil in pumpable slurry form with the aid of a particular class of non-ionic surfactants.

3,776,249

PIPELINE FLOW CONTROL SYSTEM AND METHOD

Rodney A. Wailes, Houston, and Sidney Allan Ottenstein, Spring, both of Tex., assignors to M & J Valve Company, Houston, Tex.

Filed July 14, 1972, Ser. No. 272,012
Int. Cl. F16k *31/00*
U.S. Cl. 137—14 **44 Claims**



A piping system and method having a plurality of power operated valves located substantial distance apart. The method continuously monitors pressure conditions at each valve and senses abnormal pressure conditions indicative of a line break. When such abnormal pressure conditions occur, valves on opposite sides of the break automatically close. Pressure sensing continues and if after closing certain predetermined pressure requirements are met, the valves are automatically opened. Where the system includes looped or parallel branch lines connected at their ends to upstream and downstream portions of the main lines, valves in both branch lines and also adjacent valves in the main line may close, after which all of the valves will be automatically opened, except the valves that isolate the break. Also apparatus for carrying out the method, including means for monitoring pressure conditions and means for effecting automatic closing and opening of the valve responsive to predetermined pressure conditions.

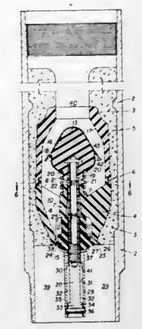
3,776,250

FLOAT COLLAR WITH DIFFERENTIAL FILL FEATURE

Lloyd C. Knox, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 13, 1972, Ser. No. 243,726
Int. Cl. F16k *15/06*; **E21b** *33/00*
U.S. Cl. 137—71 **8 Claims**

A valved collar for allowing a pipe string to fill up as it is lowered in a bore hole while controlling the rate of fill up through a differential fill feature, utilizes a valve plunger in a valve body with the plunger opening against spring means and having an elastomeric collar intermediately located on the plunger shaft for allowing fill up to occur above a predetermined differential pressure.

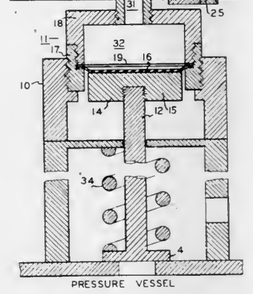


3,776,251

ANTI-LEAKAGE SYSTEM FOR BOILER SAFETY VALVES

Abraham Trubman, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 26, 1972, Ser. No. 266,182
Int. Cl. F16k *17/16*
U.S. Cl. 137—71 **6 Claims**



The invention disclosed herein relates to an improved safety valve for high pressure steam operations and includes an auxiliary system for operating high pressure steam to the safety valve main spring to prevent leakage of a safety valve with its attendant noise and condensate.

3,776,252

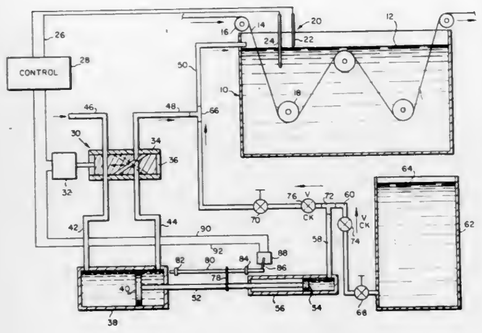
SELF-REGULATING SYSTEM FOR MIXING LIQUIDS

Harold R. Wilcox, Maynard, Mass., assignor to Riggs & Lombard, Inc., Maynard, Mass.

Filed Dec. 3, 1971, Ser. No. 204,538
Int. Cl. G05d *9/12*; **F16k** *19/00*
U.S. Cl. 137—99 **1 Claim**

A system is provided for mixing on demand, two or more liquids at a constant ratio with one of the liquids serving to

pump one or more of the other liquids into the system. The piston of one cylinder is drivingly connected to the piston of another cylinder, the first cylinder being connected to a source of pressurized liquid, such as water,which serves as a driving force for the piston of the second cylinder which is connected to the source of liquid,such as a detergent, whereby



a constant ratio of liquids is maintained. Conduits are provided to mix the discharges of the two cylinders prior to delivery to a chamber such as a washing tank for a running textile web. A control system is provided for actuating the pumping system to maintain a constant level of mixed liquids in the chamber.

3,776,253

MEANS FOR PREVENTING DEFORMATION OF STEEL TUBES

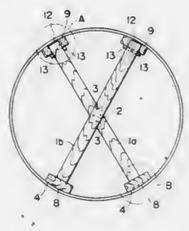
Masaya Yamaguchi, and Nobuyuki Hironaka, both of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 22, 1971, Ser. No. 182,593

Claims priority, application Japan, Sept. 29, 1970, 45/96086

Int. Cl. F16l 9/04

U.S. Cl. 138—109 **5 Claims**



A means for preventing deformation of steel tubes comprises a plurality of intersecting beams respectively provided with a fixed seat at one end thereof having a curvature corresponding to that of the inner wall of a steel tube and a removable seat having the same curvature as that of the said fixed seat to be attached to the other end with a plurality of wedges inserted therebetween to bring the respective contacting parts of the both seats into close contact with the inner wall of the steel tube by means of the wedges. In addition to the said beams, two additional beams to one end of which the same removable seat as aforementioned one is attached with the same wedges inserted in the same manner may be employed.

3,776,254

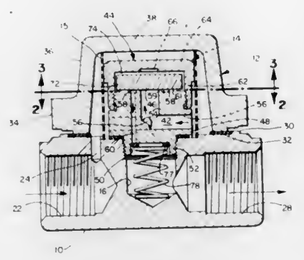
AERODYNAMIC CONDENSATE DISCHARGE TRAP AND SYSTEM

Thomas Alesson, Plains, and Theodore B. Dennis, Wilkes-Barre, both of Pa., assignors to Datron Systems, Inc. (Nicholson Division), Wilkes-Barre, Pa.

Filed Nov. 15, 1971, Ser. No. 198,741

Int. Cl. F16t 1/00

U.S. Cl. 137—183 **7 Claims**



A bleed trap for piping systems containing air or other dry gas under pressure is described which includes a body adapted to engage a threaded opening in the system, and having inlet and outlet ports therein which respectively communicate with the upstream and downstream sides of the system. These ports terminate at a planar surface of the body which is normally sealed by a separate disc whose movement is restricted by an enlcosing cap which covers the disc as well as the planar surface. The entire body and inlet thereof is sealingly covered by a covering cap which causes system air to be directed into the inlet port of the body. The outlet ports are restricted by a spring loaded element which yields as air, gas, or condensate is bled from the system.

3,776,255

AIR VENT

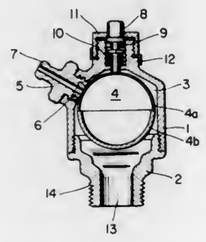
Yoshiyasu Fujiwara, No. 191 Nishitani, Kakogawa, Japan

Filed Aug. 9, 1971, Ser. No. 169,916

Claims priority, application Japan, Feb. 13, 1971, 46/7902; Apr. 2, 1971, 46/24215

Int. Cl. F16k 45/02

U.S. Cl. 137—202 **6 Claims**



An improvement of the float type air vent, which is used as air vent valve for cold water, hot water and the like. The improvement resides particularly in the points that it is formed into small size and simple make and may be used without requiring any regulation in a wide range from very low pressure to high pressure, assuring a reliable working and low cost, thus assembling and overhauling and the like may be simplified.

3,776,256

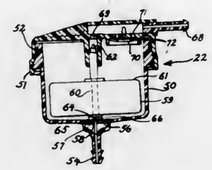
FUEL EVAPORATIVE CONTROL SYSTEM

Charles J. Marshall, Detroit, Mich., assignor to American Motors Corporation, Kenosha, Wis.

Division of Ser. No. 63,699, Aug. 14, 1970, Pat. No. 3,650,256. This application Jan. 21, 1972, Ser. No. 219,908

Int. Cl. F16k 45/00

U.S. Cl. 137—202 **4 Claims**



A system designed to prevent raw fuel vapors from entering the atmosphere from the carburetor fuel bowl and the fuel tank of a motor vehicle. The carburetor is internally vented and the fuel tank vent line routes the vapors from the tank through a float type liquid-vapor separating valve to the cylinder head cover of the engine. The vapors are stored in the crankcase of the engine while the engine is not operating and combusted during engine operation with the blow-by products by use of the positive crankcase ventilation system.

3,776,257

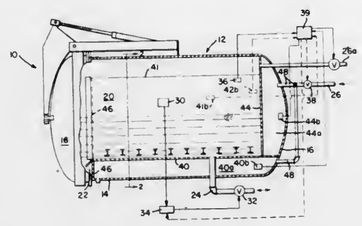
FALSE WALLED PRESSURE VESSEL

Henry J. Plegza, Clarence, N.Y., assignor to WSF Industries, Inc., Tonawanda, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,554

Int. Cl. B65d 7/22

U.S. Cl. 137—206 **14 Claims**



A generally cylindrical pressure vessel for use in treating an article with a fluid under high pressure characterized in that one or more flat metal plates are arranged within the vessel so as to define an article treating chamber and one or more balancing compartments arranged intermediate the treating chamber and the cylindrical side wall and/or double curved end wall or walls of the vessel. The plates are capable of sustaining treating chamber loadings not substantially in excess of the hydrostatic head of the treating fluid; and a balancing fluid, which is introduced into the compartments is employed to balance high treating chamber loadings substantially in excess of the hydrostatic head. A control is employed to sense and compare pressures in the treating chamber and compartments and to terminate the introduction of fluid producing the high treating chamber loadings when such pressures are out of balance.

3,776,258

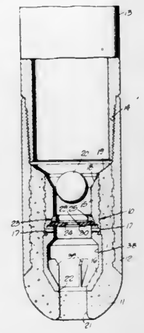
WELL PIPE VALVE

Roy Raymond Dockins, Jr., Anaheim, Calif., assignor to B & W Incorporated, Torrance, Calif.

Filed Mar. 20, 1972, Ser. No. 235,909

Int. Cl. F16k 51/00

U.S. Cl. 137—269 **16 Claims**



A valve for use in a well pipe string including an apertured diaphragm for producing a variable restriction in fluid flow through the valve for controlled filling while running the well pipe and an expandable tapered valve seat for cooperating with a ball to allow the ball to pass downwardly through the valve seat to convert the valve to a reverse flow check valve to prevent subsequent upward flow of fluid through the valve.

3,776,259

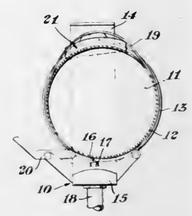
ADAPTER SHIM DEVICE

Richard William Kohrumel, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 25, 1972, Ser. No. 291,812

Int. Cl. B23b 41/08; F16e 41/04

U.S. Cl. 137—318 **6 Claims**



An adapter shim to be used with an opening and dispensing device which is utilized with containers that do not have integral dispensing means. The adapter shim provides for safe opening and dispensing of containers of different sizes with a dispensing device designed for a container of a specific size.

3,776,260

BEER KEGS AND LIKE CONTAINERS

Maurice Ruddick, Sevenoaks, England, assignor to Burnett & Rolfe Limited, Kent, England

Filed Apr. 7, 1972, Ser. No. 242,052

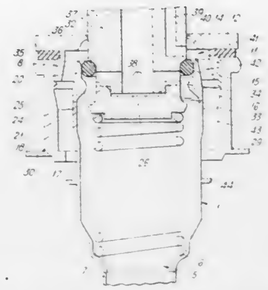
Claims priority, application Great Britain, Dec. 17, 1971, 58761/71; Apr. 13, 1971, 9243/71

Int. Cl. F16k 31/58

U.S. Cl. 137—321 **13 Claims**

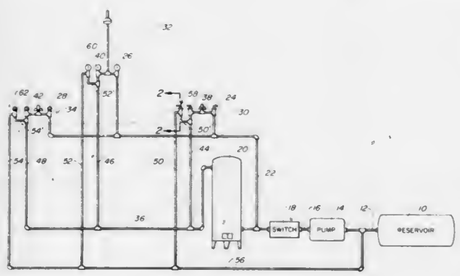
A spear and closure assembly which is arranged to be fitted as a single unit in the neck of a beer keg or like container com-

prises a tubular housing having one end open and the spear fixed to the housing and projecting from its other end, and a valve seat which is fixed to the housing so that it is located adjacent the open end of the housing and projects radially inwards with respect to the open end. The housing, the spear, and the valve seat are connected to form a unitary structure, such as by welding or by a combination of welding and being formed integrally. A spring located within the housing acts on a disc like closure member so that a resilient valve ring is pressed by the closure member against the valve seat, hence closing the opening bounded by the valve seat. Assembly of the spring, the closure member, and the valve ring within the



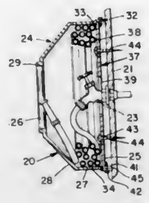
structure is made easy by arranging that the size and shape of the spring and closure member allow these to be passed through the opening bounded by the valve seat, and by providing the valve ring with sufficient resilience to allow it to be deformed and squeezed through this opening. In use, application of a filling or dispensing fitting moves the valve ring and the closure member axially inwards against the action of the spring, the valve ring being displaced axially relative to the closure member and forming a seal against a second valve seat formed on the housing so that two separate passages are formed through the fitting and into the container, one through the housing and the spear and the other outside the housing via an aperture between the two valve seats.

3,776,261
WATER CONSERVING APPARATUS
Connie H. Houghton, 28000 Foxlane Dr., Saugus, Calif.
Filed May 15, 1972, Ser. No. 253,253
Int. Cl. F16k *49/00*; **F17d** *1/00*
U.S. Cl. 137—337 **7 Claims**



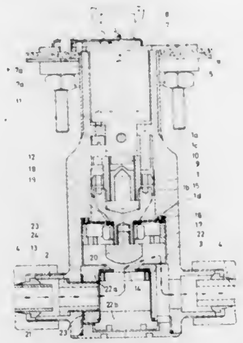
A water conserving apparatus designed particularly for use on recreational vehicles where a limited water supply is available, the apparatus includes a valved by-pass line connected to the hot water line to return the water located within the remote end of the hot water line to downstream of the water heater.

3,776,262
ENCLOSURE FOR COILED GARDEN HOSE
Udo H. Fritsch, 17 Mulberry Rd., Salem, N.H.
Filed Mar. 20, 1972, Ser. No. 236,420
Int. Cl. B65h *75/36*
U.S. Cl. 137—355.16 **9 Claims**



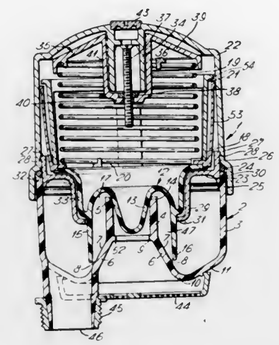
A generally cylindrical garden hose enclosure is carried on an annular base whch encircles a sill cock when detachably mounted on the exterior wall of a house. The enclosure cover is cylindrical near the base, and truncated conical at the front, where it terminates in a dispensing opening. The hose is coiled around the inside of the cylindrical chamber, rather than being tightly wrapped around a core, and therefore does not kink and it is hidden from view by the truncated conical part of the cover.

3,776,263
FUEL CUT-OFF LOCK
Aloys Hubenthal, Hirshbergstrasse 19, Munich, Germany
Filed May 15, 1972, Ser. No. 253,470
Claims priority, application Switzerland, May 19, 1971, 7363/71
Int. Cl. F16k *35/06*
U.S. Cl. 137—384.8 **2 Claims**



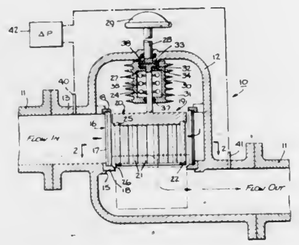
Fuel flow through a pipeline is blocked and unblocked by means of a key operated rotary cylinder lock, a shut-off valve with a linearly reciprocable valve body, and a motion transmitting device which converts the rotary motion of the lock into translatory movement of the valve body. The motion transmitting device comprises a rotary, axially reciprocable element which has external screw threads in cooperative engagement with complementary internal screw threads of a surrounding housing; a reciprocable thrust element which connects the externally threaded element with the valve body; and a diaphragm seal between the reciprocable thrust element and the surrounding housing to prevent escape of fuel and fumes past the cylinder lock.

3,776,264
VACUUM RELIEF VALVES
Douglas Lee Wenham, 90 Braid Rd., Hamilton, New Zealand
Filed Aug. 4, 1971, Ser. No. 168,839
Claims priority, application New Zealand, Aug. 4, 1970, 161050
Int. Cl. F16k *17/20*
U.S. Cl. 137—469 **13 Claims**



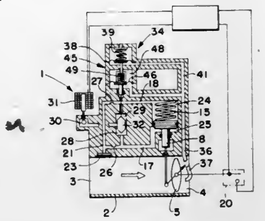
A vacuum relief valve has a movable member which coacts with an air inlet and stationary surfaces adjacent the inlet coact with shaped surfaces of the movable member to control the flow of air through the valve over a wide range of rates of flow. The control at high rates is assisted by providing a sharp cornered shoulder on the air inlet to cause a contraction of the entering column of air. The movable member is loaded by an adjustable spring and the movable member is guided by guiding surfaces.

3,776,265
CONTROL VALVE AND PROCESS CONTROL SYSTEM
Joseph O'Connor, Jr., Goshen, N.Y.. assignor to Kieley & Mueller, Inc., Middletown, N.Y.
Division of Ser. No. 112,890, Feb. 5, 1971, Pat. No. 3,709,245.
This application Sept. 25, 1972, Ser. No. 291,943
Int. Cl. G05d *7/03*
U.S. Cl. 137—487.5 **2 Claims**



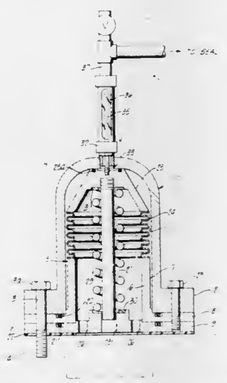
The control valve has a stator which imparts a swirl to the flow of fluid and a rotor which is rotated under the swirl of fluid. Energy is absorbed from the rotor in various ways. In one instance, the rotation of the rotor is subjected to a drag force which is induced in opposition to the force of rotation in order to control the pressure drop in the flow. In another instance, the rotation of the rotor is used to store electrical energy which can be used for other purposes throughout the process system.

3,776,266
ENGINE STARTER VALVE
James H. Bass, Irvine, and Robert P. Smith, Newport Beach, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Sept. 22, 1972, Ser. No. 291,236
Int. Cl. F16k *31/383*
U.S. Cl. 137—489 **14 Claims**



An engine starter valve for regulating engine starter air pressure to thereby control air flow in connection with the starting of aircraft turbine engines and the like characterized in that it has a main air flow control valve member which is actuated by a double acting actuator; a pressure sensor which senses air pressure downstream of the main valve member; and a modulator or pilot valve which is actuated by the sensor and which modulates the air flow from the upstream side of the main valve member to create differential pressure on opposite sides of the double acting actuator thus to move the main valve member to increase or decrease air flow through the valve. The valve herein is further characterized in that the modulator circuit embodies a pressure rise rate control valve therein to limit to desired value the rate of increase of air pressure downstream of the main valve member.

3,776,267
PRESSURE TRANSFER UNIT WITH BELLOWS
Lee Joe Alley, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 7, 1972, Ser. No. 287,166
Int. Cl. F16k *51/00*
U.S. Cl. 137—494 **14 Claims**

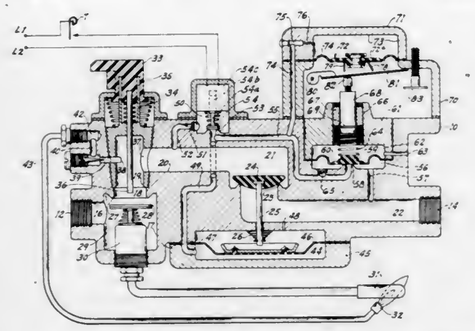


A pressure transfer unit including a bellows assembly separating an internal pressure chamber from a pressure source. An adjustable spring biases the bellows assembly to apply a predetermined pressure to fluid in the pressure chamber and to shut off fluid transfer in event of bellows failure.

3,776,268
STEPPED OPENING FLUID PRESSURE OPERATED GAS VALVE

Charles D. Visos, Manchester; John J. Love, and Carl A. Smith, both of St. Louis, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed June 2, 1972, Ser. No. 259,335
Int. Cl. F16k *31/365*
U.S. Cl. 137—495 **3 Claims**

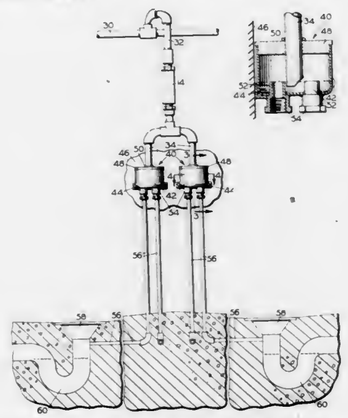


A stepped opening, diaphragm operated gas valve in which the operating pressure applied to the diaphragm is controlled by a spring biased pressure regulator and a delayed action pressure responsive actuator operating on an initial relatively low pressure acts, following a short delay, to increase the regulator spring bias, thereby to increase the controlled pressure and effect greater opening movement of the gas valve. An operative connection between the pressure responsive actuator and the regulator biasing spring includes means operative to transmit greater force and less movement during initial response of the actuator to the relatively low controlled pressure and greater movement and less force upon subsequent response of the actuator to the relatively greater controlled pressure developed as a consequence of the initial force and movement.

3,776,269
PRIMING UNIT FOR DISTRIBUTING PRIMING WATER TO MULTIPLE SEWER LINE WATER TRAPS

James B. Watts, Overgaard, Ariz., assignor to Precision Plumbing Products, Inc., Portland, Oreg.

Filed Apr. 7, 1972, Ser. No. 241,955
Int. Cl. F17d *1/08*
U.S. Cl. 137—561 A **3 Claims**

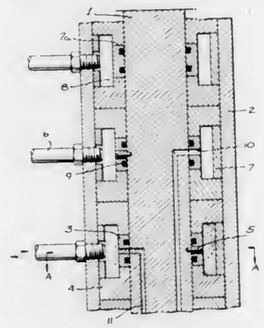


A priming unit for distributing priming water to multiple sewer line water traps comprises a case of compact dimensions, means for coupling the case to a source of priming water, and a plurality of water outlet conduits penetrating the case floor by a distance predetermined to permit use of water contained in the case to measure the level condition of the unit and to insure substantially equal distribution of priming water through all of the conduits to the various sewer line water traps.

3,776,270
FLUID COUPLING FOR THE TRANSMISSION OF CONTROL SIGNALS

Freddy Wanger, Baden, Switzerland, assignor to Heberlein & Co., AG, Wattwil, Switzerland

Filed July 19, 1971, Ser. No. 163,740
Claims priority, application Switzerland, Aug. 17, 1970, 12314/70
Int. Cl. F16l *27/00*
U.S. Cl. 137—580 **4 Claims**

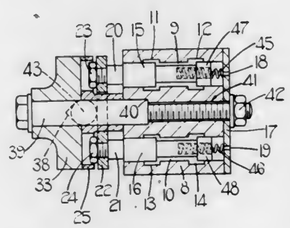


Fluid coupling including a hollow stator and cylindrical rotor within same and having at least one longitudinally extending pipe for conveying fluid to device to be actuated, the stator having at least one chamber adapted to register with an opening in the rotor in a particular relative rotational position of the rotor and stator to effect fluid communication between the pipe and the device to be actuated.

3,776,271
FLUID CONTROL VALVE

Alwyne Lee, 47 Bushby's Ln., Formby, England

Division of Ser. No. 122,479, March 9, 1971, Pat. No. 3,685,286. This application June 27, 1972, Ser. No. 266,557
Claims priority, application Great Britain, Oct. 20, 1970, 50,155/70
Int. Cl. F16k *31/524*
U.S. Cl. 137—595 **8 Claims**

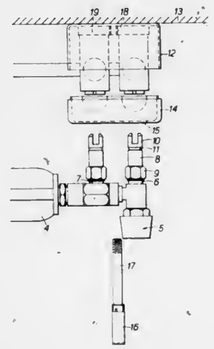


A fluid control valve has a pair of spool closure members which are slidable in unison to control flow between associated pairs of ports in response to relative movement between a pair of control elements on the valve. The said relative movement causes axial displacement of actuators which engage an abutment secured to the spools, the abutment being biased into contact with the actuators.

3,776,272
FLUID FLOW SYSTEMS

Dennis Charles Arbon, Cheltenham, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England

Filed Mar. 3, 1972, Ser. No. 231,514
Claims priority, application Great Britain, Mar. 17, 1971, 7,345/71
Int. Cl. F16k *19/00, 15/18*
U.S. Cl. 137—596 **5 Claims**



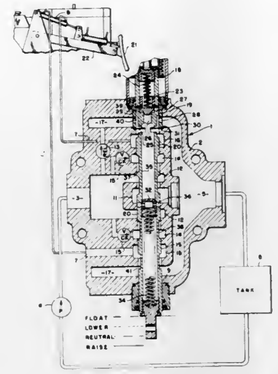
In a fluid flow system, such as for central heating, the pipework includes a valve which may be regarded as a socket to which an appliance may be connected at will so as to utilise the fluid in the system, the valve being automatically maintained in closed position but opened by connection means on the appliance when the appliance is connected to the system. Preferably, a plurality of valves are provided at appropriate locations so that the appliance can be connected at any selected location, and the valve may control both outlet and inlet fluid flows.

3,776,273
DIRECTIONAL CONTROL VALVE

Herbert H. Schmiel, Minneapolis, Minn., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Feb. 17, 1972, Ser. No. 227,212
Int. Cl. F15b *21/00;* **F16k** *17/26, 17/32*
U.S. Cl. 137—596.12 **6 Claims**

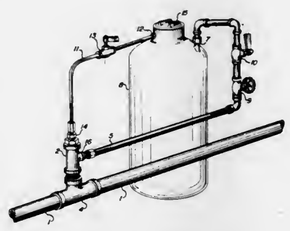
A four-way spool valve assembly embodying a regenerative circuit for controlling the actuation of a double acting fluid motor for a bulldozer blade or the like characterized in that the spool has therewithin a relief valve and a check valve respectively operative to build up back pressure in the return line from the rod end of the motor during the blade lowering operation and to permit return flow under such back pressure into the inlet port to prevent cavitation of the head end of the motor, and further characterized in that the spool has a float position in which a bypass passage in the assembly is open for flow of fluid from the inlet passage to the return passage and in which both motor ports have unrestricted communication with the return passage.



3,776,274
APPARATUS FOR EFFECTING CHEMICAL TREATMENT OF A LIQUID FLOWING THROUGH A PIPE

Jack C. Riley, Tucson, Ariz., assignor to Russell E. Taft and Andrey D. Taft, Tucson, Ariz., part interest to each

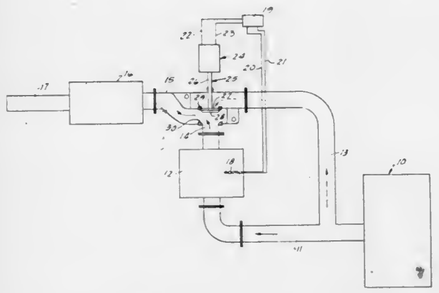
Filed July 10, 1972, Ser. No. 270,168
Int. Cl. F16k *19/00*
U.S. Cl. 137—599 **4 Claims**



Simplified apparatus is provided for injecting controlled amounts of a chemical housed within a container into a liquid, such as water, flowing through a pipe. A "T" fitting is coupled into the pipe through which the liquid is flowing by means of a second T fitting or in any other convenient manner. A length of tubing coupling the output from a container holding the chemical to be injected extends coaxially through the T and into the pipe through which the liquid is flowing, terminating just short of the opposite side thereof. A second length of tubing is coupled between the right angle extension from the T to the inlet of the container. The area at the outlet of the tubing extending through the T is smaller than the area surrounding the tubing through which the liquid in the pipe may pass to communicate with the second piece of tubing which leads to the container inlet. Thus, in effect, a suction is observed at the outlet terminal which draws liquid flowing through the pipe into the container, where it mixes with the chemical therein, and back into the pipe conveying the liquid. Flow rate through the container, and hence the concentration of chemical injected into the liquid flowing through the pipe, is controlled by a conventional valve on the inlet side to the container. Addi-

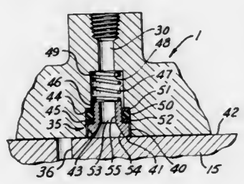
tionally, a second conventional valve may be added to the inlet side to the container and a third conventional valve to the outlet side of the container to permit complete isolation of the container to facilitate replenishing the chemical contained therein. If necessary to conform to building codes, a check valve may be inserted into the line on the inlet side of the container.

3,776,275
REACTOR BYPASS SYSTEM
Stanley H. Updike, Mentor, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Apr. 10, 1972, Ser. No. 242,342
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.4 **12 Claims**



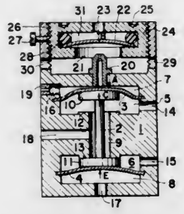
A double acting valve assembly, particularly designed for use in conjunction with catalytic reactors of the type employed in internal combustion engine exhaust treatment. The valve assembly includes a housing and a poppet type valve, axially movable within the housing into two positions, in one of which a portion of the valve stem engages a flexible spring washer to flex the same and provides sealing engagement therewith, sealing off one inlet port to the housing. In this one position, a valve head is seated within a valve seat provided within the interior of the housing. In a second position of the valve, another seating face on the valve head is received in seating engagement against a seating ring which is positioned within the housing to provide a self-centering of the valve head against the seat.

3,776,276
VALVE SEAL
Marshall A. Stiltner, 632 Cliff Dr., Laguna Beach, Calif.
Continuation-in-part of Ser. No. 867,691, Oct. 20, 1969, abandoned. This application Mar. 15, 1971, Ser. No. 124,343
Int. Cl. F16k *3/02*
U.S. Cl. 137—625.18 **10 Claims**



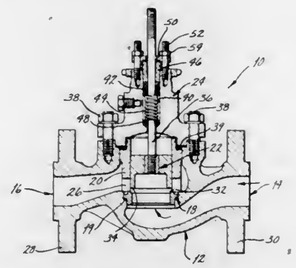
A valve assembly in which a tubular seal ring circumscribes a valve port and has a flat end face slidably and sealingly engaged with the opposing flat face of a valve member having another port, the seal ring having a resilient seal engaged in a bore between a shoulder in the seal ring and an opposing stationary shoulder and the seal ring also having a skirt extending into the valve port and engaged by a spring to bias the flat face of the seal ring into normal engagement with the opposing flat face.

3,776,277
FLUID SWITCHING DEVICE
Mitsuyoshi Nagashima, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed July 16, 1971, Ser. No. 163,216
Claims priority, application Japan, May 11, 1971, 46/31404
Int. Cl. F16k *31/145*
U.S. Cl. 137—625.6 **4 Claims**



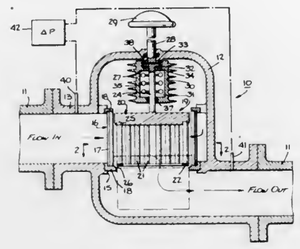
A fluid switching device having a first chamber partitioned by a diaphragm into two chambers, a valve secured to said diaphragm, a nozzle which communicates with one of said chambers having an input passage to supply a pressure fluid to one side of said diaphragm, a thin film disposed in a second chamber, with or without the use of a sealing member to hold the periphery of the thin film in place, means to adjust the gap between said nozzle and film, and/or a solenoid which electrically brings the film into and out of contact with the nozzle orifice.

3,776,278
VALVE INCLUDING NOISE REDUCING MEANS
Ernest E. Allen, State Center, Iowa, assignor to Fisher Controls Company, Inc., Marshalltown, Iowa
Continuation-in-part of Ser. No. 863,099, Oct. 2, 1969, abandoned. This application June 29, 1971, Ser. No. 157,906
Int. Cl. F15d *1/10*; F16k *47/02*
U.S. Cl. 137—625.38 **1 Claim**



A control valve including inlet and outlet ports, a valve seat and a cage member within which a valve plug is free to reciprocate toward and away from the valve seat to determine the flow therethrough. The cage member or valve plug are provided with a plurality of smooth-walled, narrow, substantially equally-spaced slots. In operation, the valve plug movement away from the valve seat controls fluid flow from the inlet port to the outlet port of the valve. The flow is directed through the slots, one dimension of which is sufficiently small (approximately 1/16 inch) to partition the flow, thereby to substantially attenuate the noise normally accompanying fluid flow through a control valve.

3,776,279
SYSTEM FOR CHANGING FLUID MOVEMENT INTO ELECTRICAL ENERGY
Joseph O'Connor, Jr., Goshen, N.Y., assignor to Kieley & Mueller, Inc., Middletown, N.Y.
Division of Ser. No. 112,890, Feb. 5, 1971, Pat. No. 3,709,245. This application Sept. 25, 1972, Ser. No. 291,906
Int. Cl. F16k *51/00*
U.S. Cl. 137—802 **6 Claims**

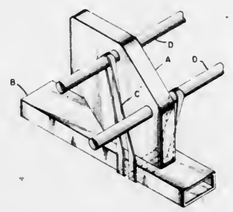


The control valve has a stator which imparts a swirl to the flow of fluid and a rotor which is rotated under the swirl of fluid. Energy is absorbed from the rotor in various ways. In one instance, the rotation of the rotor is subjected to a drag force which is induced in opposition to the force of rotation in order to control the pressure drop in the flow. In another instance, the rotation of the rotor is used to store electrical energy which can be used for other purposes throughout the process system.

ERRATUM

For Class 138—109 see:
Patent No. 3,776,253

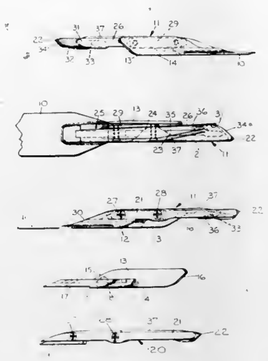
3,776,280
HAND LOOM
Jules Kliot, 2150 Stuart St., Berkeley, Calif.
Filed Apr. 24, 1972, Ser. No. 246,744
Int. Cl. D03d *29/00*
U.S. Cl. 139—33 **6 Claims**



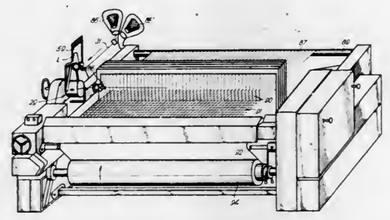
A unique means for changing sheds on a weaving loom.

3,776,281
WEFT CARRIER FOR SHUTTLELESS LOOMS
Richard L. Volpe, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed May 24, 1972, Ser. No. 256,497
Int. Cl. D03d *47/20*
U.S. Cl. 139—122 N **1 Claim**

An improved weft receiving carrier for shuttleless looms having its hooked weft engaging portion and the combined weft trapping and tensioning member operatively associated therewith disposed on the reed or rearward side of the carrier and an integrally formed guide member for maintaining the hooked portion and combined trapping and tensioning member in a generally horizontal path during insertion of the carrier into the warp sheds.

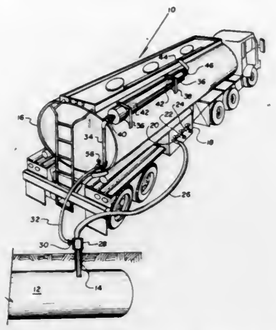


3,776,282
METHOD OF AND APPARATUS FOR METERING AND STORING WEFT YARN FOR INTERMITTENT INSERTION INTO THE SHED OF SHUTTLELESS LOOMS
Zdenek Sevcik, and Josef Jankovsky, both of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia
Filed July 10, 1972, Ser. No. 270,044
Int. Cl. D03d *47/36*
U.S. Cl. 139—122 R **16 Claims**



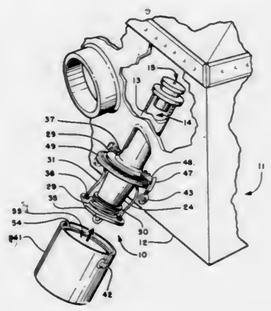
Method of and apparatus for metering and storing continuously metered weft yarn for intermittent inserting into the shed of a shuttleless loom. In such method the weft yarn metering rate is higher than the winding of the same onto a yarn storage drum, the remaining portion of the metered weft yarn length being stored as a loose loop. The device comprises a storage drum provided with a gripper controlled by a cam disc, a metering drum, a chamber, on the entering side of the chamber there being provided a pressing roller attached to the metering drum, and on the exit side thereof there being provided a device for weft yarn braking.

3,776,283
VAPOR RECOVERY SYSTEM
W. Edward Kramer, Pittsburgh, and Edward Mitchell, Valencia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed June 15, 1972, Ser. No. 263,233
Int. Cl. B65b 31/06; B01d 53/14
U.S. Cl. 141—45 6 Claims



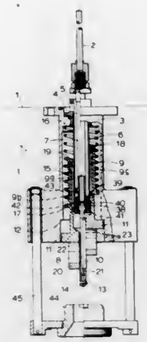
A canister containing an absorbent material is detachably mounted on a tank truck for delivery of volatile liquids. An inlet to the canister is connected through a vapor recovery hose to the vapor space in a liquid storage tank and an outlet to the canister is connected to the vapor space in a tank on the truck. As the volatile liquid is delivered into the storage tank, air displaced from the storage tank is forced via the vapor recovery hose through the absorbent and into the delivery tank. Vapors of the liquid are absorbed in the canister. Pressure relief means are connected to require all air entering or leaving the tank on the truck to pass through the canister.

3,776,284
ARTICLE REMOVAL DEVICE FOR GLOVEBOX
Raymond H. Guyer, Longmont, and Robert G. Leebl, Arvada, both of Colo., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Jan. 20, 1972, Ser. No. 219,302
Int. Cl. B65b 31/04
U.S. Cl. 141—65 5 Claims



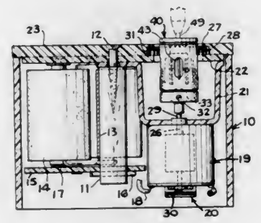
An article removal device for a glovebox comprising a conduit extending through a glovebox wall which may be closed by a plug within the glovebox, and a fire-resistant container closing the outer end of the conduit and housing a removable container for receiving pyrophoric or otherwise hazardous material without disturbing the interior environment of the glovebox or adversely affecting the environment outside of the glovebox.

3,776,285
APPARATUS FOR FILLING CONTAINERS WITH LIQUID
Arthur Ernest Nicholls, Hornchurch, England, assignor to Farrow and Jackson Limited, London, England
Filed Nov. 30, 1971, Ser. No. 203,343
Claims priority, application Great Britain, Dec. 21, 1970, 60,565/70
Int. Cl. B65b 37/02; B67c 3/26; B67d 3/02
U.S. Cl. 141—386 3 Claims



Valve mechanism for filling a miniature bottle in which a bottle rising to a filling position lifts a vertical sleeve from engagement at its end with a seal at the lower end of a tubular center part formed with a slot just above the seal. This enables liquid to run down a double passageway formed between the inner surface of the sleeve and the center part, while air in the bottle escapes through the slot and up the tubular center part. The passages in the double passageway converges to a narrow edge at their lower end and are so disposed in relation to the slot that the liquid is discharged on one side of the seal while the air enters the tubular part on the other side. The tubular part is divided into comparatively rigid upper and lower portions resiliently joined together so that the lower portion can adapt itself precisely to the path of the reciprocable sleeve, which is a neat sliding fit on arcuate surfaces extending along the tubular part.

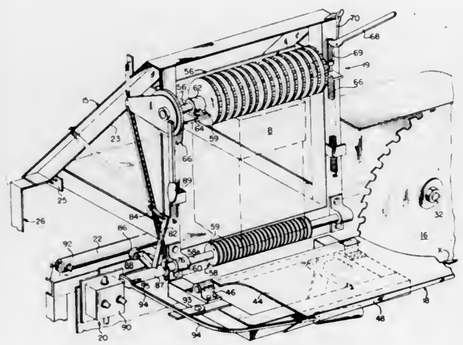
3,776,286
DRAWING LEAD SHARPENER
Charles M. Blanck, 1545 State, Algonac, Mich.
Filed Mar. 6, 1972, Ser. No. 231,861
Int. Cl. B43l 23/02
U.S. Cl. 144—28.5 9 Claims



This invention relates to an improved power operated drawing lead sharpener used for sharpening the drawing leads for mechanical drafting operations. The specification discloses an improved cutting head mechanism wherein multiple cutting blades insertable in a carrier member form a replaceable cartridge which is inserted in the cutting head. Therefore, the

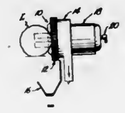
draftsman can service the unit himself which was not possible previously. Also, there is disclosed an improved swivel mounting for the cutting head whereby while the cutter head is easily removed for emptying the graphite particles produced by the sharpening process, it cannot fall off accidentally.

3,776,287
APPARATUS FOR MAKING UNIFORM SEMI-SPLIT SHAKES
John H. Hughes, 6321 Central Park Dr., Aberdeen, Wash.
Division of Ser. No. 851,575, Aug. 20, 1969, abandoned. This application Feb. 1, 1972, Ser. No. 222,575
Int. Cl. B27m 3/02; B27l 7/00
U.S. Cl. 144—13 9 Claims



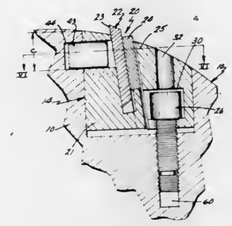
A shake bolt is carried between upper and lower rollers that are mounted on a movable carriage. A saw and a vertical splitting bar aligned with the saw are mounted on a stationary frame adjacent to the carriage. The bolt is advanced by simultaneously rotating said rollers. In one embodiment the bolt is tilted by first rotating the top roller alone. A kerf is cut in the bolt by moving the carriage past the saw blade. A shake is then split from the bolt by returning the carriage while passing the splitting bar through the kerf adjacent to the inner end thereof. The shake has a tip portion of uniform thickness and a thicker naturally split weather portion. In one form, the tip portion is at an angle with respect to the weather portion. A method of making semi-split shakes comprising making a cut into and across an end of a shake bolt to establish a predetermined tip length and splitting the weather portion of the shake from the bolt by applying a prying force within the cut and adjacent to the inner edge of the cut.

3,776,288
BLADE ASSEMBLIES FOR FLAKING APPARATUS
Donald L. Johnson, 1816 N. Lenace Dr., Tacoma, Wash.
Division of Ser. No. 630,396, April 12, 1967, Pat. No. 3,526,258. This application Aug. 27, 1970, Ser. No. 67,441
Int. Cl. B27g 13/04
U.S. Cl. 144—235 16 Claims



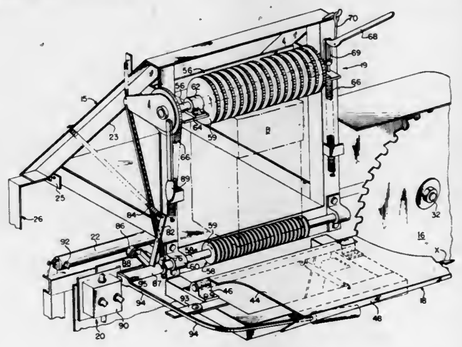
Blade assembly for flaking and surfacing machines including a runner mounted on a closure head to comprise a cutter-head. Removable blade mounting blocks are supported on the periphery of the runner with said blocks in turn supporting blade holders and blades. The blocks are anchored in the runner with fir tree root type mounting bases. The holders are also removable from the blocks.

3,776,289
CUTTING TOOL HOLDER
Charles E. Boboltz, Belmont; Frederick K. Zwald, and Ralph B. Baldwin, both of East Grand Rapids, all of Mich., assignors to Oliver Machinery Company, Grand Rapids, Mich.
Continuation-in-part of Ser. No. 60,025, July 31, 1970. This application May 18, 1972, Ser. No. 254,667
Int. Cl. B27g 13/04; B26d 1/36
U.S. Cl. 144—230 6 Claims



A plurality of cutting members are individually and detachably mounted on a rotatable drum and arranged in spaced and staggered helical rows. Each cutting member is a separate blade having multiple cutting edges and an indexing block. A seating block engaging the indexing block indexes the cutting blade with the proper projection to engage the work as the drum is rotated. The seating block also indexes the cutting edge to make a linear "plane" on the work surface and permits blade sharpening to be done by a cutting tool operable in a direction parallel to the drum axis. A pin projects from the seating block into a precisely located index hole to control the height of projection of the blade. The pressure lock for the blade acts directly on the blade. The cutting member and indexing block are permanently attached by offsetting a portion of the block into an opening in the blade.

3,776,290
UNIFORM SEMI-SPLIT SHAKE AND METHOD AND APPARATUS FOR MAKING SHAKES
John H. Hughes, 6321 Central Park Dr., Aberdeen, Wash.
Division of Ser. No. 851,575, Aug. 20, 1969, abandoned. This application Feb. 1, 1972, Ser. No. 222,560
Int. Cl. B27m 3/02
U.S. Cl. 144—326 R 9 Claims



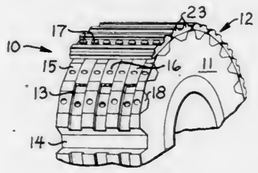
A shake bolt is carried between upper and lower rollers that are mounted on a movable carriage. A saw and a vertical

splitting bar aligned with the saw are mounted on a stationary frame adjacent to the carriage. The bolt is advanced by simultaneously rotating said rollers. In one embodiment the bolt is tilted by first rotating the top roller alone. A kerf is cut in the bolt by moving the carriage past the saw blade. A shake is then split from the bolt by returning the carriage while passing the splitting bar through the kerf adjacent to the inner end thereof. The shake has a tip portion of uniform thickness and a thicker naturally split weather portion. In one form, the tip portion is at an angle with respect to the weather portion. A method of making semi-split shakes comprising making a cut into and across an end of a shake bolt to establish a predetermined tip length and splitting the weather portion of the shake from the bolt by applying a prying force within the cut and adjacent to the inner edge of the cut.

3,776,291
TRACK-OVER-TIRE DRIVING ARRANGEMENT

Roger L. Boggs, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 28, 1972, Ser. No. 248,576
Int. Cl. B62d *65/16, 55/08*
U.S. Cl. 152—182 **10 Claims**

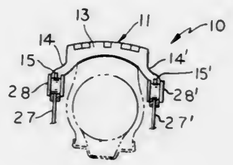


The tread of a rubber tire has circumferentially extending continuous grooves and transversely disposed notches formed thereon. A track assembly, comprising a plurality of closely coupled track shoes, circumferentially surrounds the tire and has drive lugs secured thereon which engage the notches. Circumferentially extending flexible belts are secured to the track shoes and engage the grooves.

3,776,292
AUXILIARY TREAD FOR TRACTION TIRE

Lorenzo Boscaino, 1 Chestnut St., Norristown, Pa.

Filed Jan. 19, 1972, Ser. No. 218,907
Int. Cl. B60c *27/16*
U.S. Cl. 152—225 **15 Claims**

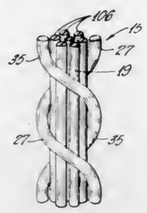


An auxiliary tread in superimposable boot-like form is provided for conventional pneumatic traction tires of vehicles. Its tread portion is segmented, but its conjoined flanking bead portions are not. The auxiliary tread is retained detachably in place on a tire by mounting means connected to the bead portions.

3,776,293
REINFORCEMENT FOR TIRES

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 664,020, Aug. 29, 1967, Pat. No. 3,631,667. This application Jan. 18, 1971, Ser. No. 107,193
Int. Cl. B60c *9/00;* **D02g** *3/02*
U.S. Cl. 152—359 **5 Claims**

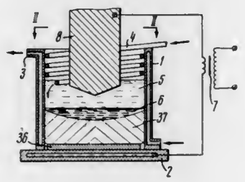


A reinforcement system for pneumatic tires featuring combination cords of individually varying extensibility composed of elements of extensible character and, combined therewith, elements of relatively inextensible character; the combination cord of greatest extensibility being preselectively located in the region of the tire subjected to the greatest deflection whereby the stress incurred during average environmental usage or of a particular impact is not transferred to the elements of relatively inextensible character until the deflection has reached a value preselectively determined. The combination cords include an organic and a somewhat greater length of substantially inextensible material, e.g., glass, so combined therewith as to yield a unit length, and are tailor-made to exhibit a particular degree of elongation depending upon the particular combination of variable lengths and the selection of organic elements to be combined with the glass.

3,776,294
METHOD OF ELECTROSLAG REMELTING

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 5, kv. 21; Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 81, kv. 14; Leonty Vasilievich Chekotilo, ulitsa Scherbakovka, 49a, kv. 10; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5; Vasily Ivanovich Us, ulitsa Saxaganskogo, 58, kv. 12; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3; Viktor Mikhailovich Martyn, ulitsa Vernadskogo, 65, kv. 102; Viktor Leonidovich Artamonov, ulitsa Sovskaya, 9, kv. 4; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 34; Georgy Alexandrovich Boiko, ulitsa V1. Libedskaya, 16, kv. 106; Anatoly Konstantinovich Tsikulenko, ulitsa Babushkina, 23, kv. 38; Vasily Vladimirovich Ivon, Darnitskoe shosse, 107/2, kv. 16, and Leonid Viktorovich Pavlov, Borschagovskaya ulitsa, 234, kv. 6, all of Kiev, U.S.S.R.

Filed Mar. 18, 1971, Ser. No. 125,744
Int. Cl. B22d *27/02;* **C22d** *7/00*
U.S. Cl. 164—52 **5 Claims**

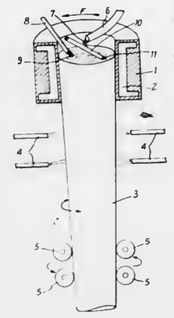


A method of electroslag remelting of consumable electrodes according to the invention, characterized in that the agents improving the quality of the ingot are blown into the melt so that the injected flow of these agents cause rotation of this melt.

3,776,295
METHOD OF CONTINUOUS ROTARY CASTING OF METAL UTILIZING A LIQUEFIED GAS TO FACILITATE SOLIDIFICATION

Michel Mola, Paris; Philippe Barthelemy, Sevres; Gerard Bentz, Elancourt-Trappes, and Jean Galey, Saint-Maur, all of France, assignors to Societe Civile D'Etudes De Centrifugation, Paris, France

Filed Dec. 22, 1971, Ser. No. 210,712
Claims priority, application France, Dec. 24, 1970, 7046640
Int. Cl. B22d *11/10*
U.S. Cl. 164—66 **11 Claims**

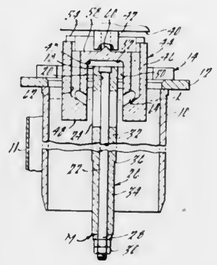


Rotary method of continuously casting metallic articles in which a liquefied gas is introduced into the top of the mold and apparatus for use in carrying out said method.

3,776,296
METHOD FOR CONTINUOUSLY CASTING A HOLLOW BILLET

Thomas B. Arrington, and Leonard A. Moody, both of Decatur, Ala., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 134,953, April 19, 1971, Pat. No. 3,735,803. This application Apr. 24, 1972, Ser. No. 246,644
Int. Cl. B22d *11/10*
U.S. Cl. 164—85 **4 Claims**

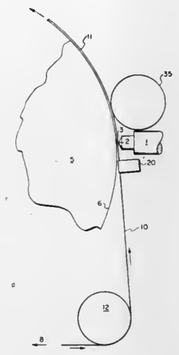


Melted metal, typically copper, is applied through floating valve means to a water-cooled mold containing a mandrel of special form and materials so as to result in continuous downward movement of the solidified billet through the bottom lower end of the mold and over the lower end of the mandrel.

3,776,297
METHOD FOR PRODUCING CONTINUOUS LENGTHS OF METAL MATRIX FIBER REINFORCED COMPOSITES

John F. Williford, and James P. Pilger, both of Richland, Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Filed Mar. 16, 1972, Ser. No. 235,340
Int. Cl. B22d *11/10*
U.S. Cl. 164—86 **18 Claims**

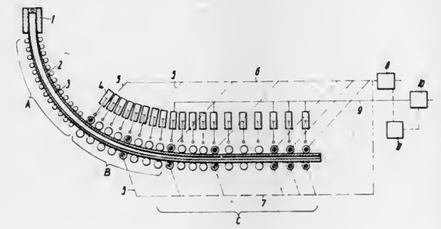


A method for producing metal matrix fiber reinforced tape by directing a plurality of arranged fibers through a stable meniscus of molten metal and effecting rapid solidification of the molten metal through the use of moving heat extracting members so as to retain the desired mechanical properties of the composite material by minimizing the exposure of the fibers to high temperature molten metal.

3,776,298
APPARATUS FOR CONTROLLING THE PRESSURE FORCE IN MULTI-ROLL DRIVES FOR EQUIPMENT WITHDRAWING AN INGOT FROM A CONTINUOUS CASTING MACHINE ALONG A CURVED PATH

Gerd Vogt, Meerbusch, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed June 29, 1972, Ser. No. 267,317
Claims priority, application Germany, July 2, 1971, P 21 33 937.7
Int. Cl. B22d *11/12*
U.S. Cl. 164—154 **3 Claims**



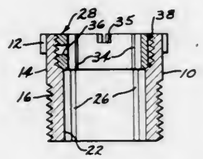
A withdrawal stand for continuously cast, curved ingots is disclosed wherein the contact pressure of driven rolls is con-

trolled to normally exceed only slightly the internal pressure of the ingot; the contract pressure is increased if the traction resistance increases.

3,776,299
GUIDE BUSHING ASSEMBLY FOR FLASK, PATTERNS, AND THE LIKE

Gerald R. Rusk, Maumee, Ohio, and Robert E. Kock, Ottawa Lane, Mich., assignors to The Freeman Supply Company, Toledo, Ohio

Division of Ser. No. 857,819, Sept. 15, 1969, Pat. No. 3,612,161. This application June 2, 1971, Ser. No. 159,550
Int. Cl. B22c 21/10
U.S. Cl. 164—385 **12 Claims**



A two part bushing or guide pin for aligning foundry flasks, hot boxes, and the like comprising: a machinable body portion having external threads for threading into a flask, hot box, etc., and internal threads for receiving either a hardened nonmachinable guide ring or a hardened nonmachinable guide pin.

In the case of the hardened nonmachinable guide ring, the outer surfaces are provided with hardened ground threads adapted to be threaded into the internal threads of the main body portion. Suitable means is provided for locking the ring in angular relationship with the body after it is threaded therein. The construction permits the main body portion of the bushing to be firmly seated and locked in a flask, etc., following which the hardened ring can be rotated within the main body portion until its surfaces are accurately angularly positioned relative to the flask, and the ring then locked to the bushing. The locking means may comprise an opening through the sidewalls of the ring for receiving a staking tool for deforming the internal threads of the main body portion. Alternatively, a longitudinally extending hemicylindrical groove may be provided in the periphery of the hardened ring, and the adjacent portion of the body drilled, to receive a soft metal locking pin.

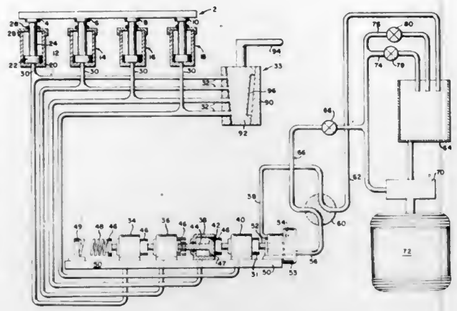
In the case of the guide pin, it is provided with a ground and hardened guide pin insert having external ground threads adapted to be inserted into the softer machinable body portion. The guide pin insert may include the hemicylindrical groove for locking it to the machinable body portion.

3,776,300
APPARATUS FOR LIFTING FLASKS, MOLDS AND PATTERNS

William L. Fismer, Verona, N.J.

Division of Ser. No. 824,777, May 15, 1969, Pat. No. 3,643,725. This application Feb. 4, 1972, Ser. No. 223,497
Int. Cl. B22c 17/00
U.S. Cl. 164—403 **7 Claims**

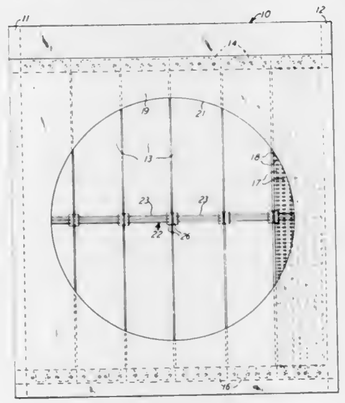
An arrangement is disclosed for improving the handling or stripping of the flasks or molds of the type which are used to cast large items such as cast metal plates or frames. A system is provided for lifting the flask or mold vertically from the pattern with assurance that each portion or part is moved at exactly the same rate and amount as every other part.



3,776,301
REINFORCED SECTIONAL RADIATOR

Fred M. Young, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.

Filed June 21, 1972, Ser. No. 264,811
Int. Cl. F28f 9/00
U.S. Cl. 165—67 **4 Claims**



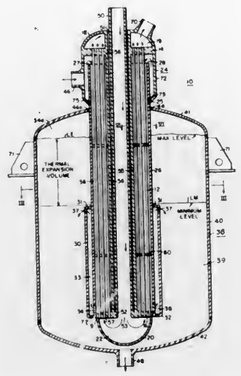
A sectional radiator having a plurality of separate cores disposed in side-by-side relation and a framework securing the cores together. Each core includes tubes and fins, and a reinforcing piece is attached to the core and extends across the width of the core to dampen mechanical vibrations set up by machinery or the like adjacent the radiator. Connectors attach the reinforcing pieces together from core to core.

3,776,302
TUBE AND SHELL HEAT EXCHANGER

Remco P. Waszink, St. Petersburg, and Michael G. Purnell, Tampa, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 14, 1972, Ser. No. 225,810
Int. Cl. F28f 19/00
U.S. Cl. 165—82 **10 Claims**

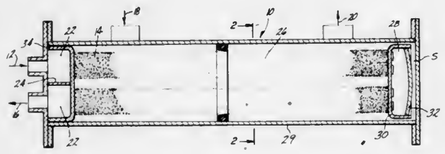
A tube and shell heat exchanger in which a tube bundle and an encompassing tubular liner extend downwardly into an enlarged main pressure vessel. The lower end of the tube bundle is freely movable during linear expansion in operation and a tubular flow guide at the lower end of the tube bundle is employed in a manner to maintain a predetermined liquid level in the main pressure vessel. The upper end of the tube bundle is supported in a second pressure vessel superimposed on the main vessel and communicating therewith.



3,776,303
HEAT EXCHANGER

George A. Anderson, Northford; Frederick A. Burne, Hamden, both of Conn.; Neil O. Neunaber, East Alton, Ill., and Edward L. McFadden, Hamden, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 27, 1971, Ser. No. 137,871
Int. Cl. F28f 9/22
U.S. Cl. 165—82 **3 Claims**



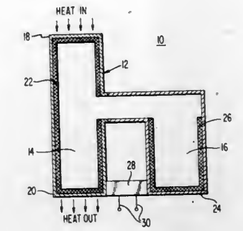
This invention relates to heat exchangers, and more particularly to an improved heat exchanger having tubular elements and a pervious body of material therein and wherein fatigue cracking of the tubular elements is substantially eliminated.

3,776,304
CONTROLLABLE HEAT PIPE

Victor Auerbach, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 5, 1972, Ser. No. 259,729
Int. Cl. F28d 15/00
U.S. Cl. 165—96 **5 Claims**

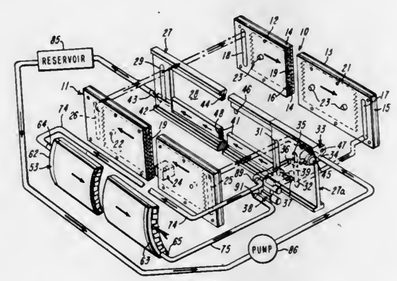
In a heat pipe comprising three heat-transfer regions, a first capillary structure is disposed at, and extends between, two of the regions; and a second capillary structure, hydrodynamically isolated from the first capillary structure, is disposed at the third region. Thermal switching between the first two regions, one of which serves as the condenser region of the heat pipe, is controlled by a heat flow between the third region and the condenser region.



3,776,305
HEAT TRANSFER SYSTEM

Carl Edward Simmons, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Feb. 22, 1972, Ser. No. 227,779
Int. Cl. F28d 15/00; H01l 01/12
U.S. Cl. 165—107 **15 Claims**



A heat transfer system in which a fluid of substantial heat absorption qualities is caused to flow in successive heat absorption and heat dissipation phases, a latter having one or more differential modes. In the disclosed embodiment of the system, a cold plate-liquid boiler assembly provides flow paths for the successive phases, the differential heat dissipation modes being provided by the liquid boiler and by external cooling means alternatively included in a heat rejection circuit. Vent control apparatus associated with the liquid boiler tends to maintain a pressure therein conducive of boiling at selected temperature values.

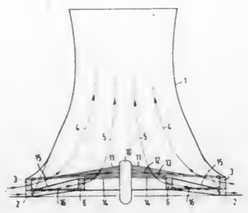
3,776,306
AIR-COOLED CONDENSATION APPARATUS

Rupprecht Michel, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Feb. 22, 1972, Ser. No. 228,222
Claims priority, application Germany, Feb. 24, 1971, P 21 08 615.7
Int. Cl. F28b 3/00
U.S. Cl. 165—111 **7 Claims**

In air-cooled condensation apparatus having a natural-draft cooling tower, condensation elements are disposed not only at the outer periphery of the cooling tower but also in at least

one ring located in the interior of the cooling tower coaxially to the condensation elements at the outer periphery, the cooling elements located in the interior of the cooling tower being operable in winter dephlegmatorically, i.e., with steam flowing into the cooling tower from below.

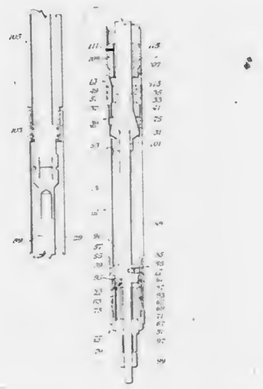


3,776,307

APPARATUS FOR SETTING A LARGE BORE PACKER IN A WELL

James Douglas Young, Fort Worth, Tex., assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Filed Aug. 24, 1972, Ser. No. 283,322
Int. Cl. E21b *23/04, 43/10*
U.S. Cl. 166—125 **9 Claims**



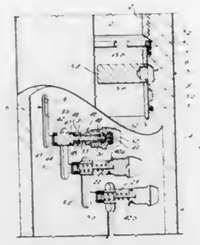
Apparatus for setting a large bore packer in a well penetrating subterranean formations characterized by a packer assembly including an expansible liner that can be expanded into contact with the conduit, such as casing, of the well for tight sealing engagement without requiring setting anchors or the like; connector means that is connected with the liner at one end and connected with a seal sub at the other end, the seal sub having an unusually large bore for receiving a sealing relationship a large bore, or seal unit; and settable retainer, such as slips and cones, for effecting a supplementary retaining force in addition to that of the expanded liner for setting the large bore packer at a given depth and retaining it there against unusually large forces. Also disclosed is a combination of the apparatus with setting tool, swage, and retainer setting means, as well as specific preferred embodiments.

3,776,308

SAFETY VALVE ARRANGEMENT FOR CONTROLLING COMMUNICATION BETWEEN THE INTERIOR AND EXTERIOR OF A TUBULAR MEMBER

Billy C. Malone, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Aug. 17, 1971, Ser. No. 172,447
Int. Cl. E21b *33/12*
U.S. Cl. 166—187 **2 Claims**



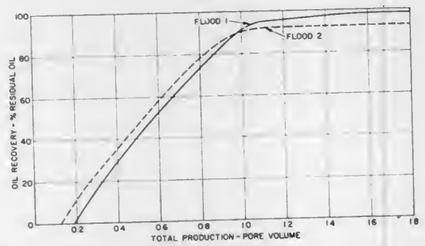
An arrangement for controlling fluid communication between the interior of a tubular member and interior of an inflatable element supported externally on the tubular member including fluid passage means communicating from the interior of the tubular member to the interior of the inflatable element with valve means normally seated to close off flow from the interior of the tubular member to the interior of the inflatable element until a predetermined pressure has been exerted thereon. After the valve has been opened to communicate fluid from the interior of the tubular member to the interior of the inflatable element for inflation thereof, the valve closes when a predetermined relationship is reached between the pressure in the interior of the tubular member and externally of the tubular member. Locking means are provided to lock the valve in closed position and prevent further communication between the interior of the tubular member and interior of the inflatable element when the valve closes.

3,776,309

VISCOUS SURFACTANT WATER FLOODING

Kenneth J. Murray, East Brunswick; Don J. Hopkins, Westfield, and Peter B. Lederman, Providence, all of N.J., assignors to Esso Production Research Company, Houston, Tex.

Continuation of Ser. No. 845,126, July 23, 1969, abandoned. This application May 28, 1971, Ser. No. 148,127
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **25 Claims**



A method of treating a formation by means of a well using a novel composition as a waterflood additive. The method is primarily used as a method for recovering oil from the formation, but also has utility in increasing the water injectivity of a well by reducing the formation's residual oil saturation. The composition is prepared by reacting hydrocarbons of the type occurring in a 700°–1,100°F boiling range fraction of a petroleum crude with gaseous SO_3 under specific sulfonating conditions. The composition is essentially a mixture of hydrocarbon sulfonates which has the properties of reducing the interfacial tension and increasing the viscosity of certain aqueous systems.

3,776,310

POLYALKENEOXIDES AND POLYVINYL-PYRROLIDONES MOBILITY CONTROL AGENT AND PROCESS

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed May 6, 1971, Ser. No. 140,931
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **7 Claims**

In a supplemented oil recovery process and other uses, flow resistance of aqueous polyalkeneoxide solutions, e.g., Polyox WRS-301, can be increased by adding high molecular weight homopolymers, or random block or heteropolymers of polyvinylpyrrolidones.

3,776,311

METHOD OF CONTROLLING LOOSE SANDS AND THE LIKE

James D. Carnes; Bill M. Young, and Kenneth D. Totty, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sept. 25, 1972, Ser. No. 292,050
Int. Cl. E02d *3/14*; **E21b** *33/138*
U.S. Cl. 166—295 **52 Claims**

The present invention relates to an improved method of controlling loose or incompetent sands and the like in a subterranean formation wherein a hydrocarbon liquid, having a consolidating fluid dissolved and dispersed therein to control the viscosity and spread of the consolidating fluid is introduced into the formation and the consolidating fluid is caused to harden thereby consolidating loose sands into a permeable mass.

3,776,312

WELL BOTTOM TREATMENT

Akos Ban; Sandor Nagy, both of Budapest, and Valer Balint, Nagykanizsa, all of Hungary, assignors to Koolaj-es Gazipari Tervezo Vallalat, Budapest, Hungary

Filed Oct. 28, 1971, Ser. No. 193,593
Claims priority, application Hungary, Oct. 6, 1970, KO 2368
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 166—302 **3 Claims**

Microcracks are formed in the environs of deep drilled wells, such as oil wells, by heating and then cooling the adjacent strata. This can be accomplished by introducing ammonia into the stratum water at the bottom of the well. The resulting heat of dissolution will slightly heat the strata adjacent to the bottom of the well as the ammonia will chemically assist the displacement of recoverable materials lodged in these strata. The cooling to the initial temperature of the bottom can be accomplished by the presence of additional stratum water in the well.

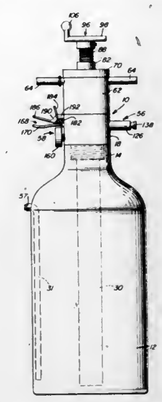
3,776,313

TEMPERATURE RESPONSIVE AUTOMATIC FIRE EXTINGUISHER

Joseph S. DePalma, 109 Carlson Ct., Closter, N.J.

Filed Feb. 4, 1972, Ser. No. 223,507
Int. Cl. A62c *13/00*
U.S. Cl. 169—19 **13 Claims**

An automatic fire extinguisher having a heat-sensitive assembly mounted on a conventional fire extinguisher container. Heat sensors are operably connected to a housing which contains a bellows and valve arrangement. Within the sensors, housing and surrounding the bellows is a fluid which expands in response to heat which causes the bellows to collapse and move a valve to an open position permitting fire extinguisher material to excape through a nozzle provided in the container. A squeeze grip manual actuator is provided for manipulating the valve at any time.

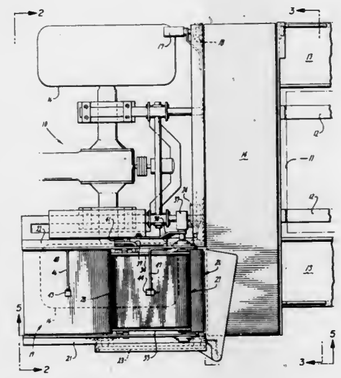


3,776,314

SOD HANDLING METHOD

John F. Nunes, Jr., 2006 Loquot Ave., Patterson, Calif.

Division of Ser. No. 807,594, March 17, 1969, Pat. No. 3,664,432. This application Mar. 2, 1972, Ser. No. 231,160
Int. Cl. A01b *79/00*
U.S. Cl. 172—1 **3 Claims**



A machine is shown which pursues a method following the steps of continuously advancing a length of sod along a path, reversing the direction of movement of one of the portions of the sod relative to the movement of another portion of the same length of sod while conjointly therewith elevating the reversed portion with respect to the other portion so as to initiate folding one of the portions onto the other.

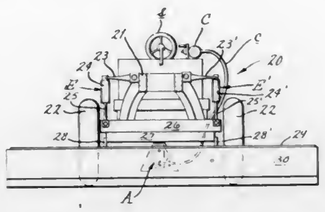
ERRATUM

For Class 172—2 see:
Patent No. 3,776,322

3,776,315
PENDULUM LIGHT SENSOR

Raymond E. Gill, and Floyd J. McMahon, both of Peoria, Ill., assignors to Westinghouse Air Brake Company, Peoria, Ill.

Filed Dec. 17, 1971, Ser. No. 209,327
Int. Cl. E02f 3/76
U.S. Cl. 172—4.5 13 Claims

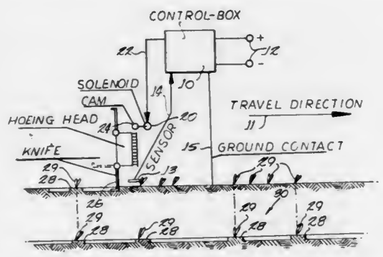


A pendulum light sensor mounted on the cutting tool of a surface finishing machine for automatically adjusting the angle of the cutting tool upon the raising and lowering of same to effect a deeper or shallower cut; said sensor incorporating a liquid chamber within which is disposed a bubble housing having a switch control arm attached thereto for opening and closing a photoelectric cell switch within the housing upon rotatable movement of said cutting tool. The photoelectric cell switch is in circuit with an elevator mechanism for raising and lowering the cutting tool to maintain the angle of the cutting tool at a predetermined attitude above the ground surface at all times.

3,776,316
ELECTRONIC CONTROL FOR CROP THINNING

Russell C. Eberhart, Manhattan, Kans., assignor to Allied Farm Equipment, Inc., Chicago, Ill.

Filed Jan. 5, 1972, Ser. No. 215,554
Int. Cl. A01b 63/00
U.S. Cl. 172—6 11 Claims

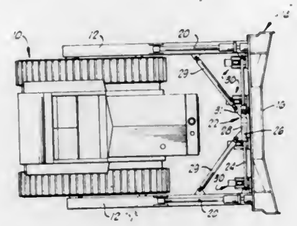


An electronic control for a crop thinning machine comprises a control unit with a plant sensor input and control circuitry providing an output for operating a solenoid that controls the position (i.e. hoeing or non-hoeing) of the hoeing implement. The control circuitry is of solid state components and includes a series of interacting timing circuits for programming the operation of the hoeing implement in a predetermined manner. Independent plant sensing and timing circuitry are provided for each of a plurality of rows being thinned. In one mode of operation the machine is hoeing until a plant is sensed. The plant is left in place after which hoeing takes place unconditionally for a preset distance. The hoeing continues until the next plant is sensed, which is left in place, and the cycle is repeated. In another mode of operation the hoeing implement is in its non-hoeing position. The first plant sensed is left in place following which hoeing takes place unconditionally over a preset distance after which the hoeing implement is moved back to its non-hoeing position until the next plant is sensed. The cycle then repeats. A simple mode-selection switch is employed for quickly changing modes during field operation.

3,776,317
EARTH EXCAVATING APPARATUS

Clady J. Royer, P.O. Box 75181, Oklahoma City, Okla.

Filed May 17, 1971, Ser. No. 143,828
Int. Cl. E02f 3/12
U.S. Cl. 172—777 9 Claims

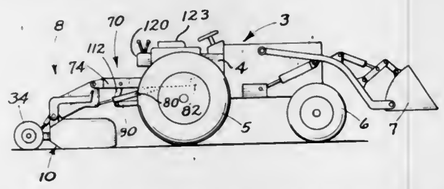


An earth working apparatus which includes a self-powered vehicle having a pair of blade-supporting mounting arms pivotally supported on opposite sides thereof, and extending forwardly from the vehicle. A bulldozer blade is mounted on the forward ends of these arms in front of the vehicle, and has a sliding center ball brace assembly extending transversely across the rear side of the blade from one end thereof to the other, and spaced upwardly from the lower edge of the blade. A plurality of scarifier teeth are pivotally mounted in brackets secured along the backside of the blade below the ball brace assembly, and adjacent the lower side of the blade.

3,776,318
EARTH WORKING MACHINE INCLUDING SCRAPER BLADE MEANS

Jack D. Layton, Salem, Oreg., assignor to Layton Manufacturing Company, Salem, Oreg.

Filed Mar. 22, 1972, Ser. No. 237,187
Int. Cl. E02f 3/12
U.S. Cl. 172—777 13 Claims

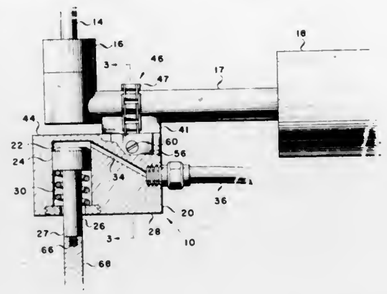


An earth working machine for towing at the rear of a tractor having an elongated scraper blade means extending transversely of the machine. Ground-traveling wheels are provided to the rear of the blade means, with hydraulically operated rams in the mounting for the wheels enabling adjustment of their elevation with respect to the blade means. The blade means has an internal pivot enabling extremities to be tilted to different relative adjusted positions about a horizontal axis extending from the front to the rear of the machine. Blade extensions are extendible from opposite ends of the blade means and the support wheels may also be shifted laterally outwardly. Different movements in the machine are remotely controlled by the operator of the tractor. The machine, through draft arm structures, is towed by the tractor, such structures connecting with the tractor frame in advance of the rear tractor wheels. A connection with the hydraulic lift arms of the tractor enables the machine to be raised from the ground.

3,776,319
IMPROVEMENT IN AN ACCESSORY FOR A RIGHT-ANGLE DRILL TOOL

Alfred G. Richter, Jr., Granada Hills, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 19, 1972, Ser. No. 219,043
Int. Cl. E21c 5/11; B23b 45/14, 41/00
U.S. Cl. 173—36 3 Claims

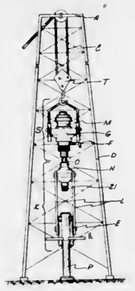


A portable accessory for mounting on a right-angle motorized drill tool whereby steady force to the tool's drill bit is supplied by means of reaction of its plunger, actuated pneumatically or hydraulically, against fixed bracing structure. The plunger is mounted on a reciprocable piston in the chamber of its cylinder or casing which is secured in a cooperative manner to a station along the length of the drill tool, preferably directly behind and in line with the axis of the drill bit. The cylinder is connected to a source of fluid power, say, by way of a three-way valve connected to an adapter fitted to the tool motor's ingress port, the portable ram thus being operated by the same source. An adjustable link chain mounted to the cylinder secures the device to the station on the drill tool. Upon operation of the drill tool, regulated pressure is fed to the ram through incorporation of the three-way valve in the circuit to the cylinder's chamber thereby actuating or reciprocating the plunger in a direction opposite to the line of drilling by the drill bit. The fixed bracing structure is engaged by the plunger's exposed free end, or extension thereto, causing a force reaction in the direction of the drill bit. This accessory provides stability to the tool in a drilling operation, accuracy of position, and ease in drilling a hole, particularly in a hard metal, examples of which are titanium and Inconel 714.

3,776,320
ROTATING DRIVE ASSEMBLY

Cicero C. Brown, 8490 Katy Freeway, Houston, Tex.

Continuation-in-part of Ser. No. 130,597, April 2, 1971. This application Dec. 23, 1971, Ser. No. 211,463
Int. Cl. E21b 19/07
U.S. Cl. 173—163 29 Claims

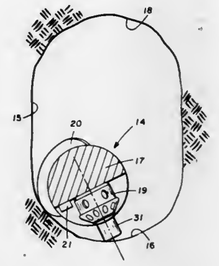


A rotating drive assembly which may be supported on a vertically movable traveling block suspended in a well derrick. The drive assembly may comprise an elevator assembly adapted for non-threaded engagement with a tubular member, for handling and transmitting torque thereto, and a power source connected to the elevator assembly for rotation thereof. The elevator assembly may comprise a tubular housing having a longitudinal section removed therefrom to provide a side opening whereby the tubular member may be laterally placed in the housing for substantially coaxial alignment therewith. A set of arcuate shoes having teeth thereon may be mounted in the housing. The shoes and housing may be provided with cooperable cam devices for camming the shoe teeth into tight gripping engagement with the tubular member upon rotation of the housing in either direction relative to the tubular member. The rotating drive assembly may also comprise a threaded drive member between the elevator assembly and power source for threaded engagement with threads on one end of tubular members to be driven by said rotating drive assembly.

3,776,321
TURNING SLIDE FOR OPEN HOLE OPERATION

Piero Wolk, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 17, 1972, Ser. No. 298,225
Int. Cl. E21b 49/04
U.S. Cl. 175—4 6 Claims

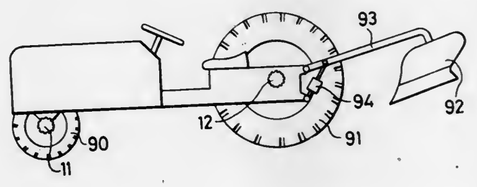


A turning slide is positioned on the body of a sidewall sampling apparatus to allow the sidewall sampling apparatus to be properly positioned in a borehole for the taking of a sample. The sidewall sampler with turning slide may be effectively used in deviated boreholes.

3,776,322
ELECTRONIC SLIP CONTROL

Wolfgang Misch, Stuttgart; Helmut Domann, and Karl-Heinz Adler, both of Leonberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed May 6, 1971, Ser. No. 140,690
Claims priority, application Germany, May 13, 1970, P 20 23 346.9
Int. Cl. A01b 41/06
U.S. Cl. 172—2 9 Claims



The outputs of two r.p.m. signal generators connected respectively to the driven and the undriven axles are fed to

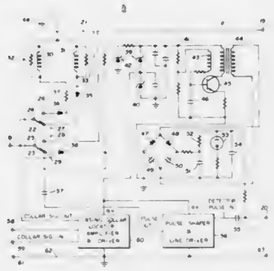
respective pulse shapers, the outputs of which are conducted to an analog divider that provides an output indicative of the slip between the two axles. This output operates a hydraulic control for raising and lowering the plow.

3,776,323

SYSTEM FOR OPERATING AN ELECTRICAL DEVICE AND A SELECTIVELY FIRED PERFORATOR UTILIZING A COMMON TRANSMISSION CHANNEL

William H. Spidell, and Billy F. Wilson, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 11, 1972, Ser. No. 252,442
Int. Cl. E21b *43/119*
U.S. Cl. 175—4.51 **8 Claims**



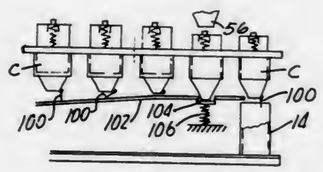
An electrically operated device in a subsurface well instrument and selectively fired perforating guns in the subsurface well instrument are operated using a single conductor cable. A switching means incuding a double pole, double throw latching relay allows the single conductor cable to be electrically connected to either the electrically operated device or the selectively fired perforator. Upon command from the surface, the switching means will couple the appropriate subsurface unit to the surface electronics and the subsurface unit may be actuated to perform the desired operation in the well.

3,776,324

AUTOMATIC LOADER FOR CARTONS

Andrew W. Bruestle, 5812 N. 6th St., Philadelphia, Pa.

Filed Nov. 16, 1972, Ser. No. 307,169
Int. Cl. G01g *13/02, 13/24, 13/16*
U.S. Cl. 177—116 **3 Claims**



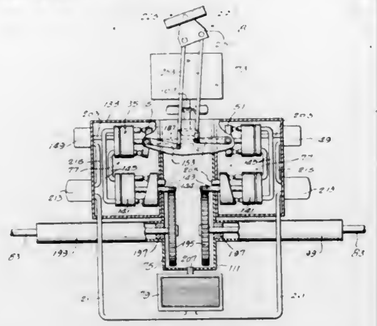
A machine provided with means for automatically feeding bulk commodities to a delivery spout, means for automatically weighing the material delivered at said spout and means for automatically loading the desired weight of material into cartons.

3,776,325

ALL-TERRAIN VEHICLE

Herbert A. Jespersen, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 857,494, Sept. 12, 1969, abandoned. This application Nov. 27, 1970, Ser. No. 93,471
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **7 Claims**



Disclosed herein is an all-terrain vehicle including a body, a power generating and transmission group, and a track suspension group, each of which can be separately initially fabricated and subsequently assembled. After assembly of the power generating and transmission group and the track suspension group to the body, a motor hood, drive sprocket, and tracks may additionally be assembled to complete the vehicle.

Also disclosed herein is a track suspension system affording both transverse and lateral resiliently flexible support to an endless track and a releasably locked and pivotally mounted rear bogie wheel assembly which, when pivoted from its normal operating position, affords assembly of or removal of the endless track relative to the sprocket and bogie wheels.

Also disclosed herein is a track sprocket affording maximum open area for the escape of mud, snow, ice and the like.

Also disclosed herein is a hydrostatic transmission including a control having a reverse lock-out preventing accidental movement of the control into position effecting reverse operation.

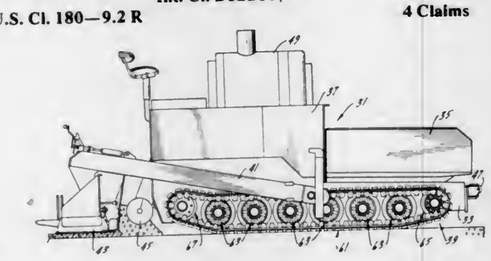
Still further, there is disclosed herein a hydraulic oil circulating system which utilizes the gear box as a sump for the circulating system and which is in heat exchanging relation with an air circulating system.

3,776,326

PAVING MACHINE

Donald R. Davin, Shelbyville, and Gary H. Beckley, Mattoon, both of Ill., assignors to Blaw Knox Construction Equipment, Inc., Mattoon, Ill.

Division of Ser. No. 889,542, Dec. 31, 1969, Pat. No. 3,700,288. This application June 28, 1972, Ser. No. 267,229
Int. Cl. B62d *55/00*
U.S. Cl. 180—9.2 R **4 Claims**



An asphalt paving machine mounted on rubber tread tracks. Each track is equally tensioned hydraulically. Each track is

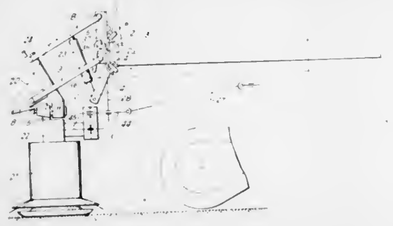
made of shoes which are individually connected to band sections. Replaceable rubber inserts are fastened to each shoe. Replaceable retainers connected to each shoe engage bogie wheels which are attached to bogie carriages pivotally mounted on a torsionally flexible machine frame. A drive sprocket for each track is directly driven by a separate hydrostatic transmission with the sprocket supporting the track shoes and bands to maintain a constant pitch diameter for the track. The gear train between the hydrostatic motor and the sprocket is completely enclosed. A manual automatic engine speed control system is provided which automatically brings the paving machine engine to idle speed when the paving machine is stopped and brings the engine to its governed speed whenever the paving machine is moved. A closed center hydraulic system supplies fluid to operate power actuators.

3,776,327

POWER-TAKEOFF ASSEMBLY FOR CONNECTING FARM IMPLEMENTS TO A VEHICLE

Emil Klopfer, Engen; Martin Stelzle, Gottmadingen, and Edwin Schneble, Gailingen, all of Germany, assignors to Maschinenfabrik Fahr AG, Gottmadingen, Germany

Division of Ser. No. 821,707, May 5, 1969, Pat. No. 3,612,574. This application Oct. 28, 1970, Ser. No. 84,873
Claims priority, application Germany, May 14, 1968, P 17 57 480
Int. Cl. B62d *59/02*
U.S. Cl. 180—14 B **1 Claim**



A self-propelled farm vehicle, e.g., a crop-pickup loader or wagon, is fitted with a horizontal profiled bumper of noncircular cross section along which an implement hitch or support can ride. This support is provided with a hydraulic cylinder which operates a parallelogrammatic linkage connected to a generally upright member which can be lifted or lowered relative to the bumper or crossbar. A generally cylindrical coupling bolt having a narrow end is mounted on this vertical member and is adapted to engage in a confronting hole on a farm implement. A locking pawl catching in a groove on the bolt holds the implement in place while allowing it to swing from side to side to a limited extent. A power-takeoff shaft is journaled in a plate pivoted about a horizontal axis on the bumper and is coupled with a pivotal chain transmission on the implement.

ERRATA

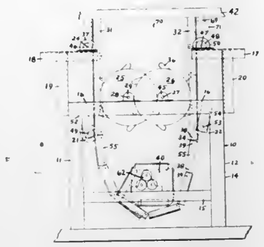
For Classes 180—27 thru 184—15 see:
Patents Nos. 3,776,353 thru 3,776,369

3,776,328

ELEVATING MECHANISM

Karol T. Dyczynski, 109 E. 29th St., Erie, Pa.

Filed May 23, 1972, Ser. No. 255,991
Int. Cl. B66b *11/04*
U.S. Cl. 187—17 **10 Claims**



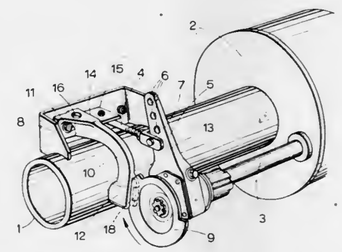
An elevating mechanism made up of a frame. A collecting device is rotatably supported at the lower part of the frame and three chains made up of links are wound around the collector in spaced relation to each other. The center chain is wound in the opposite direction from the other chains and the links are swingably connected together and fixed to move in a definite path. All three chains are connected at their distal ends to the bottom of a platform so that when the chains are unrolled from the collector, they push the platform up in a manner of an elevating mechanism. All three chains are connected at their proximal end to the platelike member of a collecting device.

3,776,329

BRAKE WEAR AND ADJUSTMENT DEVICE

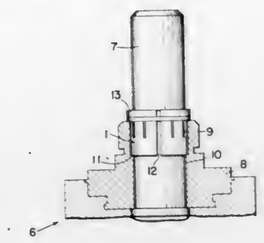
Frederick John Charles Hope, Chobham, Woking, and James Malcolm Pigney, Bracknell, both of England, assignors to Self Energizing Disc Brakes Limited, Datchet, Buckinghamshire, England

Filed Feb. 15, 1972, Ser. No. 226,427
Claims priority, application France, Feb. 19, 1971, 7109697
Int. Cl. F16d *66/02*
U.S. Cl. 188—1 A **9 Claims**



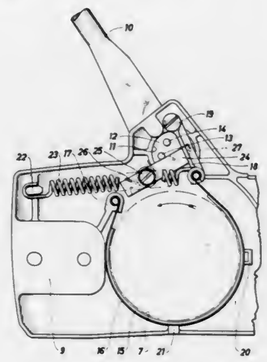
A device for indicating the condition of the brakes of a vehicle is provided which enables the driver to determine whether the brakes are properly adjusted and brake linings are badly worn. The device includes an electrical switch located remotely from the brake lining and which is arranged to be automatically operated to energize an indicator when the lining has worn to a predetermined extent and a second electrical switch which is arranged to be automatically operated when brake adjustment is required. Each of the switches is activatable by variation of a magnetic field.

3,776,330
BRAKING DEVICE FOR ADJUSTMENT APPARATUS
Rudi Theodoor De Jongh, Munich, and Helmut Oskar Stickdorn, Hohenkirchen, both of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed June 15, 1972, Ser. No. 263,236
Claims priority, application Germany, June 25, 1971, P 21 31 654.1
Int. Cl. B65h 59/10
U.S. Cl. 188—67 5 Claims



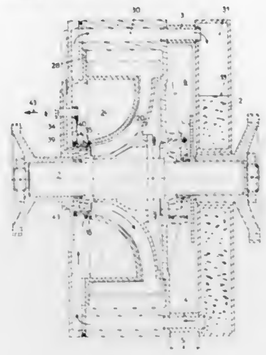
A braking device for use with adjustment apparatus such as a potentiometer having a movable shaft partially encompassed by a housing member. A braking element is concentrically positioned around the periphery of the shaft between the shaft and the encompassing surface of the housing member. A portion of the braking element has spaced-apart slits extending from an edge of the element across part of the width of the element. These slits form radially resilient segments frictionally engaged with both the periphery of the shaft and the encompassing surface of the housing member.

3,776,331
BRAKE-DEVICE FOR POWER SAWS
Lennart Gustafsson, Goteborg, Sweden, assignor to Aktiebolaget Partner, Fack, Sweden
Filed Apr. 11, 1972, Ser. No. 242,978
Claims priority, application Sweden, Apr. 13, 1971, 4771/71
Int. Cl. B60t 13/04
U.S. Cl. 188—166 6 Claims



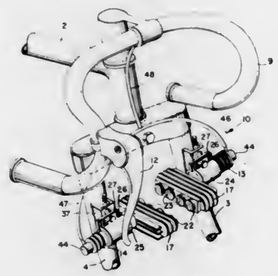
A brake device for power saws having a supporting handle and a driving mechanism drum with a trigger means operable by an operator's hand moving from said handle and striking a pivotal yoke adjacent said handle when the saw is inadvertently flung to one side during use, which yoke releases a pawl means normally retaining braking means around the drum in a non-braking position to allow resilient means to move the braking means to a drum braking position.

3,776,332
HYDRAULIC SPEED CHECKER AND COOLING MEANS
Jean D'Assignies, Chateau des Astiers, Saint Heand (Lorie), France
Filed Sept. 30, 1971, Ser. No. 185,007
Int. Cl. F16d 57/02
U.S. Cl. 188—290 4 Claims



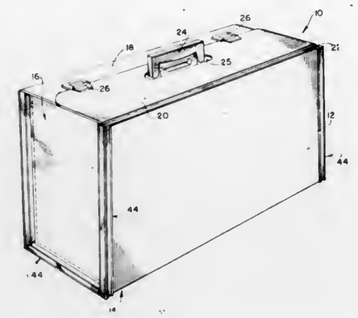
A hydraulic turbo speed checker for use for example on a drive shaft of a road vehicle, comprising a bladed rotor rotatable within a bladed stator carried within a sealed casing connected to an adjacent sealed radiator unit. The radiator unit has an aperture therethrough to accommodate a shaft on which the rotor is mounted, said shaft projecting on either side of the checker for attachment to the drive shaft. The spaces between the blades of the stator lead to a manifold connected to the top of the radiator above the level of oil therein whilst the bottom of the radiator is connected to a central section adjacent the rotor shaft and upstream of the stator.

3,776,333
BICYCLE BRAKE ARRANGEMENT
William R. Mathauser, P.O. Box 5, Sun Valley, Idaho
Continuation-in-part of Ser. No. 179,016, Sept. 9, 1971. This application Apr. 13, 1972, Ser. No. 243,587
Int. Cl. B60z 11/24
U.S. Cl. 188—344 26 Claims



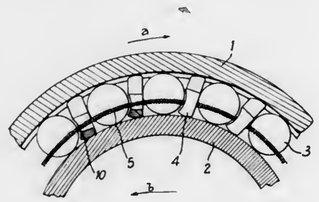
A bicycle brake arrangement in which each of the front and rear wheel forks adjustably carry a pair of hydraulic slave cylinder-piston units, one unit of each pair being on an opposite side of a wheel rim with each unit having brake shoe means associated therewith for movement toward and away from a wheel rim, there being an independent fluid transmission line from each of two hydraulic master cylinder-piston units to the respective pairs of front and rear wheel associated slave cylinder-piston units and a hand operated control means for pressurizing both master cylinder-piston units to actuate the brakes.

3,776,334
CARRYING CASE WITH A TRIMMING AND REINFORCEMENT FRAME ON THE ENDS OF CASE
Mandel A. Doppelt, 7218 Kedvale Ave., Lincolnwood, Ill.
Filed May 11, 1972, Ser. No. 252,266
Int. Cl. B23p 17/00
U.S. Cl. 190—41 R 2 Claims



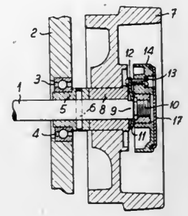
A carrying case including a pair of spaced side walls, a bottom, and spaced end walls wherein the end walls are provided with side and bottom flanges extending generally perpendicular to the plane of the end walls which are secured adjacent the outer edges of the side walls and bottom wall of the case, and wherein a frame or edge molding member, generally U-shape in plan and generally U-shape in transverse section is secured to the flanges and to the edges of the case to form a frame which covers the end edges thereof to provide a decorative as well as protective edging for said case and to provide a reinforcement for strengthening the case.

3,776,335
INTEGRATED FREEWHEEL MECHANISMS
Raymond Cadet, Annecy (Haute Savoie), France, assignor to Societe Nouvelle deRoulements, Annecy, France
Filed Jan. 3, 1972, Ser. No. 214,652
Claims priority, application France, Jan. 14, 1971, 7101122
Int. Cl. F16d 11/06
U.S. Cl. 192—41 5 Claims



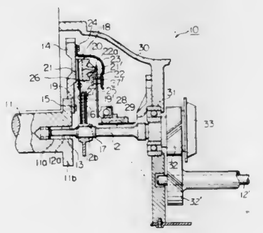
An integrated freewheel mechanism characterized in that it comprises between an outer race and an inner race a plurality of rolling elements and a plurality of wedging cams having their front and back surfaces consist at least partially of parallel planes, the surfaces of said cams which engage said inner and outer races being at least partially cylindrical, said cams being each disposed between two adjacent rolling elements and urged for engagement with said inner race through resilient means.

3,776,336
SCREW OPERATOR FOR CLUTCH WITH ADJUSTABLE STOP
Marcel Fresard, Petit-Lancy, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Apr. 6, 1972, Ser. No. 241,753
Claims priority, application Switzerland, Apr. 20, 1971, 5715/71
Int. Cl. F16d 19/00
U.S. Cl. 192—95 6 Claims



A shaft has at one end, a threaded portion, a cylindrical portion and a drive bush fixed thereto. The fly-wheel is mounted to rotate on the cylindrical portion of the shaft, a clamping block being screwed on the threaded portion to clamp the fly-wheel against the drive bush to lock it in rotation on the shaft. The possible angle of rotation of the block on the shaft is limited by a screw threaded in any one of at least two bores of the block to come into cooperation with a stop finger fast in rotation to the shaft and extending radially with respect to the latter. The bores are parallel to the axis of the shaft. The screw can be positioned in that one of the bores which provides the most favourable angle of rotation of the block between the coupling position of the fly-wheel and its uncoupled position.

3,776,337
DRY-DISC FRICTION CLUTCH
Katuyuki Yoshizawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan
Filed Dec. 27, 1971, Ser. No. 212,185
Claims priority, application Japan, June 22, 1971, 46/53758
Int. Cl. F16d 13/44, 13/58
U.S. Cl. 192—110 B 10 Claims

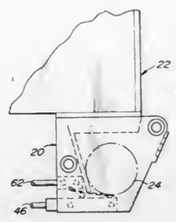


In order to prevent retarded or incomplete disengagement of the clutch disc from the engine flywheel due to deteriorated sliding engagement between the transmission input shaft and the clutch hub splined thereto and due to the axial thrust imparted to the transmission input shaft as a result of the rotation of the left-hand helical main drive gear on the input shaft, the clutch is provided with pressure means which is adapted to urge the transmission input shaft away from the engine crankshaft thereby to overcome or cancel such axial thrust on the transmission input shaft.

3,776,338
CREDIT PULSE GENERATING SYSTEM FOR VENDING MACHINES

Kurt Theodore Johnson, Palatine, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed Feb. 3, 1972, Ser. No. 223,147
Int. Cl. G07f 5/10
U.S. Cl. 194—9 R **13 Claims**

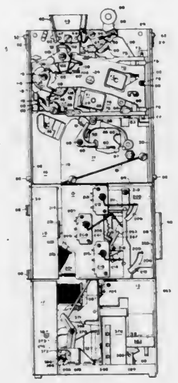


A system is provided in which the momentum of a moving credit indicator, such as a coin or token, is directed against a mechanically deformable converter, such as a piezoelectric crystal, to produce a signal pulse utilized in determining credit to be granted a vending machine customer. A separate compartment with an associated piezoelectric crystal is provided for each type of credit indicator deposited in the vending machine. The individual components of the system in each compartment are easily assembled and at least a number thereof are maintained in position without soldering or other fastening procedures until the compartments are assembled into a composite unit.

3,776,339
CONTROL APPARATUS FOR DUAL PRICE VENDING MACHINE

Raymond D. Bowman, Ringgold, Ga., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed July 21, 1972, Ser. No. 273,961
Int. Cl. G07f 5/16
U.S. Cl. 194—10 **29 Claims**

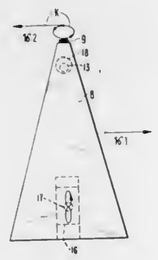


A dual price coin changer and vend control circuit for an article vending machine establishes credit at one of two prices. The prices may be preset with a price spread of up to 30 and a payout motor energized upon vend selection effects payout of correct change. A split pricing cam is indexed in accordance with the value of coins deposited in the vending machine. Microswitches positioned to be actuated in accordance with the position of the split cam control energization of price relays of the vend control circuit to enable low or high price vend selection of selected articles from a multiplicity of columns, in accordance with the value of coins deposited in the vending machine.

3,776,340
RECORDING INSTRUMENT WITH MOSAIC PRINTING HEAD

Erich Moser, Deisenhofen, Germany, assignor to Firma RENA Buromaschinenfabrik GmbH & Co., Dusenhofen near Munich, Germany

Filed Apr. 20, 1971, Ser. No. 135,566
Claims priority, application Germany, Apr. 24, 1970, P 20 20 127.8
Int. Cl. B41j 3/02
U.S. Cl. 197—1 R **8 Claims**

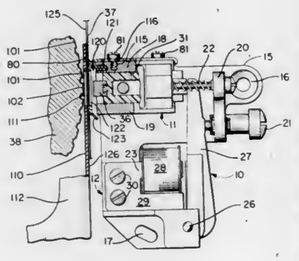


A mosaic printing head for a line-dot printing system. The printing head carrying a plurality of driveable printing rods is caused to move bodily through an orbit which is so related to relative translative movement between the printing head and printing medium that at the moment of printing impact such relative movement is made zero. Thus clear punching of the printing medium is possible and same is accomplished without damage thereto.

3,776,341
PRINTER PAPER GUIDE WHICH COMPENSATES FOR THE THICKNESS OF DOCUMENT PACK

Richard G. Dobner, Webster, and Donald G. Hebert, Pittsford, both of N.Y., assignors to The Singer Company, New York, N.Y.

Continuation of Ser. No. 142,702, May 12, 1971, abandoned. This application Mar. 7, 1973, Ser. No. 338,776
Int. Cl. B41j 13/00
U.S. Cl. 197—127 R **1 Claim**

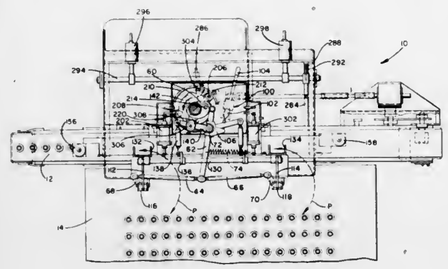


An improved document support system for use in a character by character printer of the type that employs a rear striking hammer to drive the document, at the printing position, into contact with a selected symbol on a rotating type font. Typically, the type font would be on the surface of a constantly rotating wheel. In application, a front paper guide is provided which limits and defines the normal spacing between the document and the type font in the area of the printing position; the said spacing normally being quite small. A rear paper guide is supported by the hammer structure and is spring biased towards the front paper guide. Both paper guides include cutouts or openings so that the printing hammer can drive the document towards the selected character of the font to effect a printing action. The paper guides cooperate to maintain the document in a fixed location, relative to the type font, and serve to compress the document pack which may comprise an original document, carbons, and multiple copies, so that there are no separations, or air pockets, therebetween at the printing position. The paper guides enable the production of a more uniform appearing print of improved quality. Supporting and holding the document in a known position allows a constant portion of the kinetic energy of the print hammer to be available for affecting a print action, thus increasing the quality of the print.

3,776,342
APPARATUS FOR TRANSFERRING ARTICLES BETWEEN MOVING CONVEYORS

Constantine W. Kulig, Windsor, and Alexander H. Rydlewicz, Manchester, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Jan. 27, 1972, Ser. No. 221,176
Int. Cl. B65g 47/00
U.S. Cl. 198—20 R **6 Claims**

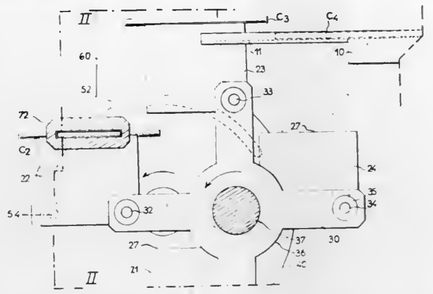


An apparatus for transferring articles between two moving and perpendicularly oriented conveyors employs a parallel-crank, four-bar linkage suspended from a structural frame to support an article clamping mechanism. The motions of the orbital link and the clamping mechanism are synchronized with and in the same direction as the motions of the articles on the conveyors at pick-up and discharge positions on the conveyors. A cam drive mechanism is utilized to modulate the orbital speeds of the link in systems in which the two conveyors operate at different speeds. An elevating mechanism is also driven in synchronism with the four-bar linkage to raise and lower the linkage and the clamping mechanism at the pick-up and discharge positions. The clamping mechanism incorporates rotatable shafts to open and close a plurality of resilient fingers which engage the articles with a controlled degree of pressure. A cam and cam follower operated by the four-bar linkage adjust the amounts by which the resilient fingers open and close at both the pick-up and the discharge positions.

3,776,343
TRANSFER DEVICE FOR CIGARETTES AND SIMILAR OBJECTS

Jean-Claude Gouy, Chaville, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Feb. 9, 1972, Ser. No. 224,683
Claims priority, application France, Feb. 11, 1971, 7104614
Int. Cl. B65g 15/30
U.S. Cl. 198—20 C **3 Claims**

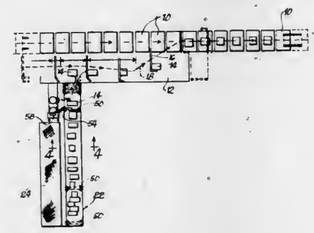


Transfer device for cigarettes or similar objects fed as a continuous stream along a rectilinear feeding path having a given set direction and designed to transfer them in succession to a receiving means at a receiving point at which said receiving means has a velocity in a direction substantially perpendicular to said feeding path, comprising prehensory members for objects on their feeding path, means for driving said prehensory members on a closed path meeting said feeding path and passing through said receiving point and imparting to said members at the meeting point with said feeding path, a velocity having a direction different from that of said path but having a component on that path at least equal to the velocity of said objects on their feeding path.

3,776,344
ARTICLE INDUCTION SYSTEM

John Harrison, Lincolnwood, Ill., assignor to The Spra-Con Company, Chicago, Ill.

Filed Mar. 10, 1972, Ser. No. 233,596
Int. Cl. B65g 47/00
U.S. Cl. 198—20 **14 Claims**



A system for handling articles which are to be moved from a supporting surface to a receiving area comprising an article engaging paddle and associated drive means. The drive means comprise a conveyor for moving the paddle over the supporting surface with the paddle in article engaging position. The conveyor automatically locates the paddle out of article engaging position upon return movement of the paddle, and then brings the paddle into position for engaging a succeeding article on the supporting surface. The paddle is preferably

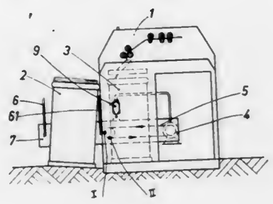
pivotally connected relative to the conveyor and a cam is positioned for engaging the paddle just prior to its movement into article engaging position. This cam serves to maintain the end of the paddle within relatively small lateral limits whereby the paddle can be inserted into article engaging position without sacrificing space requirements in the construction. The provision of the paddle is particularly useful in systems employing high speed conveyors as the supporting surface since the paddle insures movement of articles along the conveyor even if the conveyor surface should slip beneath an article located thereon.

3,776,345

APPARATUS FOR SHIFTING CONTAINERS

Oswald Dotzauer, Ingolstadt, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Continuation of Ser. No. 742,828, July 5, 1968, abandoned.
This application Apr. 23, 1971, Ser. No. 137,013
Int. Cl. B65g *47/00*
U.S. Cl. 198—24 **3 Claims**



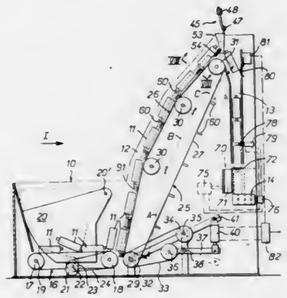
A container is advanced by an arm or forked shifter guided by a reciprocating carriage or a crank driven by a motor. The drive motor is de-energized with the carriage in a position of such that the shifter is backed slightly away from the container. The shifter is then swung upward out of the container path and returned to its starting position. Alternatively a clutch may disengage the motor and crank at dead center and a compression or torsion spring effects backing off of the shifter from the container.

3,776,346

AUTOMATIC BOTTLE HANDLING MACHINES

Louis Gilbert Dubuit, 60 Rue Vitruve, Paris, France

Filed Apr. 26, 1972, Ser. No. 247,626
Claims priority, application France, Apr. 28, 1971, 7115110
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AD **9 Claims**



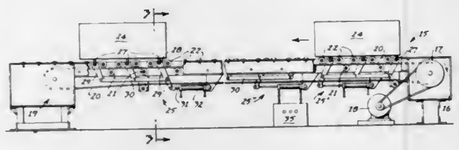
A device for automatic handling and orientation of bottles for delivery to a work station. The device comprises a storage tub into which bottles are dumped, the bottom of the tub having a plurality of conveyors thereon. A corresponding plurality of channels each having a conveyor extending into the tub in the vicinity of a corresponding one of the conveyors therein. A selective reversing device disposed at the downstream end of the each of the channels and including a brush with bristles in the path of movement of the bottles for holding a bottle momentarily if it is in open end first position and for turning it over before entering a corresponding drop chute or if it is in closed end first position, for pushing the brush out of the way and in either case enabling the bottle to fall in closed end first position into its corresponding drop chute. A delivery conveyor disposed at the bottom of the drop chute for carrying bottles upright to a work station. The device further comprises a sensing device disposed at the upper end of each drop chute, a compartmented transfer member having as many compartments as there are corresponding drop chute, the transfer member having a retaining plate extending transversely for blocking bottles from falling to the delivery conveyor in a first position and for allowing them to drop to the delivery conveyor in a second position, and retractable abutments disposed at the height of at least one bottom above the retaining plate for regulating the passage in the drop chutes to the retaining plate.

3,776,347

ACCUMULATING CONVEYOR

Hewlett M. Sawrie, c/o H. M. Sawrie & Co., P.O. Box 4205, Chattanooga, Tenn.

Filed Apr. 12, 1972, Ser. No. 243,189
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **8 Claims**



An accumulating conveyor system including a conveyor element, such as conveyor rollers, for supporting an article for movement, and one or more lifting elements mounted for vertical reciprocal movement between the rollers and through a plane including the bottom surface of the article, and control means for reciprocably moving the lifting elements to raise the article above the rollers for deceleration, stopping, indexing or accumulation of the article, and for lowering the lifting elements below the plane of the bottom surface of the article in a retracted or inoperative position, without interfering with the operation of the conveyor rollers.

3,776,348

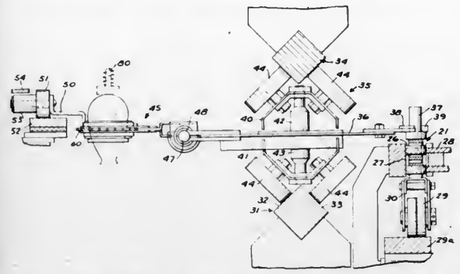
GLASS MAKING MACHINERY

Louis P. Yakubek, and George R. Obenshain, both of Perrysburg, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 22, 1970, Ser. No. 82,987
Int. Cl. B65g *15/00*
U.S. Cl. 198—131 **57 Claims**

A glass making machine and particularly a heat treat machine wherein open-ended hollow glass articles are supported on carriages moved in an endless path by a conveyor. Each carriage pivotally supports a plurality of heads which, in turn, rotatably support the hollow glass articles. The conveyor

moves the carriages and in turn the articles through a plurality of work zones of heat treatment including heating, quenching



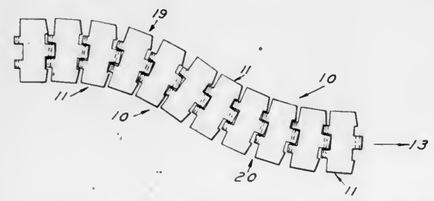
and cooling zones. As the articles are moved through a work zone, the supports on the heads are rotated to rotate the articles.

3,776,349

FABRICATED FLEXIBLE CONVEYOR CHAIN

Richard H. Kampfer, St. Paul, Minn., assignor to Conveyor Specialties Company, St. Paul, Minn.

Filed June 25, 1969, Ser. No. 836,358
Int. Cl. B65g *17/06*
U.S. Cl. 198—195 **1 Claim**



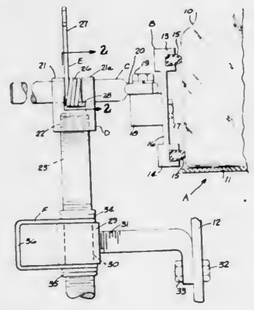
A fabricated flexible conveyor chain is provided from solid construction which can be made from a single piece of metallic material or can be made from separate sheets of material permitting different types of materials to form a completed link units, including the advantage of having negative draft rib members to give guiding and controlling surfaces permitting the chain unit to travel around small diameter curves.

3,776,350

GUIDE RAIL SUPPORT

Joseph Tice, 502 Poinsettia Dr., Simpsonville, S.C.

Filed June 8, 1972, Ser. No. 260,830
Int. Cl. B65g *15/60*
U.S. Cl. 198—204 **5 Claims**



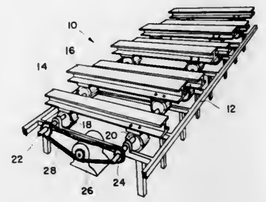
A guide rail for conveyors and the like, which can be readily adjusted with a spring in a horizontal direction to accommodate bottles of various sizes being shifted along on the conveyor. A spring means is also provided for adjusting the vertical position of the guide rail relative to the conveyor.

3,776,351

WALKING BEAM CONVEYOR AND ECCENTRIC CONSTRUCTION THEREFOR

Wick D. Erb, c/o City Machine and Welding Co., 448 Andrews Ave., Youngstown, Ohio

Filed Mar. 26, 1971, Ser. No. 128,376
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **9 Claims**



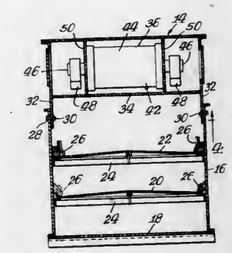
The invention relates to a walking beam conveyor and an improved eccentric construction therefor. The conveyor consists of a series of parallel extending beams each of which are connected to two shafts by eccentrics with alternate ones of the beams being connected in a 180° phase relationship. The eccentric units each consist of upper and lower eccentric housings which are provided with interlocking means and an eccentric keyed to the shaft and received within the housing. Spring retaining rings are employed to retain the eccentric within the housing and to retain the housing sections in aligned relationship. Nylon bearing pads are also provided in the housings and are retained by the snap rings.

3,776,352

SEALED DRIVE FOR VIBRATORY MATERIAL HANDLING DEVICE

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed July 8, 1971, Ser. No. 160,681
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 DB **1 Claim**

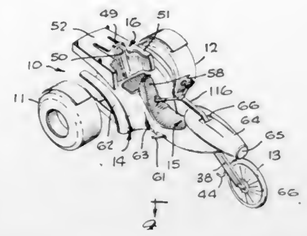


A vibratory material handler including a material handling surface, a mechanism for vibrating the same and a housing sealing the vibrating mechanism from particulate material in the surrounding environment. The housing includes an apertured wall through which the motor shaft may extend and which is held in substantial abutment with the motor casing. The remainder of the housing holds a weighted member eccentrically mounted on the shaft and shields the same from particulate material while the substantial abutment of the wall at the motor casing effects a substantial seal between the two to preclude entry of particulate material into the motor itself.

3,776,353
THREE WHEELED MOTOR VEHICLE

Edward Roth, Box 511, Maywood, Calif.

Filed Apr. 12, 1971, Ser. No. 133,170
Int. Cl. B62d *61/08*
U.S. Cl. 180—27 14 Claims

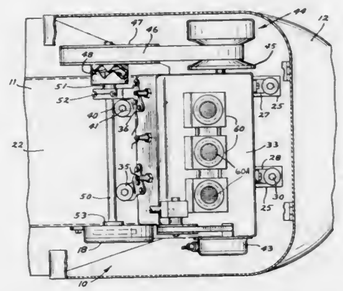


A motor vehicle having two spaced rear wheels and a single centered front wheel mounted for steering movement, with the frame and body of the device having relatively wide rear portions between the two wheels carrying and enclosing a driving motor, and having narrower forwardly projecting portions carrying a driver's seat at a location at which the driver's legs straddle those portions, with the forwardly projecting portion of the frame extending upwardly toward its forward end to connect pivotally to a fork mounting the front wheel. A second seat is desirably located back of and at a lever higher than the driver's seat, with the driver's seat preferably being located lower than, and the second seat preferably being located higher than, the level of the tops of the rims of the rear wheels.

3,776,354
SNOWMOBILE ENGINE AND TORQUE CONVERTER MOUNT

Marley J. Duclo, and Michael E. Baker, both of Brooten, Minn., assignors to Brutanza Engineering, Inc., Brooten, Minn.

Filed Mar. 2, 1972, Ser. No. 230,736
Int. Cl. B60k *5/04*
U.S. Cl. 180—64 R 9 Claims

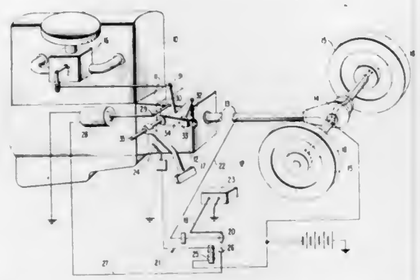


A mounting structure for the engine and torque converter of a snowmobile, which makes the engine and torque converter a separate unit. The engine-torque converter unit is then mounted to the frame of the machine through vibration isolation bushings. The unit mounting eliminates misalignment of the torque converter drive belt. The mounting also reduces fatigue failure of snowmobile chassis because both the drive and driven pulleys are connected to the engine, and the chassis does not have to carry the high belt load as is required when the pulley forming the torque converter is separately mounted from the engine.

3,776,355
INSTALLATION FOR THE PREVENTION OF SLIPPING OF THE DRIVE WHEEL OF MOTOR VEHICLES

Hans O. Scherenberg, Stuttgart-Heumaden, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Mar. 25, 1969, Ser. No. 810,160
Claims priority, application Austria, Mar. 25, 1968, 2931/68
Int. Cl. B60t *8/12*; B60k *31/00*
U.S. Cl. 180—77 R 19 Claims

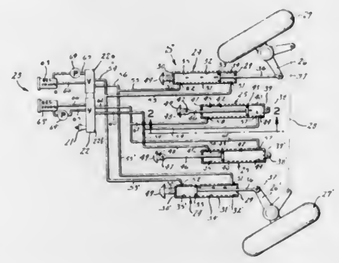


An installation for preventing slippage of the driving wheels of motor vehicles whose driving wheels are driven from the driving engine by way of a transmission, and in which a pulse transmitter responsive to an increase in the rotational acceleration is coordinated to the drive connection between the engine and the driving wheels which is so connected with a correcting member that upon exceeding a predetermined limit of rotational acceleration, the output of the engine is automatically reduced.

3,776,356
EQUAL FLOW DUAL STEERING SYSTEM

Jimmie J. France, Roanoke, Ill., assignor to Westinghouse Air Brake Company, Peoria, Ill.

Filed Mar. 9, 1972, Ser. No. 233,182
Int. Cl. B62d *5/10*
U.S. Cl. 180—79.2 R 6 Claims

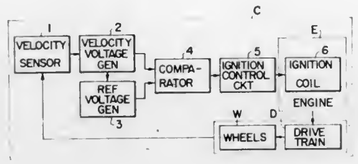


An equal-flow power steering system for a vehicle incorporating: a work performing element located on opposite sides of the vehicle and having a reciprocal member operatively connected to the adjacent front wheels; a valve interposed between a source of fluid and each work performing element and being operatively connected to the vehicle steering wheel for effecting selective distribution of fluid to each work performing element; and a structural element associated with each work performing element to assure equal displacement of fluid from said source of fluid.

3,776,357
ANTI-SKID CONTROL SYSTEM

Hiroshi Arai, and Jun Ohta, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed July 16, 1971, Ser. No. 163,349
Claims priority, application Japan, Feb. 23, 1971, 46/8414
Int. Cl. B60k *31/00*
U.S. Cl. 180—82 R 42 Claims

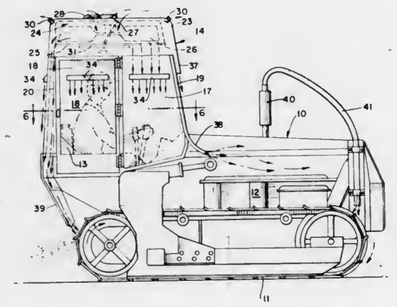


In the anti-skid system disclosed, a vehicle's wheel is protected from skidding in response to rapid acceleration, by comparing the wheel velocity with a reference signal that follows the wheel velocity but only within a predetermined maximum rate of velocity rise, and by then attenuating the wheel's drive to slow its acceleration. According to one embodiment of the invention a wheel velocity voltage generator generates a wheel velocity signal. An operational amplifier responding to the wheel velocity signal and an integrating circuit establish the reference signal that can rise up to a predetermined rate. A comparator derives an output signal when the rise rate in the wheel velocity signal exceeds the maximum rise rate of the reference signal. The output signal releases a free-running multivibrator that periodically interrupts power to the ignition system so the latter attenuates the wheel acceleration.

3,776,358
CAB FOR AGRICULTURAL TRACTORS AND THE LIKE

Cyril G. Williams, Box 246, Plains, Mont.

Filed Apr. 12, 1972, Ser. No. 243,186
Int. Cl. B62d *25/16*; B60j *9/04*
U.S. Cl. 180—84 12 Claims

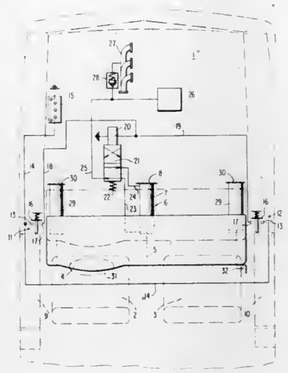


A cab for the suppression and control of dust protects the operator while furnishing adequate ventilation and cooling and assures good visibility by directing continuous streams of air over the exterior faces of all windows. The cab features hollow walls at the sides and rear and an overhead fan compartment with ventilation controls. The fan may be driven from the tractor hydraulic system.

3,776,359
INSTRUMENT PANEL FOR VEHICLES

Werner Breitschwerdt, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 17, 1972, Ser. No. 281,279
Claims priority, application Germany, Aug. 17, 1971, P 21 41 148.3
Int. Cl. B60k *37/00*; B60r *21/02*
U.S. Cl. 180—90 34 Claims

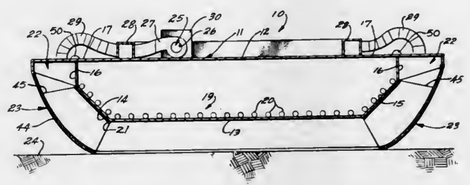


An instrument panel for motor vehicles, especially with a negative profile formed approximately in accordance with the contours of a person seated facing the same, which is automatically displaceably arranged in the vehicle longitudinal direction in such a manner that with the opening of a front door, the instrument panel is displaced into a forward position remote from the driver and/or co-driver, and with the closing of the front doors is displaced into a rearward position close to the driver and co-driver; at least one damping member is provided which is supported, on the one hand, at the instrument panel and, on the other at a relatively fixed vehicle part and which is preferably constructed in the manner of a shock absorber.

3,776,360
AIR CUSHION VEHICLE WITH RETRACTABLE SKIRT ASSEMBLY

Edward O. Anders, Houston, and Lloyd G. Nichols, Missouri City, both of Tex., assignors to Global Marine Inc., Los Angeles, Calif.

Filed July 7, 1972, Ser. No. 269,858
Int. Cl. B60r *1/16*
U.S. Cl. 180—127 20 Claims

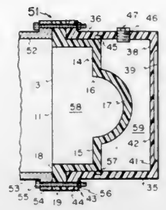


An air cushion vehicle has a body in which a peripheral skirt assembly is retractable from an operative position, in which the skirt assembly surrounds a space below the bottom of the body, to a retracted position in which the body side surfaces are exposed substantially to the body gunwale. The skirt assembly is provided as a plurality of skirt sections. The skirt assembly is arranged so that the hover height of the vehicle may be increased by movement of the skirt sections through the initial portion of their movement from their deployed positions to their retracted positions.

3,776,361
ACOUSTIC LENS

Albert L. Rolle, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 6, 1972, Ser. No. 241,602
Int. Cl. G01v 1/16
U.S. Cl. 181—.5 A 15 Claims

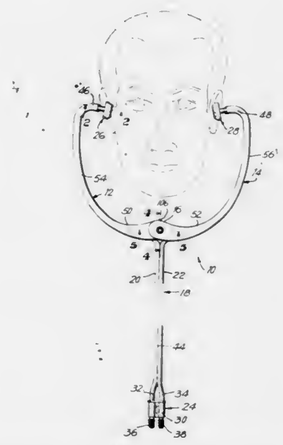


An acoustical lens doublet of the type particularly useful for focusing sonic energy on the energy converter array of an electroacoustical transducer having image resolution powers that are substantially unaffected by varying temperatures and pressures ambient thereto is disclosed. Included therein is a rearward shell containing a low density polyethylene acoustically clear forward wall-hemispherical lens combination. A forward shell is telescopically mounted on the front end of said rearward shell, with the forward end of said forward shell having a thin low density polyethylene acoustically clear window located therein. An interface fluid, preferably consisting of a predetermined quantity of m-chloroanoline ($ClC_6H_4NH_2$), is located under a predetermined pressure within a chamber effected between the forward ends of said rearward and forward shells, as a result of the telescopic relationship thereof.

3,776,362
STETHOSCOPE HEADSET

Arthur A. Rice, 199 Robby Ln., New Hyde Park, N.Y.

Filed May 26, 1972, Ser. No. 257,168
Int. Cl. A61b 7/02
U.S. Cl. 181—24 4 Claims

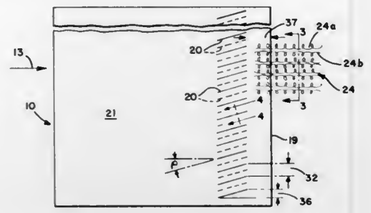


Stethoscope-type headset for conducting sound from a remote location to a user's ears which is adjustable to fit widely varying individuals while being yet comfortable to all such individuals and secure during all normal head movement.

3,776,363
CONTROL OF NOISE AND INSTABILITIES IN JET ENGINES, COMPRESSORS, TURBINES, HEAT EXCHANGERS AND THE LIKE

Arnold M. Kuethe, 490 Barton North Dr., Ann Arbor, Mich.

Filed May 10, 1971, Ser.No.141,617
Int.Cl.F01d5/16; B64c 23/06
U.S. Cl. 181—33 C 12 Claims

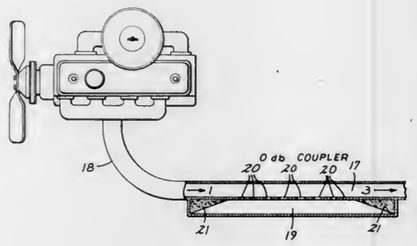


Intrinsic sound, noise and instabilities directly or indirectly due to the shedding of cross-stream vortices caused when air or fluid moves over the trailing edge of a plate, blade, vane or the like are reduced by the formation of relatively steady-state streamwise vortices upstream of the terminal edge. The invention is applied to turbine and compressor blades, jet tube inlets and exits, heat-exchanger tubes and the like by placing or forming streamwise vortex-inducing generators within the boundary layer on the shedding item so that the induced streamwise vortices trail off of the trailing edge and suppress the formation of cross-stream disturbances. Through this process, noise disturbances which would otherwise amplify to high sound intensitites and/or large flow disturbances, high structural stresses and loss of efficiency through passage over successive shedding items are suppressed in their early stages of development.

3,776,364
NOISE REDUCTION APPARATUS AND METHOD

Richard E. Van Doeren, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 28, 1972, Ser. No. 248,676
Int. Cl. F01n 1/00
U.S. Cl. 181—48 19 Claims



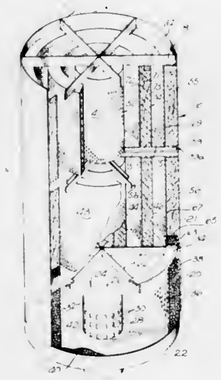
Apparatus for separating acoustic energy from a moving fluid is shown. The apparatus includes a directional acoustic coupler comprising first and second side-by-side conduits having coupling elements in a common wall thereof. The first conduit carries the fluid and acoustic energy. The coupling elements couple a pre-selected portion of the energy from the first conduit into the second conduit without disturbing the flow of fluid. In one embodiment, the second conduit is provided with sound absorbing material. In another embodiment,

a pair of symmetrical acoustic couplers are used as phase shifters in a noise cancellation circuit. In yet another embodiment, a single coupler is designed to reflect the acoustic energy back toward the source without restricting the flow of fluid. This invention has particular utility in the field of exhaust silencing.

3,776,365
FLUID BLOW-OFF SILENCER

John F. Richards, Santa Paula, Calif., assignor to Fluid Kinetics Corporation, Ventura, Calif.

Filed Jan. 14, 1972, Ser. No. 217,857
Int. Cl. F01n 1/10
U.S. Cl. 181—50 5 Claims

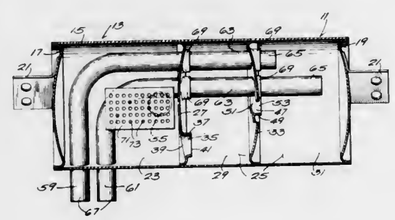


A generally-cylindrical blow-off silencer is disclosed to be used, for example, on a vent, as from a high-pressure fluid system. A diffuser unit receives fluid from the vent and divides it into a multiplicity of separate streams which are directed radially to impinge upon a housing that is lined with acoustic material, at least a portion of which material is provided to dampen the housing. Scoria (light-weight, permeable, porous mineral) is disclosed as a liner pack, to dampen, seal and absorb sound-energy, in combination with glass-fiber material, which also is employed in an acoustic-core structure.

3,776,366
EXHAUST MUFFLER

E. Douglas Betts, Gurnee, Ill.; Donald R. Hanson, Greendale, and Donald K. Stephenson, Sussex, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed July 24, 1972, Ser. No. 274,445
Int. Cl. F01n 1/08
U.S. Cl. 181—57 12 Claims

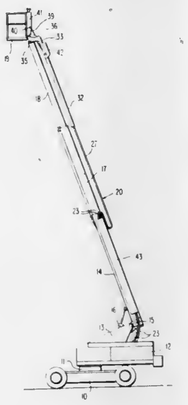


Disclosed herein is a muffler comprising an elongated housing including a generally cylindrical side wall and, at each end thereof, an inwardly concavely dished end wall, and a dished partition dividing the housing into an inlet chamber and an outlet chamber and extending convexly with respect to the inlet chamber, together with a beveled port which is located in the partition, which extends from the inlet chamber into the outlet chamber and which includes a tubular part having a length extending parallel to the length of the housing and being formed, at least in part, by the material of the partition with an inlet having a margin which merges with the partition and which has an arcuate form in a plane extending radially of the length of the tubular part, and an outlet tube including an inlet portion extending lengthwise within the housing through the partition and having an inlet in the outlet chamber and including an outlet portion extending at least partially in the inlet chamber and outwardly through said side wall.

3,776,367
MOBILE AERIAL PLATFORM

John L. Grove, Greencastle, Pa., assignor to Fulton Industries, Inc., McConnellsburg, Pa.

Filed June 12, 1972, Ser. No. 261,775
Int. Cl. B66f 11/04
U.S. Cl. 182—2 8 Claims



A mobile aerial platform embodies a multi-section telescopic boom upon which a self-leveling operator platform is mounted. Hydraulic and electrical controls for the machine on the operator platform require the use of hydraulic hoses and electrical cables external to the boom and extending between the platform and the boom base section. A flexible hose and cable guidance, positioning and protecting track extends from the boom base section to the lower extremity of a rigid arm carried by the boom fly section and being substantially coextensive lengthwise therewith. The use of the arm reduces by approximately fifty per cent the required length of the flexible track which is very expensive. The arm also forms a support for a platform leveling cylinder.

3,776,368
OVERSPEED AND POSITIONING DEVICE FOR A SHAFT

Albert Brauss, 7517-196th Ave. N.E., Redmond, Wash.

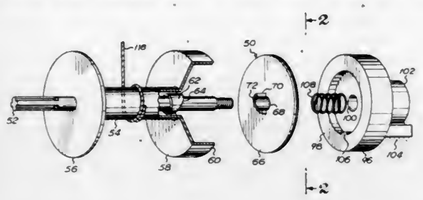
Filed Dec. 13, 1971, Ser. No. 207,139
Int. Cl. E04g 3/10
U.S. Cl. 182—19 49 Claims

In certain situations a rotating shaft may rotate too rapidly or be positioned at a precarious angle so as not to be operating in a safe manner.

Under these operating conditions it is necessary to control the angular speed of the rotating shaft or to control the angle of the rotating shaft.

An example of a shaft rotating too rapidly or being positioned at a precarious angle is one where there is a scaffold, on a building, suspended by cables from the top of the building. The winch or winches for winding and unwinding these cables may be on the suspended scaffold or may be on a carriage on the roof of the building.

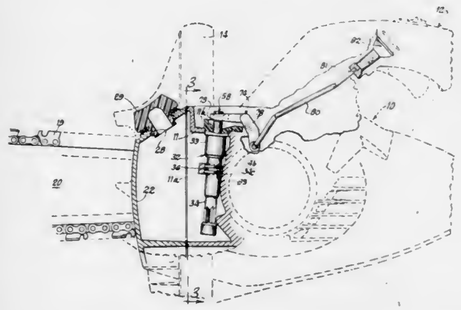
If the winches unwind too rapidly the scaffold descends too rapidly with possible injury to the people riding the scaffold.



Also, if the cables attached to the scaffold assume different lengths, then the angle of the scaffold may be such that the occupants of the scaffold may slide to one end of the scaffold and even slide off the scaffold.

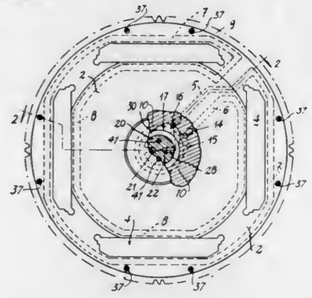
This invention is directed to an apparatus and a method for stopping the rotation of a rotating shaft which is rotating too rapidly or for stopping the rotation of a rotating shaft at a precarious angle, or the combination of too rapid a rotation of the rotating shaft and the shaft being at a precarious angle.

3,776,369
AUTOMATIC/MANUAL LUBRICATION SYSTEM FOR POWER TOOLS
Frank C. Schrack, 6388 Elm, and Arthur Lee, 694 Beachview Dr., both of Vancouver, British Columbia, Canada
Filed Apr. 17, 1972, Ser. No. 244,633
Claims priority, application Canada, Apr. 15, 1971, 110399
Int. Cl. F16n *13/08*; F01m *1/04*
U.S. Cl. 184—15 R **10 Claims**



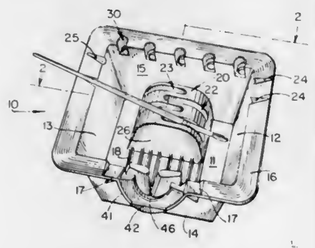
The internal combustion engine of a portable chain saw includes a liquid lubricant reservoir which is in communication with the crankcase of such engine for being pressurized thereby. A cylindrical subassembly is mounted in this reservoir and includes a spring-biased ball valve adjacent an inlet opening, which opening is normally immersed in the liquid lubricant. This subassembly includes an outlet communicating with a passageway to the cutting chain to be lubricated. When the internal combustion engine is running, the pressurized lubricant unseats the ball valve thereby automatically lubricating the cutting chain by a metered flow of lubricant past the ball valve. The cylindrical subassembly includes a piston pump which is manually actuated from a lever adjacent the control quadrant of the portable tool. Each actuation of this lever causes the ball to be unseated and a quantity of the liquid lubricant to be supplied to the cutting chain for manual lubrication before starting the internal combustion engine; when the engine is running, operation of this lever increases the flow of oil to the cutting chain.

3,776,370
PUNCH WHEEL IN MACHINES FOR COMPOSING LEAD TYPE LINES
Daniele Menta, Via Friuli 38, Milan, Italy
Filed June 27, 1972, Ser. No. 266,615
Claims priority, application Italy, July 10, 1971, 26879 A/71
Int. Cl. B41b *11/54*
U.S. Cl. 199—56 **5 Claims**



A mold wheel for receiving molten lead to compose lead type lines, the wheel comprising separate discs connected to each other with the interposition of a seal or gasket. Grooves are provided in the discs and extend adjacent the holes intended to accomodate the molds for lead pouring, water flowing through said grooves and assuring an efficient cooling both for the wheel and molds and thus for the lead being poured therein.

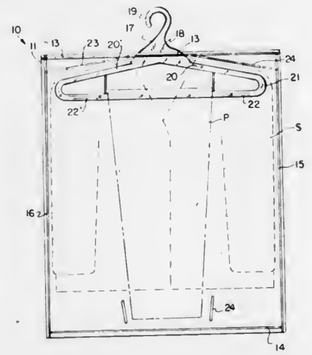
3,776,371
ARTIST'S TOOL AND BRUSH RECEPTACLE AND CONDITIONER
Harrison K. Linger, 7412 Springvale Dr., Louisville, Ky.
Continuation-in-part of Ser. No. 69,565, Sept. 4, 1970, Pat. No. 3,671,992, and a continuation-in-part of Ser. No. 866,471, Oct. 15, 1969, Pat. No. 3,650,589. This application May 12, 1972, Ser. No. 252,876
Int. Cl. B44d *3/00*; B65d *1/34*
U.S. Cl. 206—1.7 **16 Claims**



There is disclosed herein an artist's tool and brush receptacle and conditioner comprising an open receptacle having a bottom wall and an upstanding continuous side wall. A base member is disposed in the receptacle and has an upper surface terminating below the upper edge of the side wall. The base member has at least one inclined groove in the surface

thereof, with the lower portion of the groove being disposed above the bottom wall. The upper portion of the groove is larger in cross-section than the lower portion of the groove. The side wall has at least one slot in the upper edge thereof, the slot facing the groove, with the longitudinal axis of the slot lying in substantially the same vertical plane as the longitudinal axis of the groove. Upon the placement of an associated artist's brush on the receptacle with the outer end of the handle of the brush disposed in the slot and the lower portion of the handle of the brush disposed in the groove, the groove operates to support the brush above the bristles thereof while maintaining the bristles of the brush above the bottom wall of the receptacle and substantially out of contact with any portion of the receptacle.

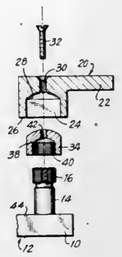
3,776,372
CONTAINER AND RETAINING MEANS
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.
Filed Feb. 3, 1972, Ser. No. 223,279
Int. Cl. B65d *85/18, 33/14*
U.S. Cl. 206—7 H **9 Claims**



A flexible container, apparatus and method for producing same are provided, the container being particularly applicable for the sealed retention of articles of clothing. The walls of the container are made of flexible, heat sealable plastic film forming an envelope about the contents. In a preferred form, the envelope is totally sealed so as to seal the contents therein to protect them for mildew and insects such as moths. A holding and hanging device, such as a plastic or metal wire hanger, extends partly into the container while a hooked portion thereof passes through an opening in the upper seam of the container. If the hanger is made of plastic, it may be heat sealed to the plastic film to totally enclose the interior of the bag. If the hanger is made of wire, the plastic film may be heat bonded thereto to hermetically seal the interior of the container.

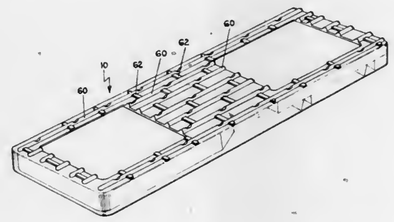
3,776,373
SYSTEM FOR REPLACING FAUCET HANDLES
John L. Mullen, Lindenhurst, N.Y., assignor to Crest Good Manufacturing Company, Inc., Syosset, N.Y.
Filed July 10, 1972, Ser. No. 270,459
Int. Cl. B65d *85/62*; G01b *3/34*
U.S. Cl. 206—16 R **6 Claims**

A system for replacing worn faucet handles. The system includes standardized faucet handles capable of replacing different types of faucet handles of many different plumbing fixture manufacturers. The standardized handles have interior recesses of the same non-circular cross section for receiving adaptors of the same external cross section matching that of the handle recesses. The adaptors however are provided with internally toothed recesses which have different characteristics for matching the different splined ends of valve stems of different manufacturers. A gauge is used for selecting a proper adaptor, this gauge being in the form of a plate formed with a series of toothed openings all of which have different characteristics. These openings can be tried one after the other on the splined end of a given valve stem until an opening



is found which has a snug precise fit with respect to the particular splined end which is tested. The plate which forms the gauge carries adjacent the several openings indicia for identifying the different adaptors, so that once a proper opening is found on the gauge, the indicia adjacent the latter opening will indicate which adaptor should be used for the standardized handle.

3,776,374
ANTI-THEFT DISPLAY CONTAINER FOR MAGNETIC TAPE CARTRIDGE
Roger L. Medendorp, Grand Rapids, Mich., assignor to Kirkhof Manufacturing Corporation, Grand Rapids, Mich.
Filed Aug. 31, 1972, Ser. No. 285,343
Int. Cl. B65d *5/50, 25/10, 85/67*
U.S. Cl. 206—45.14 **17 Claims**

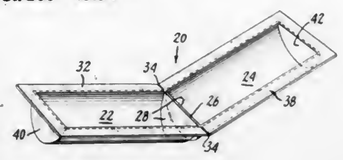


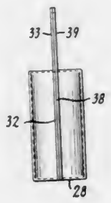
The container includes a one-piece tray and one-piece cover vacuum-formed of a very thin transparent sheet of thermoplastic each having side and end walls which glove together. The height and width of the container corresponds to an eight-track magnetic tape cartridge and the tray is partitioned into two compartments one of which receives and holds the eight-track cartridge, the other alternatively a four-track cartridge. The latter compartment includes differential-pressure formed, irregularly shaped portions in the bottom of the tray which support the four-track cartridge above the bottom wall and in from the side walls of the tray to compensate for the dimensional differences between a four and eight-track cartridge. The tray and cover include intersecting flutes of dissimilar depths greatly increasing the protection of the packaged cartridge without decreasing absorption of shock in directions transverse to the walls of the compartments. The cover includes window portions for effective display of the packaged cartridge.

3,776,375
FREE-STANDING BLISTER PACKAGE

Howard A. Rohdin, Popponesset Island, Mass., assignor to Packaging Industries Inc., Hyannis, Mass.

Filed Jan. 25, 1972, Ser. No. 220,594
Int. Cl. B65d 25/54, 73/00
U.S. Cl. 206—45.34 11 Claims



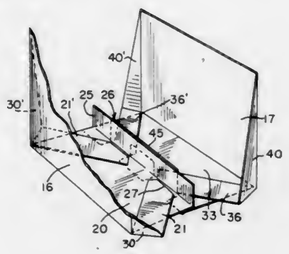


A free-standing package of the blister type includes an article containing enclosure formed of a single piece of self-supporting plastic material. The enclosure is in two mating sections integrally joined along a fold line traversing what becomes the base of the completed package. The free edges of the sections have flanges which meet when the sections are closed to envelop the article and the sections are sealed together along the flanges. At the same time, the initially folded base portion is flattened out to provide a support for maintaining the package article in an upright position. The plastic enclosure may be used with or without a display card.

3,776,376
BOTTLE CARTON

Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company Inc., Montvale, N.J.

Filed Sept. 7, 1971, Ser. No. 177,995
Int. Cl. B65d 5/02, 85/62
U.S. Cl. 206—65 E 7 Claims

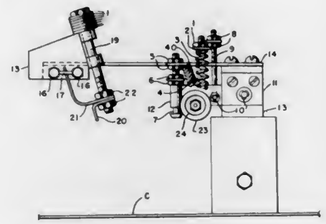


A wraparound sleeve-type container or carrier for bottled goods which is formed of a single blank and wrapped around a cluster of bottles arranged in double row formation with the ends of the blank adapted to be connected on a center line beneath the cluster of bottles and providing an upstanding row divider, with the blank having triangular panels for partially closing opposite axial ends of the carton which are hinged to the end edges of the side walls and which have integral tabs hinged to bottom edges and positioned so as to lie on the top faces of the bottom panel members with end portions in abutting engagement with the row divider and disposed beneath the end bottles in the carton, thereby precluding inadvertent unfolding of the end panels which hold the lower portions of the end bottles against movement out of the ends of the carton.

3,776,377
CAPLESS CAN DETECTING AND TURNING APPARATUS

Henry G. Lane, 3816 Avenue Q N.W., Winter Haven, Fla.

Filed Jan. 17, 1973, Ser. No. 324,510
Int. Cl. B07b 13/04
U.S. Cl. 209—73 5 Claims

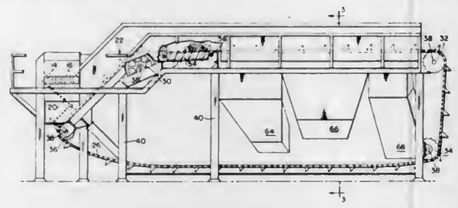


A detector arm is pivotally mounted on a supporting frame above a row of cans traveling on a conveyor. The arm is movable upwardly and downwardly and carries a detent and a detecting wheel which rides over the caps on cans while keeping the arm raised. When a capless can is encountered, the arm is in its lowered position and the detent tips and turns over the can for ejection from the conveyor. An auxiliary detent is provided on the frame to turn over a capless can which has been tipped by the first detent.

3,776,378
LOG SORTER

Bruce F. Booth, Kenogami, Quebec; Pierre Veilleux, Arvida, Quebec, both of Canada, and Richard William Hall, Aberdeen, Wash., assignors to Enterprises International, Inc., Hoquiam, Wash.

Filed May 25, 1972, Ser. No. 257,008
Int. Cl. B07b 13/04
U.S. Cl. 209—73 4 Claims

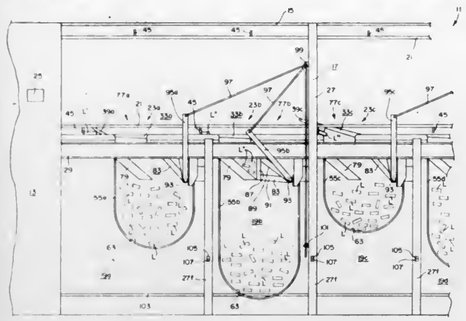


A log sorter for sorting logs according to length for delivery of the required length logs to a wood grinding mill or other desired location and the over and under length logs to chippers or other use location comprises a conveyor support table extending along a path of travel of the logs and a flight conveyor extending along the conveyor support table for receiving logs in random fashion and conveying them first to a butt alignment zone wherein the butt ends of the logs are aligned against a common surface and then to a sorting zone wherein the logs are sorted according to length by gravity drop through progressively increasing openings in the conveyor support table.

3,776,379
LUMBER SORTER

Edward M. Harvey, 268 Ledgerwood Dr., Hot Springs, Ark.

Filed Sept. 15, 1972, Ser. No. 289,676
Int. Cl. B07c
U.S. Cl. 209—73 10 Claims

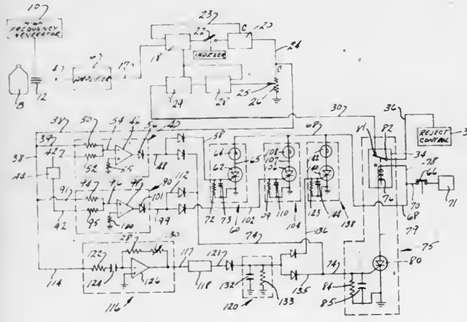


A lumber sorter including forward and rearward nylon straps suspended transversely across each of the bays to establish cooperating forward and rearward cradles for catching and supporting the lumber pieces as they are caused to fall from the disengagement mechanism of the sorter. The straps are trained about rotatable spool structure which preferably is driven by an electric motor for selectively varying the height of the cradles, i. e., each of the lumber pieces is received relatively close to the disengagement mechanism of the lumber sorter whether it be the first piece to fall on the cradles or the last. Subsequent to a bay receiving a package of lumber pieces, the straps are slackened by operating the motor, thus lowering the package until it restingly engages support structure which facilitates freeing the cradles by slipping them beyond the respective ends of the package. The support structure may be the usual buggy which heretofore received the lumber as it fell from the sorter. More preferably, the support structure is an infeed conveyor which conveys the package of lumber directly to a remote location, e. g., a stacker.

3,776,380
APPARATUS AND METHOD FOR MONITORING THE STATUS OF A RADIO FREQUENCY THICKNESS GAUGE

David A. Damm, Toledo, and Robert G. McKim, Maumee, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 24, 1973, Ser. No. 326,245
Int. Cl. B07c 5/34
U.S. Cl. 209—111.5 36 Claims

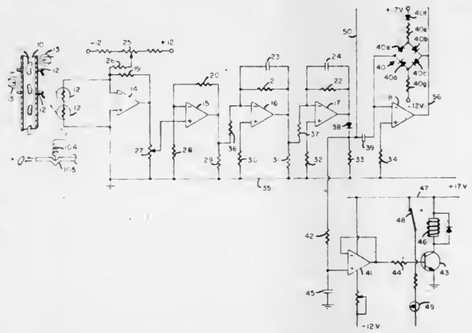


Apparatus and method for monitoring the status of a radio frequency glass thickness gauge. One type of thickness measuring device for glass containers uses the attenuation radio frequency signal as a measure of thickness. In order to compensate for ambient conditions, a compensated reference voltage, which represents the radio frequency signal with no glass present, is generated between gauging cycles. The present invention ensures that the compensated reference voltage is within its operational limits. If the compensated reference voltage is above a pre-selected maximum value or below a pre-selected minimum value, a signal is generated to turn on a warning light to indicate the deviation. In addition, the same signal may be used to interrupt the rejection of glass containers, since compensated reference voltages outside the tolerance limit will usually cause false rejection of good containers. The rate at which the compensated reference voltage is changed is likewise determined, and a signal is generated when the rate of change exceeds a pre-selected value. This signal turns on a warning light which indicates system oscillation type failure. The same oscillation warning signal may also be used to interrupt the rejection of glass containers, again to prevent false rejection of good containers.

3,776,381
APPARATUS FOR SORTING PRODUCTS

Richard A. Wood, 150 Cumulus, Sunnyvale, Calif.

Filed Apr. 25, 1972, Ser. No. 247,844
Int. Cl. B07c 5/342
U.S. Cl. 209—111.6 7 Claims

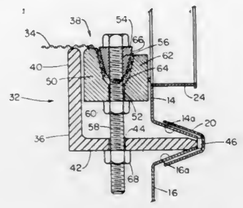


A machine for sorting products employing light sensitive cells for receiving light reflected from a product passing through a viewing zone to detect products that are too light, too dark or defective. The signals from the light sensitive cells are amplified and passed through active filters which eliminate high frequency signals, transients, etc., therefrom. Output from the active filters is supplied to comparators and also to a peak detector as well as to a product flow indicator which controls a signal, such as a light, to indicate if the flow of products through the viewing zone is interrupted for any reason. A resistor to ground supplies bias to a transistor which supplies a positive biasing voltage to the two comparators to keep these comparators turned off except when a positive peak pulse is supplied to the transistor from the peak detector. This gates the comparators on and if the signal from the product corresponds to a product that is either too light or too dark one of the other of the comparators transmits a positive pulse to a pulse stretching circuit which supplies a short pulse to a delay circuit comprising a 64 bit shift register which functions as a memory and predetermined delay and is controlled by pulses supplied by a clock pulse generator. A selected output of the shift register supplies a delay pulse to a transistor which is connected to the pulse stretcher and supplies a pulse of predetermined duration to the input of a transistor amplifier. This transistor amplifier controls the energization of the solenoid of the valve controlling the product rejector which is used to deflect the product to be rejected from the main product stream.

3,776,382
ADJUSTABLE TENSIONING DEVICE FOR CIRCULAR SCREENS

Edward S. Wright, Pittsburgh, Pa.; John W. Angstadt, and Otto C. Krolopp, both of Williamsville, N.Y., assignors to Blaw-Knox Food and Chemical Equipment, Inc., Buffalo, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,916
Int. Cl. B07b 1/06
U.S. Cl. 209—403 15 Claims

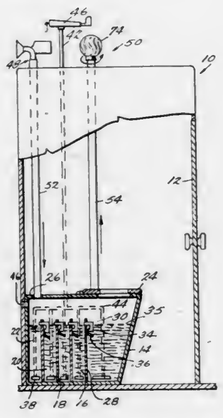


There is disclosed a novel circular screen frame assembly comprised of a screen, a support ring and an annular clamping and tensioning assembly. In one embodiment of the present invention, the annular clamping and tensioning assembly is comprised of a clamping ring and a tensioning ring. The support ring is adapted to be positioned and held within the housing of the sifter assembly. The clamping ring circumferentially secures the screen to the tensioning ring with the resulting annular clamping and tensioning assembly being positioned about the support ring with adjustable fixing means. Tensioning of the circular screen is effected either by the horizontal or vertical displacement of the annular clamping and assembly with reference to the support ring about a plurality of points about the rings.

3,776,383
SEWAGE TREATMENT VENTING SYSTEM

William J. Hargraves, 121 Lake Highlander, Dunedin, Fla.

Filed Apr. 19, 1971, Ser. No. 135,352
Int. Cl. B01d 43/00
U.S. Cl. 210—199 7 Claims

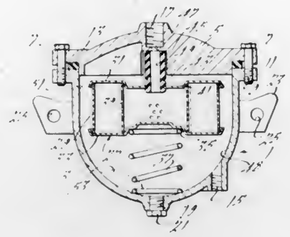


A portable toilet facility includes a plurality of series-connected aerobic digestion tanks within a walled enclosure. Venting of the air spaces of the tanks is accomplished with a vane-type air scoop which faces into the wind and conducts air to one of the air spaces, an exhaust vent conduit extending from one of the other air spaces to the exterior of the enclosure.

3,776,384
REPLACEABLE ELEMENT COOLANT FILTER

Robert J. Offer, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed July 12, 1972, Ser. No. 271,063
Int. Cl. B01d 27/00
U.S. Cl. 210—209 7 Claims

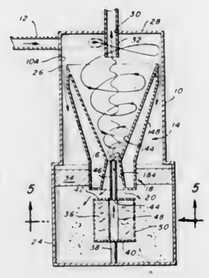


A pleated paper filter element is adapted for use in an existing water filter housing for internal combustion engine cooling systems by means of a grommet that serves to seat the element and seal it around the housing outlet.

3,776,385
HYDROCLONE FOR SIMULTANEOUSLY SEPARATING IMMISCIBLE HEAVIER LIQUIDS AND SOLIDS FROM A LIQUID MEDIUM

Andrew Maciula; William G. Tiederman, both of Stillwater, and Robert E. Reed, Bethany, all of Okla., assignors to Oklahoma State University, Stillwater, Okla.

Filed Dec. 13, 1971, Ser. No. 207,122
Int. Cl. B04c 5/04
U.S. Cl. 210—304 6 Claims

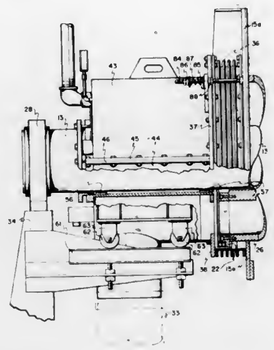


A hydroclone for simultaneously separating immiscible heavier liquids from a lighter liquid medium and solids from the lighter liquid including a cylindrical portion having an inlet tangentially intersecting the interior wall and an upper axial outlet, a conical portion axially received within the cylindrical portion, the interior surface of the conical portion being tapered to a reduced diameter vertical opening, the outer diameter of the conical portion being less than the inner diameter of the cylindrical portion providing an annular heavier liquid passageway therebetween, and an underflow pot communicating with the opened bottom cylindrical portion and the vertical opening of the conical portion, the underflow pot receiving expelled heavier liquids and some of larger solid particles through the annular passageway and expelled solids through the vortical opening.

3,776,386
APPARATUS FOR ROTARY FILTERS

Paul O. Richter, Salt Lake City; Robert M. Janchus, Bountiful, and Shih C. Shen, Salt Lake City, all of Utah, assignors to Envirotech Corporation, Salt Lake City, Utah

Filed Aug. 16, 1971, Ser. No. 171,890
Int. Cl. B01d 33/00
U.S. Cl. 210—398 6 Claims

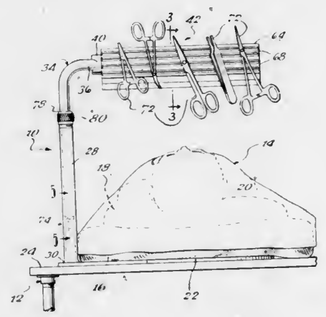


At the valve end of a rotary drum filter adapted for high submergence operation, an elongated trunnion extends to a trunnion bearing spaced outwardly of the tank wall; a longitudinally-splitable valve, non-integral with the bearing, is mounted outside the filter tank concentrically about and axially slidable on the trunnion between the bearing and tank. A short conduit conducts filtrate from the drum to the valve for discharge, and a flexible coupling surrounds the junction between the conduit and the valve and connects the valve to the filter tank.

3,776,387
PORTABLE STAND WITH MAGNETIC BAR SURGICAL INSTRUMENT HOLDER FOR USE ON AN OPERATING CART OR TABLE

Burton David Brent, 1110 Cleveland St., Evanston, Ill.

Filed Feb. 28, 1972, Ser. No. 229,732
Int. Cl. A47f 7/00; F16m 11/00
U.S. Cl. 211—60 T 6 Claims



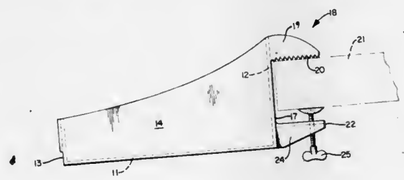
A portable stand with a removably coupled magnetic surgical tool holder arranged to overlie the patient on an operating cart and present a magnetic purchase for surgical instruments to be held within convenient reach of the operating surgeon. The stand has a flat base plate or platform capable of being engaged beneath the mattress supporting the patient on the operating cart. The holder includes an autoclave sterilizable bar member having a magnetic purchase surface for the surgical instruments canted at about 45° relative to the plane of the mattress so that the tools held thereon are oriented most conveniently relative to the operating surgeon. The distance of the bar member relative to the platform is variable by suitable adjustment means. Means may be provided for varying the angle of the bar member relative to the plane of the table or cart.

A modified embodiment of the stand is provided having suitable means for clamping the stand to a veterinary surgical table for veterinary surgery. In this embodiment, means are provided for adjusting the angle of cant of the bar member relative to the table, the head of which usually is lowered about 30° to prevent aspiration in the event the animal being operated should have an emesis.

3,776,388
DISPLAY TRAY

Harley H. Mattheis, Verona, N.J., assignor to Ethyl Development Corporation, Kansas City, Kans.

Filed Dec. 13, 1971, Ser. No. 207,160
Int. Cl. A47b 57/00; A47f 3/14, 5/00
U.S. Cl. 211—86 1 Claim

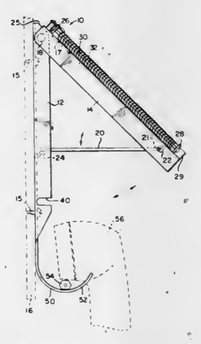


An integrally formed, injection molded, plastic display tray. The tray includes integral bottom, side, front and back walls and is provided with a plurality of integrally formed, rearwardly extending bracket members which are adapted to attach the tray to an existing shelf. The tray is particularly useful for displaying merchandise.

3,776,389
FOLDING WALL SHELF

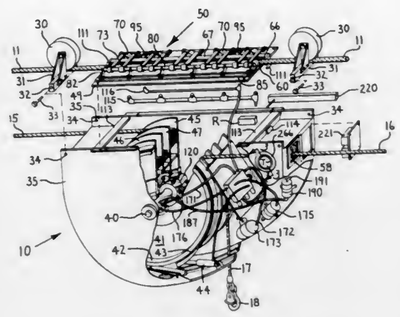
Donald E. Waldecker, 3250 Cambridge Ct., Fairfax, Va.

Filed Mar. 17, 1972, Ser. No. 235,755
Int. Cl. A47b 97/04; A47f 5/08
U.S. Cl. 211—90 9 Claims



A folding wall shelf having bracket means for mounting on a wall and pivotally carrying means adapted to swing outwardly therefrom for defining an inclined writing support, the shelf further including pencil holding means and means for temporarily cradling a telephone handset at a location away from the regular telephone cradle.

3,776,390
SKYLINE LOGGING CARRIAGE
Norman E. Junes, Rt. 3, Box 148, Astoria, Oreg., and William R. Stanyer, 1715 S. Franklin, Seaside, Oreg.
Filed June 17, 1971, Ser. No. 153,984
Int. Cl. B66c *21/00*
U.S. Cl. 212—122 **11 Claims**

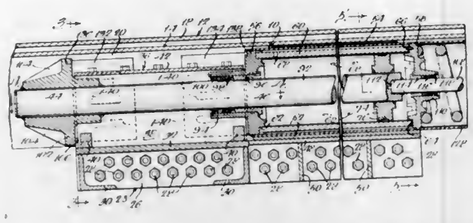


The carriage is moved back and forth on a skyline by winch drums on a yarder at one end of the skyline. The carriage contains a three-section cable drum having individual sections for a main line, a haulback line and a hoisting line. A hydraulic brake in the carriage operates on the three-section drum and a hydraulic clamp operates on the skyline. When the carriage drum brake is set and the skyline clamp released, the yarder winch drums pull the carriage out by winding in the haulback line and slacking off the main line. The yarder winch drums pull the carriage in by winding in the main line and slacking off the haulback line. When a turn of logs is to be lifted by the carriage for travel back to the yarder, the skyline clamp is set and the carriage drum brake released. The logs are lifted by causing the yarder main line winch to pull in the main line while the haulback line is slacked at the yarder.

The skyline clamp and drum brake in the carriage are actuated by a special leak-proof hydraulic system. A hydrostatic transformer provides a high pressure source of hydraulic fluid for the clamp. The hydraulic system is supplied by a bi-rotational pump operated by rotation of the carriage cable drum and pressurized oil is stored in an accumulator when the pump is not operating. Valves for actuating and releasing the brake and clamp are radio controlled by an operator at the yarder. To facilitate putting the carriage on the skyline and removing it from the skyline, the skyline clamp is made accessible by a hinged frame so that the skyline does not have to be threaded lengthwise through the clamp shoes.

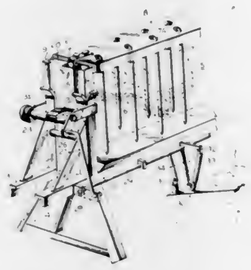
3,776,391
SINGLE ACTING IMPACT ABSORBING DEVICE
Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 1,903, Dec. 17, 1969, abandoned, which is a continuation of Ser. No. 710,196, March 4, 1968, abandoned. This application Oct. 22, 1971, Ser. No. 191,634
Int. Cl. B61g *9/08*
U.S. Cl. 213—8 **28 Claims**

The single acting impact absorbing device is interposed between the underframe center sill and the sliding sill of a railway car and has a single acting cylinder housed in a square hydraulic fluid reservoir, a first head of which normally abuts stop faces on a key housing fixed to the underframe center sill and a first set of stop faces fixed to the inner walls of the sliding sill. A piston rod slidably projects through the first head and the housing and carries a movement limiting member on its outer end which normally abuts stop faces on the opposite end of the housing and a second set of stop faces on the sliding sill. A spring rod secured to the piston rod retains a spring acting between the second head and a follower at the outer end of the spring rod, the spring stressing both rods in tension. A tube adjacent the second head houses the spring and restrains it



against lateral buckling in compression, and filling access to the reservoir is had through filler tubes having their lower ends opening to the outer face of the second head adjacent the spring tube. A piston fixed to the piston rod normally is held adjacent the second head, and when the railway car receives an impact it moves relatively toward the other head, expelling fluid from the cylinder into the reservoir through a decreasing number of flow restricting orifices.

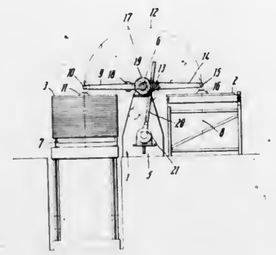
3,776,392
APPARATUS FOR OPENING TOBACCO CURING STICKS
Delmas D. Williams, Rt. 1, Robersonville, N.C.
Filed June 30, 1972, Ser. No. 267,928
Int. Cl. B65b *13/18*
U.S. Cl. 214—1 R **6 Claims**



A foot treadle operated pivotable cam plate engages the spring locks on each end of a tobacco curing stick simultaneously to release the lock and then move the top member up from the frame so that it may be grasped and manually removed.

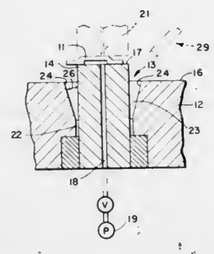
3,776,393
TRANSFER APPARATUS
Gerd Bargstedt, Wischhafenersand 91, Drochtersen, Germany
Filed May 19, 1972, Ser. No. 255,059
Claims priority, application Germany, May 25, 1971, P 21 25 846.8
Int. Cl. B65g *59/04*
U.S. Cl. 214—1 BV **9 Claims**

The apparatus serves to transfer items between two stations. A frame is disposed between said two stations and at its top carries a first pivot. A first rocker lever assembly is pivoted on the first pivot and has a longer portion on one side of the first pivot. A second pivot is carried by the first rocker lever assembly and parallel to and spaced from the first pivot. A second rocker lever assembly is mounted on the second pivot and rotatable in unison with the first rocker lever assembly during a movement of the latter. Connecting drive means connect the first and second rocker lever assemblies and are arranged to impart to the second rocker lever assembly a movement in dependence on the movement of the first rocker lever assembly. Holding means for holding items are carried by the first and second rocker lever assemblies at those ends thereof



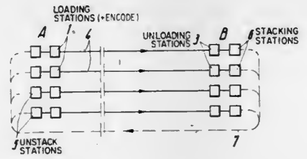
which are most remote from the associated first and second pivots. The first and second rocker lever assemblies are pivotally movable over head and have different lengths between the associated first and second pivots and the ends provided with the holding means. Said lengths are selected so that the holding means are equally spaced from the first pivot means when the first and second rocker lever assemblies are angularly spaced 180° apart.

3,776,394
METHODS AND APPARATUS FOR IMPARTING A DESIRED ORIENTATION TO AN ARTICLE
Dennis Brian Miller, Ewing Twsp., Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Aug. 23, 1972, Ser. No. 283,038
Int. Cl. B65g *47/24*
U.S. Cl. 214—1 R **18 Claims**



A small, randomly oriented article, e.g., a beam lead device, is supported on an upper surface of a ram. The ram is relatively movable vertically within an aperture in a horizontal plate. The aperture has a lower portion of dimensions very slightly larger than those of an article, and is shaped such that the article will necessarily assume a desired orientation within the lower portion of the aperture. The aperture has an upper portion with walls tapered downwardly and inwardly in order to guide the article into an aligned position in the lower portion of the aperture as the article moves downwardly within the aperture. A fluid is introduced into the vicinity of the upper surface of the ram at approximately the same time as the ram begins a relative downward movement within the aperture. The fluid causes the article to float and/or interferes with any tendency of the article to adhere to the tapered walls of the aperture due to friction, static electricity and/or the presence of any adhesive material on the article. The fluid also tends to form a meniscus sloping downwardly away from the tapered walls toward the desired orientation of the article, thereby further urging the article into the desired orientation. Once the article is aligned correctly on the upper surface of the ram, a partial vacuum may be introduced beneath the article so as to withdraw the fluid and to retain the article on the ram, after which the ram may be raised for removal of the article.

3,776,395
CONVEYOR SYSTEM WITH PALLETS, PREFERABLY FOR AIRPORT BAGGAGE HANDLING
Gerhard Lingg, Leimen, and Eberhard Hellermann, Morfelden, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Feb. 10, 1972, Ser. No. 225,245
Claims priority, application Germany, Feb. 17, 1971, P 21 07 489.5
Int. Cl. B65g *60/00*
U.S. Cl. 214—6 BA **5 Claims**

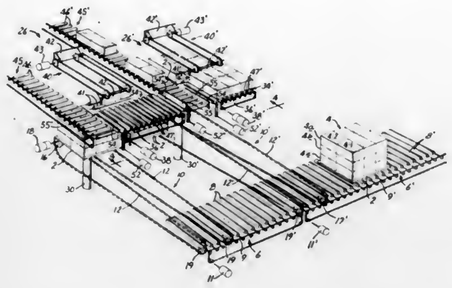


Conveyor system with plural branches and return path portions for operation in an overall closed loop configuration, there being pallets on the conveyor system circulating in the closed loop and receiving individual items of load to be transported, the conveyor system having individual loading stations for pallets and unloading stations for loaded pallets, from which the empty pallets return to the loading stations. The closed loop including a portion of the conveyor system that is common for return of pallets for several of the unloading stations to several of the loading stations. A pallet stacking station is disposed behind unloading stations for feeding stacks of empty pallets into that common portion, and a pallet unstacking station is disposed in front of the loading stations, receiving stacks of empty pallets and unstacking them for individual availability of emtpy pallets in the loading stations, so that only loaded pallets circulate in the system, loaded either with load proper or with other, empty pallets.

3,776,396
APPARATUS FOR DEPALLETIZING ARTICLES AND STACKING EMPTY PALLETS
Harold S. Burt, Mendota, and Vasco O. Carvalho, Skokie, both of Ill., assignors to Conveyor Systems, Inc., Morton Grove, Ill.
Filed Aug. 13, 1971, Ser. No. 171,554
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 A **6 Claims**

Two depalletizing stations, preferably sharing a common empty pallet stacking station and a common inlet conveyor to be rendered operable by the automatic sequential feeding of loaded pallets to the inlets thereof from the common inlet conveyor. Alternatively, one of the depalletizing stations can be shut down when desired. When the depalletizing stations are both operated, article position and/or apparatus condition sensing means and associated control means responsive thereto control the movement of palletized articles from the common inlet conveyor to the conveyors extending from the

common inlet conveyor to the depalletizing stations so palletized articles are automatically fed to a depalletizing station free to receive a new loaded pallet. The depalletizing stations most advantageously discharge articles upon respective article-receiving conveyors each of which is capable of discharg-



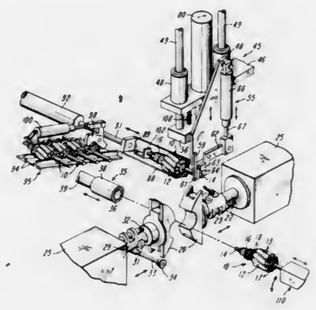
ing articles at either one of the same two discharge points when operating separately. Empty pallets from the depalletizing stations are fed to different sides of a common pallet stacking station which can receive pallets only one at a time from the depalletizing stations.

3,776,397

ARMATURE WINDING APPARATUS WITH IMPROVED ARMATURE LOADING MECHANISM

Robert P. Hoy, Springfield, and Robert C. Gray, Dayton, both of Ohio, assignors to Mechaneer, Inc., Dayton, Ohio

Filed Feb. 28, 1972, Ser. No. 229,667
Int. Cl. B65g *61/00*
U.S. Cl. 214—8.5 K **10 Claims**



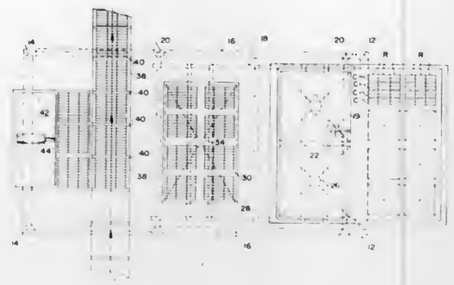
A series of armatures each including an armature core and a commutator mounted on a shaft, are automatically and successively loaded into an armature winding machine between a pair of opposingly retractable wire forming chucks by a vertically disposed carriage supported for linear movement between an upper receiving position and a lower delivery position. The carriage incorporates means for releasably gripping an end portion of the shaft and cooperates with a linearly movable transfer shelf to transfer each armature from a supply ramp downwardly between the chucks after they have moved to their retracted open positions. Adjustable stops provide for accommodating armatures of different sizes.

3,776,398

BRICK REGROUPING APPARATUS

Gerald L. Stuart, and Forrest A. Paschal, both of Siler City, N.C., assignors to Forrest Paschal Machinery Corporation, Siler City, N.C.

Filed July 28, 1972, Ser. No. 276,031
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 C **7 Claims**



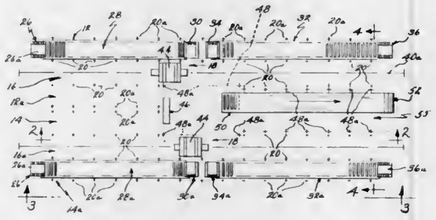
Bricks arranged in a plurality of stacks on kiln cars in double-layer courses having a prescribed number of bricks in each row and column are first transferred to an intermediate table by means of a first, side gripper pickup head. The side gripper pickup head includes several pair of gripper members which grip the bricks at the ends of the rows thereof and compact the rows in preparation for the first head to lift and transfer the bricks to the intermediate table. A second, end gripper pickup head includes several pairs of gripper segments, movable with respect to each other, to grip the bricks at the ends of the columns, lift and adjust the row-wise spacing therein to arrange the bricks into courses having a different number of bricks in the rows thereof than the courses on the kiln cars. The second pickup head then transfers the bricks held therein to an off-bearing conveyor leading to a stacking and strapping station.

3,776,399

AUTOMATIC WAREHOUSING SYSTEM

Wayne G. Atwater, Willoughby, Ohio, assignor to The Triax Company, Cleveland, Ohio

Continuation of Ser. No. 69,871, Sept. 4, 1970, abandoned. This application Sept. 29, 1972, Ser. No. 293,643
Int. Cl. G05b *19/14*
U.S. Cl. 214—16.4 A **14 Claims**



An automatic warehousing system including a storage frame area of horizontally and vertically oriented storage volumes with a mechanized load carrier movable alongside the storage volumes for handling loads at selected storage volumes. The load carrier is adapted to be controlled from an operator's control area located within the confines of the storage frame area. Inbound and outbound conveyor mechanisms disposed beneath the storage volumes operate to move stock to and from respective inbound pickup and outbound discharge sta-

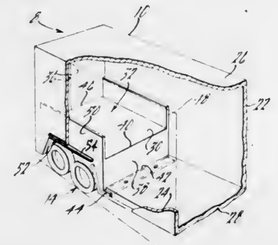
tions, which are also located within the storage frame area beneath the storage volumes. An order picking work station is also located within the storage frame area adjacent to or readily accessible to the control area, for the placing thereon of order picked stock from the load carrier, with an output conveyor coacting with the order picking station for accumulating order picked stock orders thereon and moving such order picked stock out of the storage frame area. The purpose of the system is to provide for more expeditious operation of an automatic warehousing system and for more effective and efficient utilization of the floor area occupied by the storage frame of the system.

3,776,400

TRAILER CONSTRUCTION

Robert B. Schwartz, Harper Woods, Mich., assignor to Fruehauf Corporation, Detroit, Mich.

Filed June 12, 1972, Ser. No. 262,037
Int. Cl. B62d *33/08*
U.S. Cl. 214—38 BA **18 Claims**



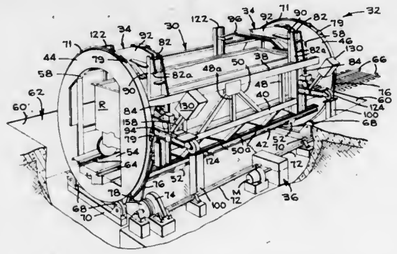
A trailer construction comprising a rear floor overlying and attached to the rear wheel bogie and a front floor, at least a portion of which is disposed for over-the-road hauling at a level vertically below the level of the rear floor to provide cargo space below the rear floor and forward of the bogie. The two floors are mounted on the trailer such that when the trailer is to be loaded or unloaded, the front floor portion may be elevated relative to the rear floor to cause the two floors to be brought into alignment and thereby provide a continuous interior floor surface over which fork lift trucks or other cargo handling equipment can be operated to load and unload cargo.

3,776,401

CLAMP MECHANISM FOR ROTARY CAR DUMPER

Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 135,960, April 21, 1971, Pat. No. 3,719,292. This application May 12, 1972, Ser. No. 252,635
Int. Cl. B65g *67/54*
U.S. Cl. 214—55 **6 Claims**



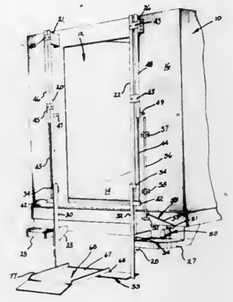
A railroad car is secured for dumping in a rotary car dumping cradle by gravity lowered clamp beams which engage the top of the car and are locked in place by a gravity actuated, infinitely variable locking mechanism that grasps tension members connected to the side of the car dumper.

3,776,402

LIFTING PLATFORM

Carl E. Bryan, Grand Rapids, Mich., assignor to Grocers Baking Company, Grand Rapids, Mich.

Filed Aug. 2, 1971, Ser. No. 167,972
Int. Cl. B60p *1/44*
U.S. Cl. 214—75 T **12 Claims**



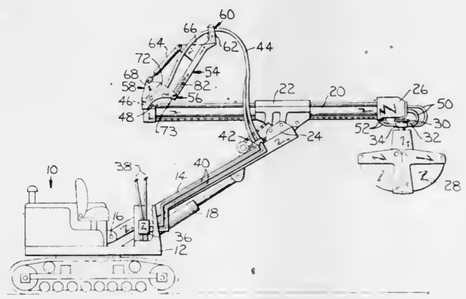
A truck, having an enclosed van including a door for access, has a hydraulically operated first platform mounted adjacent the side of the van by the door opening. The platform includes a pair of guide members slidably mounted to guide supports on either side of the door. A pair of hydraulic cylinders mounted on either side of the door opening have lifting rods actuated by the hydraulic cylinders and coupled to the platform such that the platform can be raised or lowered from the ground level to the floor level of the van. The first platform includes a hinged second platform which in a loading position is generally horizontal for receiving and discharging goods and when in a retracted position is vertically oriented and locked into position by locking means. The system is relatively inexpensive and can be easily removed from one truck and mounted to another truck.

3,776,403

HOSE MINDER

Roy O. Billings, 6621 W. Wisconsin Ave., Milwaukee, Wis.

Filed June 7, 1972, Ser. No. 260,474
Int. Cl. B66f *9/00*
U.S. Cl. 214—137 **11 Claims**



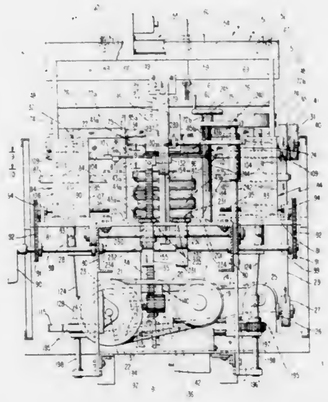
An elongated controlling arm is hingedly connected at one end to the inner end of a dipper stick of an earth-moving crane

to serve as a controller for hydraulic or pneumatic hoses which extend between the dipper stick and a boom on which the dipper stick is slideably mounted. A roller is mounted on the free end of the arm for rollably engaging the hoses. The arm is spring biased away from the boom so as to keep the hoses under tension in all positions of the boom and dipper stick. In addition, the connection of the controller arm to the dipper stick includes a pair of springs which resiliently hold the arm in contact with a bracket mounted on the dipper stick and allow the arm to be rocked from side to side in the bracket without becoming damaged or without damaging outside objects such as glass windows or siding of buildings.

3,776,404
METHOD OF HANDLING BOOKS

Frank J. Anastasio, Paramus; Clinton F. Brundage, Mahwah, both of N.J., and Clarence P. Strakosch, Tappan, N.Y., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 833,985, June 17, 1969, Pat. No. 3,640,407. This application Mar. 26, 1971, Ser. No. 128,505
Int. Cl. B65g *57/08*
U.S. Cl. 214—152 **18 Claims**



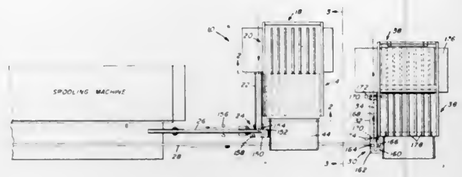
Method and apparatus whereby books delivered on-edge, spine-up, as by a building-in machine, are alternately tipped in opposite directions on a continuously operating belt conveyor, funnelled into alignment and then stacked with the spine joints of adjacent books at opposite sides of the stack and offset to prevent crushing thereof. The progressively formed stacks are progressively lowered on a photocell-controlled elevator, jogged, and then removed to a delivery conveyor while the building of the succeeding stack is begun on an auxiliary retractable platform for subsequent transfer to the elevator.

3,776,405
APPARATUS FOR UNLOADING CARTRIDGES FROM TRAYS

John N. Gade, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,027
Int. Cl. B65b *35/20*
U.S. Cl. 214—310 **11 Claims**

A method and apparatus for unloading cartridges from a tray, and particularly suitable for use in a cartridge handling system in which the unloaded cartridges are fed to a spooling machine where they are loaded with film. The cartridge handling system comprises an in-feed section for unloading rows of empty cartridges from the tray and feeding the cartridges one at a time into the spooling machine, and an out-feed section for removing the loaded cartridges one at a time from the spooling machine, arranging the cartridges into rows, and loading the rows of cartridges into empty trays. The tray unloading apparatus comprises an elevator mechanism for lifting the empty cartridges from a tray to an elevated position clear

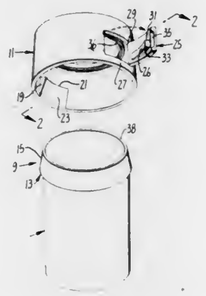


of the tray, and a retaining mechanism for retaining the cartridges in proper orientation on the elevator mechanism during the lifting operation. In addition a cartridge sweeping mechanism sweeps the rows of cartridges lifted from the tray to a transfer-conveying system which converts the rows of cartridges into a single row and feeds them in single file order to the spooling machine.

3,776,406
SAFETY CLOSURE

Benjamin K. Milbourne, Sr., 1519 S. Manhattan Pl., Los Angeles, Calif.

Filed Aug. 4, 1972, Ser. No. 277,854
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **1 Claim**



A safety closure for a container having an outwardly extending annular lip, said closure comprising a cap having an inwardly extending fixed lug which engages the underside of the lip and an opposite hinged lug which normally engages the underside of the lip but which can be pulled outwardly to disengage the lug permitting removal of the cap. The under surfaces of the two lugs may be tapered so that the cap can merely be pushed in place over the lip.

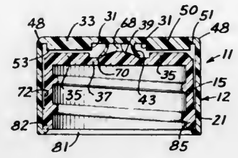
3,776,407
CLOSURE

David R. Cistone, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

Filed Feb. 4, 1972, Ser. No. 223,450
Int. Cl. B65d *55/02*; **A61j** *1/00*
U.S. Cl. 215—9 **5 Claims**

A safety closure for a container comprises inner and outer caps with ratchet teeth formed on the skirts of the caps for abutting and turning the inner cap on the container when a torque is applied to the outer cap in the application direction.

When the outer cap is turned in the removal direction, the ratchet teeth slide by each other without turning the inner cap. With exertion of a downward axial force on the outer cap, a segmented ring forming a flexible dome on a central portion of one of the caps is flexed by a facing rigid central portion on the other cap thereby allowing radially extending teeth on the

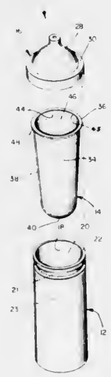


inner surface of the top end wall of the outer cap to move axially toward and into engagement with radially extending teeth on the upper surface of the top end wall of the inner cap. Thus, removal of the closure can be accomplished only with a downward axial force interengaging the radially extending teeth on the inner and outer caps and with a simultaneous applied torque in the removal direction.

3,776,408
NURSING UNIT

Stephen A. Wald, Wallingford, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Filed June 28, 1971, Ser. No. 157,409
Int. Cl. A61j *9/00*
U.S. Cl. 215—11 E **16 Claims**

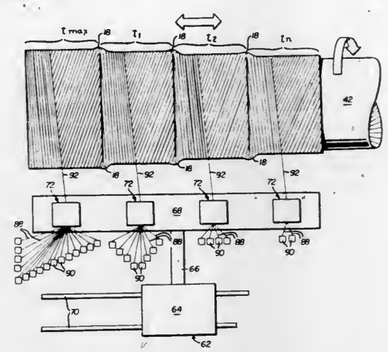


A nursing unit having a disposable, seamless, plastic liner for containing liquid; a self-supporting tubular holder for the plastic liner and a nipple for closing an open end of the tubular holder. The disposable, seamless, plastic liner has a flexible, collapsible body portion defining a cavity for containing liquid, and an upper, firm flange extending transversely beyond an outer side surface of the body portion. The body portion collapses as liquid is drawn out of the liner during nursing to prevent the formation of a vacuum in unfilled portions of the cavity. The flange defines and maintains an open mouth under ambient, uniform pressure when said flange is unsupported by the holder, said open mouth permitting egress and ingress of liquid. The flange is clamped between an upper margin of the tubular holder and a downwardly extending shoulder on the nipple.

3,776,409
GLASS FIBER CONTAINER AND METHOD OF CONSTRUCTION

Lee E. Pearson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 862,727, Oct. 1, 1969, Pat. No. 3,673,028. This application Jan. 31, 1972, Ser. No. 221,977
Int. Cl. F25j
U.S. Cl. 220—3 **7 Claims**

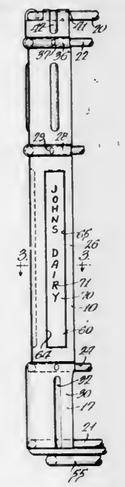


A filament wound glass fiber container includes a base and a hollow tubular wall having a unitary resin matrix reinforced with peripherally wound groups of glass fibers. The tubular wall is apportioned in axially aligned sections which incrementally increase in thickness from one end of the container to the other. Each of the wall sections is wound from a different group of glass fibers with the number of fibers in the respective group being progressively larger in proportion to the thickness of the corresponding sections. The windings of each section overlap in the end regions with the windings of adjacent sections to provide continuity of reinforcement through the region where adjacent sections meet.

3,776,410
PRODUCT-CARRYING BASKET

Arthur B. Carlson, Mendota, Ill., assignor to Conco Inc., Mendota, Ill.

Filed Mar. 5, 1971, Ser. No. 121,270
Int. Cl. B65d *7/20*; **G09f** *3/18*
U.S. Cl. 220—19 **1 Claim**



A product-carrying basket having a construction primarily of sheet metal corner members with angularly-related planar

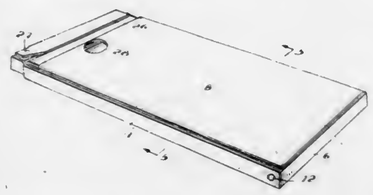
sections assembled to a plurality of perimeter frame wires, with the sheet metal corner members extending for the full height of the basket to provide added strength and constructed to form an integral part of the basket, with welding of a plurality of the perimeter frame wires to a corner member being accomplished as an initial stage in assembly. The product-carrying basket has structure associated with at least one of the corner members to permanently associate a name with the basket, with the name being added after manufacture by a mechanically-locked name-plate recessed to avoid exposure to wear.

3,776,411

HOLDER FOR THIN FLAT PLASTIC CONTAINERS, PARTICULARLY FOR BLOOD SERUM

James Lawrence Luckadoo, P.O. Box 405, Buckeystown, Md.

Filed Dec. 23, 1971, Ser. No. 211,324
Int. Cl. B65d *7/24*
U.S. Cl. 220—20 **4 Claims**



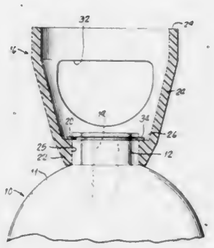
A thin flat container formed of a heat conductive material, such as aluminum consists of a shallow tray having a closure hinged along one edge and movable between open and closed positions. At the end of the tray opposite the hinge there is an outwardly opening channel for receiving test samples of the serum or the like which is enclosed in a plastic bag and is fitted in the tray. A closure member for the channel is hinged to the tray at one end of the channel, and has on one side a downward extension sufficient to engage over the upper free edge of the door. The arrangement is intended for holding serum such as blood cells, plasma or the like during freezing at very low temperatures and storing it in a refrigerated space. The closing and locking member has a hole at the end remote from the hinge, for engagement by a tool for opening it, and also a hole at the hinge end above the hinge pivot through which a hook may be inserted to engage the pivot and lift the whole device.

3,776,412

GAS CYLINDER STRUCTURE AND VALVE-PROTECTING ELEMENT THEREFOR

Wilbur H. Mink, Riverside, Calif., assignor to Luxfer USA Limited, Riverside, Calif.

Filed Sept. 27, 1972, Ser. No. 292,648
Int. Cl. B65d *25/00*; **F25j**
U.S. Cl. 220—85 P **4 Claims**



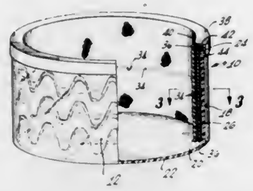
A compressed-gas cylinder having an integral neck for attachment of a valve or the like, with a rigid, hollow, open-ended valve-protecting element rotatably mounted on the neck. The protecting element includes a sleeve surrounding the neck and held in place by a retaining ring snap-fitted into an annular recess on the neck outwardly of the sleeve. An enlarged, generally outwardly flaring portion of the protecting element is formed integrally with and projects outwardly from the sleeve for laterally enclosing and protecting a valve mounted on the neck. Openings are provided in the wall of this enlarged portion to afford access to the valve and to enable use of the protecting element as a handle for the cylinder.

3,776,413

ORNAMENTAL CONTAINER

Jack N. Myers, 514 Doheny Rd., Beverly Hills, Calif.

Filed Feb. 14, 1972, Ser. No. 225,766
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 R **8 Claims**



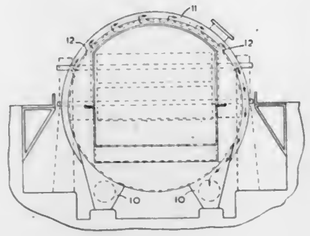
A container comprising a transparent cup-shaped member forming a base and an outer upright tubular sidewall, and an inner tubular sidewall telescoped within the outer sidewall, the sidewalls being spaced apart to define an annular space for encasing a decorative fabric which forms ornamentation for the container. A split ring forms a mounting sleeve for supporting the fabric in the annular space, and a flange overlies the upper ends of the sidewalls to close the annular space. In one embodiment, the flange is secured to the inner sidewall, and in another embodiment, the flange is part of a removable cap.

3,776,414

TANKS FOR THE CONTINUOUS TREATMENT OF ELONGATED METAL WORKPIECES

Frank George Morley Baker, Wednesbury, Staffordshire, England, assignor to Prodorite Limited, Wednesbury, Staffs., England

Filed Sept. 11, 1972, Ser. No. 287,804
Claims priority, application Great Britain, Sept. 11, 1971, 42,440/71
Int. Cl. B65d *7/42*
U.S. Cl. 220—71 **4 Claims**



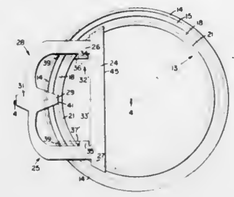
A tank for the continuous treatment of elongated metal strips and workpieces by transient immersion in acid solutions comprises an elongated tubular construction having circumferentially extending tubular stiffening parts at spaced positions along its length, the wall of the tubular construction being formed with ports opening into the interior of said stiffening parts and said interiors of all of said stiffening parts being connected to a manifold for fume extraction purposes.

3,776,415

PAINT BRUSH WIPER

William J. Pfeffer, 1015 Madison St., Manitowoc, Wis.

Filed May 30, 1972, Ser. No. 257,641
Int. Cl. B65d *25/00*
U.S. Cl. 220—90 **4 Claims**



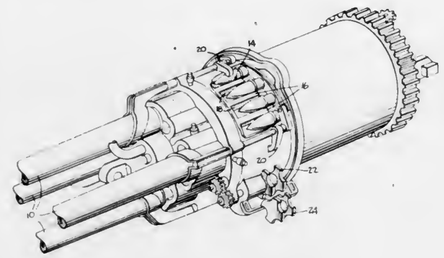
A novel paint brush wiper made from sheet metal, having an initial flat form adapted to be subsequently readily bent and deformed into an operative three dimensional shape, suitable for removable attachment over the open top of a paint can or the like and held interlockably on said can against accidental displacement forces tending to unwantedly displace said wiper sidewise, for-and-aft, upwardly and downwardly.

3,776,416

ARTICLE HANDLING SYSTEM

Eugene Ashley, Burlington; Francis L. Jarvis, Troy; Burton P. Clark, St. George; George E. Kontis, Essex Junction, and Paul A. Spoor, Jericho, all of Vt., assignors to General Electric Company

Division of Ser. No. 201,357, Nov. 23, 1971. This application Jan. 3, 1973, Ser. No. 320,839
Int. Cl. B65h *3/00*
U.S. Cl. 221—21 **8 Claims**



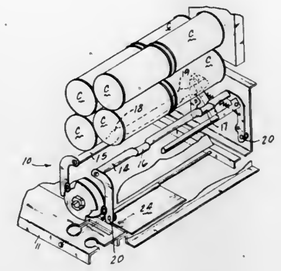
A battery gun has a stationary housing; a plurality of barrels disposed in an annular row and stationary with respect to said housing; each of said barrels having a respective chamber; feeding means for receiving a continuous and regular train of projectiles from a supply; intermediate means for receiving the train from said feeding means; and distributor means for receiving the train from said intermediate means for providing projectiles to said chambers; said intermediate means including means for sensing the presence of misfired projectiles in said chambers and for providing lacunae in the train of projectiles corresponding to such misfires, whereby no projectiles are provided to said distributor means for provision to chambers containing misfired projectiles.

3,776,417

ARTICLE VENDING MECHANISM

Forrest L. Austin, Brooklyn Center, Minn., assignor to Selectivend, Inc., Des Moines, Iowa

Filed Jan. 26, 1972, Ser. No. 220,851
Int. Cl. G07f *11/08*
U.S. Cl. 221—67 **1 Claim**



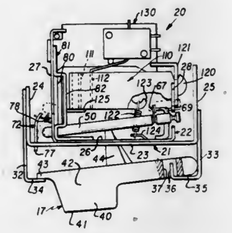
An article release mechanism for a vending machine includes horizontal bar means disposed beneath a staggered stack of articles to be vended, wall means laterally supporting the articles in the column, and one of said means, such as the horizontal bar means, having a radial projection which cooperates with the other means to provide a 3-point engagement with the article being released.

3,776,418

SELECTION SYSTEM FOR VENDING MACHINE

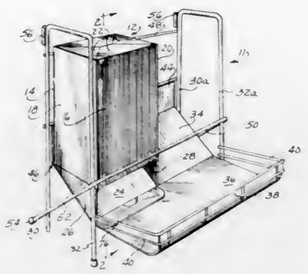
Floyd V. Bookout, Long Grove, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.

Filed Sept. 11, 1972, Ser. No. 287,785
Int. Cl. G05g *5/08*
U.S. Cl. 221—125 **9 Claims**



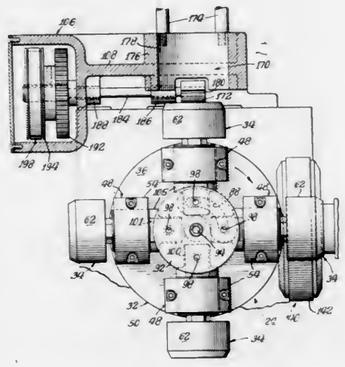
An electro-mechanical apparatus for use in automatic vending machines, particularly of the mixed drink variety, embodying multiple push button selection controls operatively integrated by pivotal commodity rods and bars with common electrical control switches and vending circuits including a mechanical memory complex demanding the dispensing of a selected commodity for each vending operation, and electromechanical means for positively integrating and interlocking credit acceptance and commodity selection functions as a precondition to initiating vending operation of the machine.

3,776,419
CONTAINER AND RACK FOR PRESENTING ARTICLES
Bernhard A. Zinkgraf, Prospect Heights, and Jack Leroy Williams, Palatine, both of Ill., assignors to Krafto Corporation, Glenview, Ill.
Filed Sept. 17, 1971, Ser. No. 181,614
Int. Cl. B65h 1/06
U.S. Cl. 221—197 1 Claim



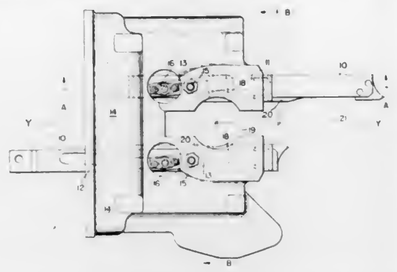
Apparatus for dispensing articles which includes a container and a rack to hold the container in an inverted position. The rack cooperates with the container to support the container in a predetermined manner so as to allow articles to move from the container through an opening in the container.

3,776,420
TURRET TYPE FEEDER FOR SPRAY MACHINE
Julius J. Melind, Des Plaines, Ill., assignor to H. L. Fisher Mfg. Co. Inc., Chicago, Ill.
Filed Apr. 3, 1972, Ser. No. 240,601
Int. Cl. B23q 7/04
U.S. Cl. 221—211 13 Claims



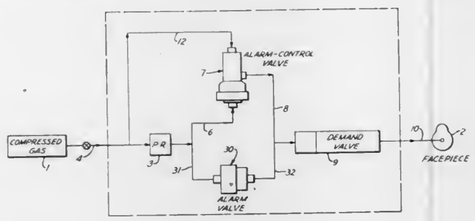
In a turret type machine adapted to apply a coating to one surface of a can lid, the can lids are stacked in a load chute and sequentially advanced downwardly by a feed means that drops the lowermost can lid to a loading position. A turret subassembly rotates a plurality of radially extending work holder units in timed relation to the feed means such that a work holder unit passes through the loading position simultaneously with the arrival of the lid. Each work holder unit has a work piece holder at its outer end which catches the falling can lid and a suction means to hold the can lids in place as the work holder unit moves into a spraying area. After a conventional spraying device applies a coating to the can lid, the suction means releases its hold on the treated can lid and the can lid drops to an output chute.

3,776,421
MECHANISM FOR SEPARATING A CONTAINER CLOSURE FROM A STACK OF CLOSURES
William B. Harrison, Dedham, and Edwin E. Keene, Roslindale, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.
Continuation of Ser. No. 1,209, Jan. 7, 1970. This application Feb. 16, 1972, Ser. No. 229,212
Int. Cl. B65g 59/00
U.S. Cl. 221—251 2 Claims



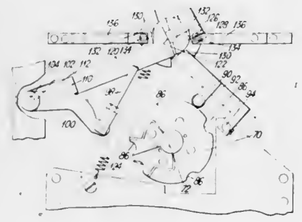
A closure feed mechanism for reciprocating slide-type container closure lining machines. It is provided with cut-off knives which separate the lowermost closure from the closure in the feed stack by causing the knives to advance transverse to the motion of the slide rather than advance longitudinally at the speed of the slide. As a result, knives approach the closures with one-half of their prior velocities, and denting or bending the closures is substantially eliminated.

3,776,422
COMPRESSED GAS BREATHING APPARATUS
Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Oct. 25, 1972, Ser. No. 301,461
Int. Cl. B67d 5/32
U.S. Cl. 222—3 10 Claims



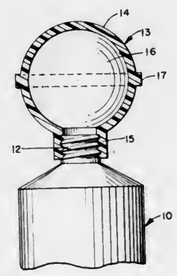
A pressure reducer is connected between a source of high pressure breathing gas and the inlet of a normally closed pneumatically operated control valve, the outlet of which is connected with a pressure reducing demand valve leading to a facepiece. A tube also connects the breathing gas source with another part of the control valve for holding the latter open as long as the breathing gas pressure remains above a predetermined value, whereby the control valve connects the pressure reducer with the demand valve. A normally closed pneumatically operated alarm valve also connects the pressure reducer with the demand valve, but is formed and constructed to be snapped open by the pressure drop across it only when the demand valve is opened while the control valve is closed due to reduction in the gas pressure below said predetermined value. The pulse of gas created every time the alarm valve opens signals the user that the control valve has closed.

3,776,423
LIQUID DISPENSING APPARATUS FOR BLENDS OF TWO OR MORE LIQUIDS
Hugh Edmund Phillips, London, England, assignor to Avery-Hardoll Limited, Chessington, Surrey and Beck & Co. (Meters) Limited, London, England
Continuation of Ser. No. 3,108, Jan. 15, 1970, abandoned. This application Jan. 13, 1972, Ser. No. 217,677
Claims priority, application Great Britain, Jan. 20, 1969, 3,182/69
Int. Cl. B67d 5/30
U.S. Cl. 222—26 1 Claim



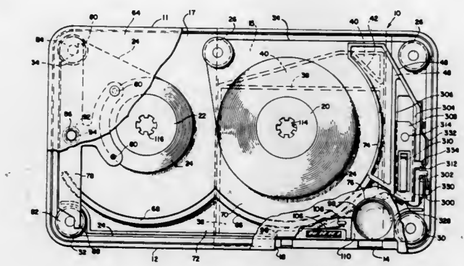
A dispensing apparatus for blends of two or more petrols is provided with an interlock linkage connected between the blend selection device and a stop member connected to the switch for activating the pump motor whereby on alteration of the blend selection device the linkage moves into the path of the stop member, de-activating the motor, and likewise the blend selection device is prevented from being operated when the motor switch is in the 'on' position.

3,776,424
NON-CLOGGING CLOSURE CAP
Nicholas J. D'Amato, 2840 Braidwood Rd., Richmond, Va.
Filed June 23, 1972, Ser. No. 265,682
Int. Cl. B65d 35/22
U.S. Cl. 222—94 2 Claims



A hollow closure cap is removably positioned on the outlet neck of a collapsible container. The interior of the cap provides a space to receive contents of the container which ooze from the neck after the container is squeezed, thus preventing the ooze from gathering on the outside of the neck and interfering with placement and removal of the cap.

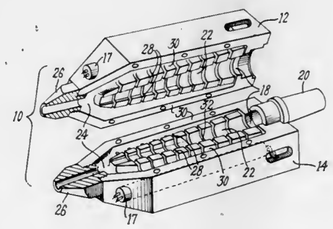
3,776,425
SYSTEM FOR RUPTURING POD CONTAINING PROCESSING FLUID FOR PHOTOGRAPHIC MATERIAL
Philip G. Baker, Peabody; Gerald H. Cook, Lynnfield, and Rogers B. Downey, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 838,783, July 3, 1969, Pat. No. 3,687,051. This application June 1, 1972, Ser. No. 258,843
Int. Cl. B65d 35/28
U.S. Cl. 222—101 17 Claims



A system for rupturing a pod having a weakened edge portion and containing processing fluid for photographic material and for expelling the fluid therefrom. The fluid filled pod is mounted adjacent a support surface and protected by a flexible cover plate. A rigid member is initially disposed between the cover plate and the support surface adjacent the end of the rupturable pod furtherest removed from the pod's weakened portion. Extending along the inside face of the cover plate is a rib which initially presses the section of the pod adjacent thereto against the support plate so that substantially no fluid is disposed within the pod between the rib and the support plate. The cover plate includes access means whereby externally mounted force applying means may be introduced into the space between the cover plate and the support surface to displace the rod across the length of the pod. The cover plate is deflected by the rod during its displacement across the pod and at the same time presses the rod firmly against the pod.

This system can advantageously be employed in a compact multi-purpose film handling cassette adapted to be inserted into a unique processor-projector unit containing the aforementioned force applying means.

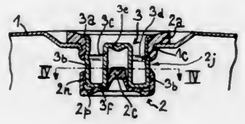
3,776,426
ADHESIVE EXTRUDERS
Albert E. Newton, Beverly, Mass., assignor to USM Corporation, Flemington, N.J.
Filed Sept. 26, 1972, Ser. No. 292,420
Int. Cl. B67d 5/62
U.S. Cl. 222—146 HE 4 Claims



Apparatus for melting and dispensing heat softenable thermoplastic material such as adhesives, including a main body

portion having therein a melting chamber, an inlet passageway leading into one end of the chamber, and a discharge passageway in communication with said chamber and at the other end thereof. The melt chamber has a cross section which progressively diminishes from the inlet end toward the discharge end. The main body portion includes a collecting manifold disposed generally parallel to the melting chamber and opening into the discharge passageway, at the discharge end of the main body portion. A plurality of by-pass conduits disposed in the main body portion and operably connected between the melting chamber and manifold permit the melted thermoplastic material to exit from the melt chamber as it becomes liquefied by passing through the by-pass conduit means and further traversing the collecting manifold to be delivered to the discharge passageway at the discharge end of the melting chamber.

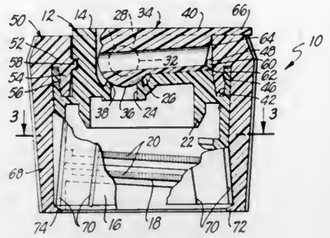
3,776,427
CONTAINER WITH VALVE FILLED WITH FLUID UNDER PRESSURE
Peter Remane, 12 Avenue Joubert, Sainte-Colombe-Les-Vienne, Rhone, France
Continuation-in-part of Ser. No. 886,242, Dec. 18, 1969. This application Jan. 4, 1972, Ser. No. 215,306
Int. Cl. B65d *83/00*
U.S. Cl. 222—394 **10 Claims**



A container filled with a pressurized fluid and closed by a valve, said valve being formed mainly by two pieces, one rigid piece being in the form of a cup embedded inside an aperture of the container above the other piece formed of elastomer material, which, on the one hand, forms a fluid-tight assembly joint by a peripheral portion pressed between rigid cup and the edge of said aperture, and, on the other hand, forms with a central portion a valve flap applied against an annular portion of the rigid piece; said other piece of elastomer material being between the two said portions traversed by at least one porthole for fluid passage; said pieces resting upon the outer wall of container by peripheral superposed flanges, and wherein the flange of the elastomer piece overlaps the outer wall of the container beyond the periphery of the flange of the rigid piece to form around it an annular fluid-tight joint, suitably centered with respect to a tubular filling mouthpiece adapted to be pressed axially against the container.

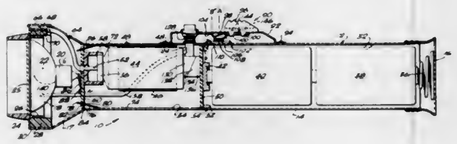
3,776,428
SAFETY CLOSURE USEABLE ON THREADED CONTAINER NECK
Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.
Filed Apr. 28, 1972, Ser. No. 248,603
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 **6 Claims**

A so-called safety closure having a closure body, a closure element mounted on the closure body so as to be movable between open and closed positions and a locking member mounted on the closure body so as to be capable of being moved so as to prohibit movement of the closure element from the closed position and so as to permit movement of the closure element to the open position from the closed position can be constructed utilizing an internally threaded skirt on the closure body and a sleeve on the locking member in such a manner that the closure can be utilized on a conventional threaded container neck without significant danger of the closure being removed from the neck by comparatively young children or others. Coacting ratchet means only permitting the



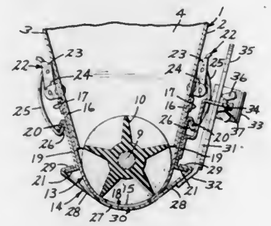
entire closure to be screwed or torqued on a container neck are provided between the closure body and the locking member on the skirt and on the sleeve.

3,776,429
COMBINATION FLASHLIGHT AND PROPELLANT DISCHARGE DEVICE
John R. DeLucia, 118 N.E. 102nd St., Miami Shores, Fla.
Filed Feb. 28, 1972, Ser. No. 229,902
Int. Cl. F21v *33/00*
U.S. Cl. 222—162 **11 Claims**



A device, incorporating the conventional configuration, appearance, weight and handiness of a flashlight, which doubles as a flashlight and a protective means incorporating a three position switch, a first or off position for deactivating the device, a second position for completing a circuit to the flashlight bulb through a conventional battery energized circuit and a third position for discharging a propellant from a capsule, enclosed within the housing, in the general direction in which the flashlight is aimed, the circuit to the bulb being energized in said third position. Interlock means are provided to prevent discharge of the propellant at all times except when the switch is in the third position.

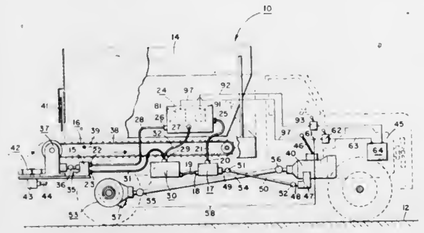
3,776,430
HOPPER CONSTRUCTION FOR DISPENSERS OF GRANULAR MATERIAL
Ebenhard S. Gandrud, P.O. Box 528, Owatonna, Minn.
Filed Oct. 16, 1972, Ser. No. 297,655
Int. Cl. A01c *15/08*
U.S. Cl. 222—177 **2 Claims**



A hopper bottom wall member and a cooperating gate member for mobile hoppers for dispensing granular material

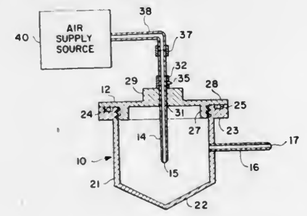
over the ground, the members each having spaced discharge openings of identical size and shape. The gate member is movable in opposite directions to move its openings between positions of full registration with the openings in the bottom wall member and material flow shut-off positions completely out of registration with the openings in the bottom wall member. The bottom wall member is mounted on the hopper for easy removal therefrom and the gate member is mounted on the bottom wall member.

3,776,431
MATERIAL SPREADER SYSTEM WITH HYDRAULIC DRIVE AND SPEED CONTROL MEANS
John R. Riley, 7139 Sharpcrest, Houston, Tex.
Filed Aug. 7, 1972, Ser. No. 278,680
Int. Cl. E01c *19/20*
U.S. Cl. 222—178 **4 Claims**



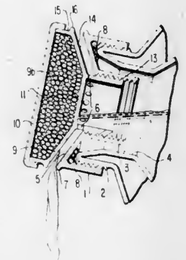
This invention relates to material spreaders of the type including: a hopper, a prime mover for propelling the hopper at predetermined speeds, a movable unloading assembly for spreading the material from the hopper on the ground at a rate dependent upon the nature of the material and the ground speed of the hopper, a hydraulic motor for driving the unloading assembly, a hydraulic pump, and a control unit between the hydraulic pump and the hydraulic motor for varying the speed of the motor. The control unit employs a fluid-flow proportioning device connected in parallel-circuit relationship with an operable 3-way valve to provide at least two speeds for the motor.

3,776,432
LYOPHILIZED SPORE DISPENSER
Artie D. Jessup, Hampton, Va., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.
Filed Oct. 13, 1971, Ser. No. 188,928
Int. Cl. B67d *5/54*
U.S. Cl. 222—193 **2 Claims**



A lyophilized spore dispenser is provided which produces a finely divided, monoparticulate cloud of bacterial spores. The spores are contained within a tightly sealed chamber and a turbulator orifice conected to an air supply source provides a jet of air which stirs up the spores and causes the spores to be suspended in eddy currents within the chamber. This air jet also produces a positive pressure within the chamber which forces the spores out of an injection orifice.

3,776,433
DISPENSING CLOSURE FOR A CONTAINER
Elias Martins De Treitas, Porto Alegre, Brazil, assignor to Industries Termica Brasileira S/A, Porto Alegre, Brazil
Filed June 21, 1972, Ser. No. 265,008
Claims priority, application Brazil, Dec. 7, 1971, 008103
Int. Cl. A47j *41/00*
U.S. Cl. 222—519 **12 Claims**

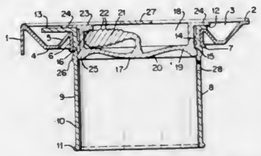


For a container such as a vacuum or THERMOS bottle, a dispensing closure including a mouthpiece secured such as by threads onto the neck of the bottle and having an inverted conical surface for receiving a complementary shaped conical surface on a stopper for closing the container. Depending from the inverted conical surface of the mouthpiece and extending into the neck of the bottle is a cylindrical skirt having internal threads for receiving a threaded sleeve projecting from the stopper whereby the stopper may be axially moved relative to the mouthpiece to seat and unseat said conical surfaces for opening and closing the bottle. In one embodiment, the contents of the bottle are conveyed to the annular space defined by said conical surfaces when unseated, by a series of annularly arranged holes in the inverted conical surface of the mouthpiece. In another embodiment, the contents of the container are conveyed to said annular space through holes formed in the sleeve of the stopper, the latter being hollow. In both embodiments, an annular gasket is inserted between the top annular edge of the neck of the bottle and the overlying portion of the mouthpiece; and the stopper is formed in two pieces with a hollow interior filled with a thermic insulating material.

3,776,434
CAN WITH AN EXTENSIBLE POURING SPOUT WITH SEALING PLUG
Borge Johannes Ravn Christensen, 31 Gunnarsvel, Bagsvaerd, and Preben Bob Jacobsen, 23A Gylfesvej, Espergaerde, both of Denmark
Filed Dec. 13, 1971, Ser. No. 207,351
Claims priority, application Denmark, Dec. 11, 1970, 6301
Int. Cl. B67d *3/00*
U.S. Cl. 222—525 **1 Claim**

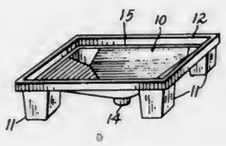
A can with an extensible pouring spout of plastic which is displaceable in a mouthpiece from a recessed position. The spout has a flange located on its upper end and is carried pendent in the can, to a pouring position projecting from the can in which it is kept by engagement of a securing part of the spout with a flat counterpiece on the mouthpiece. The secur-

ing part is formed by a mainly conical extension of the cylindrical side wall of the spout at the lower end of the spout, to which spout belongs a sealing plug of plastic for tight sealing of the upper open end of the spout. The sealing plug has a finger grip bendable thereinto and outside of circumferential projections or grooves for engagement with matching inside projections or circumferential grooves inside the spout. The can is particularly characterized in that dependable finger grip of the sealing plug branches off centrally from a central, membrane-like part of the bottom of the depression of the sealing plug, a plate part over one side of the depression, in order that the upper, outermost end of the finger grip may join firmly in



the sealed position of the sealing plug in such a manner that the innermost end of the finger grip presses the central, membrane-like part of the bottom down, bulging like a spherical shell and pressing, thereby, by pushed-in pouring spout, a lower edge part projecting from the lower peripheral part of the sealing plug against the cylindrical part of the pouring spout, same pressing a circumferential bulge out for tight contact against the lower edge part of the mouthpiece of the can, the projecting lower edge part of the sealing plug extending downwards in front of a circumferential bead in the pouring spout, when a projecting flange rests on the upper flange of the spout, when this upper flange is resting on the mouthpiece of the can.

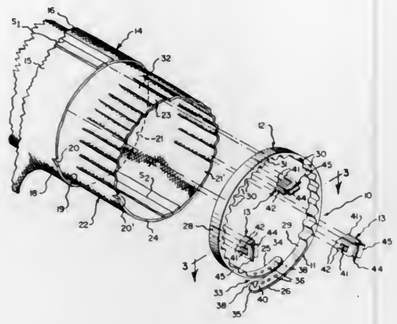
3,776,435
PALLET
William R. Smith, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed July 14, 1972, Ser. No. 271,719
Int. Cl. B65d *25/48*
U.S. Cl. 222—566 **4 Claims**



A hopper-type pallet which includes a pallet body having downwardly and inwardly sloping walls terminating in a dispensing opening and which includes a plurality of legs to permit the handling thereof by means of fork lift trucks. The pallet is adapted to be used in conjunction with a container body and is particularly suitable for the handling of flowable materials. Additionally, the pallet is of such a construction that one or more of the empty pallets can be nested together in closely spaced relationship to minimize space requirements in the course of shipping or storing the empty pallets.

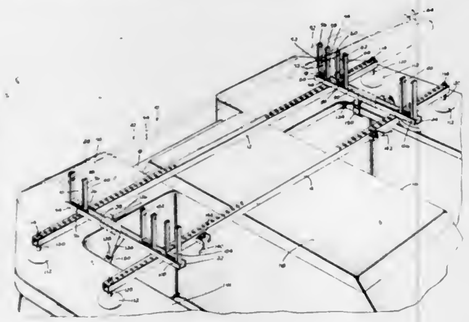
3,776,436
SEWING AID DEVICE FOR, AND METHOD OF, SETTING A SLEEVE IN THE ARMHOLE OF A BODICE
Regina Reidy, 258 W. 7th St., Emporium, Pa.
Continuation-in-part of Ser. No. 221,994, Jan. 31, 1972, abandoned. This application Mar. 21, 1973, Ser. No. 343,395
Int. Cl. A41h *43/00*
U.S. Cl. 223—1 **16 Claims**

A sewing aid device has an elongated flexible strip arcuately bent into an annular form of adjustable circumferential size. The smooth outer surface of the form is arranged to be covered by the marginal portion of a bodice at the armhole. The inner surface of the form has a series of transversely extending depressions uniformly spaced therealong to provide an undulating contour. The contoured inner surface is arranged to receive an oversized sleeve cap. A plurality of clips



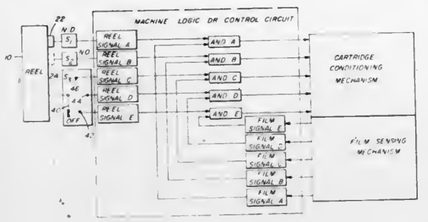
are spaced about the form for holding the marginal portion to the outer surface and for holding and gathering the sleeve cap about the contoured inner surface. Alternatively, the marginal portion of the bodice may be adhesively held to the outer surface, and the sleeve cap may be clamped against the contoured inner surface by a complementarily contoured inner strip.

3,776,437
WATER SKI STOWING DEVICE
William M. Carney, 1816 Spear St., Logansport, Ind.
Filed Feb. 23, 1972, Ser. No. 228,569
Int. Cl. B60r *9/08*
U.S. Cl. 224—42.45 R **14 Claims**



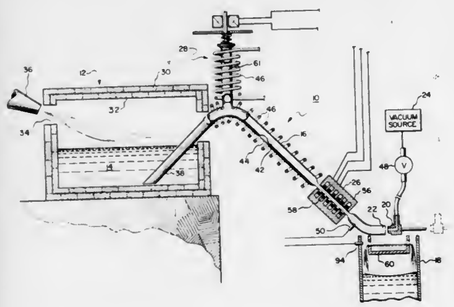
A device for stowing water skis on a boat comprising at least one elongated member and means for securing the member to the deck of a boat. A plurality of bifurcate elements are mounted adjacent the opposite ends of the elongated member, the bifurcate elements being adapted to slidably receive and frictionally engage a pair of water skis edgewise therein. The bifurcate elements are arranged to provide necessary clearances for protruding parts of the water skis.

3,776,438
FILM DISCRIMINATING AND WINDING APPARATUS
Willis G. Calberg, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 15, 1972, Ser. No. 253,068
Int. Cl. G03d *15/00*; **B26f** *3/00*
U.S. Cl. 225—93 **10 Claims**



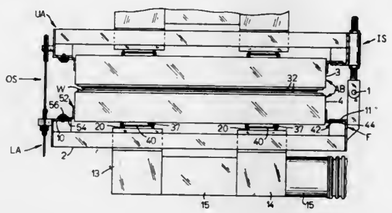
A film discriminating and winding apparatus programmed to receive and condition film containers containing a predetermined type of film for the removal of film therefrom. The apparatus is programmed in one instance by mounting a coded take-up reel thereon designed to receive film of a predetermined type, in another instance by mounting such a coded reel and manually positioning a corresponding selector-switch, or by a combination of the two. The film containers such as cartridges are provided with film-identifying indicia identifying the type of film contained therein, and the apparatus provided with an indicia or film sensing mechanism for sensing the type of film. If the film in the cartridge matches the film for which the reel is coded, the apparatus is enabled for operation, and when operated conditions the cartridge for the removal of film therefrom. The removed film is fed through an operating station, such as a splicing station, and then onto the take-up reel of the reel winding apparatus.

3,776,439
FAIL-SAFE LIQUID PUMPING AND FLOW CONTROL SYSTEM
Joseph F. Settle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Apr. 3, 1972, Ser. No. 240,417
Int. Cl. C21b *7/14*
U.S. Cl. 266—38 **4 Claims**



A fail-safe liquid metal pumping and flow control system is described wherein metal is transferred from a holding furnace to a continuous casting mold, individual molds, ladles, etc., through a siphon having an electromagnetic pump with dual direction output situated along the length of the siphon to control the flow of liquid metal therethrough. The system initially is primed by applying vacuum to the siphon through a suitable valve and the siphon is vented to terminate liquid metal flow upon sensing of an anormal process condition, e.g., loss of electrical power to the electromagnetic pump, to inhibit further siphoning of liquid metal from the reservoir. Also disclosed is a pumping system wherein the holding furnace is initially disposed at an attitude to inherently raise the liquid metal level into operating engagement with an electromagnetic pump drawing liquid metal from the holding furnace. The furnace then is tilted upon the subsequent sensing of an anormal process condition to gravitationally return metal from the electromagnetic pump to the holding furnace. The electromagnetic pump thus provides the lifting force to drive the molten metal up to and over the pouring spout, thereby providing complete electrical control of the pouring rate, while failure of power or the pump will cause the flow to terminate to provide the fail-safe feature.

3,776,440
WEB HANDLING APPARATUS
John W. Frost, and Paul H. Stibbe, both of De Pere, Wis., assignors to TEC Systems, Inc., De Pere, Wis.
Filed Jan. 30, 1973, Ser. No. 327,995
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **22 Claims**



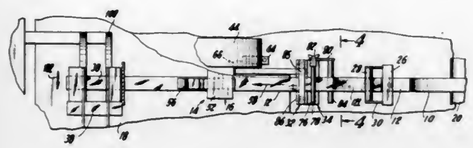
Apparatus for handling a running web including oppositely disposed air bars for drying and/or positioning the web as it passes between the air bars. Means are provided for quickly and easily inserting and removing the air bars for replacement or maintenance and also for insuring that the air bars are located precisely with respect to one another and with respect to the web.

An elongated air bar for web handling apparatus and having an air receiving hole intermiediate its length and also having bracket means extending from its ends for quick attachment to the apparatus. The air bar also has guide means for guiding the hole in the bar into precise registry with an air supply hole of an air supply duct.

3,776,441
STRIP MATERIAL FEEDING DEVICE
Frederick F. Forthmann, Jr., Washington Twp., Bergen County, and Earl F. Beezer, Saddle Brook, both of N.J., assignors to Forthmann Label Services Company, Westwood, N.J.
Filed May 10, 1972, Ser. No. 252,315
Int. Cl. B65h *17/42*
U.S. Cl. 226—114 **9 Claims**

A device for facilitating the feed of strip material, particularly, a continuous length of labels which are to be cut away

from the strip material and folded and packed into containers includes, a reel having a continuous winding of the strip material which is freely rotatably mounted. The strip material is guided through a guide element and over a table where it is advanced along a feed path by an oscillatable pusher finger which cyclically engages against the material and moves it



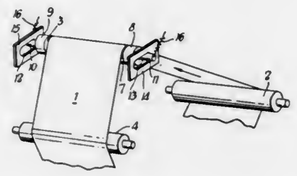
along the feed path. The construction includes holding means located between the pusher and the reel supply for holding the label periodically in order to permit looping means to engage the label strip material, pull a length of it off the reel and form it into a loop between the holding means and the reel supply. The pulled off loop is subsequently fed by the pusher.

3,776,442

STEERING DEVICE FOR TRAVELLING WEB

Kenneth Arthur Ridley, Ilford, England, assignor to Ilford Limited, Essex, England

Filed Dec. 21, 1972, Ser. No. 317,363
Int. Cl. B65h *23/32*
U.S. Cl. 226—198 **9 Claims**



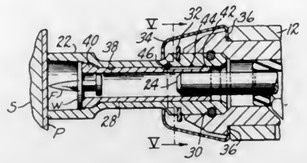
A steering device for a travelling web is described which comprises a system of rotatable rollers having an approach roller, at least one steering roller and a departure roller; the axes of the approach and departure rollers are parallel to each other and fixed and the axis of the stearing roller is diplaceable, from a position parallel to that of the other rollers, in one place, and the ends of the rollers to the system are so arranged that the travelling wet laps each of the approach, steering and departure rollers in turn. The steering roller comprises a rotatable main portion over which the web laps when the axis of the steering roller is parallel to those of the other rollers, and at least one extension roller portion is axially connected to an end of the rotatable main portion and is separably rotatable; and a spindle is connected to each such extension roller portion present, and each spindle located in a guide member containing a parallel sided slot, the parallel sides of which are so positioned in relation to the approach and departure rollers that the spindle therein is displaceable only along the tangent of an ellipse constructed on the ends of the approach and departure rollers as foci and passing through the end of the stearing roller. Means for biassing each spindle present towards that end of the slot in which the spindle is located which is the approach end in regard to the travelling web are also provided.

3,776,443

FASTENER DRIVING TOOL WITH SLIDABLE FASTENER GUIDE

Richard W. Oefinger, Shelton, Conn., assignor to USM Corporation, Boston, Mass.

Filed May 23, 1972, Ser. No. 256,086
Int. Cl. B25c *1/14*
U.S. Cl. 227—10 **5 Claims**



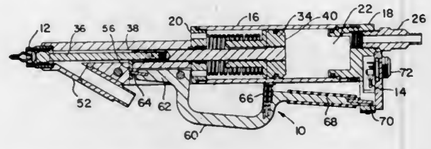
An explosive fastener driving tool has an adapter mounted on the muzzle end of the barrel and slidably holds a gas actuated liner for receiving a ram. The liner bears on the washer portion of a fastener while the ram impacts the fastener head to insure that the fastener piercing point is guided for efficient work penetration.

3,776,444

LOOP FASTENER GUN ASSEMBLY

Donald E. Kuehn, Bay Village, and John Keith Lyon, Lorain, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed June 21, 1971, Ser. No. 154,936
Int. Cl. B25c *1/04*
U.S. Cl. 227—130 **5 Claims**



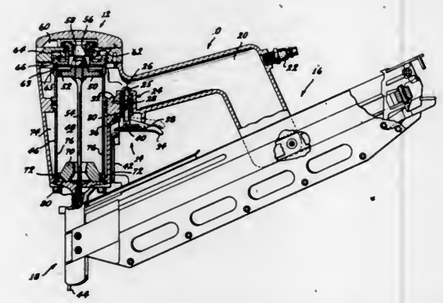
A loop type fastening mechanism which utilizes an air operated plunger which pushes the fastener into engagement with the support.

3,776,445

PNEUMATIC FASTENER DRIVING DEVICE

Raymond Visher Pomeroy, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Aug. 24, 1972, Ser. No. 283,517
Int. Cl. B02c *1/04*
U.S. Cl. 227—130 **2 Claims**



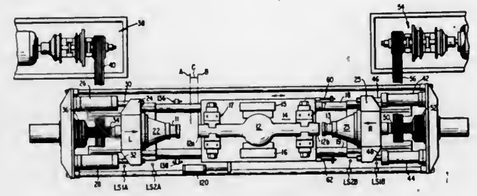
A pneumatic fastener driving device wherein a cylinder houses a piston that is adapted to be driven therethrough by air pressure. A driving blade connected to the piston extends through the cylinder and strikes a fastener, e.g., a nail. A buffer in the bottom of the cylinder cushions the impact of the piston upon reaching the end of its stroke. A chamber surrounding the cylinder is supplied with air pressure during the downward stroke of the piston which is released at the end of the stroke against the bottom side of the piston to return it to its starting position. An air deflecting collar protects the buffer by deflecting air from the chamber away from the buffer and against the bottom of the cylinder.

3,776,446

FRICTION WELDING APPARATUS

Arthur F. Gage, Warren, and Alex F. Stamm, Rochester, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 151,767, June 10, 1971, Pat. No. 3,727,298. This application Jan. 5, 1973, Ser. No. 321,489
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **6 Claims**



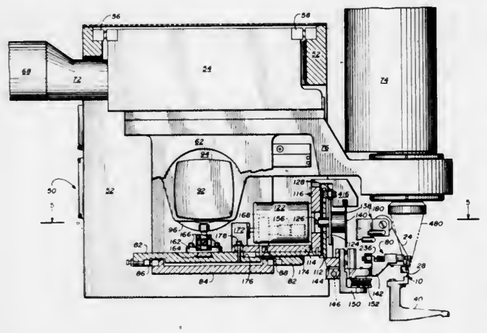
Method and apparatus for friction welding two rotating end workpieces to a non-rotatable central workpiece wherein one end workpiece is held axially stationary while the other end workpiece is moved axially into engagement with the central workpiece and then axially displaces the central workpiece into engatement with the one end workpiece. The central workpiece is mounted on a floating table which is axially displaceable to accomplish the described welding cycle.

3,776,447

AUTOMATIC SEMICONDUCTOR BONDING MACHINE

Anthony L. Adams, Dallas; Gerald A. Yearsley, Garland; Marion I. Simmons, Richardson, and Billy P. Yager, Lake Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 837,485, June 30, 1969, Pat. No. 3,641,660. This application May 26, 1971, Ser. No. 147,251
Int. Cl. B23k *21/00*
U.S. Cl. 228—3 **13 Claims**



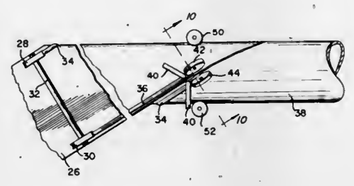
An automatic machine for ball bonding a lead wire to an expanded contact of a semiconductor device and stitch bonding the wire to a lead of the semiconductor package is described. The machine automactically aligns an X-Y table in predetermined relationship to the semiconductor device by means of an electrooptical system. A bonding needle mounted on the table is then moved in a predetermined manner to press the balled end of the wire against the expanded contact. Wire is then positively payed out as the bonding needle is moved to the lead where a stitch bond is performed. After the stitch bond, the needle is raised to pull out a length of wire, then the wire is clamped to break the wire near the stitch bond. The length of the wire protruding from the needle is then passed through a flame to form a new ball preparatory to a new cycle. The wire is payed out to the bonding needle from a spool supported by an air bearing. After the ball is formed, reverse torque is applied to the spool to pull the ball up against the end of the bonding needle. After the ball bond, forward torque is applied to pay out the wire, and the wire is positively fed through the needle by an air stream. After the stitch bond is completed and the ball reformed by the flame, reverse torque is again applied to the spool to draw the ball up against the end of the needle preparatory to the next bonding cycle.

3,776,448

APPARATUS FOR CONTINUOUS PRODUCTION OF SPIRAL PIPE

James Eugene Fay, 4204 Nelson Rd., Middletown, Ohio

Division of Ser. No. 107,748, Jan. 19, 1971, Pat. No. 3,722,075. This application Mar. 26, 1973, Ser. No. 344,607
Int. Cl. B23k *29/00*
U.S. Cl. 228—5 **14 Claims**



A method and apparatus for continuously producing spiral pipe from sheet material including feeding a strip of the sheet material into a spiral pipe forming machine, continuously deforming a portion of the longitudinal edges of the sheet material so as to bend the edge downwardly toward the axis of the formed pipe and out of the normal plane of the sheet material, forming the sheet material into a spiral tube and bringing the deformed edges into parallel face to face abutting relationship, welding the edges into a seam, and reforming the deformed portion of the sheet material to provide a smooth forged weld.

3,776,449

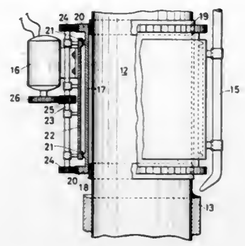
WELDING MACHINE FOR CONNECTING TUBES TO A WALL

Nils Ake Curt Jungle, Goteborg, Sweden, assignor to Aktiebolaget Gotaverken, Goteborg, Sweden

Filed June 12, 1972, Ser. No. 261,931
Claims priority, application Sweden, June 16, 1971, 7791/71
Int. Cl. B23k *5/00*
U.S. Cl. 228—29 **1 Claim**

When fitting a large number of parallel tubes to the end plate of a heat exchanger in which each individual tube is pushed through a nipple in the end plate and reaches a considerable distance into the heat exchanger, certain difficulties are encountered in performing a satisfactory welding joint between the tube and the nipple. The space available is often limited and manual or even automatic welding by conventional machines is practically impossible. The disclosure

proposes a machine which can easily be fitted around the tube, to be carried thereby and retained by simple means in



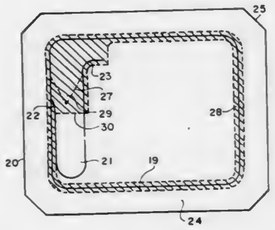
the proper position adjacent to the part of the tube to be welded. The machine includes a welding torch and means for rotating the same around the tube.

3,776,450

FOIL FOR CLOSING EASILY OPENABLE PACKAGES

Od W. Christensson, Bromma near Stockholm, Sweden, assignor to Christenssons Maskiner & Patenter Aktiebolag, Stockholm, Sweden

Filed Feb. 14, 1972, Ser. No. 226,113
Claims priority, application Sweden, Mar. 1, 1971, 2541/71
Int. Cl. B65d *17/00, 41/00*
U.S. Cl. 229—7 R **6 Claims**



A closing foil for easily openable packages of the type wherein the foil is to be laid over the upwardly open mouth of the package and adhered to the mouth of the package. The foil comprises two layers evenly contacting each other, the inner layer being provided with an arrow point-like tear line at the beginning of the tearing area, whereas the exterior layer is provided with tear lines along the continuation of the tearing area, as well as with a tongue for initiating the tearing. One end of the arrow point-like cut ends at a cut in the exterior layer which extends about the exterior layer inwardly of the periphery of exterior layer. The two layers are adhered to each other such that in each of the layers the cuts or tear lines are tightly covered by uncut portions of the other layer, and are adhered along the tear lines. The part of the exterior layer forming the tongue is not connected to the interior layer.

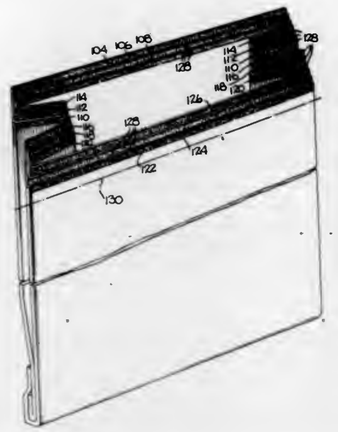
3,776,451

GUSSETED TYPE BAGS

John J. Goodrich, Pensacola, Fla., and Chester E. Waxlax, New City, N.Y., assignors to St. Regis Paper Company, New York, N.Y.

Division of Ser. No. 467,416, June 28, 1965, Pat. No. 3,687,356. This application May 26, 1972, Ser. No. 257,253
Int. Cl. B65d *31/02*
U.S. Cl. 229—55 **6 Claims**

A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and stepped rear portion adapted to overlap said front portion within the overlapped area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, a bonding agent in a dormant state substantially covering said exposed surfaces at said end of the tube when said bag is in its assembled condition, and said bonding agent being reactivatable to close said bag end, the opposite end of said tube being the reverse of said one end and being folded over and adhered to a surface of said tube by means of said bonding agent, the innermost ply being preferably of a heat sealable material.

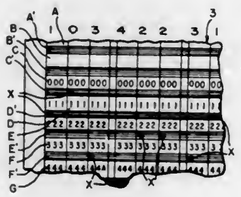


3,776,452

METHOD FOR ENCODING PUNCH CARDS

Anthony E. Maciorowski, 4913 N. Normandy Ave., Chicago, Ill.

Division of Ser. No. 157,414, June 28, 1971, Pat. No. 3,743,175. This application Mar. 6, 1973, Ser. No. 338,539
Int. Cl. G06k *1/04*
U.S. Cl. 234—1 **5 Claims**



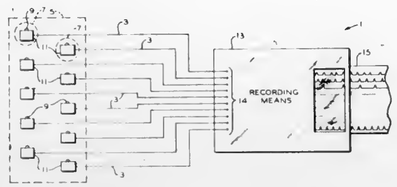
A method for coding a record card with paraindex and index punches wherein the card is punched with paraindex punches and such punches are used to control the punching index punches.

3,776,453

AUDIENCE RESPONSE MEASUREMENT METHODS AND APPARATUS

Warren W. Friedman, 705 Olive St., St. Louis, Mo.

Filed Sept. 29, 1972, Ser. No. 293,466
Int. Cl. G07c *13/00;* **G01d** *9/00;* **A61b** *5/16*
U.S. Cl. 235—52 **6 Claims**



Audience response to a presentation is measured by a method involving establishing a plurality of circuits through the audience, providing the audience members with switch means operable by the member for switching a respective circuit and making the presentation to the audience with the members then operating their respective switch means during the presentation at a rate estimated to reproduce the predetermined constant rate. Thereafter, during the presentation, the switching of each of the circuits caused by each of the members is recorded, and the recorded rate is then compared with the predetermined constant rate so as to derive from the difference between these rates a measure of audience response to the presentation.

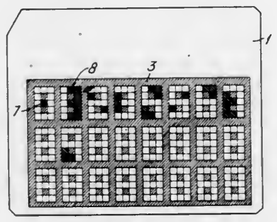
Apparatus of the invention includes a plurality of circuits through the audience, and a plurality of switch means each connected with corresponding ones of the circuits and each operable by an audience member for switching the corresponding circuit, the rate of switch operation being at a rate determined by the member to reproduce a predetermined constant rate of switch operation. The apparatus includes a device such as a strip chart recorder which is responsive to the switching of each circuit for determining the actual rate of switch operation during the presentation.

3,776,454

DATA SUPPORTS FOR NUMERICAL DATA

Lloyd Leslie Llewellyn Jones, 36 Primrose Ct., 159 Hydethorpe Rd., London S.W. 12, England

Filed Aug. 18, 1970, Ser. No. 64,702
Claims priority, application Great Britain, Sept. 12, 1969, 45,220/69
Int. Cl. G06r *1/00, 19/06*
U.S. Cl. 235—61.12 R **5 Claims**



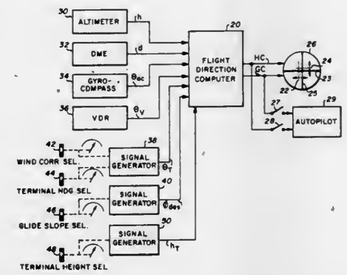
A data support such as a card or tape has a data-receiving surface delineated with rectangular digit areas in each of which a decimal digit can be recorded. Each digit area is delineated by a dark rectangular frame printed on the data-receiving surface, the area of the surface within the frame being subdivided into an array of elementary square areas arranged in three columns each of five elementary areas. Predetermined ones of the elementary areas, the second and fourth in the middle column, of each digit area are prerecorded by overprinting with dark ink. By subsequently similarly recording in selected ones of the remaining elementary areas in a digit area any one of the 10 decimal digits may be represented in visually recognisable form.

3,776,455

TERMINAL GUIDANCE SYSTEM

Shu W. Gee, Lancaster, Canada, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 6, 1972, Ser. No. 232,021
Int. Cl. G06g *7/78*
U.S. Cl. 235—150.22 **14 Claims**



A terminal guidance system including a heading command subsystem and a glide-slope command subsystem which develop command signals for use in guiding an aircraft or other vehicle into a preselected heading and/or altitude at a terminal point. The heading command subsystem is responsive to certain input data and continuously develops command signals for use in directing the aircraft from a remote location to a terminal point in such a manner that upon arrival it has a preselected terminal heading. The glide-slope command subsystem is responsive to certain other input data and continuously develops command signals for use in controlling the rate of descent of the aircraft in such a manner that it will have a preselected altitude and glide-slope upon arrival at the terminal.

3,776,456

DIRECT FIRED WATER HEATER THERMAL COMPENSATING DIP TUBE

John P. Eising, Oconomowoc, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 161,555, July 12, 1971, abandoned. This application Apr. 21, 1972, Ser. No. 246,218
Int. Cl. F24f *1/00*
U.S. Cl. 236—93 **6 Claims**

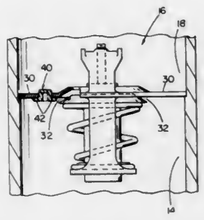
A dip tube used as a conduit of cold water into a direct fired water heater is made of two concentric tubes with one tube having a higher coefficient of expansion than the other. Longitudinally spaced apertures are provided in the upper portion of the tubes which are offset under predetermined low temperature conditions. The apertures of one tube are placed in registry with the apertures of the other tube upon increase in the temperature of the water stored in the tank which expands one tube longitudinally with respect to the other to discharge the incoming cold water into the tank through the apertures at various levels within the upper portion of the tank. In another embodiment, the dip tube, formed of two concentric tubes with one having a greater coefficient of expansion, is con-

nected to a fitting which converts the pressure head of the incoming cold water to a velocity head. When the open end of the inner concentric tube is drawn off its seat on the nozzle by longitudinal expansion of the outer concentric tube due to a rise in temperature of the stored water, this exposes the open end of the inner tube and hot water in the tank to the zone of lesser static pressure created by the incoming cold water and hot water is drawn from the upper portion of the tank through



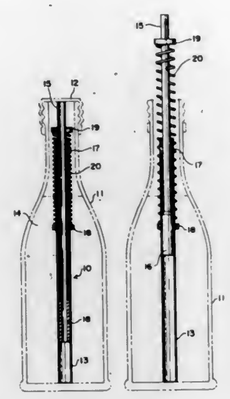
apertures in the outer concentric tube and enters the exposed end of the inner tube for discharge into the bottom portion of the water heater. Both embodiments provide for space between the concentric tubes for confining water from inside the water heater between the tubes to provide a time lag to control the rate of response of the tubes proportionally to the incoming cold water and the water in the heater so that the apertures will not be opened or closed too rapidly.

3,776,457
FAIL-SAFE DEVICE FOR THERMOSTATIC VALVES
Paul Cardi, 1375 Park Ave., Cranston, R.I.
Filed Oct. 1, 1971, Ser. No. 185,665
Int. Cl. F01p *7/16*
U.S. Cl. 236—34.5 **6 Claims**



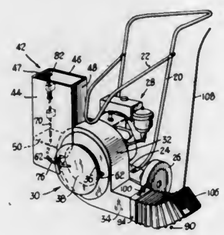
A fail-safe device for thermostatic valves featuring a support structure with an aperture providing a by-pass passage around the valve, and a plug fitting within and blocking the by-pass passage and having a retaining structure of temperature softening material, stiff while at a colder temperature to retain the plug in the aperture and softer while at a hotter temperature to permit the plug to be removed from the orifice if the valve is closed although retaining the plug in the aperture when the valve is open.

3,776,458
TELESCOPIC DRINKING STRAW
Lorenzo Chunga, Sr., Brooklyn, N.Y., assignor to Creative Product Lines Inc., Somerset, N.J.
Filed Oct. 22, 1971, Ser. No. 191,689
Int. Cl. A47g *21/18*
U.S. Cl. 239—33 **10 Claims**



A telescopic drinking straw in which a first elongated tubular cylinder has a second tubular cylinder slidably disposed therein. The first cylinder and the second cylinder are provided with annular flanges which retain the ends of a coil spring disposed over the cylinders. The spring forces the second cylinder vertically upward out of the first cylinder when the cap of a container in which the straw is packaged is removed, thereby making the straw available to the user for drinking of the liquid in the container. The outer cylinder of the drinking straw may also be provided with a plurality of slots at a particular point along its length. One end of the telescopic outer portion is affixed to the inner section of the straw, so that when the outer section is compressed downwardly to be packaged into a bottle, the portion containing the slots will extend outwardly and act as a spring forcing the outer telescopic section against the inner surface of the container cap. When the cap is removed, the extended portions contract inwardly, forcing the telescopic section out of the container.

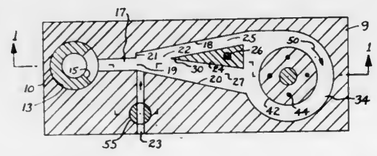
3,776,459
SPRAYER ATTACHMENT FOR LEAF BLOWER
Gene F. Bonvicini, Morehouse Rd., Easton, Conn.
Filed Jan. 8, 1973, Ser. No. 321,764
Int. Cl. A01n *17/08*
U.S. Cl. 239—77 **10 Claims**



A garden spray attachment for use with high-powered leaf blowers and the like, comprising a tank or container for insecticide liquid, having a discharge spout at the bottom which is

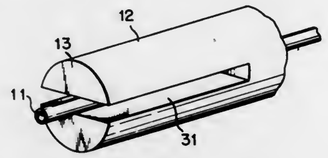
controlled as to the rate of flow by a manually adjustable valve. The tank has means for attaching it to the structural parts of the leaf blower, preferably the casing of the centrifugal air impeller, in such a manner that the discharge line from the tank can be brought directly to the air intake of the impeller. The attachment additionally includes a discharge conduit which has a nozzle portion that is movable with respect to the remainder, so as to direct fluid passing through it in different directions. The discharge conduit includes an adapter fitting which in most cases has a rectangular portion adapted to be releasably secured to the discharge duct of the leaf blower. The discharge conduit is preferably of cylindrical large-diameter plastic tubing having a helical wire reinforcement. The fitting of the discharge conduit has a circular portion adapted to mate with and be secured to the cylindrical conduit tubing. For directing the moveable nozzle portion of the discharge conduit, a flexible line such as a plastic rope or the like passes through it and is secured to the adapter fitting, said line being manually manipulated as by pulling, and causing bending of the conduit so as to direct the discharge spray to the desired areas.

3,776,460
SPRAY NOZZLE
Barry S. Fichter, Dunellen, N.J., assignor to American Standard Inc., New York, N.Y.
Filed June 5, 1972, Ser. No. 259,649
Int. Cl. B05b *1/08, 1/34*
U.S. Cl. 239—101 **5 Claims**



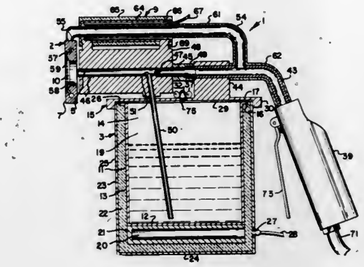
A nozzle comprising a swirl chamber having an exit port for discharging a whirling conical spray. The swirl chamber is supplied with fluid through a fluidic switch which in turn is controlled by conditions in the swirl chamber in such fashion as to periodically disrupt the whirling action and alter the spray pattern discharged from the exit port.

3,776,461
NOZZLE DEVICE FOR INK JET PRINTING EQUIPMENTS
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Oct. 4, 1971, Ser. No. 186,340
Int. Cl. B05b *9/00*
U.S. Cl. 239—125 **4 Claims**



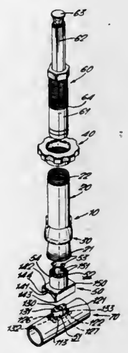
A nozzle device for ink jet printing equipments having a tube whose open end constitutes an ink nozzle exit wherein there is provided a protective member in which there is formed an extremely narrow slit extending horizontally inward from its end face, said slitted member being fitted around the periphery of the tube with the nozzle portion thereof exposed so as to allow the ink excessively flowing out of the exit end of the nozzle to be sucked into the slit by the capillary suction afforded thereby.

3,776,462
METAL SPRAYING APPARATUS
Paul H. Payne, Jr., 8512 Lee's Summit Rd., Kansas City, Mo.
Filed Jan. 8, 1973, Ser. No. 321,652
Int. Cl. B05b *1/24*
U.S. Cl. 239—134 **10 Claims**



An apparatus for melting and spraying molten fusible metals and metal alloys. The metal spraying apparatus is portable and includes an insulated container having heaters installed therein preferably at the bottom for heating metal contained in the container to a molten state. A spray head is mounted on the container and has an inlet tube extending to adjacent the bottom of the container near the heater. An air supply is connected to the spray head and furnishes heated air under pressure through a venturi at the tube connection to siphon the molten metal from the container and carry it to a spraying nozzle. A second heater is in the spraying head to heat a portion of the air from the air supply to have the air blast in the spraying head at a temperature of or above the melting point of the metal. The air blast siphons molten metal, atomizes same and propels the molten metal through the nozzle onto surfaces for adhesion therewith in the form of a coating.

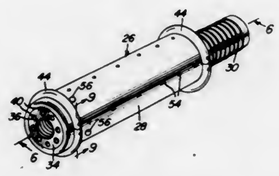
3,776,463
PLASTIC HOSE, RISER AND CLAMPING SYSTEM
Gerhard J. Dyck, Saskatoon, Canada, assignor to Dyckes Sprinkler Co. Ltd., Saskatchewan, Canada
Filed July 12, 1972, Ser. No. 270,995
Claims priority, application Canada, July 23, 1971, 118952
Int. Cl. B05b *15/10*
U.S. Cl. 239—204 **15 Claims**



A composite assembly including as essential elements a plastic material conduit, a novel riser assembly and a spray nozzle is provided. The conduit is provided with a hollow stem. The novel riser assembly includes a finite length of

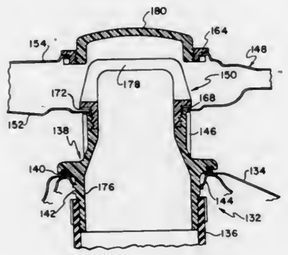
plastic tubing having one outwardly flared end. That end is adapted to be secured to, and envelope, the hollow stem on the conduit. The other end of the plastic tubing is inwardly tapered. That end is adapted to be secured to, and envelope, a sprinkler head stem. A self-threading hollow collar hose clamp is associated with each end of the plastic tubing, each hose clamp being tapered or flared to conform to the taper or flare at the respective end of the tube. The outer periphery of the hose clamp is provided with hand grip means, while the inward tapered or flared interior periphery of each hose clamp is provided with a thread includng helically disposed ridges separated by flat areas.

3,776,464
SWIMMING POOL CLEANER
Lester M. Proffit, 14836 Polk St., Sylmar, Calif.
Filed May 17, 1972, Ser. No. 254,185
Int. Cl. B05b *1/14*
U.S. Cl. 239—229 **11 Claims**



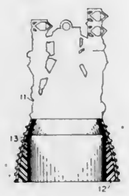
A cylindrical body including inlet and outlet ends with the inlet end provided with structure for connection with the outlet end of a flexible water supply hose. The cylindrical body includes circumferentially spaced longitudinally extending rows of small diameter apertures and an end wall provided with a main central aperture and a plurality of secondary apertures spaced circumferentially about the central aperture. Also, the cylindrical body includes fluid flow restricting and turbulence producing structure registered with the inlet end of the main outlet aperture and a cylindrical pipe section having an outside diameter smaller than the inside diameter of the cylindrical body is held captive within the latter and freely laterally shiftable therein for gravity falling to the lowest point of the inner periphery of the cylindrical body. Further, the opposite ends of the cylindrical body are provided with resilient circumferentially extending cushioning rings.

3,776,465
LIQUID SPRAY DEVICE
Philip D. Baker, Jeffersonville, Ind., assignor to General Electric Company, Louisville, Ky.
Filed Aug. 17, 1972, Ser. No. 281,498
Int. Cl. B05b *3/06*
U.S. Cl. 239—251 **12 Claims**



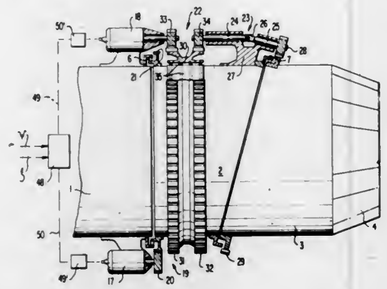
There is disclosed a dishwasher having an improved bearing and seal construction for the spray arm. The spray arm is mounted for limited vertical movement with respect to the outlet conduit of a pump. When pump pressure is applied to the spray arm, the spray arm is lifted out of load supporting engagement with the conduit and engages a seal which reduces liquid leakage around the spray arm. When pump pressure is interrupted the spray arm returns to the supported position, allowing the spray arm to drain. The spray arm is removably mounted onto the conduit to allow for servicing of the dishwasher.

3,776,466
POLYURETHANE FOAM INSERT FOR OVEREXPANDED ROCKET ENGINE NOZZLES TO PREVENT START TRANSIENT SIDELOADS
William L. Ray, 229 Richmond Dr., N.W., Huntsville, Ala.
Filed Jan. 19, 1973, Ser. No. 324,946
Int. Cl. B64d *33/04*
U.S. Cl. 239—265.15 **6 Claims**



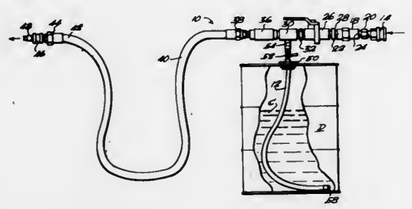
A polyurethane foam insert is adhesively secured within the nozzle of a regenerative cooled rocket engine. The insert has a central bore which reduces the engine throat to nozzle exit area ratio so as to prevent dangerous sideloads during normal or extended engine start transient periods at sea level conditions, but quickly erodes in a few seconds to permit normal engine operating conditions which follows the start transient period.

3,776,467
MEANS FOR ACTUATING A MULTIPLE TUBE JET DEFECTOR DEVICE
Fritz Riemerschmid, Starnberg, Germany, assignor to Motorem- und Turbinen-Union Munchen, GmbH, Munich, Germany
Filed Feb. 25, 1972, Ser. No. 229,305
Claims priority, application Germany, Feb. 26, 1971, P 21 09 205.7
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.35 **24 Claims**



A multiple tube jet deflector device having two tubes arranged in series downstream of a jet engine fixed inlet pipe. The upstream tube is rotatable connected to the downstream end of the inlet pipe along a first bearing face disposed perpendicularly to the centerline of the inlet pipe. The downstream end of the downstream tube is constructed as an exhaust nozzle. The downstream tube is rotatably connected to the downstream end of the upstream tube along a second bearing face which is inclined relative to the first bearing face such that relative rotation of said tubes effects an angular deflection of the centerline of the downstream tube with respect to the centerline of the inlet pipe. Actuating devices are provided for effecting independent rotation of each of the tubes with respect to the inlet pipe. These actuating devices include ring gears attached to the circumference of the respective tubes and pinions or chain and sprocket arrangements for rotatably driving these ring gears. Actuators are arranged on the circumference of the inlet pipe for driving the pinions or sprockets. A transmission arrangement for coupling the actuator to the pinion or sprocket associated with the downstream tube is rotatably supported on the circumference of the upstream tube by ball bearings or the like. This transmission arrangement includes an annular member including two ring gears disposed about the circumference of the upstream tube. One of these last mentioned ring gears is driven directly by the actuator for the downstream tube while the other is coupled to a universal drive joint which in turn is connected to the pinion or sprocket for driving the ring gears on the downstream tube. A shroud formed by an extension of the upstream tube over the outside of the inlet pipe may be provided for mounting much of the gearing and transmission structure so as to isolate this structure from heat in the gases passing internally of the tubes. An afterburner or reheating means may also be provided in said tubes.

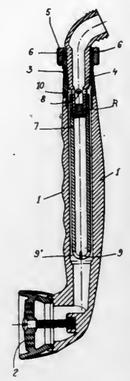
3,776,468
SPRAY MIX APPLICATOR
William K. Davenport, 125 W. 51st St., Hialeah, Fla.
Filed Mar. 31, 1972, Ser. No. 239,877
Int. Cl. B05b *7/24*
U.S. Cl. 239—310 **5 Claims**



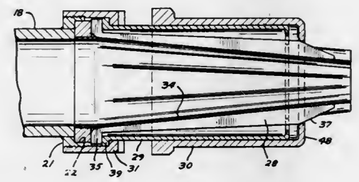
The spray mix applicator of the present invention is a device for mixing and spraying a mixture of two liquids at a prescribed flow rate in a prescribed proportion to each other, one liquid being under atmospheric pressure while the pressure of the other liquid may vary, for instance, from 15 pounds per square inch to 125 pounds per square inch without affecting the output of the device.

3,776,469
DEVICE FOR DISCHARGING LIQUID FOR INJECTION OR WASHING PURPOSES
Jean J. Joannon, Los Chenes Verts, Cap D'Antibes, France
Filed Mar. 2, 1972, Ser. No. 231,123
Claims priority, application France, Feb. 15, 1972, 7204931; Mar. 22, 1971, 7111013
Int. Cl. B05b *1/12, 7/02, 15/06*
U.S. Cl. 239—446 **2 Claims**

A device for bathroom equipment and the like, comprising a casing, a liquid inlet member, and a nozzle assembly which may be at will located inside or outside the casing, in which the liquid inlet member communicates with an outlet provided in the casing when the nozzle assembly is inside the casing, or with any nozzle of the assembly when the latter is outside the casing. The device further comprises a valve for controlling the liquid flow, the open or closed condition of which depends on the inside or outside condition of the nozzle assembly. A sprinkler may be connected to the casing at its liquid outlet, and the nozzle assembly may comprise a hollow portion with the nozzle at an end thereof and a slidable sleeve srurrounding this hollow portion.



3,776,470
VARIABLE NOZZLE
Takuzo Tsuchiya, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Sept. 30, 1971, Ser. No. 185,000
Int. Cl. B05b *1/32*
U.S. Cl. 239—534 **9 Claims**

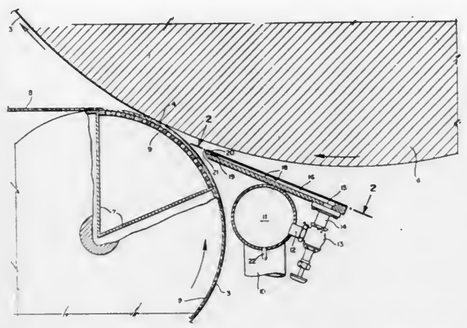


A nozzle system is provided having a nozzle with variable and controllable orifice.

3,776,471
METHOD AND APPARATUS FOR DISTRIBUTING FLUIDS
Robert W. Meyer, Springfield, and John L. Pedrick, Folsom, both of Pa., assignors to Scott Paper Company, Delaware County, Pa.
Filed Nov. 22, 1971, Ser. No. 200,923
Int. Cl. B05b *1/14*
U.S. Cl. 239—553.5 **8 Claims**

A method and apparatus are disclosed for discharging fluid in a sheetlike flow made up of contiguous flow zones extending across the width of the sheetlike flow. The fluid flow rate in each flow zone is individually controllable and is virtually unaffected by the fluid flow in the adjacent flow zones. The method consists of expanding the widths of a plurality of spaced-apart, individually flow-rate-controlled streams until all streams are contiguous and thus form an uninterrupted

sheetlike flow, while maintaining substantially uniform flow rate distribution profile across the width of each stream. The apparatus consists of a plurality of diffusion chambers arranged in a line and with the flow direction of each chamber parallel to each other. The widths of the chambers widen downstream in the chambers until all chambers adjoin each other. Fluid enters the upstream end of each chamber from its



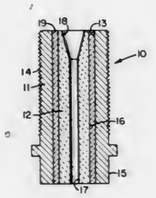
individual, valve-controlled conduit. The invention has particular value in applying fluid to a wide surface where the amount of fluid desired to be applied varies for different areas across the width of the surface. A particular use for the invention is to aid uniform drying of a wet paper web on a papermaking machine by controlling the flow rate distribution profile across the width of a sheetlike flow of steam discharged against the paper web.

3,776,472

TOOL ASSEMBLY

Everett H. Lock, Houston, and Joe K. Heilhecker, Bellaire, both of Tex., assignors to Esso Production Research Company, Houston, Tex.

Division of Ser. No. 36,834, May 13, 1970, Pat. No. 3,673,676.
This application Apr. 13, 1972, Ser. No. 243,702
Int. Cl. B05b *15/00*
U.S. Cl. 239—591 **8 Claims**



An improved tool assembly includes a ferroalloy support having an opening formed therein, a ceramic tool element positioned in the opening, and a filler metal containing finely divided refractory hard metal brazed to the support and mechanically bonded to the tool element.

3,776,473

HIGHLY REFLECTIVE ALUMINUM FLAKE

James T. Casey, Newfoundland, and Frank A. Badia, Ringwood, both of N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,375
Int. Cl. B02c *17/00*
U.S. Cl. 241—15 **7 Claims**

Aluminum flake powder having high specular reflectivity is produced by wet ball milling aluminum powder in the presence of a lubricant using a volume ratio of grinding balls to powder of at least 15:1 and a volume ratio of grinding balls



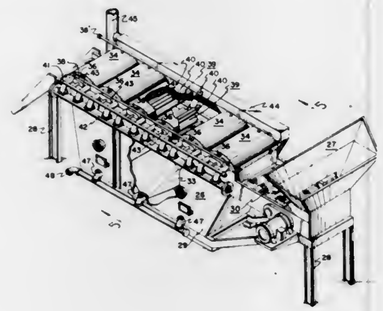
to milling liquid (e.g., a light liquid hydrocarbon) which preferably is substantially equal.

3,776,474

CONTROLLED ATMOSPHERE-SOLID WASTE DISPOSAL SYSTEM

Joseph Bassick, P.O. Box 11, Wallace, Idaho

Filed Oct. 29, 1971, Ser. No. 193,714
Int. Cl. B02c *21/00*
U.S. Cl. 241—23 **2 Claims**



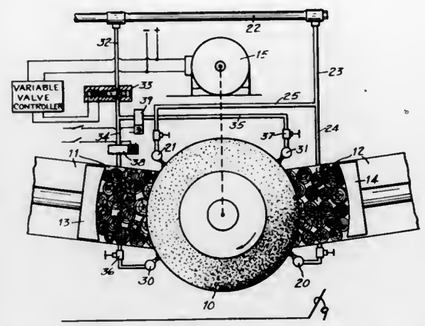
The method of this invention comprises the steps of sorting processable and nonpocessable materials from waste materials, sorting ferrous materials from processable materials, shredding processable materials, evaporating and dehydrating processable materials at substantially high temperatures while avoiding burning or incineration of the materials, and pulverizing or grinding the materials into a spreadable grain-size fertilizer and soil conditioner product. The apparatus includes a primary sorting table, a magnetic sorting means for ferrous materials, a material shredder, a substantially high-temperature, enclosed, controlled atmosphere evaporator-dehydrator, and a mixer-grinder.

3,776,475

AUTOMATIC PULP GRINDER CONTROL

James H. Perry, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed July 17, 1972, Ser. No. 272,360
Int. Cl. B02c *23/00*
U.S. Cl. 241—33 **3 Claims**



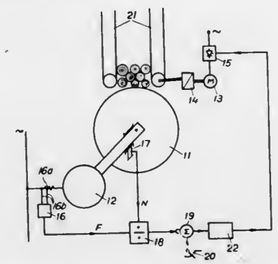
An automatic water shower flow control for a paper pulp grinding machine for control of pulp quality wherein the shower flow is regulated in accordance with the power input to the pulp grinding means.

3,776,476

CONTROL MEANS FOR GRINDING MACHINES

Henry Sandblom, and Vilmos Torok, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 9, 1971, Ser. No. 179,011
Claims priority, application Sweden, Sept. 10, 1970, 12296/70
Int. Cl. B02c *25/00*
U.S. Cl. 241—34 **3 Claims**



Grinding mills for wood wherein the wood is fed to a grinding stone require regulation to produce pulp of good quality. A signal measuring the friction coefficient between the wood and grinding stone is derived and this signal controls the wood feeding to keep the friction coefficient constant.

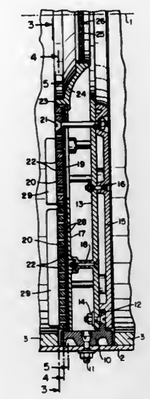
3,776,477

SANDWICH DIAPHRAGM FOR MILL

Claus M. Hansen, and Ejvind N. Norgaard, both of Copenhagen-Volby, Denmark, assignors to F. L. Smidth & Co., Cresskill, N.J.

Filed Jan. 5, 1972, Ser. No. 215,475
Claims priority, application Great Britain, Jan. 15, 1971, 2,123/71
Int. Cl. B02c *17/02*
U.S. Cl. 241—72 **12 Claims**

A diaphragm in the form of a composite sieving device for use in a rotary grinding mill containing loose grinding bodies for grinding solid materials is disclosed. The device comprises a sandwich structure which includes a plurality of plate-like members in intimate contact with one another. The plate-like



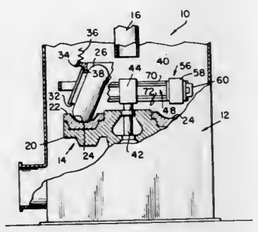
members acting in combination prevent the passage of the grinding bodies and oversized particles of the material being ground from one section of the mill to another.

3,776,478

PULVERIZER WITH FIXED-ARM SPACER ASSEMBLY

Robert P. Gillette, Randolph Township, and Henry P. Kunz, Glen Ridge, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed May 4, 1971, Ser. No. 140,173
Int. Cl. B02c *15/00*
U.S. Cl. 241—103 **3 Claims**



Apparatus is provided for pulverizing raw coal feed stock into comminuted particles which can be conveyed to the combustion chamber of a furnace. A fixed arm spacer assembly is mounted on the pulverizer table such that the pulverizer rollers are separated from each other to prevent skidding.

3,776,479

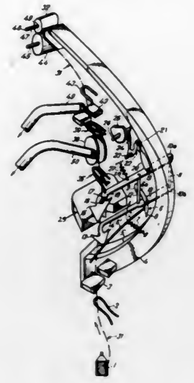
METHOD OF AND DEVICE FOR DETECTING THE YARN END FROM A CROSSWOUND BOBBIN IN AUTOMATIC YARN WINDING MACHINES

Josef Lutovsky, Liberec, and Vladimir Prasil, Brno, both of Czechoslovakia, assignors to Elitex, Zavody Textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed Feb. 24, 1971, Ser. No. 118,362
Claims priority, application Czechoslovakia, Feb. 26, 1970, 1311/70
Int. Cl. B65h *54/22*
U.S. Cl. 242—35.6 R **6 Claims**

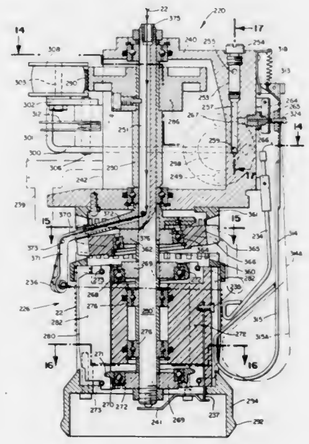
Method of and apparatus for preventing defects due to a failure in detecting the yarn end from a crosswound bobbin in

automatic yarn winding machines. By means of a stop motion detecting the presence of the end of yarn from the crosswound bobbin in the position after exit of said yarn end from a detecting tube, the end of yarn from a supply cop is prevented from being introduced into the yarn knotter in the case of absence



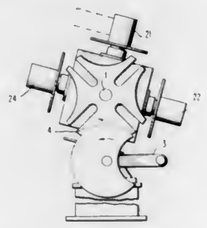
of the end of yarn from the crosswound bobbin. The introduction of the two ends of yarn into the yarn knotter is made possible in the case of presence of the end of yarn from the crosswound bobbin in the same cycle of the automatic procedure for removing the interruption of the winding process.

3,776,480
YARN HANDLING APPARATUS
John B. Lawson, Providence, R.I., assignor to Lawson-Hemphill, Inc., Central Falls, R.I.
Continuation-in-part of Ser. No. 138,749, April 29, 1971, abandoned, which is a continuation of Ser. No. 230,257, Feb. 29, 1972, abandoned. This application Apr. 5, 1972, Ser. No. 241,207
Int. Cl. B65h *51/20*
U.S. Cl. 242—47.01 **26 Claims**



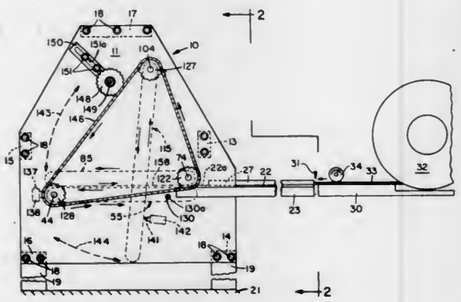
A device for temporarily storing yarn for immediate use by a yarn consuming textile apparatus, such as a winder, a knitting machine, or for the filling thread of a shuttleless loom. The device includes a yarn collecting drum on which yarn from a supply source is wound temporarily and then removed under a controlled, uniform tension. The device eliminates the wide variations in yarn tension which occur when a yarn is delivered from a source, such as a cone or a package, and permits the yarn to feed to a textile machine at a substantially constant tension.

3,776,481
APPARATUS FOR TAKING UP A WEB
Kohei Ichikawa, Minami Ashigara-Machi, Japan, assignor to Fujia Photo File Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1971, Ser. No. 213,490
Claims priority, application Japan, Dec. 29, 1970, 121440
Int. Cl. B65h *19/06, 19/26*
U.S. Cl. 242—56 A **2 Claims**



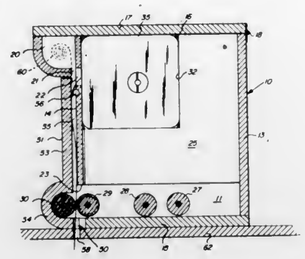
Apparatus for taking up a web which has one rotary shaft, in turn a plurality of shafts for mounting the cores of the rotatably wound web extended radially in the perpendicular plane to the rotary shaft, and a device drives the shafts for mounting the cores so as to selectively rotate and stop them at equidistant circumferential positions.

3,776,482
WINDING APPARATUS
Raymond J. Mras, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 6, 1972, Ser. No. 260,127
Int. Cl. B65h *17/14*
U.S. Cl. 242—67.1 R **10 Claims**



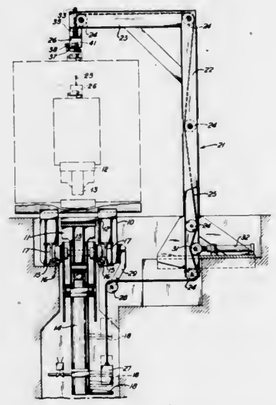
Apparatus for winding a flexible strip or length of material into a coreless spiraled roll and including three sets of belts which are driven in corresponding directions through associated loop paths of travel, two of the paths generally paralleling each other and the third path crossing the other two paths at a variable angle. The strip of material is fed into a variable size winding space or cavity defined by the belts, and driven movement of the belts roll, form or wind the strip of material into a coreless spiraled roll thereof.

3,776,483
RECEPTACLE FOR A ROLL, REEL OR CASSETTE OF PHOTOGRAPHIC FILM
George M. Reitter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 25, 1972, Ser. No. 256,664
Int. Cl. G03b *23/04*
U.S. Cl. 242—71.1 **14 Claims**



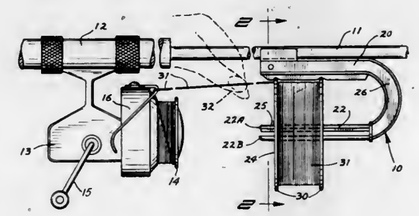
A receptacle or magazine comprises individual compartments in each of which a discrete strip of photographic film can be selectively positioned as a roll per se or as a roll contained by any one of a number of types of carriers. Each compartment receives a selected type of film in accordance with its carrier format. The film is dispersed through a withdrawal slot for introduction into processing apparatus when the receptacle is mounted thereon. The side of the casing containing the withdrawal slot is provided with mounting pins which permit the receptacle to be mounted relative to an entry slot for the processing apparatus. An indexing element on the processing apparatus is aligned with a scale on the receptacle to position the latter relative to the entry slot in accordance with the width of the film contained in the receptacle.

3,776,484
COIL CENTERING DEVICE
Charles Storer Shumaker, Glenshaw, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.
Filed Nov. 22, 1968, Ser. No. 778,191
Int. Cl. B21c *47/16*
U.S. Cl. 242—78.6 **11 Claims**



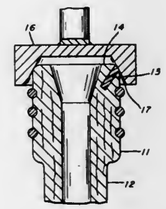
This invention relates to a centering device for use in connection with coils of strip material having varying diameters which, during the process of manufacture in a steel mill, are brought to a rolling mill or processing line for feeding into the mill or line. The invention disclosed comprises an elevator means adapted to support a coil and raise it in a vertical direction. Above the elevator there is provided a weighted element which is connected to a chain, the other end of the chain being connected to a second weighted element which is displaced by, and at the same rate as, the elevator. On movement of the elevator, the coil engaging element is lowered at the same rate that the elevator is raised so that when the coil engaging element engages the top of the coil, it produces a signal that interrupts movement of the elevator, which interrupted position will place the centers of the coils on a predetermined reference point, notwithstanding their varying diameters.

3,776,485
HOLDER FOR TRANSFERRING FISHING LINE TO REEL
Charles F. Foley, 3908 Merriam Rd., Minnetonka, Minn., and Charles D. McCarthy, Rt. No. 3, Box 217 BA, Wayzata, Minn.
Filed Sept. 2, 1971, Ser. No. 177,403
Int. Cl. A01k *47/06*
U.S. Cl. 242—106 **5 Claims**



A fish line spool holder for attachment directly to a fishing rod and for holding a new spool of line from which the line can be removed and wound directly onto a fishing reel so that the line will properly wind onto the reel.

3,776,486
TEXTILE BOBBIN
Donald L. Blake, Campton, N.H., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Nov. 19, 1971, Ser. No. 200,455
Int. Cl. B65h *75/10*
U.S. Cl. 242—118.3 **2 Claims**

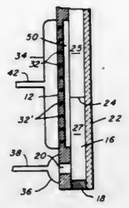


A textile bobbin for use in an automatic yarn winding apparatus wherein the butt of the bobbin includes wear resistant elements to substantially reduce wear on the butts when the bobbins are being rewound. The wear resistant elements are in the form of inserts that are mounted within the bobbins to present wear resistant surfaces positioned to reduce or prevent wear of the exterior surface of the bobbin butt.

3,776,487
VACUUM COLUMN FOR REEL SERVO

Joseph D. Henderson, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Oct. 26, 1971, Ser. No. 192,076
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 4 Claims

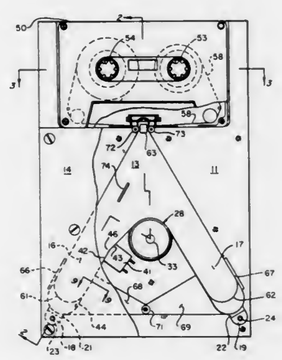


This invention describes an improved type of magnetic tape drive for computers in which a vacuum column is provided. A vacuum pulls the tape into the column, and the tape is pulled out by the capstan to the heads or, by the reel drive system. The system of this invention utilizes a plurality of small holes drilled through the back wall of the column down the length of the column, and a very narrow slot colinear with the drilled holes is provided in the front surface of the back wall. This narrow slot provides a certain amount of leakage of air from the high pressure above the tape into the vacuum below the tape. Thus as the tape moves downward, the small holes can sense the approach of the tape because of the leakage of air through the slit in advance of the tape loop. Thus by measuring air pressure in a chamber behind this set of holes, the position of the tape loop can be sensed on an almost linear basis, from one end to the other of the column. Servo means are provided to use this sensed position to continuously drive the reel motor.

3,776,488
TAPE APPARATUS

Alan M. Young, and Edwin Y. Webb, both of Los Gatos, Calif., assignors to Dicon Industries, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 56,431, July 20, 1970. This application May 10, 1971, Ser. No. 141,661
Int. Cl. G11b *15/06, 15/58, 23/12*
U.S. Cl. 242—183 19 Claims

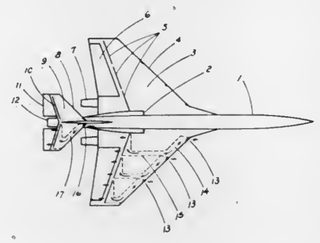


Tape apparatus adapted to operate with tape extending between tape reels which may be disposed in a cartridge or cassette. The apparatus includes a separate reel drive for driving each tape reel in either direction to supply or take up tape, a vacuum chamber adapted to receive a portion of the tape extending between the reels to form and support a low inertia tape loop, a capstan for driving the tape, and a transducer for recording and reproducing the information or data on the tape. The capstan and transducer are mounted along the wall of said chamber so that the tape loop extends past and has a portion on each side of the transducer and capstan whereby the tape can be rapidly moved in either direction past the transducer by the capstan. The apparatus also includes sensing means which sense the length of the tape loop on each side of the drive capstan and independently control the reel drives to supply and take up tape as the loops are lengthened and shortened as the drive capstan moves tape past the transducer in either direction and means for sensing the ends of the tape.

3,776,489
SONIC BOOM ELIMINATOR

Lian-Tong Wen, 601 W. 112th St., No. 7-C, New York, N.Y., and Myron Gould Beard, 6 Martin Pl., Manhasset, N.Y.

Continuation of Ser. No. 880,336, Nov. 26, 1969, abandoned. This application Jan. 7, 1972, Ser. No. 216,127
Int. Cl. B64c *21/02*
U.S. Cl. 244—1 N 6 Claims



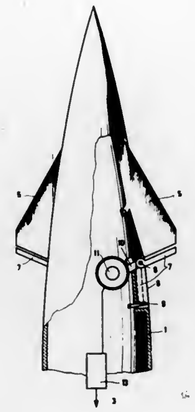
A structure for eliminating sonic booms developed by the major sub-structures of a supersonic aircraft in accordance with the selective positioning of the exhaust gases of the aircraft, air inlets and outlets and conduits between the inlets and outlets. A supersonic aircraft using the structure is disclosed wherein the major sub-structures of the aircraft incorporate exhaust gas positioning, inlets, outlets and conduits between the inlets and outlets.

3,776,490
MISSILE WITH THRUST VECTOR AND AERODYNAMIC CONTROL

Dieter Weis, Neubiberg, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munchen, Germany

Filed July 28, 1972, Ser. No. 275,970
Claims priority, application Germany, Aug. 20, 1971, P 21 41 744.7
Int. Cl. F42b *13/32, 15/02*
U.S. Cl. 244—3.21 5 Claims

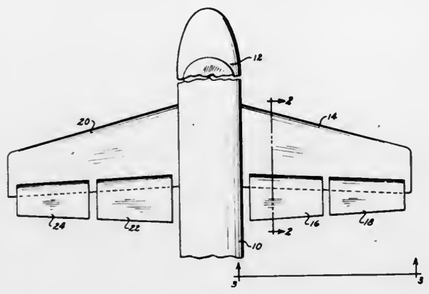
A jet propelled missile is provided with jet spoilers at its trailing end for thrust vector control and with other spoilers forwardly of its center of gravity for aerodynamic control. Both the jet spoilers and the other spoilers are operated from the same control device. The other spoilers are located adjacent the trailing ends of fins located on the forward end of the missile and can be displaced between an inoperative position recessed in the surface of the missile and an operative position projecting outwardly from the outer surface of the missile. The side edges of the other spoilers which extend outwardly from the missile can be recessed for a portion of their length for increasing the efficiency of aerodynamic control.



3,776,491
AIRCRAFT WITH COMPOUND WING

Robert F. Oulton, 1908 Sands Dr., Annapolis, Md.

Filed June 25, 1971, Ser. No. 156,798
Int. Cl. B64c *9/20*
U.S. Cl. 244—42 CB 23 Claims

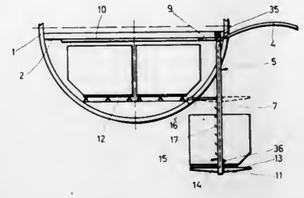


An aircraft is provided with a compound wing which includes a main wing with one or more auxiliary wings. The auxiliary wings are attached to the main wing by positioning means which may be operated to selectively vary the location of the auxiliary wings with respect to the main wing thereby to vary the chord or the span of the compound wing. The auxiliary wing may also be located with respect to the main wing to provide a Venturi effect therebetween to increase the lift of the compound wing. An aircraft with compound wings has variable lift capability which lends versatility for various flight requirements. The compound wing effectively increases air safety and reduces noise, gas, smoke, and particle pollution around airports and enroute.

3,776,492
ON-BOARD CARGO LOADING DEVICE FOR AIRPLANES

Kurt-Werner Iben, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH Gesellschaft mit beschrankter Haftung, Munchen, Germany

Filed Oct. 15, 1971, Ser. No. 189,694
Claims priority, application Germany, Oct. 23, 1970, P 20 52 192.0
Int. Cl. B64d *9/00*
U.S. Cl. 244—137 R 13 Claims

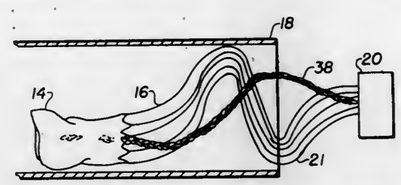


A cargo loading mechanism for use in the cargo compartment of aircraft having an opening in the side thereof providing access to the cargo compartment. A track is secured to the ceiling of the cargo compartment and is aligned with the opening providing access thereto. A carriage is mounted on the track for movement longitudinally therealong toward and away from the opening. A guide frame is pivotally secured to the carriage and has a support adapted to permit a depending downward movement of the guide frame externally of the aircraft from the carriage generally perpendicular to the track when the carriage is positioned adjacent the opening. The guide frame extends generally parallel to the track when it is positioned away from the opening and inside the aircraft. A lift carriage is mounted on the guide frame and is adapted to move between raised and lowered positions when the guide frame is positioned external of the aircraft.

3,776,493
PARACHUTE DECOUPLING APPARATUS

Jon T. Matsuo, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 11, 1972, Ser. No. 287,928
Int. Cl. B64d *17/62*
U.S. Cl. 244—147 3 Claims



Decoupling apparatus is provided between a parachute and its deployment means, such as a pilot chute, that is actuated automatically and in a positive manner when the parachute has been deployed approximately to a full stretched-out condition prior to inflation.

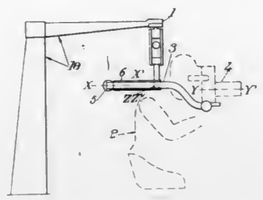
3,776,494
ANTIVIBRATION SUPPORT FOR VIEWING GEAR

Alphonse Baucheron, Charenton, France, assignor to Tele-Pictures Establishment, Vaduz, Liechtenstein

Filed Apr. 10, 1972, Ser. No. 242,463
Claims priority, application France, Apr. 14, 1971, 7113201
Int. Cl. F16m *11/12*
U.S. Cl. 248—18 12 Claims

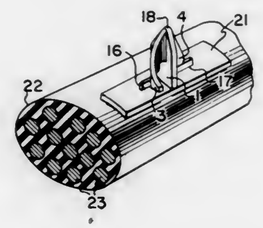
The support is for viewing gear used aboard a vehicle and comprises means enabling its anchoring at a point situated

above the head of the operator of the viewing gear, and an arm balanced by counterweights and bearing the viewing gear. The arm is mounted to pivot around an axis, parallel to the optical axis of the viewing gear and borne by a bow-shaped element. The support has between the upper anchoring means and the bow-shaped element a cardan joint enabling angular variations of the pivot about the latter. The pivot bears a rotary element on which are hinged, by one of their ends, around



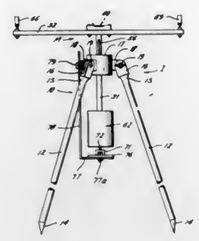
horizontal axes, two arms situated in a same vertical plane and between which a helicoidal spring is arranged. The arms bear at their free end around horizontal axes parallel to the preceding ones respectively the upper end of two vertical bars, on the other end of which are pivoted the ends of the bow element around horizontal axes situated in extension of one another and at right angles to the pivoting axes of the upper ends of the bars, the upper and lower pivots of each of the two bars being such that they enable angular variations.

3,776,495
MOUNTING DEVICE
Marvin E. Hartz, Grosse Pointe Farms, and Roman J. Witek, Jr., Gibraltar, both of Mich., assignors to Essex International, Inc., Fort Wayne, Ind.
Filed Nov. 9, 1971, Ser. No. 196,973
Int. Cl. F16b *15/00*
U.S. Cl. 248—71 **15 Claims**



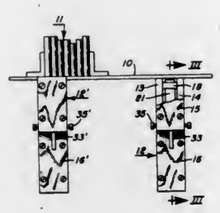
A device for mounting an article such as a wire or bundle of wires on a support having an opening therein, the mounting device having a body of such size as to pass through the opening and a pair of flexible, substantially triangular flanges extending from opposite sides of the body and together having a length greater than the corresponding dimension of the opening so as to project beyond the latter, the flanges being flexible so as to permit them to pass through the opening. Each flange has two portions, one of which extends substantially normal to the body and the other of which extends substantially normal to the first portion, the two portions merging along a smoothly rounded curve. The body carries means for attaching it to the article to be supported and between the attaching means and the flanges is a deformable cushioning rib which cooperates with the flanges to provide a rattle-free mounting of the mounting device on the support.

3,776,496
INSTRUMENT MOUNT
Clifton G. Reed, 1322 Canterlane, Houston, Tex.
Filed Jan. 26, 1972, Ser. No. 220,791
Int. Cl. F16m *11/14*
U.S. Cl. 248—182 **4 Claims**



The present invention provides a new and improved instrument mount such as for a leveling and sighting instrument, permitting improved leveling and sighting operations, particularly in windy and adverse weather conditions.

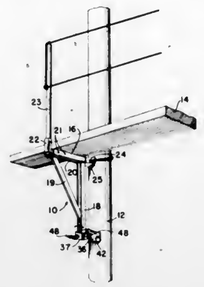
3,776,497
SHELVING SUPPORT
Bakari Mwanyoha, 51 Belmont Ct., Brockton, Mass.
Filed May 31, 1972, Ser. No. 258,245
Int. Cl. A47f *7/14*
U.S. Cl. 248—205 A **5 Claims**



A shelving support is pivotally connected to a bracket carrying a pressure-sensitive tape for attachment thereof to a wall. The bracket is so constructed that upon loading of the shelving support a force moment is developed, which moment is proportional to the load and is applied to the bracket in a direction to oppose the force normally tending to pull the bracket away from the wall.

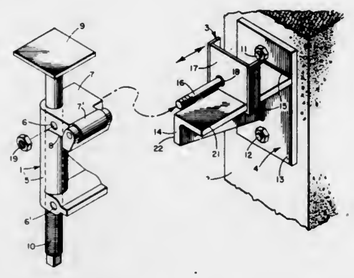
3,776,498
STABILIZABLE SCAFFOLDING SUPPORT BRACKET
Allen Peters, 3855 Calavo Dr., Spring Valley, Calif., and William J. Ryan, 3661 Valley Rd., Bonita, Calif.
Filed Aug. 28, 1970, Ser. No. 67,814
Int. Cl. F16m *13/02*
U.S. Cl. 248—221 **1 Claim**

A bracket for supporting scaffolding or the like to a structure, such as pier piling, having a means for releasibly clamping the bracket to the structure, and a means for adjusting and



stabilizing the bracket in a horizontal position to compensate for the non-verticality of the structure.

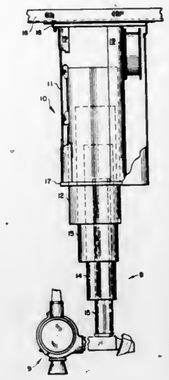
3,776,499
ADJUSTABLE MOUNTING APPARATUS FOR COLUMN SHORING BRACKET
John S. Turner, Clearwater, and William A. Fremer, St. Petersburg, both of Fla., assignors to Strickland Chrobak, Inc., Jacksonville, Fla.
Filed Sept. 14, 1972, Ser. No. 289,096
Int. Cl. A47f *5/10*; **A47h** *33/10*; **E04g** *17/16*
U.S. Cl. 248—298 **7 Claims**



Adjustable apparatus for attaching a concrete formwork shoring bracket to a supporting column including a support and an adjustable mounting bracket. The support has a base attachable to the supporting column and has an arm extending outwardly from the base said arm having a horizontal upper surface adapted to supportively engage a lower surface of a laterally extending projection of a formwork shoring bracket. The adjustable mounting bracket is clampable at predetermined positions along the outwardly extending arm of the support and has means for affixing the shoring bracket thereupon so that the combination of the adjustable mounting bracket and the formwork shoring bracket may be positioned at predetermined distances outwardly from the column.

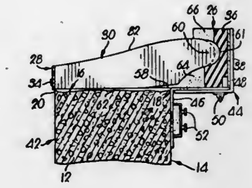
3,776,500
X-RAY APPARATUS HAVING A TELESCOPIC COLUMNAR SUPPORT
Anthony J. Foderaro, Middleburg Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio
Filed July 16, 1971, Ser. No. 163,248
Int. Cl. A61b *19/00*
U.S. Cl. 248—333 **10 Claims**

An X-ray apparatus including a telescopic columnar support comprising concentrically positioned tubular sections nested one within another. Each of the sections, except the innermost section, has a plurality of ways extending along its interior. Each of the sections, except the outermost section comprises a metallic extrusion which carries a plurality of



guide bearings on its exterior to cooperate with the ways. An adjustment means is associated with each of the guide bearings whereby the pre-load normal force between the nested and nesting sections may be adjusted.

3,776,501
APPARATUS FOR COPING A WALL
William E. Loftin, 8412 N.E. 53rd St., Kansas City, Mo.
Division of Ser. No. 810,641, March 26, 1969. This application July 8, 1971, Ser. No. 160,954
Int. Cl. B28b *7/06*; **E04g** *11/36*
U.S. Cl. 249—2 **2 Claims**

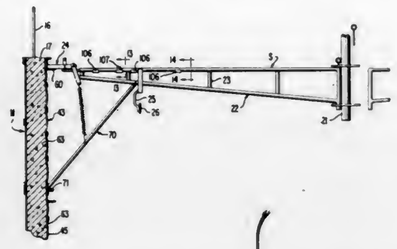


In apparatus for coping a wall, a dual section form is releasably attached to the wall adjacent its uppermost surface and cementitious material is poured on such surface within the form. Thereafter a tile bed is placed on one face of the wall against the form, the latter being utilized to support a reciprocable knife in order to trowel the tile bed into parallelism with the terminal edge of the overhanging nose of the coping. Removal of the form leaves a groove at the tile and its bed between the coping and the uppermost surface of the wall which is then caulked.

3,776,502
APPARATUS FOR CONSTRUCTING A MONOLITHIC SILO
Richard L. Weaver, Myerstown, Pa.
Division of Ser. No. 720,687, April 11, 1968, Pat. No. 3,619,431. This application July 6, 1971, Ser. No. 159,948
Int. Cl. E04g *11/22*
U.S. Cl. 249—33 **2 Claims**

System for constructing concrete silos wherein molds are sequentially erected and filled as a three tiered mold unit with

a crane scaffold supported on the top mold by radial arms which rest on ledges extending inwardly from the inner face thereof. The outer form of the bottom mold is then dismantled into semi-circular sections, raised by using the three jib cranes of the crane scaffold and erected as the fourth tier. The inner form of the bottom mold is then dismantled in predetermined length sections for passage through the restricted space



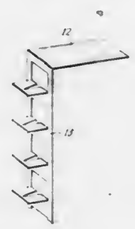
between the crane scaffold and the third tier and then erected to complete the fourth tier mold. The crane scaffold is then elevated by suspending it from the top of the fourth tier; the radial arms are then seated on the horizontal ledges of the fourth tier. A cart is rotatably mounted about the center post of the scaffold for evenly feeding concrete into the molds. Safety means are provided.

3,776,503

INGOT MOLD WITH HOT TOP HANGERS

Donald Boden, Pudsey, and Leslie Young, Darrington, both of England, assignors to Resil Processes Limited, Pontefract, Yorkshire, England

Filed Jan. 21, 1972, Ser. No. 219,756
Int. Cl. B22d 7/10; A47f 5/08
U.S. Cl. 249—106 **6 Claims**



Hangers for supporting tiles for hot top assembly comprising an element cranked or bent at one end for engagement with an edge of an ingot mould and having on the surface thereof a plurality of longitudinally spaced projections each adapted to engage with one or more corresponding recesses provided in an adjacent surface of the tile. The tile preferably has a row of recesses down the back thereof and the spacing of the recesses corresponds to the spacing of the projections on the tile.

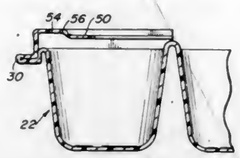
3,776,504

SPILL-PROOF ICE CUBE TRAY

Robert L. Wiley, Lake Forest, Ill., assignor to Si Lite, Incorporation, Chicago, Ill.

Filed Mar. 6, 1972, Ser. No. 232,174
Int. Cl. F25c 1/24
U.S. Cl. 249—121 **3 Claims**

A unitary, one-piece assembly constituting an ice cube tray of plastic material and including captive, integrally formed cover means pivotal between selectable positions one of which exposes the compartmental container for ready filling and one



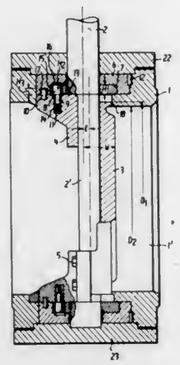
of which seals the cube compartments to prevent water spillage during transport of the filled tray from the filling site to the freezing unit.

3,776,505

VALVE

Sadayuki Nakanishi, Kobe, Japan, assignor to Kobe Steel, Ltd., Kobe, Japan

Filed Oct. 2, 1972, Ser. No. 297,992
Claims priority, application Japan, Sept. 30, 1971, 46/77224
Int. Cl. F16k 5/14
U.S. Cl. 251—163 **6 Claims**



A valve comprising a valve plate for closing a through fluid passageway which is first retracted from the valve seat and then rotated in order to open, a valve rod having an eccentric portion rotatably supporting the valve plate, a retraction guide pin for the valve plate engaging with the body of the valve to guide the valve plate during its retraction upon rotating the valve rod through a first portion, and a rotation guide pin to lock the valve plate with the valve rod only during a second portion of rotation of the valve rod for movement therewith.

3,776,506

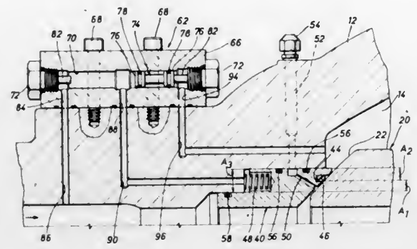
VALVE STRUCTURE HAVING FLUID PRESSURE ACTUATED SEALING MEMBERS

James M. Fowler; Willard E. Kemp, and Jerry B. Tomlin, all of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,100
Int. Cl. F16k 25/00
U.S. Cl. 251—172 **1 Claim**

A valve structure has a valve member mounted within a valve chamber and forms a body cavity between the valve member and the valve body. Upstream and downstream annular sealing members are mounted on opposed sides of the valve member for limited relative longitudinal movement and

are adapted to be urged against the valve member by fluid pressure. A separate valve control means for each sealing member is mounted on the exterior of the valve body and permits communication of the associated sealing member to fluid pressure from either the body cavity or the adjacent flow passage. Normally the associated sealing member is exposed to the higher fluid pressure for urging the sealing member into



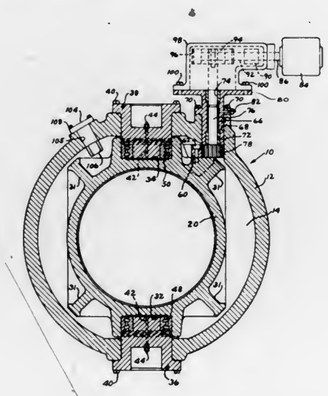
tight sealing engagement with the valve member and if fluid leaks past the upstream sealing member into the body cavity, the downstream sealing member is urged into tight engagement with the valve member from the increase in body fluid pressure. The valve control means includes a pilot valve for each sealing member having a slidable shuttle for selectively communicating the several fluid conduits.

3,776,507

MEANS TO ROTATE SPHERICAL PLUG VALVE

Jerry B. Tomlin, Houston, and John Helenberg, La Porte, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,249
Int. Cl. F16k 31/53
U.S. Cl. 251—248 **5 Claims**



A spherical plug valve structure includes a valve ball mounted on opposed trunnions and having an offset gear drive for rotation of the valve ball. The offset gear drive is mounted internally of the valve body and includes a segment gear mounted on the outer surface of the valve ball in offset relation to the axis of rotation. A pinion engages the segment gear and has a drive shaft extending through the valve body to a suitable external power drive source. The pinion and drive shaft are detachably connected to the valve body and may be easily removed. The trunnions on which the valve ball is mounted for rotation may also be easily removed.

3,776,508

PROCESS FOR MASSIVELY HYDRIDING ZIRCONIUM-URANIUM FUEL ELEMENTS

Norman H. Katz, Northridge, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 26, 1961, Ser. No. 113,036
Int. Cl. C01b 6/00
U.S. Cl. 252—301.1 R **6 Claims**

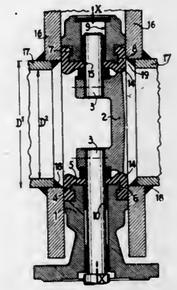
A method of hydriding uranium-zirconium alloy by heating the alloy in a vacuum, introducing hydrogen and maintaining an elevated temperature until occurrence of the beta-delta phase transformation and isobarically cooling the composition.

3,776,509

VALVE HAVING AN ECCENTRIC BUTTERFLY MEMBER AND SEALING ELEMENT FOR SAID VALVE

Christian Leblond, Atton, France, assignor to Pont-A-Mousson S.A., Pont-A-Mousson, France

Filed Feb. 27, 1973, Ser. No. 336,294
Claims priority, application France, Mar. 22, 1972, 7209970
Int. Cl. F16k 1/226
U.S. Cl. 251—306 **4 Claims**



A valve of the type having an axial bore and an annular radial bearing surface and two radially extending bearings in the body for receiving two journals carrying a butterfly member which is eccentric relative to the journals. A sealing element is disposed in the bore and has a cylindrical sleeve portion and, at one end, an outer radial bearing surface for bearing against the valve body and a beading which extends radially inwardly against which the butterfly member bears in the closing position and, in the middle of the sealing element, two diametrally opposed coaxial passageways for the journals. The distance between the axis of the passageways and the bearing surface of the sealing element in the free state of the sealing element exceeds the distance between the axis of the bearings and the bearing surface of the valve body and the diameter of the passageways of the sealing element in the free state of the sealing element is less than the diameter of the journals.

3,776,510

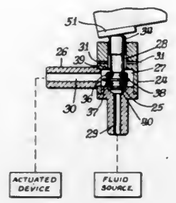
SIMPLIFIED VALVE ASSEMBLY

Leonard R. Beck, 3602 Meadow Dr., Rolling Meadows, Ill.

Filed June 1, 1972, Ser. No. 258,868
Int. Cl. F16k 43/00
U.S. Cl. 251—333 **1 Claim**

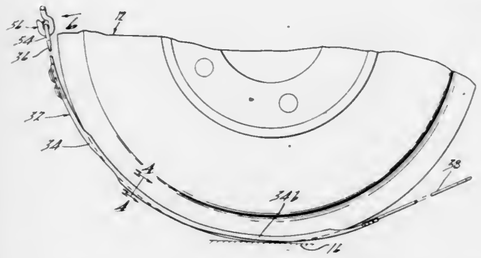
A mounting plate has a clip which holds a valve body and a spring body in spaced positions against the plate. A plunger in the spring body urges an operating lever in a direction such as to bear against the valve stem extending from the valve body.

A valve closure is formed by two O-rings on the opposite side of a pressure plate. The valve closure is movable between a



position at which one O-ring blocks an air inlet and a second position at which the other O-ring forms a seal about the valve stem.

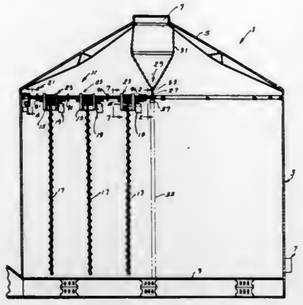
3,776,511
SPARE TIRE HOIST
John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich.
Filed June 26, 1972, Ser. No. 266,061
Int. Cl. B66f 1/00; B66d 1/00
U.S. Cl. 254—1 **8 Claims**



A self-supporting sling-type spare tire hoist for removing a spare tire from a vehicle stowage well. The spare tire is stowed in a generally upright position in the well with the hoist underlying the tire. One end of the hoist is connected to the vehicle while the other end has a handle which by virtue of the self-supporting structure of the hoist, is disposed in a position where it may be readily grasped by the hoist operator. When the user pulls the handle outwardly of the stowage well, the hoist cradles the tire, slinging it out of the well.

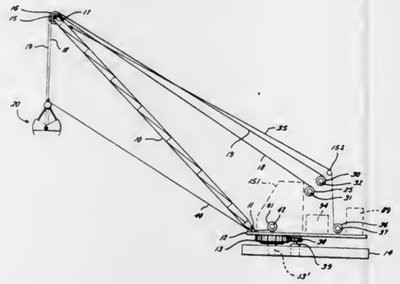
3,776,512
APPARATUS FOR STIRRING GRAIN
Richard E. McKinnon, Taylorville, Ill., assignor to Specialized Products, Inc., Taylorville, Ill.
Continuation of Ser. No. 889,469, Dec. 31, 1969, abandoned.
This application June 3, 1971, Ser. No. 149,777
Int. Cl. B01f 7/00
U.S. Cl. 259—102 **19 Claims**

Apparatus for stirring a mass of grain in a storage bin for aerating the grain to dry it and for blending the grain for controlling moisture variation in the grain throughout the mass from bottom to top, having a plurality of vertical augers rotatable on their axes for moving grain upward, these augers moving radially outward relative to the central vertical axis of



the bin while making a sweep around the bin in one direction, and radially inward on a successive sweep around the bin in the opposite direction.

3,776,513
CRANE
Fred E. Mosley, P.O. Box 1552, Waco, Tex.
Filed May 10, 1971, Ser. No. 141,473
Int. Cl. B66d 1/24
U.S. Cl. 254—150 FH **5 Claims**

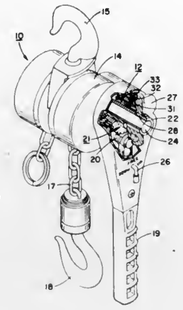


A crane is provided with winch drums for hoisting and closing the bucket or grapple and for a dragline, and mechanisms for lifting and swinging the boom. All operated by hydraulic motors each controlled by single lever actuated valves so as to be readily manipulated by a semi-skilled operator. The mentioned winch drums are powered through special differential gear trains and hydraulic systems such that the single control lever for each kind of motion may power the bucket in either direction or release its cable for rapid pay out.

3,776,514
OVERLOAD REGULATOR FOR LEVER HOISTS
Cecil Howard Eggleton, Jr., Fruitport, and William Franklin Henry, Muskegon, both of Mich., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 28, 1971, Ser. No. 138,072
Int. Cl. B66d 3/14
U.S. Cl. 254—167 **20 Claims**

A regulator to limit the raising, pulling, or stretching load capacity of a lever type hoist to a predetermined maximum. The regulator is operably mounted between the drive input applied via an operating lever and the output drive on which a load is received and/or contained. An adjustably presettable braking friction applied between coaxially interfit components

rotationally connects the input and output drives. In the event the input driving force exceeds the imposed braking friction,



the hoist is rendered inoperable to raise, pull or stretch the load but continues operable to lower or release the load.

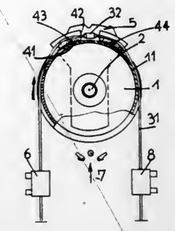
3,776,515
WINCH FOR SNOWMOBILES
Julien Bergeron, 4075 rue Rouleau, Sherbrooke, Quebec, Canada
Filed Feb. 2, 1972, Ser. No. 222,921
Int. Cl. B66d 1/18, 3/02
U.S. Cl. 254—166 **8 Claims**



Mounting a winch on a snowmobile which includes a frame, a variable driving pulley, a rotatable cam on the variable pulley and a motor to operate the variable driving pulley. The winch comprises a support which is rigidly connected to the frame of the snowmobile, a slidable table over the support, a drawing pulley mounted on the slidable table, a clutch to operatively connect the drawing pulley to the variable driving pulley, a cable which is windable around the drawing pulley and means to cause the slidable table to slide towards the variable driving pulley while operatively connecting the drawing pulley to the variable driving pulley and winding the cable around the drawing pulley.

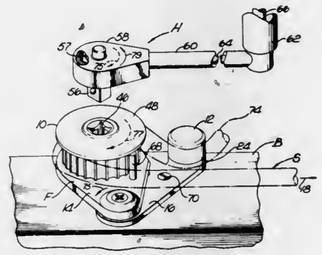
3,776,516
APPARATUS FOR FACILITATING THE PASSAGE OF RIGID CONNECTORS COUPLING FLEXIBLE ELEMENTS AROUND A ROTARY MEMBER
Edmond Daniel, Saulx-les-Chartreux, France, assignor to Societe Creusof-Loire, Paris, France
Filed Dec. 8, 1972, Ser. No. 313,474
Int. Cl. B66d 1/36
U.S. Cl. 254—190 R **10 Claims**

A device adapted to be associated with a rotary member, e.g. a pulley or drum, for assisting the passage therearound of rigid connectors coupling flexible elements of a flexible member, e.g. a belt, cable, etc., comprises a pair of shoe elements defining therebetween a recess to receive a connector, the shoe being normally positioned out of the path of the flexible member and being movable, on detection of the arrival of



a connector at the rotary member to a position between the rotary member periphery and flexible member with the connector positioned in the recess, the shoe being coupled to rotate with the rotary member closing the passage of the connector therearound.

3,776,517
WINCH FOR USE ON SAILBOATS
Richard L. Davis, 3926 Bledsoe Ave., Los Angeles, Calif., and Jerome K. Wolfram, Torrance, Calif., assignors to said Davis, by said Wolfram
Filed Apr. 3, 1972, Ser. No. 240,498
Int. Cl. B66d 1/30
U.S. Cl. 254—150 R **8 Claims**

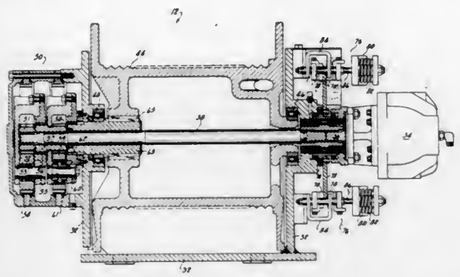


A winch is disclosed including a flat base plate for supporting an upright cylindrical idler along with a flat pivot arm which in turn carries a ratchet drum. As supported, a halyard, sheet, or the like, passes less than a full turn about the drum in a relationship such that the tension in the halyard applies a force to the drum, clampingly engaging the sheet between the drum and the idler. An extension pin adjacent the drum prevents fouling and a handle (incorporating a ratchet) engages the drum to actuate the drum and the pivotal mounting so as to accomplish various operations.

3,776,518
WINCH AND CONTROL MEANS THEREFOR
Wallace J. Witwer, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, Milwaukee, Wis.
Filed Feb. 24, 1972, Ser. No. 229,056
Int. Cl. B66d 1/30
U.S. Cl. 254—150 FH **8 Claims**

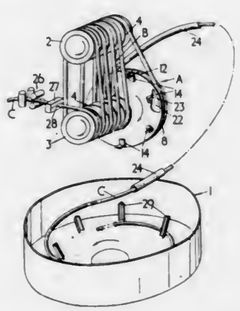
A winch for use on a mobile crane to hoist or lower a load comprises a hydraulic winch motor, a shaft driven thereby, a winch drum, and planetary gearing through which the shaft

drives the drum. A three-position hydraulic control valve controls motor speed and direction of rotation. The winch further comprises a brake disc connected by a uni-directional clutch to the shaft and spring-applied, hydraulic brake cylinder-released brake pads for frictional engagement with the brake disc. A two-position hydraulic brake valve controls operation of the brake cylinder. Both the control valve and brake valve are part of a control means which further includes a control lever and linkage. The control lever acts through the linkage



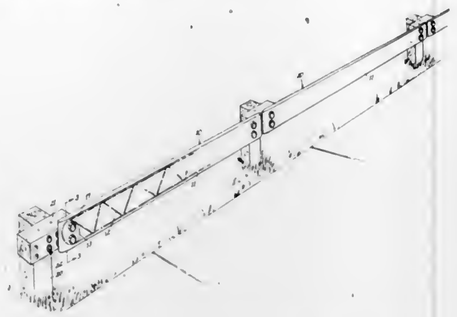
and is movable from a neutral position (wherein both valves are closed) toward a winch-lower position (wherein the brake valve opens before the control valve) and toward a winch hoist position (wherein the brake valve remains closed but the control valve opens). During lowering, the winch drum starts rotating smoothly as the brake is released and the load begins to descend under the force of gravity before lowering power is applied to the winch motor. During a winch-hoist operation, the uni-directional clutch allows winch drum rotation even though the brake is still applied.

3,776,519
CABLE HANDLING APPARATUS
William Roy Hamilton, Newton Ferrers, Near Plymouth, England, assignor to Fairey Winches Limited, Devon, England
Continuation-in-part of Ser. No. 17,066, March 6, 1970. This application Jan. 11, 1972, Ser. No. 217,021
Int. Cl. B66d *1/76*
U.S. Cl. 254—175.5 **14 Claims**



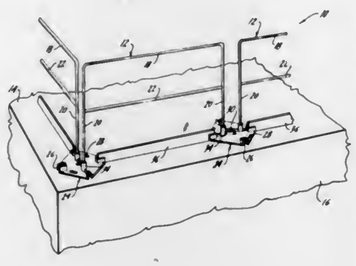
The winch includes two spaced, parallel, circumferentially-grooved driven drums, a rotary cable-driving member defining an annular groove, and rollers, gripping elements or other means for retaining a cable in the groove. The drums and driving member are rotated from a source of rotary power. During drawing-in, the cable passes through a guide, around successive drums in successive grooves thereof, around part of the annular groove of the driving member, and then through a guide conduit into a storage space. The cable is under tension as it passes from the final drum groove to the annular groove defined by the driving member.

3,776,520
ENERGY ABSORBING HIGHWAY GUARDRAIL
James Charles, and Robert L. Akens, both of Zanesville, Ohio, assignors to J. P. C., Inc., Zanesville, Ohio
Filed Nov. 6, 1972, Ser. No. 303,998
Int. Cl. E01f *15/00*
U.S. Cl. 256—13.1 **5 Claims**



A maintenance-free guardrail for use on highways or similar use with a built-in and predictable failure rate. It is formed of a body of thermoplastic resin material, which is noncorrosive and sunlight resistant, and which has a steel rod insert embedded therein, the insert being of predetermined geometry to produce a controlled failure pattern when the guardrail is subjected to sufficient impact.

3,776,521
PORTABLE SAFETY RAILING
Robert S. Weinert, 419 Park St., Manitowoc, Wis.
Filed Mar. 27, 1972, Ser. No. 238,444
Int. Cl. E04h *17/16*
U.S. Cl. 256—24 **9 Claims**

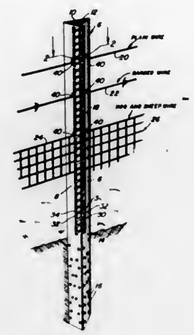


A portable safety railing includes one or more horizontal bars supported at either end by vertical posts. The posts are positioned in weighted bases having sockets for receiving the posts and slots for receiving the slab-like toe rail.

3,776,522
FENCE POST CONSTRUCTION
William W. Bartlett, R.D. 2, New Albany Township, Pa.
Filed May 15, 1972, Ser. No. 253,554
Int. Cl. E04h *17/20*
U.S. Cl. 256—47 **9 Claims**

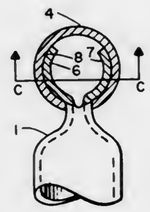
A vertically elongated hollow one-piece fence post made from moldable plastic material to render it weatherproof and otherwise appropriate for fence erecting purposes and embodying forwardly converging side walls having rearward longitudinal edges united by a back wall. The adjoined forward

edges of the side walls provide a rigid vertical corner. The vertex of the corner and adjacent portions of the side walls are provided with individual selectively usable wire hitching and fastening means for fencing wires, for example, plain wires, barbed wires, hog and sheep and poultry wires. No staples, nails or equivalent fasteners are necessary for installation. Each individual means is characterized by a V-shaped main



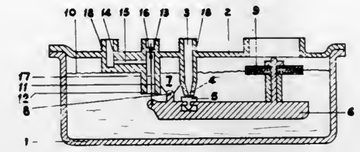
slot embodying a wire inserting crotch portion which opens through the accessible portion of the vertex and downwardly inclined wire piloting branches having rearward terminal ends. The extreme ends of the branches are communicatively joined to median portions of vertically disposed wire seating and retaining slots which are auxiliary but complemental to the main V-shaped slot.

3,776,523
STRUCTURAL TUBE ASSEMBLY
Edward E. Welland, Union Lake, Mich., assignor to Universal Fence Inc., Highland, Mich.
Continuation-in-part of Ser. No. 120,107, March 2, 1971, abandoned. This application Apr. 27, 1972, Ser. No. 248,253
Int. Cl. E04h *17/14*
U.S. Cl. 256—73 **13 Claims**



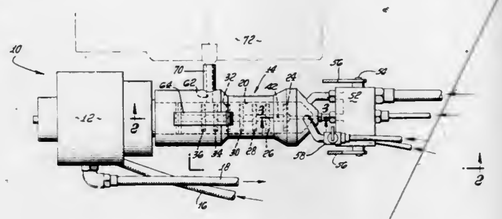
Disclosed herein is a structural tubing assembly such as a fence or gate in which one tubular member is joined to a second tubular member by (1) cutting an elongated opening in the second member, (2) cutting opposing slots in the end of the first member thus forming two locking tabs, (3) inserting the tabs through the opening in the second member, and (4) spreading the tabs, thus securely and rigidly locking the first tubular member to the second tubular member. Preferably, the end of the first tubular member is partially flattened to conform to the shape of the elongated opening in the second member prior to cutting the two opposing slots to form the locking tabs. Optionally, a reinforcing insert such as a tube of proper size is pressed into the opening between the spread tabs to strengthen the connection.

3,776,524
WATER PURIFICATION
Richard A. Starke, 37, 4th Ave. Parktown North, Johannesburg, Republic of South Africa
Filed Dec. 14, 1971, Ser. No. 207,904
Int. Cl. B01f *15/04*
U.S. Cl. 259—4 **3 Claims**



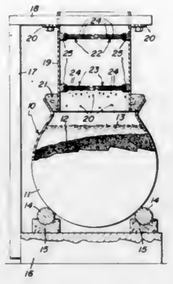
A mixing chamber particularly useful in mixing gaseous chlorine with water, the chamber having a float controlled inlet and an outlet dipping below the water level established by the float controlled valve and having at a position above the water level an orifice and a chlorine gas inlet between the orifice and water level, the orifice being such as to limit the negative pressure in the chlorine gas inlet when water passes through the orifice under suction applied to the outlet.

3,776,525
INJECTION PROCESS
James Warner, 2732 Hallister Ter., Glendale, Calif.
Filed Mar. 26, 1973, Ser. No. 344,860
Int. Cl. B01f *3/10, 5/04, 15/04*
U.S. Cl. 259—7 **11 Claims**



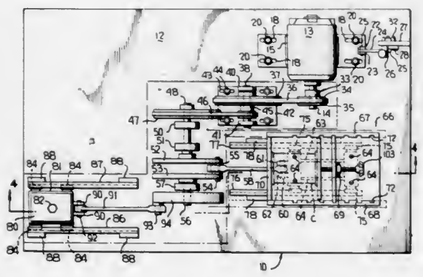
A method of injecting a plural component synthetic resin into a site where pressure and other conditions vary. A very high viscosity non-Newtonian fluid and a relatively low viscosity fluid are accurately metered in a proportioning pump system so that a small amount of the thin fluid and a large amount of the viscous fluid are supplied simultaneously to a blending device. Heat generating conditions of viscous shear are utilized in the blending device so that there is a substantial reduction in pressure across the blending device and a substantial elevation in temperature due to the internal heat generated by the viscous shear. The pressure on the resultant admixture is measured at the injection site, and the rate of fluid flow is adjusted to maintain that pressure at an approximate predetermined value. Injection is carried out at a predetermined elevated temperature. A substantial proportion of the heat required to elevate the temperature to the desired value is generated by viscous shear within the viscous component.

3,776,526
SPLASH-PROOF VIBRATORY APPARATUS
William A. Fazioli, Troy, N.Y., assignor to Norton Company, Troy, N.Y.
Filed Aug. 10, 1972, Ser. No. 279,674
Int. Cl. B01f *11/02*
U.S. Cl. 259—72 **6 Claims**



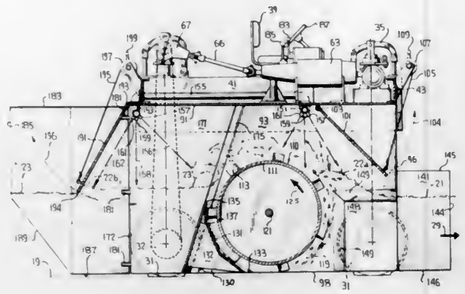
A vibratory container, primarily for use in an electrolytic process, capable of operating with high electrolyte levels and of being loaded or emptied of workpieces with the unit in motion without splash-out of the electrolyte wherein at least one flexible closure member, closes off any avenues of splash-out from the unit.

3,776,527
SIMULATION EVALUATION METHOD
Paul F. Cover, and Clyde F. Kemper, both of Westminster, Md., assignors to The United Company, Westminster, Md.
Filed Jan. 25, 1971, Ser. No. 109,262
Int. Cl. B01f *13/00*
U.S. Cl. 259—91 **7 Claims**



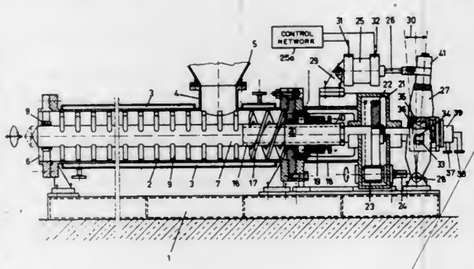
This disclosure relates to a method of simulating the operation of a commercial can shaker by employing a test shaker and evaluating the results in a repetitious manner until a desired product is observed thereby automatically making a selection of the proper commercial shaker to obtain the desired product commercially, continually and repetitiously. The method includes the steps of selecting from known performance characteristics of existing commercial shakers a predetermined shake time and rate for a particular container size, setting the test shaker to function at the preselected rate, shaking a filled container of the particular size in the test shaker for the predetermined time, observing the results of the shaking on the product, and as necessary repeating these steps using different time and shake rates until the desired result or product effect is observed.

3,776,528
VEHICULAR COMPOSTING MACHINE AND METHOD FOR AEROBICALLY DECOMPOSING WASTE MATERIALS
Louis R. Toto, Penn Green Rd. 2 mi. S. of Avondale, Landenberg, Pa.
Filed Apr. 5, 1972, Ser. No. 241,129
Int. Cl. B01f *7/04*
U.S. Cl. 259—183 **35 Claims**



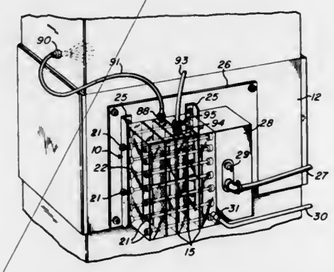
A method and apparatus for mixing non-flowable solid materials disposed stripwise on a flat surface and for periodically aerating, hydrating, and shaping aerobically decomposable waste materials into a rick having compressed sides and a nearly square cross section. The apparatus includes a straddle-carrier vehicle having a tunnel means thereunder and a beater means and a scavenger means therewithin. Revolving paddles liftingly scoop clumps of waste material from one end of the rick and sling portions thereof upwardly against a forwardly and downwardly inclined front deflecting surface as an auxiliary fragmentation means and other portions upwardly and rearwardly against a rearwardly and downwardly inclined rear baffle surface from which the material is reflected downwardly between shaping compressors at the discharge end thereof to form an aerated rick which is leveled by the baffle surface.

3,776,529
PROCESS FOR THE DOSABLE CONVEYING OF MATERIALS AND DEVICE FOR CARRYING OUT THE PROCESS
Fritz Sutter, and Fritz Ronner, both of Prattein, Switzerland, assignors to Buss Ltd., Basle, Switzerland
Filed Aug. 30, 1971, Ser. No. 176,112
Claims priority, application Switzerland, Sept. 1, 1970, 13131/70
Int. Cl. B01f *7/04*; B29b *1/06*; B01f *11/00*
U.S. Cl. 259—185 **7 Claims**



A process and apparatus for conveying and dispensing in uniform volumetric doses particulate or highly viscous materials by rotating and axially reciprocating a shaft, having radially extending paddles, within a cylindrical casing. The forward stroke of the shaft is faster than the backward stroke resulting in a net flow producing a dosable conveyance of the material through the casing. Baffles extending inwardly from the casing cooperate with the paddles to agitate and knead the material and to clean the shaft and paddles during operation.

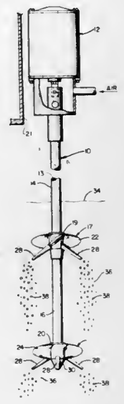
3,776,530
ELECTRODIALYTIC DEMINERALIZING UNIT FOR HUMIDIFICATION PURPOSES
Jerry L. Griffith, and Donald D. Kinsworthy, both of Dayton, Ohio, assignors to Lau Incorporated, Dayton, Ohio
Filed Mar. 25, 1971, Ser. No. 127,990
Int. Cl. B01f *3/04*
U.S. Cl. 261—4 **1 Claim**



The unit includes at least one electrodialytic "half-cell" in which a single cation-selective membrane separates the cell into a product flow chamber and a purge flow chamber and in which an anode is disposed in the product flow chamber and a cathode is disposed in purge flow chamber. Tap water is demineralized when a electric potential is established between the electrodes which pulls the cation constituents of lime, principally calcium, magnesium and manganese, out of the product flow chamber through the cation-selective membrane and into the purge flow chamber. In the preferred embodiment, the demineralized product is delivered to a nozzle in the air plenum of a furnace for atomization and humidification of hot air passing therethrough.

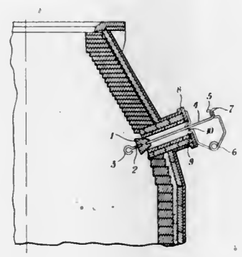
3,776,531
APPARATUS AND PROPELLER FOR ENTRAINING FLUIDS IN LIQUIDS
George A. Ebner, and Marjorie J. Ebner, both of 1405 S. Hillcrest Dr., Fort Collins, Colo.
Continuation-in-part of Ser. No. 1,523, Jan. 8, 1970, abandoned. This application Mar. 16, 1972, Ser. No. 235,288
Int. Cl. B01f *3/04*
U.S. Cl. 261—87 **9 Claims**

Apparatus and propeller for dispersing and entraining a fluid, particularly a gas, in a liquid. The apparatus includes a propeller shaft mounted for rotation, said shaft being closed at one end and having a channel therein communicating at the other end with the fluid to be dispersed, means for rotating the shaft, at least one series of diametrically aligned screw-propeller blades equidistantly spaced around said shaft extending radially from said shaft, and a plurality of diametrically aligned aspirator tubes disposed proximately to said blades equidistantly spaced around said shaft, each of said tubes having a free end disposed generally radially outwardly at least as far as the outer portions of said blades, each of said tubes having a generally longitudinally extending opening formed therethrough, each of said openings being disposed in fluid communication with said channel, and each of said tubes being mounted on said shaft to form an included angle between the longitudinal axis of the opening adjacent the free end thereof and the longitudinal axis of the shaft of not less than 35° nor more than 75°. Each of the tubes is also mounted on said shaft to form an included angle between the longitudinal axis of the opening adjacent the free end thereof and a radially extending plane having the longitudinal axis of said shaft lying therein of not less than one-half degree nor more than 3°. The method of dispersing and entraining fluids in a liquid comprises generating a columnated current of liquid



within a body of liquid, creating one or more zones of reduced pressure in the body of liquid adjacent the outer periphery of said columnated current of liquid and rotating said zone or zones about the outer periphery of said columnated current of liquid, introducing a fluid into said body of liquid adjacent the outer periphery of said columnated current of liquid and forming minute globules or bubbles of fluid adjacent the outer periphery of said columnated current of liquid, and entraining said globules or bubbles of fluid within said columnated current of liquid.

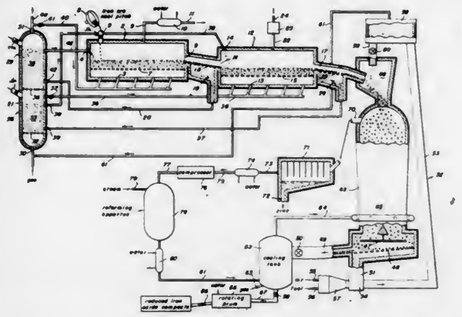
3,776,532
DEVICE FOR PLUGGING THE POUR OF ROTATING REACTORS
Bruno Imberti, Genova, Italy, assignor to Centro Sperimental Metallurgico S.p.A., Rome, Italy
Filed Apr. 4, 1972, Ser. No. 240,379
Claims priority, application Italy, Apr. 17, 1971, 49804 A/71
Int. Cl. C21b
U.S. Cl. 266—1 **12 Claims**



A device for plugging the taphole of reactors for metallurgical processes, of rotating and/or oscillating type; comprising in combination a plug having an essentially frusto-conical shape;

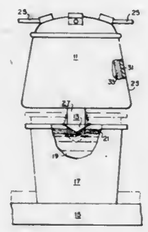
a tail piece, fixed to the greater base of the plug and substantially perpendicular thereto, having its free end folded in order to allow the plug to be operated; a rod rigid with, and perpendicular to, the minor base of the plug, the free end of which is so shaped as to allow its anchoring to the locking member of the plug; a member for locking the plug on the taphole located on the outer edge of the hole itself and co-operating with the end of said rod, said member being easily removable and apt to be reused.

3,776,533
APPARATUS FOR CONTINUOUS HEAT PROCESSING OF ORE PELLETS
Joseph Vinaty, Aliquippa, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.
Filed Jan. 28, 1970, Ser. No. 6,433
Int. Cl. C21b *13/14*
U.S. Cl. 266—24 **9 Claims**



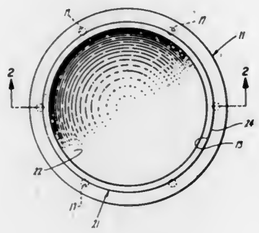
Apparatus and method for preheating, hardening and reducing ore pellets that provide for envelopment of the pellets in inert particulate material throughout the processing. Green pellets are continuously charged into a fluidized bed of heated particulate material and preheated while being buoyantly moved to a second fluidized bed. The preheated pellets are then buoyantly transported through the second fluidized bed of particulate material, which is at a higher temperature than the first bed, while being hardened. Hardened pellets are directly discharged from the second bed to the upper region of a columnar reactor for random envelopment within a bed of inert particulate material that is heated to a temperature sufficient to reduce the pellets during downward movement through the reactor.

3,776,534
DEGASSING OF SLAG COATED MELT
Robert E. Cashdollar, Sr., R.D. No. 7, Butler, Pa.
Filed May 17, 1972, Ser. No. 254,162
Int. Cl. C21c *7/10*
U.S. Cl. 266—34 V **6 Claims**



There is disclosed a degassing process and degassing apparatus incorporating a slag-breaker which instead of being an integral welded unit is formed of several parts which are readily stored and readily transported and are secured together by fasteners at the site of use. The slag-breaker includes a tapered member in the form of a conical receptacle and a top for this member. The slag-breaker is assembled near the degassing vessel, the top being secured substantially below the rim of the member. The slag-breaker is secured to the gas entrance or snorkel of the vessel with the rim of the tapered member above the opening in the snorkel.

3,776,535
METHOD FOR EVAPORATING ALUMINUM
Vernon C. Spellman, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Division of Ser. No. 29,410, April 17, 1970, Pat. No. 3,684,268. This application Mar. 13, 1972, Ser. No. 233,936
Int. Cl. C23c *17/00*
U.S. Cl. 266—34 R **2 Claims**



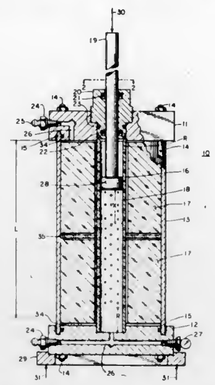
Method for evaporating aluminum utilizing a carbon liner having a recess therein by depositing the aluminum in the recess and then heating the aluminum in the recess in a location generally at the center of the recess. The outer margin of the liner is cooled to a greater extent than the inner portion of the liner so that the outer margin of the liner is cooler whereby the outer edge of the aluminum in the recess will be cooled to such an extent that the outer margin is not molten so that the aluminum will not creep over the edge of the liner.

ERRATUM

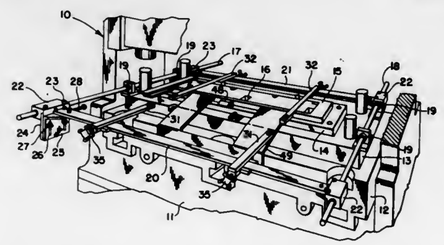
For Class 266—38 see:
Patent No. 3,776,439

3,776,536
CUSHION MOUNTING
Homer I. Henderson, 2220 Live Oak St., San Angelo, Tex.
Continuation-in-part of Ser. No. 12,589, Feb. 19, 1970, which is a continuation of Ser. No. 768,573, Aug. 19, 1968, abandoned, which is a continuation of Ser. No. 542,491, April 14, 1966, abandoned. This application Feb. 10, 1972, Ser. No. 225,311
Int. Cl. B60q *1/62*
U.S. Cl. 267—35 **10 Claims**

A cushion mounting comprising a housing containing a liquid and a solid material having a bulk modulus of elasticity lower than that of the liquid. A load-carrying member is provided for supporting a load. The load-carrying member is mounted to reciprocate with respect to the housing so that the load-carrying member displaces some of the liquid so as to stress the liquid and solid according to the amount of displacement.



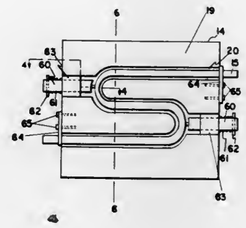
3,776,537
LOADER FOR POWER PRESSES
Victor P. Smith, Mansfield, and Charles C. Smith, Lucas, both of Ohio, assignors to The Tappan Company, Mansfield, Ohio
Filed Aug. 7, 1972, Ser. No. 278,405
Int. Cl. B65g *9/00*
U.S. Cl. 269—13 **11 Claims**



A manual loader is provided in the form of a rigid frame moved by hand from a loading position in front of the press to carry the stock into the same for working on loading fingers bridging the frame, each finger having two spaced aligned parts with depressible stops for pushing and pulling stock respectively to load and unload the same. The assembly permits adjustment of spacing of finger parts for stock width variation, lateral adjustment of the fingers, and vertical adjustment thereof. During unloading, the worked piece falls freely by gravity from the loader in approaching the loading position to receive another piece to be inserted in the press.

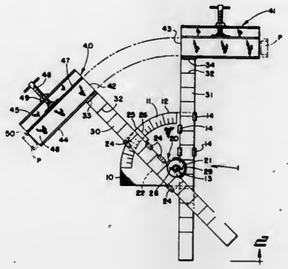
3,776,538
JIG FOR USE IN APPARATUS FOR SECURING AN ELONGATED METAL MEMBER TO A FLAT METAL SHEET
Edward G. Beck, Jr., 532 S. Ft. Thomas Ave., Ft. Thomas, Tenn.
Division of Ser. No. 673,138, Oct. 5, 1967, Pat. No. 3,514,834, which is a continuation-in-part of Ser. No. 523,619, Jan. 28, 1966, abandoned. This application Mar. 24, 1972, Ser. No. 237,989
Int. Cl. B23q *1/00*
U.S. Cl. 269—46 **4 Claims**

A method of securing metallic tubing and the like to a flat metal sheet while maintaining the flatness of the sheet so that the composite tube and sheet may be used as radiant heating or cooling panels in building interiors where distortion or wrinkling of the flat sheet would be undesirable. The apparatus comprises a heating station where a composite of sheet, of suitably disposed bonding material, and a piece of tubing in properly assembled relationship and under pressure are heated to induce a bond between the tubing and the sheet while maintaining the sheet in flat condition. An assembly station is provided including a jig in which the piece of tubing



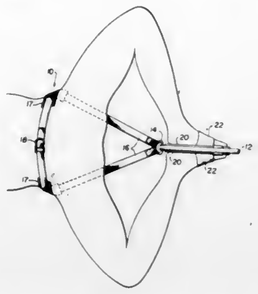
may be accurately located, means for accurately locating the jig with respect to the sheet, and means for raising and lowering the jig and for releasing the jig from the raising and lowering means so that it may move with the assembly from the assembly stations to the heating station. After the heating cycle, the assembly moves to a cooling station (which may be the same as the assembly station) for a cooling cycle. A combined assembly and cooling station may be provided on each side of the heating station, each assembly station having a jig whereby production may be speeded up.

3,776,539
PLASTIC PIPE BENDING JIG
John S. Curtis, 3659 Cummings Rd., Cleveland Heights, Ohio, and Lee A. Miller, 15104 Hill Dr., Novelty, Ohio
Filed May 19, 1971, Ser. No. 144,817
Int. Cl. B29g *7/00*; **B23q** *3/06*
U.S. Cl. 269—81 **10 Claims**



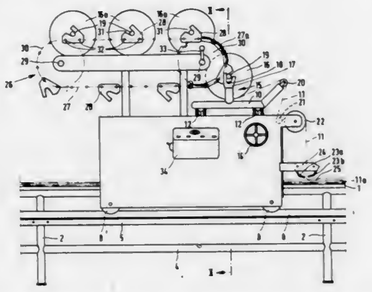
A plastic pipe bending jig for establishing bend curvature and configuration having a plurality of operatively interconnected arms, pipe receiving clamps connected to the radial extremities of such arms, such clamps being radially and angularly adjustable to the desired radius and angle of curvature for the pipe, and indicia associated with the jig for determining such radial and angular displacement of the clamps. The jig is used by adjusting the clamps to define the desired pipe configuration, heating the pipe until pliable and placing the same in the clamps until hardened.

3,776,540
BED STIRRUP FOR PELVIC EXAMINATIONS
Edward N. Comando, 120 Millburn Ave., Livingston, N.J.
Filed Mar. 23, 1972, Ser. No. 237,449
Int. Cl. A61g 13/00
U.S. Cl. 269—328 10 Claims



A restraining device for keeping the thighs and knees far apart and enabling an efficient pelvic examination of a patient in a home or hospital bed without the use of an examining table with stirrups specifically means for that purpose.

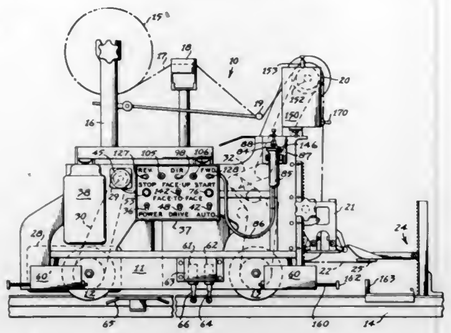
3,776,541
CLOTH FOLDING MACHINE
Gunter Stumpf, 7421 Mehrstetten, Kreis Munsigen, Germany
Filed July 14, 1971, Ser. No. 162,350
Claims priority, application Germany, July 21, 1970, P 20 36 127.7
Int. Cl. B65h 29/46
U.S. Cl. 270—31 9 Claims



A folding machine, which is displaceable on a table to lay out cloth from a roll to form a stack of folded layers, carries a pluraltiy of further rolls to replace the unwound rolls when they are exhausted. The further rolls are supported in receivers connected to a conveyor, and to transport the further rolls to a carrier device for the roll to be unwound, the conveyor is driven.

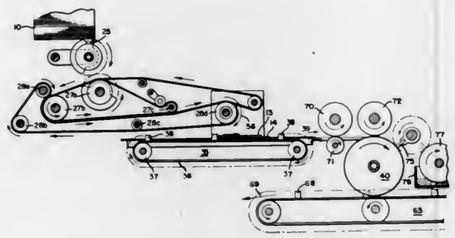
3,776,542
ELECTRICALLY CONTROLLED CLOTH SPREADING MACHINE
Robert W. Benson; James Ronald Chapman; Robert G. Reed, and Hoyt L. Smith, all of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.
Division of Ser. No. 857,509, Sept. 12, 1969, Pat. No. 3,663,006. This application Feb. 25, 1972, Ser. No. 229,602
Int. Cl. B65n 29/46
U.S. Cl. 270—31 3 Claims

An electrically driven and controlled cloth spreading machine including means for reversing the travel of the machine, means for controlling the high and low speeds of the machine, means for causing the machine to fail safe at low speed upon power failure and open circuit conditions caused by different changes in function of the machine.



The machine is also provided with various selective controls for manual, semi-automatic and automatic operation of the machine, and for spreading cloth face-to-face, face-up or face-down.

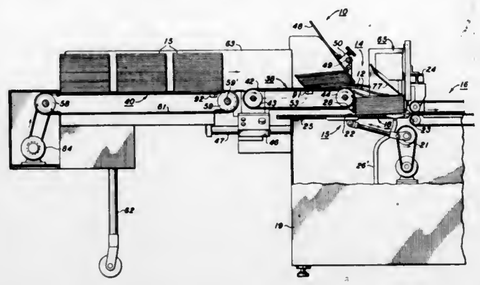
3,776,543
REVERSIBLE TIP-ON MACHINE
William M. Edwards, West Milton, Ohio, assignor to The McCall Printing Company, Dayton, Ohio
Filed Nov. 23, 1971, Ser. No. 201,364
Int. Cl. B42b 5/00
U.S. Cl. 270—53 3 Claims



A machine for applying inserts to signatures to be gathered into books or magazines is provided with a reversible insert conveyor which can selectively orient either a leading or a trailing edge of an insert to coincide with the backbone edge of a corresponding signature. This allows multi-leaf inserts to be fed initially with a folded edge forward, and then re-oriented to position a free edge of one leaf along the backbone edge of an insert, whereby a fold-out multi-leaf insert is readily accommodated into the magazine.

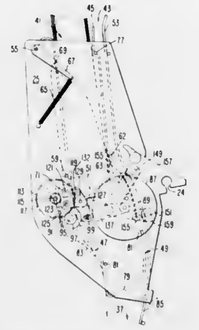
3,776,544
AUTOMATIC LOADING APPARATUS
Donald W. Watson, Arlington Heights, and Albert G. Enskat, Barrington, both of Ill., assignors to Xerox, Inc., Stamford, Conn.
Filed Sept. 23, 1968, Ser. No. 761,515
Int. Cl. B65g 60/00
U.S. Cl. 271—3 6 Claims

An automatic loading apparatus designed to maintain supply of articles at the infeed station of an article processor; the apparatus including a supply conveyor for bringing articles which may be in the form of stacks forward; a shingling conveyor downstream of the supply conveyor for receiving articles from the supply conveyor, the shingling conveyor serving to rearrange any article stack thereon into shingled form and to transport the shingled articles in procession to the infeed



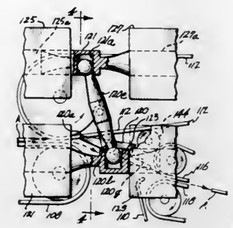
station; and control means for operating the supply and shingling conveyors in response to the demand for articles at said infeed station whereby to maintain a stack-like supply of articles at the infeed station.

3,776,545
UNITARY LEDGER FEEDER AND STACKER WITH REFEED FROM A STACKER HOLD POSITION
Howard P. White, Livonia, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed July 3, 1972, Ser. No. 268,579
Int. Cl. B65h 1/14, 31/06
U.S. Cl. 271—4 27 Claims



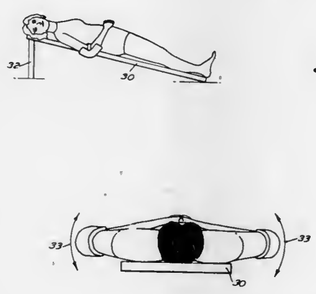
A unitary ledger handling device is provided for ready and convenient attachment to the forms handling mechanism of an accounting machine or the like, the accounting machine being effective for readably and writably processing ledger-type documents as well as for printably recording transactions on fan-fold or continuous journal paper. The device includes a hopper compartment into which the documents to be processed are manually deposited, a stacker compartment into which completely processed documents are automatically advanced, and a document hold position disposed contiguously downstream of the stacker compartment where partially processed documents are stored pending the generation of data to be recorded in summary thereon. Means are provided within the unitary device for automatically feeding documents singly from the hopper compartment to the processing station of the accounting machine, for automatically advancing partially and fully processed documents from the processing station to the document hold position and to the stacker compartment, respectively, and for recallably feeding partially processed documents from the document hold position to the processing station to complete the processing thereof.

3,776,546
SELECTIVE ARTICLE DIRECTOR MULTIPOSITION GATE
Arlen J. Erickson, and Paul A. Carlstedt, both of Seattle, Wash., assignors to CX Processing Laboratories, Inc., Seattle, Wash.
Filed Oct. 17, 1972, Ser. No. 298,351
Int. Cl. B65h 29/58
U.S. Cl. 271—64 5 Claims



An article directing gate selectively routes advancing articles such as photoprints into any of three offbear paths in accordance with simultaneous energization of different combinations of two of four electromagnet relays with the other two remaining deenergized. The relay armatures act on the pivoted gate through a walking beam and gate crank arm.

3,776,547
METHOD OF EXERCISE FOR PECTORAL MUSCLE DEVELOPMENT
Albert G. Gaboriault, 401 Armistice Blvd., Pawtucket, R.I.
Filed Oct. 25, 1972, Ser. No. 300,451
Int. Cl. A63b 23/00
U.S. Cl. 272—57 R 3 Claims

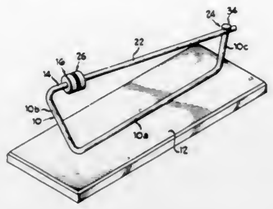


A method and apparatus for developing the pectoral muscle of a female by immobilizing the bicep and tricep muscles of the arm while the arm is moved through a series of exercise positions. The apparatus utilized to immobilize these muscles is a saddle-like member that consists effectively of two sections positioned substantially at right angles to each other with a bight portion where the two meet. These two sections and the bight portion have a U-shaped cross section that embraces the underside of the elbow area of the arm and maintains the elbow in a bent condition. The saddle-like member is structurally rigid to prevent extension of the arm. It may be in the form of a solid dense material or it may be in the form of a hollow shell that can be filled with shot, sand, water, etc. A strap is attached to the opposite sides in the area of the bight portion of the saddle-like member for securing it to arm of the female exerciser.

3,776,548
MAGNETIC ATTRACTION APPARATUS

Marvin I. Glass, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 15, 1972, Ser. No. 289,574
Int. Cl. A63b 67/00
U.S. Cl. 273—1 M 3 Claims

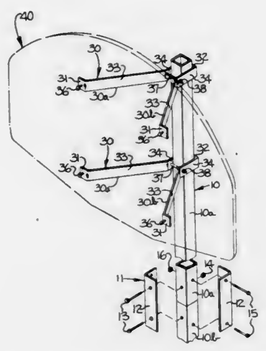


A novelty or game device which includes a pair of magnets provided with relative movement whereby the movement may be caused to stop should the magnets be brought into sufficiently close proximity to each other to be mutually attracted thereby. One magnet is immovably mounted on an upright support member, and a second magnet is mounted on the free swinging end of an elongated manually manipulatable support arm. The opposite end of the support arm is pivoted to a second upright support member spaced from the first support member. As the support arm is swung about the second upright support member, the magnet on the free end thereof is swung in a defined circle into sufficiently close proximity to the fixed magnet whereby the two magnets may mutually attract each other and stop the swinging magnet only if it is travelling at a sufficiently slow rate of speed.

3,776,549
BASKETBALL BACKBOARD SUPPORT ASSEMBLY

Joseph Francis Ganis, Charlotte, N.C., assignor to E-Z Up Industries, Inc., Charlotte, N.C.

Filed Mar. 13, 1972, Ser. No. 233,931
Int. Cl. A63b 63/04
U.S. Cl. 273—1.5 R 3 Claims

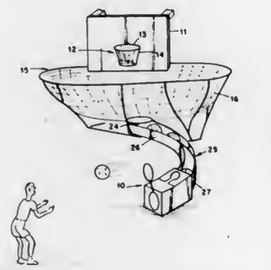


A basketball goal assembly designed for ease of assembly and adjustment, and including an upright, rectangular pole formed of a plurality of relatively short, aligned tubular pole components, each having substantially the same cross-sectional dimension. Two L-shaped angle brackets splice the pole components together. Each bracket engages two adjacent sides of a pole component and overlaps each of two adjacent components. A pair of bolts extend through the angle brackets and pole components, the bolts being perpendicular to each other, for securing same together to form a rigid, rectangular pole. A pair of vertically spaced backboard brackets are carried by the upper end of the pole and support a backboard, to which a basketball goal is attached.

3,776,550
BASKETBALL RETRIEVAL AND RETURN DEVICE

James R. McNabb, Rt. No. 1, Philadelphia, Tenn.

Filed Sept. 1, 1972, Ser. No. 285,867
Int. Cl. A63b 69/00
U.S. Cl. 273—1.5 A 7 Claims

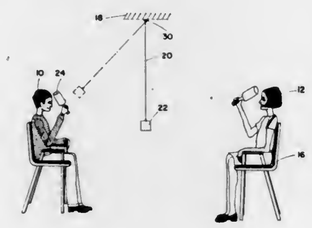


A large basket shaped framework enclosed by an outer covering is positioned beneath a basketball basket. A chute leads from the bottom of this framework to a basketball return mechanism. The return mechanism comprises a motor driven rotating projecting arm and a transfer arm for transferring a basketball from the end of the chute to the projecting arm. The projecting arm is connected to the motor by a drive shaft and a torsion spring mount. A tension spring controlled arm engages the end of the projecting arm to prevent it from rotating while the transfer arm operates. When the force in the torsion spring increases to a force greater than that of the tension spring, due to the continued operation of the motor, the projecting arm is released and throws the basketball resting thereon to a user.

3,776,551
RESILIENT RESIN FOAM POLYHEDRON & BAT

Joseph P. Schaller; E. Chris Jorgensen, and Louis J. Critelli, Jr., all of Columbus, Ohio, assignors to Skill Sports, Inc., Columbus, Ohio

Filed Nov. 26, 1971, Ser. No. 202,249
Int. Cl. A63b 71/02
U.S. Cl. 273—95 A 7 Claims

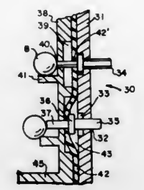


An amusement apparatus for contests of skill and amusement between two players. A resiliently deformable, polyesterurethane foam cube is suspended by a cord from the ceiling of a room. Each of the opposing players, seated on radially opposite side of the cord, grasp a bat and alternately strike the cube and propel it toward his opponent.

3,776,552
BOARD GAME APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Filed Jan. 24, 1972, Ser. No. 220,160
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R 10 Claims

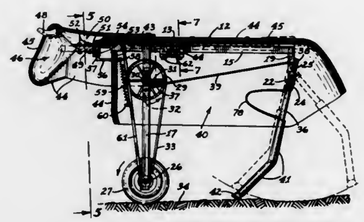


Game apparatus is provided in which a plurality of pin-like members are moveable through a playing board to effect scoring. Several configurations are provided, each of which utilizes a flexible, rubber-type sheet material to either frictionally retain a moveable member or spring-bias said moveable member so that when the moveable member is moved, it will be returned thereby to a pre-moved location. The constructions provided herein permit the production of a variety of games and game devices at relatively low cost due to the elimination of separate springs and retaining means.

3,776,553
ANIMATED MECHANICAL STEER HAVING SPRING BIASED HEAD

Robert L. Kelton, 1895 Hayden Ln., Tempe, Ariz.

Filed Dec. 29, 1972, Ser. No. 319,485
Int. Cl. A63b 71/02
U.S. Cl. 273—105.2 6 Claims

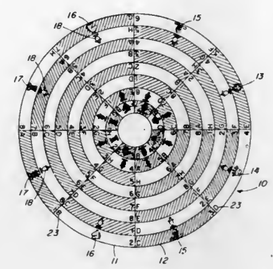


An animated mechanically operated steer which simulates the appearance and natural movements of a live animal used for practicing the art of cattle roping from horseback and to train a horse to follow the moving steer at the proper speed and distance for roping or lassoing purposes. An arm rotatably secured to a pedestal is also secured to the steer and drives the steer. The back legs of the steer move in an arcuate path to simulate a live animal. The head is pivotally secured to the frame and comprises a pair of horns mounted thereon. A pair of springs are mounted on the frame to opposite sides of the head to hold the head in a vertical position. Thereby, when the head is lassoed by a rope, it moves in an arcuate manner to dislodge the rope in a live steer simulated manner.

3,776,554
CIRCULAR PLAYING SURFACE HAVING CODED INDICIA

Fernando A. Capablanca, 1231 Red Rd., Coral Gables, Fla., and Douglas E. Whitney, P.O. Box 523, Wenham, Mass.

Filed Dec. 8, 1971, Ser. No. 205,958
Int. Cl. A63f 3/02
U.S. Cl. 273—131 AB 4 Claims

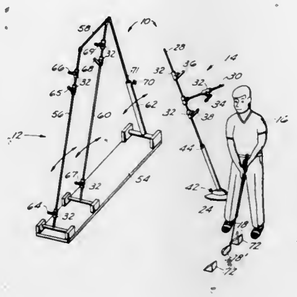


A circular playing surface, specifically suitable for use in a circular chess game, consisting of sixty-four spaces of alternately light and dark color arranged in eight radial files and eight concentric ranks of eight spaces each, wherein discrete coded indicia are provided individually on the spaces to indicate spiral moves along series of diagonally adjacent spaces of like color. Such discrete coded indicia are letters and numbers, having like indicia for each spiral.

3,776,555
GOLF CLUB SWING TRAINING APPARATUS

Smith M. Hagaman, 559 Westover Ave., Winston-Salem, N.C.

Filed June 19, 1972, Ser. No. 263,996
Int. Cl. A63b 69/36
U.S. Cl. 273—186 R 18 Claims



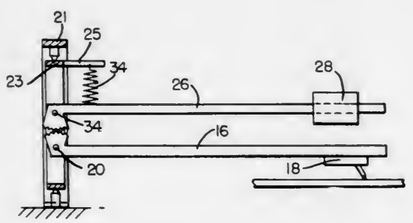
First and second arrays of photoelectric units respectively delineate the vertically inclined plane and the arcuate paths traveled by the clubhead during a full golf swing, and through associated electrical circuitry cause actuation of signaling devices upon the performance of an improper swing by the golfer. The signaling devices give immediate audible notification of an error in a golf swing, and also indicate the approximate location of the error or errors. The photoelectric units are physically spaced from the golfer so as to not impede his natural swing, and are adjustably movable and selectively energizible so as to readily permit use of the apparatus by golfers who differ in size and/or in other physical characteristics, and so as to permit, if desired, the use of progressive teaching techniques.

3,776,556
GOLF CLUB SWING TRAINING DEVICE
Charles S. McLaughlin, 181 Grove St., Cambridge, Mass.
Filed Aug. 2, 1972, Ser. No. 277,471
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 A 5 Claims



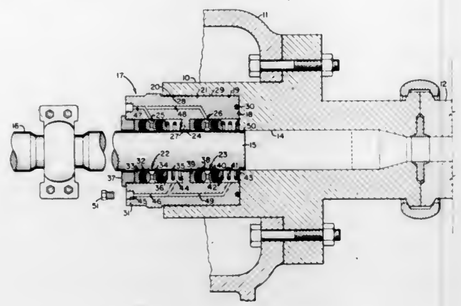
A tear drop shaped body containing a pair of differently oriented and pitched whistles is attached to the shaft of a golf stick to indicate slices and hooks when the golf stick is swung. When the golf stick is properly swung, neither whistle will produce a sound.

3,776,557
DYNAMICALLY-BALANCED PHONOGRAPH ARM
Jacob Rabinow, 6920 Selkirk Dr., Bethesda, Md.
Filed May 13, 1971, Ser. No. 142,908
Int. Cl. G11b *3/14, 25/04*
U.S. Cl. 274—23 R 16 Claims



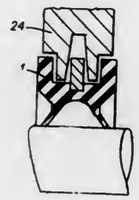
A conventional phonograph arm consists essentially of a balanced rod on one end of which is mounted a phono pick-up device (cartridge) and at the other end a counterweight. A pivot system located near the counterweight is so arranged that the cartridge can move vertically and laterally. Such arms suffer from the fact that when the turntable is suddenly tilted or vibrated the cartridge frequently leaves the surface of the record. The present disclosure describes the use of a two-element arm where the two elements are interconnected so as to rotate in opposite directions so that rotational motions of the machine do not cause the cartridge to leave the record.

3,776,558
TANDEM PACKING FOR A RECIPROCATING PUMP
William C. Maurer, Houston; Joe K. Hellhecker, Bellaire, and Everett H. Lock, Houston, all of Tex., assignors to Esso Production Research Company, Houston, Tex.
Filed Mar. 17, 1972, Ser. No. 235,514
Int. Cl. F16j *15/18*
U.S. Cl. 277—9 9 Claims



A packing assembly for a pump includes a pair of packings arranged in tandem along the plunger of a reciprocating pump or along the shaft of a centrifugal pump to provide axially-spaced sealing intervals. The tandem packing arrangement permits the pump to be operated through two stages, with separate packings providing the seal in each stage.

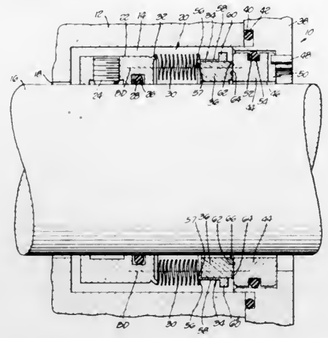
3,776,559
SHAFT SEALS
Trevor Lewis Cawthorn, Norfolk, England, assignor to Cooper Roller Bearings Company Limited, King's Lynn, Norfolk, England
Filed Jan. 18, 1971, Ser. No. 106,976
Claims priority, application Germany, Oct. 20, 1970, P 20 51 500.8; Japan, Oct. 20, 1970, 45/91691
Int. Cl. F16j *15/48*
U.S. Cl. 277—56 4 Claims



A shaft seal comprising a split annular body made of resilient material to surround and engage the shaft and a split ring adapted to surround the body and having its ends shaped to engage each other in a locked condition.

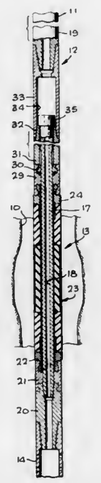
3,776,560
BELLOWS TYPE FLUID SEAL
Robert S. Wentworth, Jr., Wilmington, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 4, 1971, Ser. No. 121,099
Int. Cl. F16j *15/36*
U.S. Cl. 277—88 5 Claims

A bellows type mechanical fluid seal combination including a first sealing ring structure having an annular sealing face adapted for mounting to a stationary member, a second sealing ring structure having a complementary annular sealing face adapted for mounting to a rotatable member, and an axially extendible cylindrical bellows structure included with one of the sealing ring structures and cooperating to urge the sealing faces of the sealing rings into sealing relationship responsive to applied fluid pressure. The improvement resides in the



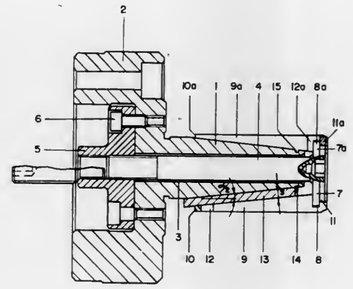
relative shape and configuration provided for one of the sealing ring structures to attain improved utilization of sealing face areas within a seal installation space of limited dimensions.

3,776,561
FORMATION OF WELL PACKERS
Robert L. Haney, 111 Massey Pl., S.W., Calgary, Alberta, Canada
Filed Oct. 16, 1970, Ser. No. 81,412
Int. Cl. F16j *15/10*
U.S. Cl. 277—116.8 9 Claims



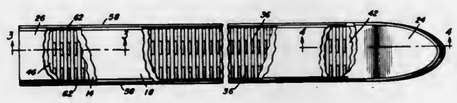
A well packer including a sleeve disposed about a pipe or other carrier structure and adapted to be compressed axially in a manner expanding the sleeve radially outwardly to form a seal in a well. The sleeve has a longitudinally central portion of relatively soft elastomeric material and two opposite end portions of harder elastomeric material, with annular plates desirably being provided between the end portions and the softer central body. In manufacturing the sleeve, a thin outer layer of relatively hard elastomer is provided about the body of softer material in order to allow accurate shaping of the outer surface of the packer at the location of the soft material, by machining the thin outer layer at that location to a desired circular cross section.

3,776,562
ADJUSTABLE MANDREL FOR CLAMPING A WORK PIECE
Werner Johann Gross, Heidelberg; Gunter Franz Lanzerath, Heidelberg-Wieblingen; Helmut Karl Patzer, Ilgen; Joachim Klauss Maennchen, Wiesloch; Helmuth Rieger, Geidelberg-Wieblingen, and Horst Welberg, Edingen, all of Germany, assignors to Borg-Warner Stieber GmbH, Heidelberg, Germany
Filed Aug. 11, 1972, Ser. No. 280,007
Claims priority, application Germany, Aug. 20, 1971, G 71 31 831.5
Int. Cl. B23b *31/40*
U.S. Cl. 279—2 16 Claims



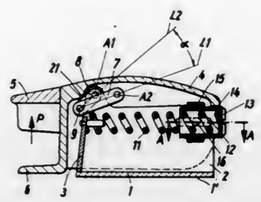
An adjustable mandrel for gripping a work piece includes a tapered arbor and collet having an adapter sleeve inserted therebetween. Preferably, a series of interchangeable adapter sleeves is provided for extending the gripping range of the mandrel.

3,776,563
SKI AND CORE CONSTRUCTION
Allen R. Tigert, 2031 Olympic Dr., Anchorage, Alaska
Filed Sept. 1, 1972, Ser. No. 285,560
Int. Cl. A63c *5/00*
U.S. Cl. 280—11.13 L 9 Claims



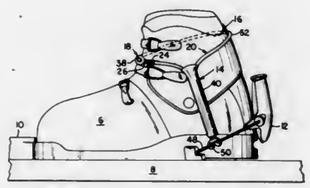
A ski body including a body core laminated between top and bottom reinforcing sheets or panels. The top and bottom sheets are in turn covered by a top outer surface panel and a plastic, or other material, lower running surface or sheet. The core consists of a plurality of transversely elongated and longitudinally spaced links with adjacent link sides provided with tightly interdigitated knuckles. The spaces between adjacent knuckles on each side of each link seatingly and tightly receive the opposing knuckles of the adjacent link and the transversely overlapped knuckle surfaces are frictionally engaged with each other and may be roughened to promote additional stiffness of the ski core.

3,776,564
RELEASING HEEL RETAINER
Paul Unger, Bruckwiesenstr. 113, Altenberg near Nurnberg, Germany
Filed Sept. 27, 1971, Ser. No. 183,935
Claims priority, application Germany, Sept. 26, 1970, P 20 47 519.8
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 12 Claims



Releasing heel retainer with sole retaining part and stepping spur for ski binding that is pivotable in the manner of a sliding crank arrangement on a stationary base about a front axis extending horizontally transversely of the longitudinal extent of the ski and slidably journalled and supported with its rearward end remote from the sole retaining part on the base, where a release acting against spring pressure effects the release of the ski boot in response to excessive load, while the crank-like linkage of the housing of the heel retainer on the base is by way of a linked lever device and the journalling of the rearward housing part on the base is slidable against spring action and is simultaneously formed as a rotatable bearing.

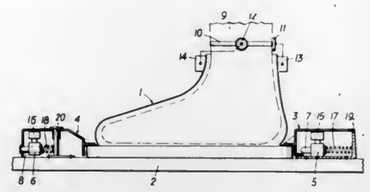
3,776,565
SKI SAFETY STRAP
James E. Granville, 631 Larkin St., San Francisco, Calif.
Filed Feb. 19, 1971, Ser. No. 116,986
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 N 12 Claims



A safety strap for preventing runaway skis having a quick release fastener to disengagingly connect a ski boot with a ski. The fastener is constructed of a flexible, readily stretchable elongate member which permits substantial elongations of the member when subjected to axial forces to protect the skier's foot and leg from possible injuries when the ski is disengaged from the boot under dynamic conditions.

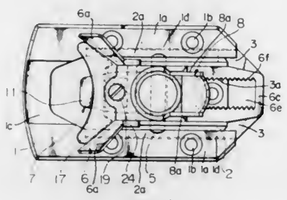
3,776,566
SAFETY SKI BINDING
Thomas Gordan Smolka, Wien-Mauer, Austria, assignor to Gertsch AG, Zug, Switzerland
Filed July 6, 1971, Ser. No. 159,789
Claims priority, application Austria, July 8, 1970, 6161
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 M 4 Claims

Safety release bindings for action between a ski and a ski boot. Means are provided for utilizing muscular stress of the skier and utilizing a preselected value of same for releasing the binding. In certain embodiments, the muscular stress is measured by the bio-electrical output of the skier's muscles. In other embodiments the muscular stress is measured by physical movement of the skier's foot within or with respect to his



ski boot. In one embodiment, a primary measurement is made of such muscular stress while a secondary measurement is made of the stress between the ski boot and the ski, both of said stresses being required to coincide in order to release the ski.

3,776,567
HEEL PIECE
Giichi Shimizu, No. 3-5-16, Nishi Azabu, and Teiji Takahashi, both of Tokyo, Japan, assignors to said Shimizu, by said Takahashi
Filed Aug. 2, 1971, Ser. No. 168,109
Claims priority, application Japan, Aug. 5, 1970, 45/67965
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 3 Claims

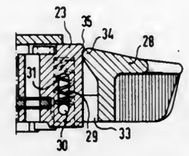


A heel holding device for safety ski bindings comprising stationary guide means, pivotal stepping-down means and spring-loaded pivotal heel holding-down means, said guide means having two surfaces, one being arcuate and substantially parallel the other being flat and substantially vertical with respect to the plane of the ski, said holding-down means being adapted to pivot from said arcuate guide face portion to said vertical guide face portion of the guide means upon said stepping-down means being depressed.

3,776,568
TOE IRON FOR SAFETY SKI BINDINGS
Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany
Division of Ser. No. 81,702, Oct. 19, 1970, Pat. No. 3,722,902.
This application Feb. 22, 1972, Ser. No. 227,808
Claims priority, application Germany, Nov. 11, 1969, P 19 56 653.1
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 3 Claims

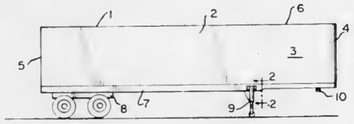
The toe iron comprises a soleholder carrier and an upwardly movable soleholder. The soleholder is held on the soleholder carrier by means of a cam slot to be movable approximately vertically upwardly against the force of at least one return spring and is also pivoted to the soleholder carrier by means of

a horizontal transverse pivot. The sole-holder has a lower surface, which in the normal position of the soleholder engages at least one supporting surface of the soleholder carrier. The top



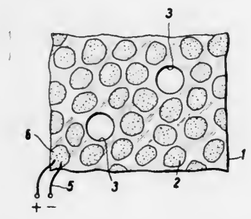
part of the soleholder bears on the soleholder carrier by means of a locking or follower arm, which holds the soleholder against a pivotal movement in its normal position.

3,776,569
TRAILER LANDING GEAR ARRANGEMENT
Edwin L. Carmel, and Olaf W. Schirmer, both of Cincinnati, Ohio, assignors to Pullman Incorporated, Chicago, Ill.
Filed Jan. 27, 1972, Ser. No. 221,157
Int. Cl. B62d 21/00
U.S. Cl. 280—106 T 7 Claims



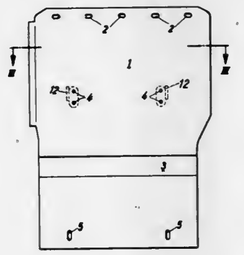
A highway trailer having a landing gear mounted on each side to each main rail of the trailer by means of bolts which attach the landing gear mounting plate to the main rail mounting angles and a single piece mounting brace that is attached to the landing gear tab by bolts, and the top edge of the single piece mounting brace is welded to the lower flange of the main rail and to the lower flange of the landing gear crossmember, the single piece mounting brace being trapezoidal shaped and bent at 90° about its vertical center line to provide for two diaphragm plate portions, one for each direction of force, as well as providing opposing stiffeners which strengthen the opposite plane.

3,776,570
AIR BAG FOR MOTOR VEHICLES FOR THE PREVENTION OF INJURIES IN COLLISIONS
Per Olof Weman, Stockholm, Sweden, assignor to Klippah GmbH, Hamburg, Germany
Filed June 11, 1971, Ser. No. 152,130
Claims priority, application Germany, June 16, 1970, P 20 29 587.8
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 5 Claims



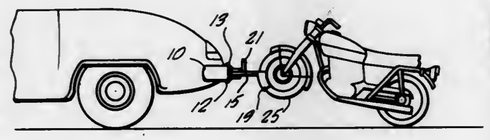
An air bag for preventing injuries to the passengers of a motor vehicle having on the inner wall of the bag a coating of a substance adapted to generate a gas to inflate the air bag. The coating may be arranged in discrete sections and be fired by an electric ignition device. Additionally air intake openings may be provided, for sucking in air from the passenger compartment.

3,776,571
CASING FOR TRACK-LAYING AND WHEEL-EQUIPPED VEHICLES
Martin Gilles, Cologne, and Anton Thiel, Garching/Alz, both of Germany, assignors to Clouth Gummiwerke AG, Cologne, Germany
Filed Oct. 14, 1971, Ser. No. 189,385
Claims priority, application Germany, Oct. 15, 1970, P 20 50 492.1
Int. Cl. B62d 25/16
U.S. Cl. 280—154.5 R 3 Claims



A cover for track-laying and wheel-equipped vehicles, which, while consisting of elastic material, is variable in length.

3,776,572
MOTORCYCLE TOWING DEVICE
James Bane, 1337 Amadore Ave., Ontario, Calif.
Filed Sept. 20, 1972, Ser. No. 290,622
Int. Cl. B62d 53/04
U.S. Cl. 280—292 3 Claims

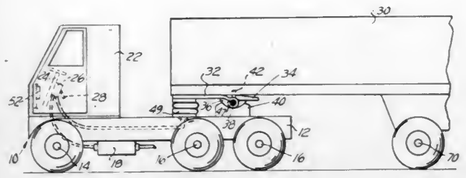


A towing device for motorcycles uses a channel member bent into a segment of a circle to receive the front wheel of a motorcycle. A clamp attaches a plate welded to the channel member to the rear bumper of a vehicle and levers pivotally raise the channel member and wheel off of the ground.

3,776,573
LOAD TRANSFERRING COUPLING DEVICE
Michael F. Paielli, 12360 Roberts, Taylor, Mich.
Filed Oct. 4, 1972, Ser. No. 294,977
Int. Cl. B62d 53/00
U.S. Cl. 280—405 A 6 Claims

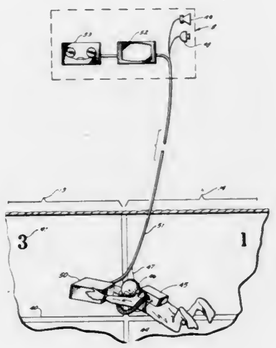
A coupling device for connecting tractor and trailer units which consists of a pivoted coupling member having associated therewith a pivoted flat member supported in the

plane of the coupling member by two inflatable air bags mounted on the tractor. The air bags are connected into the compressed air system of the tractor through a control valve manipulable to change the pressure in the air bags so as to



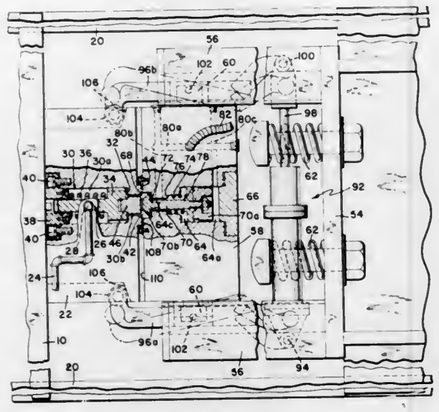
vary the upward thrust on the pivoted flat member and thereby distribute the load in the trailer in a pre-selected manner over the trailer and tractor axles, thereby greatly improving the riding quality of the tractor and simultaneously correcting any mis-loading of the trailer.

3,776,574
UNDERWATER HULL INSPECTION
Donald W. Henderson, deceased, late of Santa Barbara, Calif.; by Joseph A. Seltz. executor. Compton, and Shirley W. Henderson, Santa Fe Springs, both of Calif., assignors to Shirley W. Henderson, Santa Fe Springs, Calif.
Filed Feb. 17, 1972, Ser. No. 227,496
Int. Cl. B63b *59/00*
U.S. Cl. 283—1 **5 Claims**



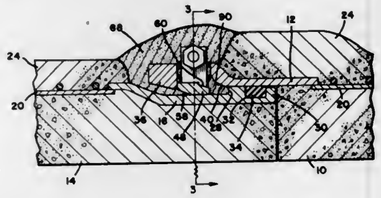
There is described an improved method for directing a diver-inspector to a hull location of interest during the process of performing an inspection of the submerged surfaces of the hull of a floating ship. The submerged surface area of the hull is visibly subdivided into a plurality of discrete areas. A designating indicium for each discrete area is applied to each area to be visible from adjacent the area. A map is provided, at an inspection control site, of the several discrete areas into which the hull submerged surface area is subdivided and of the designating indicia applied to the areas. Also, a communication path is provided to the diver-inspector by which the diver, when submerged, may receive instructions from the inspection control site which preferably is located aboard the vessel. By reference to the map, an inspection controller may direct the diver-inspector to a designated hull location of interest for scanning of the hull by an underwater television camera, or by a plate sounding mechanism or the like.

3,776,575
COUPLING DEVICE
Martin Gilvar, Westboro; Robert D. Wykes, Worcester, and Charles S. Mercer, Northboro, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.
Continuation of Ser. No. 46,258, June 15, 1970, abandoned.
This application Mar. 29, 1972, Ser. No. 239,036
Int. Cl. F16l *35/00*
U.S. Cl. 285—18 **7 Claims**



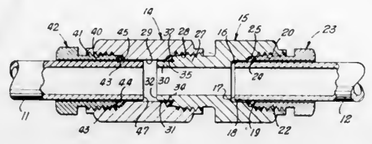
A coupling for connecting fluid services to a housing. The device includes a movable coupling element which is clamped against a mating coupling element attached to the housing as an integral part thereof. Housing conduits communicate with passageways in the mating coupling element, the latter being in communication with the adjacent ends of intermediate passageways in the movable coupling element when the latter is clamped in the operative position. The other ends of the intermediate passageways are connected via flexible conduit means either to remote sources of fluid under pressure or to fluid drains. Seals at the interface between the two coupling elements insure fluid-tight integrity between the communicating passageways.

3,776,576
PIPE ASSEMBLY
Lewis R. Keyser, Dayton, Ohio, assignor to Price Brothers Company, Dayton, Ohio
Filed Apr. 6, 1972, Ser. No. 241,553
Int. Cl. F16l *49/00*
U.S. Cl. 285—27 **8 Claims**



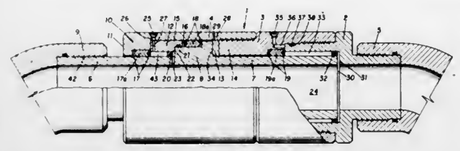
A pipe joint which includes a bell and spigot and a split locking ring positioned within the joint between the outer face of the spigot and the inner face of the bell. The locking ring is expanded within the bell so that the spigot may be inserted into the locking ring and the bell and the locking ring is then contracted to provide a key which bears against an inwardly projecting nose on the bell and an annular rib on the spigot, thereby resisting axial thrust forces tending to separate the bell and spigot.

3,776,577
FLOW CONDUCTOR COUPLING
Weldon G. Dickey, 103 N. Kaufman, Seagoville, Tex.
Filed Nov. 9, 1971, Ser. No. 197,026
Int. Cl. F16l *19/06*
U.S. Cl. 285—31 **6 Claims**



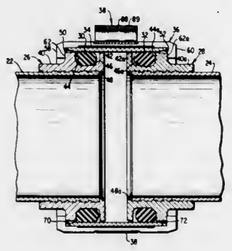
A coupling for connecting adjacent spaced ends of two flow conductors, such as pipes or tubes, which automatically adjusts for variations in the spacing between the two ends and is installable on the two flow conductors without requiring displacement of either flow conductor during such installation or the threading or other adaptation of the two ends.

3,776,578
HIGH PRESSURE ROTATABLE PIPE CONNECTION
Robert L. Jessup, and David L. Farley, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Mar. 21, 1972, Ser. No. 236,624
Int. Cl. F16l *7/00*
U.S. Cl. 285—94 **19 Claims**



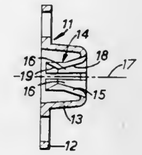
A rotatable pipe connection for rotatably joining two pipe sections for high pressure fluid flow has a pressure balancing internal annular ring open to the flow passage in the connection, and bearings, packing, and seals to provide longitudinal and transverse support and seal against pressure loss.

3,776,579
COUPLING ASSEMBLIES
Edwin J. Gale, Aurora, Colo., assignor to Stanley Aviation Corporation, Denver, Colo.
Filed Mar. 11, 1971, Ser. No. 123,234
Int. Cl. F16l *27/04*
U.S. Cl. 285—233 **5 Claims**



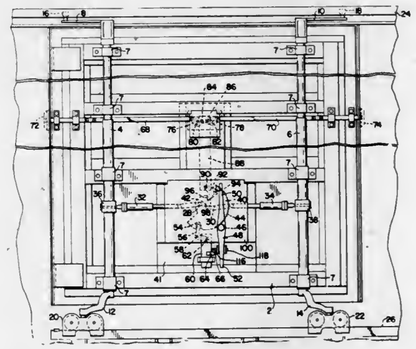
A coupling assembly for interconnecting the adjacent ends of a pair of tubular members and comprising a pair of flange members respectively receiving and fixed to the adjacent ends of the tubular members, a pair of deformable seal rings seated in outwardly open grooves on the flange members, a sleeve telescopically receiving the flange members and bridging the space between the seal rings to engage the seal rings for establishing fluid tight seals between the sleeve and the flange members, a longitudinally split coupler peripherally surrounding the seal ring-engaging sleeve and having radial shoulders that are abuttable with shoulders on the flange members to limit axial movement of the flange members away from each other, and a fastening means for securing the halves of the split coupler circumferentially around the seal ring-engaging sleeve.

3,776,580
CATCHES
Joseph James Michael, Cheltenham, England, assignor to Micro & Precision Mouldings (Cheltenham) Limited, Cheltenham, England
Filed Feb. 28, 1972, Ser. No. 229,698
Int. Cl. E05c *7/00, 9/00, 19/02, 19/06*
U.S. Cl. 292—17 **11 Claims**



A catch and a striker therefor are each in the form of a one-piece plastics moulding. The catch has a back fixing flange from which a re-entrant tubular formation projects, an inturned portion of such formation being longitudinally slotted whereby it is subdivided into resiliently flexible tongues. The tubular formation has a central bore providing a taper socket for reception of a tapering stem of the striker. The striker has a fixing flange and a catch-engaging stem is offset from and projects generally parallel to the striker flange. A headed formation of the stem results in the striker being gripped by the resilient catch tongues, and this grip and fitting of the tapering stem in the taper socket results in firm lateral location of the striker.

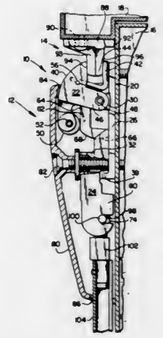
3,776,581
SEALING CAM INTERLOCK
Irving D. Ross, Jr., Barrington, Ill., assignor to The Youngstown Steel Door Company, Cleveland, Ohio
Filed July 26, 1971, Ser. No. 165,897
Int. Cl. E05c *1/12, 9/12*
U.S. Cl. 292—39 **4 Claims**



A cam activated mechanism which permits a railroad car door to be sealed only when the door is in a fully closed posi-

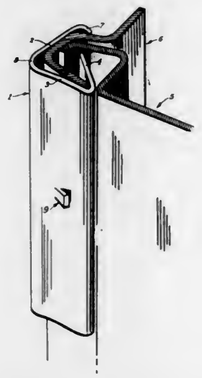
tion. The mechanism is activated by the final rotation of a car door operating lever or handle. An aperture is provided in the handle to allow the insertion of a car seal when the handle is rotated to the proper final position between spaced opposed arms of a sealing fork. Turning the handle imparts rotational movement to a shaft which drives a pinion in meshed engagement with a segmental gear rotatably mounted between the base and cover plates on the car door. The rotational movement of the pinion thus turns the segmental gear. A cam slot is located in the segmental gear and is adapted to admit one end of a cam crank pivotally mounted on the base plate to provide a rocking motion such that the other end of the cam crank which is attached to a bar provides rectilinear motion to the bar. The cam slot is so situated on the segmental gear that it will accept the one end of the cam crank only when the door is closed. Spaced below the segmental gear adjacent the handle is a sealing fork, the housing for which is essentially a U-shaped bracket having two legs and an intermediate portion therebetween which is secured to the base plate. The bracket lies within the periphery of the circumference projected by the handle. A rod having a locking surface thereon is journalled in the legs of the U-shaped bracket and the handle interfering sealing fork arms are fixedly mounted on said rod. The arms are apertured to allow the insertion of a car seal therethrough when said apertures are aligned with the corresponding aperture in the handle. The rectilinearily moving bar has a lateral projection adapted to contact the rod having the locking surface when the one end of the cam crank is dislodged from the cam slot in the segmental gear. The cam crank is in a dislodged position whenever the door is not closed and the sealing apertures are thus prevented from being aligned since the arms are prevented from being positioned on either side of the handle to lock it in place. When contact is effected between the bar and rod, the sealing fork arms are positively held in a position out of the path of the handle so that the handle may be rotated. A seal may be passed through the apertures in the handle and the arms of the sealing fork to seal the railroad car only when the cam crank end is in the cam slot and the door is fully closed.

3,776,582
LATCH ASSEMBLY
Walter O. Balducci, New Britain, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed June 4, 1971, Ser. No. 150,023
Int. Cl. E05c *3/26*
U.S. Cl. 292—92 **19 Claims**



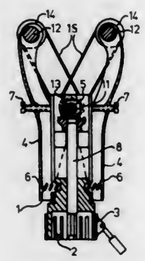
A top latch assembly for an emergency-exit door lock including a latch unit for mounting on the inner face of a door and having a pivotally supported latch bolt and a strike for mounting on the door frame and engageable with the latch bolt to shift the bolt toward latched position during closing movement of the door. Rigid and resilient parts of the latch bolt cooperate to grippingly engage an associated portion of the strike therebetween when the latch unit is in a latched position. The latch unit includes a reciprocably movable slide which cooperates with the latch bolt to retain it in a deadlocked position when the door is closed. When the door is open the latch bolt retains the slide in a hold-back position.

3,776,583
DETERRENT SPRING CLIP
Charles T. Biscardi, Maple Shade, N.J., assignor to Merit Metal Products Corp, Warrington, Pa.
Filed Mar. 22, 1972, Ser. No. 236,803
Int. Cl. B65d *55/04, 55/06*
U.S. Cl. 292—307 R **11 Claims**



A deterrent spring clip which can be added to doors which will seal them when closing and which will not permit door to yield to surreptitious or forcible means. These seals will be expendable and may be opened only with a special tool furnished to authorized personnel.

3,776,584
APPARATUS FOR REPLACING TUBULAR LAMPS AND THE LIKE WHICH ARE DIFFICULT OF ACCESS
Gerardus Wilhelmus Van Gerven, Eindhavenseweg 56, Valkenswaard, Netherlands
Filed Mar. 7, 1972, Ser. No. 232,396
Int. Cl. H01k *3/32*
U.S. Cl. 294—21 **6 Claims**



The disclosure relates to a clamping spanner which is to be placed on the end of a control stick and comprises jaw halves which are forced towards each other by springs and which in the opened condition can pass a tubular lamp and in the closed condition can grip around the tube to above the longitudinal central axis, by a driving shaft directed transverse to the plane of said spanner and extending at least approximately through the pivot thereof, which shaft is connected, by means

of a square transmission, to a coupling shaft extending at right angles thereto, said coupling shaft being rotatable from the lower end of the control stick when the spanner is placed on said stick, the driving shaft comprising means which are capable of engaging, with friction, a tubular lamp inserted in the spanner, and by two guide roller shafts which extend parallel to the driving shaft and which are each supported so as to be rotatable in the free end of one of the jaw halves of the spanner and which are provided with guide rollers capable of engaging the upper part of a tubular lamp inserted in the spanner.

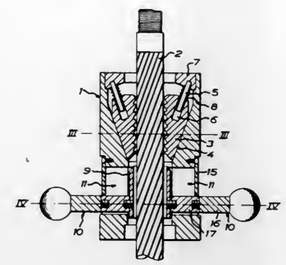
3,776,585
SYNTHETIC FIBER SLING CONSTRUCTION
Scott Bridgehouse, Leola, Pa., assignor to Lift-All Company, Inc., Manheim, Pa.
Filed Sept. 15, 1972, Ser. No. 289,542
Int. Cl. B66c *1/12*
U.S. Cl. 294—74 **6 Claims**



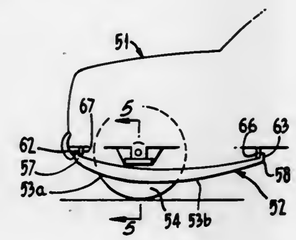
A sling particularly adapted for use in hoisting heavy objects. The sling is formed in a predetermined length and has loops at each end for connection to the hoisting equipment or for looping the sling about the load which is to be hoisted. The sling comprises a synthetic fabric, which according to the invention is woven in three plies in which each ply comprises chain warps extending throughout the length of the ply, the plies being interconnected both by the filling yarns and by connecting binder warps. The chain warps, the connecting warps and the filling yarns are composed of filaments of the same synthetic fiber. The connecting warps interlace the outer ply on one side with the central ply and interlace the outer ply on the other side with the central ply so that the connecting binder warps on one side do not extend through the entire thickness of the fabric. The binder warps on each side pass around each weft of the central ply as well as around each weft of the outer ply to provide a firm interconnection of the plies. In the event of damage to the webbing, for example by reason of fraying through or other failure of the ply on one side of the webbing, the damaged ply does not destroy the integrity of the remaining two plies which are otherwise undamaged. The failure of the sling at the point of damage is postponed, and the likelihood of the load coming loose from the hoisting equipment is substantially reduced.

3,776,586
GRIPPING DEVICE
Nils Harald Ahlgren, Saltsjobaden, Sweden, and Odd Jahr, Hovik, Norway, assignors to Uddemann Byggteknik AB, Stockholm, Sweden
Filed Feb. 9, 1972, Ser. No. 224,681
Int. Cl. F16g *11/10*
U.S. Cl. 294—102 R **8 Claims**

A gripping device which is adapted to coact with a wire rope, bar or other load-carrying element, comprises a body embracing the element and has wedge-shaped clamping jaws which are arranged around the element, which cooperate with conical guides and are actuated by springs. This gripping device also has opening means consisting of a sleeve or like member for moving the jaws out of engagement with the load-carrying element against the action of the springs, the sleeve having at least one operating arm which projects outside the body of the gripping device and which serves to adjust the sleeve in relation to the body for moving the jaws into and out of engagement with the load-carrying element, and the operating arm is adapted to be latched to the body of the gripping device at least in that position in which the sleeve has moved the jaws out of engagement with the load-carrying element.



3,776,587
SURFACE VEHICLES WITH VENTURI ATTACHMENT
Kenneth David Oxlade, Lot 3, Knees Rd., Park Orchards, 3114 Australia
Filed Feb. 14, 1972, Ser. No. 225,905
Int. Cl. B62d *37/02*
U.S. Cl. 296—1 S **6 Claims**

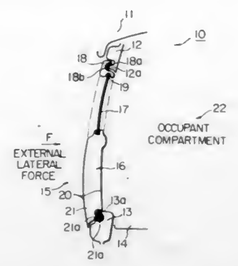


An automobile or other surface vehicle having the underside thereof formed so as to define a venturi to thereby reduce the tendency of the vehicle to lift from the ground during movement; an attachment for fitting to a vehicle to define such a venturi.

3,776,588
SAFETY ARRANGEMENT FOR VEHICLE BODY CLOSURE STRUCTURES
Katsunobu Sobajima, and Kiyoto Matsuzaki, both of Yokohama City, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan
Filed Sept. 27, 1971, Ser. No. 184,084
Claims priority, application Japan, Dec. 24, 1970, 45/130463
Int. Cl. B60j *5/04*
U.S. Cl. 296—146 **1 Claim**

A safety arrangement of motor vehicle bodies free from collapse by an external transverse force including two coactive engaging means having at least two peripheral crests and corresponding peripheral grooves engageable with each other. The two coactive engaging means are formed either in opposite peripheral structural members of the vehicle body wall defining an opening for a vehicle door or in a corresponding

portion of the vehicle door. The transverse force due to, for example, side collision of the vehicle is born by the two engaging means when it is applied to the vehicle door, thus precluding a danger of the vehicle occupant's being hurt by the intruded or deflected vehicle door.



3,776,589
VEHICLE BODY
Bela Barenyi, Maichingen, and Heinrich Haselmann, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Jan. 27, 1972, Ser. No. 221,173
Claims priority, application Germany, Jan. 30, 1971, P 21 04 454.2
Int. Cl. B62d *27/00*
U.S. Cl. 296—28 R **8 Claims**



A support structure for motor vehicles, especially for passenger motor vehicles, which includes on each side of the vehicle one floor bearer and one roof bearer that are connected within the central area thereof by a door column; the connecting places for the door columns at the floor bearers and at the roof bearers are constructed as stamped-out parts extending in the direction of the door columns.

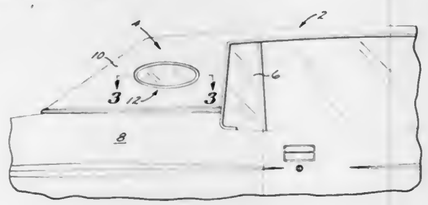
3,776,590
WINDSHIELD VISOR
Frank J. Polidora, 827 Elizabeth St., Turtle Creek, Pa.
Filed Aug. 23, 1972, Ser. No. 283,153
Int. Cl. B60j *1/00, 11/00*
U.S. Cl. 296—95 R **3 Claims**

A flexible membrane supported by a frame comprising stiffeners and legs is fitted to the top of an automobile in such a way that it overhangs the windshield and a portion of the hood of the automobile. The visor protects the windshield from



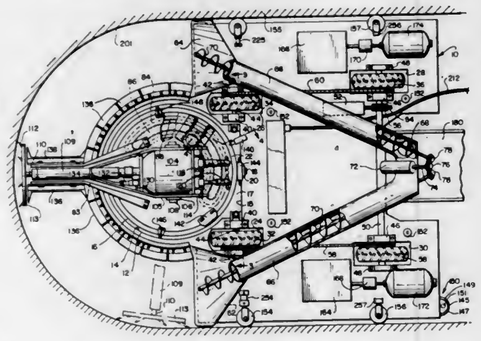
natural precipitation such as rain and snow and the like when persons in an automobile are viewing a motion picture at an outdoor theater.

3,776,591
AUTOMOBILE OPERA WINDOW INSTALLATION APPARATUS AND METHOD
Henry B. Krueger, 1105 Barbara St., Redondo Beach, Calif.
Filed Aug. 18, 1972, Ser. No. 281,967
Int. Cl. B60j *1/08*
U.S. Cl. 296—146 **7 Claims**



The quarter panel and headliner of an automobile having openings cut therein, and the flange of a stepped outer ring is secured to the inner surface of the quarter panel. A flanged inner ring is inserted through the headliner opening and telescopes into the outer ring, adequate clearance being provided between the rings to allow for angular adjustments. The space between the telescoped rings is filled with adhesive, the vinyl roof on the automobile is secured in place within the outer ring, and a glass panel and a trim ring are installed in the step of the outer ring with adhesive to complete the installation.

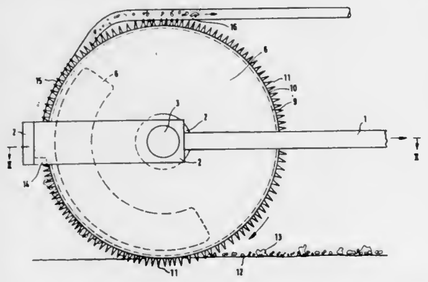
3,776,592
REMOTELY CONTROLLED MINING MACHINE
Alvin L. Ewing, 3317 Osborne Rd., Chester, Va.
Filed Oct. 12, 1972, Ser. No. 296,996
Int. Cl. E21c *35/24*
U.S. Cl. 299—1 **16 Claims**



A coal mining machine operated by remote control to cut coal lying in thick or thin seams and to convey the cut coal out

of the shaft cut thereby. The machine can be manipulated to move forward or rearward and can be directed to the left and right. Cutter bits in a cutting assembly mounted on the machine frame are moved in a predetermined path through an angle of 180° as they cut a first cut and are then elevated and moved back along 180° in the opposite direction from the first cut to cut a second cut higher than the first cut. The cutter bits are then lowered to the original level completing their predetermined path. Both the upper and lower limits of the cuts can be adjusted and the base upon which the cutting assembly is connected can be tilted to allow the cutter bits to follow the contour of the coal seam and have its predetermined path varied. The machine comprises a main machine frame mounted on power-driven wheels for movement in forward and rearward directions; a base pivotably mounted to the frame so that it can be tilted relative thereto; a turntable rotatably mounted on the base and carrying a cutting assembly thereon for rotation through 180°, the cutting assembly having cutting bits at one end capable of being moved upwards and downwards; and a control system for actuating a motor for rotating the turntable through a cycle consisting of two opposite and coincident 180° reciprocations, for actuating a hydraulic cylinder to allow the cutting assembly to be pivoted so that the cutting bits are moved to a higher or lower elevation at the end of a 180° reciprocation, and for actuating the wheels to move the frame forward after the turntable and cutting assembly have moved through a complete cycle. Two ammeters measure the current magnitude in the cutter motor along each half of the cycle and indicate to the operator on increases of the load imposed on the cutter motor that the machine is cutting into substances other than coal and that, therefore, some adjustment is necessary to the path of the cutting bits at the end of a shaft mounted on the cutter motor.

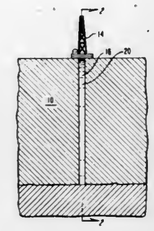
3,776,593
APPARATUS FOR RECOVERY OF MAGNETIZABLE MATERIALS FROM THE SEA BOTTOM
Wilhelm H. Kuhlmann-Schaefer, Hannover, and Manfred E. Dinter, Munich, both of Germany, assignors to Preussag Aktiengesellschaft, Hannover, Germany
Filed Mar. 21, 1972, Ser. No. 236,678
Claims priority, application Germany, Mar. 26, 1971, P 21 14 828.7
Int. Cl. E02f *1/00*; **E21c** *45/00*
U.S. Cl. 299—8 **15 Claims**



Apparatus for collecting manganese or other magnetizable material from the bottom of the sea and conveying it to the sea surface comprising a rotating drum having teeth on the surface thereof to lift said material from said sea bottom, a plurality of magnets mounted inside the drum extending along the axis of the drum through an arc of between 90° and 180°, and a suction means mounted at the surface of the drum near the terminal ends of the magnets to carry the material from the drum to the surface. The magnets do not rotate with the drum surface but remain disposed at the trailing edge of the rotating drum to hold the material on the surface until it reaches the suction conveyor.

In a preferred form of the invention the arcuate magnets are arranged side by side with the North and South poles alternating with each other in the axial direction of the drum.

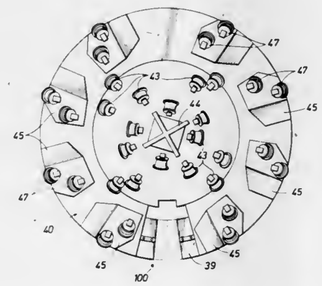
3,776,594
METHOD FOR MECHANIZED SEAM MINING
John C. Haspert, 895 Coronado Dr., Arcadia, Calif.
Continuation-in-part of Ser. No. 873,344, Nov. 3, 1969, abandoned. This application Jan. 20, 1972, Ser. No. 219,218
Int. Cl. E21c *27/34*
U.S. Cl. 299—18 **20 Claims**



An ore seam or vein is mined by robbing ore from the side of a pilot hole using a gravity force broach to form a trench. The operators and most of the equipment, except for the broach, are located outside the trench. In weak formations the trench is filled with drilling fluid which lends mechanical support to its walls, and the drilling fluid may also be utilized in collecting the ore or mineral from the trench.

Apparatus is disclosed for adjusting a parasite weight load on the broach to a desired value, and for providing a progressively advancing reciprocating drive for the broach.

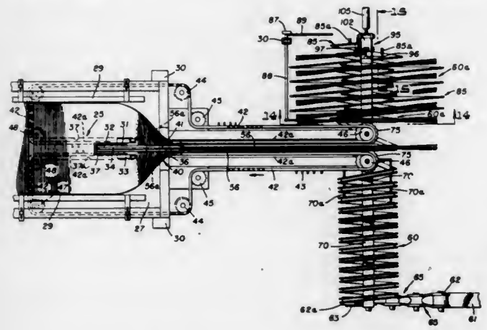
3,776,595
TUNNELING MACHINE HAVING ACCESS PASSAGEWAY AND INVERT CLEANER
Douglas F. Winberg, Issaquah, Wash., assignor to Subsurface Machine and Manufacturing Inc., Durango, Colo.
Filed Mar. 14, 1972, Ser. No. 234,509
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **26 Claims**



A machine for boring a tunnel in a subterranean formation may comprise: a main beam; a cutterhead support assembly attached to the main beam; a cutterhead assembly mounted for rotation on the cutterhead support assembly; and means connected to the main beam for advancing the cutterhead and cutterhead support assemblies to cut a tunnel through the formation. The cutterhead support assembly may include a blade assembly projecting radially toward the walls of the tunnel for cleaning the invert of the tunnel as the cutterhead support assembly advances therethrough. The cutterhead support as-

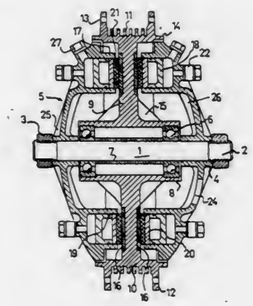
sembly may be provided with a passageway communicating with a passageway beneath the main beam to form a continuous human passageway along the invert of the tunnel, throughout the length of the tunneling machine, through which the face of the cutterhead assembly may be reached. The blade assembly may be mounted on the cutterhead support assembly for movement between first and second positions blocking and unblocking the human passageway, respectively.

3,776,596
APPARATUS FOR PRODUCING BRUSH SECTIONS
Arthur E. Drumm, Rt. 1, Marysville, Ohio
Filed July 25, 1972, Ser. No. 274,912
Int. Cl. A46d *3/05*
U.S. Cl. 300—2 **10 Claims**



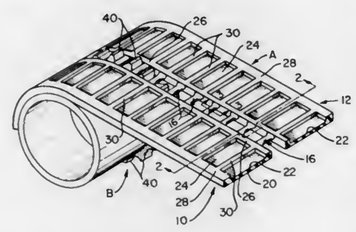
Apparatus for producing brush sections of the type used in heavy-duty work and consisting of bristles anchored in a retaining channel and extending outwardly therefrom. The apparatus feeds the bristles and bends them into hair pin or U-form, feeds the channel-forming metal strip and forms it into an outwardly opening channel, feeds the U-formed bristles over and into the outwardly opening channel, and crimps the sides of the channel inwardly at intervals to clamp the bristles therein, all of these operations being performed in a continuous advance of the materials through the apparatus.

3,776,597
WHEEL HUB ASSEMBLY
Javier Sanglas Camps, Paseo de Gracia 29, Barcelona, Spain
Filed Feb. 24, 1972, Ser. No. 228,984
Claims priority, application Spain, Feb. 26, 1971, 389147
Int. Cl. B60t *1/06*
U.S. Cl. 301—6 V **4 Claims**



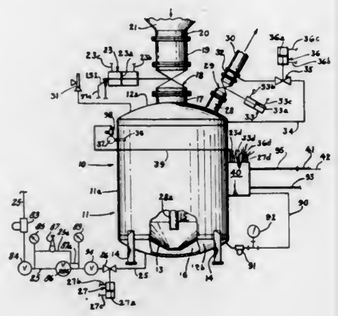
A wheel hub assembly for a motorcycle has a fixed spindle and a boss rotatable about the spindle. A plate forming a brake disc projects radially from the boss and carries the wheel supporting structure on its outer periphery. Secured on the spindle, one to each side of the boss, are two members carrying opposed hydraulic cylinders. The cylinders apply brake blocks to the two faces of the brake disc.

3,776,598
FERRULE FOR SNOWMOBILE TRACK
George E. Nichols, Ottawa, Ohio, assignor to The Standard Products Company, Cleveland, Ohio
Filed Oct. 19, 1972, Ser. No. 299,047
Int. Cl. B62d *55/24*
U.S. Cl. 305—38 **13 Claims**



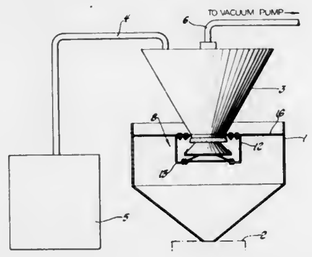
An improved, reinforcing ferrule for the crossbars of an endless flexible track or belt used for driving snowmobiles or like apparatus. The ends of the ferrule are flared at the longitudinal ends thereof in the horizontal plane of the track.

3,776,599
SELF-PURGING, PNEUMATIC CONVEYING APPARATUS INCLUDING FLUID FLOW PUMPS ON SCALES, WITH AGITATOR, VACUUM FILLED, WITH MATERIAL DRYER, AND OF VARIED MEANS OF SEQUENTIAL VALUE OPERATION
Brian R. Reuter, Houston, Tex., assignor to Consolidated Engineering Company, Houston, Tex.
Continuation-in-part of Ser. Nos. 518,533, Jan. 3, 1966, Pat. No. 3,355,221, and Ser. No. 686,018, Nov. 28, 1967, abandoned, and Ser. No. 822,126, May 6, 1969. This application Dec. 16, 1970, Ser. No. 98,567The portion of the term of this patent subsequent to Nov. 28, 1984, has been disclaimed.
Int. Cl. B65g *53/00*
U.S. Cl. 302—3 **32 Claims**



The disclosure, for classification, is to a pressure vessel with fill valve admitting thereinto material to drop onto a perforate diaphragm, thereafter to be transferred, the gas plenum below the diaphragm having activating gas, as compressed air, controlled to communicate therewith. When a batch of material has been drawn in, the fill valve is automatically closed, the activating gas inlet valve is opened to admit activating gas, as compressed air, to pass upwardly through diaphragm and activate the material to a highly flowable state. A discharge valve is then opened to let the pressurized material flow out through a discharge line to point of transfer. As the pressure in material plenum drops, the discharge valve is closed, the activating gas valve is closed, and a purge valve in a by-pass line, around the discharge valve, is opened, and residual pressure purges the residual material as this pressure falls substantially to atmospheric, for a succeeding cycle to begin. The disclosure is to pressure vessels where the material drops onto the diaphragm via gravity when the fill valve opens, such vessels also being shown equipped to close fill valve responsive to at least one of time actuated means, material lever sensor actuated means, and batch weight actuated, vessel supporting scale generated, pressure fluid signal operated circuitry; also variations of circuitry are shown whereby various steps may be controlled by at least one of pressure, time, level probe position, weight and limit switch position.

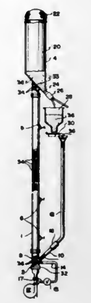
3,776,600
VALVE FOR VACUUM LOADER
John H. McLeod, Jr., Royal Oak, Mich., assignor to Thoreson-McCosh, Inc., Troy, Mich.
Filed June 7, 1971, Ser. No. 150,610
Int. Cl. B65g *53/60*
U.S. Cl. 302—59 **1 Claim**



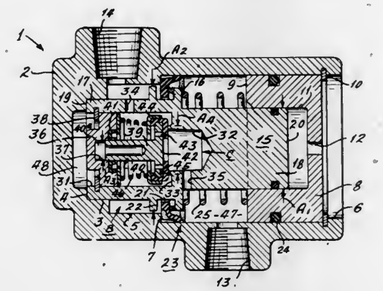
A granular or pulverant material loader in which a charging vessel has its discharge outlet controlled by a conical valve which closes and opens in response to application and release of vacuum within the vessel.

3,776,601
METHOD AND APPARATUS FOR CONVEYING PARTICULATE MATERIAL UPWARDLY IN A GAS STREAM
Charles Edwards Capes; Allan Edward McIlhinney, both of Ottawa, and Thomas Allen Tweddle, Orleans, Ontario, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Nov. 30, 1971, Ser. No. 203,132
Claims priority, application Canada, Feb. 19, 1971, 105,787
Int. Cl. B65g *53/52*
U.S. Cl. 302—64 **6 Claims**

Particulate material is conveyed upwardly in a gas stream in an elongated casing, with the gas stream having a velocity less than the conventional choking velocity, by having gas and particle stream deflecting elements, such as wire mesh cylinders, randomly disposed along the length of the casing.

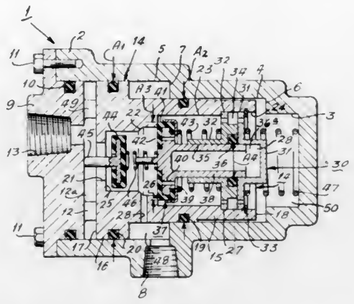


3,776,602
CONTROL VALVE
Richard C. Bueler, Des Peres, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Aug. 23, 1972, Ser. No. 282,945
Int. Cl. B60t *11/34*
U.S. Cl. 303—6 C **9 Claims**



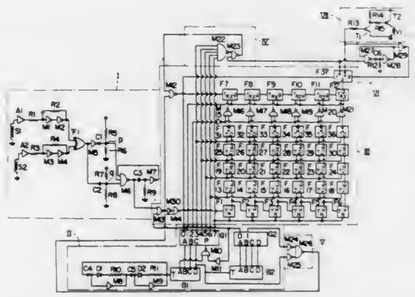
A control valve is provided with a proportioning valve generally operable to effect the application through said control valve of a reduced applied fluid pressure in a predetermined ratio with fluid pressure supplied thereto between first and second predetermined values, and another proportioning valve is movable in said first named proportioning valve and generally operable in response to supplied fluid pressures between the second predetermined value and a third predetermined value acting thereon to increase the reduced applied fluid pressure in another predetermined ratio, said other proportioning valve being responsive to supplied fluid pressure acting thereon in excess of the third predetermined value to blend the supplied and applied fluid pressures.

3,776,603
CONTROL VALVE
Richard C. Bueler, Des Peres, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed July 17, 1972, Ser. No. 272,308
Int. Cl. B60t 11/34
U.S. Cl. 303—6 C 25 Claims



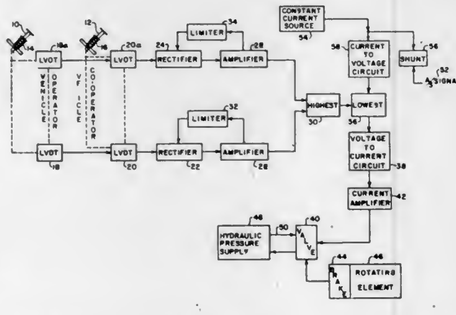
A control valve for varying brake pressures applied to front vehicle brakes includes a differential piston having ratio changing valve means therein.

3,776,604
DIGITAL TYPE BRAKE CONTROL DEVICE
Junichiro Ooya; Koji Oomura; Katsuki Takayama, and Kazutaka Kuwana, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Japan
Filed Dec. 30, 1971, Ser. No. 214,056
Claims priority, application Japan, Dec. 30, 1970, 45/129138; Dec. 30, 1970, 45/129139; Dec. 30, 1970, 45/129140; Dec. 30, 1970, 45/129141; Dec. 30, 1970, 45/129142
Int. Cl. B60t 8/08
U.S. Cl. 303—21 EB 13 Claims



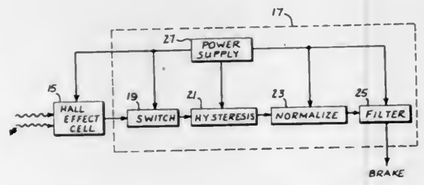
Digital type brake control devices, each comprising a suitable combination of a first block adapted to detect rotational conditions of rotating wheels, a second block comprising a clock pulse circuit and producing a control signal, a third block comprising a computation circuit, a fourth block comprising a sensing pulse difference setting circuit, a fifth block comprising a compensation circuit for compensating a pulse difference computation, a sixth block comprising a circuit for limiting time period of a pressure reducing signal, and a seventh block comprising a circuit for driving a valve adapted to reduce brake oil pressure, said blocks being connected and arranged so that number of pulses obtained by the first block is counted in accordance with the control signal produced by the clock pulse circuit of the second block and the brake pressure is controlled by the circuit of the seventh block through the circuit of the sixth block in accordance with signals obtained by the circuit of the third and fourth blocks. In the above improved devices, a "nand" element is further connected in the clock pulse generating circuit or a circuit for limiting time period of the pressure reducing signal thereby to provide a circuit adapted to limit the time period of the pressure reducing signal.

3,776,605
ELECTRICALLY CONTROLLED BRAKING SYSTEM
Edgar J. Ruof, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 877,794, Nov. 18, 1969, abandoned.
This application Oct. 18, 1971, Ser. No. 189,832
Int. Cl. B60t 8/00
U.S. Cl. 303—21 A 5 Claims



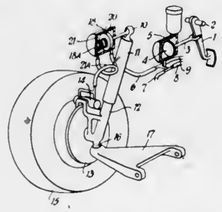
The invention relates to an improved means of braking and providing anti-skid control for vehicles by utilizing electronics between the brake pedal and the electro-hydraulic valve which serves the dual function of braking and anti-skid control. The anti-skid signal comes from normal anti-skid circuits. The brake pedal is manually controlled, and it operates against the spring force to develop an electrical signal directly proportional to the actuation. The signal produced by the anti-skid circuits is inversely proportional to the degree of skid of the wheels. The two signals are compared and the lower of the two is selected and drives the electro-hydraulic valve to control the hydraulic pressure to the brake.

3,776,606
FREQUENCY TO VOLTAGE CONVERTER EMPLOYING HALL EFFECT CELL WITH SIGNAL HYSTERESIS AND NORMALIZING
L. Frank Emerson, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Filed June 13, 1972, Ser. No. 262,344
Int. Cl. B60t 8/08
U.S. Cl. 303—21 CF 6 Claims



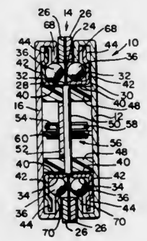
Frequency to voltage converter apparatus suitable for use in wheeled vehicle anti-skid devices includes a source of magnetic flux varying between upper and lower levels at a rate representative of vehicle wheel speed with a Hall effect cell device responsive to the rate of upper and lower flux variation to provide varying electrical signals which are applied by electrical circuitry to a braking system for effecting control of the wheel speed.

3,776,607
BRAKING SYSTEMS
Howard Kenneth Alderton, Sutton, England, assignor to Cam Gears Limited, Hitchin, Hertfordshire, England
Division of Ser. No. 12,092, Feb. 17, 1970, Pat. No. 3,695,733.
This application Feb. 2, 1972, Ser. No. 222,880
Int. Cl. B60t 8/18
U.S. Cl. 303—22 R 5 Claims



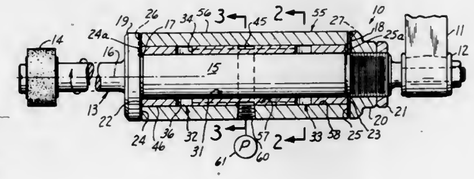
A braking system in which pressure from a master cylinder acting in slave cylinders at the brakes carries initial or low-force braking dependent on the driver's pedal force, there being a mechanical feed-back mechanism which increases the braking pressure in accordance with the mechanical force resulting from brake reaction in the vehicle, e.g. torque or drag. The hydraulic braking force is therefore augmented by fed-back force and in that sense provides a servo effect.

3,776,608
CIRCULATING BALL BEARING SLIDE
Herbert S. Fall; Martin K. Fall; Maxwell S. Fall; Charles E. Scalf; Ronald D. Lambert, and William D. York, all of Indianapolis, Ind., assignors to Herbert S. Fall, Indianapolis, Ind.
Filed Jan. 5, 1973, Ser. No. 321,535
Int. Cl. F16c 29/00
U.S. Cl. 308—3.8 21 Claims



A slide assembly comprising a relatively fixed elongated track member, a relatively movable elongated track member, and an intermediate elongated track member movable relative to the fixed and movable track members. The intermediate track member provides, at each of its upper and lower longitudinal edge portions and on opposite sides of a vertically and longitudinally extending center plane, longitudinally extending ball bearing raceways. End pieces at each end of the intermediate member provide a ball bearing passageway communicating between one of the upper raceways and the lower raceway on the opposite side of the center plane and another passageway communicating between the other upper raceway and the other lower raceway on the opposite side of the plane. Ball bearings substantially fill the raceways and their communicating passageways, and the fixed and movable track members include runner portions extending respectively into and engaging the ball bearings in the adjacent upper and lower raceways.

3,776,609
FLUID-STABILIZED SHAFT
Edmond A. Pichette, 14304 San Feliciano Dr., La Mirada, Calif.
Filed July 13, 1972, Ser. No. 271,552
Int. Cl. F16c 17/16
U.S. Cl. 308—9 7 Claims

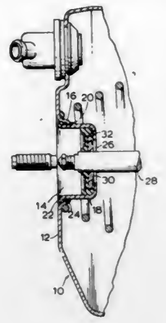


A fluid-stabilized shaft assembly wherein the shaft can move axially and/or rotationally under substantial side loads without requiring supplemental lubrication, and without galling. An external, circularly cylindrical bearing surface is provided on the shaft, and the shaft fits with a clearance in a geometrically similar bearing surface in a sleeve. The sleeve is shrink-fitted into a housing so that its outer wall bears against an inner wall of the housing. One of these walls includes a fully peripheral supply groove which receives fluid that is used to stabilize the shaft. A group of restrictor passages of equal length and like cross-sections extend from the supply groove to individual members of two axially spaced-apart sets of balance chambers. The balance chambers open through the bearing surface of the sleeve, and discharge fluid which is received from the supply groove through the respective ones of the restrictor passages, thereby to provide lateral balancing forces which stabilize the shaft. The bearing surface on the inside of the sleeve is cylindrical and uninterrupted between the sets of balance chambers and also for substantial and equal distances on opposite sides of the two sets of pressure chambers.

3,776,610
SERVO MOTORS
Dennis Francis Harvey, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed July 26, 1971, Ser. No. 165,907
Claims priority, application Great Britain, Aug. 6, 1970, 37,952/70
Int. Cl. F16c 33/74
U.S. Cl. 308—3.5 5 Claims

A housing for servo motors for vehicle braking systems is disclosed having an easily fabricated housing member in the

end wall of the housing for carrying output rod sealing means. The housing member has an annular lip which cooperates with



an annular lip on the end wall of the housing and forms a location therebetween to house a second seal.

3,776,611

AUTOMATIC DOOR CLOSER

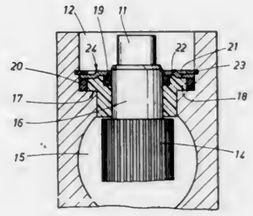
Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Dorma Baubeschlag GmbH & Co., KG, Ennepetal-Voerde, Germany

Filed Dec. 15, 1972, Ser. No. 315,481

Claims priority, application Germany, Dec. 18, 1971, P 21 63 095.5

Int. Cl. F16c *33/74*

U.S. Cl. 308—36.1 **4 Claims**



The shaft of an automatic door closer, to which a door is to be connected, is mounted in a bearing bushing located in a bore of the oil filled housing of the door closer. A pair of sealing rings, held in place by releasable means, seal the shaft with respect to the bushing and the latter with respect to the housing bore.

3,776,612

PRODUCTION OF COMPOSITE MATERIALS

John Barlow, Willenhall, England, assignor to G.K.N. Group Services Limited, Smethwick, Warley, England

Filed July 22, 1971, Ser. No. 165,303

Claims priority, application Great Britain, July 29, 1970, 36,652/70; Sept. 22, 1970, 44,972/70

Int. Cl. F16c *27/00*

U.S. Cl. 308—238 **9 Claims**

A bearing material comprising a metal matrix reinforced with less than 50 percent by volume fibres is disclosed. Preferably the fibres comprise 10 to 25 percent by volume of the bearing material and may be carbon or asbestos fibres whilst the matrix may be lead, a lead/tin alloy or silver.

The bearing material may be provided with a steel backing strip to form a thin wall bearing component.

3,776,613

GAS-DISCHARGE DISPLAY PANEL

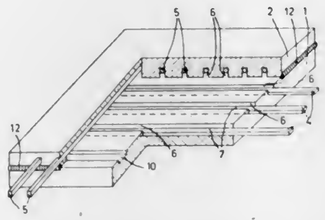
Johannes Van Esdonk; Jacobus Hubertus Jacobs; Johannes Petrus Hornman, and Wilhelmus Johannes Van de Laar, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 120,103, March 2, 1971, abandoned. This application Aug. 31, 1972, Ser. No. 285,477

Claims priority, application Netherlands, Mar. 20, 1970, 7003971

Int. Cl. H01j *9/38*

U.S. Cl. 316—20 **2 Claims**



A method of making a gas-discharge panel comprising etching discharge cavities and interconnecting channels between the discharge cavities out of strip-shaped electrodes embedded in insulating plates. The channels are etched beneath the surface of the insulating plate to depths which do not allow a discharge in one cavity to strike a discharge in adjacent cavities.

3,776,614

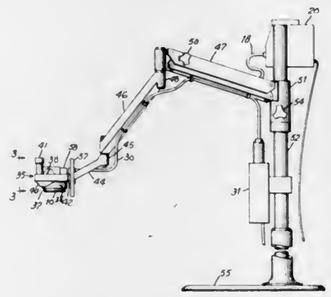
MICROSCOPE WITH REMOTE IMAGE SYSTEM

Jacobus Kloots, Sturbridge, and Rato Buhler, Brimfield, both of Mass., assignors to Applied Fiberoptics and Scientific Specialties, Inc., Southbridge, Mass.

Filed Mar. 1, 1972, Ser. No. 231,191

Int. Cl. G02b

U.S. Cl. 350—35 **3 Claims**



A long-viewing-distance microscope is disclosed having a single objective lens utilized by a plurality of optical systems facing the objective lens in parallel so as to be focused to the same viewing spot, one of the optical systems including a coherent fiber-optics cable for providing a remote image.

3,776,615

LIQUID CRYSTAL DISPLAY DEVICE

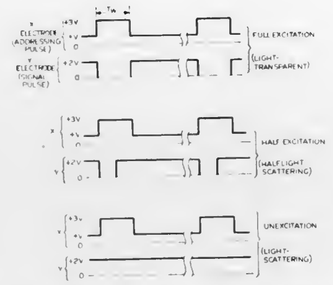
Masahide Tsukamoto, Katano-shi, and Tetsuro Ohtsuka, Takatsuki-shi, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed June 2, 1972, Ser. No. 259,301

Claims priority, application Japan, June 2, 1971, 46/38863

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **7 Claims**



Liquid crystal display elements formed at intersections of strip-shaped X-electrodes and Y-electrodes are actuated so as to display images. The liquid crystal mixture used consists essentially of a nematic liquid crystal having a positive dielectric anisotropy, a nematic liquid crystal having a negative dielectric anisotropy and a steroidal compound of a certain group. This liquid crystal mixture has a threshold value and is light-transparent upon application of a voltage above said threshold value. Each of said X-electrodes is sequentially addressed by an addressing pulse having a pulse height of about 2V and as biased by a d.c. bias voltage V from a standard level and having a duration Tw, said d.c. bias voltage V being below said threshold value. A signal pulse is supplied to each of said Y-electrodes, said signal pulse having a polarity opposite to that of said addressing pulse and a duration up to Tw and being biased by a d.c. bias voltage 2V from said standard level.

3,776,616

COHERENT OPTICAL MULTICHANNEL CORRELATOR

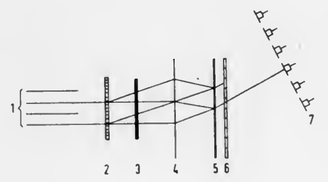
Nikolaos Douklias, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 10, 1972, Ser. No. 295,998

Claims priority, application Germany, Nov. 22, 1971, P 21 578 75.6

Int. Cl. G02b *5/18*

U.S. Cl. 350—162 SF **7 Claims**



A coherent optical multichannel correlator having a plurality of channels of coherent light beams for permeating an object to be identified, a Fourier transmission lens receiving the light permeating the object, a number of filter holograms disposed on a focal plane of the transformation lens and one or more photo detectors for receiving the output of the filter holograms characterized by providing a matrix of controllable optical switches between the Fourier transformation lens and the photo detectors for sequentially blocking and passing selected channels to reduce background noise from cross correlation of adjacent channels. The matrix of optical switches can be an arrangement of mechanically actuated light shutters or a matrix of electro-optical polarization switches.

3,776,617

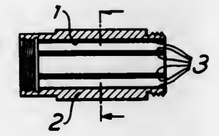
METHOD OF PROVIDING THE CYLINDRICAL INNER SURFACE OF A LENS MOUNT WITH ROLLS AND LENS MOUNT PROVIDED THEREWITH

Ernst Strauch, Waldgirmeser Strasse 37, Naunheim, and Gerhard Bleier, Ludwig-Rinn-Strasse 18, Atzbach, both of Germany

Division of Ser. No. 207,038, Dec. 13, 1971. This application Apr. 5, 1973, Ser. No. 348,230

Int. Cl. G02b *7/02*

U.S. Cl. 350—245 **3 Claims**



Into the inner surface of a cylindrical lens mount grooves are pressed by means of a roller member so that the material on either side of the groove folds from the general level of the surface into the interior space and forms rolls. The diameter between the rolls is then calibrated to the exact size and the lenses, lens elements and pre-mounted lenses are supported on the rolls.

3,776,618

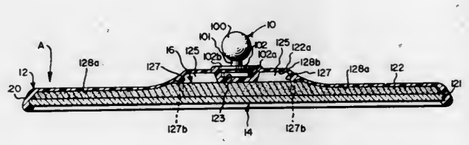
SHATTER-PROOF REAR VISION MIRROR ASSEMBLY FABRICATION

Ronald C. Perison, Sr., East Aurora, N.Y., assignor to Standard Mirror Company, Inc., Buffalo, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,117

Int. Cl. G02b *5/08*

U.S. Cl. 350—288 **8 Claims**

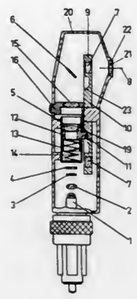


A shatter-proof rear vision mirror assembly is fabricated from a pre-formed plastic casing molded with a mounting in situ and having a cavity into which is poured a self-foaming liquid prior to closing of the cavity by installation of a mirror panel, whereupon the casing and panel act as a mold in which the liquid foams to form a foamed in situ backing filling the cavity between and bonded to both the casing and panel.

3,776,619
OPHTHALMOSCOPE WITH INTERCONNECTED ILLUMINATION AND LENS CARRIER SYSTEMS

Helmut A. Heine, Herrsching/Obb., Germany, assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y. and Optotechnik Heine KG, Herrsching Obb., Germany, part interest to each

Filed Nov. 20, 1972, Ser. No. 308,253
Claims priority, application Germany, Apr. 18, 1972, P 22 18 681.8
Int. Cl. A61b 3/12
U.S. Cl. 351—12 10 Claims

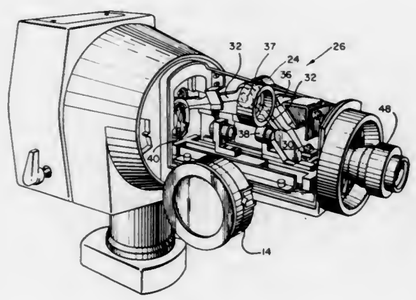


An ophthalmoscope is provided with an illuminating system including a mask or test pattern for projection on the fundus of the eye. The focal point of the mask or test pattern is automatically adjusted in accordance with the viewing lens selected such that the focal point of the pattern corresponds to the focal length of the lens thereby insuring a sharp image of the mask or test pattern on the fundus once the proper lens has been selected.

3,776,620
OPTHALMOMETER HAVING ALTERNATIVE VIEWING AND MEASURING SYSTEMS

Joseph C. Dianetti, East Aurora, and Krishnaiyer Swaminathan, Buffalo, both of N.Y., assignors to American Optical Corporation, Southbridge, Mass.

Filed Nov. 29, 1972, Ser. No. 310,298
Int. Cl. A61b 3/10; G01b 9/00; F21v 33/00
U.S. Cl. 351—13 10 Claims

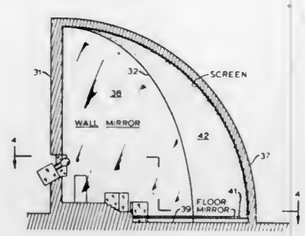


Ophthalmometer including a measuring circuit for measurement of the curvature of the cornea and contact lens curvatures with a built-in viewing circuit which is activated by the movement of a lever to allow visible inspection of the cornea and contact lenses. A interference ultraviolet filter in communication with a single light source permits the cornea to be viewed under ultraviolet light as well as ordinary visible light.

3,776,621
OPTICAL DISPLAY SYSTEM AND METHOD FOR CREATING A THEATRICAL ILLUSION

Donovan Worland, San Francisco, Calif., assignor to Walter Landor Associates, San Francisco, Calif.

Filed May 24, 1972, Ser. No. 256,428
Int. Cl. G03b 37/00
U.S. Cl. 352—85 11 Claims

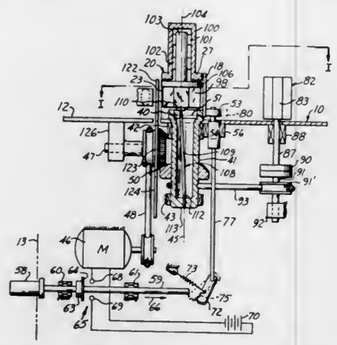


An optical display system and method comprises provision of two angularly disposed side mirror surfaces, a bottom mirror surface angularly disposed with respect to the side mirror surfaces, and a projection sceeen angularly disposed with reference to such mirror surfaces. An image projected on the screen provides an object which because of the mirror arrangement creates a plurality of virtual images.

3,776,622
SEQUENTIAL PICTURE APPARATUS WITH CONTINUOUS FILM FEED

Lewis B. Browder, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation-in-part of Ser. No. 127,113, March 23, 1971.
This application Oct. 6, 1972, Ser. No. 295,750
Int. Cl. G03b 41/04
U.S. Cl. 352—119 23 Claims

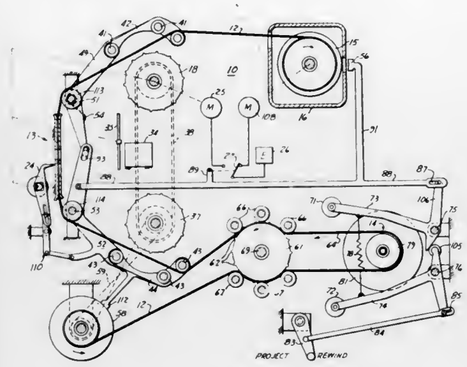


A sequential picture apparatus, such as a motion picture camera, projector, viewer or scanner, or a microfilm reader, employs a film drive for continuously moving a film. The continuous film motion is compensated by a rotary prism having a predetermined overall diameter and a plurality of facets and having a first axis of rotation. The film is guided adjacent the rotary prism with the film sequentially facing the facets of the prism at the film guiding path. A rotary prism drive device has an effective diameter smaller than the overall diameter of the prism and has a second axis of rotation spaced from the first axis of rotation. The first axis of rotation of the prism extends through the rotary film drive means. The prism drive device is placed into driving engagement with the film adjacent the prism. The prism drive device continuously rotates the prism at the same angular velocity as the prism drive device whereby the prism is driven to compensate the continuous film motion.

3,776,623
RAPID REWIND SOUND MOTION CAMERA OR PROJECTOR

Lewis B. Browder, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,948
Int. Cl. G03b 23/00
U.S. Cl. 352—124 12 Claims



Rapid rewind of a sound motion picture film in a sound motion picture camera or projector is facilitated by the use of a free-running sprocket wheel that is in engagement with the motion picture film on both sides of the sound transducer. During advancement of the film at normal speed, the sprocket wheel cooperates with a film tensioning device in maintaining the film in engagement with a rotary mechanical filter at the sound transducer. During rapid rewind, the tensioning device is released and the sprocket wheel helps to maintain the film spaced from the rotary mechanical filter.

3,776,624
PHOTOGRAPHIC CASSETTE FOR MAKING AND STORING TRANSPARENCIES INCORPORATING PROGRAMMED FILM STRIP WITH OPAQUE REFLECTIVE SEGMENTS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 9, 1972, Ser. No. 261,168
Int. Cl. G03c 11/00
U.S. Cl. 352—130 14 Claims

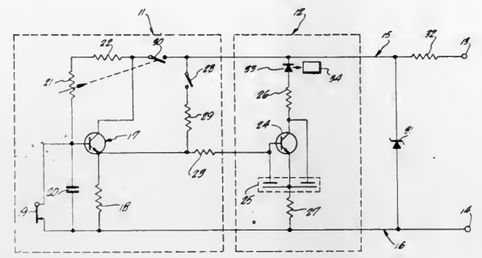


A photographic film cassette for making and storing projectable transparencies and comprising a strip of film extending through a film gate, a supply of processing composition, and a processor for applying the processing composition to the film upon manipulation of the film in the cassette. The film strip is programmed to direct the sequence of maniuplations that will expose, process, project and rewind it, and comprises chemically inert reflective portions for inhibiting the projection of blank frames.

3,776,625
CONDITION RESPONSIVE ALERT SIGNAL FOR A MOVIE CAMERA

Gerald F. Fountain, Santa Monica, Calif., assignor to Ponder & Best, Inc., Santa Monica, Calif.

Filed July 27, 1972, Ser. No. 275,689
Int. Cl. G03b 1/60
U.S. Cl. 352—170 13 Claims

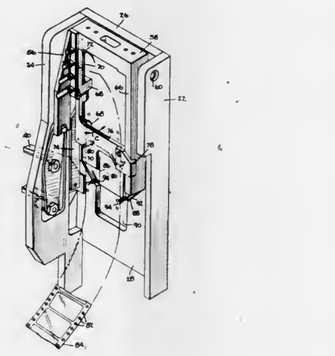


Circuitry for producing an alert signal for notifying a camera operator that a pre-determined length of time for filming has expired or that the film has come to the end of a reel. The alert signal is usually generated by an audio oscillator taking the form in a preferred embodiment of a single transistor ceramic transducer element oscillator. Also a visual alert signal observable in the camera viewfinder is disclosed.

3,776,626
FILM ADVANCING AND POSITIONING APPARATUS

John Hopkins Lewis, Teaneck, N.J., assignor to Columbia Pictures Industries, Inc., New York, N.Y.

Filed Feb. 15, 1972, Ser. No. 226,436
Int. Cl. G03b 1/22
U.S. Cl. 352—194 15 Claims

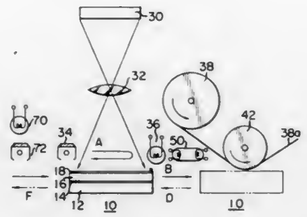


Optical gate device wherein film advancement and positioning is controlled by pull down and registration pins mounted on a shuttle arm which swings in one direction to project the pull down pins into film sprocket holes while withdrawing the registration pins for film advancement, and which swings in the opposite direction to project the registration pins into the film sprocket holes while withdrawing the pull down pins for fine positioning of the film. Liquid immersion arrangements for the film passing through the device are also described.

3,776,627
ELECTROPHOTOGRAPHIC APPARATUS USING PHOTOSENSITIVE MEMBER WITH ELECTRICALLY HIGH INSULATING LAYER

Nasaru Ohnishi, and Michi Yoshizawa, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,827
Claims priority, application Japan, Nov. 16, 1971, 46/91755
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 6 Claims

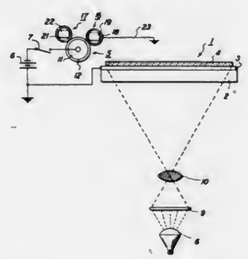


The disclosed photosensitive member comprises a supporting substrate, an electrode, a visible photoconductive layer and a thin layer of an electrically high insulating material which is transmissive to visible light, and is photoconductive in the ultraviolet range. The insulating layer is irradiated with visible light from an object to be reproduced and is simultaneously charged with a predetermined polarity through corona charging to form an electrostatic latent image corresponding to the object on the insulating layer. After the electrostatic image undeveloped or developed, has been transferred to a record medium, the electrostatic image left on the insulating layer is erased by irradiation with ultraviolet radiation.

3,776,628
PHOTOELECTROPHORETIC IMAGING SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 829,624, June 2, 1969, Pat. No. 3,639,224.
This application Oct. 15, 1971, Ser. No. 189,729
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 1 Claim

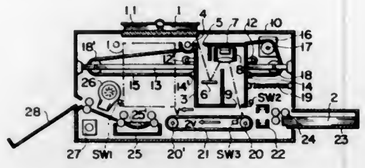


A photoelectrophoretic imaging system is disclosed wherein a thermoconductive material such as polyethylene is used as the blocking electrode of the system. The thermoconductor is heated to discharge static electricity accumulated on its surface and cooled to restore its high insulating property. The heating and cooling is accomplished by using heated rollers, gas streams and infrared radiation.

3,776,629
ELECTROPHOTOGRAPHIC DUPLICATOR

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Filed Sept. 1, 1971, Ser. No. 176,903
Claims priority, application Japan, July 8, 1971, 46/22189
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 5 Claims

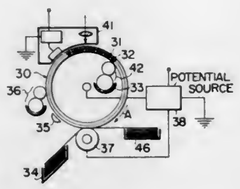


In electrophotographic duplicators, a manuscript is disposed in a static position and an exposing device comprising an illuminating device for illuminating the manuscript is provided. The exposing device, having one of several embodiments of projection lens systems therein, is provided with a slit at the side facing the manuscript, and is slit at the side facing the light-sensitive surface. The device is caused to transfer parallel to the manuscript at a constant linear speed, and the light-sensitive surface is caused to transfer parallel to the manuscript in the same direction at a linear speed twice the transfer speed of the exposing device to form an electrostatic latent image on the light-sensitive sheet. The duplicating speed is made to be twice the speed of exposure sequentially, and operations such as succeeding development, transfer and the like can be effected at the duplicating speed.

3,776,630
ELECTROSTATIC PRINTING METHOD AND APPARATUS

Genji Ohno, Yokohama, and Eiichi Inoue, Tokyo, both of Japan, assignors to Research and Development Laboratories of Ohno Co., Ltd., Yokohama-shi, Japan

Filed Mar. 10, 1972, Ser. No. 233,547
Claims priority, application Japan, Mar. 29, 1971, 46/17940
Int. Cl. G03g *15/10*
U.S. Cl. 355—10 9 Claims

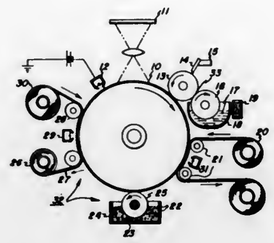


Apparatus is disclosed for electrostatically printing, comprising a photosensitive plate composed of a conductive substrate having fine pores distributed uniformly all over the surface thereof and a liquid-repellent photoconductive layer coating the surface of the substrate except the part of the pores. An electrostatic latent image is formed on the photoconductive layer, and a liquid developer is supplied from the back side of the photosensitive plate. Next, a voltage is applied between the plate and an opposing electrode contacting a paper to be printed, disposed in an opposing relation to the plate so that the latent image is developed and transferred to the paper.

3,776,631
LIQUID DEVELOPER CLEANING SYSTEM

Joseph Mammino, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 878,495, Nov. 20, 1969, Pat. No. 3,656,948. This application Dec. 13, 1971, Ser. No. 207,651
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 16 Claims

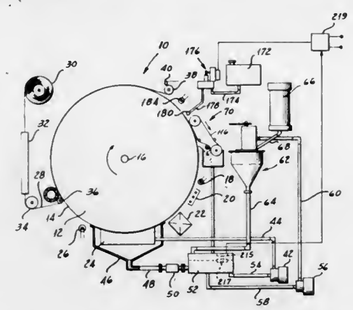


An electrostatographic imaging surface is cleaned of liquid developer by selectively applying to the charged or image areas of the imaging surface a finely divided, dry, absorbent powder. The powder may be selectively applied by charging the powder to a polarity opposite that which the imaging surface bears and presenting a charged powder loaded applicator adjacent the imaging surface such that the charged powder is transferred to the imaging surface with an electrostatic assist from the residual charge on the imaging surface.

3,776,632
CLEANING MECHANISM FOR PHOTOCONDUCTIVE SURFACES

Ian E. Smith, Lockleys; Peter J. Hastwell, Elizabeth Grove, and Marinus C. Vermeulen, Valley View, all of Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed Feb. 24, 1972, Ser. No. 228,873
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 18 Claims

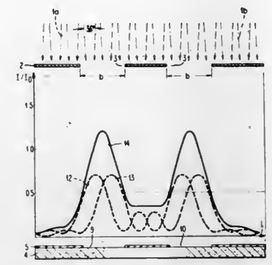


A cleaning system for the moving photoconductive surface of an image transfer electrostatic copying system using a developer made up of toner particles and a liquid carrier in which a cleaning belt with a rough surface is constrained to cause an area of the belt surface to contact the photoconductive surface at a location past the image transfer station with the belt being driven in a direction opposite to the direction of movement of the photoconductive surface and with clear carrier liquid being metered across the photoconductive surface just ahead of the cleaning belt at a rate which is approximately equal to the rate at which the carrier liquid evaporates from the developer. Preferably the belt is reciprocated transversely and preferably the photoconductive surface is flooded with light as it leaves the image transfer station.

3,776,633
METHOD OF EXPOSURE FOR GHOST LINE SUPPRESSION

Albert Frosch, and Arno Schmackpfeffer, both of Boeblingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,224
Claims priority, application Germany, Apr. 6, 1971, P 21 16 713.5
Int. Cl. G03c *5/00*
U.S. Cl. 355—132 10 Claims

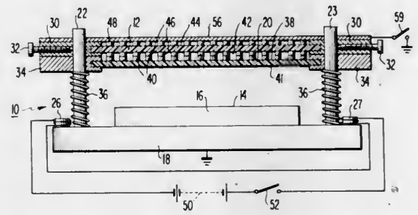


A photographic method and apparatus for exposing a light sensitive layer using a mask spaced from said layer while avoiding "ghost lines" due to diffraction effects in the developed pattern on the layer. The mask is illuminated by pairs of collimated ray sets, either sequentially or simultaneously, at an angle relative to each other so that the constituent diffraction pattern on the light sensitive layer resulting from one ray set of a pair is shifted with respect to the constituent diffraction pattern attributable to the other ray set of the pair. The shift is such that the ratio of the "ghost line" intensity to the maximum intensity in the composite diffraction pattern is reduced relative to the corresponding ratio in each of the constituent diffraction patterns. The pairs of ray sets are produced by spacially displaced fixed light sources or by a rotating optical system using a single light source.

3,776,634
APPARATUS FOR AND METHOD OF REPRODUCING AN ELECTROSTATIC CHARGE PATTERN

Richard Williams, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 22, 1972, Ser. No. 308,839
Int. Cl. G03b
U.S. Cl. 355—133 11 Claims



An electrostatic charge pattern on an image-bearing surface is reproduced on a collector plate by means including a transfer sheet. The transfer sheet, comprising electrically insulating material, is disposed for reciprocal movement between the image-bearing surface and the collector plate. The transfer sheet is first disposed with one surface adjacent the image-bearing surface. The other surface of the transfer sheet, having a plurality of discrete dots of electrically conductive material thereon, is momentarily grounded to induce thereon an electrostatic charge whose charge density varies with the

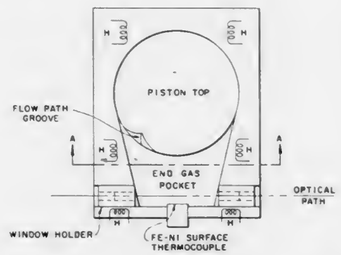
charge pattern on the image-bearing surface. The transfer sheet is then moved to the collector plate which comprises an electrically insulating plate with a plurality of electrically conductive discrete dots thereon adapted to contact the dots on the transfer sheet. The opposite surface of the collector plate is next grounded so that the electrostatic charge pattern on the transfer sheet is transferred to the collector plate.

3,776,635

GAS TEMPERATURE MEASUREMENT USING AN ORGANIC COMPOUND HAVING STRONGLY TEMPERATURE-DEPENDENT LIGHT ABSORPTION PROPERTIES

Weston W. Haskell, Edwardsville, Ill., assignor to Shell Oil Company, Houston, Tex.

Filed June 5, 1972, Ser. No. 259,898
Int. Cl. G01j 5/48; G01n 1/00
U.S. Cl. 356—43 **7 Claims**



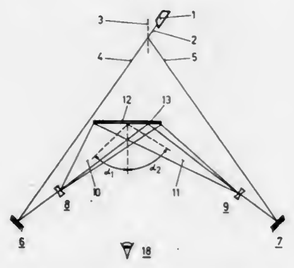
A method for continuously measuring rapidly changing temperatures between about 300° to 1,600° K of a gas having a relatively low light absorption at an ultraviolet wavelength, λ, by including in said gas a quantity of an organic compound which vaporizes without polymerizing, decomposing or reacting with said gas and which has strongly temperature-dependent light absorption properties at said wavelength, λ; measuring the light absorption of the gas including said organic compound at wavelength λ; and determining the gas temperature from a previously determined ultraviolet light absorption-temperature relation for the organic compound.

3,776,636

PROCESS AND APPARATUS FOR INVESTIGATING THE COHERENCE OF LIGHT RADIATION

Rene Dandliker, Oberrohrdorf, and Francois Mottier, Zurich, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Feb. 22, 1972, Ser. No. 227,937
Claims priority, application Switzerland, Feb. 23, 1971, 2637/71
Int. Cl. G01b 9/02
U.S. Cl. 356—106 **10 Claims**



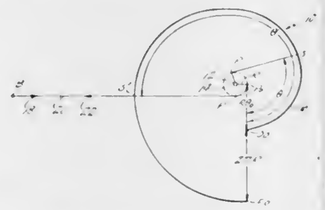
A process and an apparatus are disclosed for examining the mode structure or coherence of laser light beams. According to the process, the laser beam to be studied is first divided into two portions which are projected onto a diffusely scattering body in a superimposed fashion. If the laser beam is not coherent, patterns are formed on the scattering body which are visually observable. No visible interference fringes are formed if the laser beam is strictly coherent. The apparatus disclosed includes a beam splitter for dividing the laser beam into two portions, and an optical system for projecting the two beam portions onto a diffusely scattering body. The diffusely scattering body may be comprised of a variety of materials, such as white paper, and may include a calibrating scale.

3,776,637

CIRCULAR INVOLUTE REFLECTOR FOR PROVIDING A VARIABLE PATHLENGTH

Richard Hecht, Bloomfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 14, 1972, Ser. No. 315,039
Int. Cl. G02b 5/10; G01b 9/02
U.S. Cl. 356—106 **5 Claims**



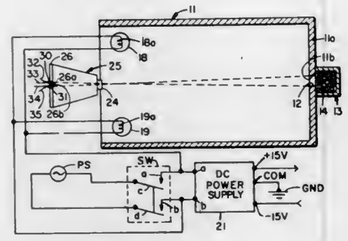
A rotatable reflection surface in the form of a circular involute is disclosed. The reflector provides a variable pathlength for a beam of radiant energy over a range that is related to the change in radius of curvature of the involute. A general description of the physical characteristics of the reflector as well as a mathematical verification of these characteristics is provided. The reflector operation is discussed and several immediately applicable embodiments including an optical pathlength modulator, a Fourier spectrometer and an optical heterodyning receiving system are shown.

3,776,638

VEILING GLARE MEASUREMENT SYSTEM AND METHOD

Michael P. Teter, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,846
Int. Cl. G01b 9/00
U.S. Cl. 356—124 **10 Claims**



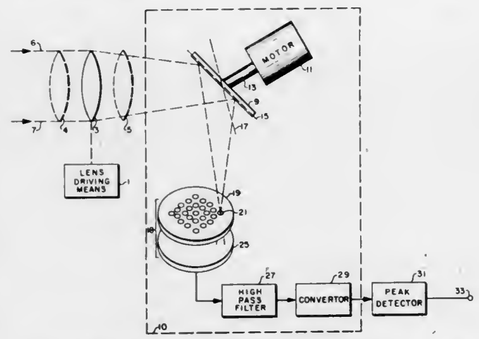
Photoelectric system and method for measuring the veiling glare from optical lens, such system comprising a pair of photosensitive devices disposed in a camera obscura and associated electrical circuitry for making a comparison measurement of light intensity striking first and second ones of the photosensitive devices from the optical lens when held in the lens-aperture of the camera obscura and the camera obscura is focused at an illuminated reflective screen having a light trap in the vicinity of the center of the screen. An indication or visual display of the results of the comparison measurement may be given by a suitable meter, pen graph or any suitable indication device.

3,776,639

FREQUENCY RESPONSIVE FOCUS DETECTING APPARATUS

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed June 5, 1972, Ser. No. 259,787
Int. Cl. G01b 9/00
U.S. Cl. 356—126 **8 Claims**



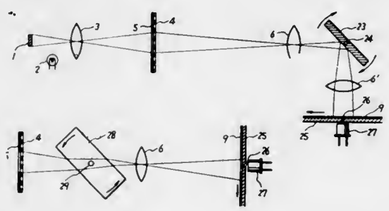
A lens device traverses a predetermined portion of a light path between an external scene and an image plane on which an image of the scene is to be focused. A wobbulating mirror effects a rotation of the image on the image plane. A light detection device comprising a mask with apertures therein and a light responsive device, is positioned at the image plane. As the image is uniformly moved over the mask, the frequency characteristic of the output signal of the light detection device varies with the degree of sharpness of the scanned image. The high pass filter passes only the high frequency components of the output signal of the light detection device to a frequency-to-magnitude converter which, in turn, is connected to a peak detector circuit. The output of the peak detector circuit is related in time to the position of the lens at which the best focused image appeared at the image plane during the predetermined travel of the lens.

3,776,640

METHOD OF AND APPARATUS FOR MEASURING DIMENSIONAL QUANTITIES

Yoshizo Ikegami, Amagasaki, Japan, assignor to Konan Camera Research Institute, Kobe, Japan

Filed Mar. 1, 1972, Ser. No. 230,598
Int. Cl. G01b 11/04
U.S. Cl. 356—160 **3 Claims**



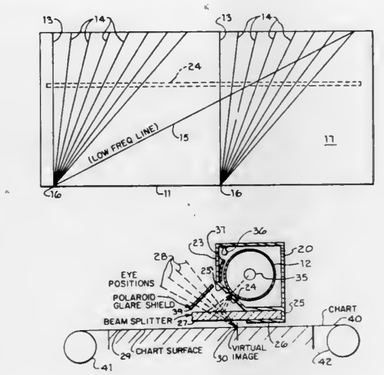
A method and apparatus for measuring dimensional quantities of articles and particularly articles in motion wherein an image of the article is formed on a patterned plate and then scanning the patterned plate and image formed thereon to produce electric pulses which are related to the dimension of the article and then counting the number of pulses.

3,776,641

OPTICAL DIVIDER POINT ASSEMBLY FOR HARMONIC SPECTRUM ANALYSIS

Marvin J. Northcutt, and Eugene R. Roeschlein, both of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1972, Ser. No. 221,248
Int. Cl. G01b 11/14
U.S. Cl. 356—171 **3 Claims**



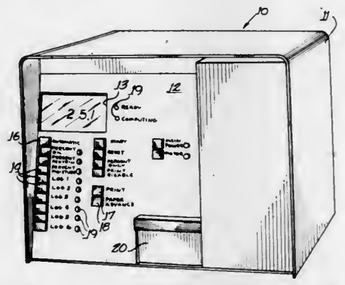
An optical divider point assembly for harmonic spectrum analysis having a cylindrical drum with one or more sets of spiral lines therearound, each set originating at a point and diverging in equal separation and rotatable within a housing having an elongated slot parallel to the drum axis to project reflected light from the spiral lines onto a supporting surface of frequency spectrums through a beam splitter plate to match the points of reflected light with frequency harmonics at the points of virtual image formation to identify same, the matched position being read out of a potentiometer position having its adjustable tap mechanically connected to rotate with the drum.

3,776,642

GRAIN ANALYSIS COMPUTER

James H. Anson, Auburn, and Donald E. O'Neal, Springfield, both of Ill., assignors to Dickey-John Corporation, Auburn, Ill.

Filed Aug. 1, 1972, Ser. No. 277,131
Int. Cl. G06f 15/20; G01j 3/48; G01n 21/48
U.S. Cl. 356—188 **30 Claims**



A grain analyst computer is disclosed which has a quartz-iodide lamp to provide infrared radiation which is directed

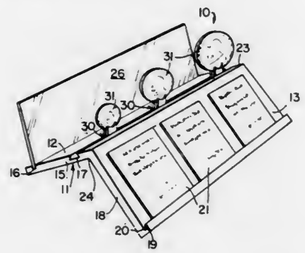
through a lens toward the surface of a quantity of grain which is to have certain constituents thereof analyzed. The infrared radiation is made parallel by the lens and then passes through selected filters so that only a specific frequency of the radiation impinges upon the grain sample, and this frequency provides a reflected radiation signal which has an amplitude corresponding to the quantity of a given constituent within the sample being analyzed. A plurality of pulse signals is then generated by a photocell which receives the reflected signals. These pulse signals are applied to a signal storage circuit and a signal computing circuit to provide a direct readout in terms of per cent of the constituents being analyzed. A reference standard element is automatically positioned in light-receiving relation with the light source so that the constants within the storage and computing circuits can be adjusted automatically prior to analyzing each grain sample. The plurality of filter elements are adjustably mounted to a rotating filter wheel which provides tilt adjustment to each filter element so that an exact positioning thereof can be obtained, thus accurately selecting the frequency which is to pass therethrough.

3,776,643

DEVICE FOR SIMULTANEOUSLY DISPLAYING THE FRONT AND REAR OF COINS

Victor Titoff, 630 8th Ave., San Francisco, Calif.

Filed May 22, 1972, Ser. No. 255,343
Int. Cl. G01n *21/16*; G02b *27/32*
U.S. Cl. 356—244 **7 Claims**



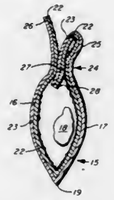
A device for simultaneous display of the front and rear sides of one or more coins comprising a base member having a mirror substantially inclined from the base member and means for holding the coins above the base member and parallel to said mirror. The means for holding the coins preferably are clip members which engage a small portion of the rim of the coins and which fit into a groove in the base member, the groove being parallel to and spaced from the mirror.

3,776,644

PACKET

Robert C. Baker, 1831 Summit Ave., St. Paul, Minn.

Continuation-in-part of Ser. No. 192,241, Oct. 26, 1971. This application Oct. 25, 1972, Ser. No. 300,788
Int. Cl. A46b *5/04*; B43b *3/04*
U.S. Cl. 401—7 **6 Claims**



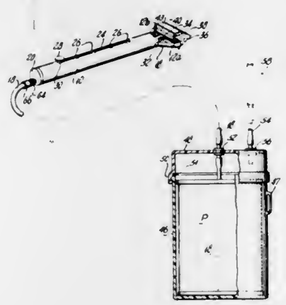
The new composite flexible sheet material comprises a base sheet structure made up of a thermoplastic resin layer which is flowable or fusible at predetermined sealing conditions, plus a polyester backing layer non-flowable or non-fusible at said conditions. The thermoplastic layer is thicker than the backing layer. Adhered to the thermoplastic layer is a layer of polyester fibrous material not flowable or fusible at said sealing conditions. The fibrous material layer is capable of being substantially submerged into the thermoplastic layer upon the application of sealing conditions. A preferred invertible envelope-type packet is formed by using a composite sheet having a thermoplastic fusible layer and a non-fusible backing layer, and involves placing the thermoplastic layer inwardly and the backing layer on the exterior of the envelope. Opposing walls of the envelope are united along portions thereof adjacent the envelope cavity. The expanse of the sheet material forming each opposing wall extends beynnd a seal structure along one edge of the envelope cavity to form a pair of outwardly projecting ear-flaps. Sheet material forming one of the ear-flaps is folded back upon itself over th thermoplastic layer side thereof. Part of this folded back portion extends as a partition member substantially throughout the seal structure along the one edge; and this seal structure along said one edge is temporary and rupturable at the interface between the backing layer of the partition member and the thermoplastic layer of the opposing sheet.

3,776,645

PRESSURIZED CONTINUOUS FLOW LIQUID APPLICATOR WITH SHUT-OFF VALVE

Harold L. Walker, 10-14 160th St., Whitestone, N.Y.

Continuation of Ser. No. 85,764, Oct. 30, 1970, abandoned, which is a continuation of Ser. No. 50,263, June 26, 1970, which is a continuation-in-part of Ser. No. 794,175, Jan. 27, 1969, abandoned. This application Sept. 13, 1972, Ser. No. 288,862
Int. Cl. A46b *1/02*; B44d *3/28*
U.S. Cl. 401—188 **2 Claims**



A system for the application of liquid to a surface, such as by painting, washing and waxing, in which the liquid source is maintained under a constant super-atmospheric pressure and a flexible cable is connected between the pressurized liquid source and the liquid applicator. A shut-off valve can selectively pinch-off the cable in order to cut off the liquid supply to the applicator. The liquid applicator can be fixed or movable to selected positions and may be in the form of a roller.

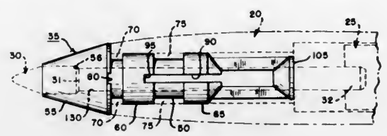
3,776,646

WRITING IMPLEMENT

Claude H. Bich, 152 Rue de Paris, Montreuil, France

Continuation-in-part of Ser. No. 288,295, Sept. 12, 1972, abandoned. This application Oct. 4, 1972, Ser. No. 294,888
Int. Cl. B43k *8/00*
U.S. Cl. 401—199 **11 Claims**

A writing implement is disclosed in which a nib holder provides a tortuous air passageway between the exterior of the writing implement and an ink reservoir in its interior. The nib holder includes a stem, a frusto-conical tip, and at least one raised rib surrounding the stem and spaced apart from the tip. Through the center of the frusto-conical tip and stem there is a hollow passageway in which a writing nib is securely fitted. The nib holder fits into the front end of the barrel of the writing implement; and the tip, the rib, the interior of the barrel, and a portion of the stem cooperate to form a small air chamber in the writing implement. Another passageway in the



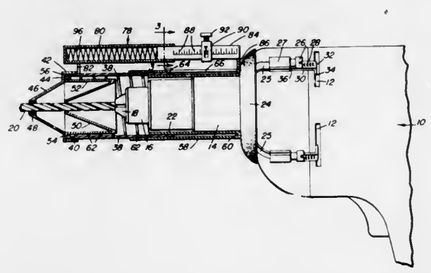
tip provides for the communication of air between the exterior of the writing implement and the air chamber and a passageway in the rib provides for the communication of air between the air chamber and the remainder of the interior of the writing implement. The points at which the two passageways enter the air chamber have a different angular orientation with respect to the axis of the stem, thereby providing a tortuous air passage that minimizes any ink leakage from the interior of the writing implement.

3,776,647

SAFETY GUARD AND DUST AND DEBRIS COLLECTOR ATTACHMENT FOR A DRILL

Herman Hart, 1078 N.W. 53rd St., Miami, Fla.

Filed Aug. 31, 1972, Ser. No. 285,507
Int. Cl. B23b *47/00*
U.S. Cl. 408—241 G **11 Claims**



This is an attachment for a drill that provides a safety guard, and a dust and debris catcher. It is in the form of a pair of frusto-cones, preferably of stainless steel, removably held in spaced apart relationship by a cylinder of similar material, providing space for the dust and debris to accumulate therebetween. The apexes of the frusto-cones are apertured to permit the drill-bit to extend therethrough. The frusto-cones and cylinder, in turn, are threadedly secured on a telescopic sleeve which is retractable into and between a pair of concentric sleeves, secured together, and mounted on a drill body, fitting over the drill hub, and removably secured to the drill body. A spring about the frusto-cones and the cylinder urges the frusto-cones outwardly and permits the frusto-cones and telescopic sleeve to retract as the drill-bit penetrates the material being drilled. The outer concentric sleeve is apertured to permit ready retraction and prevent pressure building up between the concentric sleeve, and permit suction through the frusto-cone apertures as the drill is removed from the drilled area, thus providing a vacuum cleaner effect about the drill-bit to keep the dust within the frusto-cones as the drill-bit is removed.

To empty the dust, telescoping the male sleeve back and forth will act like a blow-gun and blow out the dust and debris. A drill-bit depth-limiting and depth gauge for the drill, and in another form, a drill depth measuring gauge on the outer surface of the telescopic sleeve, is provided. Should the drill-bit break while in use, the broken parts will be trapped within the frusto-cones or concentric sleeves, preventing any injury or damage.

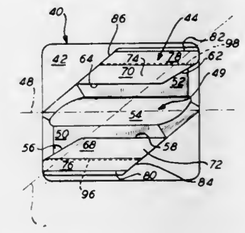
To prevent the dust from falling out, the drill-bit aperture in the outer cone when drilling downwardly, as in a floor, an internal flared pipe is detachably added to the inside of the outer frusto-cone, just slightly larger than the drill-bit, and has a flared internal flanged lip so that the major part of the dust will collect within the outer cone.

3,776,648

LOOSELEAF BINDER MECHANISM

Roy H. Price, Springfield, Mo., assignor to Litton Business Systems, Inc., Springfield, Mo.

Filed Feb. 28, 1972, Ser. No. 229,831
Int. Cl. B42f *13/14*
U.S. Cl. 402—17 **18 Claims**



A flexible post looseleaf binder having novel post hold-down slide means adapted to be easily inserted into and, if desired, removed from its retaining channel. To insert the slide means into the channel, the slide is held in a first angular position relative to the channel. In this position, the body of the slide presents to the channel top opening a maximum width not greater than substantially equal to the width of the channel opening, so that the slide can readily be inserted into the channel. After insertion, the slide is rotated to a second angular position. In this latter position, an abutment portion of the slide underlies a lateral wall portion of the channel, so that the slide is locked against accidental removal from the channel.

In a modified form, each slide is provided with a hook-like hanger extension. When the slides are moved to the outward ends of the channel, these extensions protrude outwardly beyond the binder covers, and are used to hang the binder in a file cabinet or the like. Detent structure provided on each slide holds the slide releasably latched in the foregoing end position.

3,776,649

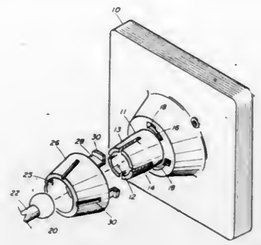
LOCKING BALL JOINT

Vincent A. Kemezys, Norwalk, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Aug. 23, 1972, Ser. No. 283,119
Int. Cl. B25g *3/38*; F16c *11/06*
U.S. Cl. 403—90 **8 Claims**

A ball-and-socket joint is provided having a mounting base with a spherical slotted socket protruding therefrom, and slotted openings being provided in the base. A ball is mounted in the spherical slotted socket, and a sleeve having fingers extending therefrom is positioned on the socket with the fingers extending into the slots of the base. A sloping ramp is provided on the base near the slots therein, whereby, on rotation of the

sleeve, the fingers positioned therein are drawn up the ramp, pulling the sleeve toward the base, and clamping the ball in the



slotted joint, which is accomplished by hand movement of the sleeve. When so locked, the joint is incapable of being released by hand, and requires a special tool for release.

3,776,650

CONNECTING DEVICE

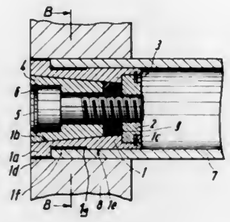
Heinrich Zenhausern, Birmensdorferstrasse 134, Urdorf, Switzerland

Filed Aug. 17, 1971, Ser. No. 172,399

Claims priority, application Switzerland, Aug. 19, 1970, 12435/70

Int. Cl. F16b *7/00*

U.S. Cl. 403—191 **1 Claim**



of the sleeve, adjacent the collar, is likewise serrated, the serrations terminating in a groove, and the remainder of the sleeve being smooth. The sleeve has an inner conical surface into which a conical tension plug fits which, when tightened against a counter element, expands the sleeve and causes the serrated surfaces to bind against the inner surface of the shaft, and against the bore of the hub, respectively, the smooth surface of the sleeve centering and additionally frictionally engaging the shaft. In a preferred form, the tightening screw is an Allen head bolt which is constrained against axial movement in a recess of the plug, so that upon loosening movement of the bolt, the conical plug will disengage from the inner conical surface, and so that the connection can be released without further tools. A plastic or oil-resistant disk can be inserted between the counter elements for the bolt and the conical plugs to make the connection fluid-tight.

3,776,652

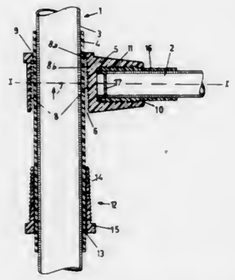
SHEET METAL JOINT

Edward Sanderson, 159 Algonquin, Park Forest, Ill.

Filed Nov. 17, 1972, Ser. No. 307,412

Int. Cl. F16b *5/07*

U.S. Cl. 403—282 **3 Claims**



A connecting device for connecting together hollow members comprises a body having frusto-conically tapered bores and sleeves having bores of similar diameter to the outside diameter of members to be connected, said sleeves having complementarily tapered external surfaces for mating with the bores in said body so that a member carrying one of said sleeves can be passed through one of said tapered bores in said body and, by facing said sleeve into said tapered bore, positively connected to the body and to any other member or members similarly connected thereto.

3,776,651

HUB CONNECTION FOR USE WITH HOLLOW SHAFTS

Oskar E. Peter, Schlosstrasse 9/I, Brackenheim, and Lothar Peter, Guglingen, Wurttemberg, both of Germany, assignors to said Oskar E. Peter, by said Lothar Peter

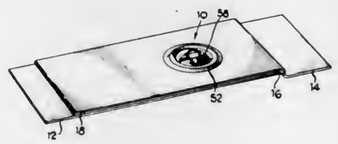
Filed Apr. 21, 1972, Ser. No. 246,199

Claims priority, application Germany, Sept. 23, 1971, P 21 47 501.4

Int. Cl. F16d *1/06*

U.S. Cl. 403—248 **9 Claims**

To secure a hub on a hollow shaft, a sleeve adapted to fit into the hollow shaft has, at one end, a cylindrical collar which is adapted to fit into the bore of the hub. The outer end of the collar has a serrated surface, and a portion of the outer surface



A coatable or paintable joint formed between the end of a coil of sheet metal and the beginning of a coil of sheet metal comprising a hole pierced through the pieces of sheet metal to form tabs which are turned upon themselves to secure the sheet metal portions together and including a circular ridge formed on opposite sides of said sheet metal surrounding said pierced hole, each of said ridges being offset from the general plane of sheet metal pieces to protect the coating or painting rollers from damage when the joint passes over same.

3,776,653

CORRUGATED ELASTIC SHIM AND SHAFT AND HUB

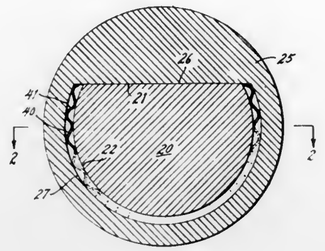
Alexander S. Buzogany, Morrisville, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.

Filed Oct. 20, 1971, Ser. No. 190,968

Int. Cl. F16d *1/06*

U.S. Cl. 403—372 **5 Claims**

A corrugated elastic shim mounting for a hub on a shaft, in which the shaft and the hub have cooperating interlocks such as flats which transmit the torque, and in which the shim occupies space between the hub and the shaft which is substantially less than a complete circumference, but preferably more than



180°. The shim according to the invention is relieved of the torque transmitting function and must perform only the mounting, engaging or positioning functions.

3,776,654

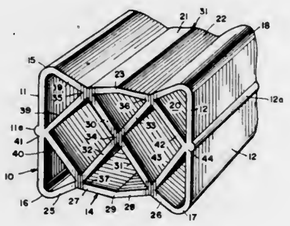
EXPANSION JOINT AND BRIDGE JOINT SEALS

Delmont D. Brown, North Baltimore, Ohio, assignor to The D.S. Brown Company, North Baltimore, Ohio

Filed July 22, 1971, Ser. No. 165,162

Int. Cl. E01c *11/10*

U.S. Cl. 404—65 **6 Claims**



Invertible, elongated, elastomer joint sealing strips having substantialy flat side walls, longitudinally corrugated or pleated top and bottom walls preferably of the same general configuration, an internal web structure with one or two pairs of crossed webs connected to the top and bottom walls and additional diagonal webs extending diagonally across the four corners to provide two or three side-by-side diamond openings in internal structure of seals, and a longitudinal rib or bead on each side wall to aid symmetrical lateral collapse of the seal and also to impede inward bending or rolling of its corners.

3,776,655

CARBIDE THREAD CHASER SET AND METHOD OF CUTTING THREADS THEREWITH

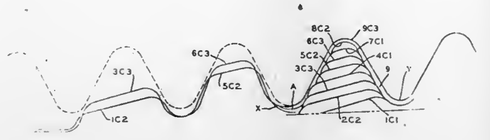
Robert F. Urbanic, Willowick, Ohio, assignor to The Pipe Machinery Company, Willowick, Ohio

Division of Ser. No. 887,457, Dec. 22, 1969, Pat. No. 3,629,887. This application Sept. 7, 1971, Ser. No. 178,388

Int. Cl. B23g *1/00, 5/04*

U.S. Cl. 408—1 **2 Claims**

A set of multitooth thread chasers with their teeth shaped and arranged to perform a succession of central roughing cuts of approximately trapezoidal cross section, respectively, and of successively decrescent areas. The chasers are free from any portions which can cause flanking cuts which result in lateral flanges on the resultant chips. The cut produced by each tooth extends close to, but terminates a few thousandths of an inch short of, the flanks of two adjacent threads so that, in the final rough cut thread, a very thin layer of metal remains



between the rough cut thread surface and the thread finish lines, and this layer is continuous and uninterrupted along the entire final rough cut thread surface.

This layer is removed by a single finishing tooth which makes a single finish cut concurrently cutting a portion of one crest, along the thread trough and flanks and a portion of the adjacent crest, thus cutting over a length of thread cross section equivalent to one complete thread.

3,776,656

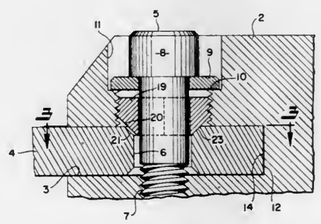
SPADE DRILL

Milton L. Benjamin, Chagrin Falls, Ohio, assignor to Erickson Tool Company, Solon, Ohio

Filed Sept. 25, 1972, Ser. No. 291,947

Int. Cl. B23b *41/00*

U.S. Cl. 408—233 **6 Claims**

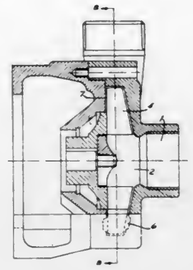


A spade drill characterized in that the slotted end of the holder in which the spade drill blade is clamped by a clamping screw extending through a hole in the blade has a set screw therein coaxially disposed with respect to the clamping screw and adjacent to the head thereof, said set screw being disposed eccentrically with respect to the blade hole and having a tapered end which engages one side of the blade hole thus to retain the blade in seating engagement with the bottom of the holder slot when the spade drill is retracted from the drilled hole.

ERRATUM

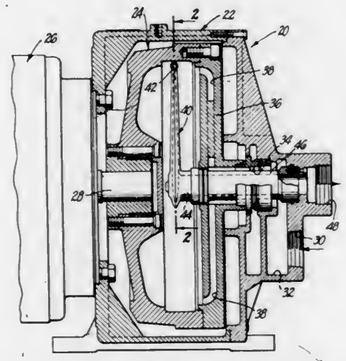
For Class 408—241 see:
Patent No. 3,776,647

3,776,657
SELF-PRIMING HIGH-PRESSURE PUMP
Emil Julius Ask, Farresfjorden Aksnes, Haugesund, Norway
Filed Dec. 29, 1971, Ser. No. 213,491
Claims priority, application Norway, Jan. 6, 1971, 22
Int. Cl. F04d 5/00
U.S. Cl. 415—53 2 Claims



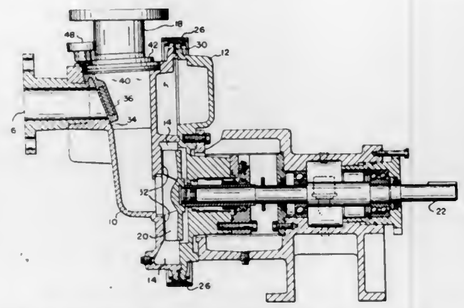
The outlet of the pump housing has an increasing area and extends as a side-channel into the pump housing around a part of the periphery of the rotating impeller in such a way that direct communication exists between the side-channel and the inlet of the pump housing.

3,776,658
PITOT TUBE FOR PITOT PUMP
John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., Huntington Park, Calif.
Filed Aug. 14, 1972, Ser. No. 280,677
Int. Cl. F04d 1/12
U.S. Cl. 415—88 8 Claims



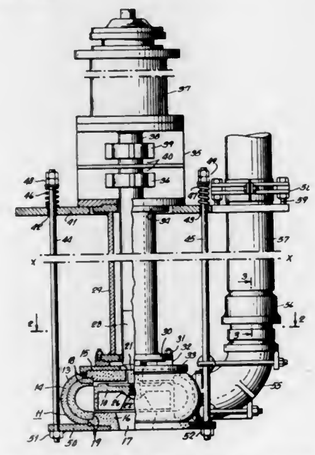
A pitot tube for a pitot pump, i.e., a centrifugal pump comprising a rotary casing, means for delivering a fluid to be pumped to the rotary casing, and a discharge duct coaxial with the rotary casing. The pitot tube is disposed in and extends radially of the rotary casing and is provided adajcent its outer end with an inlet facing in a direction opposite to the direction of rotation of the rotary casing, whereby the inlet receives fluid from adjacent the periphery of the rotary casing with a ram effect. The pitot tube includes axially spaced side walls and is provided adjacent its inner end, and in one of such side walls, with an outlet communicating with the discharge duct and coaxial with the rotary casing. Within the pitot tube is a flow splitting vane which extends from one side wall to the other, such vane extending from adjacent the outlet to adjacent the outer end of the pitot tube and dividing the pitot tube into two compartments spaced apart circumferentially of the rotary casing, one compartment being adjacent the leading edge of the pitot tube and the other adjacent the trailing edge thereof. This vane has the effect of streamlining the fluid flow through the outlet of the pitot tube and into and through the discharge duct, thereby minimizing flow losses.

3,776,659
CENTRIFUGAL SELF-PRIMING PUMP
Donald F. Coon, Jr., Mansfield, Ohio, assignor to Peabody Barnes Inc., Mansfield, Ohio
Filed Jan. 11, 1972, Ser. No. 217,070
Int. Cl. F04d 7/06, 9/02
U.S. Cl. 415—200 1 Claim



A self-priming, centrifugal pump having a pump body formed of two, separate, coacting matched half shells releasably retained together by a retaining ring clamp secured by a single bolt, whereby release of such bolt enables complete disassembly of the pump body for quick, easy access to all interior pump parts. One body shell contains an easily replaceable wear plate disposed opposite the pump impeller. The pump inlet port is disposed above the impeller centerline to effect self-priming in coaction with a flap-type check valve at the inlet port. The pump body has a top access opening permitting easy access to the check valve and to the inlet eye of the impeller for quick cleanout.

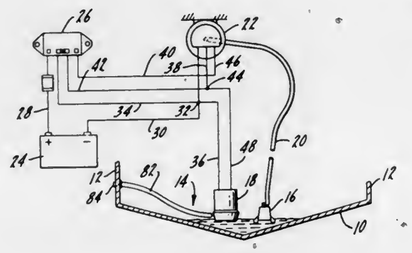
3,776,660
PUMP FOR MOLTEN SALTS AND METALS
Loren E. Anderson, Las Vegas; Roy E. Adams, and Gordon D. Weese, both of Henderson, all of Nev., assignors to NL Industries, Inc., New York, N.Y.
Filed Feb. 22, 1972, Ser. No. 227,767
Int. Cl. F04d 7/02, 7/06
U.S. Cl. 415—196 7 Claims



A pump comprising a refractory body portion of oblate spheroidal configuration having apertures in the top and bot-

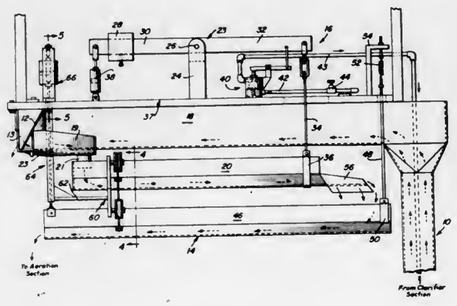
tom thereof is provided with refractory covers for said apertures which covers are held securely in said apertures by upper and lower metal plates, respectively, the upper plate forming the base of a vertical housing for the pump impeller shaft and the lower plate being resiliently mounted for vertical movement relative to said upper plate to compensate for thermo-expansion and contraction of the pump elements.

3,776,661
WATER LEVEL CONTROLLED PUMP SYSTEM
Joseph F. Wohnlich, Warren, Ind., assignor to United Filtration Corporation, Chicago, Ill.
Filed Dec. 28, 1970, Ser. No. 101,937
Int. Cl. F04b 49/00
U.S. Cl. 417—12 1 Claim



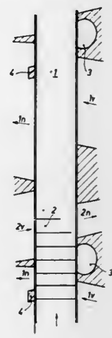
A fluid actuated pump system including a pump, a source of power for operating the pump and sensing means for connecting the pump with the power source. The sensing means is responsive to a fluid level and includes a housing having an open lower end and a pressure conduit connecting the housing with a pressure-responsive switch. The pressure-responsive switch operates the pump through a dampening heating element.

3,776,662
AUTOMATIC AIR VALVE CONTROL APPARATUS
Ellis C. Hall, Rt. 2, P.O. Box 107, Gautier, Miss.
Filed Apr. 17, 1972, Ser. No. 244,763
Int. Cl. F04b 49/00; F04f 1/18
U.S. Cl. 417—37 6 Claims



An apparatus particularly for controlling the amount of air supplied to an air-lift pump used for pumping return sludge from a clarifier section to an aeration section of a sewage and waste treatment plant. A weir is arranged for diverting a portion of a flow from a flow path created by the air-lift pump. This diverted flow portion is fed to an arrangement including a pair of troughs for weighing the diverted flow portion. One arm of a balance beam is connected to one of the troughs and to an air control valve for regulating the air supplied to the air-lift pump as a function of the weight of the diverted flow portion. The trough connected to the regulating arrangement is connected to the other trough at an end spaced from its connection to the regulating arrangement by a device for inversely duplicating in the trough a displacement of the other trough, resulting in the spaced end of the trough being displaced by the other trough and the rate of flow in the trough being thus varied. As a, for example, heavier sludge or other material flows through the trough and into the other trough, the material receiving end of the trough will be raised resulting in the trough holding less material, and a counterweight on the other balance beam arm will move the end of the trough connected to the balance beam upwardly and increase the supply of air to the air-lift pump. A lighter sludge or other material flowing into the other trough reverses this procedure.

3,776,663
AERODYNAMIC PRESSURE-WAVE MACHINE
Nicolaus Croes, Niederrohrdorf, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland
Filed Aug. 29, 1972, Ser. No. 284,764
Claims priority, application Switzerland, Oct. 19, 1971, 15215/71
Int. Cl. F04f 11/00
U.S. Cl. 417—64 4 Claims

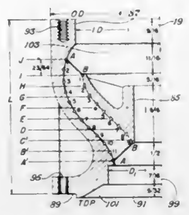


An aerodynamic pressure-wave machine which includes a stator and a celled rotor, the stator being provided with gas inlet and outlets adjoining one side of the rotor at one end of the rotor cells and air inlets and outlets adjoining the opposite side of the rotor at the opposite end of the rotor cells. The stator also includes a compression recess located after the air inlet, as viewed in the direction of rotation of the cells, and a web located in the gas outlet. This web extends radially for the entire height of the gas outlet and its width is approximately the same as one of the rotor cells. The function of the web is to cause pressure waves to impinge upon the compression recess at the highest and lowest speeds within the greatest part of the operating range of the machine.

3,776,664
SMALL DIAMETER IRRIGATION PUMP
Ardean Kimmel, Rt. 3, Deleon, Tex.
Filed Aug. 18, 1972, Ser. No. 281,791
Int. Cl. F04b 23/00
U.S. Cl. 417—243 7 Claims

An irrigation pump having exceptional flexibility and unusually large pumping capacity in terms of gallons pumped per inch of outside diameter characterized by: (1) unusually large flow passageways through its inlet adapter, impellers, bowls and top manifold in proportion to its outside diameter

and (2) flexibility with one bowl that is adapted to take three specifically designed impellers for different ratings without infeasibly adversely affecting the efficiency of the pump. The impellers have a reduced outside diameter and enlarged inlet diameter, but compensate for the reduced diameter by specifically designed spirally exteriorly ascending passageways to effect the flow capacity as great as prior art pumps 20 percent larger. The irrigation pump of this invention is able to be installed in wells drilled with an 8 inch bit; whereas, pumps of the prior art having the same capacity required a well that was drilled with a twelve inch bit which more than doubled the cost of drilling the irrigation well.

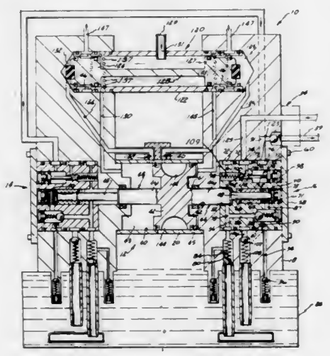


3,776,665

TWO STAGE FLUID PUMP

Thomas B. Dalton, Muskegon, Mich., assignor to Westran Corporation, Muskegon, Mich.

Filed July 8, 1971, Ser. No. 160,614
Int. Cl. F04b *3/00*
U.S. Cl. 417—252 **5 Claims**



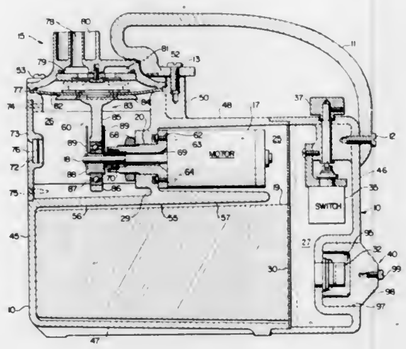
A fluid pump having a reciprocally mounted air driven piston including portions extending from opposite sides thereof with each piston portion extending into a pair of axially spaced pressure chambers such that when the air piston is reciprocated in one direction within the housing the piston portion at one end is in a compression stroke and compresses its associated chambers to discharge pressure fluid from the pump through an appropriate outlet portion, while the portion at the opposite end of the air piston is in an expansion stroke and expands its associated chambers to draw fluid therein from a reservoir. One pressure chamber associated with each of the piston portions has a valve means adapted to exhaust fluid pressure therein while closing communication with its associated chamber when the pressure in the same reaches a predetermined value. Actuation of the valve means is accomplished by an actuating mechanism responsive to a predetermined pressure build up as caused by the load being imposed upon the fluid user such that in the absence of a predetermined pressure being produced by the fluid user during each compression stroke fluid is discharged from the pump from both chambers at a first, relatively high, rate of flow and at a pressure less than the predetermined pressure, and upon the predetermined pressure being reached the spaced pressure chambers are fluidly disconnected, resulting in a decreased rate of fluid flow from the pump, while the pressure of the discharged fluid is increased. Valve means are provided to control the direction of flow of the fluid discharged from the pressure chambers on opposite sides of the air piston to either direct the fluid from each side of the pump to a single fluid user or to provide two sources of pressure fluid for separate fluid users.

3,776,666

PORTABLE PUMP

Philip Ludwig, Merrick, N.Y., assignor to Deknatel, Inc., Long Island, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,507
Int. Cl. F04b *17/00, 35/04*
U.S. Cl. 417—411 **6 Claims**



An explosion proof portable pumping unit instantaneously available for pumping flammable fluids. The pumping unit comprises a housing internally divided into three compartments, a diaphragm pump mounted within one compartment, an electric motor mounted within a second compartment and connected to the pump with a shaft extending through an aperture in the dividing wall, a battery electrically connected to the motor and mounted within the same compartment as the motor, a flame-propagation prevention sleeve concentric around the shaft for preventing a spark originating in the motor compartment from passing along the shaft into the pump compartment and causing an explosion therein, and a switch mounted within a third compartment which is segregated from the other two compartments for energizing the motor from the battery.

3,776,667

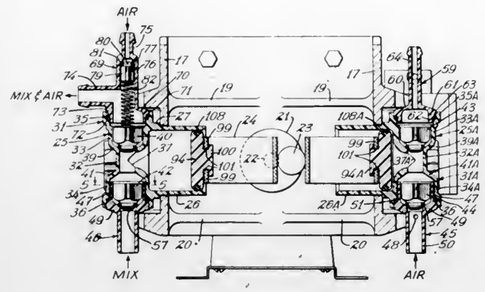
ICE CREAM PUMP

Harold A. Berglund, Afton, and David F. Thomas, West St. Paul, both of Minn., assignors to Waterous Company, St. Paul, Minn.

Division of Ser. No. 61,658, Aug. 6, 1970, Pat. No. 3,697,197.
This application May 1, 1972, Ser. No. 248,976
Int. Cl. F04b *39/14, 21/02*
U.S. Cl. 417—454 **10 Claims**

A double acting pump is provided for pumping air in one

cylinder and liquid mix into another. The cylinders and valve housings, together with the inlet and outlet fittings, are readily separable for cleaning. The entire pump unit may be disassembled for cleaning by the removal of four knobs or nuts.



3,776,668

OIL SEPARATOR FOR REFRIGERATION COMPRESSOR

Frederic H. Abendschein, Columbia, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 18, 1972, Ser. No. 227,513
Int. Cl. F01c *21/04*; **F04c** *29/02*
U.S. Cl. 418—97 **3 Claims**

An improved oil separator, particularly adapted for use with a refrigerant compressor in which oil must be separated from the refirgerant vapor. The oil separator of the present invention is characterized by a oil coalescing screen arranged in the flow path of discharge gas delivered from the discharge port and a novel arrangement of baffles which reduce the velocity of the discharge gas before it passes through the screen and prevent re-entrainment of oil in the discharge gas.

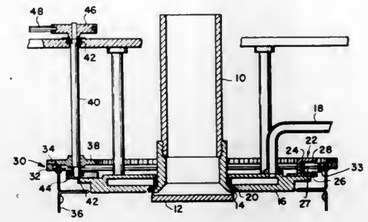
3,776,669

APPARATUS FOR COLLECTING CENTRIFUGALLY SPUN FILAMENTS

Yukihiko Ito, Fukushima; Tadashi Araki; Yoshio Kawai, both of Tokyo, and Iwao Kameyama, Fukushima, all of Japan; assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,297
Claims priority, application Japan, Dec. 29, 1970, 45/120974
Int. Cl. B29c *23/00*
U.S. Cl. 425—8 **3 Claims**

An apparatus for collecting centrifugally spun filaments from a rotating spinning device of a centrifugal melt spinning machine. The collecting apparatus includes at least one stationary air-jet, surrounding the rotating spinning device, a rotatable cylindrical collecting surface that is air-permeable, and a stationary cutter located between the rotating spinning device and the rotating collecting surface.

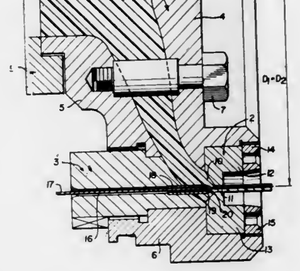


3,776,670

EXTRUSION HEAD FOR PRODUCING A RESISTANT ELEMENT OF A CONVEYOR BELT, DRIVING BELT AND THE LIKE

Attilio Antioletti, and Nino Madonini, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Continuation of Ser. No. 889,260, Dec. 30, 1969, abandoned.
This application Mar. 21, 1972, Ser. No. 236,794
Claims priority, application Italy, Jan. 1, 1969, 11173 A/69
Int. Cl. B28b *21/56*
U.S. Cl. 425—114 **4 Claims**



This invention pertains to an extrusion head for producing a resistant element of a conveyor belt or the like, the particular resistant structure of which comprises metal wires or threads of various diametrical dimensions. The extrusion head is capable of producing a tube of uncured elastomeric material in which longitudinal metal wires or threads are embedded during its formation. The tube is then cut along one of its generatrices by suitable means and is converted to a flat band.

3,776,671

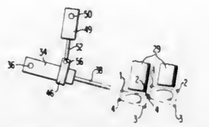
APPARATUS FOR PRODUCING CONFECTION BARS

Joost M. M. Bruschke, and Ronald E. Minor, both of Richmond, Va., assignors to Eskimo Pie Corporation, Richmond, Va.

Filed Nov. 13, 1970, Ser. No. 89,402
Int. Cl. A23g *5/02*
U.S. Cl. 425—164 **2 Claims**

A method and apparatus for producing confection bars in which a unitary cutting element is periodically passed transversely across a length of confection mix being extruded from a downwardly facing extruder nozzle positioned over a conveyer with the cutting element being supported and caused to move through the extruded length from one side to the other

in a plane intersecting the plane of the conveyer immediately below the nozzle at an acute angle, the reciprocating single cutter element and the extruder nozzle assembly being



mounted on a support frame that is rotatable to selected angular positions relative to the conveyer in a plane parallel to the line of conveyer movement.

3,776,672

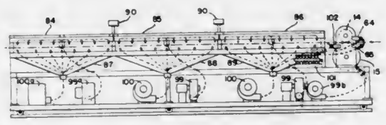
METHOD AND APPARATUS FOR PRODUCING SIDING

Peter F. Heilmayr, McPherson, Kans., assignor to Certain-teed Products Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 225,348, Feb. 10, 1972, and a continuation-in-part of Ser. No. 225,347, Feb. 10, 1972, said Ser. No. 225,348, is a continuation of Ser. No. 2,900, Jan. 14, 1970, abandoned, said Ser. No. 225,347, is a division of Ser. No. 2,900, Jan. 14, 1970, abandoned. This application Apr. 12, 1972, Ser. No. 243,205

Int. Cl. B29d 7/02; B29f 3/08

U.S. Cl. 425—72 7 Claims



The disclosed technique is adapted to production of siding from resin materials, especially polyvinyl chloride, and includes the use of sizing and shaping templates both above and below the horizontally extruded siding. Provision is made for cooling the lower convex side of the siding more rapidly than the upper concave side and for delivering refrigerated air to the siding in the downstream end of the cooling zone.

3,776,673

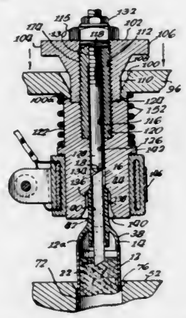
APPARATUS FOR SECURING NIB IN PLASTIC WRITING INSTRUMENT

Walter J. DeGroft, Glen Ellyn, Ill., assignor to Sanford Research Company, Bellwood, Ill.

Division of Ser. No. 813,886, April 7, 1969, abandoned. This application Sept. 27, 1971, Ser. No. 183,963

Int. Cl. B29c 27/14, 27/30

U.S. Cl. 425—125 7 Claims



An apparatus for securing a wick-like nib in a plastic ferrule of a marking instrument which has a hollow body containing porous absorbent material for storing a quantity of ink. The apparatus deforms the outer end of the ferrule into positive gripping engagement with the nib by applied heat and pressure while maintaining the nib in contact with the absorbent material. The apparatus includes a multipurpose die, capable of reciprocation, which has a first portion for pushing the nib into the absorbent material and a second portion including a heating jacket with heated camming surfaces for engaging and softening the end of the plastic ferrule to force that end into gripping engagement with the nib as the first portion of the die maintains the nib in contact with the absorbent material.

3,776,674

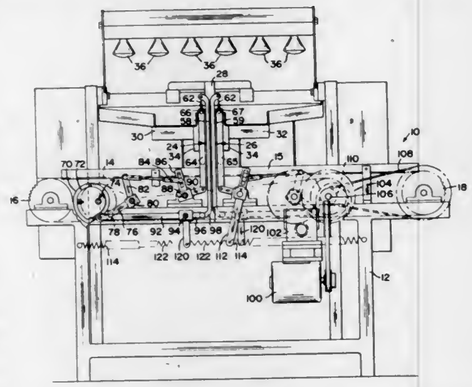
APPARATUS TO FORM ELONGATE PLASTIC ARTICLES

Norman H. Nye, Cuyahoga Falls, and Arthur T. Medkeff, Tallmadge, both of Ohio, assignors to Nicholas Creme and Cosma Creme, both of Tyler, Tex.

Division of Ser. No. 64,946, Aug. 19, 1970, Pat. No. 3,711,589. This application July 12, 1972, Ser. No. 271,139

Int. Cl. B29c 9/00

U.S. Cl. 425—134 4 Claims



Apparatus for making elongated multi-colored articles from a plastic material including means to move a series of molds through a fixed path, two members one for depositing a controlled amount of heated liquid plastic material of one color into one end portion of each of the molds and a second for depositing a controlled quantity of a heated liquid plastic material of a second color in overlapping relation to a portion of the first material to fill the remainder of the mold cavity with the second material. The two members for providing controlled discharge of regulated amounts of the two plastic materials are positioned in immediate association with each other for prompt discharge of the second material in the mold cavity after the first material has been introduced into the mold and they include a plurality of substantially vertically extending control links positioned adjacent a pair of discharge head assemblies present in the apparatus.

3,776,675

INJECTION MOULDING PRESS WITH MEANS FOR SEPARATING SCRAP MATERIAL FROM THE MOLDED ARTICLES

Giovanni Bessolo Veneria, Ivrea, Italy, assignor to Ing. C. Olivetti & C. S. p.A., Ivrea, Italy

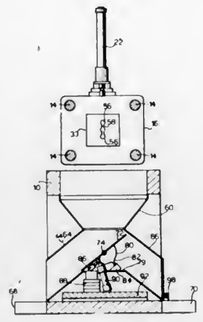
Filed Sept. 10, 1971, Ser. No. 179,363

Claims priority, application Italy, Sept. 18, 1970, 70144 A/70

Int. Cl. B29f 1/14

U.S. Cl. 425—139 1 Claim

An injection-moulding press is arranged to eject the moulded article and the deadhead at different moments. A deflector is arranged under the die from which the articles and deadheads are ejected, and is moved between two positions during the interval between the ejection of an article and a deadhead. In one position, the delfector guides a falling article



into a collection bin for articles, and in the second position it guides a falling deadhead into a bin for deadheads. Manual sorting of the articles from the deadheads is thus avoided.

3,776,676

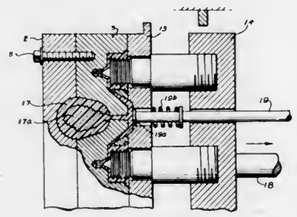
INSULATED RUNNER SYSTEM FOR PLASTIC CAP MOLDS

Milton Kessler, 6690 Harrington, Youngstown, Ohio

Division of Ser. No. 61,766, Aug. 6, 1970, abandoned. This application June 26, 1972, Ser. No. 266,365

Int. Cl. B29f 1/08

U.S. Cl. 425—250 2 Claims



In extrusion molding of plastic screw caps, the unit cap cost can be closely related to the number of caps which can be made at each cycle of the mold operation. A system is described which maximizes the number of caps by providing hot, self-insulated runners which feed a number of relatively short sprue channels with hot plastic so that a larger number of caps than before can be molded in a single cycle without the remoter caps at the edges of the die being fed plastic too cool to permit successful caps to be molded.

3,776,677

PIPE MAKING MACHINE

Horace Allan Wilkinson, Lilli Pilli, New South Wales, Australia, assignor to Monier Research & Development Pty. Ltd., Villawood, New South Wales, Australia

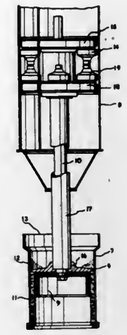
Filed Dec. 20, 1971, Ser. No. 209,834

Claims priority, application Australia, Dec. 24, 1970, PA 3589

Int. Cl. B28b 1/29

U.S. Cl. 425—262 3 Claims

A machine for moulding pipe in an upright stationary mould having a cylindrical troweling element rotatable within the mould and axially moveable therein. Packing means directly above the troweling element have rollers to pack the moulding



material into the space between the element and the mould. Deflector bars and closure plates adjacent the roller assure proper distribution of the material.

3,776,678

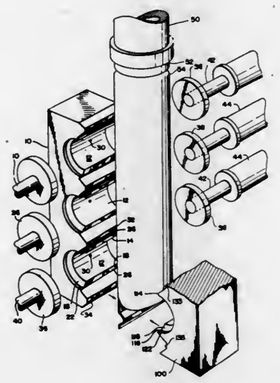
BLOW MOLDING APPARATUS

Sheldon Saslawsky, Easton, Conn., assignor to Textron Inc., Providence, R.I.

Filed Sept. 27, 1971, Ser. No. 184,144

Int. Cl. B29d 23/03

U.S. Cl. 425—310 4 Claims

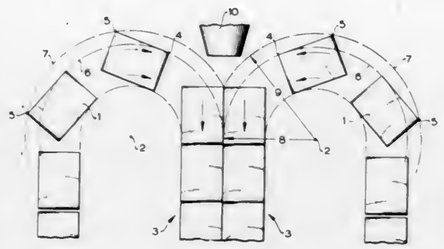


Blow molding apparatus and method for making a hollow plastic spool include a four section mold operated in a particular sequence to confine a thermoplastic core by two of the mold sections forming an open ended cavity while such core is permitted to expand outside the open ends of the cavity; coring pins carried by the other two mold sections deform the longitudinal axis of the protruding core and the other two mold sections close the cavity to finalize the shape of plastic spool and to pinch off excess plastic which has blown outside the peripheral edges of the mold cavity.

3,776,679
APPARATUS FOR THE MANUFACTURE OF PLASTIC TUBING OF SPECIAL CROSS-SECTIONAL CONFIGURATION

Wilhelm Hegler, 8731 Oerlenbach, Germany

Filed Apr. 8, 1971, Ser. No. 132,471
Claims priority, application Germany, Dec. 11, 1970, P 20 61 027.9
Int. Cl. B29c 17/07
U.S. Cl. 425—325 19 Claims

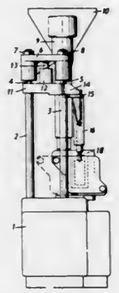


Improvements in the manufacture of transversely annular or helical corrugated thermoplastic tubing made by extruding a thermoplastic tubing and feeding the tubing into the jaws of revolving or recycling mold halves which come together about the tubing to form transverse corrugations therein, which improvement resides in bringing the mold halves about their recycle tracks or paths, particularly about the last arcuate path before entering the molding path, in such manner that their forward end, and particularly the outside edge of the forward end, has a smaller radius of curvature than does the rearward end, and particularly the outside edge of the rearward end.

3,776,680
EXTRUDER MOVEMENT

Ronald George Saffron, London, England, assignor to Hayssen Manufacturing Company, Sheboygan, Wis.

Continuation of Ser. No. 882,913, Dec. 8, 1969, abandoned.
This application Jan. 27, 1972, Ser. No. 221,393
Claims priority, application Great Britain, Feb. 14, 1969, 8,104/69
Int. Cl. B29d 23/03
U.S. Cl. 425—326 2 Claims

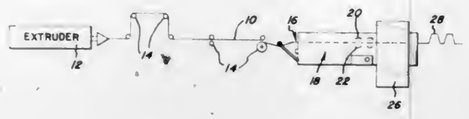


In a blow moulding machine of the kind in which an extruder feeds a tubular extrusion into a two-part die, the die subsequently closing and gripping the extrusion and the extruder being retracted to stretch the extrusion for severing between the extruder nozzle and the die, the extruder nozzle is arranged to retract linearly and axially from the die so as to cause the extrusion to be stretched symmetrically and linearly along its axis, thereby resulting in the severed edges of the extrusion being in a plane normal to the axis of the extrusion.

3,776,681
THERMOFORMING APPARATUS

Peter C. Neil, Fullerton, Calif., assignor to Standard Oil Company, Chicago, Ill.

Filed Apr. 27, 1971, Ser. No. 137,941
Int. Cl. B29c 3/04
U.S. Cl. 425—346 5 Claims

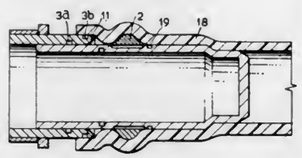


Disclosed is a thermoforming apparatus including a mold assembly wherein the mold sections of the assembly are moved relative to each other in accordance with a harmonic pattern of movement, and a film advancing assembly that moves the film intermittently in accordance with a harmonic pattern of movement.

3,776,682
APPARATUS FOR PRODUCING RADIALLY-EXPANDED SOCKET ENDS ON THERMOPLASTIC PIPE LENGTHS

Gunnar Parmann, Mathopen, Norway, assignor to Rieber & Son Plastic-Industri A/S, Bergen, Norway

Filed Apr. 21, 1972, Ser. No. 246,217
Claims priority, application Norway, Apr. 26, 1971, 1538/71; Sept. 27, 1971, 2386/71
Int. Cl. B29c 17/02
U.S. Cl. 425—384 13 Claims

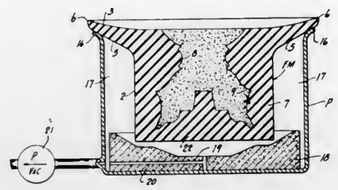


Process and apparatus for producing radially expanded socket ends on pipe lengths of thermoplastic material. An appropriately heated pipe end is fashioned over a shape-conferring means comprising a substantially cylindrical drift, a mould element for forming an internal, radially expanded peripheral groove in said end and support means mounted on said drift and axially displaceable relative thereto. The support means is maintained in a desired position with a view to locating the mould element in the face of a pushing-on force from the pipe and as drift, mould element and support means are caused to be led in succession axially into the hot pipe end. Subsequent to the desired insertion of the mould element in the hot pipe end, the support means is axially displaced relative to the drift outwardly from the pipe end, thereby enabling elastic forces in the radially expanded pipe end to be drawn radially inwards against the drift and said end to be fashioned by the mould element into the required form. The mould element and fashioned pipe end are then subjected to cooling prior to their joint removal from the drift.

3,776,683
APPARATUS FOR MOLDING ARTICLES

Raymond M. Putzer, Racine, and William J. Maurino, Kenosha, both of Wis., assignors to Precision Flexmold, Inc., Racine, Wis.

Filed Jan. 31, 1972, Ser. No. 222,141
Int. Cl. B28b 7/06
U.S. Cl. 425—440 13 Claims

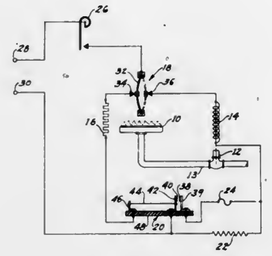


Molding apparatus for molding articles without a seam or parting line even though the articles may have severe backdraft portions. The apparatus includes a one-piece flexible mold of relatively thick and self-supporting wall construction which is deformable by the application of fluid pressure differential to thereby release the finished article from the mold. One modification of the one-piece mold also has a thick radially extending flange which forms a seal with a vacuum pot when the mold is simply set in the pot.

3,776,684
IGNITION AND CONTROL SYSTEM FOR GAS BURNERS

James A. Wright, Webster Groves, Mo., assignor to Emerson Electric Co., St Louis, Mo.

Filed May 10, 1972, Ser. No. 252,122
Int. Cl. F23n 5/04
U.S. Cl. 431—66 7 Claims

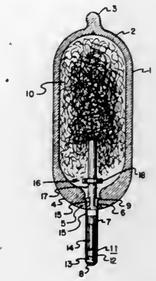


A ceramic glow igniter is connected in series with the hot-wire actuating element of a normally open thermal relay across a power source through a double-throw switch when in its cold position. This causes heating of the igniter to ignition temperatures, causes the hot wire element to expand and close the relay, and the heat of the igniter causes the double-throw switch to move to its hot position thus breaking the igniter and hot wire circuit. The electromagnetic winding of a normally closed solenoid gas valve is connected across the power source through the now-closed relay and the double-throw switch, now in its hot position, causing the gas valve to open. Due to thermal lag, the gas valve opens before the thermal relay opens and ignition of the gas occurs before the igniter cools. Burner flame maintains the double-throw switch in its hot position, and a current limiting resistor connected across the relay holds the solenoid gas valve open.

3,776,685
FLASHLAMP PRIMER PRECOATING

Stephen P. Senft, Cleveland Hts., and Vaughn C. Sterling, Cleveland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,956
Int. Cl. F21k 5/02
U.S. Cl. 431—93 4 Claims

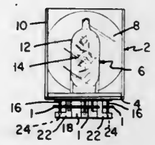


A precoating of rewettable polyvinyl alcohol is provided on the anvil member of a percussion-ignitable flashlamp to improve adherence of the primer coating as well as improve performance of the primer coating when the lamp is actuated.

3,776,686
PHOTOGRAPHIC FLASHLAMP UNIT

Lester F. Anderson; William C. Fink, and William T. Colville, all of Williamsport, Pa., assignors to Sylvania Electric Products Inc., Danvers, Mass.

Continuation of Ser. No. 773,176, Nov. 4, 1968, abandoned.
This application Sept. 8, 1970, Ser. No. 70,496
Int. Cl. F21k 5/02
U.S. Cl. 431—93 5 Claims



A flashcube having lamps of the percussive primer type and having self-contained means for firing them.

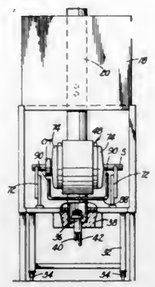
3,776,687
METHOD AND APPARATUS FOR HEATING WORK PIECES

Robert F. Heran, 1842 Dovna Dr., West Lake, Ohio

Filed June 19, 1972, Ser. No. 263,959
Int. Cl. F27d 3/00
U.S. Cl. 432—6 12 Claims

A method and apparatus for heating work pieces, especially motor armatures to degrade the insulation thereon for facile removal of the windings. The apparatus includes an annular combustion chamber, positioned to surround the work piece, enclosing it in a work piece receiving space. A combustion pipe provides combustion flame to the chamber and a combustion exhaust pipe exhausts the products of combustion from the chamber. Also, ports connect the work piece receiv-

ing space with the combustion chamber to vent the volatile combustible material with the products of combustion.



Preferably the exhaust pipe vents to an afterburner chamber where complete combustion of the products is accomplished. Other features are also disclosed.

3,776,688

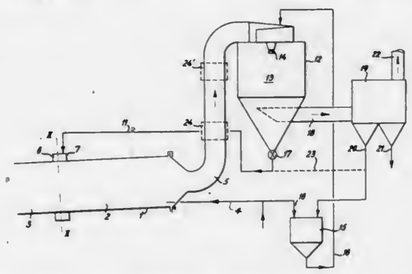
METHOD FOR OPERATING A ROTATING KILN PLANT FOR THE PRODUCTION OF CEMENT AS WELL AS A PLANT FOR CARRYING OUT THE METHOD

Jorgen Damgaard-Iversen, Birkerod, and Flemming Kruse, Farum, both of Denmark, assignors to Aktieselskabet Niro Atomizer, Gladsaxevej, Soborg, Denmark

Continuation of Ser. No. 77,929, Oct. 5, 1970, abandoned. This application June 29, 1972, Ser. No. 267,722

Int. Cl. F27b *7/02*

U.S. Cl. 432—14 **14 Claims**



The operation of a rotating kiln plant for producing cement according to the wet process the capacity of the kiln is increased and the heat economy is improved by drying a part of the cement slurry in a spray drier and introducing the spray-dried material into the kiln in the transition between the drying zone and the calcining zone of the latter. The sum of the quantity of slurry which is spray-dried and the quantity introduced in normal way at the inlet of the kiln plant is 120–300 percent by weight of the normal capacity of the kiln. The spray drying is performed using exhaust gas from a rotating kiln, which may be the same as that in which the spray-dried material is introduced.

3,776,689

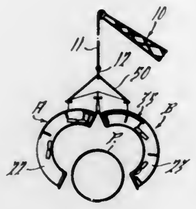
APPARATUS FOR HEATING LOCALIZED AREAS OF PIPE

Frederick W. Mayo, Livonia, Mich.; Billy G. Spires, Kenai, Alaska, and William M. Bockelman, Livonia, Mich., assignors to Burners, Inc., Detroit, Mich.

Filed June 8, 1970, Ser. No. 44,427

Int. Cl. F27d *3/00*; **F23c** *5/00*

U.S. Cl. 432—183 **11 Claims**



A device for heating localized areas of horizontally positioned pipe is formed in two complemental semi-annular hollow sections adapted to be fitted around the pipe, the sections being hinged together at the top to open and close with respect to a vertical diametric plane for fitting upon and removal from the pipe. A plurality of gun-type burners carried by the sections are adapted to project flame and heated products of combustion around the surface of the pipe.

CHEMICAL

3,776,690

PROCESS FOR DYEING TEXTILES MADE OF POLYESTER OR CELLULOSE TRIACETATE

Stefan Wiatrowski, Bischofsheim; Christian Heid, and Karl-Heinz Keil, both of Frankfurt, Main, Fechenheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

Filed Dec. 7, 1971, Ser. No. 205,718

Claims priority, application Germany, Dec. 9, 1970, P 20 60 565.6

Int. Cl. D06p *1/68*

U.S. Cl. 8—174 **7 Claims**

Process for dyeing textiles made of polyester or cellulose triacetate with dispersed dyes, in an aqueous medium, whereby the dyeing is carried out with the concurrent use of 0.5 – 10 c.c./l. trichloroethylene and/or perchloroethylene as carrier and an emulsifier, with pressure and temperatures above 100°C..

3,776,691

PROCESS FOR DYEING AND PRINTING TEXTILE MATERIALS CONTAINING ACID GROUPS WITH BASIC DYESTUFFS

Rudolf Neeb, Obertshausen; Eberhard Mundlos, Heusenstamm, and Reinhard Mohr, Offenbach/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

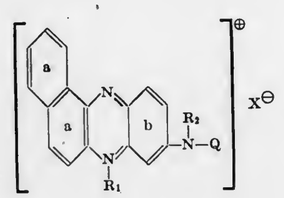
Filed Apr. 21, 1972, Ser. No. 246,167

Claims priority, application Germany, Apr. 26, 1971, P 21 20 246.0

Int. Cl. D06p *3/76*

U.S. Cl. 8—177 AB **7 Claims**

Process for the dyeing and printing of textile materials made from polymers or copolymers of acrylonitrile by using dyestuffs of the general formula



in which R_1 represents an alkyl, aralkyl, aryl or heterocyclic radical which may be substituted R_2 represents hydrogen or an alkyl or aralkyl radical which may be substituted, Q represents an aromatic or heterocylic radical which may be condensed with the benzene nucleus *b*, and X represents an anion and the benzene radicals *a* and *b* as well as the radical Q may contain further non-ionogenic substituents. The dyeings and prints thus obtained show a good fastness to light, wet processing, washing, fulling, over-dyeing, to chlorine, to perspiration and to carbonizing as well to decatizing, steaming, ironing, rubbing and to solvents.

3,776,692

RECURABLE CROSSLINKED CELLULOSIC FABRICS FROM METHYLOL REAGENTS AND POLYCARBOXYLIC ACIDS

William E. Franklin, and Stanley P. Rowland, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 27, 1972, Ser. No. 248,200

Int. Cl. D06m *15/56, 13/20, 13/14*

U.S. Cl. 8—181 **22 Claims**

Cellulosic fabrics are treated with formulations containing methylol crosslinking reagents and polycarboxylic acids having three or more acidic groups per molecule. The treated fabrics are cured in a flat configuration and washed. The fabric is subsequently heated in a folded configuration whereby the folded or creased configuration is permanently imparted to the fabric.

3,776,693

DRY CLEANING COMPOSITION AND PROCESS

Grant N. Smith, Midland, and Yvonne S. Taylor, Alma, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 24, 1972, Ser. No. 220,485

Int. Cl. D06l *1/00*

U.S. Cl. 8—142 **9 Claims**

Improved removal of stains of animal or vegetable origin from fabrics by a dry cleaning process is obtained when the dry cleaning solvent contains small amounts of water and one or more enzymes. Proteolytic enzymes such as trypsin are of particular interest.

3,776,694

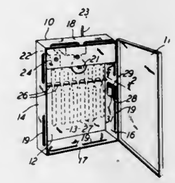
GERMICIDAL TOILETRY CABINET FOR DIFFERENT PERSONAL HYGIENE ITEMS

Leo C. Leitl, 830 Everett Ave., Ingleside, Ill.

Continuation-in-part of Ser. No. 38,321, May 18, 1970, abandoned. This application Apr. 3, 1972, Ser. No. 240,396

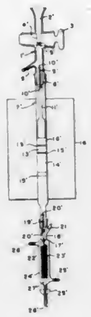
Int. Cl. A61l *3/00, 9/00*; **A47g** *29/08*

U.S. Cl. 21—102 R **6 Claims**



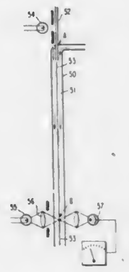
A cabinet housing having a swingable door and an electric switch actuated by the door and an electric lamp disposed within the housing. The housing has openings for the emission of rays of light, and the lamp is actuated by opening and closing the door. A tooth brush rack is mounted in the housing, and another support member, for tooth water picks, combs, and the like, is also mounted in the housing for receiving these other items, all for sterilization of the tooth brushes and water picks and like items, by the action of the germicidal lamp, a unitary piece extends through the width of the cabinet at the top thereof and provides the rack, and a bracket is affixed to the unitary piece and supports the electric switch and shields the electric switch from being approached exteriorally of the switch.

3,776,695
SCINTILLATION ANALYSIS SYSTEM
John I. Peterson, Falls Church, Va., assignor to The United States of America as represented by the Secretary Department of Health, Education and Welfare, Washington, D.C.
Filed Sept. 30, 1970, Ser. No. 76,705
Int. Cl. G01n 31/12; G21h 5/00
U.S. Cl. 23—230 PC 22 Claims



A system for the combustion preparation of samples for scintillation analysis comprising a combustion tube containing a combustion catalyst, a chimney tube positioned within the combustion tube and resting on the catalyst and means for admitting a sample for combustion, oxygen gas for ignition and an outlet means for the combustion product. Also, means for collecting the combustion products comprising: for H_2O an externally cooled condenser like system containing means for contacting a scintillation solvent with the gaseous combustion products in a cooled zone; and for CO_2 an externally cooled condenser like system containing a helical rotatable band within the inner bore thereof for distributing a scintillation solvent along the walls thereof for countercurrent contact with the CO_2 combustion product.

3,776,696
LIQUID SENSITOMETRY OF PHOTOGRAPHIC EMULSION
Hisatoyo Kato, and Hideo Takeda, both of Minami Ashigara-Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 12, 1971, Ser. No. 188,404
Claims priority, application Japan, Oct. 13, 1970, 45/89933
Int. Cl. G01n 21/26, 33/00; G03c 5/26
U.S. Cl. 23—230 R 4 Claims



A method of performing liquid sensitometry on a liquid photographic emulsion wherein the photographic emulsion is exposed to radiation and then caused to flow in contact with a developer solution. The photographic emulsion and developer remain in distinct layers in contact with each other. During the period when the developer and emulsion flow together, the emulsion is developed by diffusion and penetration of the developer at the interface between the developer and emulsion. The optical density of the developed emulsion is continuously measured.

3,776,697
METHOD AND REAGENT FOR DETERMINING NITROGEN OXIDES
Richard W. Crawford; Lester P. Rigdon, both of Livermore, Calif., and Richard J. Thompson, Hillsborough, N.C., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Apr. 13, 1972, Ser. No. 243,877
Int. Cl. G01n 31/22
U.S. Cl. 23—232 R 9 Claims

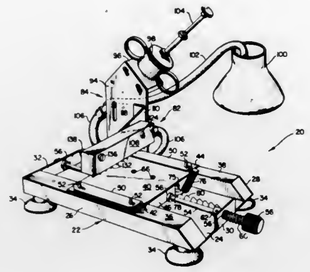
A measured quantity of gas such as atmosphere containing nitrogen oxides is contacted with Hochheiser solution comprising dilute base with or without a foaming agent, however, now containing small amounts of OsO_4, XeO_3 or perxenate whereupon at least about 90 to 95 percent of the NO_2 is absorbed yielding nitrate and nitrite in the solution. Nitrate may then be converted to nitrite as by reduction in a cadmium amalgam cell. Then the amount of nitrite is determined photometrically using Saltzman's reagent comprising n-(1-naphthyl)-ethylene diamine and sulfanilic acid which forms a dye specifically with $-NO_2^-$. The collection efficiency of the Hochheiser solution is increased from 25–70 percent to above 90 percent yielding a more accurate indication of NO_2 content.

3,776,698
TEST FOR THYROID HORMONE
Anna M. Eisentraut, Dallas, Tex., assignor to Nuclear-Medical Laboratories, Inc., Dallas, Tex.
Filed Jan. 24, 1972, Ser. No. 220,458
Int. Cl. C07c 101/72; G01n 33/16; G21h 5/02
U.S. Cl. 23—230 B 17 Claims

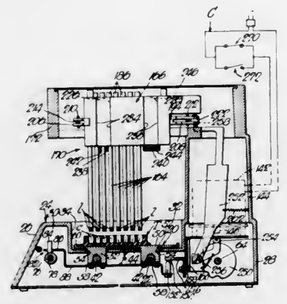
Method for separating thyroid hormone from blood serum, which is particularly suitable for use in an improved T-4 test procedure. The improved T-4 test procedure includes an extraction step whereby thyroid hormone (thyroxine) is initially extracted from a blood sample by admixing the sample with an acidic solution to free the thyroid hormone from hormone-binding globulin in the sample, and thereafter the acidic solution containing the serum components is contacted with a suitable sorbent for the thyroid hormone, such as a particulate inorganic crystalline sorbent material. The sorbent containing the hormone is then separated from the liquid and admixed with an alkaline solution to cause elution of the thyroid hormone from the sorbent. Next, a predetermined amount of thyrobinding globulin and radioisotope-labeled thyroid hormone and sorbent is mixed in the liquid, the liquid adjusted to an optimum pH, and the sorbent is separated from the supernatant fluid and either the supernatant fluid or the sorbent is counted in a scintillation counter.

3,776,699
RED CELL RINSER
Ronald E. Gross, Springfield, Va., assignor to The Cooke Engineering Company, Alexandria, Va.
Filed Oct. 20, 1971, Ser. No. 190,813
Int. Cl. A61m 1/03; B01l 11/00; G01n 33/16
U.S. Cl. 23—259 13 Claims

A red cell rinsing apparatus for preparing serological and like test specimens of sera including a liquid manifold having a plurality of ejection pipettes through which a plurality of microquantities of rinsing liquid are simultaneously ejected, and a carrier tray for supporting a plurality of red blood cell specimens arranged in rows. The tray is manually moved and located underneath the manifold successively to a plurality of predetermined portions in which the respective rows of specimens are automatically aligned with the ejection pipettes.

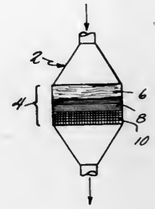


3,776,700
SERIAL DILUTION APPARATUS
Reginald R. Gallant, Bristol, Conn., assignor to Linbro Chemical Co. Inc., New Haven, Conn.
Filed Dec. 8, 1971, Ser. No. 205,828
Int. Cl. G01n 31/00, 31/16, 33/16
U.S. Cl. 23—259 20 Claims



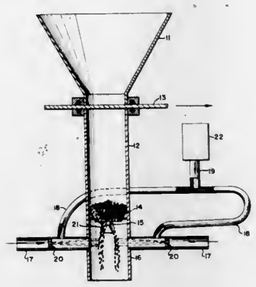
Apparatus for making serial dilutions in longitudinal titration trays having equally spaced transverse rows of cups, providing an elevator vertically movable into upper and lower positions, a carriage for removably supporting and locating a tray thereon and being supported and guided on the elevator for horizontal movement lengthwise of a located tray, fixed oscillatory loops above the carriage and arranged for their alignment with the cups in any row in a located tray on movement of the carriage on the elevator in its lower position, and for their reach into the aligned cups on movement of the elevator into its upper position, and operating mechanism, including controls, performing in a presettable number of cycles in each of which the elevator is raised to its upper position, the loops are oscillated, the elevator is moved to its lower position, and the carriage is indexed to bring a next cup row in a tray thereon into alignment with the loops.

3,776,701
CATALYST SUPPORTING STRUCTURE
James B. Hunter, Newtown Square, Pa., assignor to Matthey Bishop Inc., Malvern, Pa.
Filed Oct. 5, 1971, Ser. No. 186,630
Int. Cl. B01j 1/00, 9/04
U.S. Cl. 23—288 R 9 Claims



A catalyst supporting structure comprising a layer of heat-resistant rope elements composed of compacted knitted wire, placed in contiguous relationship with each other to provide a pad of substantially uniform thickness and having flat top and bottom surfaces and a woven sheet of heat-resistant material bonded to each surface.

3,776,702
APPARATUS FOR MINERAL-FILLED FOAM PRODUCTION
Peter R. Chant, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Division of Ser. No. 10,546, Feb. 11, 1970, Pat. No. 3,627,706.
This application Sept. 7, 1971, Ser. No. 178,491
Int. Cl. C08g 22/44
U.S. Cl. 23—284 4 Claims



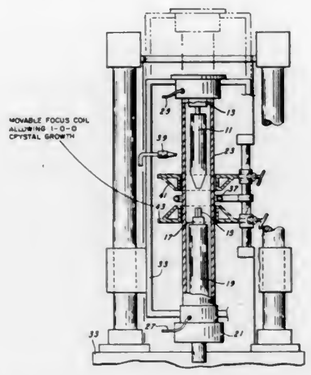
Apparatus for preparing a polyurethane foam containing granular filler which comprises: a normally vertically dispersed tubular body, a reservoir for granular filler mounted thereon, having an outlet disposed to supply granular material through the tubular body; a liquid supply conduit coupled to a source of liquid to supply liquid to a gas supply conduit coupled to a source of compressed gas and having an outlet within the tubular body at a point below the outlet of said reservoir.

3,776,703

METHOD OF GROWING 1-0-0 ORIENTATION HIGH PERFECTION SINGLE CRYSTAL SILICON BY ADJUSTING A FOCUS COIL

Gary Michael Valant, Garland, and Hoyt Randuff Guffey, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1970, Ser. No. 93,617
Int. Cl. B01j *17/18*
U.S. Cl. 23—301 SP **11 Claims**



Silicon monocrystals having a 1-0-0 crystallographic orientation are prepared using a crystal growing apparatus of the float zone type having a heating coil and upper and lower focusing coils, wherein the silicon feed bar is held upright and moved downward as the monocrystal rod is formed. After the stem of the monocrystal has been grown, the lower focusing coil is lowered slightly, thus producing a condition more conducive to the formation of the 1-0-0 crystalline structure.

3,776,704

DISPERSION-STRENGTHENED SUPERALLOYS

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. Nos. 852,861, Aug. 25, 1969, and Ser. No. 849,133, Aug. 11, 1969, abandoned, Continuation-in-part of Ser. No. 709,700, March 1, 1968, Pat. No. 3,591,362.
This application May 17, 1971, Ser. No. 143,765
Int. Cl. C22c *31/04*
U.S. Cl. 29—182.5 **5 Claims**

Directed to a dispersion-strengthened, nickel-base superalloy produced from mechanically alloyed powder of special composition and characterized, in the consolidated, grain-coarsened condition by coarse elongated grains and by high strength over a wide range of temperatures.

3,776,705

SINTERED ALLOY HAVING WEAR RESISTANCE AT HIGH TEMPERATURE

Itar Niimi, 4-1205, Obasama, Aza, Takabari, Ooaza, Idaka-sho, Nagoya City; Kametaro Hashimoto, 29, 5-chome, Takami-cho, Toyota City; Kenzi Shitani, 3-38, 4-chome, Maruyama-cho, Toyota City; Ko Ishihara, 58-79, Kitayama, Ichiki, cho, Toyota City; Yoichi Serino, 2-1, Ekakushin-machi, Toyota City; Seishu Mitani, 11-5, Higashi-machi, Anshubaba, Kyoto City, and Kunizo Imanishi, 2-11, Toei-cho, Mizuho-ku, Nagoya City, all of Japan

Filed Aug. 17, 1971, Ser. No. 172,402
Claims priority, application Japan, Dec. 28, 1970, 45/120197
Int. Cl. B22p *3/16*; **C22c** *9/00*
U.S. Cl. 29—182 **2 Claims**

The present invention relates to sintered alloys having wear resistance at high temperature composed of 5 to 15 percent tin and 4 to 25 percent chromium, the balance being copper, and the alloy being sintered to more than 88 percent of theoretical density ratio.

3,776,706

ALUMINUM OXIDE BASED ARTICLES OF JEWELRY

Alma U. Daniels, Salt Lake City, Utah, and Ralph K. Iler, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 878,894, Nov. 21, 1969, abandoned. This application Dec. 15, 1971, Ser. No. 208,426
Int. Cl. B22f *5/00*; **C22c** *29/00*
U.S. Cl. 29—182.5 **10 Claims**

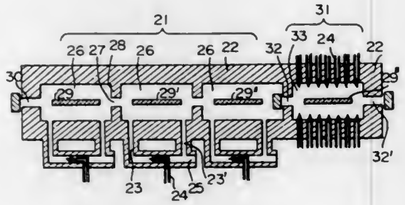
Fine-grained mixtures of 25 to 75 volume percent refractory aluminum oxide, 25 to 75 volume percent refractory titanium carbide, and 0 to 10 volume percent metal are sintered or hot-pressed to form articles of jewelry having low porosity, a metallic-grey appearance, perspiration resistance and a high luster when polished.

3,776,707

PROCESS FOR PRODUCING TEMPERED GLASS SHEET

Touru Inoue, and Kenzi Terashima, both of Nishinomiya, Japan, assignors to Nippon Sheet Glass Co., Ltd., Higashi-ku, Osaka, Japan

Filed Sept. 1, 1970, Ser. No. 68,634
Claims priority, application Japan, Sept. 4, 1969, 44/70451
Int. Cl. C03b *27/00*
U.S. Cl. 65—29 **18 Claims**



In a process for producing tempered glass sheet which includes a step of tempering treatment comprising heating a glass sheet to a temperature in the vicinity of its softening point and rapidly cooling the heated glass sheet from its surface, the improvement which comprises maintaining the glass sheet, before or after said tempering treatment, at a temperature in the range of 100° to 380°C. for a total period of time which meets the following formula

$$\int_0^H 10^{-\frac{a}{T}} dH \geq 1$$

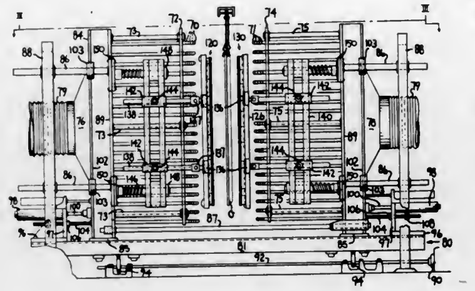
wherein T is a temperature in degrees centigrade at an optional time,
H is a time in minutes which is calculated when T is in the range of 100° to 380°C. and
a is a number 250 after the tempering treatment and 540 before the tempering treatment,
thereby to impart a thermal history to the glass sheet, and removing those glass sheets which break by said thermal history and tempering treatment, whereby the remaining tempered glass sheets do not undergo spontaneous breakage.

3,776,708

CONTROLLING THE SHAPE OF A SHEET OF GLASS DURING COOLING

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 23, 1971, Ser. No. 155,873
Int. Cl. C03b *27/00*
U.S. Cl. 65—114 **22 Claims**



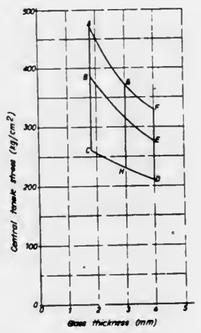
Removing heated glass sheets outside a furnace introduces a temperature gradient along the length of the glass. This gradient induces thermal warpage when the glass transfers from a shaping station to a cooling station. The present invention compensates for this warpage by supporting the glass sheet in spaced relation between opposed outline guides having complementary shapes conforming to that desired for the glass sheet marginal portion during the cooling step that heat-strengthens the shaped glass. Care is taken to avoid continuous contact of the glass with either guide to avoid glass breakage during cooling. The shaped guides are separated from one another during cooling by a maximum distance equal to the glass thickness plus the tolerance limit established by the customer. The guides may be continuous or discontinuous.

3,776,709

METHOD OF TOUGHENING GLASS SHEETS

Richard Melling, Hollywood, near Birmingham, and John Pickard, Studley, both of England, assignors to Triplex Safety Glass Company Limited, Piccadilly, London, England

Filed July 23, 1971, Ser. No. 165,052
Claims priority, application Great Britain, July 29, 1970, 36,749/70
Int. Cl. C03b *27/00*
U.S. Cl. 65—114 **14 Claims**



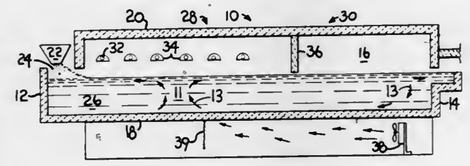
A glass sheet of thickness in the range 1.8 mm to 4 mm having a dual fracture characteristic is toughened by heating the sheet to a temperature near its softening point, exposing the surface of the hot glass sheet to gaseous chilling medium and maintaining a rate of flow of the gaseous chilling medium dependent on the glass thickness, the rate being just sufficient to give a selected heat transfer coefficient with respect to the glass in the range bounded by from 0.008 to 0.02 calories/cm^{-2}/°C^{-1}/sec^{-1} for 1.8 mm glass and from 0.006 to 0.009 calories/cm^{-2}/°C^{-1} sec^{-1} for 4 mm glass. The central tensile stress thereby induced in the glass is from 260 kg/cm^2 to 470 kg/cm^2 for 1.8 mm glass reducing to from 210 kg/cm^2 to 330 kg/cm^2 for 4 mm glass.

3,776,710

APPARATUS FOR REFINING GLASS

Leonard A. Knavish, Pittsburgh, and James R. Schornhorst, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 747,395, July 24, 1968, abandoned. This application Feb. 18, 1971, Ser. No. 116,368
Int. Cl. C03b *5/22*
U.S. Cl. 65—134 **3 Claims**



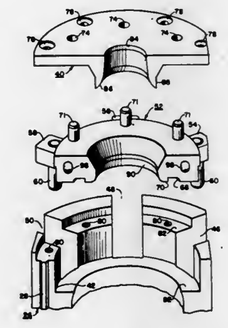
Forced cooling of the bottom of the glass in the refiner of a continuous glass-melting furnace allows changes in the thermal gradients through the glass. This reduces convection flow and convolutions in the glass and thus improves the quality of glass produced.

3,776,711

APPARATUS FOR FORMING A BLOWN BOTTLE HAVING A CHIME IN THE SHOULDER PORTION THEREOF

Elvin R. Hollingsworth, Winchester, Ind., assignor to Owens-Illinois Corporation, Winchester, Ind.

Division of Ser. No. 105,872, Jan. 12, 1971, Pat. No. 3,734,704. This application Feb. 26, 1973, Ser. No. 326,307
Int. Cl. C03b *9/14*
U.S. Cl. 65—261 **5 Claims**



Apparatus for forming a bottle having a chime or groove in its shoulder portion. This is achieved by providing at the tops

of two mold halves movable mold parts forming an annular flange. The movable parts and the flange carried thereby are normally urged upwardly by coil springs but are forced downwardly against the force of the springs by a blowhead positioned over the mold halves when closed around a partially formed glob of glass (i.e., a parison). After the bottle is blown, the blowhead is removed, permitting the aforesaid movable mold halves to move upwardly under the force of the springs to permit the mold halves to open and release the blown bottle having a chime in its shoulder portion.

3,776,712
TREATMENT OF GLASS SHEET

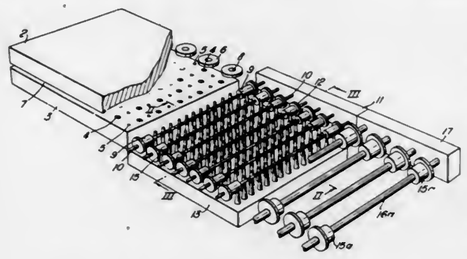
Dennis Wilde, Hoscar, nr. Ormskirk, England, assignor to Pilkington Brothers Limited, Liverpool, Lancashire, England

Continuation of Ser. No. 56,251, July 20, 1970, which is a continuation of Ser. No. 632,795, April 21, 1967. This application July 10, 1972, Ser. No. 270,161

Claims priority, application Great Britain, Apr. 25, 1966, 18,074/66

Int. Cl. C03b *27/00*

U.S. Cl. 65—348 **3 Claims**



Toughening of advancing glass sheets is effected in two stages; in the first the glass is supported on a gaseous support and thereafter when the underface of the glass is no longer deformable the advancing glass is mechanically supported as quenching is completed, clearance of cullet being facilitated in the final quenching stage.

3,776,713
KCL-PHOSPHATE GRANULES

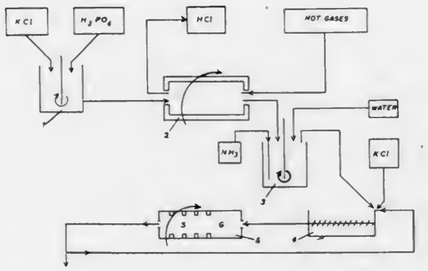
Bernard Quanquin; Honore Trimbach, both of Grande Couronne, and Pierre Dumont, Cleon, all of France, assignors to Azote et Produits Chimiques S.A., Toulouse, France

Filed June 9, 1969, Ser. No. 831,464

Claims priority, application France, June 20, 1968, 68155735

Int. Cl. C05b *19/00*

U.S. Cl. 71—33 **14 Claims**



To produce hard, abrasion-resistant, substantially spherical granules consisting essentially of potassium chloride and phosphate, particulate potassium chloride is agglomerated with an aqueous solution containing as the essential binding agent, a complex mixture of ortho-phosphates and condensed phosphates produced by reacting potassium chloride in orthophosphoric acid at above 180° C. To improve the granulation yield having the desired particle sizes, ammonia is added to the mixture to be granulated either before or during granulation.

3,776,714
SELECTIVE HERBICIDE COMPOSITION AND PROCESS

Carl Bordenca, Vedra Beach, Fla., assignor to SCM Corporation, Cleveland, Ohio

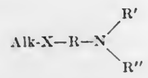
Continuation-in-part of Ser. No. 740,458, June 27, 1968, abandoned. This application Oct. 7, 1970, Ser. No. 78,995

Int. Cl. A01n *9/12*

U.S. Cl. 71—98 **5 Claims**

Described are a novel class of compounds selected from the group consisting of:

a. a β-di-lower alkylamino lower alkylene ether of the formula:



where Alk is a saturated branched chain alkyl group containing from 4 to 16 carbon atoms, X is sulfur or oxygen, R is lower alkylene and R′ and R″ are like or dissimilar lower alkyl and

b. stable salts thereof.

Processes for selectively controlling undesirable plant growth by application of the compounds falling within the scope of this invention to a plant environment are also described. Crop and grass plants are generally not adversely affected by the compounds when such compounds are used in concentrations which will kill pest weeds.

The compositions and processes of the invention are advantageous in that undesirable pest weeds such as crabgrass, mustard, pigweed, barn grass, and morning glory are substantially eliminated in fields where valuable crops such as bluegrass, corn, cotton, soybeans, and wheat are planted and are grown.

3,776,715
HALOPHENOXY BENZOIC ACID HERBICIDES

Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 819,412, April 25, 1969, Pat. No. 3,652,645. This application Nov. 1, 1971, Ser. No. 194,479

Int. Cl. A01n *9/20*

U.S. Cl. 71—111 **10 Claims**

2-Nitro-5-(halophenoxy)benzoic acids and esters, salts, amides, and acyl halides thereof comprise a class of compounds that are highly effective pre- and post-emergence herbicides.

3,776,716
HERBICIDAL METHOD AND COMPOSITIONS COMPRISING DIPHENAMID AND 2,4-D

Alan J. Lemin, Richland Township; Arnolds Steinhards, and George Swank, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 385,032, July 24, 1964, abandoned, which is a continuation-in-part of Ser. No. 98,316, March 27, 1961, abandoned. This application Oct. 10, 1969, Ser. No. 865,485

Int. Cl. A01n *9/24*

U.S. Cl. 71—117 **4 Claims**

Herbicidal methods and compositions containing, as the essential active ingredients, an N,N-disubstituted-α,α-diphenylacetamide and 2,4-dichlorophenoxyacetic acid.

3,776,717
METHOD FOR PROCESSING OF RED MUD

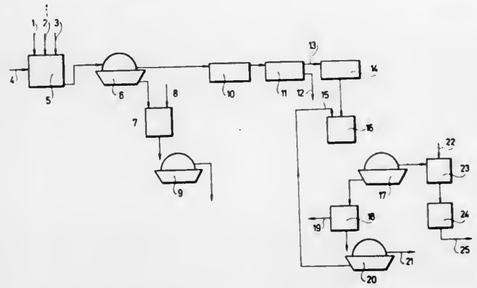
Laszlo Kapolyi, Budapest; Ferenc Lazar, Tatabanya; Bela Galauner, Tatabanya; Laszlo Dzsida, Tatabanya; Gyorgy Vamos, Tatabanya; Laszlo Wagner, and Alfred Pogany, both of Budapest, all of Hungary, assignors to Tatabanyai Szenbanyak, Tatabanya, Hungary

Filed Dec. 2, 1971, Ser. No. 204,216

Claims priority, application Hungary, Dec. 4, 1970, TA-1907

Int. Cl. C21b *13/08*

U.S. Cl. 75—38 **9 Claims**



The red mud by-product of aluminum manufacture is processed by first removing its alkali metal content by causticization of a slurry thereof with burnt lime in the presence of humic acid or derivative thereof. From the remaining solids iron can be recovered such as by reduction and smelting, where the humic acid-containing ingredient, a soft coal, can be utilized for its carbon content. From the remaining slag of the smelting either an aluminaceous refractory cement is prepared or the solids are converted into a spontaneously disintegrating dicalcium silicate for which the aluminum content can be recovered. In the latter case the last remaining solids can be used in the manufacture of portland cement.

3,776,718
RECOVERY OF COPPER AND STEEL FROM SCRAP

Vance G. Leak, and Morris M. Fine, both of Minneapolis, Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed July 13, 1972, Ser. No. 271,340

Int. Cl. C22b *7/00, 15/00*

U.S. Cl. 75—63 **13 Claims**

Scrap items containing copper and iron in physical admixture, such as electrical and electronic scrap, are pretreated with an aqueous reagent, such as an alkali metal sulfate or silicate, prior to recovery of the copper by preferential melting in an inert, liquid medium. The chemical pretreatment reduces the tendency of copper to alloy or braze with the iron and results in a substantially higher copper recovery in the preferential melting step.

3,776,719
METHOD OF PREPARING COPPER FOR USE IN THE ARCING ELECTRODES OF A VACUUM CIRCUIT INTERRUPTER

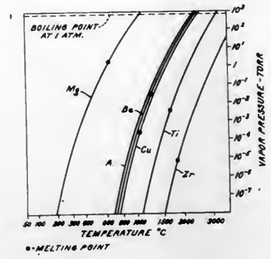
Stephen Foldes, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Nov. 30, 1971, Ser. No. 203,242

Int. Cl. C22b *15/14*

U.S. Cl. 75—76 **4 Claims**

A method of preparing copper for use in the electrodes of a vacuum-type circuit interrupter comprising the steps of: melting copper in a vacuum; adding to the molten copper a small amount of magnesium that reacts with any oxygen present in the copper to form magnesia, which floats to the surface of the liquid copper-magnesium solution; maintaining while in a vacuum the temperature of the solution above its melting point for a sufficient time to evaporate from the solution all of



the magnesium present therein that has not reacted with the oxygen therein; and then directionally cooling and solidifying said copper to force residual magnesia trapped therein to move to the surface of the liquid copper.

3,776,720
STEEL COMPOSITION CAPABLE OF BEING COLD ROLLED

Maria B. Dudek, Bochum, Germany, assignor to Fried. Krupp Huttenwerke AG, Bochum, Germany

Filed Dec. 27, 1971, Ser. No. 212,794

Claims priority, application Germany, Dec. 24, 1970, P 20 63 666.2

Int. Cl. C22c *39/16, 39/54*

U.S. Cl. 75—126 M **14 Claims**

A stainless semi-ferritic steel composition suitable for forming ribbing-free cold strip said steel composition having an austenite content of between about 10 and 40 percent, at temperatures above Ac_1, said steel composition comprising:

Up to 0.12 % by weight carbon
13–23 % by weight chromium
0 – 2 % by weight molybdenum
0–0.5 % by weight nickel
Up to a maximum of 1.0 % by weight silicon
Up to a maximum of 0.35 % by weight manganese
Up to a maximum of 0.010 % by weight sulphur
0.025–0.060 % by weight phosphorus
0.020–0.060 % by weight arsenic,
at least 0.050 % of said arsenic and said phosphorus being combined arsenic and phosphorus,
the balance being iron plus other common impurities;

a process for obtaining a semi-ferritic stainless steel which is still air-hardening, said stainless steel having a austenite content of between 10 and 40 percent at temperatures above Ac_1 and capable of being cold rolled into a strip of slight thickness, which strip is characterized by being substantially non-washboarding, which process comprises utilizing as the steel composition the composition set forth above, maintaining the same at a temperature of between 700° and 780°C for between 2 and 10 hours, thereafter heating the same to a hot rolling temperature just below Ac_1 and rolling down to the final hot rolling thickness, said steel composition being worked either as a crude ingot from the solidus temperature or in the form of a bloom in which it is worked from the cogging temperature.

3,776,721
MANIFOLD IMAGING

Ivar T. Krohn; Geoffrey A. Page, and Gedeminas J. Reinis, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 609,124, Jan. 13, 1967, abandoned. This application Dec. 18, 1970, Ser. No. 99,712

Int. Cl. G03g *13/22, 17/00*

U.S. Cl. 96—1 R **19 Claims**

An imaging system wherein a structure comprising a cohesively weak imaging layer sandwiched between a donor sheet

and a receiver sheet is employed. The sandwich is placed in an electrical field and exposed to extended imagewise activating electromagnetic radiation. The extended exposure causes the

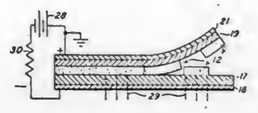


image which conventionally adheres to the receiver sheet to adhere to the donor sheet and the image which conventionally adheres to the donor sheet to adhere to the receiver sheet.

3,776,722

ELECTROPHOTOGRAPHIC METHOD OF IMAGEWISE PARTICLE TRANSFER EMPLOYING ALTERNATING MODULATED FIELD

Marcus Cantarano, No. 47, av. F. Roosevelt, Bat. B. Thiais 94, France

Continuation-in-part of Ser. No. 715,313, March 22, 1968, abandoned, which is a continuation-in-part of Ser. No. 613,792, April 18, 1967, abandoned. This application June 14, 1971, Ser. No. 152,962

Int. Cl. G03g *13/14, 13/16*

U.S. Cl. 96—1 R **14 Claims**

A process and a device for electrophotographic reproduction using a photoconductive layer placed in contact with a uniform layer of developer between two electrodes. An alternatively modulated voltage is applied to the electrodes.

3,776,723

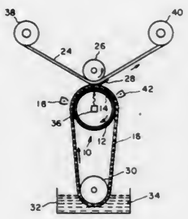
IMPROVED LIQUID TRANSFER ELECTROPHOTOGRAPHIC DEVELOPMENT PROCESS

Stephen F. Royka, Fairport, and Ernest A. Weiler, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,164

Int. Cl. G03g *13/10, 13/14*

U.S. Cl. 96—1 LY **11 Claims**



An improved liquid transfer development process comprising:

electrically charging the photoconductive surface of an imaging member comprising a photoconductive insulating layer overlying a transparent electrically conductive substrate;

exposing the photoconductive surface of said imaging member through said transparent substrate to a pattern of light and shadow;

contacting the photoconductive surface of said imaging member with a developer-laden web, said developer comprising particulate toner dispersed in an insulating liquid carrier;

contacting said developer-laden web with an image receiving web to selectively deposit particulate toner in conformance with said pattern of light and shadow; and,

separating said image receiving web from said developer-laden web.

3,776,724

ELECTROPHOTOGRAPHIC COMPOSITION OF ZINC OXIDE AND A RESIN BINDER

Athar M. Usmani, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 84,102, Oct. 26, 1970, abandoned. This application Sept. 22, 1971, Ser. No. 182,854

Int. Cl. G03g *5/00*

U.S. Cl. 96—1.8 **26 Claims**

The electrophotographic resin compositions disclosed herein comprise 10–96 mole percent of an acrylate ester having the formula $CH_2{=}C(R)COOR'$, wherein R is H, CH_3 or C_2H_5 and R' is an alkyl radical of the formula C_nH_{2n+1} with n equal to 1–20, preferably 1–8; 0–86 mole percent of a vinyl monomer having the formula $CH_2{=}C(R''')R''''$ wherein R''' is H or CH_3 and R'''' is an aryl radical of 6–12 carbon atoms, -CN or -OOCR''''' wherein R''''' is alkyl, cycloalkyl or aryl radical of 1–12 carbon atoms; 1–5 mole percent of an acrylic acid and 1–8 mole percent of an acrylamide or polymerizable amine compound. This electrophotographic resin composition is particularly suitable for use as a binder in preparing zinc oxide coatings for paper used in reproducing images with superior speed by an electrophotographic method.

3,776,725

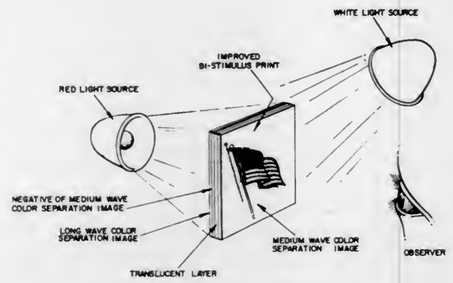
BI-STIMULUS PRINT

John J. McCann, Belmont, and Julius J. Scarpetti, Revere, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 1, 1971, Ser. No. 203,688

Int. Cl. G03c *7/00*

U.S. Cl. 96—2 **21 Claims**



An improved bi-stimulus print is disclosed which provides more faithful rendition of the colors perceived therein. One perceives color in an image recorded on a bi-stimulus print by illuminating the front of the bi-stimulus print with light having one wavelength distribution and by simultaneously illuminating the back with light having another wavelength distribution and viewing, together, an image conveyed from the front by reflected light and another image conveyed from the back by transmitted light. A negative of the front image located on the back of the improved bi-stimulus print in precise registration with the other images compensates for the modulation of the transmitted light by the front image. Improved bi-stimulus anaglyphs are also described.

3,776,726

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC PRODUCTS, PROCESSES AND COMPOSITIONS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 247,025

Int. Cl. G03c *7/00*

U.S. Cl. 96—3 **50 Claims**

Diffusion transfer process film units are disclosed which include a viscous processing composition including a film-forming, viscosity-providing polymer and colloidal silica. Substantially increased viscosity results from the inclusion of the colloidal silica. Color images, particularly multicolor integral negative-positive reflection prints, are obtained using the disclosed film units.

3,776,727

TRANSMISSION HOLOGRAMS

Heinrich Nassenstein, Leverkusen, and Joachim Eggers, Cologne, Stammheim, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 16, 1969, Ser. No. 833,603

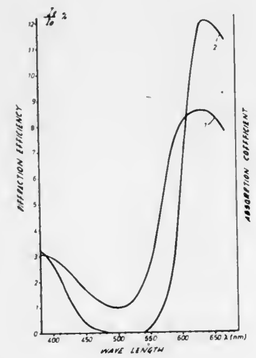
Claims priority, application Germany, June 29, 1968, P 17 72 756.9

Int. Cl. G02b *27/10;* **G03c** *5/04*

U.S. Cl. 96—27 H **1 Claim**







A transmission hologram which is reconstructable by white light is produced by the color processing in which the hologram itself is colored so as to obtain a high diffraction efficiency in the wave length region of maximum absorption and dispersion of the dye stuff which is used for coloring the holograms. Outside of this region of maximum absorption and dispersion the diffraction efficiency is low. Thus the transmission hologram is so colored that when illuminated with white light the hologram selects a narrow wave length region.

3,776,728

METHOD OF PRODUCING OFFSET PRINTING PLATE

Shigeyoshi Suzuki; Norio Kobayashi, and Kiyoshi Futaki, all of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Marunouchi, Chiyoda-ku, Tokyo, Japan

Filed Mar. 30, 1972, Ser. No. 239,756

Claims priority, application Japan, Mar. 20, 1971, 46/19001

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 L **7 Claims**

An offset printing plate of improved printability is provided utilizing the silver complex salt diffusion transfer process by treating an offset master plate containing an image-receiving layer composed of 100 parts by weight of a physical development center and not more than 30 parts by weight of a high-molecular-weight compound, with a transfer developer solution consisting essentially of a developing agent, a solvent for a silver halide, and at least one organic heterocyclic compound such as 3-pentyl-benzoxazoline-2-thione, 5-phenyl-2-mercapto-1,3,4-oxadiazole or 3-mercapto-4-methyl-5-pentyl-1,2,4-triazole.

3,776,729

PHOTOSENSITIVE DIELECTRIC COMPOSITION AND PROCESS OF USING THE SAME

M. Frank Levy, Los Gatos, Calif., and George P. Schmitt, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,808

Int. Cl. G03c *1/68*

U.S. Cl. 96—35.1 **15 Claims**

A photosensitive dielectric composition comprising a first polymer system formed by the photopolymerization of a multi-functional vinyl monomer, e.g., pentaerythritol tetraacrylate, in the presence of a partially cured second polymer system. The first polymer system occludes therein the second polymer system which has been finally cured, i.e., cross-linked by an ionic mechanism, subsequent to the polymerization of the first polymer system, e.g., the second polymer system can be an epoxy resin. One process for forming the above composition comprises applying a solution of pentaerythritol tetraacrylate monomer, a photosensitizer, the epoxy resin cured to the B-stage and a curing agent for the epoxy resin onto a support, selectively exposing the same to radiation to polymerize the tetraacrylate monomer, washing the same in an appropriate solvent to remove the components in areas unexposed to light and baking the assembly to cross-link the epoxy resin which is occluded within the tetraacrylate polymer.

3,776,730

TREATMENT OF AN IMAGEWISE EXPOSED AND DEVELOPED SILVER HALIDE EMULSION LAYER CONTAINING A CATALASE ACTIVE OR PEROXIDE ACTIVE CATALYST WITH PEROXIDE

Reinhart Matejec; Rudolf Meyer; Franz Moll; Erwin Ranz, all of Leverkusen, and Edith Weyde, Kurten, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 15, 1971, Ser. No. 198,961

Claims priority, application Germany, Nov. 17, 1970, P 20 56 360.4

Int. Cl. G03c *5/26*

U.S. Cl. 96—50 R **6 Claims**

A process for the production of positive photographic images comprising the steps of imagewise exposing a light-sen-

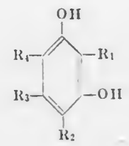
sitive silver salt emulsion layer, photographically developing to form a negative silver image in the exposed areas, treating the exposed and developed layer with a peroxide compound, the peroxide compound is left to act on the layer until it has been decomposed at the negative silver image, and forming a positive image by decomposition of the undercomposed peroxide compound in the unexposed areas of the layer.

3,776,731
DEVELOPER FOR PHOTOGRAPHIC NEGATIVES USED FOR PRINTING

Haruhiko Iwano; Katsumi Hayashi; Yoo Iijima, and Isao Shimamura, all of Minami Ashigara-Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Dec. 23, 1971, Ser. No. 211,756
Claims priority, application Japan, Dec. 24, 1970, 45/118087
Int. Cl. G03c *5/30*
U.S. Cl. 96—66.4 **8 Claims**

A developer for photographic films used for half-tone printing which contains at least one compound represented by the following formula in combination with more than 0.008 mols of sulfite ions:

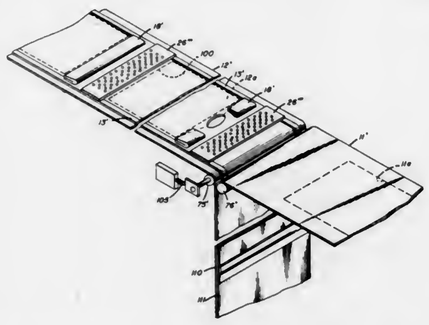


wherein R_1 and R_3 each represent a hydrogen atom, an alkyl group having one to two carbon atoms, a carboxyl group, an acetyl group having one to two carbon atoms or a hydroxyl group, and R_2 and R_4 each represent a hydrogen atom, a halogen atom, an alkyl group having one to six carbon atoms, a carboxyl group, a sulfo group, an alkoxy group having one to two carbon atoms, an acetyl group having one to two carbon atoms or a hydroxyalkyl group having one to two carbon atoms.

3,776,732
LIQUID TRAPPING MEANS FOR IN-CAMERA PROCESSED PHOTOGRAPHIC PRODUCT

David A. Frost, Rochester, and Stanley R. Schieven, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 15, 1969, Ser. No. 841,865
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C **6 Claims**



For trapping and retaining the excess processing fluid distributed between an exposed photosensitive sheet and a second sheet superposed therewith when the two are moved longitudinally between a pair of pressure-applying members to rupture a pod containing an amount of processing fluid in excess of that required to process the exposed latent image, the trailing end of at least one of said sheets is embossed to provide a plurality of protuberances for separating the opposed surfaces of the trailing ends of said sheets as they pass through the pressure-applying members and provide a space for retaining the excess processing solution. While each individual protuberance might be readily compressible, the arrangement of protuberances is such that there is a sufficient number of them between the pressure-applying members at any one time to effect a significant separation of said pressure-applying members for maintaining a separation between the superposed surfaces of the trailing ends of said sheet elements as they pass between the pressure-applying members.

3,776,733
PHOTOGRAPHIC MATERIAL OF EMULSIONS OF DIFFERENT GAMMA AND SENSITIVITY

Karl Lohmer, and Werner Verburg, both of Leverkusen, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 688,354, Dec. 6, 1967, abandoned. This application Oct. 15, 1970, Ser. No. 81,161
Claims priority, application Germany, Dec. 14, 1966, A 54364
Int. Cl. G03c *1/76*; **G03f** *5/00*
U.S. Cl. 96—68 **3 Claims**

Photographic copy of image that is partly continuous tone and partly line is made with a single exposure of entire image on combination of two silver halide emulsions carried by a supporting surface that reflects at least half the light reaching it, one emulsion having a gamma between 0.8 and 1.2 and a maximum density of at least 1.4, the other being slower than the first by at least 6° DIN, having a gamma between 2.0 and 4.0 and at least 1.0 greater than the first and having a maximum density about the same as the first. The emulsions can have their respective maximum sensitivities in different portions of the spectrum and can contain dyes that absorb in such spectrum portion to adjust respective sensitivities.

3,776,734
PHOTOSENSITIVE ALUMINUM PLATE OF IMPROVED STORAGE STABILITY

Isao Kumasaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Feb. 29, 1972, Ser. No. 230,449
Claims priority, application Japan, Mar. 2, 1971, 46/10820
Int. Cl. G03c *1/94*
U.S. Cl. 96—86 R **9 Claims**

A photosensitive aluminum plate of improved storagability in which an anodically oxidized aluminum is used as a support and a silver halide is contained as a photosensitive material in the micropores of the oxide film formed on the support by anodic oxidation.

3,776,735
LIGHT-SENSITIVE COPYING COMPOSITION CONTAINING A LIGHT INSENSITIVE POLYMER AND A LIGHT SENSITIVE HETEROCYCLIC COMPOUND

Sigrid Bauer, Hahn/Taunus; Helga Sikora, and Hans Werner Frass, both of Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 28, 1971, Ser. No. 213,154
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 R **4 Claims**

The invention relates to a light-sensitive copying composition comprising a high molecular weight light-insensitive polymer and a light-sensitive nitrogen compound containing at least one six-membered N-heterocyclic nucleus and at least one benzene nucleus.

3,776,736
STABILIZED PHOTORESIST COMPOSITION

Edmund Benjamin Davidson, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,265
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 R **4 Claims**

A photoresist composition comprising an air-drying alkyd resin, a photosensitizer, and a stabilizer consisting of methylthio-m-cresol or methylthio phenol.

3,776,737
PHOTOSENSITIVE ELEMENT COMPRISING LIGHT-SENSITIVE POLYMERS

Jack L. R. Williams; Thomas M. Laakso, and Douglas G. Borden, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 850,261, Aug. 14, 1969, abandoned. This application Aug. 5, 1971, Ser. No. 169,543
Int. Cl. G03c *1/68, 1/70*
U.S. Cl. 96—115 R **8 Claims**

A novel class of light-sensitive polymers contains recurring cyclohexadienedicarboxylate units as an integral part of, or appended to, a polymer backbone. The polymers, and photosensitive compositions and elements prepared therefrom, are utilized in the preparation of photomechanical images.

3,776,738
SILVER HALIDE EMULSIONS SENSITIZED WITH A COMBINATION OF OXAZOLINE OR DIHYDROOXAZINE CYANINE DYES AND MERCAPTO OR SELENOL COMPOUNDS

Hans Ohlschlager, Hahnenweg, and Oskar Riester, Goetheplatz, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 8, 1972, Ser. No. 224,596
Int. Cl. G03c *1/14*
U.S. Cl. 96—126 **6 Claims**

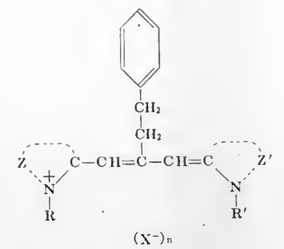
Light sensitized photographic materials containing trimethine cyanine dyes of the oxazoline and dehydrooxazine series and hypersensitizing additives of mercapto or selenol compounds which contain acid groups.

3,776,739
SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Akira Sato; Tadashi Ikeda; Yoshiyuki Nakazawa; Yashuharu Nakamura, and Haruo Takei, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 16, 1971, Ser. No. 115,550
Claims priority, application Japan, Feb. 16, 1970, 45/13284. The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.
Int. Cl. G03c *1/18*
U.S. Cl. 96—137 **5 Claims**

A spectrally sensitized silver halide photographic emulsion containing at least one sensitizing dye represented by the following general formula

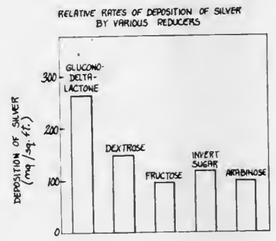


wherein Z and Z', each represents the atomic group necessary to complete a benzothiazole nucleus, a benzoselenazole nucleus or a naphthothiazole nucleus, R and R' each represents an alkyl group, a carboxyalkyl group or a sulfoalkyl group, at least one of said R and R' being a carboxyalkyl or a sulfoalkyl group, X represents an anion and n is 0 or 1, is disclosed. The emulsion is highly sensitive to red light.

3,776,740
ELECTROLESS SILVERING COMPOSITION AND METHOD

Christian Sivertz, 1123 Sunset Ave., and Joseph F. Soltys, 1094 Southdale Rd., both of London, Ontario, Canada

Continuation-in-part of Ser. No. 98,716, Dec. 16, 1970, abandoned. This application July 13, 1972, Ser. No. 271,380
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 **14 Claims**



Higher rates of silver deposition from silvering compositions such as ammoniacal silver nitrate solutions are achieved by employing as a reducer an aldonic acid having 4 – 7 carbon atoms, or a salt or lactone thereof. Preferred reducers are gluconic acid, sodium gluconate, sodium glucoheptonate or gluconо delta lactone. Since the reducer is stable in the strong base normally employed in silvering, it can be added to the strong base prior to admixing the strong base with the silvering solution.

3,776,741
FLAME-PROOF PROTECTIVE COATING FOR ELECTRICAL FILM RESISTORS

Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 724,220, April 25, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,150The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.
Int. Cl. C09d *5/18*
U.S. Cl. 106—15 FP **22 Claims**

A coating composition capable of producing coatings on resistors which do not tend to crack during and following curing comprising a prehydrolyzed tetraalkyl orthosilicate, aluminum

oxide, a suspension agent, a filler and crystalline silicon dioxide having a particle size of below 149 microns, no more than 65 percent of the silicon dioxide having a particle size less than 44 microns (pass 325 mesh), and resistors coated therewith.

3,776,742
NON-COCKLING CONDUCTIVE INK

Frederick W. Sanders, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 800,261, Feb., 1869, abandoned. This application June 15, 1971, Ser. No. 153,426
Int. Cl. C09d *11/00, 11/02, 11/16*
U.S. Cl. 106—22 **8 Claims**

An electrically conductive aqueous base ink for use in printing on a cellulose containing base member by formation of discrete droplets to provide a non-cockled print is composed of a water soluble dye, a water soluble inorganic conductive material in an amount of between 1% to 20% and compatible with the dye, a water soluble polyol present in an amount between 5% to 50%, an organic crystallizable material which acts temporarily as a plasticizer for cellulose and present in an amount between 5% and 20%, and the balance water, the ink being substantially free of particulate material larger than about 1.5 mils in diameter.

3,776,743
GLASS

Hendrikus Johan Lodewijk Trap, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporaton, New York, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,467
Claims priority, application Netherlands, Apr. 16, 1970, 7005457The portion of the term of this patent subsequent to May 16, 1989, has been disclaimed.
Int. Cl. C03c *3/10, 3/04, 3/30*
U.S. Cl. 106—53 **1 Claim**

Glass which after adjustment of the surface conductivity by heating in a reducing atmosphere is particularly suitable for use in a continuous channel dynode and which has a composition within the following limits in percent by weight:

SiO_2	20–48	PbO	25-35	combined 45–70
Al_2O_3	5	Bi_2O_3	10-35	
B_2O_3	3	CaO+SrO	8	
Na_2O	4	MgO	7	
	Combined			
K_2O	5 2–8	Sb_2O_3	2	
Li_2O	5			

3,776,744
ALUMINA-TRANSITION METAL OXIDE CERAMIC PRODUCTS OF ENHANCED DUCTILITY

Ronald L. Clendenen, Orinda, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 74,181, Sept. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 735,541, June 10, 1968, abandoned. This application June 15, 1972, Ser. No. 263,014
Int. Cl. C04b *35/10, 35/60*
U.S. Cl. 106—73.4 **3 Claims**

High-density, finely grained aluminous ceramic compositions are produced by maintaining mixtures of finely divided alumina precursors and transition metal oxide precursors under pressure at a temperature high enough to decompose the precursors to ceramic oxides but below the melting point of the resulting ceramic oxide composition. The novel ceramic compositions produced by this process are characterized by enhanced ductility at temperatures below their melting points, and are therefore useful in the production of ceramic objects by deformation processes of hot forming and the like. They can be heated to temperatures nearer their melting points for crystal growth and creep-resistance.

3,776,745
LITHIUM-BOROVANADATE GLASS FOR USE IN A SECONDARY ELECTRODE

Hendrikus Johan Lodewijk Trap, Emmasingel, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 862,446, Sept. 30, 1969, abandoned. This application Nov. 11, 1971, Ser. No. 197,940
Claims priority, application Netherlands, Oct. 2, 1968, 6814050
Int. Cl. C03c *3/14*; **H01b** *1/06*; **C03c** *3/30*
U.S. Cl. 106—54 **2 Claims**

Glass particularly suitable for use in a secondary emission electrode and comprising Li_2O, V_2O_5, B_2O_3 and possibly CaO and SiO_2, the composition in % by weight satisfying the following conditions:

$10 < V_2O_5 < 56$
$25 < B_2O_3 < 75$
$32 < (B_2O_3+SiO_2) < 75$
$9 < (Li_20+CaO) < 28$
$(Li_20+CaO) < 44/35\ (B_2O_3+SiO_2) - 26.4$

3,776,746
PROCESS FOR MANUFACTURE OF RIGID FOAMS

Kinichi Abe, 633, 1-chrome, Kasugijrnya-machi, Kawasaki, Japan

Filed June 1, 1971, Ser. No. 148,990
Claims priority, application Japan, June 4, 1970, 45/48252; June 26, 1970, 45/55209
Int. Cl. C04b *31/00*
U.S. Cl. 106—75 **16 Claims**

A process for the manufacture of a rigid foam out of a slurry containing an alkali silicate, or foaming agent, a substance which produces a gradual reaction with the alkali silicate, and other additives. It is essential that dinitrosopentamethylenetetramine be included in the slurried mixture. Such an undesired decomposition residuum as formaldehyde that may be produced by this compound is removable either by the combined use of a ureal substance or by an additional heat treatment of the slurry. To be turned into a rigid foam, this slurry is agitated at a temperature less than the boiling point thereof, succeedingly foamed and hardened, and dried.

3,776,747
HIGH TEMPERATURE RESISTANT COATING

Norman Edmund Ballard, Derby, England, assignor to Rolls-Royce (1971) Limited, Derby, England

Continuation-in-part of Ser. No. 136,537, April 22, 1971, abandoned. This application Feb. 10, 1972, Ser. No. 225,062
Claims priority, application Great Britain, Apr. 24, 1970, 19,761/70
Int. Cl. C09d *1/02*
U.S. Cl. 106—84 **3 Claims**

A composition for coating steel components, such as the compressor parts of gas turbine engines consisting essentially of from two parts to half a part by weight of potassium silicate; from one part to two parts by weight of finely divided aluminum powder, from one quarter to three quarters of a part by weight of a polyhydroxy alcohol and sufficient water to produce a viscosity of up to and including forty seconds when measured on a British Standard number 4 flow cup at 20° C.

3,776,748
METHOD OF PREPARING SURFACING COMPOSITION FOR ROADS; AIRFIELD RUNWAYS AND THE LIKE

Dennis Maunder Richards, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England

Continuation of Ser. No. 811,166, March 27, 1969, abandoned. This application June 20, 1972, Ser. No. 264,420
Int. Cl. C09d *3/24*; **C08h** *13/00, 17/02*
U.S. Cl. 106—280 **9 Claims**

A method of producing artificial roadstones for use in bituminous surfacing compositions for roads, airfield runways and the like. The artificial road-stones are produced by a method which comprises the steps of (a) extruding a mixture comprising water, a bonding material, at least 50 percent by weight of which is composed of materials capable of forming on reaction with water stable, substantially insoluble, hydrated calcium silicates and/or calcium aluminates, and a granular aggregate, and (b) hardening the extruded composition to form the desired artificial roadstones. The bonding material constitutes from 5 to 100 percent by weight of the solids in the mixture to be extruded and has a particle size distribution such that substantially all thereof passes a No.100 mesh British Standard sieve and the granular aggregate constitutes from 0 percent to 95 percent by weight of the solids in the mixture and is composed wholly or substantially wholly of material passing a ⅜ inch mesh British Standard sieve and retained on a No.100 mesh British Standard sieve.

3,776,749
DIARYLIDE PIGMENT COMPOSITIONS

Robert Bruce McKay, Kilmarnock, and Gordon Frank Bradley, Paisley, both of Scotland, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed May 6, 1971, Ser. No. 141,004
Claims priority, application Great Britain, May 6, 1970, 21,754/70
Int. Cl. C08h *17/44*
U.S. Cl. 106—288 Q **44 Claims**

A process in which a diarylide pigment composition is produced by coupling a tetrazotised pigment benzidine with a pigment coupling agent, preferably an acetoacetarylamide, and incorporating in the pigment a water-soluble coupled diarylide dyestuff, preferably prior to the isolation and drying of the pigment, and the diarylide pigment composition having better colour strength and transparency properties than conventional diarylide pigments when incorporated in printing inks.

3,776,750
CARBON BLACK PELLETING PROCESS

King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 10, 1972, Ser. No. 251,894
Int. Cl. C09c *1/58*
U.S. Cl. 106—307 **9 Claims**

A two-stage process for pelleting carbon black; in the first stage, an oil-water-carbon black mixture is formed; in the second stage, an aqueous solution is added and the black is pelleted to form soft pellets.

3,776,751
METHOD OF PRODUCING REINFORCED THERMOPLASTIC MATERIALS

John Howard Davis, Bengeo, and Brian Norman Hendy, Welwyn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 843,226, July 18, 1969, abandoned. This application Apr. 26, 1971, Ser. No. 137,705
Claims priority, application Great Britain, Aug. 6, 1968, 34,526/68
Int. Cl. B32h *31/18*; **B32b** *17/10*
U.S. Cl. 117—4 **6 Claims**

Depositing a copolymer of acrylonitrile and aromatic olefin from an emulsion onto a glass-fibre reinforcing material, separating and drying the coated reinforcing material.

3,776,752
PROCESS FOR FINISHING SURFACES

James Milton Craven, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 834,505, June 18, 1969, abandoned. This application June 29, 1971, Ser. No. 158,093
Int. Cl. B44d *1/02, 1/44*
U.S. Cl. 117—10 **8 Claims**

A novel wiping-type color composition is provided containing (A) a volatile organic liquid, (B) a dispersed polymer (e.g. an acrylic polymer) in the form of tiny solid coalescible particles which are insoluble in (A) at normal storage conditions and will not coalesce when applied at 25°C. and (C) a dispersed pigment which is present in an amount such that the (B):(C) weight-ratio is about 1:99 to 40:60. The process of applying this organosol is also claimed.

3,776,753
SYNTHETIC SUEDE FABRICS

Emile E. Habib, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 30, 1971, Ser. No. 139,234
Int. Cl. D44d *1/44*; **B06n** *3/00*
U.S. Cl. 117—11 **10 Claims**

The disclosure describes synthetic, leathery suede-like fabrics comprising a substrate and a fiber flock surface wherein the flock fibers have a coating of an abraded polymer thereon. A process for preparing these suedes is disclosed. Such synthetic suedes have improved properties over natural suedes including washability and they can be prepared in a variety of sizes and colors.

3,776,754
PRODUCTION OF LUMINESCENT SCREENS

Steven Levinos, Chatham, N.J., assignor to GAF Corporation, New York, N.Y.

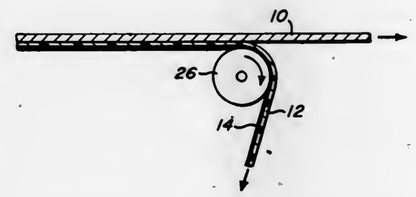
Continuation of Ser. No. 679,617, Nov. 1, 1967, abandoned. This application July 22, 1971, Ser. No. 165,319
Int. Cl. B44d *1/50*; **C08f** *3/00*; **H01j** *29/22*
U.S. Cl. 117—33.5 CM **5 Claims**

Process for the production of luminescent screens for color television tubes, the improvement comprising the use of light-insensitive ethylenically unsaturated vinyl compounds as the binder material, said compounds being capable of undergoing a hardening action when subjected to corpuscular radiation.

3,776,755
BUSINESS SHEET HAVING REMOVABLE TRANSFER MEANS AND METHOD OF MAKING

William T. Paulson, and David M. Davidson, both of Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 800,167, Feb. 18, 1969, abandoned. This application June 25, 1971, Ser. No. 156,704
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.4 **53 Claims**



A business sheet or the like carries image transfer means which is supported by a thin film or layer of tough flexible carrier material. The film or layer of carrier material is removably

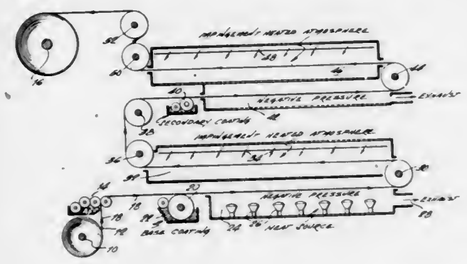
attached to the sheet and may be removed from the sheet before or after use of the transfer material. Thus, when desired, the transfer material is removed from the business sheet by removal of the carrier material and the business sheet is thus freed from the transfer material and from any problems which may be associated therewith.

3,776,756

CORRECTION MATERIAL AND METHOD FOR THE MANUFACTURE THEREOF

Victor Barouh, 935 Plum Tree Rd., West, Westbury, and Robert Glenn, 70-20 108th St., Forest Hills, both of N.Y.

Filed Feb. 1, 1972, Ser. No. 222,538
Int. Cl. B41c *1/08*; **B23p** *7/00*
U.S. Cl. 117—36.4 **6 Claims**



A method for manufacturing a correction material which utilizes a release layer top coating having a solvent which penetrates a transfer layer base coat to insinuate itself between the base coat and a substrate to permit for better and clearer transfer of material.

3,776,757

ELECTROGRAPHIC FORMATION OF DYE IMAGES

Donald R. Eastman, Rochester, N.Y.; Jonas J. Chechak, Saint Petersburg Beach, Fla., and Stewart H. Merrill, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,486
Int. Cl. G03g *13/22*, *13/10*
U.S. Cl. 117—37 LE **21 Claims**

The present invention relates to an electrographic method for the formation of water-soluble dye images. An electrostatic charge pattern is developed using a liquid developer having toner particles containing a polymeric material which is normally hydrophobic, but which is readily convertible to a hydrophilic form when contacted by an activating solution of appropriate pH. The toner particle image is formed on a hydrophobic surface and is contacted with the activating solution to convert the toner particle image to hydrophilic form. The hydrophilic toner particle image is then contacted with a water-soluble dye solution to preferentially deposit dye on the hydrophilic toner image. If desired, the dye image thus formed may be transferred to a suitable receiver element.

3,776,758

POLYMERIC FLEXOGRAPHIC INK

Donald G. Epple, Oak Lawn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Oct. 18, 1971, Ser. No. 190,028
Int. Cl. B41m *1/00*
U.S. Cl. 117—38 **4 Claims**

A rapid drying flexographic ink consisting of:

a. about 40 percent by weight of an inorganic pigment;

b. 40 – 45 percent by weight of a polymer solution/emulsion consisting of a styrene/butadiene/acrolein/acrylic acid (SBAA) tetrapolymer (30 – 40 percent by weight solids) containing as a predispersant additive 5 – 15 percent by weight of a polyacrylate; and

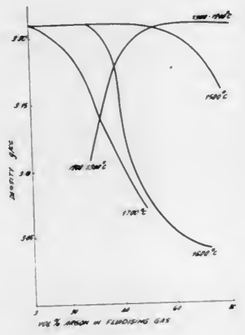
c. the balance inert diluent selected from the group consisting of water and lower alkanols.

3,776,759

PRODUCTION OF NUCLEAR FUEL PARTICLES COATED WITH SILICON CARBIDE

Lionel Houston Ford, St. Annes-on-sea, Lancashire; Roger William Davidge, Wantage, Berkshire, both of England, and Anthony Glyn Evans, Santa Monica, Calif., assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 22, 1971, Ser. No. 210,911
Claims priority, application Great Britain, Jan. 8, 1971, 1,119/71
Int. Cl. G21c *3/20*
U.S. Cl. 117—69 **6 Claims**



In the production of nuclear fuel particles carbon-coated nuclear fuel kernels are coated with silicon carbide. Deposition of the silicon carbide at a low rate increases the strength of the silicon carbide coating. It is necessary only for the outer layers to be deposited at the low rate. The temperature of deposition, the nature of the substrate and the composition of fluidising gas may be relevant factors.

3,776,760

METHOD FOR MANUFACTURING A TETRAFLUOROETHYLENE POLYMER-COATED ROLL

John R. Baker, Webster, and Edward G. Williams, Macedon, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Oct. 6, 1971, Ser. No. 187,208
Int. Cl. B44d *1/14*; **B30b** *3/00*
U.S. Cl. 117—72 **3 Claims**

Tetrafluoroethylene resin-coated fuser rolls, in which the resin is applied in a single-fusion process, for use in xerographic reproducing apparatus. The single-fusion process involves successive application of tetrafluoroethylene coats 0.6 to 0.9 mil thick until a coating of about 6 mils is attained. Between each application, the rolls are heated to about 180° F. in order to flash off water and volatile materials. The coating is fused by a single baking step at the end of the process.

3,776,761

SUPPORT FOR AN IMAGE-RECEIVING MATERIAL FOR THE SILVER SALT DIFFUSION TRANSFER PROCESS

Kazunobu Kato, and Kinji Ohkubo, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Minami, Ashigarashi, Kanagawa, Japan

Filed Apr. 21, 1972, Ser. No. 246,402
Claims priority, application Japan, Apr. 22, 1971, 46/26289
Int. Cl. C23c *9/00*, *7/00*, *5/00*
U.S. Cl. 117—76 P **8 Claims**

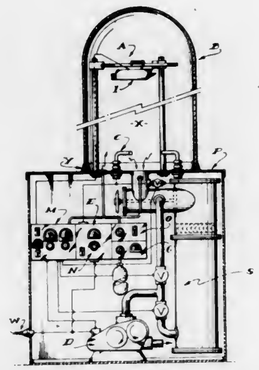
A support for an image-receiving material for the silver salt diffusion transfer process having on a paper base, in order, a polyolefin resin layer and a polyvinyl butyral layer containing a fluorescent brightening agent, is disclosed.

3,776,762

DRY LUBRICATION

John Bernath, Los Angeles, Calif., assignor to Du-Kote Corporation, Los Angeles, Calif.

Filed Oct. 18, 1971, Ser. No. 190,098
Int. Cl. B44d *1/18*; **C08f** *3/22*
U.S. Cl. 117—93.1 GD **8 Claims**



Applying a dry, lubricous, protective coating of polymerous material on the surfaces of parts in a thickness of about 100A. and in added increments thereof by cleaning the surfaces of the parts by subjecting the parts to ionic glow discharge in a low vacuum atmosphere and then coating the cleaned surfaces of the parts with polymerous material by subjecting the parts to ionic bombardment in an ionized atmosphere of fluorcarbon gas at about 6×10^{-6} Torr.

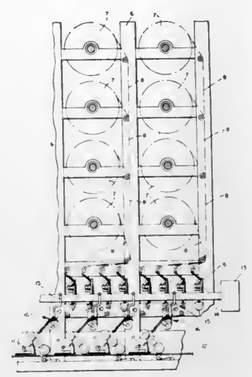
3,776,763

METHOD AND APPARATUS FOR APPLYING SMALL AMOUNTS OF LIQUID SUBSTANCE TO A WEB

Richard T. Ross, Aston, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Filed Jan. 27, 1972, Ser. No. 221,254
Int. Cl. B05b *13/02*
U.S. Cl. 117—105.3 **7 Claims**

A method and apparatus are disclosed for uniformly applying small amounts of liquid to a moving web of material. The method consists of dispersing controlled quantities of the liquid in a stream of air which is conveyed in controlled quantities to the zone of application and coalescing the liquid prior to applying it to the web. The apparatus consists of a mist generator to atomize the liquid in a stream of air, a conduit system to conduct the air stream containing the suspended droplets of the liquid to the application zone, a coalescer to convert the minute droplets of atomized liquid in the air stream to larger drops removed from their suspended state in the air stream, and an application zone where the coalesced liquid is brought into contact with the moving web of material. In the preferred use of the invention, perfume is applied to webs of tissue paper, and the method includes passing the stream of air after the perfume is precipitated from it through the tissue paper web to filter any remaining atomized perfume from the air.



3,776,764

METHOD FOR SEALING GLASS, METAL OR CERAMICS WITH MIXTURE OF PBO GLASS AND β-EUCRYPTITE CONTAINING GLASS

Kiyoshi Takagi; Susumu Kawamura, and Hiroshi Fujii, all of Otsu, Japan, assignors to Nippon Electric Glass Company, Limited, Tokyo, Japan

Filed Aug. 24, 1970, Ser. No. 47,580
Claims priority, application Japan, Aug. 25, 1969, 44/66488
Int. Cl. C03c *5/00*, *7/02*, *5/02*
U.S. Cl. 117—124 A **1 Claim**

A sealing glass comprising a primary composition suitable as a solder, having a rapid rate of crystallization at a low temperature, a high melting point and a high coefficient of expansion, and a secondary glass composition having an extremely low coefficient of expansion crystallizing at a high temperature. The two compositions are mixed in predetermined ratio and placed under sealing heat conditions where they are caused to react to produce a third composition having a crystal which is higher in melting point and sealing resistance to reheating but which is lower in coefficient of expansion.

3,776,765

PROCESS FOR PROTECTING A SUBSTRATE WITH AN N⁴-SUBSTITUTED AMINOARYLSULFONAMIDE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,133
Int. Cl. C09d *5/18*; **C09k** *3/28*
U.S. Cl. 117—136 **5 Claims**

Intumescent compositions of the invention comprise certain N⁴-thiazolyl, isothiazolyl, oxazolyl, and isoxazolyl aminoarylsulfonamides, such as N⁴-2-thiazolylsulfanilamide, N⁴-5-isothiazolylsulfanilamide, N⁴-2-oxazolylsulfanilamide, N⁴-5-isoxazolylsulfanilamide, and derivatives thereof. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied to the substrates in any suitable manner, such as by electrodeposition, spraying onto an adhesive substrate, or application of a coating composition comprising the intumescent agent.

3,776,766

PROCESS FOR IMPROVING THE PROCESSING PROPERTIES OF POLYESTER FILAMENTS AND FIBRES

Otto Smerz, Kelkheim/Taunus; Werner Linke, Sulzbach/Taunus; Alfred Scharf, Frankfurt/Main, and Peter Hess, Kelkheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Nov. 17, 1971, Ser. No. 199,796

Claims priority, application Germany, Nov. 18, 1970, P 20 56 695.4

Int. Cl. D06m *13/20, 13/52*

U.S. Cl. 117—138.8 F 3 Claims

A process for improving the processing properties of polyester filaments by treating the freshly-spun filaments before being drawn with an aqueous solution or emulsion of a condensation product of 1 mole of a 1,4-butane-diol-polyglycol ether and 2 moles of a fatty acid.

3,776,767

PROCESS FOR IMPROVING THE CREASE RESISTANCE AND THE ABRASION RESISTANCE OF A TEXTILE MATERIAL

Arthur Buehler, Rheinfelden; Hans Ulrich Schuetz, Basel; Dieter Maeusezahl, Allschwil; Melvin Harris, Arlesheim, and Christian Guth, Basel, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Continuation of Ser. No. 768,495, Oct. 17, 1968, abandoned. This application Jan. 5, 1971, Ser. No. 104,142

Claims priority, application Switzerland, Oct. 24, 1967, 14826/67

Int. Cl. D06m *13/00*

U.S. Cl. 117—139.4 6 Claims

This invention provides new condensation products which are obtained by reacting a monocyclic or dicyclic heterocyclic compound having 5 to 7 ring members, at least two members being nitrogen and at least two halogen atoms being linked directly with the carbon atoms of the hetero ring, with a thiourea compound, an alkali metal or ammonium hydrogensulfide and a mono- or dialkanolamine.

These condensation products are useful in combination with aminoplast precondensates for improving the crease resistance and the abrasion resistance of a textile material.

3,776,768

STRENGTHENED FIBRE FLEECES

Hans Weitzel, and Hellmut Striegler, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 8, 1971, Ser. No. 122,145

Claims priority, application Germany, Mar. 14, 1970, P 20 12 287.6

Int. Cl. B32b *27/12*; C09d *3/80*

U.S. Cl. 117—140 A 3 Claims

The object of the invention is a strengthened fibre fleece from staple fibres containing as strengthening agent a copolymer based on acrylic and/or methacrylic acid esters and styrene. The copolymer contains additionally in copolymerised form a monomer having nonconjugated carbon double bonds, acrylic acid and methacrylic acid, and methacrylamido-N-methylolmethylether. In a process for producing the strengthened fibre fleece, the fibre fleece is impregnated with an aqueous dispersion of the copolymers and subsequently dried at temperatures between 60° and 130°C.

3,776,769

METALLISING PASTES

Raymond Herbert Buck, Newbury, and Harry Campbell Barlow, Basingstoke, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 2, 1971, Ser. No. 168,466

Claims priority, application Great Britain, Aug. 27, 1970, 41,275/70

Int. Cl. B44d *1/18*; C09d *5/24*

U.S. Cl. 117—212 6 Claims

A metallising paste for screen-printing microcircuitry comprises a heat-vaporizable inert liquid medium containing, in powder form, at least one constituent selected from a noble metal, a noble metal alloy, an oxide of a noble metal and an oxide of a noble metal alloy, at least one constituent selected from copper and copper oxide, and a vitreous binder, the binder having a fusion temperature less than the melting temperature of the noble metal - copper oxide alloy formed on fusing the powder constituents of the paste. The noble metal is usually Ag or Au and the noble metal alloy a Ag-Au alloy.

3,776,770

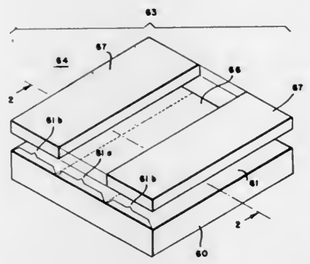
METHOD OF SELECTIVELY DEPOSITING A METAL ON A SURFACE OF A SUBSTRATE

David Jacob Lando, Lawrence Twsp., Mercer City, N.J., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,633

Int. Cl. B44d *1/50*; H05k *3/12*

U.S. Cl. 117—212 10 Claims



A method of selectively depositing a metal on a surface of a substrate is disclosed. The method comprises sensitizing the surface with a photosensitive sensitizing solution selected from the group of sensitizing solutions comprising (a) an aqueous solution comprising Sn^{+2} ions, Sn^{+4} ions and HF, (b) an aqueous solution comprising Pb^{+2} ions, Pb^{+4} ions and HF, (c) an aqueous solution comprising Ti^{+2} ions, Ti^{+4} ions, and HF and (d) an aqueous solution comprising Fe^{+3} ions and HF. The sensitized surface is then selectively exposed to a source of short wavelength ultraviolet radiation (less than 3,000A) to form a latent pattern capable of reducing an activating metal from an activating metal salt. The ultraviolet radiation pattern delineated or formed substrate is then treated with a solution comprising the activating metal salt, to deposit on the pattern the activating metal. The activating-deposited surface is then exposed to an electroless plating bath, which is catalyzed by the reduced activating metal, to produce an electroless metal-deposited pattern.

3,776,771

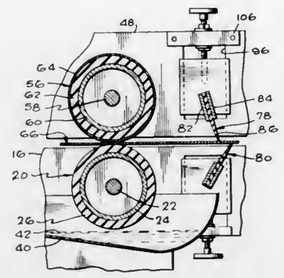
METHOD FOR ETCH RESIST COATING OF PLATED HOLES IN PRINTED CIRCUIT BOARDS

David Shepard, 2525 W. Washington Blvd., Los Angeles, Calif.

Filed Feb. 9, 1972, Ser. No. 224,805

Int. Cl. B44d *1/06*

U.S. Cl. 117—212 6 Claims



Etch resist coating is applied into the plated holes in a printed circuit board by dipping the board in a liquid etch resist solution of fairly low viscosity, squeezing the etch resist into the holes by pressing the board between opposed press rolls, followed by first squeegeeing the top and then the bottom of the board to wipe both surfaces, This results in a resist-coated hole.

3,776,772

ELECTRICAL RESISTANCE COMPOSITION AND RESISTANCE ELEMENT

Eiichi Asada, Sakuradai, and Minoru Nakagome, Tokyo, both of Japan, assignors to Shoei Chemical Industries Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1971, Ser. No. 199,462

Claims priority, application Japan, Nov. 17, 1970, 45/101207

Int. Cl. B44d *1/02*; B05c *7/14*

U.S. Cl. 117—227 5 Claims

An electrical resistance composition has been provided using particles of ruthenium oxide which are coated with niobium and/or niobium oxide, and a glass frit.

3,776,773

TISSUE PAPER MOISTENING

John R. Taft, Duxbury, Mass.

Filed June 10, 1971, Ser. No. 151,846

Int. Cl. A61l *3/00*; B05b *13/02*; B08b *7/00*

U.S. Cl. 134—6 10 Claims

A generally vertical planar member below a roll of toilet tissue paper defines a target area backing a sheet of tissue to be moistened. The vertical member carries a retractable arm which swings out to position a source of liquid for moistening having a nozzle opposite the center of the target area at a distance from the tissue comparable to the tissue width for spraying a sheet of tissue substantially uniformly to wet it without disintegrating it, typically with a mixture of propylene glycol and water.

3,776,774

PROCESS FOR INTERNAL CLEANING OF EXTRUDERS

Donald N. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1972, Ser. No. 248,958

Int. Cl. B08b *7/00, 9/00*

U.S. Cl. 134—7 11 Claims

A process and an extruder cleaning composition for removing deposits of encrusted and decomposed material at elevated temperatures from the interior surfaces in contaminated zones of an extruder. The extruder cleaning composition comprises (1) discrete, crushable particles of a highly crystalline thermoplastic first polymer having a high brittle point and (2) a thermoplastic second polymer which has a melting point below said brittle point and which upon heating above its said melting point forms a fluid-phase carrier for said particles, said highly crystalline polymer having a melting point up to about 350°C. One method of operating the process comprises charging the composition into the inlet of the barrel of an extruder while the extruder is operated at barrel temperatures which ahead of and in its contaminated zones are above the melting point of the second polymer and below the brittle temperature of the first polymer, melting the second polymer in the barrel ahead of said contaminated zones, crushing the first polymer in said contaminated zones and thereafter melting said crushed polymer in the barrel, and removing the composition from the outlet of the barrel in melted form along with loosened deposits occluded therein.

3,776,775

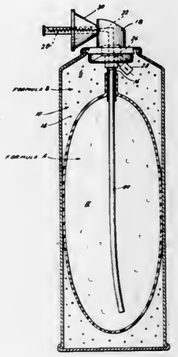
REMOVAL OF ICE BY A SELF-HEATING MIXTURE

Stokes Lazarus, Harrisburg, Pa., assignor to Aeroseal Corporation, York Haven, Pa.

Continuation-in-part of Ser. No. 147,822, May 28, 1971, abandoned. This application Dec. 14, 1971, Ser. No. 207,855

Int. Cl. C09k *3/18*

U.S. Cl. 134—42 15 Claims



Ice is removed from a windshield or the like by spraying onto that surface an at least partially reacted mixture in droplet form of two dissimilar chemical compositions which react chemically to generate heat. The two compositions are stored in separate compartments of a dispensing container, preferably of the aerosol type, and when the dispensing valve is opened the two compositions are mixed in predetermined proportions and expelled from the container. Means may be provided in the container to control the relative flow rates of the two compositions thereby to determine the proportions in which they are mixed. Means may be provided in the valve to retain the mixed compositions in the container for a period of time sufficient to provide for a desired degree of reaction between them.

3,776,776

GOLD-COATED PLATINUM-METAL BLACK CATALYTIC STRUCTURE AND METHOD OF PREPARATION

Henry G. Petrow, Cambridge, Mass., assignor to Prototech Company, Burlington, Mass.

Filed Jan. 21, 1972, Ser. No. 219,882

Int. Cl. H01m *27/04*

U.S. Cl. 136—86 E 8 Claims

This disclosure is concerned with a novel gold-coated platinum-metal black catalytic structure, such as a fuel cell

electrode and the like, formed by growing colloidal gold oxide upon the black and reducing the same.

3,776,777

UNITARY ASSEMBLY OF SERIALLY CONNECTED FUEL CELLS

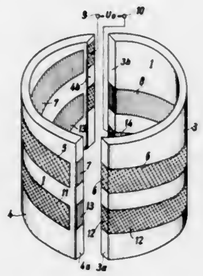
Bernd Houpert, and Andreas Reich, both of Heidelberg, Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Germany

Filed May 19, 1972, Ser. No. 255,060

Claims priority, application Germany, May 21, 1971, P 21 25 208.4

Int. Cl. H01m 27/16

U.S. Cl. 136—86 R **16 Claims**



A unitary assembly of serially connected fuel cells is provided comprising a fuel cell electrolyte of solid material formed in two mating semi-cylindrical bodies, with the electrodes of the fuel cells arranged in a spiral pattern in opposed relationships on opposite sides of the electrolyte bodies. The semi-cylindrical bodies are joined together at abutment surfaces in a gas-tight relationship to form a cylinder through which a gaseous fuel flows, with the exterior of the cylinder being exposed to a gaseous oxidant. The electrodes extend across the abutment surfaces of the semi-cylinders, and when the semi-cylinders are assembled, selected electrodes are placed in electrical contact internally of the fuel cell assembly to effectseries interconnection between the individual fuel cells of the assembly.

3,776,778

COLLECTIVE DRY CELL UNIT

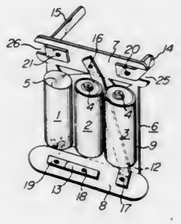
Kuninori Azuma, Ikoma, and Miyoji Nakai, Neyagawa, both of Japan, assignors to Matsushita Electric Industry Co., Ltd., Osaka, Japan

Filed Jan. 31, 1972, Ser. No. 222,022

Claims priority, application Japan, Feb. 3, 1971, 46/5408; Feb. 3, 1971, 46/5409

Int. Cl. H01m 5/00

U.S. Cl. 136—132 **6 Claims**



A collective dry cell unit comprising a plurality of dry cells arranged in parallel positions, connecting leads for connecting the terminals of different polarities of adjacent cells, a plurality of take-out leads each having an end connected to the terminal of the dry cell positioned at the extreme right or left and the other end extended outward, a pair of fixing plates of insulating material and a housing for containing the dry cells; characterized in that each of the leads is fixed on the fixing plates and the pair of fixing plates is connected with each other by at least one of the leads, whereby the fixing plates are pressed inwardly thereby to maintain each lead in contact with the terminal of a dry cell.

3,776,779

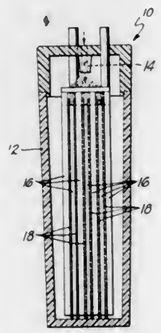
GELLED BATTERY ELECTROLYTE CONTAINING A POLYGLYCOL POLYMER AND A PROCESS FOR LOCATING SAME WITHIN A LEAD-ACID CELL

Bruce L. Johnson, Newport Beach, Calif., assignor to Elpower Corporation, Santa Ana, Calif.

Filed Apr. 28, 1972, Ser. No. 248,536

Int. Cl. H01m 9/00

U.S. Cl. 136—157 **12 Claims**



A gelled battery electrolyte of a non-thixotropic character resistant to cracking and shrinking can be formed utilizing aqueous sulfuric acid, silica serving as a gelling agent for this acid and a polyglycol, preferably polyethylene glycol, as an additive-stablizer for the gel. The amounts of the silica and the polyglycol used will depend upon the physical and electrical properties desired in the battery. Preferably the electrolyte is formed by placing the polyglycol in an inlet to a battery so that it will be mixed with sulfuric acid and the silica as a dispersion of the two is directed into the battery so as to fill the battery. The polyglycol may, also, be located on battery parts prior to filling or a solution of the polyglycol can be injected into the electrolyte solution during filling.

3,776,780

MAGNETIC THERMOCOUPLE DEVICE

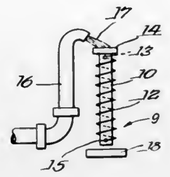
Jerome J. Kanter, 12300 Hobart Ave., Palos Park, Ill.

Continuation-in-part of Ser. No. 783,486, Dec. 13, 1968, abandoned. This application Jan. 17, 1972, Ser. No. 218,131

Int. Cl. H01v 1/14

U.S. Cl. 136—228 **12 Claims**

A non-magnetic metal wire is wound around a dissimilar magnetic metal core member in magnetic inductive relation and the dissimilar metals are connected at spaced junctions. A difference in temperatures between the junctions results in the



magnetization of the magnetic metal. When one junction of the device is heated, for example, the magnetic metal, for example a ferro-magnetic metal, provides a magnetic field.

3,776,781

THERMOCOUPLE WITH NICKEL-SILICON-MAGNESIUM ALLOY NEGATIVE ELEMENT

Carrol Dean Starr, Whippany, and Teh Po Wang, North Caldwell, both of N.J., assignors to Wilbur B. Driver Co., Newark, N.J.

Division of Ser. No. 173,671, Aug. 20, 1971. This application Apr. 12, 1973, Ser. No. 350,641

Int. Cl. H01v 1/22

U.S. Cl. 136—239 **5 Claims**

A nickel-base alloy, useful as a negative thermoelement, is disclosed. The alloy consists essentially of from about 3.25 to about 5.0 percent by weight of silicon and from about 0.03 to about 0.25 percent by weight of magnesium and the balance nickel. The new alloy is more oxidation resistant and has a greater EMF stability than existing type K negative thermoelements.

3,776,782

POLYESTER AND POLYAMIDE ADHESION IMPROVERS

Thomas J. Kiefer, Ambler, Pa., and Masamichi Nagatani, Tokyo, Japan, assignors to Amchem Products, Inc., Ambler, Pa.

Filed Mar. 15, 1971, Ser. No. 124,562

Int. Cl. C23f 7/08

U.S. Cl. 148—6.15 Z **11 Claims**

Prior to applying an alkyd paint to a metallic surface or to a pre-paint coating covering a metallic surface, there is applied to said surface or said coating a polyester or a polyamide for the purpose of improving the adhesion of said paint. The polyester or polyamide can be applied from an aqueous rinse solution or from a final rinse solution.

3,776,783

ALUMINUM COATING

Reddi Venkata S., Hollywood, Calif., assignor to Michael N. Marosi, Encino, Calif.

Filed Oct. 29, 1971, Ser. No. 194,031

Int. Cl. C23f 7/00

U.S. Cl. 148—6.27 **5 Claims**

This invention relates to an improved method of providing a color coating on the surface of aluminum products as a protection against corrosive action and for a decorative coating, the method comprising treating the aluminum products with a solution containing an aldehyde and an alkali.

3,776,784

METHOD OF PROCESSING STAINLESS STEEL STRIPS OR SHEETS

Wilson S. Rowe, Valparaiso, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed July 14, 1972, Ser. No. 271,881

Int. Cl. C21d 9/46

U.S. Cl. 148—12 **2 Claims**

A process for producing stainless steel sheet and strip by hot rolling a stainless steel slab to conventional hot band gauge and then cold rolling the hot rolled steel without removing the mill scale formed during hot rolling and thereafter continuous annealing and pickling the cold rolled steel at an annealing temperature in excess of 1,700°F and at line speeds up to 50 percent faster than previously possible.

3,776,785

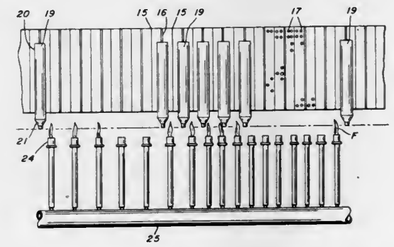
TUBE ANNEALING APPARATUS AND METHOD

Milton H. McCann, Wheeling, W. Va., assignor to Wheeling Stamping Company, Wheeling, W. Va.

Filed Dec. 21, 1971, Ser. No. 210,502

Int. Cl. C21d 1/08

U.S. Cl. 148—13 **5 Claims**



An apparatus and method for annealing thin-walled metal tubes which comprise a body portion and a tapered shoulder portion which has a relatively thickened wall. The tubes are disposed upon a transport conveyor which rapidly moves tubes through an annealing furnace wherein a first heat source is disposed for maintaining a uniform high temperature within the chamber, and wherein a second heat source comprising a plurality of combustion flame burners are disposed within the chamber along the path of travel of the conveyor. The flame emanating from the second combustible flame burners is directed upon the shoulder portion of the tubes which are passed through the annealing furnace. The tubes are rapidly brought to the annealing temperature without rupture or deformation of the thin-walled tubes.

3,776,786

METHOD OF PRODUCING HIGH SPEED TRANSISTORS AND RESISTORS SIMULTANEOUSLY

James L. Dunkley, and Bruce E. Smith, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

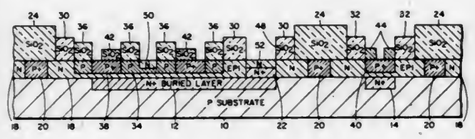
Filed Mar. 18, 1971, Ser. No. 125,648

Int. Cl. H01l 7/44

U.S. Cl. 148—175 **8 Claims**

When transistors and resistors are provided on a chip or a wafer to become the electrical components of a digital or linear circuit, the emitter and collector regions must be etched simultaneously utilizing conventional photoresist techniques. In accordance with the prior art, the silicon dioxide layer over the area where the collector-contact is to be provided is substantially thicker than the silicon dioxide layer over the area where the emitter is to be provided, whereby the total time of etch must be great enough to etch the thicker silicon dioxide layer over the collector contacts, whereby the thinner layer is overetched, resulting in undercutting of the silicon dioxide layer in an umpredictable manner. The resulting emitters are larger in area than desired, resulting in a transistor having an

emitter that is larger and therefore slower than is desired. A method of producing a transistor and a resistor on a chip is disclosed in which the thickness of the layers of silicon dioxide over the base and collector areas and over the resistor areas are more nearly equal prior to the emitter-collector photoresist operation, whereby overetching is greatly reduced when



the holes are etched through the silicon dioxide layers in the production of the emitter and collector contacts. Furthermore, the silicon dioxide layer is grown, rather than being chemically deposited, since the grown silicon dioxide layer is denser, purer, and less likely to have pinholes therein than deposited silicon dioxide layers that have been used in the prior art.

3,776,787

GRANULAR PROPELLANT CONTAINING KNO_3 AND UNSATURATED ESTER

Herbert Leslie Wood, West Kilbridge, Scotland, assignor to Imperial Chemical Industries, Limited, London, England

Filed Nov. 9, 1972, Ser. No. 304,948

Claims priority, application Great Britain, Nov. 23, 1971, 54,453/71

Int. Cl. C06b *19/02*

U.S. Cl. 149—7 **12 Claims**

A propellant of improved ballistic efficiency for small arms ammunition comprising potassium nitrate and, as surface moderant, a non-saturated ester having at least two ester groups and at least two —C=C— groups in its molecule.

3,776,788

METHOD OF PRODUCING INSULATED SEMICONDUCTOR REGIONS

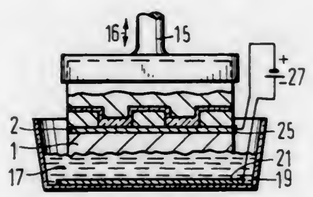
Heinz Henker, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 22, 1971, Ser. No. 126,724

Claims priority, application Germany, Mar. 20, 1970, P 20 13 546.0

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **4 Claims**



A process for producing insulated semiconductor regions. To produce an insulated region on a semiconductor wafer, a semiconductor substrate of one conductance type is etched to the region of opposite conductance type. The etching process stops at the pn-junction. The polycrystalline semiconductor layer is separated by the etchant through an insulating layer. The invention is particularly suitable for the production of multiple structures in a semiconductor wafer.

3,776,789

METHOD FOR PROTECTING GaAs WAFER SURFACES

Jagtar S. Basi, Wappingers Falls, and Edward M. Hull, Legrangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1972, Ser. No. 248,874

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **5 Claims**

A process for the protecton of gallium arsenide surfaces comprises treating the surface with sodium oxychloride solution to form an interim protective film and subsequently removing the protective film utilizing sodium oxychloride and sodium carbonate prior to further processing.

3,776,790

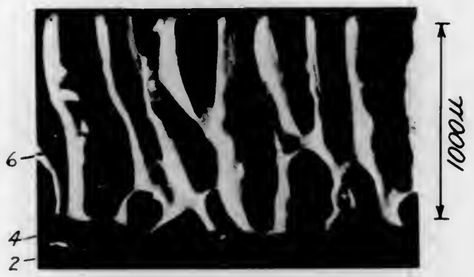
SUEDE-LIKE MATERIALS

Gene Norman Harrington, Monmouth, Maine, and Frank Peter Civardi, Wayne, N.J., assignors to Inmont Corporation, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,173

Int. Cl. B32b *5/20*

U.S. Cl. 156—79 **16 Claims**



A suede-like material is produced by expanding a thin layer of fused deaerated vinyl plastisol, containing a blowing agent, on a backing to form a layer of vertically elongated cells covered by a thin skin, which is then removed by abrasion.

3,776,791

PISTON VALVE

Ludovicus Hendrikus Baghuis, Vliedberg, Vlijmen, Netherlands, assignor to D. Stempel AG, Frankfurt am Main, Germany

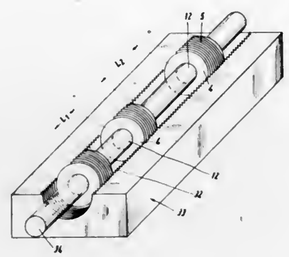
Original application Nov. 17, 1969, Ser. No. 877,382, now Patent No. 3,599,672. Divided and this application Oct. 29, 1970, Ser. No. 85,250

Claims priority, application Germany, Nov. 16, 1968, P 18 09 319.1

Int. Cl. F16k *11/07*

U.S. Cl. 156—91 **2 Claims**

A method for manufacturing a piston valve in a housing fitted with boreholes to add or withdraw a pressure fluid, and provided with a threaded bore therethrough into which at least two sleeves are threadedly received therein in spaced relationship to each other by means of an expanding mandrel, and cemented therein with a synthetic resin adhesive, and then removing the expanding mandrel from the central bores of said sleeve members when the



synthetic resin adhesive has hardened and said sleeve members have become fixed in place.

3,776,792

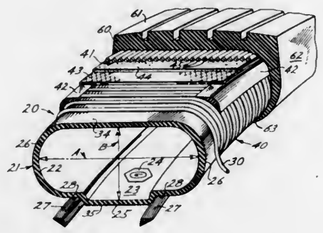
METHOD FOR FORMING BELTED OVAL PNEUMATIC TUBE-TIRES

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Original application June 23, 1969, Ser. No. 835,499. Divided and this application Feb. 25, 1971, Ser. No. 119,022

Int. Cl. B29h *5/01, 17/04*

U.S. Cl. 156—124 **24 Claims**



A pneumatic tube-tire is fabricated by applying inextensible reinforcing filaments on an oval toroidal tube member which has its major axis parallel to the axis of revolution of the resulting tube-tire carcass and providing the resulting reinforced tube-tire carcass with an inextensible circumferential belt (i.e. one that is circumferentially inextensible) about its outer periphery to maintain the tube-tire carcass in its oval configuration when the tube-tire is pressurized. The inextensible circumferential belt may be associated with rubber stock forming the tread of the tube-tire and can be formed separately or integrally with the tube-tire carcass. Preferably, the circumferential belt will contain inextensible reinforcing filaments which are oriented generally parallel to the mid-circumferential plane of the tube-tire and generally normal to the reinforcing filaments surrounding the tube-tire carcass. Spaced apart roll restraining hoops are placed within the reinforcing filaments surrounding the tube-tire carcass for lateral stability.

3,776,793

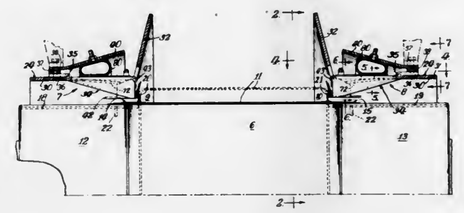
METHOD OF INCORPORATING TIRE BEADS INTO A TIRE

Larry C. Frazier, Sun City, Ariz., assignor to National-Standard Company, Niles, Mich.

Original application Feb. 19, 1970, Ser. No. 12,774, now Patent No. 3,645,827. Divided and this application Nov. 3, 1971, Ser. No. 195,147

Int. Cl. B29h *17/12, 17/22*

U.S. Cl. 156—132 **2 Claims**



Method of building a tire in which tire carcass material is formed with tire bead shoulders from which outer end portions of tire carcass material extend, supporting tire beads concentrically at the tire bead shoulders, freeing the support of the tire beads while maintaining the tire beads against the tire bead shoulders and partially encase the tire beads in the outer end portion of the tire carcass material, and then displacing the outer end portions of the tire carcass material over the tire beads and onto the tire carcass material at the tire beads to fully encase the tire beads.

3,776,794

REINFORCED FLEXIBLE HOSE AND METHOD OF MANUFACTURING SAME

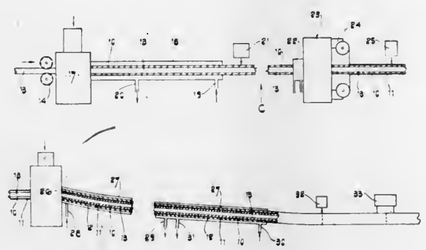
Kenneth Ingham, Stainsacre, England, assignor to Winster Hose Limited, Ilkeston, England

Filed Apr. 28, 1971, Ser. No. 138,261

Claims priority, application Great Britain, Apr. 28, 1970, 20,262/70

Int. Cl. B29h *7/14*

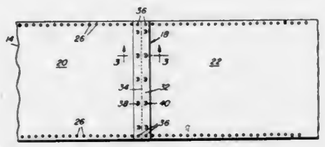
U.S. Cl. 156—143 **11 Claims**



Flexible reinforced hose is manufactured by extruding curable material onto a mandrel to form a tubular inner part of the hose, applying a wire reinforcement about the inner part, extruding a further layer of curable material about the reinforcement to form a tubular outer part. The assembly is then heated to cure the inner and outer parts simultaneously, with the assembly supported as a catenary during an initial part of the curing treatment

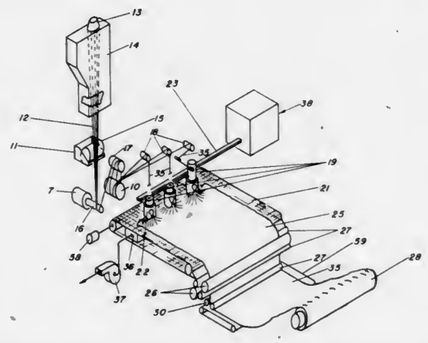
to avoid imparting a non-rectilinear set to the hose. The respective co-efficients of thermal expansion of the mandrel and of the reinforcement are such that mandrel expands radially relative to the reinforcement as the assembly is heated, with the result that material from the inner part is forced into interstices in the reinforcement and a closely embracing and surface keying relation is established between the reinforcement and the inner part of the hose.

3,776,795
METHOD OF JOINING THE ENDS OF MULTI-LAYER PRINTING FORMS
Elbert H. Stevenson, Stratford, Conn., assignor of a fractional part interest to Frederick H. Rehm, Stamford, Conn.
Continuation-in-part of abandoned application Ser. No. 824,776, May 15, 1969. This application Apr. 9, 1971, Ser. No. 132,656
Int. Cl. B31f *5/06;* **B41j** *13/00, 5/04*
U.S. Cl. 156—157 **10 Claims**



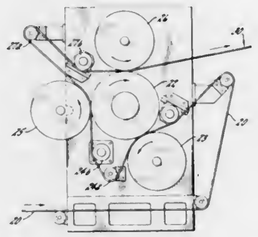
This disclosure relates to a method and means for joining the ends of multi-layer printing forms so as to provide a continuous supply of printing media to high speed printing machines. The end of one strip of multilayer forms is positioned with the front edge of the next strip in aligned abutting relation. Then a strip of adhesive material is applied across an outer sheet or layer of each strip. Then one or both forms are partially perforated leaving a partially folded over tab which holds the under layers in aligned relation to the outer sheet.

3,776,796
PROCESS AND APPARATUS FOR PRODUCTION OF A NONWOVEN WEB
Walter Peter Lipscomb and Garland L. Turner, Chesterfield, Va., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Sept. 28, 1971, Ser. No. 184,542
Int. Cl. D04h *3/05*
U.S. Cl. 156—181 **28 Claims**



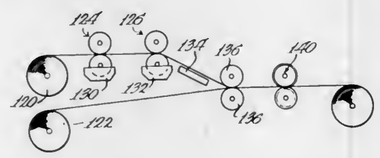
Method and apparatus for producing a nonwoven web. Continuous polymer filament is melt spun, treated with a substantially permanent anti-static agent, drawn uniformly about a slowly rotating draw pin, and splayed onto a conveyor by reciprocation of a series of air jet aspirators, each employing an aspirating medium which is introduced into each aspirator and flows through each aspirator in a direction substantially parallel with the aspirator axis, to form a nonwoven web, which is thereafter fusion-bonded between rolls. Filaments having different properties may be used.

3,776,797
NONWOVEN ROLL TOWEL MATERIAL AND METHOD OF PRODUCING THE SAME
Gordon D. Thomas, Neenah, and James Tyson Gresham, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Original application Dec. 23, 1968, Ser. No. 786,270, now abandoned. Divided and this application May 24, 1971, Ser. No. 146,512
Int. Cl. B31f *1/00*
U.S. Cl. 156—220 **8 Claims**



A nonwoven roll towel material including a central layer of an open mesh crossed thread fabric comprising resilient warp threads extending in the machine direction, and substantially non-resilient fill threads extending in the transverse direction. The thread count is in the range of from about 1.5 to about 5 threads per inch in both directions. A multi-ply layer of cellulosic tissue is bonded to each of the opposite faces of the central layer, and the resulting composite material is heavily embossed. The preferred embossing technique comprises passing a web of the composite material through two or more embossing stations on the surface of a single embossing roll, and drawing the web away from the surface of the embossing roll between successive stations. This technique produces two or more embossments repeated continuously along the length of the composite material and out of register with each other.

3,776,798
METHOD OF MAKING POUCHES
Gerard M. Milano, Glen Ellyn, Ill., assignor to Arvey Corporation
Continuation-in-part of abandoned application Ser. No. 69,670, Sept. 4, 1970. This application Jan. 31, 1972, Ser. No. 221,982
Int. Cl. B32b *7/14, 31/18*
U.S. Cl. 156—269 **9 Claims**

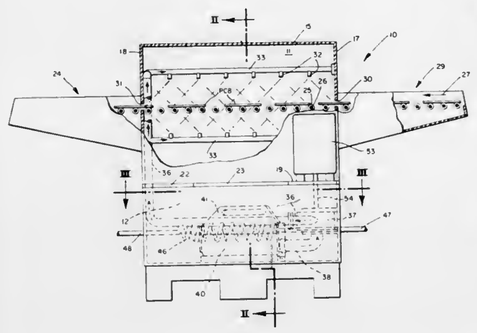


A method of simultaneously producing a plurality of plural walled members by applying localized areas of adhesive to a first continuous web of one material, feeding a second continuous web of material in super-posed relation to the first web with the adhesive located between the webs, pressing the webs into engagement with each other to adhere the webs along at least some of localized areas of adhesive, severing the adhered webs along spaced lines to produce a plurality of plural walled members capable of being transformed into pouches.

3,776,799
PROCESS FOR BONDING THE FIBERS OF A NON-WOVEN TEXTILE FABRIC
Ehrenfried Gruber, Wiesbaden-Biebrich, Ludwig Klenk, Hallgarten, and Klaus-Dieter Hammer, Finthen, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
No Drawing. Filed May 2, 1972, Ser. No. 249,543
Claims priority, application Germany, May 5, 1971, P 21 22 142.1
Int. Cl. C09j *5/00*
U.S. Cl. 156—305 **3 Claims**

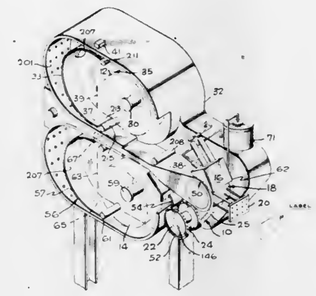
A bonded non-woven textile fabric is made by incorporating in the fabric an aqueous thermosensitive liquid containing an elastic polymer capable of binding the fibers of the fabric and the polymer is differentially coagulated throughout the thickness of the fabric by applying coagulating heat conditions to one surface and non-coagulating heat conditions to the other surface, the coagulating heat conditions being induced by a heat-carrying liquid, and uncoagulated polymer being then removed by washing out.

3,776,800
ETCHING APPARATUS
Daniel L. Goffredo, Riverton, N.J., and Conrad Dale Shakley, Spring Mills, Pa., assignors to Chemut Corporation, State College, Pa.
Filed Dec. 6, 1971, Ser. No. 205,202
Int. Cl. H05k *3/06*
U.S. Cl. 156—345 **8 Claims**



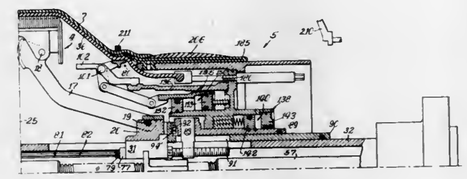
An etching apparatus is provided, in which articles, such as printed circuit boards and various other types of articles may be etched, within a chamber, during their movement through the chamber of the etching apparatus. Disposed beneath the chamber is a reservoir or sump for collecting etchant, or treatment fluid that is sprayed onto the articles as they are being conveyed through the chamber, with the sump or reservoir extending laterally of that portion of the apparatus directly beneath the chamber, for ease of top access to the reservoir, through a removable access opening therein, for ready access to a removable and replaceable filter disposed within the reservoir, near the inlet to an etchant pump also disposed therein. All of the etchant plumbing is contained within the apparatus, for internal collection of the etchant in the event of leakage or the like.

3,776,801
LABELING APPARATUS
Herbert La Mers, Los Angeles, Calif., assignor to R. A. Jones & Company, Inc.
Original application Aug. 30, 1968, Ser. No. 756,651, now Patent No. 3,661,625. Divided and this application Nov. 13, 1970, Ser. No. 89,492
Int. Cl. B32b *31/18*
U.S. Cl. 156—350 **19 Claims**



Apparatus for applying labels to goods comprising an elongated web with labels spaced therealong and supported within the web, and means for transporting said web to a first station where glue is applied to the labels and to another station where the labels are punched out of the web and pressed against the goods.

3,776,802
TIRE BUILDING APPARATUS
Edwin E. Mallory, Niles, Mich., and Emerson C. Bryant, South Bend, Ind., assignors to National-Standard Company, Niles, Mich.
Filed Aug. 23, 1971, Ser. No. 173,769
Int. Cl. B29h *17/12, 17/16*
U.S. Cl. 156—420 **18 Claims**



A tire building apparatus embodying an expandable and contractable intermediate drum, end drum assemblies at opposite ends of the intermediate drum for supporting tire carcass material and tire bead supporting and locking means at the inner ends of the end drums in an arrangement including carrier means and in which the tire bead supporting and locking means may be positioned with respect to the carrier means in equidistant axially spaced apart relation with respect to the transverse centerline of the intermediate drum, and concentrically of the longitudinal axis of the apparatus, and in which the tire bead

supporting and locking means in operative position lock tire beads inwardly of the ends of the tire carcass material.

3,776,803

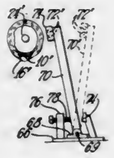
JACKETED FIBROUS DUCT AND METHOD AND APPARATUS FOR APPLYING THE JACKET TO THE DUCT

Ronald E. Kissell, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation

Original application Mar. 17, 1969, Ser. No. 807,761, now Patent No. 3,607,496. Divided and this application May 28, 1971, Ser. No. 147,905

Int. Cl. B29c *27/14*

U.S. Cl. 156—499 **9 Claims**



The disclosure embraces a rigid duct of bonded fibers sheathed or encased in a heat-shrunk jacket and involves a method of and apparatus for applying a tubular jacket of a suitable heat-shrinkable organic film onto the fibrous duct and applying heat to the end regions of the jacket and throughout the length of the jacket whereby the same is heat-shrunk or contracted to snugly engage and enclose the exterior surfaces of the fibrous duct.

3,776,804

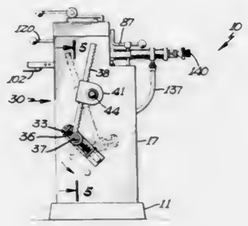
INTERMITTENT DRIVE MECHANISM

Thomas J. Monahan, Swansea, Mass., and Richard C. Adams, West Barrington, R.I., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Continuation-in-part of abandoned application Ser. No. 81,369, Oct. 16, 1970. This application June 10, 1971, Ser. No. 151,842

Int. Cl. B30b *15/34;* **B32b** *31/00*

U.S. Cl. 156—515 **4 Claims**



Means for intermittently advancing a web of flexible film comprising drive means for imparting repeating cycles of intermittent motion and dwell to a web of flexible film with the web motion normally being in only the forward direction. The drive means includes an output shaft having first and second input driver means coupled to the output shaft, with the driver means being arranged in phased relationship, one to another, so as to achieve motion in the output shaft for more than 180° of motion in the input shaft. In one operational mode, the driver means are arranged in overlapped phased relationship, one to another, so as to achieve motion from each driver means for less than 180° of motion in the input shaft. In a second operational mode, the driver means are arranged in phased relationship, 180° from each other, so as to achieve motion in the output shaft of 360° during each operational cycle, this 360° of motion being followed by a dwell cycle of 180° of motion, prior to initiating the advance of the web on the next succeeding cycle. In the first operational mode, means are provided for intermittently inter-coupling the first driver means to the input and output shafts for initiating rotation of the output shaft, and for continuing the rotation for a predetermined period of less than one-half cycle of rotation of the input shaft. Thereafter, de-coupling of the first driver means occurs, along with substantially simultaneous inter-coupling occurring between the second driver means and the input and output shafts for the continued rotation of the output shaft for a second pre-determined period of less than one-half cycle of rotation of the input shaft, at which point, de-coupling the second driver means occurs.

3,776,805

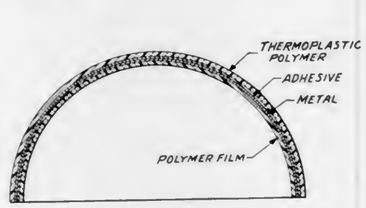
SOLAR CONTROL PRODUCTS

Richard L. Hansen, Fridley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 7, 1971, Ser. No. 178,253

Int. Cl. B32b *15/08;* **B44f** *1/04;* **G02b** *5/08*

U.S. Cl. 161—2 **7 Claims**



Transparent-reflective metallized solar control film having a tacky light-curable adhesive is applied to window glazing and the adhesive thereafter cured to a hard state by visible or near-ultraviolet light. When applied to planar thermoplastic polymeric glazing, the interface remains free from bubbles caused by evolution of monomer or other gaseous material from the polymeric glazing material, even when the laminate is thermoformed, e.g., to a concavo-convex dome.

3,776,806

FILAMENT COMPRISING A POLYMER BLEND OF POLYESTER AND POLYAMIDE CONTAINING AN ORGANIC PHOSPHORUS COMPOUND

Richard E. Mayer, Amnon Birenzvige, and Gene C. Weedon, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Application Mar. 10, 1971, Ser. No. 123,008, now Patent No. 3,692,867, which is a continuation of abandoned application Ser. No. 752,789, Aug. 15, 1968. Divided and this application May 24, 1972, Ser. No. 256,227

Int. Cl. C08g *41/04*

U.S. Cl. 161—88 **4 Claims**

A process for increasing the whiteness of a filament extruded from a polymer blend comprised of polyester and polyamide which comprises incorporating in the polymer blend prior to extrusion thereof a small amount of an organic phosphorus compound which can be an organic phosphite, phosphinate, phosphate, polymeric phosphite, polymeric phosphate, the corresponding acid, or mixtures thereof.

3,776,807

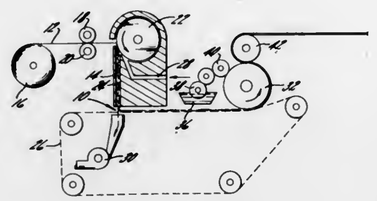
AIR FORMED ADHESIVE BONDED WEBS AND METHOD FOR FORMING SUCH WEBS

Charles E. Dunning and Winterton U. Day, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 20, 1971, Ser. No. 145,458

Int. Cl. D04h *1/04;* **D21h** *5/26*

U.S. Cl. 161—124 **4 Claims**



A method of forming a lightweight, airlaid web of wood fibers suitable for tissue and toweling applications comprises airlaying a wood fiber continuum onto a foraminous carrier, bringing the continuum into contact with a transfer member printed with an adhesive in a preselected pattern, the adhesive being disposed in a liquid, and removing the liquid to provide an airlaid, adhesively bonded web.

3,776,808

SUPPORTED RIBBONS

Robert Terry Montgomery, Matthews, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,015

Int. Cl. B32b *5/08, 7/04*

U.S. Cl. 161—141 **5 Claims**



Supported bulked ribbons having improved cover and the process for their preparation, the ribbons comprising a sheet of substantially parallel continuous filament compacted yarns peripherally secured to a substrate.

3,776,809

QUARTZ GLASS ELEMENTS

Peter Bäumler, Dornigheim, Gerhard Höfer, Bruchkobel, Tassilo Körner, Erlensee, Heinrich Mohn, Haller, Karl Seiler, Hanau-Hohe Tanne, Fritz Simmat, Meerholz, and Karlheinz Rau, Hanau, Germany, assignors to Heraeus-Schott Quarzschmelze GmbH, Hanau, Germany

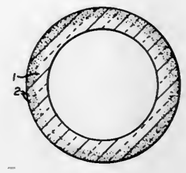
Continuation-in-part of abandoned applications Ser. No. 793,775, Jan. 24, 1969, and Ser. No. 810,713, Mar. 26, 1969. This application July 28, 1971, Ser. No. 166,844

Claims priority, application Germany, Feb. 22, 1968, P 16 96 061.5; Mar. 30, 1968, P 17 71 077.9, H 62,286

Int. Cl. B32b *7/02, 17/06;* **C03c** *3/06*

U.S. Cl. 161—164 **10 Claims**

Quartz glass element, such as a diffusion tube useful in the production of semiconductor elements, capable of forming an outer layer of uniformly fine crystalline silica such as cristobalite or tridymite when heated to a temperature at which crystalline silica forms containing crystallization promoting nuclei having a rate of diffusion in quartz glass less than that of sodium at elevated temperatures. Such nuclei are preferably present in the outer



half of the element wall. When the quartz glass element is exposed to elevated temperatures, the nuclei promotes the formation of the outer layer of uniformly fine crystalline silica which imparts thermal dimensional stability for extended periods of use at elevated temperatures.

3,776,810

BONDED NONWOVEN FABRIC

Louis E. Kelley, Philadelphia, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 36,499, May 11, 1970. This application Sept. 22, 1971, Ser. No. 182,877

Int. Cl. B32b *27/08*

U.S. Cl. 161—170 **2 Claims**

Fibers in nonwoven fibrous products are bonded together by a binder comprising the heat-cured product of a water insoluble copolymer of (i) an N-methylolamide which is N-methylolacrylamide or N-methylolmethacrylamide, and (ii) an acrylic acid ester of acrylic acid or methacrylic acid and a C_1 to C_8 alkanol, modified with (iii) a polyalkylene glycol of the formula

$$HO—(RO)_n—H$$

wherein R is an alkylene group of 2 to 6 carbon atoms and *n* is a number having an average value of 4 to 50. Preferred acrylic acid esters are ethyl acrylate and butyl acrylate, and the preferred polyalkylene glycol is a polyethylene glycol characterized by a molecular weight in the range of 300 to 2000. The copolymer may also contain units derived from unsaturated aliphatic carboxylic acids. Preferably the copolymer contains units derived from itaconic acid. The itaconic acid stabilizes aqueous dispersions of the copolymer and adds stiffness to the treated fibrous products without detracting from resilience and solvent resistance.

3,776,811

BONDING EPDM RUBBER TO GENERAL PURPOSE BUTADIENE POLYMER RUBBER

Charles F. Eckert, Wayne, and Norman J. Pinkowski, Bloomfield, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Original application Apr. 27, 1970, Ser. No. 32,425. Divided and this application Sept. 9, 1971, Ser. No. 179,178

Int. Cl. B32b *25/08;* **C08d** *3/06;* **C09j** *5/00*

U.S. Cl. 161—253 **6 Claims**

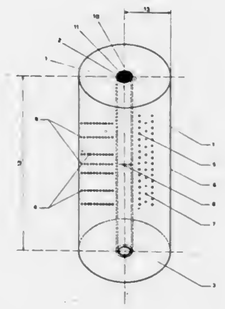
A cement and technique for bonding stocks made from EPDM made with ethylidene norbornene or isopropylidene norbornene as the third monomer to conventional general purpose butadiene polymer rubber stocks are disclosed. The cement is made by dissolving compounded polybutadiene having a cis content not over 30%, a trans content of from 35% to 75%, a vinyl content of from

15% to 40%, and a combined trans and vinyl content of at least 70%, and an intrinsic viscosity greater than 2, in a volatile organic solvent. The surfaces of the two stocks to be joined are coated with this cement. The solvent is then caused to evaporate, the two surfaces are pressed together and the plied assembly of the two stocks is then cured under heat and pressure.

3,776,812
PROCESS FOR MAKING PAPER CONTAINING LATEX WITH CARBOXYL GROUP
Hendrik Jongetjes, Heemskerk, Netherlands, assignor to Koninklijke Papierfabrieken Van Gelder Zonen N.V., Amsterdam, Netherlands
No Drawing. Continuation of abandoned application Ser. No. 770,791, Oct. 25, 1968. This application Nov. 17, 1971, Ser. No. 199,797
Int. Cl. D21h *3/40*; D21d *3/00*
U.S. Cl. 162—168 **9 Claims**

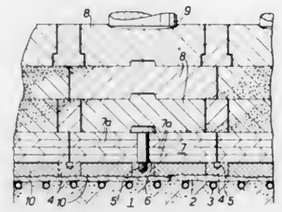
The preparation of a fibrous bonding agent for non-woven materials in which a polymer latex containing 0.02–10 percent carboxyl groups is mixed with an aqueous solution of a cationic polymeric substance at a pH of 6–9. Within sixty minutes, the finely divided particles which are formed are converted into fine, fibrous particles by adjusting the pH of the mixture to 2–4 with stirring and taking care that the final solids content is 0.01–10 percent by weight. Also, the fiber so produced and the manufacture of non-woven materials using said fibrous binding agent.

3,776,813
METHOD TO DETERMINE THE NEUTRON ABSORPTION AND MULTIPLICATION PARAMETERS FOR CLUSTER-TYPE NUCLEAR FUEL ELEMENTS
Silvio E. Corno, San Donato Milanese, Italy, assignor to Snam Progetti S.p.A. L.R.S.R-Brevetti, Milan, Italy
Filed June 26, 1969, Ser. No. 836,882
Claims priority, application Italy, July 4, 1968, 18,561/68
Int. Cl. G21c *17/00*
U.S. Cl. 176—19 R **8 Claims**



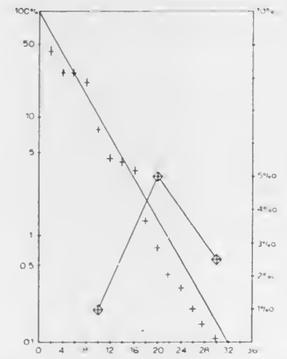
The neutron absorption and multiplication parameters are determined for heavy water (D_2O) or graphite moderated heterogeneous power reactors by irradiating a single fuel element cluster positioned along the longitudinal axis of a given column of moderator and taking neutron flux measurements at suitable radial and axial positions. The critical dimensions and power distribution for a heterogeneous core made up of a plurality of fuel element clusters of the type irradiated are derived from the neutron flux measurements by means of the so-called "source-sink" heterogeneous reactor theory.

3,776,814
HIGH TEMPERATURE NUCLEAR REACTORS
George Edward Lockett, Poole, and Samuel Brittan Hosegood, Wareham, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Feb. 18, 1971, Ser. No. 116,448
Claims priority, application Great Britain, Mar. 2, 1970, 9,975/70
Int. Cl. G21c *13/08*
U.S. Cl. 176—87 **10 Claims**



The difficulties which arise, in conducting heat away from the thermal shield, which lies between a nuclear reactor core and the concrete pressure vessel which contains it, are acute, especially in respect of the underside of the core, and in cases where the direction of coolant flow is vertically downwards. According to the present invention this difficulty is overcome by using thermal conduction to lead away heat from the thermal shield to the concrete vessel in which the usual liquid coolant pipes are embedded. Special measures are taken to ensure a good conductive flow-path which are effective enough to obviate the need of special bleed coolant flows.

3,776,815
PROCESS FOR THE MANUFACTURE OF CEPHALOSPORIN C
Hans-Joerg Treichler, Buus, and Jakob Nuesch, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jan. 14, 1971, Ser. No. 106,420
Claims priority, application Switzerland, Jan. 21, 1970, 81,170/70
Int. Cl. C12d *9/22*
U.S. Cl. 195—36 R **4 Claims**

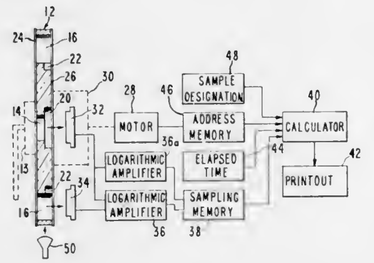


Process for the manufacture of Cephalosporin C by cultivating mutants of Emericellopsis-Cephalosporium in which the metabolism and/or biosynthesis of organic sulfur compounds is disturbed.

3,776,816
PROCESS FOR PRODUCING STEROID DEHYDROGENASE
Osamu Terada, Tokyo, Hitoshi Yagi, Matsudo-shi, Chibaken, and Shizuko Nakamura, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan
No Drawing. Continuation-in-part of abandoned application Ser. No. 34,636, May 4, 1970. This application Aug. 21, 1972, Ser. No. 282,251
Claims priority, application Japan, May 6, 1969, 44/34,034
Int. Cl. C07c *167/00*; C12d *13/10*
U.S. Cl. 195—66 R **6 Claims**

Steroid dehydrogenase, useful for the determination of hydroxy groups at the 3β- and 17β-positions of steroids, is produced by cultivating a strain of bacteria, designated as *Brevibacterium sterolicum*, in a culture medium and recovering the resulting steroid dehydrogenase from the microbial cells and the culture medium.

3,776,817
METHOD AND APPARATUS FOR DETERMINING BACTERIAL GROWTH
Hans J. von der Pfordten, 3463 Ashton Court, Palo Alto, Calif. 94306
Filed Oct. 4, 1971, Ser. No. 186,365
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **21 Claims**

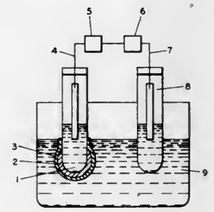


Apparatus and a method for use in determining the growth of bacteria in the presence of an inhibiting agent, such as an antibiotic. The apparatus includes a disk of transparent material mounted for rotation and having a number of outer peripheral cavities for receiving the bacteria in solutions containing the growth inhibiting agents of either the same or different types. The disk can possibly have a central cavity for receiving a mass of bacteria in a solution free of an inhibiting agent. A pair of photocells adjacent to the central cavity and a position to be occupied by one of the peripheral cavities sense the radiation scattered along paths extending 90° to the radiation passing into the the disk and the solutions from a radiation source near the outer periphery of the disk. The signals generated by the photocells at the beginning and end of a predetermined time interval are processed so that curves of the logarithm of the bacteria growth versus time can be obtained to permit the use of extrapolation techniques for determining zero growth of the bacteria.

3,776,818
COVER ELEMENT DISC DISPENSER
Waheed N. Khan, 1703 East-West Highway, 503, Silver Spring, Md. 20910
Filed June 19, 1970, Ser. No. 47,675
Int. Cl. C12k *1/10*
U.S. Cl. 195—139 **14 Claims**

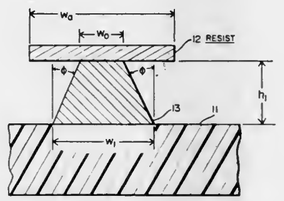
A disc dispenser for use in microbiological techniques such as antibiotic sensitivity testing is provided by adding to the conventional petri dish a cover element having means for holding paper discs in a predetermined pattern. The discs may be accurately deposited onto media contained in the dish by removing the lid and cover element, replacing the cover element of the invention, and inverting the assembly to allow the discs to fall into place. Discs are thereby positioned accurately without the need of an elaborate dispensing device.

3,776,819
UREA DETERMINATION AND ELECTRODE THEREFOR
David L. Williams, Reading, Mass., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 22, 1969, Ser. No. 887,200
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **13 Claims**



The invention concerns a potentiometric method of determining the urea content of fluids by use of a cation sensitive electrode having a urease layer on its surface.

3,776,820
METHOD OF FORMING MINIATURE ELECTRICAL CONDUCTORS
E. Curtis Johnson, Mahtomedi, and Benjamin F. Hillis, Lindstrom, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.
Filed Sept. 15, 1972, Ser. No. 289,728
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **3 Claims**



A process for the manufacturing of miniature electrical conductors which comprises etching a base material to a predetermined shape followed by electroplating material onto the base material until the desired conductor configuration is obtained.

3,776,821
GOLD PLATING ELECTROLYTE
Kenneth D. Baker, Somerville, N.J., assignor to Engelhard Minerals & Chemicals Corporation
Filed May 12, 1972, Ser. No. 252,595
Int. Cl. C23b *5/28, 5/42*
U.S. Cl. 204—43 G **4 Claims**

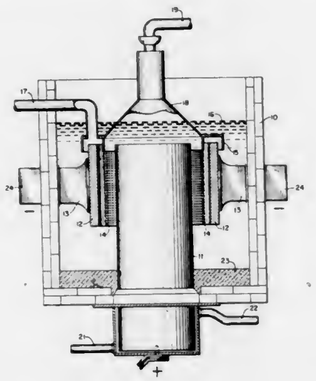
A gold plating electrolyte containing as its conducting and buffering compounds alkali metal or ammonium sul-

phamate and alkali metal or ammonium phosphate. The criticality of the ratio of 5:1 to 2.3:1 sulphamate to phosphate if maintained in the gold electrolyte between the prescribed limits will give gold deposits with excellent metal distribution. To maintain the prescribed ratio of the two radicals, the gold is replenished from ammonium gold cyanide, thereby maintaining pH and density and critical ratio of said electrolyte.

3,776,822
GOLD PLATING ELECTROLYTE
Kenneth D. Baker, Somerville, N.J., assignor to Engelhard Minerals & Chemicals Corporation
No Drawing. Filed Mar. 27, 1972, Ser. No. 238,615
Int. Cl. C23b *5/28*
U.S. Cl. 204—46 **5 Claims**

A gold plating electrolyte for providing gold deposits with controlled hardness below 130 Knoop, which contains gold as the sulfite complex, an alkali metal sulfite, a buffering and conducting salt, and the combination of a polycarboxylic acid and a semi-metal brightener.

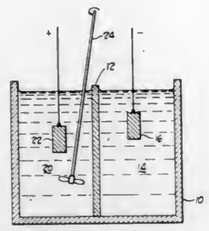
3,776,823
PROCESS FOR STARTING OPERATION OF A FUSED SALT ELECTROLYTIC CELL
Sam Crowther, Pasadena, Tex.
(Rte. 8, Box 286, Austin, Tex. 78703)
Continuation-in-part of abandoned application Ser. No. 658,131, Aug. 3, 1967. This application Oct. 21, 1971, Ser. No. 191,493
Int. Cl. B01k *1/00;* **C22d** *3/00, 3/06*
U.S. Cl. 204—60 **10 Claims**



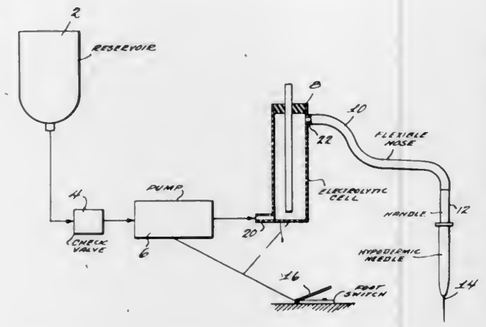
Process for starting operation of a fused salt electrolytic cell comprising filling a preheated cell with molten fused salt electrolyte and then applying operating current load to the cell to begin product recovery. There is no period of electrolysis prior to installation of product collection apparatus or means.

3,776,824
CATALYTIC OXIDATION OF NAPHTHALENE
Irwin B. Bernstein, Homewood, Ill., and Abraham Cooper, East Brunswick, N.J., assignors to The Sherwin-Williams Company, Cleveland, Ohio
Filed July 17, 1972, Ser. No. 272,521
Int. Cl. C07b *3/00;* **C07c** *49/66*
U.S. Cl. 204—78 **12 Claims**

Naphthalene is oxidized in a liquid phase reaction with aqueous sulfuric acid and a catalytic amount of β-form lead dioxide. The oxidation products are 2-naphthol and 1,4-naphthoquinone. The catalyst may be formed electrolytically or thermally, and the oxidation step can be carried out in an electrochemical cell.



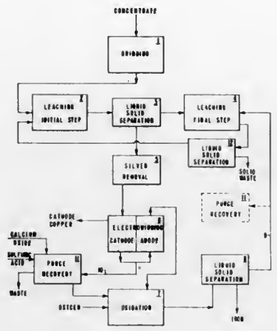
3,776,825
ELECTROLYTIC TREATMENT
Jaroslav Vit, Belle Mead, N.J., assignor to National Patent Development Corporation, New York, N.Y.
Filed Oct. 26, 1972, Ser. No. 301,142
Claims priority, application Great Britain, Aug. 24, 1972, 39,591/72
Int. Cl. B01k *1/00;* **A61k** *5/02*
U.S. Cl. 204—81 **9 Claims**



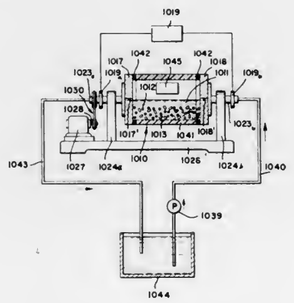
An aqueous solution is provided containing (1) an alkali metal or alkaline earth metal halide where the halogen has an atomic weight of 35 to 127 and (2) an amine containing a hydroxy group, a sulfonic acid group, an acetyl group or a carboxylic acid group and the solution is decomposed electrolytically to form the corresponding N-halo compound in situ.

3,776,826
ELECTROLYTIC RECOVERY OF METAL VALUES FROM ORE CONCENTRATES
Erdem Munir Atadan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 19, 1972, Ser. No. 273,275
Int. Cl. C22b *15/08;* **C22d** *1/12, 1/16*
U.S. Cl. 204—107 **15 Claims**

A hydrometallurgical process to recover metal values e.g., copper from sulfide ore concentrates, e.g. chalcopyrite, bornite, and chalcocite characterized by (1) a staged countercurrent leaching of the concentrate with an aqueous solution containing cupric chloride with an excess of chloride ion with the solids from the initial step of leaching directed to the final step and the liquid from the final step being directed to the initial step while maintaining at least 3.5 and preferably at least 5 gram equivalents of chloride per kilogram of solution, (2) electrowinning a portion of the copper in the solution from the initial step from the catholyte compartment of an electrolytic cell having separate catholyte and anolyte compartments, (3) oxidizing the stream from the electrowinning step, and (4) recycling the liquid from the oxidation.

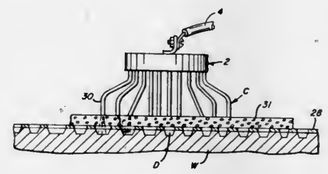


3,776,827
METHOD OF DEBURRING WORKPIECES
Kiyoshi Inoue, 16–8 3-chome, Kamiyoga, Setagaya-ku, Tokyo, Japan
Continuation-in-part of application Ser. No. 714,252, Mar. 19, 1968, now Patent No. 3,620,953, which is a continuation-in-part of application Ser. No. 598,391, Dec. 1, 1966, now abandoned, and a continuation of application Ser. No. 859,532, Apr. 21, 1969, now Patent No. 3,533,928. This application Feb. 25, 1971, Ser. No. 118,725
The portion of the term of the patent subsequent to Oct. 13, 1987, has been disclaimed
Int. Cl. B23p *1/00;* **C23b** *5/78*
U.S. Cl. 204—129.46 **16 Claims**



Apparatus for the electrochemical deburring of metallic workpieces in which a drum or endless band forms a continuously displaceable surface for the workpieces which, together with carbon particles and/or other abrasive particles, are agitated in an electrolyte. The drum is rotated about its horizontal axis while a pair of disks form electrodes closing the drum. When the endless belt is used, it then passes into a vessel retaining the electrolyte and thereafter carrying the workpieces to a collecting trough while carbon particles are continuously added or removed from the system whose electrodes are connected in pairs to respective phases of the power supply.

3,776,828
METHOD OF EMBOSSING THE SURFACE OF A METAL WORKPIECE
Robert H. Ashworth, Penn Hills Township, Allegheny County, Pa., assignor to United States Steel Corporation
Original application Apr. 15, 1970, Ser. No. 28,901, now Patent No. 3,704,220. Divided and this application May 12, 1972, Ser. No. 252,869
Int. Cl. B23p *1/00*
U.S. Cl. 204—129.65 **8 Claims**



The embossed surface of a metal workpiece is repaired by utilizing an electrode having relatively closely spaced discharge areas adjacent its center and relatively widely spaced discharge areas at its outer portion. A dent is first repaired by filling it with a metal to the level of the surrounding surface or by bending the metal of the dent back into its original position. A suitable stencil is placed on the prepared surface to be repaired and a pad saturated with electrolytic fluid is placed on the stencil. The electrode and workpiece are connected to opposite poles of a D.C. power source and the free end of the electrode is pressed into the pad. During the repair embossing operation the electrode is occasionally lifted from the pad and then lowered into the pad in a slightly different position.

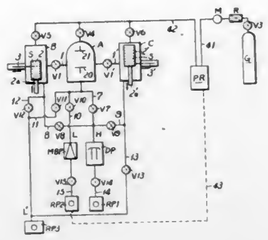
3,776,829
AMINATED CARBON FIBERS
John Cecil Goan, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.
No Drawing. Original application Feb. 27, 1970, Ser. No. 15,281, now abandoned. Divided and this application Oct. 26, 1971, Ser. No. 192,563
Int. Cl. B01k *1/00;* **D06m** *11/14*
U.S. Cl. 204—164 **1 Claim**

Carbon fibers are reacted with ammonia plasma to form amino groups on the surface, useful in preparing carbon fiber-epoxy resin composite.

3,776,830
PROCESS FOR PRODUCING SPUTTERED FILMS
Tsunehiko Endo, 1716 Yahara 2-chome, Nerima-ku, Tokyo, Japan
Filed July 9, 1971, Ser. No. 161,168
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **7 Claims**

A process for producing sputtered films and an apparatus for carrying out said process in which substrates are transferred between a sputtering chamber and one of at least two preliminary chambers both of which sputtering and one preliminary chambers are maintained under the same pressure and gas atmospheric conditions, said substrates are sputtered films thereon while they are disposed in the sputtering chamber and during the transfer and sputtering of said substrates the other of said preliminary chambers is charged with a new supply of substrates

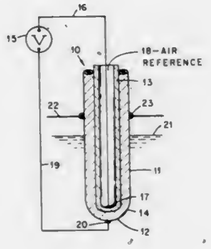
to be sputtered films thereon and evacuated so that the last-mentioned preliminary chamber is ready for a subsequent sputtering cycle whereby substrates are continuously sputtered.



3,776,831
DEVICE FOR MEASURING OXYGEN ACTIVITY IN LIQUID SODIUM

Prodyot Roy, Saratoga, and Robert S. Young, San Jose, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 15, 1972, Ser. No. 306,976
Int. Cl. G01n 27/46
U.S. Cl. 204—195 S 7 Claims



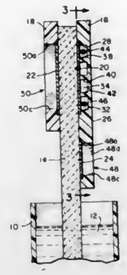
A composite ceramic electrolyte in a configuration (such as a closed end tube or a plate) suitable to separate liquid sodium from a reference electrode with a high impedance voltmeter connected to measure EMF between the sodium and the reference electrode as a measure of oxygen activity in the sodium. The composite electrolyte consists of zirconia-calcia with a bonded layer of thoria-yttria. The device is used with a gaseous reference electrode on the zirconia-calcia side and liquid sodium on the thoria-yttria side of the electrolyte.

3,776,832
ELECTROCHEMICAL DETECTION CELL

Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, N.Y., assignors to Energetics Science Inc., New York, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,267
Int. Cl. G01n 27/46
U.S. Cl. 204—195 R 10 Claims

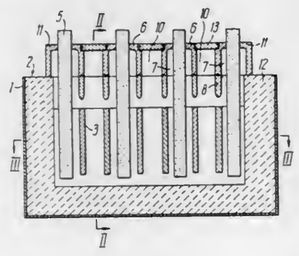
An electrochemical cell comprising an anode, a cathode and a reference electrode operating in an aqueous electrolyte is utilized for detection of noxious gases in air. The gas is oxidized at the anode and detection thereof occurs as a result of the current generated by the reaction. A fixed potential difference is maintained between the anode and the reference electrode to avoid generation of undesired current from reactions involving an oxygen-water redox couple within the cell which would invalidate anode-cathode current for gas detection purposes. The fixed potential is chosen from within the range of about 0.9 to 1.5 volts.



3,776,833
MAGNESIUM ELECTROLYZER

Vladimir Pavlovich Sheka, ulitsa Khimikov 8, kv. 29; Valery Afanasievich Kolesnikov, ulitsa Sverdlova 57, kv. 44; and Valery Vyacheslavovich Kuzmin, ulitsa Pyatiletki 24, kv. 18, all of Berezniki, U.S.S.R.; Konstantin Dmitrievich Muzhzhavlev, ulitsa Zheleznovodskaya 48, kv. 30, Leningrad, U.S.S.R.; Petr Alexandrovich Donskikh, ulitsa Svobody 51, kv. 36; Berezniki, U.S.S.R.; Evgeny Georgievich Chistyakov, ulitsa Molodezhnaya 1, kv. 60, Kalush, U.S.S.R.; and Alexandr Ivanovich Rzyankin, ulitsa Karla Marxa 62, kv. 34, Berezniki, U.S.S.R.

Continuation of abandoned application Ser. No. 98,544, Dec. 16, 1970. This application June 5, 1972, Ser. No. 260,009
Int. Cl. C22d 3/02, 3/08
U.S. Cl. 204—243 R 1 Claim



The present invention relates to magnesium electrolyzers having cathodes introduced through an electrically insulating material on a lining deposited on an electrolyzer wall.

3,776,834
PARTIAL REPLACEMENT OF RUTHENIUM WITH TIN IN ELECTRODE COATINGS

Kevin J. O'Leary, 2590 Shaker Road, Cleveland Heights, Ohio 44118

No Drawing. Continuation-in-part of abandoned application Ser. No. 104,740, Jan. 7, 1971. This application May 30, 1972, Ser. No. 257,717
Int. Cl. B01k 3/06
U.S. Cl. 204—290 F 3 Claims

An electrode is disclosed which comprises an electrically conductive, particularly titanium, substrate at least partially covered with a solid solution-type coating consisting essentially of titanium, ruthenium and tin dioxides.

3,776,835
FOULING RATE REDUCTION IN HYDROCARBON STREAMS

Louis M. Dvoracek, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 62,718, Aug. 10, 1970. This application Feb. 23, 1972, Ser. No. 228,736
Int. Cl. C07c 3/30; C10g 9/16, 23/00
U.S. Cl. 208—48 AA 10 Claims

Fouling accompanying the treatment of hydrocarbon streams at elevated temperatures is reduced by contacting the hydrocarbons in the presence of hydrogen and antifouling compositions containing one or more of detergents, dispersants, metal deactivators, corrosion inhibitors and antioxidants.

3,776,836
REFORMING PROCESS IN TWO STAGES AT DIFFERENT PRESSURES

Daniel Y. C. Ko, Pittsburgh, and Donald L. Stahlfeld, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 23, 1971, Ser. No. 174,005
Int. Cl. C10g 39/00
U.S. Cl. 208—65 17 Claims

A C_5^+ naphtha containing C_6 through C_{10} and even C_{11} and C_{12} naphthenes and linear (non-ring structure) paraffins is reformed to improve its octane value by passage through one or a plurality of relatively high pressure acidic platinum catalyst naphthene aromatization reactors in series with one or more relatively lower pressure paraffin dehydrocyclization catalyst reactors. Most C_9 and C_{10} linear paraffins have an extremely low octane value (the octane number of normal decane is −53) and must generally be cracked to higher octane number fragments or to gases to achieve a gasoline product of satisfactory octane number. In the prior art this cracking generally occurred in the acidic platinum catalyst phase wherein the hydrogen pressure is high, protecting the catalyst from excessive coking. Cracking of the C_9 and C_{10} paraffins in the dehydrocyclization phase wherein the total pressure is lower in order to favor dehydrocyclization in addition to dehydrogenation would result in severe coking of catalyst. According to this invention C_9 and C_{10} linear paraffins are not hydrocracked but rather are dehydrocyclized. It has now been discovered that the dehydrocyclization phase must dehydrocyclize C_9 and C_{10} paraffins to C_9 and C_{10} aromatics if there is to be an increase in octane-barrel value in the dehydrocyclization phase. According to the present process, the C_9 and C_{10} paraffins are not cracked in the high pressure phase but are charged to the low pressure dehydrocyclization catalyst phase wherein the pressure is sufficiently low to dehydroaromatize the C_9 and C_{10} paraffins so that there is a net increase in C_9 and C_{10} aromatics in the dehydrocyclization phase. The pressure in the dehydrocyclization phase is sufficiently low that there is relatively little or no net increase in C_6 and C_7 aromatics at least in the zone of the dehydrocyclization phase wherein dehydroaromatization of C_9 and C_{10} paraffins occurs. It has now been discovered that a significant net increase of C_9 and C_{10} aromatics is incompatible with a significant net increase in C_6 and C_7 aromatics in the same dehydrocyclization zone, and vice versa. It has further been discovered that dehydrocyclization of C_9 and C_{10} linear paraffins is enhanced by the presence in the feed of C_9 and C_{10} aromatics containing multi-methyl or ethyl groups on the benzene ring together with a high ratio of hydrogen to hydrocarbon, even though both aromatics and hydrogen are products of the reaction. Therefore, a variation in the process accomplishes dehydrocyclization of C_6 and C_7 linear paraffins in an upstream zone of the dehydrocyclization phase and utilizes the hydrogen and aromatics therein produced with or without hydrogen and aromatics produced in the high pressure naphthene aromatization phase to enhance dehydroaromatization of C_9 and C_{10} paraffins which are separately added to a downstream zone in the dehydrocyclization phase.

3,776,837
MOTOR FUEL PRODUCTION PROCESS

Frits M. Dautzenberg and Henk J. Alkema, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

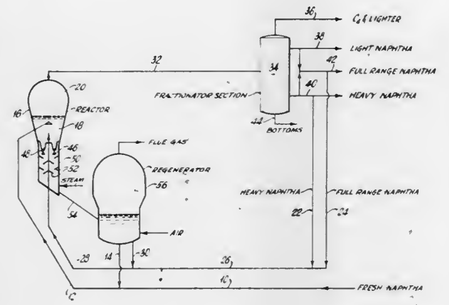
No Drawing. Filed Oct. 20, 1971, Ser. No. 191,088
Claims priority, application Netherlands, Nov. 19, 1970, 7016985
Int. Cl. C10g 31/14, 35/06
U.S. Cl. 208—65 6 Claims

High aromatic content motor fuel is produced from C_5–C_8^+ naphtha by separating the naphtha into a C_5–C_6 cut, a separate C_7 cut and a C_8^+ cut; catalytically dehydrocyclizing the C_7 cut; catalytically reforming the C_8^+ cut; and thereafter combining the three fractions. In preferred modes of operation, the C_7 cut is also subjected to catalytic reformation and the C_5–C_6 cut is isomerized before combination with the other hydrocarbon fractions.

3,776,838
CATALYTIC CRACKING OF NAPHTHAS

Douglas J. Youngblood, Groves, and David L. Raynolds, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,480
Int. Cl. C10g 37/02
U.S. Cl. 208—74 9 Claims



Low octane naphtha and a recycle stream of full range naphtha or heavy naphtha are catalytically cracked with a zeolite cracking catalyst in separate elongated reaction zones yielding products which include C_4 and lighter hydrocarbons for alkylate feedstock, C_5 and lighter hydrocarbons for petrochemical manufacture and naphtha having an increased octane rating. Optionally, either or both of the feedstocks being cracked may be subjected to further cracking in a dense fluidized bed of the zeolite catalyst.

3,776,839
HYDROCRACKING PROCESS FOR LUBE OIL OVER Ni-Mo- AND Ni-W-on SiO_2-ZrO_2

Peter Ladeur, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Original application Nov. 4, 1971, Ser. No. 195,861, now abandoned. Divided and this application Feb. 21, 1973, Ser. No. 334,346
Claims priority, application Great Britain, Dec. 2, 1970, 57,250/70
Int. Cl. B01j 11/74; C10g 13/06
U.S. Cl. 208—110 5 Claims

Lubricating oil hydrocracking process utilizing catalysts comprising (a) one metal A consisting of nickel

and at least one metal B selected from the group consisting of molybdenum and tungsten present on a carrier in amounts of at least about 0.01 gram-atom of metal A and at least about 0.10 gram-atom of metal B per 100 grams of carrier; (b) an atomic ratio of metal A to metal B in the range of from about 0.10:1 to about 0.75:1, and (c) a carrier composed of silica and zirconia.

3,776,840

REGENERATION OF PLATINUM-GERMANIUM REFORMING CATALYST

Vincent J. Moravec, Jr., and William K. Meerbott, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 16, 1971, Ser. No. 208,731
The portion of the term of the patent subsequent to Apr. 4, 1989, has been disclaimed
Int. Cl. B01j *11/02, 11/80;* **C10g** *35/06*
U.S. Cl. 208—139 **10 Claims**

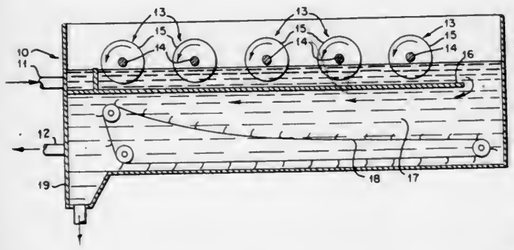
The activity and stability of a deactivated reforming catalyst containing a platinum group metal and germanium are restored to that of fresh catalyst by (1) removing substantially all carbon from the catalyst; (2) contacting the catalyst at about 900° F. with a non-reducing gas containing halogen, steam and oxygen until about 85% w. of the desired halide content is added; (3) discontinuing the use of stream and oxygen from the last-mentioned step until the halogenation is completed; and (4) drying and reducing the catalyst with a hydrogen-containing gas; then reusing the catalyst in a reforming process. Preferably, the catalyst is halogenated to a level about 20% greater than that of fresh catalyst. It is also preferred that the catalyst then be dried with a non-reducing gas at about 900° F. until the water content in the exit gas is below 150 p.p.m.v. followed by reducing at least the platinum oxides or chlorides by contact with a hydrogen-containing gas at 700–900° F. The regeneration procedure is especially applicable to platinum-germanium catalysts used in high severity fully-regenerative reforming processes.

3,776,841

METHOD AND APPARATUS FOR THE BIOLOGICAL TREATMENT OF WASTE WATER

Wilbur N. Torpey, Douglaston, N.Y., assignor to Autotrol Corporation, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 122,618, Mar. 1, 1971, now Patent No. 3,703,238, which is a division of application Ser. No. 781,452, Dec. 5, 1968, now Patent No. 3,575,849. This application Nov. 15, 1972, Ser. No. 306,584
Int. Cl. C02c *1/04*
U.S. Cl. 210—17 **12 Claims**



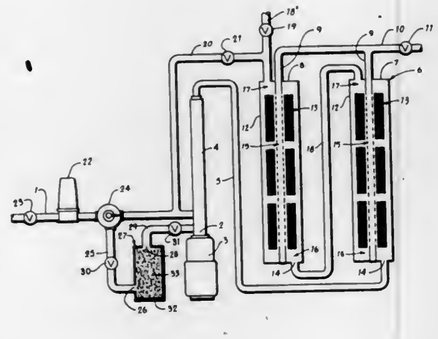
Method and apparatus for substantially upgrading the operating efficiency of waste water treatment plants is disclosed. The invention utilizes forcibly rotating bodies that are partially submerged in the waste water to provide surface area on which biological slimes develop and serve the purpose of removing pollutants from the waste water. The rotating, partially submerged bodies are located in the upper portion of the treatment tanks, to provide a biological treatment zone. A subjacent settling zone, physically separated from the biological treatment zone by a "false bottom" or longitudinal baffle is provided in the lower portion of the treatment tank. Waste water introduced in the tank is first biologically treated and then circulated through the subjacent settling zone to remove settleable solids.

3,776,842

WATER CLEANING TREATMENT

Henry L. Grimme, Jr., Parkville, Mo., assignor to Raypak, Inc., Westlake Village, Calif.

Filed Mar. 8, 1971, Ser. No. 121,935
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **1 Claim**



A treatment of water having alkaline earth metals and a pH above 7 wherein the pH of the feed water is controlled and reduced to desired limits by dividing the feed water flow and substituting hydrogen ions for some alkaline earth metal ions by contacting said one portion of the feed water with a cation exchange media. Returning the contacted feed water portion with the hydrogen ions to the other portion of the feed water stream to combine same and then passing said combined feed water under pressure over one side of cellulose acetate membranes and removing clean water from the opposite side of said membranes.

3,776,843

SOLID FIRE-EXTINGUISHING COMPOSITIONS

Arnold George Cottrell, Nevin Dornan Bradford, and Terence Oliver Lovett, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 14, 1971, Ser. No. 153,041
Claims priority, application Great Britain, June 25, 1970, 30,910/70
The portion of the term of the patent subsequent to Sept. 21, 1988, has been disclaimed
Int. Cl. A62d *1/00;* **C07c** *127/00*
U.S. Cl. 252—7 **11 Claims**

Improved yields of fire-extinguishing compounds having the empirical formula $MC_2N_2H_3O_3$ were M is an alkali metal are obtained by reacting urea with an alkali metal hydroxide, carbonate, bicarbonate or sesquicarbonate at a temperature of between 150° C. to 200° C. and in contact with an atmosphere containing at least 5% and up to 50% by volume of water vapor.

3,776,844

COMPOSITION AND METHOD FOR TREATING FIBROUS MATERIAL

James E. Nayfa, 1209 Levee St., Dallas, Tex. 75207

No Drawing. Continuation of abandoned application Ser. No. 727,021, May 6, 1968. This application Mar. 5, 1971, Ser. No. 121,566
Int. Cl. D06m *13/46, 13/34*
U.S. Cl. 252—8.75 **3 Claims**

A composition for treating seed cotton preparatory for ginning, as by way of a fog or mist during its passage from the cleaning operations, to prevent deterioration thereof during the ginning process and to preserve the staple and luster of the fibers, and thus improve the product as to marketability and spinning qualities in the textile industry where uniformity in fiber lengths is important. One constituent of the composition is a cationic surface active agent of the alkyl imidazoline class containing hydrocarbon substituents derived from animal and vegetable fats and converted to an ionic salt by reaction with alkyl sulfate, minimizing or eliminating static electricity and thereby reducing fire hazards and the tendency of the adherence of sticks and trash to the lint cotton. A second constituent is a lubricating constituent such as an amine halide.

3,776,845

DRY FILM LUBRICANT CONSISTING OF SYNTHETIC RESIN, FLUORINATED GRAPHITE, AND SOLID LUBRICANTS SUCH AS MOLYBDENUM DISULFIDE, GRAPHITE, AND POLYTETRAFLUOROETHYLENE

Nobuatsu Watanabe, Kyoto, Hideaki Kusuno, Nishinomiya, and Yutaka Ishida, Suita, Japan, assignors to Nippon Paint Co., Ltd., Osaka, and Nippon Carbon Co., Ltd., Tokyo, Japan

No Drawing. Filed May 11, 1970, Ser. No. 36,467
Claims priority, application Japan, May 16, 1969, 44/37,756
Int. Cl. C10m *7/14, 7/28, 7/06*
U.S. Cl. 252—12 **4 Claims**

A novel, coating composition for dry film lubricant which comprises a synthetic resin for paint containing dispersed therein a mixture of at least one conventional lubricating material having a particle size of up to 60 microns, such as molybdenum disulfide powder, graphite powder or polytetrafluoroethylene powder, and a fine fluorinated graphite powder having a particle size of up to 60 microns, the proportion of said synthetic resin to said mixture being 90:10 to 10:90, preferably 60:40 to 40:60, by weight and the proportion of the conventional lubricating material to the fluorinated graphite powder being 99.5:0.5 to 5:95, preferably 70:30 to 30:70, by weight. Said coating composition has an increased critical PV value and substantially the same friction coefficient as that of a conventional one. The dry film of the coating composition acts as a durable, solid lubricant.

3,776,846

ALUMINUM COMPLEX SOAP GREASE

Wayne W. Bailey, Gibsonia, and Paul R. McCarthy, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,239
Int. Cl. C10m *5/24, 5/22, 5/14*
U.S. Cl. 252—32.7 **13 Claims**

A grease composition for lubricating bearings operating at temperatures up to about 350° F. comprises a mineral lubricating oil base having an aniline point below about 230° F. and a grease-forming amount of an aluminum complex soap of benzoic acid and (1) a saturated fatty acid having from 20 to 22 carbon atoms per molecule or (2) a saturated fatty acid mixture which contains at least 50 percent by weight of C_{20} and/or C_{22} fatty acids. The molar ratio of benzoic acid to C_{20}–C_{22} fatty acids is about 1.25:1 to about 2:1, benzoic acid to C_{20}–C_{22} fatty acids, respectively. If a saturated C_{14} to C_{22} fatty acid mixture which contains about 50 to about 60 percent by weight of C_{20} and/or C_{22} fatty acids is used, the molar ratio of benzoic acid to saturated C_{14} to C_{22} fatty acid mixture is about 0.7:1 to about 1:1, benzoic acid to saturated fatty acid mixture, respectively, The grease composition of the invention is distinguished over grease compositions prepared from an aluminum complex soap of benzoic acid and hydroxystearic acid or fatty acid mixtures which predominate in C_{16} and C_{18} acids.

3,776,847

LUBRICATING OIL COMPOSITION

James W. Pearson, Weybridge, Gareth G. Price, West Byfleet, and Hugh B. Earps, Wirral, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Feb. 10, 1972, Ser. No. 225,283
Claims priority, application Great Britain, Feb. 16, 1971, 4,735/71
Int. Cl. C10m *1/40*
U.S. Cl. 252—33 **5 Claims**

A lubricating oil composition for the hot rolling of metals comprises (a) from about 50 to about 85% by weight of a natural fatty oil, (b) from about 0.1 to about 10% by weight of an alkaline earth metal salt of an oil-soluble sulfonic acid and (c) from about 5 to about 49.9% by weight of a mineral lubricating oil having a viscosity index of at least 50.

3,776,848

PROCESS AND COMPOSITION FOR COATING METALS

Wilbur S. Hall, Plymouth Meeting, and Lester Steinbrecher, Southampton, Pa., assignors to Amchem Products, Inc., Ambler, Pa.

No Drawing. Continuation-in-part of application Ser. No. 791,801, Jan. 16, 1969, now Patent No. 3,585,084, which is a continuation-in-part of abandoned application Ser. No. 554,336, June 1, 1966. This application June 14, 1971, Ser. No. 152,992
Int. Cl. C10m *1/06, 1/26*
U.S. Cl. 252—49.5 **14 Claims**

A lubricating coating is applied to a metallic surface by treating the surface with an acidic aqueous coating composition comprising a coating-forming lubricant and an oxidizing agent.

3,776,849

LIQUID ELECTROPHOTOGRAPHIC DEVELOPERS

Jacques C. T. Tellier, Conklin, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 875,515, Nov. 10, 1969. This application Nov. 12, 1971, Ser. No. 198,461
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **8 Claims**

A liquid toner composition comprising an electrically insulating carrier liquid, a pigment and a copolymer of maleic anhydride and a higher alkyl vinyl ether. The alkyl group of the alkyl vinyl ether contains from about 16 to about 22 carbon atoms.

3,776,850

DETERGENT FORMULATIONS

Tillmon H. Pearson and Gunner E. Nelson, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 106,926, Jan. 15, 1971. This application July 28, 1972, Ser. No. 276,177
Int. Cl. C11d *3/20*
U.S. Cl. 252—89 **21 Claims**

To obviate eutrophication of water, non-phosphorus detergent builders and sequestering agents are provided. These are either

(a) a water soluble polymer of a 1-oxyacylopropane-2,3-dicarboxylic acid,

(b) a water soluble salt of a poly-1-oxacyclopropane-2,3-dicarboxylic acid

or a mixture of (a) and (b). Conventional detergent actives may be used with these builders.

3,776,851

DETERGENTS CONTAINING TETRAHYDROXYSUCCINIC ACID AND SALTS THEREOF

Bao-Ding Cheng, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Sept. 25, 1972, Ser. No. 291,683

Int. Cl. C11d *1/04*

U.S. Cl. 252—89 **11 Claims**

A non-phosphate and non-NTA containing detergent composition comprising from about 30 to 95% by weight of a detergent, especially an anionic or nonionic detergent and from about 5 to 70% by weight of tetrahydroxysuccinic acid and salts thereof.

3,776,852

PICKLING SOLUTIONS

Horst Fluchter, Dusseldorf, and Christian Rossmann, Langenfeld, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,039

Claims priority, application Germany, Feb. 2, 1971, P 21 04 699.1

Int. Cl. C11d *7/48*

U.S. Cl. 252—143 **4 Claims**

The present invention provides an acid pickling solution containing a wetting agent, the solution also containing an anti-foaming agent consisting essentially of a mixture of octadecanediol-1,12 and a paraffin oil.

3,776,853

DRY-CLEANING COMPOSITION AND METHOD

Herbert F. Minter, Pittsburgh, and James D. B. Smith, Turtle Creek, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,231

Int. Cl. C11d *7/52*

U.S. Cl. 252—171 **10 Claims**

Filter clogging in dry-cleaning machines is reduced and filter life is extended by using a dry-cleaning solvent containing a flocculant. A dry-cleaning composition is disclosed which comprises a dry-cleaning solvent, about 50 to 1000 p.p.m. flocculant, and about 0.1 to 2% detergent.

3,776,854

SULFUR OXIDE ACCEPTORS HAVING HIGH INITIAL ACTIVITY WITH GOOD CHEMICAL AND PHYSICAL STABILITY AND PROCESS FOR THEIR PREPARATION

Frits M. Dautzenberg, Herman W. Kouwenhoven, and Jaap E. Naber, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 58,461, July 27, 1970. This application Dec. 1, 1971, Ser. No. 203,843

Claims priority, application Netherlands, Dec. 2, 1970, 7017654

Int. Cl. B01d *53/16;* **B29d** *27/08;* **C04b** *35/18*

U.S. Cl. 252—190 **16 Claims**

Highly active copper-containing acceptors suitable for use in removing sulfur oxides from waste gases are prepared by impregnating an alumina-containing support which has been calcined at a temperature above 780° C., with a water soluble compound of aluminum, titanium and/or zirconium either prior to or simultaneously with impregnation of a copper compound.

3,776,855

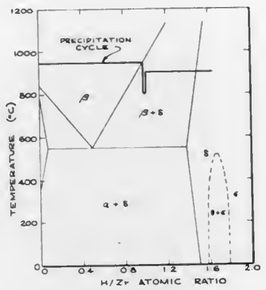
HYDRIDING PROCESS

Jan W. Raymond, Canoga Park, and Hideo Taketani, Northridge, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 14, 1965, Ser. No. 487,337

Int. Cl. C01b *6/00*

U.S. Cl. 252—301.1 R **10 Claims**



A method for hydriding a body of a Group IV–B metal, preferably zirconium, to produce a crack-free metal hydride body of high hydrogen content by cooling the body at the beta to beta+delta boundary, without further addition of hydrogen, to precipitate a fine-grained delta-phase metal hydride in the beta+delta phase region and then resuming the hydriding, preferably preceded by a reheating step.

ERRATUM

For Class 252—301 see:
Patent No. 3,776,508

3,776,856

PROCESS FOR THE WET CHEMICAL COMBUSTION OF ORGANIC MATERIAL

Knut Scheffler, Karlsruhe, and Hendricus M. Muller and Aldo Cappel, Hanau am Main, Germany, assignors to Alkem, Alpha-Chemie und- Metallurgie G.m.b.H., Leopoldshafen uber Karlsruhe, Germany

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,196

Claims priority, application Germany, Nov. 21, 1969, P 19 58 464.6

Int. Cl. C01g *56/00*

U.S. Cl. 252—301.1 W **18 Claims**

The wet chemical combustion of organic materials, e.g. animal cadavers, cellulose, cellulose containing materials and other organic waste with subsequent separation and recovery of heavy metals, especially plutonium and uranium, contained therein by carbonizing the organic material with highly concentrated mineral acids at elevated temperature and combusting the colloidal carbon obtained with active oxygen to form carbon dioxide.

3,776,857

WATER-IN-OIL EMULSIONS

Paul Lindner, Evanston, Ill., assignor to Witco Chemical Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 839,667, July 7, 1969. This application Sept. 24, 1971, Ser. No. 183,646

Int. Cl. B01j *13/00*

U.S. Cl. 252—308 **9 Claims**

Stable (invert) water-in-oil emulsions are readily prepared comprising an oleaginous continuous phase, a dispersed water phase, and, as the emulsifier, fatty acid esters of ethylene oxide adducts of aliphatic polyhydric alcohols, said alcohols containing from 3 to 12 carbon atoms and 3 to 6 hydroxyl groups and said adducts containing from about 0.3 to about 1.5 mols of ethylene oxide per hydroxyl group.

3,776,858

CATALYSTS

Bastiaan Adriaan Heide and Johannes Jacobus Muller, Rotterdam, and Theodorus Joannes Kock, Heenvliet, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Dec. 1, 1971, Ser. No. 203,844

Claims priority, application Great Britain, Dec. 4, 1970, 57,649/70

Int. Cl. B01j

U.S. Cl. 252—431 R **13 Claims**

The specification describes interesterification catalysts comprising particles of a catalytically active alkali metal derivative, e.g. sodium ethoxide, immobilized by a substantially completely saturated solid fatty material, e.g. hydrogenated fat, soap or fatty acid wax.

The catalyst can be used for the interesterification of glycerides.

3,776,859

AUTOMOTIVE EXHAUST CONVERSION CATALYST

Edgar Alan Simpson, Severna Park, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,072

Int. Cl. B01f *11/06, 11/12*

U.S. Cl. 252—462 **5 Claims**

A process for improving the thermal stability of auto exhaust conversion catalyst prepared by deposition of a coating containing the catalyst components on a relatively inert base, in which the coating composition is stabilized in a manner such that the catalyst composite can withstand temperatures as high as 1800° to 2000° F. without loss of activity.

3,776,860

REFORMING CATALYST

Charanjit Rai, Somerset, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

No Drawing. Filed July 30, 1971, Ser. No. 167,760

Int. Cl. B01j *11/12*

U.S. Cl. 252—455 R **6 Claims**

An improved reforming catalyst is disclosed comprising an alumina support impregnated with platinum, rhenium and a rare earth metal. Preferably the catalyst composition comprises platinum, rhenium and rare earth metals such as neodymium (Nd), praseodymium (Pr), samarium (Sm) and ytterbium (Yb) each in amounts of from 0.1% to 5% weight.

3,776,861

DRY POWDER BUBBLEBATH COMPOSITION

Marvin Mausner, Teaneck, and Julian A. Rachels, Jr., Ridgewood, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Filed June 7, 1972, Ser. No. 260,580

Int. Cl. C11d *1/14, 1/22, 1/37, 3/04*

U.S. Cl. 252—545 **6 Claims**

Improved dry powder bubblebath compositions composed of separately prepared olefin sulfonate in flaked or powdered form blended with a spray dried bead composed of olefin sulfonate, linear alkyl benzene sulfonate, starch hydrolysate, magnesium sulfate and a sodium or potassium sulfate filler.

3,776,862

CYCLIC ETHER POLYMERIZATION PROCESS

John Boor, Jr., El Cerrito, Calif., assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,837

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A **5 Claims**

Cyclic ethers are polymerized to polyethers, at a temperature between about 50° C. and about 160° C., in the presence of a catalyst comprising the reaction product of (1) an inorganic compound of a metal from Groups II, III*a*, IV, and VI*b*, of the periodic system having at least one bond from said metal to oxygen or sulfur, (2) a primary or secondary amine containing up to 18 carbon atoms and (3) a dialkyl zinc compound.

3,776,863

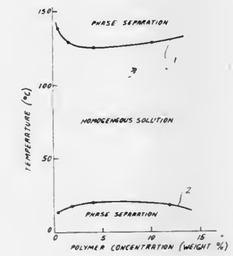
PROCESS FOR THE PRODUCTION OF PROPYLENE OXIDE POLYMERS

Kyoichiro Shibatani and Shiro Nagata, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan

Filed May 15, 1972, Ser. No. 253,328

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A **10 Claims**



Solution polymerization of propylene oxide homopolymers and copolymers can be easily conducted in a polymerization system with low viscosity by strictly controlling the polymerization temperature at certain levels within the range of 0° C. and 150° C. and using an aliphatic hydrocarbon having four carbon atoms as a polymerization medium.

3,776,864

TRANSFER COATING FOR CARBON PAPER AND THE LIKE

Warren H. Woerner, Rochester, N.Y., assignor to Kee Lox Manufacturing Company, Rochester, N.Y.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,750

Int. Cl. C09d *3/14, 3/16*

U.S. Cl. 260—17 R **6 Claims**

There are disclosed formulations for coatings for carbon papers comprising a plastic binder, ink, and a solvent. The plastic binder is composed of a methyl methacrylate polymer, a modifying resin, and a plasticizer. The methyl methacrylate comprises between 51% and 90% of the total resin content. The ink is composed of oils, coloring materials, a surface active agent, and a filler or extender. The modifying resin is compatible with the acrylic resin and the plasticizer but incompatible with the oils used in the ink.

3,776,865
WATER-REDUCIBLE ACID TERMINATED POLYMERIC FAT ACID POLYAMIDE RESINS USEFUL AS FLEXOGRAPHIC INK BINDERS
David W. Glaser and Roger A. Lovald, St. Paul, Minn., assignors to General Mills Chemicals, Inc.
No Drawing. Filed May 30, 1972, Ser. No. 258,023
Int. Cl. C08g *20/26*
U.S. Cl. 260—18 N 8 Claims
An acid terminated polymeric fat acid polyamide resin obtained by reacting an acid component comprising a polymeric fat acid and another dicarboxylic acid with an amine component comprising isophorone diamine or mixtures thereof with an alkylene diamine. The resins are particularly useful in flexographic inks where water reducibility of the resins is desirable.

3,776,866
MALEINIZATION PROCESS
Yasuharu Nakayama, Hiratsuka, Japan, assignor to Kansai Paint Company Limited, Hyogo-ken, Japan
No Drawing. Original application Sept. 22, 1971, Ser. No. 182,912. Divided and this application Dec. 21, 1972, Ser. No. 317,273
Claims priority, application Japan, Sept. 24, 1970, 45/84,344; Sept. 28, 1970, 45/85,244
Int. Cl. C08f *27/00*; C09f *7/00*
U.S. Cl. 260—18 R 1 Claim
In maleinization process in which a maleic anhydride compound is reacted with at least one of unsaturated polymers having ethylenic double bond in the molecule, unsaturated fatty acids having 8 to 18 carbon atoms and esters of said unsaturated fatty acids to produce a maleinized product, the improvement wherein said reaction is carried out in the presence of at least one of nitrogen-containing compounds selected from the group consisting of ammonia, ammonium salts of saturated fatty acids, monoamine compounds, diamine compounds and amide compounds.

3,776,867
SOLVENTLESS NON-POLLUTING VEHICLES FOR HEAT-SET INKS
Harold W. Perry, Chicago, and Martin E. Swinford, Palatine, Ill., assignors to Richardson Ink Co., Niles, Ill.
No Drawing. Filed Oct. 5, 1970, Ser. No. 78,270
Int. Cl. C08g *51/72*
U.S. Cl. 260—21 15 Claims
Vehicles for use in commercial heat-set inks comprising raw castor oil and hydroxylated fatty acids of castor oil which in the presence of modified resins, a cross-linking agent and an acid catalyst cure instantly when exposed to heat to form hard coatings on paper or paper-like substrates. The ink vehicles do not employ any hydrocarbon solvent additives requiring evaporation in the drying process, and therefore, no polluting vapors are present to contaminate normal atmospheric resources.

3,776,868
MODIFIED ESTER RESINS
Arthur L. Cunningham, Park Forest, and John Mathai, Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio
No Drawing. Filed May 1, 1972, Ser. No. 249,003
Int. Cl. C08f *19/14*
U.S. Cl. 260—23 EP 27 Claims
This invention relates to resin compositions and to a process for preparing resin compositions which are particularly useful in organic mediums as coating or film-forming materials. The compositions comprise a modified ester obtained by reacting a fatty acid with an epoxidized-fatty acid ester and/or epoxidized-fatty oil to obtain a mixed ester which is modified with an aromatic vinyl monomer.

3,776,869
IMPROVED URETHANE ADHESIVES COMPRISING A BLEND OF A CASTOR OIL BASED ISOCYANATE PREPOLYMER WITH A TEREPENE PHENOLIC RESIN
Julius Sirota, South Plainfield, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 173,312, Aug. 19, 1971. This application Apr. 9, 1973, Ser. No. 349,036
Int. Cl. C08g *5/20*
U.S. Cl. 260—24 1 Claim
Improved urethane adhesives having high green strength are disclosed comprising a blend of an isocyanate prepolymer derived from castor oil with a terpene phenolic resin.

3,776,870
PRODUCTION OF BENZOTHIETANE-2-SPIRO-2'-(1',3'-DIAZACYCLOALKANES)
Helmut Hagen, Frankenthal, and Friedrich Becke, Heidelberg, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed July 2, 1971, Ser. No. 159,497
Claims priority, application Germany, July 15, 1970, P 20 34 987.5
Int. Cl. C07d *51/36*
U.S. Cl. 260—25 R 10 Claims
Benzothietane-2-spiro-2'-(1',3' - diazacycloalkanes) by reaction of o-halobenzaldehyde compounds with diaminoalkanes and sulfur and the benzothietane-2-spiro-2'-(1',3'-diazacycloalkanes) themselves. The compounds which can be prepared by the process of the invention, such as benzothietane-2-spiro-2'-imidazolidine and its derivatives substituted in the 4'-position by methyl and/or the 4-position by chlorine or benzothietane-2-spiro-2'-hexahydropyrimidine and its derivative substituted in the 4-position by chlorine, are auxiliaries for the textile and rubber industries, plant protection agents and valuable starting materials for the production of plant protection agents and dyes.

3,776,871
COLD HARDENING POLYMERIZABLE COMPOSITION
Erich Bader, Hanau am Main, and Hubert Koert and Gerd Brod, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Continuation-in-part of abandoned application Ser. No. 71,372, Sept. 11, 1970, which is a division of application Ser. No. 692,248, Dec. 20, 1967, now Patent No. 3,551,372, which in turn is a continuation of abandoned application Ser. No. 404,511, Oct. 16, 1964. This application June 6, 1972, Ser. No. 260,144
Claims priority, application Germany, Dec. 12, 1963, D 43,156
Int. Cl. C08f *19/00*
U.S. Cl. 260—28.5 D 5 Claims
A polymerizable composition useful for coating, filling, sealing and waterproofing various substrates, which consists essentially,

(A) in an amount of about 50 to 95% by weight of said composition, of polymerizable monomer compounds and said monomer compounds in turn consisting,
  (i) to an extent of about 1 to 50% by weight of the total monomers, of at least one compound selected from the group consisting of n-hexyl acrylate, n-octyl acrylate, 2-ethylhexyl acrylate, decyl acrylate and the corresponding methacrylic acid esters,
  (ii) the remainder of said polymerizable monomer compounds being methylmethacrylate,
(B) in an amount of about 5 to 50% by weight of said composition, of polymeric compounds and said polymeric compounds in turn consisting of

(i) at least one interpolymer of vinyl chloride and at least one other monomer selected from the group consisting of vinyl acetate, maleic acid, maleic acid esters and maleic acid anhydride, said interpolymer of vinyl chloride being soluble in said monomer compounds at (A), and
  (ii) any remainder of said polymeric compounds consisting of at least one polymer of said monomer compounds at (A) which is soluble in said latter monomer compounds, and
(C) of sufficient quantities of catalyst to effect the polymerization of said monomer compounds at (A) so as to cause the cold hardening of said composition.

3,776,872
PROCESS FOR THE PRODUCTION OF AQUEOUS DISPERSIONS OF MODIFIED SYNTHETIC CONJUGATED DIENE POLYMERS
Gerardus E. La Heij and Gerrit J. van Amerongen, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 882,743, Dec. 5, 1969. This application Mar. 16, 1972, Ser. No. 235,327
The portion of the term of the patent subsequent to Feb. 15, 1989, has been disclaimed
Int. Cl. C08d *5/02, 5/04*
U.S. Cl. 260—29.7 AT 8 Claims
A process for the production of dispersions of synthetic conjugated diene solution polymers containing toluene insoluble gel comprises treatment of an aqueous polymer dispersion with a free radical yielding substance at a temperature above 20° C., in the absence of a compound that would form a redox system.

3,776,873
SPRAYABLE COMPOSITIONS
Leon V. Kremer, Cottage Grove Village, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed July 22, 1968, Ser. No. 746,245
Int. Cl. C08f *45/28, 45/30*; C09k *3/30*
U.S. Cl. 260—29.1 R 10 Claims
Solutions of a polymeric base material and a volatile organic liquid at solid contents hitherto nonsprayable are rendered sprayable, either for aerosol or non-aerosol applications, by the inclusion of an organic compound, either a volatile liquid or a gas at room temperature and pressure, and a carbonated metal salt of an acid having at least 12 aliphatic carbon atoms and a metal ratio of at least 3. The polymeric base of such a composition is in the form of relatively small, discrete non-agglomerating particles capable of passing through the orifice nozzle of conventional aerosol or non-aerosol equipment.

3,776,874
ALKYL-SULFOXIDE AND ALKYL-SULFONE TERMINATED OLIGOMERS AS EMULSIFIERS IN EMULSION POLYMERIZATIONS
Leland E. Dannals, Waterbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.
No Drawing. Division of application Ser. No. 777,175, Nov. 19, 1968, now Patent No. 3,668,230, and a continuation-in-part of applications Ser. No. 547,743, May 5, 1966, now abandoned, Ser. No. 562,097, July 1, 1966, now Patent No. 3,498,943, and Ser. No. 562,098, July 1, 1966, now Patent No. 3,498,492. This application Aug. 25, 1971, Ser. No. 174,950
Int. Cl. C08d *1/09*; C08f *1/13*
U.S. Cl. 260—29.6 TA 18 Claims
Alkyl-sulfoxide and alkyl-sulfone terminated oligomers. Prepared by addition polymerization of monomer in presence of a mercaptan, followed by oxidation. Oligomers used as emulsifiers in the emulsion polymerization of one or more monomers to produce rubber or plastic latexes from which solid polymers can be obtained.

3,776,875
PREPARATION OF MODIFIED ORGANOPOLYSILOXANES IN A SOLVENT SYSTEM
John Charles Getson, Tecumseh, Mich., assignor to Stauffer Chemical Company, New York, N.Y.
Continuation of abandoned application Ser. No. 713,203, Mar. 14, 1968. This application Dec. 30, 1971, Ser. No. 214,405
Int. Cl. C08f *11/04*
U.S. Cl. 260—31.2 R 15 Claims
Thixotropic curable compositions with self-priming properties are prepared by grafting hydroxyl-terminated organopolysiloxanes with unsaturated organic monomers in the presence of inert organic solvents.

3,776,876
SPREADABLE COVERING MATERIAL
Jens Juul Christensen, Bedford, Ohio, assignor of a fractional part interest to W. J. Ruscoe Company, Akron, Ohio
No Drawing. Continuation-in-part of abandoned application Ser. No. 6,555, Jan. 28, 1970. This application Feb. 15, 1972, Ser. No. 226,518
Int. Cl. C08d *7/08, 9/08*
U.S. Cl. 260—29.7 R 9 Claims
A covering material comprising an air setting, spreadable homogeneous mixture made from normally incompatible organic solvent based elastomer cement, a water base neoprene latex, and a water base filler and/or pigment mixture.

3,776,877
METHOD OF PRODUCING EXTRUDED THERMOSET POLYURETHANES
Donald W. Kelley, Garland, and James F. White, Jr., Ronald B. Winslow, and Charles L. Coppock, Dallas, Tex., assignors to Thuron Industries, Inc., Dallas, Tex.
No Drawing. Continuation of abandoned application Ser. No. 804,258, Mar. 4, 1969. This application July 23, 1971, Ser. No. 165,743
Int. Cl. C08g *41/04, 51/36, 53/00*
U.S. Cl. 260—31.8 M 7 Claims
The process of producing an extruded thermosetting resin having a urethane linkage comprising: forming a mixture in reactive proportions of a diisocyanate and a polymer having reactive hydroxyl groups, the mixture being capable of being extruded, reacting the diisocyanate and the polymer to form said urethane linkages, extruding said mixture while extrudable, and prior to the completion of the reaction, into a predetermined form and permitting the reaction to complete to produce a thermosetting resin.

3,776,878
ADDITIVE FOR ACRYLIC LACQUERS
Martin J. Simon, Natrona Heights, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.
No Drawing. Filed Jan. 4, 1971, Ser. No. 103,917
Int. Cl. C08f *45/36*
U.S. Cl. 260—32.2 9 Claims
Acrylic lacquers containing acrylic polymers when used as coatings exhibit excellent gloss and pattern control when methyl 12-hydroxystearate is used as an additive. The additive may be used for both solvent solutions and dispersions of acrylic polymers.

3,776,879
HIGH SOLIDS METHYLATED UREA-FORMALDEHYDE COATING COMPOSITIONS
Werner Josef Blank, Wilton, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Jan. 31, 1972, Ser. No. 222,321
Int. Cl. C08c *11/28, 11/32*; C08f *45/28*
U.S. Cl. 260—33.4 R 10 Claims
There are provided high solids methylated urea-formaldehyde resin compositions comprising (1) at least 80%, by weight, of a blend of (a) liquid or syrupy methylated

urea-formaldehyde resins composed of urea, formaldehyde, and methanol in 1:2–3:1–2.5 molar ratio, respectively, and (b) a monofunctional branched-chain aliphatic alcohol wherein the alcohol is present in an amount equal to from 30% to 70% of the overall blend and (2) the balance, that is, not more than, 20%, by weight, if desired, being a suitable solvent for said blend. The composition, when applied as a coating to a metal or wood substrate and heated, will render the surface substantially free from pinholes, crawling, and cratering.

3,776,880
ARYLENE SULFIDE POLYMER COATING COMPOSITIONS

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,130
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 R **5 Claims**

Adherent coatings of arylene sulfide polymers are formed by applying to substrates a mixture of any arylene sulfide polymer and selected nitrogenous organic compounds. The arylene sulfide polymer-nitrogen-containing organic compound mixture is preferably applied as a slurry to a substrate in a carrier liquid, such as ethylene glycol, methyl alcohol, water, toluene, and the like or mixtures thereof, and thereafter heated to form a coating.

3,776,881
COATING COMPOSITION

Robert Wendell Lerner, Hossein Hayati, and John Robert Flasch, Adrian, Mich., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,428
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB **11 Claims**

A coating composition containing a hydrolyzed and condensed organotrihydrocarboxy silane, a boron compound selected from the class consisting of boric acid, boric acid anhydride, alkoxy boroxines and alkyl borates and a particulate solid. The coating composition will impart galvanic protection to metal surfaces coated therewith.

3,776,882
STABILITY OF FIBER-FORMING POLYESTERS

Franz Witzler, Oberbruch, and Hans-Martin Koepp, Erlenbach am Main, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed Apr. 14, 1971, Ser. No. 134,044
Claims priority, application Germany, Apr. 25, 1970, P 20 20 330.9
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.9 R **4 Claims**

Stabilizing fiber- or film-forming polyesters, especially against heat and hydrolysis, by adding and melt-blending therewith a small amount of at least one arylene-biscarbodiimide as the essential stabilizing agent. The resulting stabilized polyester products are especially useful as filaments or fibers in tire cords.

3,776,883
FLAME RETARDANT POLYESTER COMPOSITIONS

Robert William Stackman, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,765
Int. Cl. C08g *51/62*
U.S. Cl. 260—45.75 B **1 Claim**

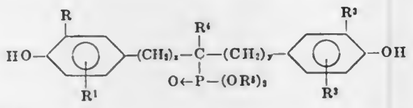
Flame retardant synthetic linear polyester compositions are provided which comprise from 1 to about 25 weight percent, based on the weight of the polyester composition, of an organo-arsenic compound which contains at least 5 weight percent of arsenic and has a boiling point of at least 20° C. higher than the melting point of the polyester. Suitable compounds for poly(ethylene terephthalate) include ethylenebis(diphenylarsine) and tetraphenylarsonium chloride.

3,776,884
COMPOSITIONS STABILIZED WITH BIS-(HINDERED PHENOL)-ALKYLENE DIPHOSPHONATES AND PHOSPHONOACETATES

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation

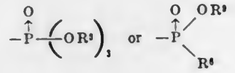
No Drawing. Original application May 19, 1969, Ser. No. 825,953, now Patent No. 3,714,300, dated Jan. 30, 1973. Divided and this application Apr. 12, 1971, Ser. No. 133,371
Int. Cl. C08f *45/58*; C08g *51/58*
U.S. Cl. 260—45.85 B **12 Claims**

Compositions of matter comprising organic materials normally subject to oxidative and thermal deterioration are stabilized by compounds having the structure

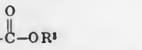


where

R, R^1, R^2 and R^3 are alkyl or cycloalkyl groups, R^4 is a phosphoryl group having the structure



or carbalkoxy group



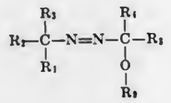
where R^6 is alkyl, phenyl or alkylphenyl, R^5 is alkyl, alkaryl or aralkyl and x and y are 1 to 6.

3,776,885
METHOD OF CURING POLYMERS WITH AZO COMPOUNDS

Ronald Edward MacLeay, Williamsville, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Oct. 28, 1971, Ser. No. 193,568
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 G **13 Claims**

Azo compounds of the formula



in which

R_1 is aliphatic hydrocarbon, cyano, aryl, aralkyl or R_6O—;
R_2, R_3 and R_4 are aliphatic hydrocarbon;
R_5 is aliphatic hydrocarbon, aryloxyalkyl, alkoxyalkyl, aryl alkoxycarbonylalkyl, acyloxyalkyl, hydroxyalkyl, aralkyl, acylalkyl, carboxyalkyl, cyanoalkyl, haloalkyl or t-alkylperoxyalkyl;
R_2 and R_3 and R_4 and R_5 can together form a bivalent aliphatic hydrocarbon radical; and
R_6 is aliphatic hydrocarbon, aryl or aralkyl;

are used to cross-link a methyl-vinyl base silicone rubber at a temperature in the range of from above 250° F. to 450° F. until cross-linking is effected.

3,776,886
POLYESTERS FROM 1,4-DIALKYL-1,4-CYCLOHEXANE-DICARBOXYLIC ACID AND ORGANIC DIOLS

Ralph C. Schreyer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Nov. 4, 1971, Ser. No. 195,858, now Patent No. 3,725,343, which is a division of application Ser. No. 722,204, Apr. 18, 1968, now Patent No. 3,646,223. Divided and this application Dec. 20, 1972, Ser. No. 316,745
Int. Cl. C08g *17/08*
U.S. Cl. 260—47 C **4 Claims**

Polyesters from 1,4-dialkyl-1,4-cyclohexane dicarboxylic acid and organic diols. Synthesis of the dicarboxylic acid from substituted butadiene and acrylic compound starting materials is disclosed. Advantages of a variety of polyesters are illustrated.

3,776,887
FLAME RETARDANT POLYESTER PRODUCTS PREPARED FROM HALO-SUBSTITUTED-ARYLOXY-ALKANOLS

Charles V. Juelke, Morristown, and Louis E. Trapasso, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Jan. 4, 1972, Ser. No. 215,412
Int. Cl. C08g *17/14, 17/18*
U.S. Cl. 260—47 C **5 Claims**

Flame retardancy imparted to polyester products by incorporating therin a small but effective amount of a halo-substituted-aryloxy-alkane diol comonomer.

3,776,888
CARBOXY POLY(VINYL BENZAL)RESINS

John A. Mattor, Bar Mills, Maine, assignor to Scott Paper Company, Delaware County, Pa.

No Drawing. Continuation-in-part of application Ser. No. 180,104, Sept. 13, 1971. This application Dec. 26, 1972, Ser. No. 318,014
Int. Cl. C08f *27/18*; C08g *11/00*
U.S. Cl. 260—73 R **8 Claims**

Disclosed are carboxy poly(vinyl benzal) resins useful as binders in combination with lithographic diazo compounds.

3,776,889
ALLYL CARBAMATE ESTERS OF HYDROXY-CONTAINING POLYMERS

Kailash C. Pande, Farmingdale, and Stanley E. Kallenbach, Roslyn Heights, N.Y., assignors to Powers Chemco, Inc., Glen Cove, N.Y.

No Drawing. Filed Jan. 7, 1971, Ser. No. 104,807
Int. Cl. C08f *27/10*; C08g *22/06, 22/10*
U.S. Cl. 260—77.5 CR **3 Claims**

Light-sensitive film forming polymers are disclosed which comprise recurring units of allyl carbamate-esterified polymeric alcohols. The use of these photosensitive materials in photolithography and photomechanical processes is also described.

3,776,890
POLYAMIDES FROM 2-(4-AMINOCYCLOHEXYL)-1,1 - DIMETHYLETHYLAMINE OR 2-(4-AMINOPHENYL)-1,1-DIMETHYLETHYLAMINE

Lester Tsung-Cheng Lee, Parsippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 13, 1971, Ser. No. 143,186
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **6 Claims**

Novel polyamides are prepared by polymerizing a diamine selected from the group consisting of 2-(4-aminocyclohexyl)-1,1-dimethylethylamine and 2 - (4 - aminophenyl)-1,1-dimethylethylamine with a dicarboxylic acid or derivative thereof. The diamines are also novel compounds and are prepared by reduction of 2-(4-nitrophenyl)-1,1-dimethyl-1-nitroethane. The polyamides are useful in forming fibers and films having excellent high temperature properties.

3,776,891
1,1-DI(AMINOALKYLTHIO)-2,2-DICYANOETHYLENES

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 9, 1972, Ser. No. 224,968
Int. Cl. C07c *121/42*; C08d *9/00*; C08f *27/06*
U.S. Cl. 260—79.5 B **9 Claims**

Compounds of the formula

$$(CN)_2C{=}C(S{-}A{-}NRR_1)_2$$

which are accelerators for the vulcanization of rubber.

3,776,892
ACRYLAMIDE POLYMER AND METHOD OF FLOCCULATING AN AQUEOUS SUSPENSION OF SOLID PARTICLES THEREWITH

Merrill Bleyle, Waltham, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed July 2, 1971, Ser. No. 159,293
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.73 **4 Claims**

Polymers containing a major amount of acrylamide copolymerized with an aliphatic carboxylic acid and an aminoester are useful for flocculating aqueous suspension of finely divided solid particles.

3,776,893
MULTIFUNCTIONAL INITIATORS

Floyd E. Naylor and Ralph C. Farrar, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 149,830, June 3, 1971, which is a division of application Ser. No. 800,271, Feb. 18, 1969, both now abandoned. This application Nov. 4, 1971, Ser. No. 195,811
Int. Cl. C08d *1/32*; C08f *1/28, 19/08*
U.S. Cl. 260—83.7 **12 Claims**

A polymerization process employing multifunctional initiators prepared by contacting organomonolithium compounds with selected compounds containing at least two carbon-carbon double bonds in the presence of polar compounds.

3,776,894
PROCESS FOR THE MANUFACTURE OF SUSPENSION POLYVINYL CHLORIDE OF POROUS STRUCTURE AND HIGH APPARENT DENSITY

Arno Czekay, Knapsack, Bruno Krämer, Hurth, and Karl Kaiser, Bruhl, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,090
Claims priority, application Germany, Mar. 24, 1970, P 20 14 015.2
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.8 W **2 Claims**

Production of polyvinyl chloride of porous structure and high apparent density, vinyl chloride is polymerized in suspension with agitation, in a closed reactor, in aqueous phase, at a temperature of between 50 and 65° C., in contact with a monomer-soluble activator and a protective colloid. More particularly, agitation of the polymerization batch is interrupted 10 to 20 minutes after the start of the

polymerization, for a period of between 0.5 and 1.5 hours, and agitation is resumed after that period and the polymerization is completed.

3,776,895

PRODUCTION OF CYCLOALKENE POLYMERS HAVING IMPROVED PROCESSABILITY

Servaas van der Ven and Dirk Medema, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,167

Claims priority, application Netherlands, Sept. 24, 1969, 6914466

Int. Cl. C08f *1/56*

U.S. Cl. 260—93.1 5 Claims

Elastomeric cycloalkene polymers having improved processability are produced by polymerizing at least one cycloalkene having 5 or 7 to 12 ring carbon atoms with a catalyst system consisting of a combination of an aluminum hydrocarbyl compound and a compound of tungsten or molybdenum and in the presence of a small amount of an acyclic monoolefin.

3,776,896

ORGANOLITHIUM POLYMERIZATION INITIATORS

William J. Trepka and Richard J. Sonnenfeld, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Application Feb. 24, 1971, Ser. No. 118,575, now Patent No. 3,711,424, which is a continuation of abandoned application Ser. No. 772,865, Nov. 1, 1968. Divided and this application Aug. 7, 1972, Ser. No. 278,234

Int. Cl. C08d *1/20, 3/08, 3/12*

U.S. Cl. 260—94.2 M 12 Claims

Improved 4 - halophenyllithium polymerization initiators are prepared by milling 4-halophenyllithium as a highly dispersed form in a hydrocarbon dispersing medium.

3,776,897

METHOD FOR TREATMENT OF SULFITE SPENT LIQUOR

Yoshikatsu Ikari, Chiba-ken, and Shoichiro Yokoyama, Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 2, 1972, Ser. No. 277,472

Claims priority, application Japan, Aug. 6, 1971, 46/58,967

Int. Cl. C07g *1/00*

U.S. Cl. 260—124 R 3 Claims

The pH of sulfite spent liquor to be treated is first adjusted to neutrality or weak acidity. To the resulting liquor is added a water-miscible organic solvent having a solubility parameter value of 9.0 to 12.5 in an amount such that the weight ratio of the solvent to water present in the spent liquor will fall in the range of from 6:4 to 4:6 thus causing hemicelluloses to be precipitated first. The hemicelluloses are removed from the liquor. Then, the organic solvent is added again to the residual liquor after the removal of hemicelluloses so as to cause formation of a heavy liquid phase containing lignosulfonates and a light liquid phase containing monosaccharides. The two phases thus formed are separated and refined to produce lignosulfonates and monosaccharides. The organic solvent used in the present treatment is recovered from the light liquid phase.

3,776,898

AZO DYESTUFFS CONTAINING AS THE TERMINAL COUPLING COMPONENT A PYRROLIDONOANILINE

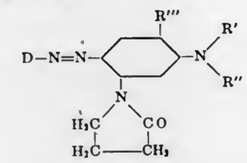
Lester N. Stanley, Delmar, and Russell E. Farris, Jr., Elnora, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,379

Int. Cl. C09b *29/08, 29/36, 31/14*

U.S. Cl. 260—156 12 Claims

Dye of the formula:



wherein D represents a diazotizable amine moiety free from carboxylic and sulfonic acid groups; R′ and R″ are selected from hydrogen, C_{1-18} alkyl and substituted alkyl, aralkyl, and cycloalkyl; R‴ is selected from hydrogen, lower alkyl and lower alkoxy, said dyes being suitable for dyeing hydrophobic fibers.

3,776,899

METHOD FOR THE PREPARATION OF O-SUBSTITUTED-6-AZACYTININES AND 6-AZACYTIDINE

Vladimir Panteleevich Chernetsky and Inna Vladimirovna Alexeeva, Kiev, U.S.S.R., assignors to Institute Mikrobiologil Im. Akad. Dk. Zabolotnogo, Kiev, U.S.S.R.

No Drawing. Continuation-in-part of applications Ser. No. 365,183, May 5, 1964, and Ser. No. 688,654, Dec. 7, 1967, which is a continuation-in-part of application Ser. No. 367,866, May 13, 1964, all now abandoned, and Ser. No. 731,698, May 24, 1968, now Patent No. 3,522,237. This application July 24, 1970, Ser. No. 58,161

The portion of the term of the patent subsequent to July 28, 1987, has been disclaimed

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 R 12 Claims

A method in which solutions of 2′,3′-O-alkylidene-5′-O-acyl-4-thio-6-azauridines or 2′,3′-O-alkylidene-4-thio-6-azauridines in organic solvents are treated with ammonia at atmospheric pressure to convert the substituted azauridines to 2′,3′-O-alkylidene-5-O-acyl-6-azacytidines or 2′,3′-O-alkylidene-6-azacytidines which may then be converted, if desired, to free 6-azacytidine by dissolving the above substituted-6-azacytidine in an anhydrous solvent and treating same with a metal alcoholate at an alkaline pH.

3,776,900

STABILIZATION OF REDUCED COENZYMES

Frank E. Hammer, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,687

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 R 12 Claims

Stabilization of reduced coenzymes such as reduced diphosphopyridine nucleotide and reduced triphosphopyridine nucleotide is achieved by dissolving the reduced coenzyme in a solvent mixture consisting of a water-soluble alkanol and a water-soluble polyhydroxy alcohol.

3,776,901

REACTION OF KETOXIMES WITH CARBOXYLIC ACID AMIDE-SULFUR TRIOXIDE COMPLEXES

Kenneth K. Kelly, Franklin Township, Westmoreland County, and Joseph S. Matthews, O'Hara Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,967

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A 17 Claims

A method for converting a ketoxime to an N-substituted amide by reacting a ketoxime with a complex of an N-substituted carboxylic acid amide and sulfur trioxide to form a novel compound of the ketoxime, carboxylic acid amide and sulfur trioxide and decomposing this compound to produce an N-substituted amide corresponding to the ketoxime. Cyclohexanone oxime is converted to caprolactam.

3,776,902

NOVEL $\Delta^{1,3,5(10)}$-ESTRATRIENES

Jean-Claude Gasc, Bondy, and Andre Pierdet, Noisy-le-Sec. France, assignors to Roussel-UCLAF, Paris, France

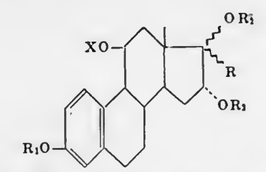
No Drawing. Filed Sept. 1, 1972, Ser. No. 285,885

Claims priority, application France, Sept. 10, 1971, 7132703

Int. Cl. C07c *169/08, 173/00*

U.S. Cl. 260—239.55 R 7 Claims

Novel 11β - alkoxy - $\Delta^{1,3,5(10)}$ - estratrienes of the formula



(I)

wherein X is selected from the group consisting of methyl and ethyl, R_1 is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of 1 to 18 carbon atoms, R is selected from the group consisting of hydrogen and unsaturated hydrocarbon of 2 to 4 carbon atoms, R_2 is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of 1 to 18 carbon atoms when R is hydrogen and R_2 is with R_3, when OR_2 and OR_3 have the same spatial configuration, an alkylidene or aralkylidene in the form of



wherein A is selected from the group consisting of hydrogen and hydrocarbon and B is a hydrocarbon and R_3 may also be selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of 1 to 18 carbon atoms and the wavy lines mean that the substituent may be in the α or β configuration having intense uterotrophic and estrogenic activity and very intense antigonadotrophic activity and their preparation.

3,776,903

PROCESS OF PREPARING 6-AZAURACIL

William Drell, Del Mar, and Donald E. Gueffroy, San Diego, Calif., assignors to Calbiochem, La Jolla, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,775, Feb. 4, 1971. This application Aug. 10, 1972, Ser. No. 279,999

Int. Cl. C07d *55/10*

U.S. Cl. 260—248 AS 15 Claims

6-azauracil is produced by combining thiosemicarbazide, glyoxylic acid, and dimethyl sulfate in aqueous solution. Cyclization occurs, with the production of the desired product. The procedure is simple, gives good yields, and requires only commercially available starting materials, and is readily adapted to continuous flow synthesis.

3,776,904

5-NITROFURFURYLIDENALKYL DERIVATIVES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS FEEDSTUFF ADDITIVES

Henry Martin and Stefan Janiak, Basel, Switzerland, Georg Pissiotas, Lorrach, Germany, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 15,936, Mar. 2, 1970. This application Oct. 4, 1971, Ser. No. 186,486

Claims priority, application Switzerland, Mar. 4, 1969, 3,273/69

Int. Cl. C07d *33/52*

U.S. Cl. 260—240 A 4 Claims

New 5-nitrofurfurylidenalkyl compounds substituted by a nitrogen containing heterocycle are disclosed. They are useful as feedstuffs and feedstuff additives for farm animals. They have antiparasitic, antibacterial and growth stimulating properties.

3,776,905

STYRYLTRIAZOLES, THEIR USE FOR THE OPTICAL BRIGHTENING OF ORGANIC MATERIALS, AND PROCESSES FOR THEIR MANUFACTURE

Reinhard Zweidler, Basel, Guglielmo Kabas, Binningen, Hans Schlaepfer, Basel, and Ian John Fletcher, Munchenstein, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,287

Claims priority, application Switzerland, Dec. 11, 1970, 18,366/70

Int. Cl. C09b *23/14*

U.S. Cl. 260—240.1 14 Claims

The invention relates to new styryltriazoles which in the 2-position possess a coumarinyl-(7) group which is substituted in the 3-position. These compounds are prepared by known methods. They are useful as optical brighteners for organic material.

3,776,906

7-[D-(α-AMINO-α-PHENYL-, 2-THIENYL- AND 3-THIENYL-ACETAMIDO)] - 3 - (1,2,5 - THIADIAZOL - 3 - YL)CARBONYLTHIOMETHYL - 3-CEPHEM-4-CARBOXYLIC ACIDS

John Michael Essery and Lee Cannon Cheney, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Mar. 16, 1972, Ser. No. 235,323

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 44 Claims

7[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)]-3-(1,2,5-triadiazol - 3 - yl)carbonylthiomethyl-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, and are specially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria. Also included in this invention are the corresponding pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl and phenacyl esters of such acids and their nontoxic, pharmaceutically acceptable acid addition salts.

3,776,907
7-[D-(α-AMINO-α-PHENYL-, 2-THIENYL- AND 3-THIENYL-ACETAMIDO)] - 3 - (1,2,3-THIADIAZOL-4- OR 5-YL)-CARBONYLTHIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACIDS

John Michael Essery and Lee Cannon Cheney, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed June 12, 1972, Ser. No. 261,767
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 88 Claims

7-[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)-3-(1,2,3-thiadiazol-4- or 5-yl)carbonylthiomethyl-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria. Also included in this invention are the corresponding pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl and phenacyl esters of such acids and their nontoxic, pharmaceutically acceptable acid addition salts.

3,776,908
HETEROCYCLIC AMINE ESTERS OF 2-PHENYL OR 2-PROPYL-4-PENTYNOIC ACID

Guido Cerbai, Via C. Loquez, 7 Pisa, Italy, and Luigi Turbanti, Via B. Da Padule, 10 Pisa, Italy

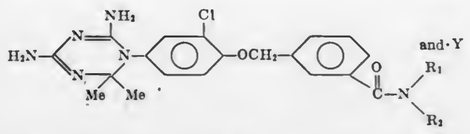
No Drawing. Original application Aug. 6, 1968, Ser. No. 750,479, now Patent No. 3,687,955, dated Aug. 29, 1972. Divided and this application June 23, 1972, Ser. No. 265,753
Claims priority, application Italy, Aug. 9, 1967, 19,363/67
Int. Cl. C07d *87/36*
U.S. Cl. 260—247.2 B 1 Claim

A series of alkylamine esters and heterocyclic amine esters of 2-phenyl or 2-propyl-4-pentynoic acid are provided along with physiologically acceptable salts thereof. These compounds are effective therapeutic agents having antispasmodic action as well as a regulatory effect on gastric and intestinal hyperkinesia. The production of these compounds is also provided.

3,776,909
4,6-DIAMONO-1(p-BENZYLOXYPHENYL-1,2-DIHYDRO-2,2-DIMETHYL-s-TRIAZINES

Bernard R. Baker, deceased, by Reba Baker, legal representative, Santa Barbara, Calif., and Wallace T. Ashton, Charleston, S.C., assignors to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,662
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.9 4 Claims



NR_1R_2=$N(CH_3)_2$ and $N(C_2H_5)_2$
Y=pharmaceutically acceptable acid addition salts thereof

where R_1 and R_2 are Me, the compounds are useful in inhibiting Walker 256 carcinosarcoma in rats as injectables utilizing a dosage range of about 0.1 to 6 mg./kg./day and also in inhibiting Dunning leukemia ascites in the same animal (because of transport by passive diffusion). This compound particularly has been found to have suitable transport across the blood/brain barrier in dogs.

3,776,910
PRODUCTION OF 5-(1',3'-DIAZACYCLOALK-2'-ENYL)-OXDIAZOLES-(1,2,4)

Helmut Hagen, Frankenthal, Friedrich Becke, Heidelberg, and Juergen Niemeyer, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,900
Int. Cl. C07d *51/28*
U.S. Cl. 260—256.4 H 4 Claims

The production of 5-(1',3'-diazacycloalk - 2' - enyl)-oxidazoles-(1,2,4) by reaction of 5-halomethyloxdiazoles with diaminoalkanes and elementary sulfur, and the novel 5 - (1',3' - diazacycloalk - 2' - enyl) - oxidazoles - (1,2,4) themselves. The compounds of the invention have hypotensive action and are assistants for the textile industry, plant protection agents and valuable starting materials for the production of plant protection agents, pharmaceuticals and dyes.

3,776,911
2-AMINO-5-OXO-5,6-DIHYDRO-s-TRIAZOLO [1,5-c]PYRIMIDINES

Gilbert Joseph Stacey, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 22,047, Mar. 23, 1970. This application Nov. 2, 1971, Ser. No. 195,048
Claims priority, application Great Britain, Apr. 17, 1969, 19,635/69
Int. Cl. C07d *51/46*
U.S. Cl. 260—256.4 F 7 Claims

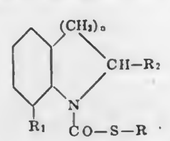
5 - oxo-5,6-dihydro-s-triazolo[1,5-c]pyrimidine derivatives bearing an amino or substituted amino group in the 2-position, an alkyl or aralkyl group in the 6-position, an alkyl group in the 8-position, and optionally, an alkyl group in the 7-position, for example, 2-amino-5,6-dihydro - 5 - oxo-6,8-di-n-propyl-s-triazolo[1,5-c]pyrimidine. These compounds are effective in preventing bronchospasm and can be used in the treatment of asthma.

3,776,912
1-(ALKENYLTHIOCARBONYL)-DECAHYDROQUINOLINES

Elmar Sturm, Arlesheim, Hans Joerg Cellarius, Riehen, and Christian Vogel, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,778
Claims priority, application Switzerland, Jan. 14, 1971, 553/71
Int. Cl. C07d *33/02*
U.S. Cl. 260—283 S 3 Claims

Substituted azabicycloalkanes of the Formula I



(I)

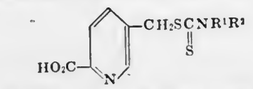
wherein R represents an alkyl radical which contains 2 or 2 carbon atoms and is substituted by chlorine or a straight-chain or branched alkenyl radical containing 3 or 4 carbon atoms, R_1 and R_2 represent hydrogen or the one represents methyl and the other represents hydrogen, and n is the number 1 or 2, may be used for influencing the growth of plants, preferably for combating weeds in rice-cultures.

3,776,913
CERTAIN DITHIO-CARBAMATE DERIVATIVES OF 5-HYDROXYMETHYL-PICOLINIC ACID

Hiroyoshi Hidaka, Nagoya, and Ikuo Matsumoto and Junji Yoshizawa, Tokyo, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, and Hiroyoshi Hidaka, Nagoya-shi, Japan

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,904
Claims priority, application Japan, Apr. 16, 1971, 46/23,892; Nov. 29, 1971, 46/95,282
Int. Cl. C07d *29/10, 31/50*
U.S. Cl. 260—293.69 1 Claim

Picolinic acid derivates having the formula:



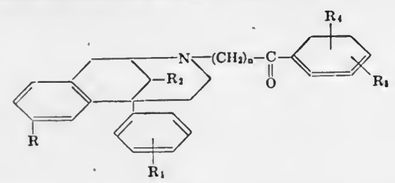
wherein R^1 represents a lower alkyl group; and R^2 represents hydrogen or a lower alkyl group, or R^1 and R^2 together may form a heterocyclic ring with nitrogen; can be prepared by reacting 5-(hydroxy or halo-methyl)-picolinic acid or ester thereof with an alkylisocyanate or dithiocarbamates, and if the ester is formed, hydrolyzing said ester to the acid form. These compounds have been proven to be effective anti-inflammatory agents or anti-allergic agents and have been found to be physiologically active to the circulatory system, nervous system, and to the sensory organs.

3,776,914
5-PHENYLBENZOMORPHAN DERIVATIVES AND SALTS THEREOF

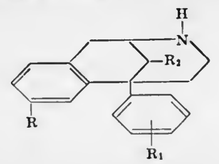
Toshio Atsumi, Kenji Kobayashi, and Yoshiaki Takebayashi, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,621
Claims priority, application Japan, Jan. 27, 1970, 45/7,584; Jan. 28, 1970, 45/7,894
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.54 8 Claims

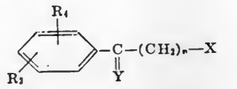
Benzomorphan derivatives of the formula,



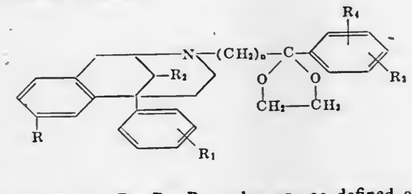
wherein R is a hydrogen atom, a hydroxyl group, or a C_1–C_3 alkoxy group; R_1 is a hydrogen atom, a halogen atom, a C_1–C_3 alkyl group, a C_1–C_3 alkoxy group, a hydroxyl group, a trifluoromethyl group, an amino group, a C_1–C_3 alkylthio group, a nitro group or an alkanoyloxy group; R_2 is a hydrogen atom or a C_1–C_3 alkyl group; R_3 is a hydrogen atom, a halogen atom, a C_1–C_3 alkyl group, a C_1–C_3 alkoxy group, a C_1–C_3 alkylthio group, a nitro group, a trifluoromethyl group, an amino group or a hydroxyl group; R_4 is a hydrogen atom, a C_1–C_3 alkoxy group, a halogen atom or a C_1–C_3 alkyl group; and n is an integer of 2–4, which are useful as non-addicted analgesics and pain-relieving agents with calming effects. These benzomorphan derivatives are prepared by reacting a 6,7-benzomorphan derivative of the formula,



wherein R, R_1 and R_2 are as defined above, with a halogen derivative of the formula,



wherein R_3, R_4 and n are as defined above; X is a halogen atom; and Y is an oxygen atom or an ethylenedioxy group, and further, in the case of Y=ethylenedioxy group, by hydrolyzing the resulting ethylenedioxy derivative of the formula,



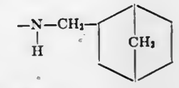
wherein R, R_1, R_2, R_3, R_4 and n are as defined above.

3,776,915
TETRASILA-ADAMANTANE COMPOUNDS

Cecil L. Frye, Midland, and Jerome M. Klosowski, Monitor Township, Bay County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,937
Int. Cl. C07d *103/02*
U.S. Cl. 260—293.56 21 Claims

The sulfate salts of tetrasila-adamantane compounds in which at least one silicon atom is substituted with a nitrogen-containing radical, such as



are useful as emulsifiers.

3,776,916
CERTAIN N-PHENACYL PYRIDINIUM HALIDES

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Nov. 21, 1969, Ser. No. 878,918, now Patent No. 3,702,361, dated Nov. 7, 1972. Divided and this application June 7, 1972, Ser. No. 260,672
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 12 Claims

Pyridinium, pyridazinium, pyrimidinium, and pyrazinium halides respectively having an N-(phenacyl) substituent and the corresponding ylids obtained therefrom by alkaline treatment which compounds are useful as herbicides and/or insecticides.

3,776,917
2-AMINO-6-PHENALKYL-AMINOPYRIDINES AND DERIVATIVES THEREOF

Thomas A. Mann, New York, N.Y., and Frank J. Villani, West Caldwell, N.J., assignors to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 49,577, June 24, 1970. This application June 5, 1972, Ser. No. 259,927
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R 8 Claims

This invention relates to substituted phenylalkylaminopyridines and substituted phenacylaminopyridines, to their use as hypoglycemic agents and to the processes useful in the preparation thereof.

3,776,918
HALOGENO-6-HYDROXY-PYRIDONE-(2) COMPOUNDS

Gert Hegar, Schonenbuch, and Henri Riat, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Aug. 11, 1971, Ser. No. 170,963
Claims priority, application Switzerland, Aug. 19, 1970, 12,371/70
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R **5 Claims**

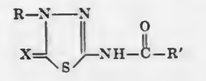
3-halogeno-6-hydroxy-pyridone - (2) compounds and process for their manufacture by halogenating the corresponding 6-hydroxy-pyridone-(2) compounds. Valuable starting compounds for the manufacture of dyestuffs.

3,776,919
2-ACYLAMINO - 1,3,4-THIADIAZOLE-(THI)ONE-(5) COMPOUNDS AND HERBICIDAL COMPOSITIONS

Klaus Sasse, Schildgen, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,741
Claims priority, application Germany, Jan. 24, 1970, P 20 03 145.2
Int. Cl. C07d *91/62*
U.S. Cl. 260—306.8 D **17 Claims**

Novel 2-acylamino-1,3,4-thiadiazolone-(5) and 2-acylamino-1,3,4-thiadiazole thione-(5) compounds of the formula



wherein

R and R′ are unsubstituted or substituted alkyl, cycloalkyl, cycloalkenyl, aralkyl or aryl; and
X is oxygen or sulfur

are outstandingly effective herbicides, particularly selective herbicides.

3,776,920
2-(N-2-CYANOETHYLDITHIOCARBAMYL-METHYLENE)BENZIMIDAZOLES

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,369
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **5 Claims**

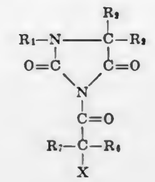
2-(N-2 - cyanoethyldithiocarbamylmethylene)benzimidazoles are disclosed which are toxicological agents for the control of bacteria and fungi.

3,776,921
HYDANTOIN ACYL HALIDES AND THEIR USE AS INSECTICIDES

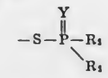
Gophal H. Singhal, Westfield, N.J., and Joseph H. Lesser, Woodside, N.Y., assignors to Esso Research and Engineering Company

No Drawing. Original application Apr. 23, 1970, Ser. No. 31,405, now abandoned. Divided and this application Dec. 17, 1971, Ser. No. 209,449
Int. Cl. C07d *49/32;* **C07f** *9/08*
U.S. Cl. 260—309.5 **6 Claims**

Acyl hydantoin derivatives defined by the following structural formula:



wherein R_1 is one selected from the group consisting of C_1–C_6 lower alkyl optionally substituted by chlorine, bromine, C_1–C_6 alkoxy and C_1–C_6 alkylthio; C_3–C_6 alkenyl; C_3–C_6 alkynyl; C_3–C_8 cycloalkyl; or phenyl optionally substituted with chlorine, bromine, trifluoromethyl or NO_2. R_2 and R_3 can be the same or different and either one is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 chloroalkyl, phenyl optionally substituted with chlorine or nitro and C_1–C_4 alkoxy. X is one selected from the group consisting of chlorine, bromine, fluorine and a moiety defined by



wherein Y can be either O or S and R_4 and R_5 can be the same or different and selected from the group consisting of C_1–C_6 alkoxy, C_1–C_6 alkyl, C_1–C_6 alkylthio, phenyl optionally substituted with chlorine or bromine, phenoxy optionally substituted with chlorine or bromine; R_6 and R_7 can be the same or different and can be selected from the group consisting of hydrogen, and C_1–C_6 alkyl.

Organic compounds represented by this structure have been found to have pesticidal, particularly insecticidal, activity.

Compounds represented by the following structure:

have been found to possess post-emergence herbicidal activity. In this structure, R_1, R_2, R_3, R_7 and R_8 are defined as hereinabove, and Q is one selected from the group consisting of chlorine, bromine and fluorine.

3,776,922
INDOLE CARBOXALDEHYDES

Joseph William Epstein, 19 Briarwood Ave., Monroe, N.Y. 10950, and Leon Goldman, 126 Grandview Ave., Nanuet, N.Y. 10954

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,976
Int. Cl. C07d *27/54*
U.S. Cl. 260—326.5 B **3 Claims**

This disclosure describes derivatives of 5-methoxyindolecarboxaldehydes variously useful as antimicrobial agents, diuretics, central nervous system depressants, and central nervous system antidepressants.

3,776,923
2-NITRO-4-OXO-4,5,6,7-TETRAHYDROINDOLE

William Alan Remers, West Lafayette, Ind., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Jan. 6, 1970, Ser. No. 1,043, now Patent No. 3,654,303. Divided and this application Jan. 4, 1972, Ser. No. 215,434
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.16 **1 Claim**

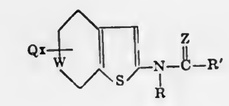
This disclosure describes compounds of the class of 2-substituted-4-oxo-4,5,6,7-tetrahydroindoles useful as anti-inflammatory agents and as intermediates.

3,776,924
N-[2-(4,5,6,7-TETRAHYDROBENZOTHIENYL)]-UREAS

Charles A. Lundberg, Jr., Colonia, and John E. Engelhart, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original application May 20, 1970, Ser. No. 39,153, now Patent No. 3,705,910, dated Dec. 12, 1972. Divided and this application Nov. 14, 1972, Ser. No. 306,501
Int. Cl. C07d *63/22*
U.S. Cl. 260—332.2 R **9 Claims**

Compounds having the following structural formula:



wherein W is CH_2 or CH—Q or a heteroatom selected from the group consisting of O, $S(O)_n$ (where *n* equals 0–2) and N—R; Q can be hydrogen, C_1–C_{15} alkyl optionally substituted by chlorine, bromine, cyano, C_1–C_4 alkoxy, C_1–C_4 alkylthio and nitro; C_3–C_{30} cycloalkyl optionally substituted by chlorine, bromine, cyano, C_1–C_4 alkoxy, C_1–C_4 alkylthio and nitro; C_1–C_{20} alkoxy, C_3–C_{30} cycloalkoxy, C_1–C_{20} alkylthio, C_2–C_{20} dialkylamino, C_6–C_{30} dicycloalkylamino, cyano, chlorine, bromine, C_2-C_5 alkyl carboxy, C_1–C_5 carboalkoxy, C_1–C_4 perfluoroalkyl, thiocyano, C_1–C_6 alkylsulfoxide, C_1–C_6 alkylsulfone, C_6–C_{10} aryl and C_5–C_{20} heterocyclic; X ranges from 0–6 when Q is a C_1–C_{15} optionally substituted alkyl group but for all other values of Q, X is no greater than 2; R is selected from the group consisting of hydrogen, C_1–C_{16} alkyl, C_3–C_{10} cycloalkyl, C_1–C_{10} alkoxy, C_3–C_{12} cycloalkoxy and C_1–C_{10} alkylthio. Each of the above enumerated R groups may be optionally substituted by chlorine, bromine, cyano, C_1–C_4 alkoxy, C_1–C_4 alkylthio and nitro; R′ is selected from the group consisting of: hydrogen, C_1–C_{15} alkyl optionally substituted by C_1–C_4 alkylthio, chloro, bromo, cyano, C_1–C_4 alkoxy and nitro, C_3–C_{10} cycloalkyl optionally substituted by C_1–C_4 alkyl, chloro, bromo and C_1–C_4 alkylthio, C_6–C_{10} aryl, C_6–C_{10} aryloxy, C_6–C_{10} arylthio, C_6–C_{10} arylamino, C_{12}–C_{20} diarylamino, hydrazino, C_1–C_6 monoalkyl hydrazino, C_2–C_{12} dialkylhydrazino, and C_3–C_{12} trialkylhydrazino, C_1–C_{10} alkylamino, C_2–C_{20} dialkylamino, C_2–C_6 alkoxyalkylamino; Z is either O or S. These compounds have been found to possess post emergent herbicidal activity.

3,776,925
CYCLIC ORGANIC COMPOUNDS

George Holan, Brighton, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australian Capital Territory, Australia

No Drawing. Filed July 13, 1971, Ser. No. 162,262
Claims priority, application Australia, July 23, 1970, 1,945/70; Feb. 5, 1971, 3,948/71; Feb. 12, 1971, 4,010/71
Int. Cl. C07d *3/00*
U.S. Cl. 260—333 **3 Claims**

The invention provides new derivatives of 2,2-diphenyl-3,3-dimethyloxetane in which the phenyl groups are substituted with alkoxy, alkylthio and/or methylenedioxy groups. The new compounds have insecticidal properties and the invention also provides insecticidal compositions thereof. The compounds may be made by irradiating a mixture of the appropriately substituted benzophenone and isobutylene with ultra-violet radiation.

3,776,926
METHOD FOR MACROCYCLIC LACTONES

Paul R. Story, Athens, Ga., assignor to Research Corporation, New York, N.Y.

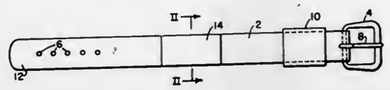
No Drawing. Application Jan. 9, 1970, Ser. No. 10,121, now Patent No. 3,584,067, which is a division of application Ser. No. 697,593, Jan. 15, 1968, now Patent No. 3,528,898. Divided and this application Nov. 24, 1970, Ser. No. 92,546
Int. Cl. C07d *9/00*
U.S. Cl. 260—343 **5 Claims**

Macrocyclic compounds are produced when cyclic ketone di- and triperoxides are decomposed by irradiation with ultraviolet light or by heating to a temperature above 100° C.

3,776,927
IODINE CONTAINING CHOLESTERIC COMPOUNDS

James L. Fergason, Kent, Ohio, and Newton N. Goldberg, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Aug. 22, 1968, Ser. No. 754,582, now Patent No. 3,657,538, dated Apr. 18, 1972. Divided and this application Sept. 24, 1970, Ser. No. 75,179
Int. Cl. C07c *169/58*
U.S. Cl. 260—397.2 **9 Claims**



Increasing dosages of X-ray radiation progressively lower the color-play range of cholesteric-phase liquid-crystal materials. The effect is enhanced when an effective amount of an iodine-containing compound is used in the liquid-crystal material. Novel iodine-containing compounds are described, and articles are disclosed that give direct-reading indication of the dosage of X-ray radiation that they have received, without need for a separate development operation.

3,776,928
CRYSTAL MODIFIER AND METHOD FOR SOLVENT SEPARATION OF FATTY MATERIALS

Donald D. Staker and Richard H. Plantholt, Cincinnati, Ohio, and David J. Kriege, Newport, Ky., assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Original application Apr. 5, 1968, Ser. No. 719,251, now Patent No. 3,649,657. Divided and this application Oct. 12, 1971, Ser. No. 188,530
Int. Cl. C07c *69/34, 69/80;* **C08h** *9/00*
U.S. Cl. 260—404.8 **8 Claims**

Crystal modifiers useful in the separation of mixtures of more saturated from less saturated fatty acids or mixtures of relatively saturated and relatively unsaturated triglycerides into saturated and unsaturated fractions. Also a method for crystallization of fatty materials using said crystal modifiers. The crystal modifiers are prepared in an acidolysis reaction in which polybasic acids are reacted with fatty acid esters of polyhydric alcohols.

3,776,929
PHOSPHINITE, PHOSPHONITE, THIOPHOSPHINITE, AND DITHIOPHOSPHONITE COMPOUNDS OF PALLADIUM AND PLATINUM

Joseph J. Mrowca, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 18, 1971, Ser. No. 189,834
Int. Cl. C07f *15/00, 15/04*
U.S. Cl. 260—429 R **20 Claims**

Disclosed herein are compounds having the formula $(L)_2MXY$, wherein (L) is a phosphinite, phosphonite,

thiophosphinite, or dithiophosphonite ligand, M is Pd or Pt and X and Y are alike or different and are selected from chlorine, bromine, iodine, various substituted and unsubstituted alkyls and aryls, cyano, $SnCl_3$, isocyanato, thiocyanato, aroyl and lower perfluoroalkyl groups. The process involves reacting one equivalent of a source of MXY with two or more equivalents of a selected phosphorus-containing ligand. The products are useful in the alkoxycarbonylation of olefins and in the polymerization of acetylene.

3,776,930

SOLID STATE CONVERSION OF A METAL OXIDE TO THE CORRESPONDING METAL CARBOXYLATE

Yu-Lin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 25, 1971, Ser. No. 156,981
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **7 Claims**

A solid metal oxide dispersed in an inert dispersant is contacted with an aromatic carboxylic acid under reaction conditions for a time sufficient to form the corresponding metal salt of the aromatic carboxylic acid. The formed metal salt is also in the solid state and is also dispersed in the inert dispersant. The metal salt, in the dispersant, is useful as a catalyst in the disproportionation of salts of aromatic carboxylic acids.

3,776,931

COPPER-CONTAINING COMPOUNDS

Derek Bryce-Smith, Highland Wood House, Mill Lane, and Ernest Thomson Blues, 36 Reeds Ave., both of Reading, England

No Drawing. Filed Jan. 12, 1971, Ser. No. 105,960
Claims priority, application Great Britain, Jan. 13, 1970, 1,663/70
Int. Cl. C07f *1/08*
U.S. Cl. 260—438.1 **40 Claims**

A new copper compound, copper ketenide, is disclosed, useful as a complexing agent to provide complexes, particularly with metal halides, useful as catalysts for the oxidation of hydrocarbons, particularly the oxidation of ethylene and propylene to ethylene oxide and propylene oxide respectively. Copper ketenide may be prepared by reaction of a copper compound with ketone, which ketene may be preformed or formed in the reacting medium. The reaction may be carried out chemically or electrochemically.

3,776,932

METAL-ORGANO COMPOUNDS WITH STERICALLY EXPOSED METAL-METAL BONDS, AND A METHOD FOR THEIR PRODUCTION

Guido P. Pez, Boonton, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,144
Int. Cl. C07f *7/00*
U.S. Cl. 260—429.3 **24 Claims**

Metal-organo complex characterized as having at least one sterically exposed metal-metal bond, and having the structure:

$$R_nM{:::}M'R_n$$

wherein R represents a ligand which may contain one or more atoms of carbon, hydrogen, oxygen, nitrogen, sulfur or phosphorus; n is an integer of from 1 to 3; M and M′ each represent the same or a different transition metal; and the symbol

$$:::$$

represents at least one sterically exposed metal-metal bond.

The preparative method involves the low temperature reaction between an alkali metal naphthalene in an ethereal solvent, with the dihalogenide of at least one metal-organic species. The reaction mixture is allowed to slowly warm to ambient temperatures, the solvent is evaporated, and the naphthalene sublimed at temperatures below 40° C. The remaining crude product is extracted with an organic solvent, the extract is separated from the insoluble portion, and the product recovered by evaporating the solvent.

The metal-organo complex has utility as an absorbent of nitrogen when present as a contaminant in argon.

3,776,933

METHOD OF PREPARING AMIDOSILANES

Louis H. Toporcer, Ingersol Township, Midland County, and Irvin D. Crossan, Homer Township, Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,606
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 E **11 Claims**

Mixing metal salts of organic amides with organohalosilanes in an inert organic solvent is a useful method for preparing amidosilanes of the formula

$$R''_xSi\{N(R)C(O)R'\}_{4-x}$$

where R is methyl, ethyl, propyl or phenyl, R′ is methyl, ethyl or phenyl, R″ is a hydrocarbon radical and x is 1, 2 or 3. The by-produced metal halide is separated from the amidosilane solution which can be used to make silicone elastomers and resins. The organic solvent can be separated from the amidosilane to provide the amidosilane for use in silicone elastomers and resins where solvents are not desired.

3,776,934

METHYLVINYLDI-(-N-METHYLACETAMIDO) SILANE

Louis H. Toporcer, Ingersol Township, Midland County, and Joseph N. Clark, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,607
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 N **1 Claim**

Methylvinyldi-(-N-methylacetamido)silane is useful as a chain extender in making low modulus room temperature vulcanizable silicone elastomers possessing fast cure and adhesion to substrates.

3,776,935

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES

James D. McClure and George W. Conklin, Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,334
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 PC **10 Claims**

An improved process for preparing carbocyclic aromatic isocyanates comprises contacting a carbocyclic aromatic polynitro compound with carbon monoxide in the presence of a catalyst system consisting of certain noble metal halides, heteroaromatic nitrogen compounds and an iron borate.

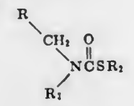
3,776,936

THIOCARBAMIC ACID ESTER PESTICIDES

Gopal H. Singhal, Westfield, and Robert E. Turkos, Fords, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 19, 1970, Ser. No. 38,896
Int. Cl. C07c *155/08*
U.S. Cl. 260—455 A **9 Claims**

Thiocarbamic acid esters characterized by the following structural formula:



wherein R is a cycloalkyl group containing from 3 to 5 carbon atoms, said group being optionally substituted by C_1–C_4 alkyl groups; R_1 can be same as R or it can also be a C_1–C_4 alkyl group optionally substituted by a C_1–C_4 alkoxy, C_1–C_4 alkylthio, cyano or a carbethoxy group; R_2 is a C_1–C_6 alkyl group. Compounds having these structures possess excellent pre-emergent herbicidal activity along with excellent crop tolerance. In addition, these compounds possess good fungicidal activity.

3,776,937

PROCESS FOR THE MANUFACTURE OF AROMATIC NITRILES

Abraham P. Gelbein, Plainfield, N.J., assignor to The Lummus Company, Bloomfield, N.J.

No Drawing. Filed June 23, 1972, Ser. No. 265,956
Int. Cl. C07c *121/12, 121/56*
U.S. Cl. 260—465 B **4 Claims**

In the production of aromatic polynitriles having at least one pair of nitrile groups in the ortho position relative to each other by the reaction of an alkyl aromatic hydrocarbon with ammonia, the problem of imide formation can be at least partially resolved by passing the product stream of the reaction over a dehydration catalyst to convert imides present to additional nitrile product. If necessary, additional ammonia can be added.

3,776,938

DIHYDRO-PGE$_1$

Sune Bergstrom and Jan Sjovall, both of Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

No Drawing. Continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of abandoned application Ser. No. 199,209, Apr. 9, 1962, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. This application Feb. 12, 1971, Ser. No. 115,109
Int. Cl. C07c *61/36*
U.S. Cl. 260—468 D **4 Claims**

The prostaglandins dihydro-PGE$_1$ and dihydro-PGF$_{1\alpha}$, and their salts and esters are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,776,939

DIHYDRO-PGF$_{1\alpha}$

Sune Bergstrom and Jan Sjovall, both of Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

No Drawing. Application Feb. 12, 1971, Ser. No. 115,109, which is a continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of abandoned application Ser. No. 199,209, Apr. 9, 1962, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. Divided and this application July 3, 1972, Ser. No. 268,587
Int. Cl. C07c *61*
U.S. Cl. 260—468 D **5 Claims**

The prostaglandin dihydro-PGF$_{1\alpha}$, and its salts and esters are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,776,940

INTERMEDIATES FOR PRODUCING PROSTAGLANDINS

George E. Just, 499 Mount Pleasant Ave., Westmount, Quebec, Canada, and Chaim Simonovitch, Rishon le Zion, Israel; said Simonovitch assignor to said Just

No Drawing. Continuation of application Ser. No. 103,337, Dec. 31, 1970, which is a continuation-in-part of application Ser. No. 657,085, July 31, 1967, both now abandoned. This application Aug. 17, 1972, Ser. No. 281,339
Int. Cl. C07c *61/32, 69/74*
U.S. Cl. 260—468 G **32 Claims**

Prostaglandin F$_{1\alpha}$, prostaglandin F$_{1\beta}$, and analogs of those are produced from bicyclo[3.1.0]hexane intermediates.

3,776,941

INTERMEDIATES FOR PRODUCING PROSTAGLANDINS

George E. Just, 499 Mount Pleasant Ave., Westmount, Quebec, Canada, and Chaim Simonovitch, Rishon le Zion, Israel; said Simonovitch assignor to said Just

No Drawing. Continuation of application Ser. No. 103,341, Dec. 31, 1970, which is a continuation-in-part of application Ser. No. 657,085, July 31, 1967, both now abandoned. This application Aug. 17, 1972, Ser. No. 281,340
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 G **16 Claims**

Prostaglandin F$_{1\alpha}$, prostaglandin F$_{1\beta}$, and analogs of those are produced from bicyclo[3.1.0]hexane intermediates.

3,776,942

SUBSTITUTED 1 - (2 - HYDROXYBENZYLIDENE)-4 - ALKOXYCARBONYLTHIOSEMICARBAZIDES AND RELATED COMPOUNDS

George A. Miller, Glenside, and Stanley A. Greenfield, Ambler, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,720
Int. Cl. C07c *159/00*
U.S. Cl. 260—470 **7 Claims**

Novel compounds belonging to the class of halo-, nitro- or hydroxy-salicylaldehyde thiosemicarbazones having a 4-N-substituted alkoxy(aryl)-carbonyl, thioalkoxy(aryl)-carbonyl, alkyl(aryl)-carbonyl, thiocarbamoyl, carbamoyl, or phosphoryl group. They have utility as fungicides.

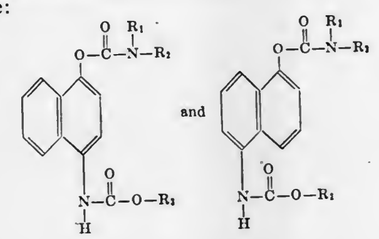
3,776,943

4- (AND 5-) LOWERALKOXYCARBONYLAMINO-1-NAPHTHYL-N-LOWERALKYLCARBAMATES

Louis H. Peterson, Woodbridge, and Edward F. Rogers, Middleton, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,656
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **6 Claims**

Naphthyl-N-loweralkylcarbamates having the formulae:



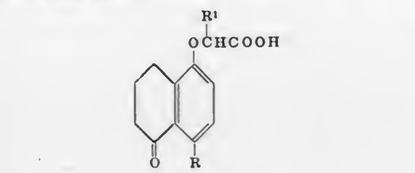
wherein R_1 and R_2 are members selected from the group consisting of loweralkyl having from 1 to 2 carbon atoms and R_3 is a member selected from the group consisting of loweralkyl having from 1 to 6 carbon atoms are prepared from 4- or 5-amino-1-naphthol and display activity as insecticides, as plant nematocides and as fruit thinning agents.

3,776,944
TETRALONEOXY ACETIC ACIDS AND ESTERS THEREOF

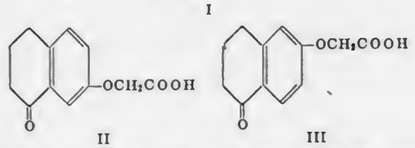
Richard E. Brown, Hanover, N.J., Paul Cavanagh, Oshawa, Ontario, Canada, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Sept. 16, 1971, Ser. No. 181,199
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 F **12 Claims**

Tetraloneoxy acetic acids having the following structural formulas are described:



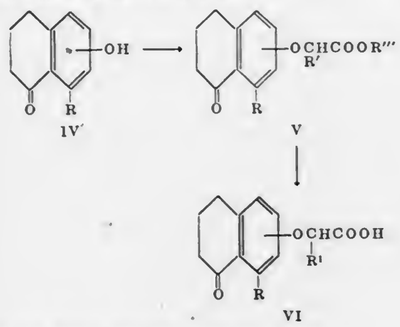
I



II

III

wherein R is hydrogen or lower alkoxy and R^1 is hydrogen, lower alkyl or aryl. These compounds are prepared by the following reaction scheme:



IV V VI

They are useful as anti-flammatory agents.

3,776,945
METHOD OF DEPOLYMERIZING POLYETHYLENE TEREPHTHALATE

Ferdinando Ligorati, Giancarlo Aglietti, and Vittorio Emanuele Nova, Milan, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Nov. 16, 1971, Ser. No. 199,352
Claims priority, application Italy, Nov. 26, 1970, 32,207/70
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 D **5 Claims**

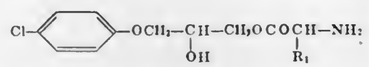
Dimethyl terephthalate and ethylene glycol are recovered from polyethylene terephthalate by depolymerising in methanol, instantaneous evaporation after removal of the methanol, and condensation of the vapours in cold methanol.

3,776,946
CHLORPHENESIN DERIVATIVES

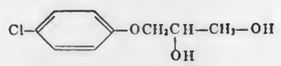
Yuichi Inai and Kanzo Okazaki, Tokyo, Katsutoshi Shimada, Niizamachi, and Kengo Kagei and Motoaki Bessho, Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 28, 1972, Ser. No. 284,358
Claims priority, application Japan, Sept. 3, 1971, 46/67,495
Int. Cl. C07c *101/00*
U.S. Cl. 260—482 R **3 Claims**

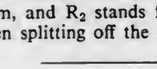
Novel chlorophenesin derivatives having the formula of



wherein R_1 is a hydrogen atom or a methyl group, and inorganic acid addition salts thereof are prepared by condensing chlorphenesin having the formula of



with a compound having the formula of

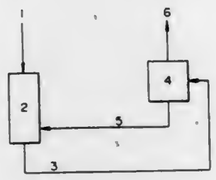


wherein R_1 is as defined above, X is a hydroxyl group or a halogen atom, and R_2 stands for an amino-protective group, and then splitting off the amino-protective group.

3,776,947
CONTINUOUS ESTERIFICATION PROCESS

Noboru Shimizu, Ibaraki, Sadao Yoshida, Suita, Kunihiro Kubota, Takatsuki, Daizo Kobayashi, Osaka-fu, and Takashi Ohara, Nishinomiya, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 10, 1972, Ser. No. 295,811
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **3 Claims**



In the process for continuously preparing acrylic acid esters or methacrylic acid esters by reacting acrylic acid or methacrylic acid with an excess of either methanol or ethanol in the liquid phase in the presence of an acidic catalyst, the method characterized in that the acrylic acid or methacrylic acid and alcohol are reacted in the reaction zone at a molar ratio of 1:1.2–5.0 at a temperature of 40–100° C.; in heating the resulting reaction product in an evaporating still to distill off the acrylic acid ester or methacrylic acid ester, water and alcohol, the concentration of the acrylic acid or methacrylic acid of the bottom liquid inside the evaporating still is maintained at 10–40% by weight; and the bottom liquid in an amount of at least 0.4 times by weight of the total amount of the acrylic acid or methacrylic acid and alcohol fed to the reaction zone is recycled from the evaporating still to the reaction zone.

3,776,948
PROCESS FOR THE PRODUCTION OF MONOACETIN AND GLYCERINE

Axel Kleemann, Oberursel, Gerd Schreyer, Grossauheim, Otto Weiberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach (Main), Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,182
Claims priority, application Germany, Aug. 30, 1969, P 19 44 120.4
Int. Cl. C07c *29/02, 67/00*
U.S. Cl. 260—491 **9 Claims**

Glycerine is produced by reacting allyl acetate with aqueous peracetic acid. The monoacetin formed is converted to glycerine by alcoholysis or aqueous saponification after removal of unreacted allyl acetate, acetic acid and water.

3,776,949
PRODUCTION OF AROMATIC POLYCARBOXYLIC ACIDS

Abraham P. Gelbein, Plainfield, Benjamin J. Luberoff, Summit, Morgan C. Sze, Upper Montclair, and Richard T. Whitehead, Westfield, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Sept. 7, 1971, Ser. No. 178,263
Int. Cl. C07c *63/00, 63/26*
U.S. Cl. 260—515 P **24 Claims**

Aromatic polycarboxylic acids and their anhydrides are produced from the corresponding nitriles by aqueous catalytic hydrolysis and countercurrent stripping to produce an acid ammonium salt of the aromatic acid, followed by thermal decomposition of the salt to form the acid, and purification if necessary.

3,776,950
N-CYANOPHOSPHINIMIDES

Ronald A. Mitsch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 808,656, Mar. 19, 1969, which is a continuation-in-part of application Ser. No. 482,585, Aug. 25, 1965, both now abandoned. This application Nov. 26, 1971, Ser. No. 202,667
Int. Cl. C07d *27/56, 31/46, 63/00*
U.S. Cl. 260—551 C **5 Claims**

Novel substituted N-cyanophosphorus imides having a relatively high degree of hydrolytic stability are prepared by reacting a trivalent phosphorus compound with difluorodiazirine in the presence of an inert solvent. Such compounds have utility as pest control agents, corrosion inhibitors, plasticizers, flotation agents and petroleum additives.

3,776,951
PRODUCTION OF TETRAMETHYL SUBERIC ACID

Harry Failey, Keyingham, and Bertram Yeomans, Hessle, England, assignors to BP Chemical International Limited, Great Britain

No Drawing. Filed July 11, 1972, Ser. No. 270,802
Claims priority, application Great Britain, July 15, 1971, 33,148/71
Int. Cl. C07c *51/14, 55/02*
U.S. Cl. 260—533 A **13 Claims**

2,2,7,7-tetramethyl suberic acid is made by reacting 2,7-dimethyloctene-4 with carbon monoxide in strong sulphuric acid, separating 2,2,7-trimethyloctanoic acid, feeding the 2,2,7-trimethyloctanoic acid to a rearrangement reaction with strong sulphuric acid to give 2,2,7,7-tetramethyl suberic acid, feeding the rearrangement product in strong sulphuric acid to the carbonylation zone, and recovering 2,2,7,7-tetramethyl suberic acid from the carbonylation product.

3,776,952
PREPARATION OF UNSATURATED ALDEHYDES AND ACIDS

Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed May 2, 1968, Ser. No. 726,218
Int. Cl. C07c *51/32, 57/04*
U.S. Cl. 260—533 N **5 Claims**

Unsaturated acids and aldehydes as acrylic acid and acrolein or methacrylic acid and methacrolein are prepared in excellent yields and at improved rates by the oxidation of an olefin as propylene or isobutylene in the presence of a catalyst containing chromium molybdate, tellurium oxide and phosphorus oxide.

3,776,953
PROCESS FOR SIMULTANEOUS PRODUCTION OF HALOMETHYLPHOSPHONIC DIHALIDES, BIS-(HALOMETHYL)-PHOSPHINIC HALIDES AND METHYLHALOMETHYLPHOSPHINIC HALIDES

Ludwig Maier, Kilchberg, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,343
Claims priority, application Switzerland, Dec. 16, 1970, 18,684/70
Int. Cl. C07f *9/42*
U.S. Cl. 260—543 P **6 Claims**

Halomethylphosphonic dihalides, bis - (halomethyl)-phosphinic halides and methylhalomethylphosphinic halides are simultaneously produced by reacting phosphorus (white), alkali metal hydroxide, water and formaldehyde in the presence of a water-miscible monohydric alcohol to form a reaction mixture comprising alkali metal salt of methyl-hydroxymethyl phosphinic acid, alkali metal salt of bis(hydroxymethyl)phosphinic acid and the dialkali metal salt of hydroxymethyl phosphonic acid, removing volatile constituents from the reaction mixture and treating the acid salt reaction products with a halogenating agent (e.g. $SOCl_2$) thereby to convert said products to the corresponding halide derivative. The halides produced by the process are useful as flame retardants.

3,776,954
PROCESS FOR THE PRODUCTION OF THIOPHOSGENE

Hans-Dieter Rupp, Erlenbach, and Gerhard Meyer and Helmut Mägerlein, Obernburg, Germany, assignors to Akzo N.V., Arnhem, Netherlands

No Drawing. Filed July 24, 1972, Ser. No. 274,582
Int. Cl. C07c *153/01*
U.S. Cl. 260—543 **14 Claims**

A catalytic process for the production of thiophosgene by reduction of trichloromethane sulfenyl chloride with hydrogen sulfide at elevated temperatures and in the presence of at least one sulfide of the metals potassium, silver, barium, zinc, cadmium, lanthanum, tin, lead, vanadium, manganese or rhenium or at least one chloride of the metals chromium and magnesium, the catalyst being in an essentially water-free form. High yields of thiophosgene are obtained, and the process is especially adapted to be carried out in a continuous manner. Thiophosgene is known to be useful as an intermediate in the syntheses of many organic compounds.

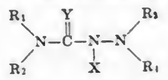
3,776,955
PESTICIDAL SEMICARBAZIDE AND BIURET DERIVATIVES

James Zielinski, Kenilworth, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed May 29, 1968, Ser. No. 732,858
Int. Cl. C07c *159/00*
U.S. Cl. 260—552 SC **9 Claims**

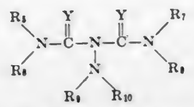
Semicarbazides, especially the tetraalkylated thiosemicarbazides, and biuret derivatives, especially the mono- and di-thiobiuret derivatives, are effective fungicides, bac-

tericides, and herbicides. Exemplary of preferred semicarbazides are those of the general formula



where R_1–R_4 can be unsubstituted or substituted hydrocarbyl and X can be hydrogen, or unsubstituted or substituted hydrocarbyl, and Y can be O or S.

Exemplary of preferred biuret derivatives are those of the general formula



where R_5–R_{10} can be H, or unsubstituted or substituted hydrocarbyl; and Y can be O or S. Typical R_1 to R_{10} hydrocarbyl groups include: (1) saturated or unsaturated, acyclic or cyclic, aliphatics such as, e.g., ethyl, propargyl, cyclohexyl, cyclohexenyl, etc.; and (2) aromatic or hetero-aromatic radicals such as phenyl, pyridyl, etc.

3,776,956
RESINOUS COMPOSITION
Izumi Yamane, Yokohama, Daini Saika, Funabashi, and Susumu Tomidokoro, Ichikawa, Japan, assignors to Lion Fat & Oil Co., Ltd., Yokoami, Sumida-ku, Tokyo, Japan
No Drawing. Filed Apr. 16, 1971, Ser. No. 134,851
Claims priority, application Japan, Apr. 25, 1970, 45/35,224, 45/35,225
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 N **17 Claims**

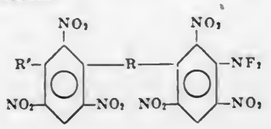
A method of synthesizing specific ethylenic type unsaturated acrylamide (I) by effecting dehydrohalogenation of a specific ethylenic type unsaturated carboxylic halide (II) or halogenated carboxylic halide (III) and a specific amine (IV), wherein a specific amine (V) is employed as a dehydrohalogenating agent; and a copolymer consisting of the foregoing compound (I) and a monomer capable of copolymerizing with said compound (I) as well as a resinous composition comprising said copolymer.

3,776,957
METHOD FOR REMOVING COPPER FROM AQUEOUS SOLUTIONS OF ACRYLAMIDE
John D. Newkirk, Downers Grove, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed May 15, 1972, Ser. No. 253,073
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N **2 Claims**

Copper may be removed or reduced from aqueous solutions of acrylamide by treating such solutions with a water-soluble salt of orthophosphoric acid.

3,776,958
NITRODIFLUORAMINOPOLYAROMATIC COMPOUNDS
Marion E. Hill, Palo Alto, and Michael W. Lerom, Menlo Park, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Apr. 18, 1972, Ser. No. 245,186
Int. Cl. C07c *87/00*
U.S. Cl. 260—576 **5 Claims**

Difluoraminonitropolyaromatic compounds corresponding to the formula



wherein R may be —CH=CH—, —CH_2—CH_2—, or 0 (zero), i.e., a direct ring carbon to ring carbon bond; and wherein R′ may be H or —NF_2 and methods of preparing same. The compounds are of high energy density suitable as explosives, for use in detonators or as plasticizers or otherwise as components in explosive and propellant compositions.

3,776,959
PREPARATION OF AMINE OXIDES IN NON-POLAR SOLVENT SYSTEMS
Joseph S. Staliorailis and Charles S. Wilhelmy, Chicago, Ill., assignors to Akzona Incorporated, Asheville, N.C.
No Drawing. Continuation-in-part of application Ser. No. 686,805, Nov. 30, 1967, now Patent No. 3,558,710, dated Jan. 26, 1971. This application Jan. 25, 1971, Ser. No. 109,574
The portion of the term of the patent subsequent to Jan. 26, 1988, has been disclaimed
Int. Cl. C07c *85/00*
U.S. Cl. 260—583 D **6 Claims**

Substantially anhydrous amine oxides are prepared by reacting a tertiary amine with hydrogen peroxide in a non-polar solvent system and removing water from the reaction mass azeotropically.

3,776,960
PREPARATION OF BIS(PERFLUOROALKYL-SULFONYL)METHANES
Robert J. Koshar, Lincoln Township, Washington County, and Ronald A. Mitsch, Little Canada, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Dec. 9, 1971, Ser. No. 206,518
Int. Cl. C07c *147/02*
U.S. Cl. 260—607 A **9 Claims**

A process is provided for obtaining improved yields of bis(perfluoroalkylsulfonyl)methanes by the reaction of perfluoroalkanesulfonyl fluorides with methylmagnesium halide using a non-reactive ether forming an oxonium ion in aqueous sulfuric acid having an ionization constant as expressed by pKa of greater than —3.3.

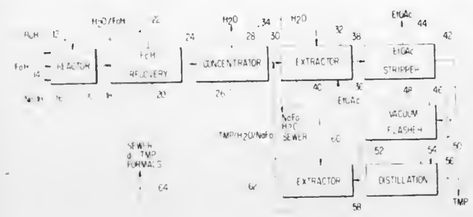
3,776,961
3-SUBSTITUTED 4-NITROPHENYL HALOPHENYL ETHERS
Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 819,411, Apr. 25, 1969. This application Dec. 23, 1971, Ser. No. 211,787
Int. Cl. C07c *43/22*
U.S. Cl. 260—613 R **3 Claims**

4-nitrophenyl halophenyl ethers having a substituent in the 3-position comprise an effective class of pre- and post-emergence herbicides.

3,776,962
PROCESS FOR THE MANUFACTURE OF AROMATIC SUBSTITUTED ALKANES
Husni R. Alul and Gilbert J. McEwan, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed May 26, 1966, Ser. No. 553,030
Int. Cl. C07c *39/06*
U.S. Cl. 260—624 C **10 Claims**

Alkyl aromatic products containing higher percentages of compounds in which the aromatic substituent occupies the 2 or 3 position on the alkyl chain are prepared by reaction of olefins and aromatics in the presence of an amount of hydrogen fluoride catalyst insufficient to form a separate catalyst phase. The sulfonates of such products have high solubility and are useful as surfactants in detergent formulations.

3,776,963
TRIMETHYLOLPROPANE RECOVERY
Edward Gustave Zey and Robert Frank Stubbeman, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.
Filed Mar. 16, 1971, Ser. No. 124,687
Int. Cl. C07c *29/24, 31/18*
U.S. Cl. 260—637 P **5 Claims**



In a process for the manufacture of trimethylolpropane in which a major proportion of the trimethylolpropane is first separated from the reaction mixture, the improvement which comprises recovering additional trimethylolpropane from the reaction mixture residue of said first separation step.

3,776,964
ORGANOLITHIUM POLYMERIZATION INITIATORS
Robert C. Morrison and Conrad W. Kamlenski, Gastonia, N.C., assignors to First National City Bank, New York, N.Y.
No Drawing. Filed Mar. 18, 1971. Ser. No. 125,793
Int. Cl. C07f *1/02*
U.S. Cl. 260—665 R **24 Claims**

Polymerization initiators comprising alkyllithium adduct-metalates of conjugated dienes and vinyl-substituted aromatic compounds. Such initiator compositions are highly effective for the production of polymers of conjugated dienes and/or vinyl-substituted aromatic compounds.

3,776,965
SELECTIVE CONVERSION OF DIETHYLCYCLOHEXANES TO GEM-STRUCTURED TETRAMETHYLCYCLOHEXANES
Henri Robert Debus, Meise, Marcel Van Tongelen, Diegem, and Raymond M. Cahen, St. Pierre, Belgium, and Calvin Lee Daniels, Big Spring, Tex., assignors to Labofina S.A., Brussels, Belgium, and Cosden Oil & Chemical Company, Big Spring, Tex.
No Drawing. Filed May 10, 1972, Ser. No. 251,883
Int. Cl. C07c *5/28*
U.S. Cl. 260—666 R **13 Claims**

Gem-polymethylcyclohexanes are produced by a process of contacting certain alkylcyclohexanes under anhydrous conditions with a Friedel-Crafts catalyst and an effective amount of a promoter for the catalyst selected from hydrogen halide, alkyl halides, olefins and mixtures thereof at temperatures in the range of 0 to 70° C. The contact time is generally from 0.1 to about 10 hours.

3,776,966
CATALYTIC ISOMERIZATION PROCESS FOR THE PRODUCTION OF 5-ETHYLIDENEBICYCLO[2.2.1] HEPT-2-ENES
Wolfgang Schneider, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
No Drawing. Filed Oct. 30, 1972, Ser. No. 302,093
Int. Cl. C07c *5/28*
U.S. Cl. 260—666 PY **10 Claims**

5-vinylbicyclo[2.2.1]hept-2-ene is isomerized to 5-ethylidenebicyclo[2.2.1]hept-2-ene when contacted with a catalyst comprising a titanium compound such as titanium alcoholates and cyclopentadienyl titanium halides with a Group I–A, II–A, III–A of lanthanide metal in combination with a halide of iron, zinc, or zirconium. 5-ethylidenebicyclo[2.2.1]hept-2-ene is a useful comonomer for polymerization with α-olefins such as ethylene and propylene.

3,776,967
DEHYDROGENATION PROCESS
Herbert Riegel, Palisades Park, N.J., Harvey P. Schindler, New York, N.Y., Margan C. Sze, Upper Montclair, N.J., and Maurice E. Brooks, Great Neck, N.Y., assignors to The Lummus Company, Bloomfield, N.J.
No Drawing. Original application Oct. 23, 1968, Ser. No. 769,811, now Patent No. 3,637,895. Divided and this application Oct. 14, 1971, Ser. No. 189,390
Int. Cl. C07c *5/20*
U.S. Cl. 260—666 A **15 Claims**

Process for dehydrogenating a feed containing either an alkane, cycloalkane, mono-halo substituted derivative thereof or alkyl substituted aromatic hydrocarbon wherein the feed is contacted with a melt containing a multivalent metal halide in both its higher and lower valence state, such as a mixture of cupric and cuprous chloride. In accordance with a preferred embodiment, the melt is previously contacted with an oxygen containing gas to produce the corresponding oxyhalide of the metal, whereby the reaction may be effected on a continuous basis.

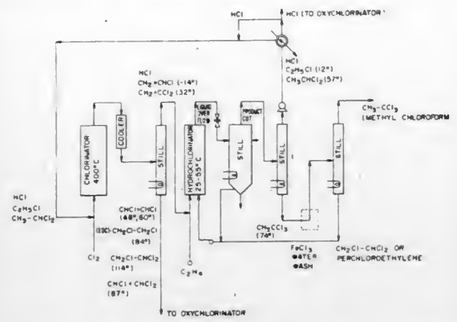
3,776,968
CATALYTIC CONVERSION OF POLYCYCLIC AROMATIC HYDROCARBONS IN THE PRESENCE OF HYDROGEN
Ronald D. Bushick, Glen Mills, and Alfred E. Hirschler, Springfield, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 749,932, Aug. 5, 1968, now Patent No. 3,565,964, dated Feb. 23, 1971. Divided and this application Feb. 23, 1971, Ser. No. 118,177
Int. Cl. C07c *5/24, 15/28*
U.S. Cl. 260—668 F **14 Claims**

Polycyclic aromatic hydrocarbons (preferably containing at least three condensed rings) can be converted to other polycyclic hydrocarbons by a catalytic conversion process comprising contacting the hydrocarbon with an acidic alumino-silicate zeolite in the presence of from 5–5000 p.s.i. of hydrogen at an elevated temperature (e.g., at least 40° C., preferably 100–200° C.) for a period of time sufficient to allow the catalytic conversion to occur. For example, s-hydrindacene (s-HIN) can be converted to as-hydrindacene (as-HIN) by so contacting the s-HIN with a GdHY zeolite at 100–200° C. (e.g., 150° C.) in the presence of 15–250 p.s.i.g. of hydrogen at a weight hourly space velocity in the range of 0.1–20 (preferably 0.25–10).

3,776,969
PRODUCTION OF METHYL CHLOROFORM FROM ETHYLENE AND CHLORINE
Walter Lobunez, Princeton, N.J., assignor to FMC Corporation, New York, N.Y.
Filed Dec. 18, 1969, Ser. No. 886,070
Int. Cl. C07c *17/00*
U.S. Cl. 260—668 R **7 Claims**

Methyl chloroform is made from ethylene and chlorine by introducing the ethylene into a hydrochlorinator containing a suspension of a hydrochlorination catalyst in an anhydrous carrier, most preferably 1,1,2-trichloroethane or perchloroethylene, together with a stream obtained from a high-temperature chlorinator, which contains the vinyl chloride, vinylidene chloride and HCl produced therein to obtain a mixture of ethyl chloride, 1,1-dichloroethane and methyl chloroform. After separation of the products, the ethyl chloride and 1,1-dichloroethane are

recirculated back to the chlorinator. The mixed products from the high-temperature chlorinator are preferably fractionated to remove higher boilers, in particular the



small amount of 1,2-dichloroethane (EDC) which is present, and which is extremely difficult to separate from methyl chloroform.

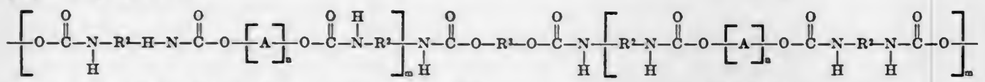
3,776,970

PROCESS FOR THE SEPARATION OF STYRENE FROM ETHYLBENZENE

William F. Strazik, Wilbraham, Mass., and Eli Perry, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 14, 1972, Ser. No. 315,266
Int. Cl. C07c *7/02*
U.S. Cl. 260—669 A **6 Claims**

Styrene is separated from organic mixtures comprising styrene and ethylbenzene by contacting the mixture (feed mixture) against one side of a polyurethane elastomer membrane under pervaporation permeation conditions and withdrawing at the other side a vaporous mixture having increased styrene concentration. The polyurethane elastomer employed contains polyether or polyester groupings. Examples of polyurethane elastomer polymers are polymers of the formula



wherein R, R^1, R^2 and R^3 are divalent organic radicals, R^4 is hydrogen or an organic radical, A is



or

n is an integer in the range of 3–500 and *m* is an integer indicating the degree of polymerization.

3,776,971

PROCESS FOR PREPARING A MONOALKYL AROMATIC

Norman L. Carr, Allison Park, and Daniel Y. C. Ko, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 13, 1971, Ser. No. 171,474
Int. Cl. C07c *3/52*
U.S. Cl. 260—671 P **12 Claims**

An improvement in a process wherein a first compound is converted to a second compound in an essentially irreversible reaction or to the second compound and to a third compound in essentially irreversible reactions and the second compound and the third compound are convertible to each other in equilibrium-limited reactions which involves introducing the third compound into the reaction zone in an amount greater than the amount that would be present at equilibrium and terminating the process before the reaction mixture reaches equilibrium.

3,776,972

LIGAND COMPLEXES OF Cu(I) SALTS

William E. Tyler III, Berkeley Heights, and Martin B. Dines, Mountainside, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed June 2, 1972, Ser. No. 259,079
Int. Cl. C07c *11/24*
U.S. Cl. 260—677 A **9 Claims**

Novel compositions of matter herein are claimed and may be represented by the general formula CuA.L, where CuA is a Cu(I) salt of medium to strong Bronsted acids and L is a ligand chosen from a variety of structural classes including phosphines, phosphites, phosphine sulfides, phosphine oxides, thiophosphates, thioureas or arsines. These compositions are liquid at ambient conditions and are useful for complexing a variety of complexible organic compounds, such as olefins, diolefins, allenes, acetylenes, aromatics, carbon monoxide and the like. In a preferred embodiment, the use of trialkyl phosphines is found to improve the stability of $CuAlCl_4$-aromatic systems when said systems are used in olefin complexing processes.

3,776,973

OLEFIN CONVERSION USING COMPLEXES OF Mn, Tc, AND Re WITH ORGANOALUMINUM

Edmund T. Kittleman and Ernest A. Zuech, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 75,800, Sept. 24, 1970, which is a division of application Ser. No. 717,026, Mar. 28, 1968, now Patent No. 3,558,515, which in turn is a continuation-in-part of abandoned application Ser. No. 635,669, May 3, 1967. This appplication June 23, 1971, Ser. No. 156,045
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **13 Claims**

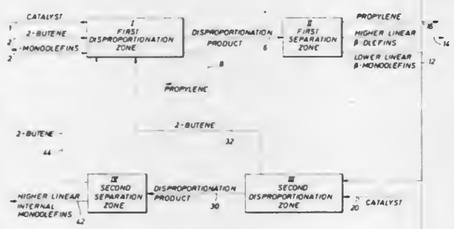
A process for the conversion of internal olefinic hydrocarbons according to the olefin reaction (e.g., the olefin disproportionation reaction) and for the double bond isomerization of terminal olefinic hydrocarbons by contacting the olefinic hydrocarbon with a catalyst comprising a coordination complex of manganese, technetium, or rhenium, together with an organoaluminum adjuvant.

3,776,974

LINEAR MONOOLEFIN PRODUCTION

Pieter A. Gautier, Deer Park, Tex., and Franciscus J. F. van der Plas and Pieter A. Verbrugge, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 17, 1972, Ser. No. 227,193
Claims priority, application Great Britain, Feb. 22, 1971, 5,107/71
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **4 Claims**



Linear α-olefins, of principally even carbon number, preferably produced by oligomerization of ethylene, are

converted to detergent range linear monoolefins of both even and odd carbon number by (1) disproportionating the linear α-olefins with 2-butene (2) separating of the resulting disporportionation product into a lower linear β-olefin fraction below the detergent range of carbon numbers and a higher linear β-olefin fraction within the detergent range of carbon numbers (3) recovering the higher linear β-olefin fraction as product (4) subjecting the lower β-olefin fraction to disproportionation to yield 2-butene and linear internal monoolefins and (5) separating and recovering from the resulting lower β-olefin disproportionation reaction mixture the normal internal monoolefin fraction within the detergent range of carbon numbers.

3,776,975

DISPROPORTIONATION PROCESS

Peter A. Verbrugge and Gerard J. Heiszwolf, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

No Drawing. Filed Mar. 16, 1972, Ser. No. 235,322
Claims priority, application Netherlands, Mar. 19, 1971, 7104210
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **6 Claims**

In the process for catalytic disproportionation of linear monoolefin reactant mixtures, each of which consists substantially of mixtures of olefins of internal double bond isomers, the disproportionation catalyst aging is substantially reduced by employing as one of the linear monoolefin reactant mixtures a mixture that contains at least 20% more β-olefins than would be present in the same mixture if isomerized to thermodynamic equilibrium. Also described is an improved process for the preparation of detergent range, C_{11}–C_{15} linear internal monoolefins which utilizes as an essential processing step the above-described catalystic disproportionation reaction procedure.

3,776,976

PROCESS FOR THE PRODUCTION OF POLYMERS CONTAINING N-SUBSTITUTED ACRYLIC ACID AMIDES AND/OR METHACRYLIC ACID AMIDES

Theodor Volker and Hanspeter Hugener, Freiburg, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

No Drawing. Filed July 13, 1971, Ser. No. 162,292
Claims priority, application Switzerland, July 14, 1970, 10,652/70
Int. Cl. C08g *20/38*
U.S. Cl. 260—780 A **6 Claims**

A process for the production of polymers containing N-substituted acrylic acid amides and/or methacrylic acid amides comprises reacting polyacrylic acid imide and/or polymethacrylic acid imide or polymers containing acrylic acid imide and/or methacrylic acid imide groups at a temperature of 0° C. to 120° C. with an amine of the formula RCH_2NH_2 in which R is H, alkyl, aryl, aralkyl, hydroxyalkyl or carboxyalkyl. The amide polymers are useful as flocculation and disperison agents.

3,776,977

METHOD OF CURING ORGANIC SILOXANE POLYMERS AND COPOLYMERS

Rajendra Nath Chadha, Farmingdale, N.Y., assignor to Stauffer Chemical Company, Adrian, Mich.

No Drawing. Continuation-in-part of application Ser. No. 37,409, May 11, 1970, which is a continuation of application Ser. No. 516,689, Dec. 27, 1965, both now abandoned. This application June 18, 1971, Ser. No. 154,594
Int. Cl. C08g *47/10, 45/16*
U.S. Cl. 260—825 **10 Claims**

A curable composition is discolsed which comprises a hydroxylated organopolysiloxane fluid and an organic polymer having one or more silyl groups connected thereto. Each silyl group contains one or more groups capable of reacting with the hydroxyl groups of the organopolysiloxane.

3,776,978

EPOXY RESINS CONTAINING PHENOLIC ACCELERATORS AND ORGANIC TITANATES

Mark Markovitz, 2173 Apple Tree Lane, Schenectady, N.Y. 12309

No Drawing. Continuation-in-part of abandoned application Ser. No. 69,481, Sept. 3, 1970. This application Jan. 7, 1972, Ser. No. 216,240
Int. Cl. C08g *45/08*
U.S. Cl. 260—831 **24 Claims**

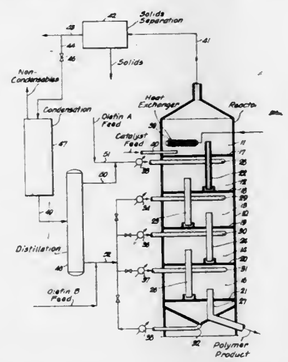
The cure rate of epoxy resins containing 1,2 epoxy groups and having more than one epoxide group per molecule can be controllably varied by the utilization of a hardener comprising a mixture of a phenol and an organic titanate containing only titanium-oxygen primary valence bonds wherein the phenol is present in quantities less than 15% by weight of the epoxy resin, and the organic titanate is present in quantities less than 10% by weight of the epoxy resin.

3,776,979

OLEFIN BLOCK COPOLYMER FLUIDIZED-BED POLYMERIZATION PROCESS

Robert William Hill, Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 5, 1971, Ser. No. 196,001
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 B **9 Claims**



Olefin block copolymers are prepared by a fluidized-bed polymerization process wherein a vaporous feed is passed upwardly through multiple reaction zones in intimate contact with downwardly flowing fluidized catalyst and polymer particles, olefin A being continuously introduced into an upper polymerization zone, olefin B being continuously introduced into a lower polymerization zone, and a A–B block copolymer product being continuously withdrawn from the lowest polymerization zone.

3,776,980

POLYESTERS OF METHYLCYCLOHEXENE-DICARBOXYLIC ANHYDRIDE

Frank Scardiglia, Woodcliff Lake, N.J., and Israel J. Dissen and Takeo Hokama, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 33,501, Apr. 30, 1970, now Patent No. 3,663,658. This application Jan. 17, 1972, Ser. No. 218,471
The portion of the term of the patent subsequent to May 16, 1990, has been disclaimed
Int. Cl. C08f *21/00, 21/02;* C08g *17/12*
U.S. Cl. 260—872 **9 Claims**

This invention discloses new air-drying polyester compositions comprising the adduct of maleic acid or anhydride and trans-piperylene; isophthalic acid; an unsatu-

rated dicarboxylic compound selected from the group consisting of maleic acid, maleic anhydride and fumaric acid; and glycol.

3,776,981

HYDROFORMYLATED BLOCK COPOLYMERS

Hans J. S. Winkler, Berkeley, and Friedrich E. Neumann, Oakland, Calif., assignors to Shell Oil Company, Houston, Tex.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,463
Int. Cl. C08f *19/08, 27/00, 27/24*
U.S. Cl. 260—880 B **16 Claims**

Novel hydroxylated block copolymers are made by reacting a precursor block copolymer with carbon monoxide and hydrogen. The precursor block copolymer has at least one mono alpha alkenyl arene polymer block and at least one conjugated diene polymer block having between 0% and about 30%, 1,2 or 3,4 microstructure, the balance being 1,4 structure. Alternatively, the 1,2 or 3,4 microstructure of the precursor polymer may be decreased or substantially removed by selective hydrogenation before hydroformylation. Hydroformylation of the block copolymer with about 1:1 to about 5:1 hydrogen-carbon monoxide mixture using a complex cobalt carbonyl trihydrocarbylphosphine catalyst produces mainly $-CH_2OH$ substituents. In the hydroxylated polymers so produced, 10–100% of the olefinic unsaturation in the diene polymer block has been replaced with $-CH_2OH$ groups and 90% to 0% of the unsaturation has been saturated with hydrogen.

3,776,982

PROCESS FOR THE PRODUCTION OF IMPACT RESISTANT TRANSPARENT POLYMERS OF VINYL CHLORIDE AND ACRYLIC ACID ESTER

Rene Nicolet, Walter Gutmann, and Theodor Volker, Freiburg, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

Filed July 14, 1971, Ser. No. 162,346
Claims priority, application Switzerland, July 15, 1970, 10,743/70; Dec. 11, 1970, 18,369/70
Int. Cl. C08f *29/24*
U.S. Cl. 260—884 **12 Claims**

A process for the production of impact-resistant and weather-resistant polymers of vinyl chloride by polymerization of vinyl chloride in the presence of polymers of acrylic acid esters. The process comprises polymerizing vinyl chloride in the presence of 2–10% by weight of a polymer of 2-ethylhexylacrylate with at least 50% by weight of 2-ethylhexylacrylate so that the polymerization of the vinyl chloride conducted at temperatures of from 50–65° C. with mixing at the saturation pressure of the vinyl chloride in the presence of liquid vinyl chloride such that the conversion amounts to 70%. The maximum mean particle diameter and the minimum mean particle diameter of the polymer of 2-ethylhexylacrylate is related to the concentration of the polymer of 2-ethylhexylacrylate in the polymer of the vinyl chloride.

3,776,983

BLOCK POLYMERS DERIVED FROM VINYL QUATERNARY NITROGEN MONOMERS AND POLYALKYLENE OXIDE CONDENSATES

Carmine P. Iovine and Dilip K. Ray-Chaudhuri, Somerset, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed June 10, 1971, Ser. No. 151,985
Int. Cl. C08f *29/46;* **C08g** *33/14*
U.S. Cl. 260—901 **7 Claims**

Novel block copolymers of the A-B or A-B-A type are described wherein the A block is derived from a vinyl quaternary nitrogen monomer and the B block is derived from a polyalkylene oxide condensate. The novel copolymers are water-soluble or water-dispersible and are useful as electroconductive coatings in the manufacture of electrophotoconductive paper.

3,776,984

S-DICHLOROMETHYL OXYPHOSPHORUS THIOATES

Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,467
Int. Cl. C07f *9/16, 9/30, 9/38*
U.S. Cl. 260—943 **12 Claims**

S-dichloromethyl oxyphosphorus thioates are prepared from substituted dichloromethane sulfenyl chlorides by reaction with a tertiary oxyphosphorus compound. The compounds of this invention are pesticidally active and particularly useful as pre-emergent herbicides.

3,776,985

CONTINUOUS PRODUCTION OF PRIMARY AND SECONDARY PHOSPHATE ESTER ADMIXTURE

Louis J. Nehmsmann, Warren, and Leslie M. Schenck, Mountainside, N.J., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed May 26, 1971, Ser. No. 147,221
Int. Cl. C07f *9/02*
U.S. Cl. 260—980 **7 Claims**

This invention relates to the production of surface active compositions, and more particularly to an improved process for continuously preparing surface active compositions containing uniform mixtures of primary and secondary phosphate esters of organic hydroxyl compounds.

3,776,986

PREPARATION OF TETRAISOPROPYL THIOPEROXYDIPHOSPHATE

James Kalil, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 11, 1971, Ser. No. 142,385
Int. Cl. C07f *9/16*
U.S. Cl. 260—985 **12 Claims**

The preparation of tetraisopropyl thioperoxydiphosphate by (a) reacting one mole phosphorous pentasulfide with at least about 5 moles of isopropyl alcohol at a temperature of from about 20° C. to the reflux temperature of the reaction mixture; (b) adding at least about 0.85 mole of H_2O_2 per mole of phosphorus pentasulfide utilized to the reaction mixture of Step (a) and (c) isolating the reaction product.

This process is simple and economical and yields directly from the reaction mixture a product having a greatly lessened tendency to develop disagreeable odors.

3,776,987

PRODUCTION OF METAL-CONTAINING MATERIALS FROM SOLS

John Herbert Grimes, Basingstoke, and Edward Sydney Lane, Didcot, England (both % United Kingdom Atomic Energy Authority, 11, Charles II St., London, SW. 1, England)

No Drawing. Continuation of abandoned application Ser. No. 747,800, July 26, 1968. This application May 19, 1971, Ser. No. 145,018
Int. Cl. B01j *13/00;* **G21c** *21/00*
U.S. Cl. 264—.5 **17 Claims**

To a hydrous metal oxide sol of the relevant metal or metals (e.g., uranium, aluminum, zirconium, iron, titanium) is added a non-cellulosic, non-dehydrating organic polymer soluble in the hydrous sol and selected from the group consisting of polyhydroxy, polycarboxylic and polyamine polymers which form a complex with said hydrous metal oxide, said organic polymer being capable of increasing the viscosity of the sol. The sol is formed into entities of a selected physical configuration, e.g. drops, and the entities treated with an agent capable of precipitating the metal oxide, e.g., a base such as ammonia, to convert them to a gel, e.g., of discrete spheres, containing the metal. The organic compound can be driven off by heating.

3,776,988

CRYOCHEMICAL METHOD FOR FORMING SPHERICAL METAL OXIDE PARTICLES FROM METAL SALT SOLUTIONS

Marvin C. Tinkle, Los Alamos, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,745
Int. Cl. B01j *2/06*
U.S. Cl. 264—14 **1 Claim**

A method of preparing small metal oxide spheres cryochemically utilizing metal salts (e.g., nitrates) that cannot readily be dried and calcined without loss of sphericity of the particles. Such metal salts are cryochemically formed into small spheres, partially or completely converted to an insoluble salt, and dried and calcined.

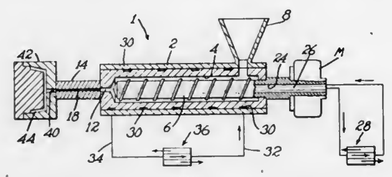
3,776,989

METHOD FOR INJECTION MOLDING ARTICLES OF FOAM MATERIAL INVOLVING AUTOGENOUS FLOW

Rupert E. Annis, Jr., Salem, and William T. Kyritsis, Beverly Farms, Mass., assignors to USM Corporation, Boston, Mass.

Continuation-in-part of application Ser. No. 886,485, Dec. 19, 1969, which is a continuation-in-part of application Ser. No. 644.886, June 9, 1967, both now abandoned. This application May 8, 1972, Ser. No. 250,932
Int. Cl. B29b *3/00;* **B29d** *27/00;* **B29f** *1/08*
U.S. Cl. 264—53 **7 Claims**

A process of molding articles of foam material comprising forming a mixture of organic polymeric resin material and a blowing agent in a chamber at a temperature below the foaming temperature of the resin-blowing agent system and forcing the mixture through a restriction for resisting the flow of the material to impart heat to the material, the heat imparted being of a magnitude sufficient to raise the temperature of the mixture to the foaming temperature, and discharging the mixture, at its foaming temperature, into a mold cavity.



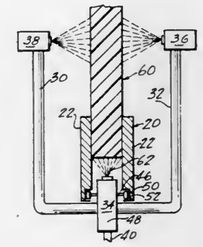
3,776,990

METHOD OF FORMING SOLID STRUCTURES FROM A CONTINUOUSLY SUPPLIED LIQUID

Ernest R. Watkins, Jr., P.O. Box 12091, Atlanta, Ga. 30305, and David W. Browne, P.O. Box 444, Snellville, Ga. 30278

Continuation of abandoned application Ser. No. 817,317, Apr. 18, 1969. This application Nov. 22, 1971, Ser. No. 200,812
Int. Cl. B28b *1/32*
U.S. Cl. 264—54 **10 Claims**

A continuously moving foam spray nozzle which supplies liquid plastic such as polyurethane moves in a path to define and create a solid structure which solidifies immediately as the noozle moves away and the result can be a curved solid building structure similar to a conventional "Quonset hut" made from solid plastic or can be wall structures of different shapes. The foaming spray nozzle is carried on a guide frame which moves along a predetermined track and in the case of curved structures like a "Quonset hut" the foam nozzle moves in an arch from one side to the other and at the same time is moving lineally on the track to create a continuous curved shell of whatever length is desired. (Nozzles may be mounted facing each other in opposition to coat a shell formed there between by the foam which is applied from other means.) In another form, simultaneously with the creation of the plastic structure a covering of sheet plastic or other similar material is supplied from rolls carried with the nozzle, whereby the exterior surfaces both outside and inside may be simultaneously covered with sheet plastic



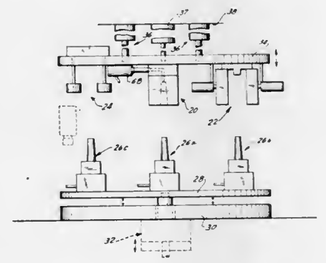
or other similar material which adheres to the foam. With the nozzle operating from side to side and simultaneously moving lineally, wall panels may be created continuously and simultaneously covered with a skin of plastic or other similar material. According to the method of the present invention, the material used must be self-supporting in atmosphere (e.g. plastic foam) so as to remain in place and resist dripping by gravity until it has solidified sufficiently to form a solid structure. The method is that of continuously supplying a foam material and continuously moving said supply in a pre-determined pattern to create a three-dimensional structure by moving said supply both lineally and in a direction either straight or curved transverse thereto.

3,776,991

INJECTION BLOW MOLDING METHOD

Paul Marcus, 85 Pascack Road, Pearl River, N.Y. 10965

Filed June 30, 1971, Ser. No. 158,161
Int. Cl. B29c *17/07;* **B29d** *23/02*
U.S. Cl. 264—89 **8 Claims**



An injection blow molding method utilizing a rotary indexing plate on which core rod assemblies are mounted for indexing, in a rotary path, through at least three stations. The first station is an injection station at which a

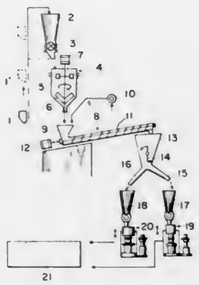
plastic parison or preform is injected around the core rod and within a neck mold. The second station is a blow station at which air passes through the core rod into the parison thereby inflating it and forcing it against the surface of the selected blow mold cavity. The third station is an ejection station at which the finished plastic container is removed from the core rod and neck mold. In some applications there are four stations. The fourth station could be used to preheat or precool the core rods preparing them for the start of the ejection cycle. The fourth station in a suggested embodiment could be deployed for preparing for orientation the plastic parison by temperature control; and, thereafter, orientation takes place prior to blowing. Obviously the three and four station machine can be modulated to present a six and eight station machine respectively. In one embodiment, the core rods and supporting indexing plate are vertically reciprocal into and out of the injection mold, blow mold and removal mechanism. In another embodiment, the core rod assemblies do not reciprocate but the associated injection and blow molds and finished product removal mechanism are mounted for vertical reciprocation on a clamp plate. The blown finished containers are indexed to the ejection station at which the containers are removed from the machine. In the event the neck mold is of one-piece construction and the container neck includes threads, an unscrewing device acts to remove the bottle from the mold. If a neck mold of multiple section construction is utilized, the neck mold is opened by suitable mechanical means.

3,776,992

METHOD FOR PRODUCING SLEEVES OR SHEETS FOR FEEDER HEADS FORMED IN METAL CASTING AND AN APPARATUS THEREFOR

Masamitsu Miki, 25–15, 1-chome, Nakahara, Mitaka, Tokyo, Japan

Filed Mar. 31, 1971, Ser. No. 129,778
Claims priority, application Japan, Sept. 7, 1970, 45/77,948, 45/77,949
Int. Cl. F27d *1/16*
U.S. Cl. 264—122 **7 Claims**



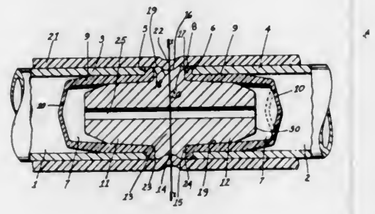
A method of producing sleeves or sheets for feeder heads formed in metal casting, which comprises optionally blending a raw material mixture of refractory materials with large quantities of inorganic and organic fibrous materials and a binding agent; cotton-opening and mixing the inorganic and organic fibrous materials blended in the raw materials through agitation in the dry state without adding water; kneading the resultant mixture with less than 150% by weight of water so as to hold the mixture in the solid form with minimal fluidity; molding the kneaded mixture into a desired shape by pressing in molds; and drying to solidify the molded mixture at a temperature of about 180° C.

3,776,993

METHOD OF MANUFACTURING TUBULAR ARTICLES

Wilhelm Lachenmayer, Berlebeck, Germany, assignor to Benteler-Werke AG, Schloss Neuhaus, Germany

Original application Oct. 10, 1969, Ser. No. 865,283, now Patent No. 3,661,184, dated May 9, 1972. Divided and this application Feb. 14, 1972, Ser. No. 225,878
Claims priority, application Germany, Nov. 26, 1968, P 18 10 957.4
Int. Cl. B28b *21/58, 21/72*
U.S. Cl. 264—159 **9 Claims**



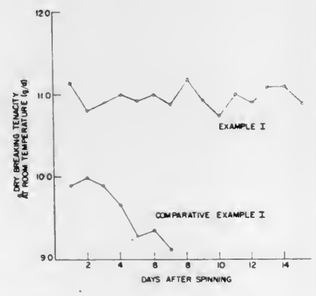
A method of manufacturing tubular articles wherein the open ends of a pair of elongated tubular members are closed by corrosion resistant inserts having flange portions overlying the radial end faces of the tubular members. The members are then aligned and surrounded by an insulating jacket provided with radially inwardly extending circumferential beads which abut against and are sealed to the respective flange portions of the inserts so as to fixedly secure the latter in the open ends, whereafter the jacket is severed between the beads thereof.

3,776,994

METHOD OF MANUFACTURING POLYVINYL ALCOHOL FIBER OF IMPROVED PROPERTY

Yoshihide Yoshioka, Saijo, and Shigekazu Kobayashi and Akio Mizobe, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Nov. 26, 1971, Ser. No. 202,384
Claims priority, application Japan, Nov. 27, 1970, 45/105,374
Int. Cl. D01d *1/10*
U.S. Cl. 264—170 **13 Claims**



The properties of polyvinyl alcohol fibers are improved by spinning polyvinyl alcohol containing boric acid or a borate into an alkaline spinning bath containing a conventional dehydrating salt and an additive comprising 4×10^{-5} to 9×10^{-2} mol/l. of (a) an aminopolycarboxylic acid, or (b) a condensed phosphoric acid, or (c) a salt, e.g., sodium or potassium or ammonium salts of (a) or (b).

3,776,995

METHOD OF PRODUCING X-RAY DIFFRACTION GRATING

William S. Little, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1970, Ser. No. 80,865
The portion of the term of the patent subsequent to Mar. 21, 1989, has been disclaimed
Int. Cl. B29c *1/02*
U.S. Cl. 264—219 **1 Claim**

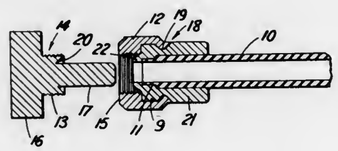
A method is herein disclosed for producing a high resolution X-ray diffraction grating having a relatively large working surface thereon. An optically worked glass substrate is coated with an even layer of photoresist material. The coated surface is then exposed to a pattern of light interference fringes and the pattern is scanned across the surface in a manner whereby the phase relationship between the interfering light beams remain unaltered at each point on the surface. The rate of scan is controlled to produce a uniform time average exposure of the fringes on the coated surface. The exposed surface is then developed by slectively removing the photoresist material from the glass support surface leaving behind a periodic array of extended parallel glass stripes separated by ridges of photosensitive material. The developed surface is next coated with a thin layer of glass adhering metal to form an inverse X-ray grating. A substrate coated with an unfixed epoxy resin is placed in pressure contact against the metallized surface of the work element and allowed to dry or harden while under pressure. The substrate is then removed from the master and forms an X-ray diffraction grating having a smooth unblemished surface thereon interrupted by equally spaced grooves that are determined by the positioning of the photosensitive ridges on the surface of the master.

3,776,996

METHODS OF PROVIDING END FITTINGS ON HOSES

James Brisbane Cameron and Bernard Piet Walton-Knight, London, England, asssignors to BTR Industries Limited, London, England

Filed Aug. 12, 1971, Ser. No. 171,245
Claims priority, application Great Britain, Aug. 13, 1970, 39,091/70
Int. Cl. B32b *1/10*
U.S. Cl. 264—242 **2 Claims**



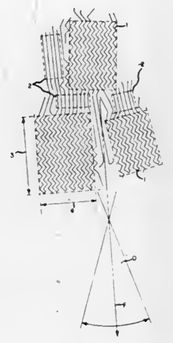
A method of providing an end fitting in the end portion of a hose, by forming a mould around the hose end portion, so that the end portion is a part of the mould, and then injecting a hardenable material into the mould so that the moulded part is moulded to the end portion. The bore of the hose may be closed by a removable plug prior to the moulding. An end fitting nut may be positioned around the end portion to form a part of the mould, and the nut may be threaded on the plug; prior to the plug being used to close the bore of the hose.

3,776,997

PROCESS FOR THE PREPARATION OF STRETCH RESISTANT POLYPIVALOLACTONE FIBERS

Shee Lup Jung and Lawrence Forwood Beste, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1966, Ser. No. 599,178
Int. Cl. B29c *17/02*
U.S. Cl. 264—290 **1 Claim**



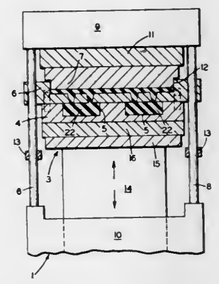
Polypivalolactone fibers with high resistance to stretch after boil-off are prepared by a critical combination of drawing and heating steps performed upon oriented polypivalolactone fibers. These fibers are characterized by their unique structural form, most significantly the relative amounts of the polymer which exist in the two crystalline forms: α and β.

3,776,998

METHOD OF MOLDING RUBBER ARTICLES

Herman S. Church, Cuyahoga, Ohio, assignor to Teledyne Mid-American Corporation, Hartville, Ohio

Filed Feb. 10, 1972, Ser. No. 225,065
Int. Cl. B29g *3/00*
U.S. Cl. 264—294 **8 Claims**



A method of molding rubber articles in which uncured rubber is transferred from the chamber of a pot sprue plate into the cavities of a mold cavity plate by pot plunger pressure in a master press while the uncured rubber in the pot is maintained at a temperature considerably below curing temperature. The sprue plate retained by the master press is separated from the cavity plate, and the cavity plate then is removed from the master press. A mold lid with cavity pressure pads then is placed on the cavity plate with the cavities filled with uncured rubber. The mold lid and cavity plate as a mold unit is pressed in an auxiliary press to cure the rubber

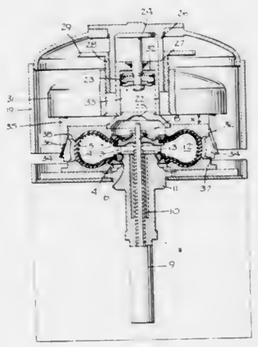
under pressure for the necessary time interval at the required curing temperature. The master press may serve a number of auxiliary presses. Fresh uncured rubber is added to the chamber of the master press sprue plate which is maintained at a temperature considerably below curing temperature, before each new cavity plate for a mold unit for one of the auxiliary presses is injected with uncured rubber. The procedure eliminates forming substantially any cured rubber scrap in producing molded articles.

3,776,999

METHOD OF TIRE SHAPING AND VULCANIZING

Jean R. Leblond, Compiegne, France, assignor to Uniroyal Societe Anonyme, Neuilly-sur-Seine, France

Filed Sept. 15, 1971, Ser. No. 180,591
Claims priority, application France, Sept. 21, 1970, 7034111
Int. Cl. B29n *5/02*
U.S. Cl. 264—315 **6 Claims**



Improvements in a tire shaping and vulcanizing method to enable use of a press with tread molding segments avoiding distortion of the tire. A movable mold section is applied to the tire with sufficient force to position the movable mold section coaxially in place on the tire prior to complete closure of the mold. Compressible stops restrain the travel of the movable mold section to maintain space for movement of the tread molding segments until complete closure of the mold.

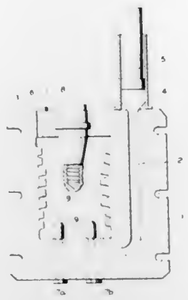
3,777,000

METHOD OF PRODUCING A THICK-WALLED CURED PLASTICS MOULDING

Eugen Kusenberg, Basel, Ernst Hubler, Aesch, Hans-Rudolf Aus der Au, Reinach, Basel-Land, and Otto Ernst, Pfeffingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of application Ser. No. 45,123, June 10, 1970. This application July 19, 1972, Ser. No. 273,171
Claims priority, application Switzerland, June 19, 1969, 9,385/69
Int. Cl. B29g *7/00*
U.S. Cl. 264—327 **5 Claims**

Thick-walled, cured plastics mouldings are produced by pouring a preheated, highly reactive liquid casting resin composition, which is capable of setting within a period of three to sixty minutes, such as an epoxide resin composition, into a preheated mould substantially without the application of pressure so as substantially to fill the mould, the temperature of the mould being sufficient to initiate curing of the resin composition and the temperature of the composition being at least 10% below the temperature of the mould, said temperatures being measured in degrees centigrade; further composition is supplied to the mould with the application of gentle



pressure to compensate for shrinkage until the composition has set, whereafter the set moulding can be removed from the mould. The specified temperature difference between the mould and the composition ensure that relatively minor temperature gradients arise and enables good quality mouldings of any desired size to be made.

3,777,001

METHOD FOR THE PRODUCTION OF STRUCTURAL BODIES

Robert S. Clark, 1428 E. 3rd Place, Mesa, Ariz. 85203

No Drawing. Continuation-in-part of application Ser. No. 36,459, May 11, 1970. This application July 13, 1971, Ser. No. 162,268
Int. Cl. B29c *1/02*
U.S. Cl. 264—337 **8 Claims**

A method for producing structural bodies wherein unground but crushed clay pieces are introduced into a mold having a configuration related to the desired shape of the body to be produced. The mold in contact with the clay pieces is formed of solid graphite, which will not melt or otherwise deteriorate under the conditions prevailing during treatment and which will not adhere to or become embedded in the body being produced. The mold and clay particles present therein are heated to a temperature between about 1800° F. and 2500° F. Evidence indicates a solid reaction wherein the clay pieces have been densified, resulting in a product, which, when cooled, is a substantially homogenous, structurally sound body suitable for many load bearing applications including use as panels employed in the construction of homes and other buildings, and for large diameter clay pipe.

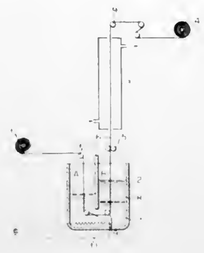
3,777,002

METHOD FOR MODIFYING THE SURFACE OF A POLYOLEFIN FILM

Toshio Suzuki, Koichi Awano, and Katsuhisa Ogino, Tokyo, Japan, assignors to Nisshin Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1971, Ser. No. 109,884
Claims priority, application Japan, Feb. 2, 1970, 45/8,435
Int. Cl. B29c *25/00;* **B44d** *5/02*
U.S. Cl. 264—343 **3 Claims**

This invention relates to a method for modifying the surface of a polyolefin film by heating said film in a thermal medium and then contacting said film with a treating liquid. The thermal medium is selected from various kinds of inert liquids which do not react with the polyolefin film



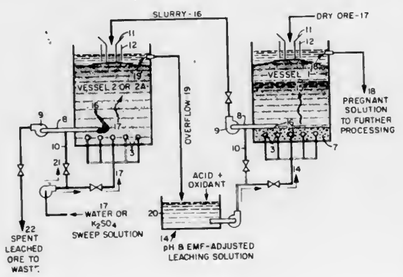
and the treating liquid is selected from various kinds of organic compounds which may contain or do not contain a high molecular substance other than the polyolefin of the film.

3,777,003

CONTINUOUS VAT LEACHING PROCESS

Adolph V. Mitterer, Lakewood, Colo., assignor to Continental Oil Company, Ponca City, Okla.

Filed Sept. 1, 1970, Ser. No. 68,690
Int. Cl. B01d *11/00;* **C01g** *43/00*
U.S. Cl. 423—20 **6 Claims**



The present invention relates to a method for leaching a mineral from an ore containing said mineral wherein a leaching solution is passed upwardly through a downwardly flowing bed or ore. The leaching solution is passed through the ore under conditions of quiescent flow whereby the mineral is dissolved from the mineral ore and is withdrawn from the upper portion of a vessel containing said bed or ore. The spent ore is withdrawn from the bottom of said vessel and passed to a second vessel wherein the ore is washed free from any entrained leaching solution.

3,777,004

PROCESS FOR HEAP LEACHING ORES

Arthur W. Lankenau and James L. Lake, Lakewood, Colo., assignors to Hazen Research, Inc., Golden, Colo.

No Drawing. Filed May 10, 1971, Ser. No. 141,960
Int. Cl. B01d *11/00;* **C01g** *43/00*
U.S. Cl. 423—20 **26 Claims**

A method for recovering metal values from large deposits of low grade ores or from high grade ores existing in small ore bodies in an outdoor operation near the mine which comprises making a pile of the ore and successively leaching selected depths of the ore from the top of the pile down by adding leaching agent and sufficient moisture to leach the metal contained in each selected depth with intermittent stirring of the selected depth of ore until the metal is solubilized followed by removal of the leached section from the pile, separation of the leach solution and solid tailings and recovery of the dissolved metal values from the leach solution.

3,777,005

METHOD OF REFINING NONFERROUS SULFIDE, ARSENIDE AND ANTIMONIDE MINERAL SUBSTANCES

Johannes Gerlach and Eberhard Gock, Berlin, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,228
Claims priority, application Germany, Sept. 28, 1970, P 20 47 609.9; Dec. 15, 1970, P 20 61 652.8; July 30, 1971, P 21 38 143.1
Int. Cl. C01g *3/00*
U.S. Cl. 423—27 **13 Claims**

Nonferrous metal sulfides, antimonides and arsenides in mineral crystalline form, e.g. as ore, concentrates and metallurgical tailings, byproducts and waste materials, are comminuted, in for example, a vibrating mill by impact techniques (vibrating impact mill) until the X-ray diffraction or interference intensity is reduced, e.g. to a ratio of comminuted intensity to original intensity of less than 0.8. The comminuted product is then treated in a single step with oxygen and a lixiviant for recovery of the nonferrous metal or a salt thereof. The latter is found in solution in the aqueous phase.

3,777,006

PROCESS FOR PREPARING ZEOLITIC BODIES HAVING HIGH STRENGTH CHARACTERISTICS

Clark A. Rundell, Silver Spring, and Carl V. McDaniel, Laurel, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 868,568, Oct. 22, 1969. This application Jan. 21, 1972, Ser. No. 219,837
Int. Cl. C10b *33/28;* **B01j** *11/40*
U.S. Cl. 423—118 **2 Claims**

A process for preparing zeolitic bodies having a size in excess of 200 microns, high strength characteristics and excellent adsorptive properties by preparing clay bodies in the desired size range, treating the clay bodies in a sodium silicate solution and heating the formed bodies in the solution until crystallization is complete.

3,777,007

ANTI-CAKING ADDITIVES FOR INORGANIC SALTS

Lawrence P. Gould, Syracuse, and Robert J. Hoffman, Clay, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,028
Int. Cl. C01b *21/50;* **C01c** *1/16, 1/26*
U.S. Cl. 423—268 **14 Claims**

Mono- and di-saccharides in a finely divided state of about 200 mesh size and in very small amounts of the order of 0.05 to 0.50 weight percent, are effective anti-caking agents when mixed with inorganic salts which are prone to caking. Inorganic salts such as sodium nitrite, ammonium bicarbonate and ammonium chloride, to which is added this minute quantity of a saccharide such as sucrose, lactose, maltose, dextrose, fructose, mannose and arabinose, remain free-flowing after prolonged storage at elevated temperatures. When dissolved in water, these compositions yield clear solutions having no sediment, no floating scum or foam.

3,777,008

SOLID POLYPHOSPHORIC ACID

Peter John McIver, Rossland, British Columbia, Canada, assignor to Cominco Ltd., Montreal, Quebec, Canada

Filed Nov. 3, 1969, Ser. No. 873,363
Claims priority, application Canada, Sept. 24, 1969, 63,026
Int. Cl. C01b *25/16, 15/16*
U.S. Cl. 423—316 12 Claims

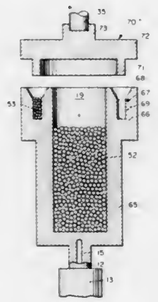
A process for producing a solid completely water-soluble polyphosphoric acid. Wet process phosphoric acid containing a cationic material—a term defined in the disclosure—is passed through an electrothermal cell at an elevated temperature. The concentrated acid is withdrawn from the cell and cooled to yield the desired product. The polyphosphoric acid produced by the process is described. An electrothermal cell in which the process may be carried out is described.

3,777,009

METHOD FOR DIRECT MELT SYNTHESIS OF INTERMETALLIC COMPOUNDS

Wilson P. Menashi, Lexington, Joseph F. Wenckus, Needham, and Roger A. Castonguay, Salem, Mass., assignors to Arthur D. Litttle, Inc., Cambridge, Mass.

Filed Aug. 5, 1971, Ser. No. 169,315
Int. Cl. C01b *19/00;* C22c *7/00*
U.S. Cl. 423—508 16 Claims



Method and apparatus for the melt synthesis of Group III–V, mixed III–V, II–VI, II–IV–VI and II–III–V compounds, at least one of the components forming the compounds being highly volatile under the conditions of synthesis. The metal components are placed in a reaction vessel which is sealed by a liquid selant in combination with a mechanical seal prior to heating the reactants to a temperature at which one or more of the reactants develops an appreciable vapor pressure. The atmosphere surrounding the reaction vessel is pressurized to a pressure above the maximum vapor pressure developed by the reactants during the melt synthesis which is accomplished by heating the reactants. The combination of mechanical and liquid seal is of a character to permit diffusion by high-pressure gas through it.

3,777,010

H_2S REMOVAL

Stephen W. Nicksic, Brea, and Shigeto Suzuki, San Francisco, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 21, 1971, Ser. No. 155,341
Int. Cl. C01b *17/04*
U.S. Cl. 423—573 6 Claims

A process for removing H_2S from a gas mixture containing H_2S and for the production of sulfur which process comprises contacting the gas mixture with a solution, prepared by mixing 100 parts of an H_2S solvent with 0.05 to 5.0 parts of an amine, to absorb H_2S from the gas mixture, and oxidizing H_2S absorbed in the solution to sulfur by contacting the solution containing H_2S with a gas comprising molecular oxygen.

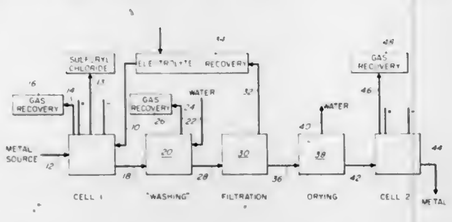
Preferably the gas mixture from which the H_2S is removed is a mixture of H_2S and light hydrocarbon gases. Preferred amine additives are alkyl nitrogen compounds such as dimethylamine. Preferred H_2S solvents include dimethyl formamide.

3,777,011

PROCESS FOR EXTRACTING METAL PLATING, SCRAP OR ORE IN A FUSED ELECTROLYTE CELL

Alberto E. Veloso, Quezon City, Philippines, assignor to Internationale Erfinder -und Patentanstalt, Vaduz, Liechtenstein

Filed Oct. 2, 1970, Ser. No. 77,537
Int. Cl. C23b *5/00;* C01g *1/02, 1/04*
U.S. Cl. 423—592 4 Claims



A method of recovering metal from sources such as metal plating, scrap or ore, for example copper from copper ore, including extracting the metal in an electrolytic cell, containing sodium chloride, and forming the purified metal oxide. The metal may then be recovered in purified form electrolytically. The extraction step is performed in a fused electrolyte cell at high temperature, whereby a compound chloride of the metal with sodium is formed, which is then washed with water to form the metal hydroxide. The metal hydroxide is then dried and calcined to form the oxide of the metal, which can be recovered in a second fused electrolyte cell in purified form, containing molten alkali metal or alkaline earth halides and the metal fluoride, or by any suitable conventional method of reducing metal oxides to pure metal.

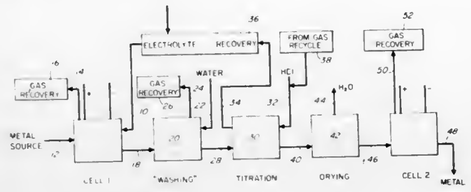
3,777,012

PROCESS FOR EXTRACTING METAL FROM METAL PLATING, SCRAP OR ORE IN A FUSED ELECTROLYTE CELL

Alberto E. Veloso, Quezon City, Philippines, assignor to Internationale Erfinder -und Patentanstalt, Vaduz, Liechtenstein

Filed Oct. 2, 1970, Ser. No. 77,536
Int. Cl. C01g *1/04;* C23b *5/00, 5/32*
U.S. Cl. 423—610 5 Claims

A method of recovering metal from sources such as metal plating, scrap or ore, for example tin from tin plate or tin cans, including extracting the metal in an electrolytic cell, containing sodium chloride, and forming a solution of the metal hydroxide. The metal may then be recovered in the purified metal oxide. The extraction step is performed in a fused electrolyte cell at high temperature, whereby a temporary alloy of the metal with sodium is formed, which is then washed with water and titrated to form the metal hydroxide. The metal hydroxide is then dried and calcined to form the oxide of the metal, which can be recovered in a second fused electrolyte cell in purified form, containing molten alkali metal or alkaline earth halides and the metal fluoride, or by any suitable conventional method of reducing metal oxides to pure metal.

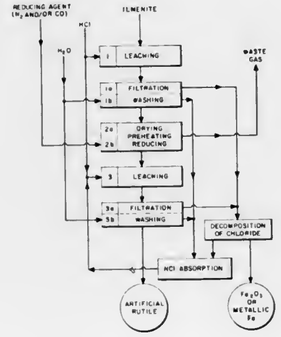


3,777,013

PROCESS FOR THE PREPARATION OF SYNTHETIC RUTILE STARTING FROM ILMENITE

Arrigo Soverini, Giuseppe Sironi, and Raffaele Arezzi, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed May 12, 1971, Ser. No. 142,517
Claims priority, application Italy, May 13, 1970, 24,547/70
Int. Cl. C01g *23/04;* C22b *3/00, 53/00*
U.S. Cl. 423—610 3 Claims



A process is disclosed for the preparation of synthetic rutile starting from ilmenite, characterized in that it comprises a pre-leaching of the ilmenite with hydrochloric acid, followed by a reduction of the pre-leached product to convert to ferrous oxide the higher iron oxides therein, and a second leaching with hydrochloric acid.

3,777,014

METHOD AND REAGENTS FOR THE DIAGNOSIS OF VIRAL DISEASES

Joseph Zichis, Chicago, Ill., assignor to Beckman Instruments, Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 786,770, Dec. 24, 1968. This application Feb. 2, 1971, Ser. No. 112,039
Int. Cl. G01n *31/00, 33/16*
U.S. Cl. 424—12 3 Claims

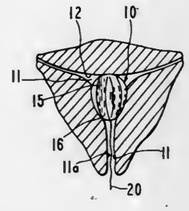
Erythrocytes derived from certain animal or fowl blood are specially treated to produce a substance which is readily agglutinable by viruses and by certain types of antibodies. The substance possesses properties of stability, sensitivity and agglutinability which are utilized in a serological diagnostic test for viral diseases.

3,777,015

DEVICE FOR SUPPRESSING FERTILITY

Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation

Original application Jan. 19, 1970, Ser. No. 3,852, now Patent No. 3,699,951. Divided and this application Aug. 16, 1972, Ser. No. 281,148
Int. Cl. A61f *5/46;* A61m *7/00*
U.S. Cl. 424—15 7 Claims



Fertility suppression in a female mammal is achieved with a device for insertion and retention in the uterus in the form of a flexible, resilient body of polymeric material having an elastic memory. The body has an ellipsoidal shape and a fluted surface. When inserted into the uterine cavity in a compacted state, the body assumes an ellipsoidal configuration. Preferably, the device contains a progestational anti-fertility agent, most preferably progesterone, and is permeable to passage of the progestational anti-fertility agent at a low rate. Upon insertion in the uterus, the device releases a fertility suppressing amount of the progestational anti-fertility agent to the uterus.

3,777,016

COMPOSITION AND METHOD FOR THE TREATMENT OF DAMAGED SKIN

Joseph G. Gilbert, 75 Barberry Lane, Roslyn Heights, N.Y. 11577

No Drawing. Continuation of abandoned application Ser. No. 737,113, June 14, 1968, which is a continuation-in-part of application Ser. No. 679,365, Oct. 31, 1967, now Patent No. 3,525,340. This application Mar. 12, 1971, Ser. No. 123,809
Int. Cl. A61k *9/00, 27/00;* A61l *15/06, 23/00*
U.S. Cl. 424—80 2 Claims

A composition prepared from an ingredient for solubilizing bacterial and fungal organic material and skin and subcutaneous tissue which have been abraded, incised or lacerated, such as cinnamic alcohol, and an ingredient for precipitating bacterial and fungal organic material and skin and subcutaneous tissue which have been abraded, incised or lacerated, such as a tannin, or tannic acid, and preferably a film-former, such as polyvinylpyrrolidone, said ingredient for precipitating bacterial and fungal organic material and skin and subcutaneous tissue which have been abraded, incised or lacerated being

present in an amount of from about 0.1 to about 50 parts per part of said ingredient for solubilizing bacterial and fungal organic material and skin and subcutaneous tissue which have been abraded, incised or lacerated, is used as a solid, a solid residue of a solution, or an aqueous or dilute alcoholic solution for topical treatment of body surface. The preferred composition is pharmaceutically active in a solution to act as a biocidal agent which also has a high tendency to arrest bleeding and also has good adhesive characteristics. The composition can also be employed as a pharmaceutically active adhesive composition with elastic and flexible dressing substrates, such as foam rubber. A surgical implement, comprised of one or more surgical clips in a coated or uncoated foam rubber or the like substrate provides a simple means for the coaptation of gaping wounds. Other features of the invention appear in the following specification.

3,777,017

ESTERS OF 1,4 - BENZODIOXAN-2-CARBOXYLIC ACID AS ATTRACTANTS FOR THE EUROPEAN CHAFER

Terrence P. McGovern, Bowie, and Morton Beroza, Silver Spring, Md., and Bart J. Fiori, Geneva, N.Y., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,792

Int. Cl. A01n *12/14*

U.S. Cl. 424—84 **6 Claims**

The propyl, isobutyl, butyl, isopentyl and pentyl 1,4-benzodioxan-2-carboxylates were found to be effective attractants for the European chafer.

3,777,018

COMPOSITIONS CONTAINING POLYENIC MACROLIDE AND ARYL DERIVATIVE OF ALIPHATIC ACID AND METHOD FOR TREATING HYPERLIPIDAEMIA

Harry W. Gordon, Bronx, N.Y., and Carl P. Schaffner, Trenton, N.J., assignors to Julius Schmid Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 627,313, Mar. 31, 1967, now U.S. Patent No. 3,627,879. This application July 7, 1969, Ser. No. 839,617 The portion of the term of the patent subsequent to Dec. 14, 1988, has been disclaimed

Int. Cl. A61k *21/00*

U.S. Cl. 424—117 **6 Claims**

Orally administered compositions for treating hypercholesterolemia are described herein, these compositions comprising an effective dose of (1) a polyenic macrolide selected from the group consisting of candicidin, fungimycin, hamycin, trichomycin and amphotericin B and (2) an aryl derivative of an aliphatic acid. Also the method of treating hyperlipidaemia including reducing and controlling blood cholesterol and triglyceride levels in a host is described herein.

3,777,019

STABILIZED CHLORPROMAZINE HYDROCHLORIDE SOLUTION FOR USE IN DISPOSABLE CARTRIDGES

Howard J. Levin, Norristown, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,427

Int. Cl. A61k *27/00*

U.S. Cl. 424—175 **1 Claim**

The invention is directed to a stable, injectable solution of chlorpromazine hydrochloride for use particularly in disposable cartridges. The chlorpromazine hydrochloride has known utility in pharmacology as a tranquilizer.

3,777,020

PSORIASIS TREATMENT WITH MYCOPHENOLIC ACID

Irving S. Johnson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 191,824, Oct. 22, 1971, which is a continuation-in-part of application Ser. No. 93,432, Nov. 27, 1970, both now abandoned. This application Aug. 14, 1972, Ser. No. 280,626

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **3 Claims**

Psoriasis is treated orally and topically with mycophenolic acid or its β-D-glucuronide.

3,777,021

METHOD OF STABILIZATION OF PLANT ROOTS AND EXTRACTS THUS STABILIZED

Jacques Perrin, 40 Rue Pierret, Neuilly-sur-Seine, France

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,733 Claims priority, application France, Feb. 10, 1970, 7004591

Int. Cl. A01n *3/00;* **A61k** *27/14*

U.S. Cl. 424—195 **4 Claims**

A method stabilization of roots and plants for the purpose of obtaining extracts of said roots, such as valerian extract in which the stabilizing process is applied as soon as the roots are gathered and in the actual places of the crops, the roots being immediately plunged into a bath of solvent such as propylene-glycol, polyol, etc., brought up to a temperature preferably at least equal to 120° C. The roots are then ground and put into a press, after which the compressed cake is mixed with propylene-glycol or alcohol at 95° containing chloroform before being again passed into the press. The various concentrates thus collected form the desired extract and correspond weight for weight to the fresh plants. The invention also specifies a medicinal association of this extract with barbiturates.

3,777,022

DISINFECTANT COMPOSITION

Abraham Cantor, Elkins Park, Pa., and Murray W. Winicov, Flushing, N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 788,926, Jan. 3, 1969. This application June 28, 1971, Ser. No. 157,671

Int. Cl. A61l *1/00*

U.S. Cl. 424—150 **11 Claims**

An iodine-phenol disinfectant composition of enhanced stability in both concentrate and aqueous use dilution form, said composition consisting essentially of 1 to 10% of a germicidal phenolic compound in which at least two, and preferably three, of the 2, 4 and 6 positions have substituents selected from the class consisting of halogen, nitro, phenyl, halogenated phenyl, benzyl, halogenated benzyl and halogenated hydroxy benzyl groups, and not more than one C_1 to C_6 alkyl or C_3 to C_6 cycloaliphatic group, and in which substituents not otherwise accounted for are selected from the class consisting of hydrogen, halogen and not more than one additional alkyl group, 2.5 to 35% of an ionic detergent providing about 1 to 10 parts per part by weight of phenolic, an amount of iodine within the range of about 0.25% to 5% by weight with the limitation that the amount of iodine does not exceed the weight of phenolic compound, an acid, optional with a trisubstituted phenol and essential with a disubstituted phenol, in an amount not exceeding about 40% by weight, and a diluent selected from the class consisting of solid diluents, aqueous alcoholic diluents providing not more than 25% alcohol and an amount of water in excess of the alcohol present, and water, if the only diluent, comprising at least 10% by weight of said composition.

3,777,023

MACROTETROLIDE MITICIDE AND INSECTICIDE

Takao Sagawa, Seiji Hirano, and Nobuhiko Tanaka, Tokyo, and Kunihiko Togashi, Kashiwa, Japan, assignors to Chugai Saiyaku Kabushiki Kaisha, Tokyo, Japan

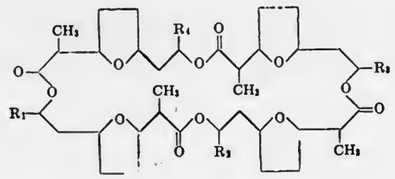
Filed Sept. 8, 1970, Ser. No. 70,042

Claims priority, application Japan, Sept. 6, 1969, 44/70,320; Feb. 24, 1970, 45/15,360

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **11 Claims**

An agricultural composition comprising, as active ingredients, one or more macrotetrolide compounds represented by the formula



wherein R_1, R_2, R_3 and R_4 are each selected from the group consisting of methyl and ethyl, with or without containing one or more pesticides selected from the group consisting of organo-chloric pesticides, carbamate pesticides and organo-phosphorus pesticides is disclosed.

3,777,024

SYNERGISTICALLY ACTIVATED BIOCIDAL COMPOSITIONS

Henry Martin and Volker Dittrich, Basel, Switzerland, Georg Pissiotas, Loerrach, Germany, and Otto Rohr, Therivil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 5, 1971, Ser. No. 104,143

Claims priority, application Switzerland, Jan. 8, 1970, 205/70

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **13 Claims**

Arylpropargyl-ethers and arylpropargyl-thioethers of the formula

$$Aryl—X—CH_2—C\equiv C—R_1$$

in which X represents an oxygen or a sulphur atom, and R_1 represents a hydrogen atom, a halogen atom, an alkyl group having from 1 to 7 carbon atoms or an unsubstituted or substituted aromatic hydrocarbon radical, as synergistic agents to biocidally active compounds other than carbamic acid derivatives.

3,777,025

THIADIAZINE FUNGICIDES AND MITICIDES

John B. Adams, Jr., Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Oct. 20, 1970, Ser. No. 82,529, now Patent No. 3,655,657, which is a continuation-in-part of abandoned application Ser. No. 14,212, Feb. 24, 1970. Divided and this application Dec. 16, 1971, Ser. No. 208,987

Int. Cl. A01n *9/12*

U.S. Cl. 424—246 **13 Claims**

A group of substituted 1H-2,1,4-benzothiadiazine-3-carbamic acid esters are useful for controlling fungi and mites. These compounds can be prepared by the reaction of an o-nitroaniline with an alkoxycarbonyl isothiocyanate followed by the alkaline hydrosulfite reduction of the intermediate formed.

A compound exemplary of the group is 1H-2,1,4-benzothiadiazine-3-carbamic acid, methyl ester.

3,777,026

N-SUBSTITUTED AMINO-N-NITROSO-AMINOACETONITRILES AS ANTI-ANGINAL AGENTS

Paul L. Anderson, Dover, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 113,622, Feb. 8, 1971, which is a continuation-in-part of application Ser. No. 44,654, June 8, 1970, both now abandoned. This application June 14, 1972, Ser. No. 262,473

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **6 Claims**

Certain known N-substituted amino-N-nitroso-aminoacetonitriles, e.g., N - morpholino-N-nitroso-aminoacetonitrile, have been found to be useful as anti-anginal agents.

3,777,027

ANORECTIC COMPOSITIONS COMPRISING N-PYRIDYLALKYL - β - ALKOXY-β-TRIFLUOROMETHYLPHENALKYLAMINES

Stephen T. Ross and Charles L. Zirkle, Berwyn, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Original application Sept. 15, 1970, Ser. No. 72,536, now Patent No. 3,679,693. Divided and this application May 8, 1972, Ser. No. 251,528

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **11 Claims**

Pharmaceutical compositions having anorectic activity comprising N-pyridylalkyl-β-alkoxy-β-trifluoromethylphenalkylamines. The active medicaments are prepared by the condensation of an N-pyridylalkylamine with a β-alkoxy-trifluoromethylphenalkyl halide.

3,777,028

5,5 - DIMETHYL - 10-HYDROXY-8-(3-METHYL-2-OCTYL) - 2-(2-PROPYNYL)-1,2,3,4-TETRAHYDRO-5H-[1] - BENZOPYRANO[3,4-d]PYRIDINE AS AN ANTI-DIARRHEAL AGENT

Louis Selig Harris, Chapel Hill, N.C., and Harry George Pars, Lexington, and Raj Kumar Razdan, Belmont, Mass., assignors to Sharps Associates, Cambridge, Mass.

No Drawing. Filed Aug. 24, 1972, Ser. No. 283,619

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **2 Claims**

A method of controlling diarrhea by administering a therapeutically effective amount of 5,5-dimethyl-10-hydroxy - 8 - (3 - methyl-2-octyl)-2-(2-propynyl)-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-d]pyridine to a patient in need of such treatment.

3,777,029

CHEWABLE MULTIVITAMIN TABLETS CONTAINING ALUMINUM NICOTINATE

Louis Magid, Clifton, N. J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation of abandoned application Ser. No. 704,254, Feb. 9, 1968. This application Jan. 28, 1971, Ser. No. 110,648

Int. Cl. A61k *15/12*

U.S. Cl. 424—266 **4 Claims**

Chewable multivitamin tablets containing aluminum nicotinate.

3,777,030

SULPHUR-CONTAINING 1,4 - DIHYDROPYRIDINE DERIVATIVES FOR CORONARY VESSEL DILATION

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

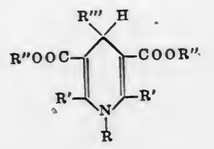
No Drawing. Original application Nov. 20, 1970, Ser. No. 91,607, now Patent No. 3,696,112. Divided and this application Feb. 25, 1972, Ser. No. 229,551

Claims priority, application Germany, Dec. 17, 1969, P 19 63 186.8

Int. Cl. A61k 27/00

U.S. Cl. 424—266 24 Claims

Sulphur-containing 1,4-dihydropyridine derivatives of the formula:



wherein

R is hydrogen, saturated or unsaturated, straight, branched or cyclic alkyl of 1 to 6 carbon atoms, unsubstituted or substituted by hydroxyl or alkoxy of 1 to 3 carbon atoms, or benzyl or phenethyl unsubstituted or substituted in the aryl moiety by 1, 2 or 3 members selected from the group consisting of 1 to 3 alkoxy moieties of 1 to 3 carbon atoms, 1 or 2 alkyl moieties of 1 to 3 carbon atoms and 1 or 2 halogen atoms,

R' is straight or branched chain alkyl of 1 to 4 carbon atoms,

R'' is straight, branched, cyclic, saturated or unsaturated alkyl of 1 to 6 carbon atoms, said alkyl interrupted by 1 or 2 oxygen atoms or said alkyl substituted by hydroxyl,

R''' is aryl substituted by SO_nR_1 unsubstituted or substituted by 1 to 8 members selected from the group consisting of nitro, amino, acylamino of 1 to 2 carbon atoms, hydroxyl, acyloxy of 1 to 2 carbon atoms, 1 or 2 alkyl moieties of 1 to 4 carbon atoms, 1 or 2 alkoxy moieties of 1 to 4 carbon atoms, and 1 or 2 halogen atoms,

n is 0, 1, 2 or 3, and

R_1 is lower alkyl of 1 to 4 carbon atoms or phenyl when *n* is 0, 1 or 2 and R_1 is hydrogen when *n* is 3,

are useful for their coronary dilating effect and antihypertensive effects. Processes for the production of these compounds are set forth below.

3,777,031

2-(P-PHENYLBENZYL) OXAZOLINES IN TREATING INFLAMMATION

Ying-Ho Chen and Carl Dalton Lunsford, Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Application Sept. 9, 1971, Ser. No. 179,237, now Patent No. 3,726,893, which is a continuation-in-part of abandoned application Ser. No. 82,159, Oct. 19, 1970. Divided and this application Dec. 29, 1972, Ser. No. 319,545

Int. Cl. A61k 27/00

U.S. Cl. 424—272 13 Claims

2-(p-phenylbenzyl)oxazolines are disclosed which are prepared by reacting p-phenylphenylacetic acids with amino-alcohols under dehydrating conditions. The compounds possess anti-inflammatory activity.

3,777,032

2,3-DIHYDRO-1H-THIENOBENZOTHIEPINO[4,5-c] PYRROLES AS CNS-DEPRESSANTS

Hans Blattner ad Walter Schindler, Riehen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Dec. 16, 1970, Ser. No. 98,927, now Patent No. 3,682,959, dated Aug. 8, 1972. Divided and this application June 15, 1972, Ser. No. 263,048

Claims priority, application Switzerland, Dec. 23, 1969, 19,061/69, 19,062/69

Int. Cl. A61k 27/00

U.S. Cl. 424—274 8 Claims

Compounds of the class 2,3 - dihydro - 1H - thieno-[2',3':2,3][1]benzothiepino[4,5-c]pyrrole, 2,3 - dihydro-1H-thieno[3',2':2,3][1]benzothiepino[4,5-c]pyrrole, and the N-allyl and N-alkyl derivatives thereof are prepared from 4,5-bisbromomethylthieno[3,2-b][1]benzothiepin or 4,5 - bisbromomethylthieno[2,3-b][1]benzothiepin and amines, these compounds and the pharmaceutically acceptable acid addition salts thereof have a depressant effect upon the central nervous system and are active ingredients of pharmaceutical compositions.

3,777,033

BIS-CHROMONYL PHARMACEUTICAL COMPOSITION AND METHODS

Colin Fitzmaurice, Macclesfield, and Thomas Brian Lee, Loughborough, England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England

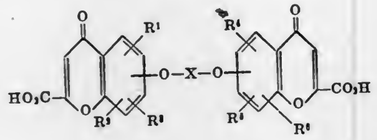
No Drawing. Application Nov. 2, 1970, Ser. No. 77,711, now Patent No. 3,686,412, which is a continuation of abandoned application Ser. No. 765,722, July 30, 1968, which in turn is a division of application Ser. No. 536,281, Mar. 22, 1966, now Patent No. 3,419,578. Divided and this application Nov. 16, 1971, Ser. No. 199,360

Claims priority, application Great Britain, Mar. 25, 1965, 12,626/65; Dec. 9, 1965, 52,414/65

Int. Cl. A61k 27/00

U.S. Cl. 424—283 10 Claims

Pharmaceutical compositions comprising a pharmaceutical carrier together with a bis-chromonyl compound selected from compounds of the formula



and functional derivatives thereof, in which R^1, R^2, R^3, R^4, R^5 and R^6 are each selected from the group consisting of hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy, hydroxyloweralkyl, haloloweralkyl, hydroxyloweralkoxy, loweralkoxyloweralkoxy and carboxyloweralkoxy; and X is selected from the group consisting of saturated and unsaturated, straight and branched hydrocarbon chains which may be interrupted by at least one member selected from the group consisting of benzene rings, oxygen-containing heterocyclic rings, oxygen atoms and carbonyl groups, and which may be substituted by at least one member selected from the group consisting of halogen atoms, hydroxy groups and lower alkoxy groups, are useful in inhibiting antigen-antibody reactions.

3,777,034

COMPOUNDS HAVING PHARMACOLOGICAL PROPERTIES

Jenkin Eric Davies and Jan van Dijk, van Houtenlaan, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Original application July 16, 1969, Ser. No. 842,334, now Patent No. 3,658,850. Divided and this application Jan. 14, 1972, Ser. No. 217,939

Claims priority, application Netherlands, July 18, 1968, 6810333

Int. Cl. A61k 27/00

U.S. Cl. 424—285 11 Claims

Novel O-(2-aminoethyl) oximes of alkyl 2-(and 3-) benzofuranyl ketones have been found to be useful control of nervous system activities for example as antidepressants, sedatives or anticonvulsives.

3,777,035

ACYLATED ANILIDE CARBAMATE ANTHELMINTIC COMPOSITIONS AND METHODS OF USING THE SAME

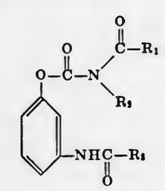
Eugene G. Teach, El Cerrito, and Julius J. Menn, Saratoga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Mar. 29, 1968, Ser. No. 717,465, now Patent No. 3,592,949. Divided and this application Feb. 22, 1971, Ser. No. 117,791

Int. Cl. A61k 27/00

U.S. Cl. 424—300 12 Claims

Compounds corresponding to the formula



in which R_1 and R_2 are independently lower alkyl, halogenated lower alkyl, lower alkenyl, cycloalkyl, phenyl substituted phenyl in which the substituents are nitro, halogen, lower alkyl or lower alkoxy and R_3 is hydrogen, lower alkyl, cycloalkyl, halogenated lower alkyl, lower alkenyl, furyl or benzyl. The above-defined compounds are effective as herbicides, insecticides and animal parasiticides, especially as anthelminthics. Representative compounds are: 3'-(N-methyl-N-acetylcarbamoyloxy) formanilide; 3' - N - isopropyl-N-trifluoroacetylcarbamoyloxy propionanilide; 3' - N - butyl-N-trifluoroacetylcarbamoyloxypropionanilide; 3' - (N - isobutyryl - N - isopropylcarbamoyloxy) propionanilide; 3' - (N - i-propyl-N-chloroacetyl-carbamoyloxy) propionanilide.

3,777,036

PESTICIDAL PREPARATIONS CONTAINING CARBAMATES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Sept. 9, 1968, Ser. No. 758,618, now Patent No. 3,655,730. Divided and this application Jan. 10, 1972, Ser. No. 216,762

Claims priority, application Switzerland, Sept. 14, 1967, 12,862/67

Int. Cl. A01n 9/12

U.S. Cl. 424—300 26 Claims

The invention comprises new alkenylaminophenylcarbamates and their use in preparations for combating pests, preferably insects and acarides.

3,777,037

CINNAMYL PHENOLS USEFUL AS ANTI-MICROBIAL AGENTS

Leonard Jurd, Berkeley, Alfred Douglas King, Jr., Martinez, and William L. Stanley, Richmond, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Sept. 22, 1970, Ser. No. 74,485, now Patent No. 3,745,222, dated July 10, 1973. Divided and this application Oct. 31, 1972, Ser. No. 302,621

Int. Cl. A01n 9/26

U.S. Cl. 424—341 3 Claims

Substances which are subject to microbial spoilage are preserved by addition of a cinnamyl phenol, e.g., 2-cinnamyl-phenol, 4-cinnamyl phenol, 2-methoxy-4-cinnamyl-phenol, 2-cinnamyl-5-methoxy-quinol, etc.

3,777,038

BAKING PROCESS AND COMPOSITIONS FOR ITS PRACTICE

Jerome B. Thompson, Rte. 3, Box 231, Cumberland, Md. 21502

No Drawing. Continuation-in-part of abandoned application Ser. No. 81,560, Oct. 16, 1970. This application Feb. 12, 1973, Ser. No. 331,882

Int. Cl. A21d 2/04, 2/22, 2/24

U.S. Cl. 426—19 18 Claims

Iron chelates of ethylenedinitrilotetraacetate, ferrous or ferric, are incorporated in the dough mass used in the production of yeast leavened baked products made from wheat flour to improve the dough as well as the baked products obtained therefrom. Such chelates are introduced into the dough mass, as such, or by forming them in situ by the introduction of iron salts and ethylenedinitrilotetraacetates which react in the presence of dough water to form such chelates. The effect of the chelates will be found to be materially enhanced by having present therein activating traces of bromate ions therewith, the amount of bromate being about 10% to 20% of the amount that has generally been employed heretofore in the production of baked products. Thus, the amount of bromate to be employed in the practice of the present invention will be in the range of about .0001% to about .003% based on the weight of the flour.

3,777,039

HIGH AMYLOSE STARCH ADDITIVE IN LEAVENED PASTRY DOUGHS

Eric M. Van Patten, Tinley Park, and James A. Freck, Naperville, Ill., assignors to American Maize-Products Company

No Drawing. Filed Jan. 14, 1972, Ser. No. 217,999

Int. Cl. A21d 13/08

U.S. Cl. 426—62 6 Claims

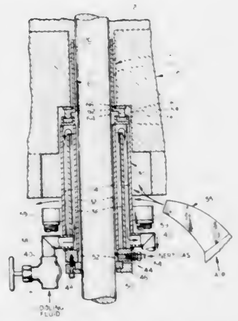
A new and improved dough for leavened pastries such as pizza is disclosed. The dough has from about 2% to about 14% of a high amylose material containing 50% or more amylose and thereby the stickiness of the dough is materially reduced, the proofing time is reduced, and yet a tender structurally stable crust is formed. Additionally, after baking, the crust has less of a tendency to shrink than normal pizza pastries and the thickness of the crust varies substantially less than standard pizza pastries.

ELECTRICAL

3,777,040
PROTECTION OF GLASS MELTING FURNACE ELECTRODE

Philip Anthony Maunsell Gell, Staffs, England; Frederick Maynard Merritt, and William Richards Steitz, both of Toledo, Ohio, assignors to Toledo Engineering Co., Inc., Toledo, Ohio and Elemelt Limited, Kingswinford, Brierley Hill, Staffs, England

Filed Apr. 25, 1973, Ser. No. 354,505
Int. Cl. C03b *5/02*
U.S. Cl. 13—6 **22 Claims**

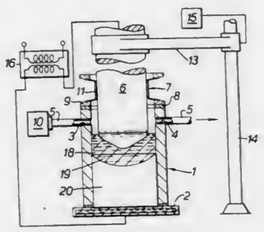


An oxidizable electrode such as molybdenum projecting vertically through a shouldered aperture in the ceramic of the bottom of an electric glass melting furnace being surrounded in said aperture below said shoulder by a water jacket, above said shoulder by a corrosion resisting metal sleeve containing high content of nickel which sleeve has an outwardly extending flange adjacent said shoulder, a refractory gasket on each side of said flange sealing said flange to said shoulder and the upper end of said water jacket, and providing a coating or layer of refractory material, such as of alumina-silica fiber or cement and/or sodium silicate, at least on the outside of said sleeve and preferably on both sides thereof, and purging the space between the electrode and said jacket and lower portion of said sleeve with an inert gas.

3,777,041
ELECTROSLAG REFINING APPARATUS

Richard John Hawkins, Kingston Upon-Thames, England, assignor to The British Iron and Steel Research Association, London, England

Filed Mar. 22, 1973, Ser. No. 343,879
Claims priority, application Great Britain, Mar. 24, 1972, 13,885/72
Int. Cl. H05b *7/12*
U.S. Cl. 13—17 **14 Claims**

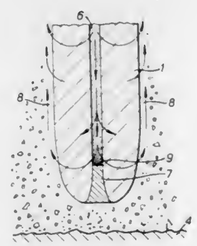


Electroslag refining apparatus comprises a mould having an upper open-end into which the lower end of an electrode depends and ducting to convey inert or reactive gaseous media to and from the mould. A device operable to restrict the flow of gaseous media is mounted on the upper end of the mould, and means are provided for effecting relative movement between the electrode and the flow restricting device. The flow restricting device includes a tubular, longitudinally-corrugated flexible member of heat-resistant material which encompasses the electrode and which is so positioned and dimensioned that the apices of the corrugations make contact with the surface of the electrode over at least part of their lengths to define with the electrode surface discrete passages which inhibit the flow of air from the atmosphere to the upper portion of the mould. The arrangement is such that variations in electrode dimension and alignment relative to the mould are accommodated by flexing of the corrugated tubular member.

3,777,042
ARC FURNACE ELECTRODES

Brian Bowman, Geneva, Switzerland, assignor to British Steel Corporation, London, England

Filed Oct. 4, 1972, Ser. No. 294,900
Claims priority, application Great Britain, Oct. 19, 1971, 48,594/71
Int. Cl. H05b *7/06*
U.S. Cl. 13—18 **8 Claims**



A method of shrouding an electrode in an arc furnace by forcing nitrogen along a bore in the electrode, which is plugged at its tip, the gas diffusing through the electrode walls so as to create a protective shroud around its sides. The gas entrains along the bore a particulate carboniferous material which coagulates and fuses together and with the plug so as to constitute a growth in this plug along the bore and compensate for erosion of the electrode tip.

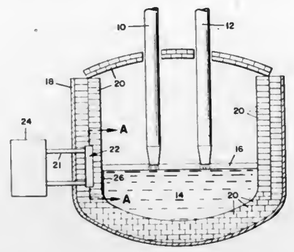
It is effective on both uncoated and coated electrodes - in the latter case, the gas will function to shroud only when this coating has been eroded, i.e., it serves as a secondary protective measure.

3,777,043
APPARATUS AND METHOD FOR COOLING A REFRACTORY LINING

Raymond J. O'Neill, Alameda, Calif., assignor to O'Neill Corporation, Alameda, Calif.

Filed Jan. 17, 1973, Ser. No. 324,250
Int. Cl. F27g *3/24*; **F27d** *1/12*
U.S. Cl. 13—32 **18 Claims**

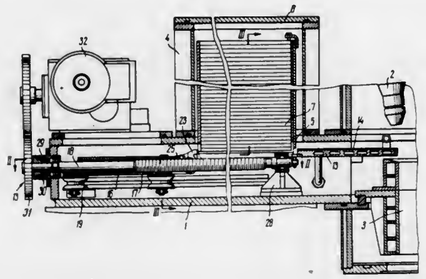
In a vessel for producing or refining molten metal, excessive heat is generated on top of the molten metal, resulting in excessive wear of the refractory lining of the vessel. The invention provides a plurality of channels constructed within the refractory lining and means for circulating gaseous material through each channel to cool the lining to reduce wear induced by heat. Spherical beads of refractory material can be packed in the plurality of channels to evenly distribute the flow of gaseous material throughout the channels. The invention is applicable to any refractory lining wherein heat-induced wear is a problem.



3,777,044
PLASMA-ARC FURNACE

Konstantin Trofimovich Nautny, ulitsa Krasitskogo, 17, kv. 2; Viktor Iosifovich Lakomsky, ulitsa Bastionnaya, 10, kv. 30; Anatoly Ivanovich Chvertko, bulvar Lasi Ukrainki, 2, kv. 36, all of Kiev; Anatoly Vasilievich Zherdev, ulitsa Zhdanova, 3-a; Alexandr Petrovich Voropaev, ulitsa Gorkogo, 49, kv. 71, both of Kommunarsk Voroshilovgradskoi oblasti; Viktor Romanovich Pilipchuk, ulitsa Mashinostroitelnaya, 12, kv. 4, Kiev; Semen Yakovlevich Shekhter, ulitsa Brestkaya, 15, kv. 18, Kommunarsk Voroshilovgradskoi oblasti; Alexandr Mikhailovich Reznitsky, ulitsa Kirova, 2, kv. 18, Kommunarsk Voroshilovgradskoi oblasti; Leonid Nikolaevich Tsipura, ulitsa Gagarina, 23, kv. 24, Kommunarsk Voroshilovgradskoi oblasti, and Oleg Semenovich Zabarilo, ulitsa Chapaeva, 2/10, kv. 3, Kiev, all of U.S.S.R.

Filed Oct. 1, 1971, Ser. No. 186,267
Claims priority, application U.S.S.R., Oct. 1, 1970, 1479356
Int. Cl. H05b *7/00*; **F27d** *3/00*
U.S. Cl. 13—33 **4 Claims**

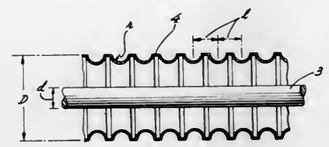


A plasma-arc furnace for remelting of sheet-waste material of high reactivity metals and their alloys has a furnace chamber containing a mould, plasmatrons mounted on a roof of the chamber, and a charging device for feeding sheet-waste material into a melting zone. The charging device has a hopper arranged to contain the sheet-waste material, a water-cooled base plate, guide troughs along which the sheet-waste material is fed, and controlling means to control the feed of the sheet-waste into the melting zone. The furnace expediently employs a stripping and conveying gear to deliver remelted sheet-waste material in any desired from such as a bar or slab.

3,777,045
HIGH VOLTAGE SYSTEM, PARTICULARLY CABLE

Jan Artbauer, Langenhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed May 30, 1972, Ser. No. 257,914
Claims priority, application Germany, June 2, 1971, P 21 27 274.2
Int. Cl. H01b *9/04*
U.S. Cl. 174—28 **4 Claims**

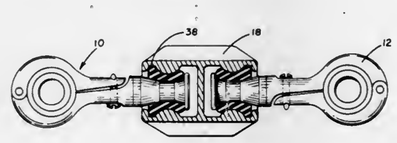


High voltage cable with a particular first, inner conductor of circular outer cross section and contour, and a second tubular conductor coaxially arranged to the first conductor, having inwardly projecting corrugation crests of convex contour, projecting inwardly towards the inner conductor. The radius of curvature of the convexity is selected so that the electric field strength immediately adjacent the corrugation crests of the second conductor is about similar to or somewhat smaller than the field strength immediately adjacent the first conductor.

3,777,046
ELASTOMERIC SPACER AND/OR DAMPER FOR ELECTRICAL CONDUCTORS

Donald J. Schiavone, Huron, Ohio, assignor to Gould, Inc., Chicago, Ill.

Filed Aug. 14, 1972, Ser. No. 280,437
Int. Cl. H02g *7/14*, *7/12*
U.S. Cl. 174—42 **16 Claims**



A resilient spacer and/or motion damper for overhead line electrical conductors, which includes an arm having at one end a clamp for receiving an electrical conductor and the other end extending articulately with an elastomeric member into the cavity of a multi-arm spacer hub or a damping weight. The articulated end is permitted controlled movement under resilient restraint and is provided with a fail safe stop.

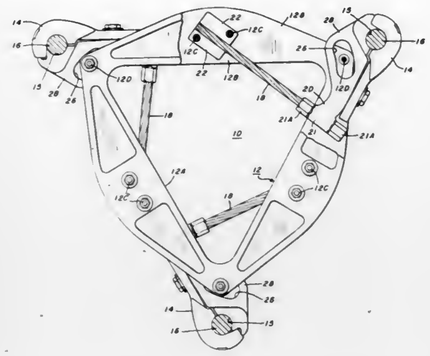
3,777,047
SPACER DAMPER

Charles B. Rawlins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 23, 1973, Ser. No. 353,650
Int. Cl. H02g *7/12*, *7/14*
U.S. Cl. 174—42 **3 Claims**

A damping spacer for overhead, parallel conductors in which the groove axes of conductor receiving clamps are dis-

placed from the axes of resilient wire cables respectively connecting the clamps to a spacer frame. In addition, the clamps



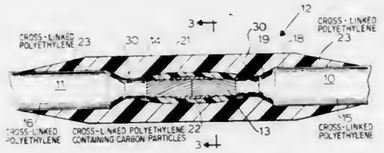
and frame are loosely coupled together to limit cable and clamp movement with respect to the frame.

3,777,048

MOLDING PROCESS FOR SPLICING CABLE AND PRODUCT FORMED THEREBY

Richard T. Traut, Danielson, Conn., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sept. 22, 1971, Ser. No. 182,758
Int. Cl. H02g *15/08, 1/14*
U.S. Cl. 174—73 R **11 Claims**



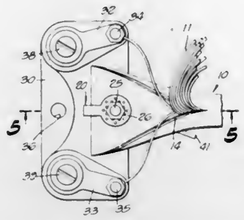
A substantially void-free cable splice for high voltage lines wherein the ends of two electrical cables insulated with cross-linked polyethylene are conductively connected by a metallic connector, the cable ends and connector then being coated with a semi-conductor shielding layer of cross-linked polyethylene having a smooth surface and having conductive particles, advantageously carbon particles, dispersed through such layer, and an insulating layer of cross-linked polyethylene monolithically bonded to the shielding layer and to the insulating layer on each cable. In a method of forming the splice, the connector-cable joint made up of abutted cable ends and a metallic connector is first wrapped with cross-linkable polyethylene tape, a close-fitting pressure-resistant cover is applied and the overall joint assembly thus formed heated in two stages, (a) to fuse the shielding polyethylene to a semi-liquid state and to drive off any occluded or formed gas, and (b) to cross-link the shielding polyethylene tape and bond it to any adjacent cross-linked polyethylene material. The resultant shielding layer and joint are cooled and then wrapped with additional cross-linkable polyethylene tape to form an outer insulating layer. The final joint assembly is next heated in a further multi-stage process, and then cooled to recover the final monolithic cable splice desired.

3,777,049

BONDING DEVICE AND ANCHORAGE FOR SHIELDED CABLES

George W. Gillemot, 2331 20th St., Santa Monica, Calif., and John T. Thompson, 244 Loring St., Los Angeles, Calif.

Filed Aug. 2, 1971, Ser. No. 168,164
Int. Cl. H02g *15/08*
U.S. Cl. 174—78 **20 Claims**



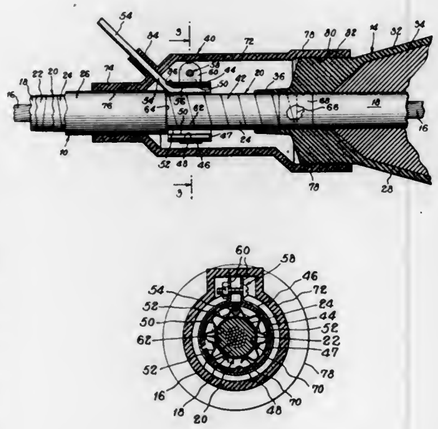
A bonding device and method for attachment to shielded electrical cables and effective in bonding the shields to a grounding conductor or to another cable shield and utilizing the strength of the cable sheath as an anchorage for the bonding device and for dead-ending the cable or cables themselves. The device comprises a one-piece, U-shaped conductive clip assembled astride the edge of the shield and sheath and having burrs which penetrate into at least the shield as an assembly bolt or stud for the clip is tightened after being inserted through aligned holes of all components. This bolt may also pass through a terminal strip or anchorage for the cable as well as through a pair of cable sheaths superimposed in back-to-back relationship.

3,777,050

SHIELDING TAPE GROUNDING DEVICE FOR HIGH VOLTAGE CABLES

Frank A. Silva, Basking Ridge, N.J., assignor to American Esna Corporation, New York, N.Y.

Continuation of Ser. No. 112,146, Feb. 3, 1971, abandoned.
This application Dec. 30, 1971, Ser. No. 214,309
Int. Cl. H02g *15/02*; **H01r** *3/06, 11/10*
U.S. Cl. 174—78 **47 Claims**



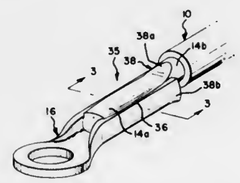
A shielding tape grounding device which is installed on a high voltage cable of the type having a metallic shielding tape for the purpose of grounding the shielding tape, the device including a sleeve of elastomeric material, preferably electrically conductive, a corrugated band seated within the sleeve, a grounding rod connected to the band, and a clamp surrounding the sleeve and the band such that the sleeve may be slipped over the cable to place the band over a bared portion of the metallic shielding tape and the clamp may be tightened to draw the band into engagement with the tape and provide a direct connection to ground through the grounding rod.

3,777,051

ALUMINUM ELECTRICAL CONNECTION

George William Ziegler, Jr., Carlisle, and Henry William Demler, Jr., Lebanon, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 2, 1973, Ser. No. 320,021
Int. Cl. H02g *15/08*
U.S. Cl. 174—94 R **2 Claims**



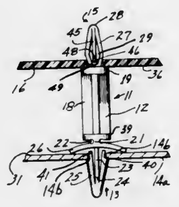
This invention relates to a connector for electrical conductors and more particularly to a connector made from aluminum and adapted to receive aluminum conductors therein. The connector includes an elongated groove wherein the inwardly facing edges of the sidewalls defining the grooves provide a scrapping action against the conductor to break up the oxide film or insulation thereon and further wherein the sidewalls are elastically flexed outwardly by the tamping of the conductor into the groove so as to maintain a continual pressure on the conductor and thereby counter creep induce by temperature change and the like.

3,777,052

SUPPORT FOR CIRCUIT BOARDS

James F. Fegen, Morton Grove, Ill., assignor to Richco Plastic Company, Chicago, Ill.

Continuation-in-part of Ser. No. 120,830, March 4, 1971, Pat. No. 3,688,635. This application Feb. 28, 1972, Ser. No. 229,800
Int. Cl. F16b *19/00*; **A44b** *21/00*
U.S. Cl. 174—138 D **3 Claims**



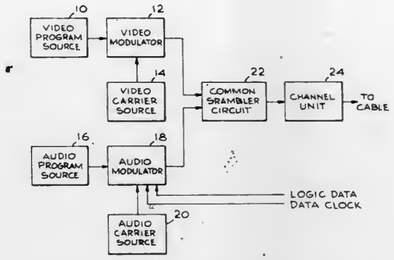
A support for circuit boards having means for detachably securing the support to a chassis, flexible means for holding the circuit board in position, and positive locking and unlocking means for removably securing a circuit board on the support, said support adapted to securely mount a circuit board in predetermined position spaced apart from a chassis.

3,777,053

CONVERTER FOR CATV

Karl Wittig, Los Angeles; Guenther Wimmer, Saugus; Patrick R. J. Court, Los Angeles, and Carl Akrell, Burbank, all of Calif., assignors to Optical Systems Corporation, Los Angeles, Calif.

Filed May 16, 1972, Ser. No. 253,768
Int. Cl. H04n *1/44*
U.S. Cl. 178—5.1 **23 Claims**



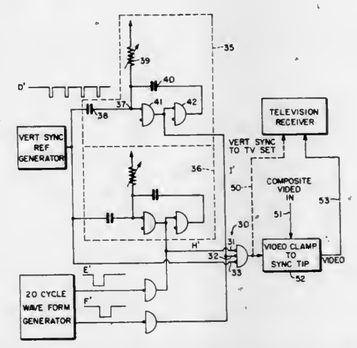
A converter for a CATV system is described. The converter includes, amongst other circuits, a reader for reading the binary bits on an encoded document and comparing them with a binary bit code which is transmitted from the transmitter on the CATV cable to a subscriber's receiver. If the code on the encoded document and the code received are identical, a signal is generated which enables the converter to process the received television signals so that the subscriber's receiver can present an intelligible program. Provision is also made in accordance with the code on the document, to select a predetermined one of a plurality of channels being transmitted over the CATV cable.

3,777,054

VERTICAL SYNCHRONIZATION TIME BASE ERROR CORRECTOR

Don J. Loughry, San Jose, Calif., assignor to Avco Corporation, San Jose, Calif.

Filed Mar. 13, 1972, Ser. No. 234,022
Int. Cl. H04m *1/22, 5/78*
U.S. Cl. 178—6.6 SF **3 Claims**



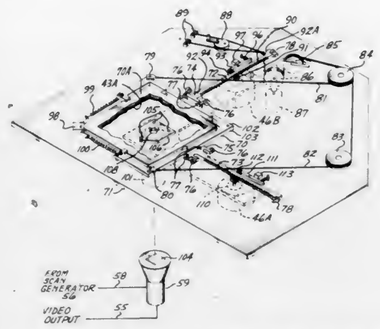
The invention discloses a means and method of eliminating jitter, during playback, in video reproducing and/or recording apparatus utilizing the skip field system. This jitter is eliminated and both horizontal and vertical continuity of sync assured by phase displacing head No. 2, and delaying, in a controlled manner, the vertical synchronizing signals applied to the television receiver for playback by heads Nos. 1 and 3.

3,777,055

HEXAGONAL PATCH PRINTING FOR ORTHOPHOTO PRINTERS

Gilbert L. Hobrough, Vancouver, British Columbia, Canada, assignor to Hobrough Limited, Vancouver, British Columbia, Canada

Filed Mar. 3, 1972, Ser. No. 231,574
Int. Cl. G01c 11/12
U.S. Cl. 178—6.7 7 Claims



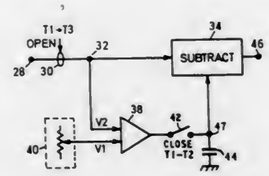
A system is described for providing video signals from left and right stereo photographs which correspond to discrete, homologous areas thereof and which are compensated for parallax and other visual distortion errors. To print a portion of an orthophotograph corresponding to this video signal, a mask defining an hexagonal patch is interposed in the light path between a cathode ray tube for displaying the video signal, and a photographic negative. To construct the entire orthophoto, the negative is mounted on a photo printing device which moves the negative in discrete increments corresponding to selective scanning of corresponding areas in the left and right stero photographs

3,777,056

VIDEO SIGNAL LEVEL CORRECTION CIRCUITRY

Leon Andre Pieters, Cambridge, England, assignor to Image Analysing Computers Limited, Melbourn, Royston, Hertfordshire, England

Filed Apr. 21, 1972, Ser. No. 246,133
Claims priority, application Great Britain, Apr. 21, 1971, 10,325/71
Int. Cl. H04n 5/16, 5/21
U.S. Cl. 178—7.1 20 Claims



Methods and circuits for reducing the glare component in a video signal obtained by line scanning an image of a field.

In one method the video signal amplitude obtained when scanning a region of known grey value is compared with a reference voltage set to the theoretical amplitude level of the video signal for that grey. Any difference voltage is subtracted from the video signal so as to remove the movement of amplitude due to glare.

Alternatively this difference signal controls the gain of a variable gain amplifier amplifying the video signal or in a further modification the corrected video signal.

A closed loop circuit is also described in which the correction is achieved by a variable gain amplifier the gain control for which is derived from the difference signal obtained by comparing the output of the amplifier for a particular grey region with a reference voltage for that grey and clamping the white amplitude level of the amplifier output signal.

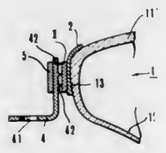
The grey region may be inserted artificially into the field and more than one such region may be employed, the difference signals obtained from the various regions being averaged.

3,777,057

CATHODE RAY TUBES

Katsuo Abe, Chiba-ken, Mobara-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1971, Ser. No. 146,042
Claims priority, application Japan, May 22, 1970, 45/43338
Int. Cl. H01j 61/50; H01k 1/28
U.S. Cl. 178—7.8 7 Claims



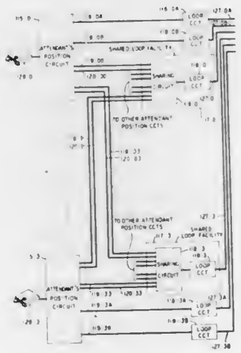
An implosion-proof cathode ray tube assembly, having a reinforcing band applied around the cathode tube, includes an adhesive tape wrapped around the cathode ray tube, a first tension band tightly wound surrounding the adhesive tape, a plurality of mounting lugs engaging the outer periphery of the first tension band at predetermined spaced positions, and a second tension band tightly surrounding the mounting lugs to force them against the first tension band.

3,777,058

OPERATOR POSITIONS HAVING BOTH DEDICATED AND SHARED LOOP FACILITIES

James Richard Stidham, Broomfield, and Louis Emanuel Thelemaque, Longmont, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 27, 1972, Ser. No. 275,726
Int. Cl. H04m 3/22
U.S. Cl. 179—27 CA 16 Claims



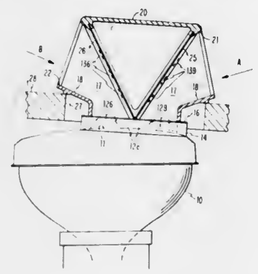
A switching system having operator positions is disclosed in which the position loop circuitry is separate and apart from the operator position circuitry. The loop circuits are arranged so that each operator has access to a plurality of dedicated loops individual to her position as well as access to a plurality of shared loops which are common to and shared by all positions.

3,777,059

MULTIPLE DISPLAY DEVICE

Frank Wilkey, Jr., Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,318
Int. Cl. G06d 3/14; G06k 15/20; H01j 29/89
U.S. Cl. 178—7.88 8 Claims



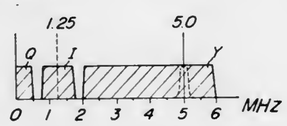
A cathode ray tube is mounted in a substantially vertical position with a multiline display presented on an upwardly facing screen. The screen is partitioned into two discrete areas with the lines of the display associated one area presenting one message and that associated with the other presenting another, independent message. A pair of converging mirrors which each reflect one of the messages to a viewing location thereby permitting the screen to provide displays for a pair of independent devices.

3,777,060

COLOR TELEVISION SIGNAL RECORDING AND REPRODUCING SYSTEM

Tushiro Kamogawa, Hirakata; Yoshihiro Okino, Kyoto; Isao Sato, Kawasaki, and Noboru Okuno, Sennan, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 3, 1971, Ser. No. 177,590
Claims priority, application Japan, Sept. 9, 1970, 45/79467; Sept. 9, 1970, 45/79468
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 CD 10 Claims



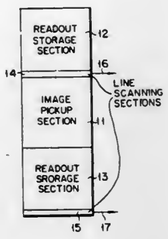
In the recording and reproduction of a color television signal including three component signals carrying color information of a scene, for instance the Y, I and Q signals, on a film by means of EVR or SV, two subcarriers at different frequencies are usually required. However, in reproduction a beat noise is likely to be created from the interference of the different subcarriers due to the light-sensitive characteristics of the film and non-linear characteristics of the system. In this respect, it is aimed to provide a color television signal recording and reproducing system, wherein one of the component signals is directly recorded without modulation and at least another component signal is recorded as a carrier-suppressed modulation signal.

3,777,061

SOLID STATE IMAGE PICKUP DEVICE

Yasuo Takemura, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 11, 1972, Ser. No. 296,596
Claims priority, application Japan, Oct. 15, 1971, 46/81433
Int. Cl. H04n 9/04, 5/30
U.S. Cl. 178—5.4 R 5 Claims



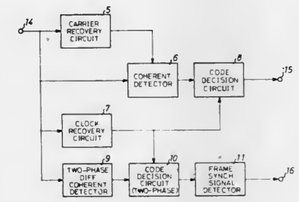
An image pickup device of solid state semiconductor which comprises an image pickup section including frame scanning means for shifting carriers corresponding to picture elements of an optical image in a longitudinal direction for each row of matrix arrangement of carriers, the carriers being stored in potential wells of the same arrangement induced in a semiconductor substrate by using the principle of the charge coupled device; first and second readout storage sections constructed with the same arrangement as the image pickup section and disposed on the portions of the semiconductor substrate longitudinally extending from the opposite sides of image pickup section; and first and second line scanning means for reading out the carriers of each row of the first and second storage sections respectively in the form of electrical signals.

3,777,062

TRANSMISSION SYSTEM FOR A TIME-DIVISIONAL MULTIPLEX PSK SIGNAL

Akira Ogawa, Tokyo, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed July 17, 1972, Ser. No. 272,345
Claims priority, application Japan, July 20, 1971, 46/53591
Int. Cl. H04l 7/00
U.S. Cl. 178—69.5 R 4 Claims

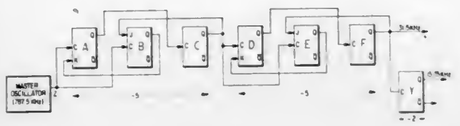


A transmission system for a time-divisional multiplex PSK signal including a frame synchronization signal in addition to information channel signals, in which the number of quantum phase positions of the frame synchronization signal is smaller than the number of quantum phase positions of the information channel signals in the time-divisional multiplex PSK signal so that the frame synchronization signal and the information channel signals are transmitted by the same modulation rate.

3,777,063
TECHNIQUE FOR ALL-DIGITAL TELEVISION SYNC GENERATION

James H. Meacham, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1972, Ser. No. 221,242
Int. Cl. H04n 5/06
U.S. Cl. 178—69.5 G 28 Claims

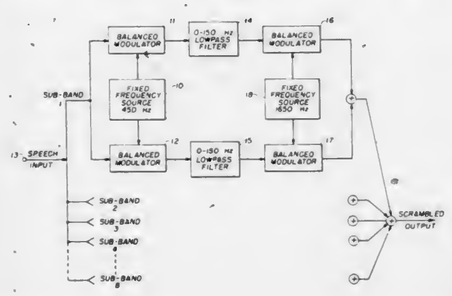


An all digital design for the generation of standard television (TV) synchronizing (sync) signals employs bistable multivibrators which count down the frequency of a basic oscillator using modulo counting techniques. The oscillator frequency is determined by the smallest differential pulse width required in generating the EIA standard format and corresponds to the interval of time preceding the horizontal pulse also known as the horizontal front porch. The modulo counter intervals coincide exactly with a majority of the required EIA pulse widths, and the accuracy of each time interval remains within specification to the same tolerance as the oscillator frequency, thereby affording significant improvement in temperature and jitter stability. The design of the invention facilitates deriving different television line and frame rates by changing only the oscillator frequency and selecting the desired modulo counters. The particular digital implementation lends itself readily to medium scale integration techniques such that the entire TV sync generator can be packaged into units about 1 inch square and one-fourth inch high exclusive of the crystal element required by the oscillator.

3,777,064
VOICE PRIVACY SYSTEM

Craig R. Allen, and John E. Celto, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 1, 1972, Ser. No. 258,560
Int. Cl. H04k 1/04
U.S. Cl. 179—1.5 FS 10 Claims

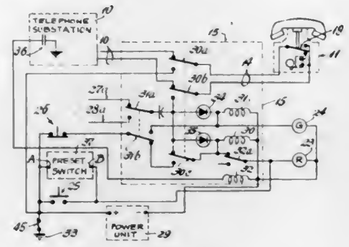


A selected bandwidth of speech frequencies is divided into a plurality of sub-bands and each sub-band is processed in a "-Weaver modulator" type of circuit for filtering, frequency translation, and inversion. The sub-bands which have undergone frequency translation are then combined to provide a scrambled output which is transmitted to a receiver where the converse processing of the scrambled signals including filtering, frequency translation, and inversion is accomplished to produce the original speech modulated input.

3,777,065
CALLING SYSTEM UTILIZING A TELEPHONE

John N. Galian, Woodbury, and Ernest W. Karkut, Bridgeport, both of Conn., assignors to Total Systems Corp., Fairfield, Mass.

Filed June 30, 1971, Ser. No. 158,243
Int. Cl. H04m 3/42, 11/00, 11/02
U.S. Cl. 179—6 TA 9 Claims

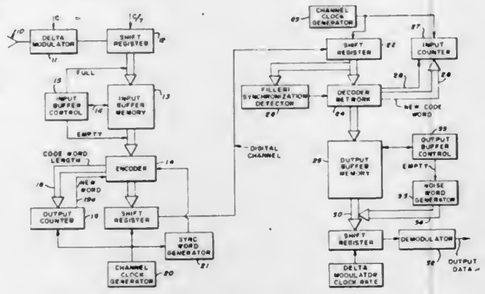


A calling system for use in a hotel or the like having a plurality of rooms each with a telephone connected to a telephone substation for enabling a telephone operator to ring the telephone to awaken the guest, have an audio prerecorded message played to the guest when the telephone is answered and provide a visual indication that the telephone has been answered. The system may also have an automatic calling switch which is presettable.

3,777,066
METHOD AND SYSTEM FOR SYNCHRONIZING THE TRANSMISSION OF DIGITAL DATA WHILE PROVIDING VARIABLE LENGTH FILLER CODE

David C. Nicholas, Cedar Rapids, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa

Filed Jan. 13, 1972, Ser. No. 217,612
Int. Cl. H04m 5/10
U.S. Cl. 178—69.5 R 7 Claims

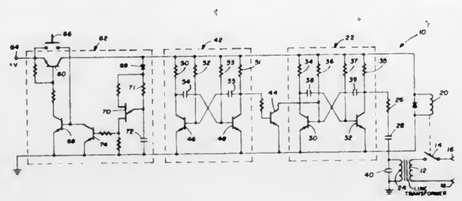


A filler/synchronization word is used in the transmission of Huffman code. A procedure including assigning all ZEROS to a dummy word is used in assigning code words to source code to limit the number of ZEROS that naturally occur in any sequence of transmission code words. The filler/synchronization word then consists of: (1) a string of ZEROS having at least one more ZERO than the longest run which can occur in a sequence of the original source words; and (2) a terminating ONE. If it is desired to synchronize the receiver with the transmitter the filler/synchronization word is sent with a minimum number of ZEROS. If the transmitter runs out of data and filler is required, ZEROS are transmitted continuously until data is available for transmission at which time a ONE is inserted to terminate the train of filler ZEROS. The receiver ignores the filler ZEROS and is automatically synchronized to decode subsequent data once the inserted ONE is discarded.

3,777,067
SYSTEM FOR DISABLING INCOMING TELEPHONE CALLS

Jack S. Kilby, 7723 Midbury, Dallas, Tex.

Filed Dec. 30, 1971, Ser. No. 214,268
Int. Cl. H04m 1/00
U.S. Cl. 179—81 R 12 Claims

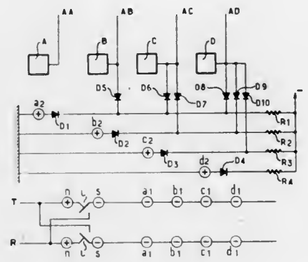


A system for detecting a ring signal and responding with a busy signal is disclosed. The system is under the control of the subscriber to present an open circuit condition to the central switching circuit until a ring signal is detected. Then a closed circuit condition is established and a signal duplicating the system busy signal is applied to the telephone line to give the calling party the impression that the called station is busy. The subscriber may activate the device either manually or by voice in response to a ring signal, or the device may be placed in an activated condition at any time and remain in the activated condition for a selected period of time to automatically respond to an incoming ring signal with an off-hook condition and a busy signal before an audible ring signal occurs.

3,777,068
CURRENT-ANALYZING AND CODING DEVICE USABLE PARTICULARLY IN TELECOMMUNICATIONS FOR NUMBER DIALING BY MEANS OF A KEY SET

Claude Monin, Villennes-sur-Seine, and Daniel Arpin, Fontenay-aux-Roses, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed July 30, 1971, Ser. No. 167,574
Claims priority, application France, July 30, 1970, 7028235
Int. Cl. H04m 1/26
U.S. Cl. 179—84.55 9 Claims

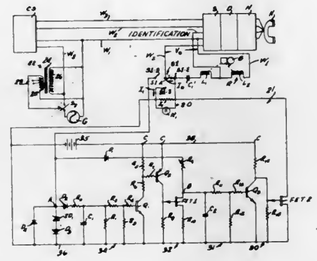


A current analyzer-coder for a number-dialing system by keyboard control with impedance variation, wherein the state of a plurality of current analyzing relays which operate only in prescribed current ranges indicates the impedance of the line, and means is provided to assure that only a single analyzing relay is engaged for each resistance value, the combination further including means for transferring the information being received to a register or recorder and consisting of a gate controlling a thyristor, and a control device authorizing the transfer only at a specific instant.

3,777,069
TELEPHONE SILENCING APPARATUS

Maw-Huei Lee, 251 Tenth St. N.W., Apt. 80, Bldg. 8, Atlanta, Ga.

Continuation-in-part of Ser. No. 112,122, Feb. 3, 1971, Pat. No. 3,710,032. This application Apr. 19, 1972, Ser. No. 245,522
Int. Cl. H04q 9/00
U.S. Cl. 179—84 R 10 Claims



Apparatus for selectively silencing the bell of a telephone wherein the method comprises selectively reducing the resultant magnetomotive force through the ringer circuit to a value below that necessary to ring the bell. The method also includes selectively increasing the ringing voltage output from the central system generator with a transformer to increase the current level in the ringer circuit and thus the magnetomotive force above that necessary to ring the bell.

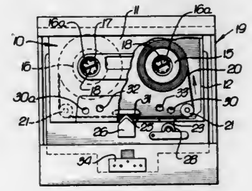
The embodiment of the apparatus includes an impedance means selectively connectable between the incoming ringer hot wire and the ringer circuit of the telephone by a switch. The impedance means has an impedance valve sufficiently great to reduce the current flow through the ringer circuit and thus the magnetomotive force below that necessary to ring the bell when the standard ringing signal voltage is imposed thereon. This embodiment of the apparatus may also include a voltage step-up transformer selectively connecting the signal generator to the ringer circuit to increase the ringer voltage and the ringer current as well as the magnetomotive force to a value above that necessary to ring the bell.

The embodiment of the apparatus also includes an accumulator circuit selectively connecting the incoming ringer hot wire with the ringer circuit in such a way as to silence the bell of the telephone until a predetermined number of ring signals have been received.

3,777,070
TAPE GUIDE AND MAGNETIC HEAD-PRESSURE PAD SPACER

Frank C. Bumb, Jr., San Gabriel, Calif., assignor to California Data Machines, Los Angeles, Calif.

Filed Sept. 23, 1971, Ser. No. 183,205
Int. Cl. G11b 23/04, 15/62, 5/58
U.S. Cl. 179—100.2 Z 1 Claim



For use in a magnetic tape transport assembly wherein a pressure pad carried by a tape cartridge is adapted to urge the

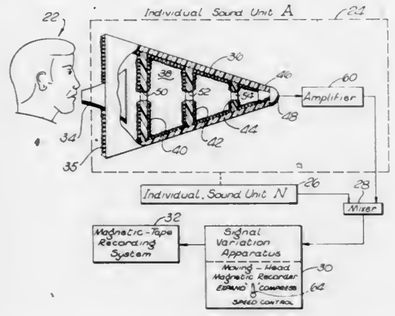
tape toward a read or write head, and in combination with said head, the improvement comprising spacer means projecting at the tape side of the head for seating the pad at a predetermined space from the head characterized in that the tape remains free for travel lengthwise in said space adjacent the head and out of contact with the pad.

3,777,071

SOUND SEQUENCE INTERVAL CHANGING STRUCTURE

Jess Oppenheimer, 549 Moreno St., Los Angeles, Calif.

Filed Mar. 27, 1972, Ser. No. 238,068
Int. Cl. G11b 27/00
U.S. Cl. 179—100.2 K **11 Claims**



A system is disclosed for reproducing and recording a sound sequence in a time interval that is different than the interval of the original performance sequence. A fragment of the sound energy provided by an original performance or delivery is isolated into a substantially pure form (including essentially no echoes) and is converted into an electrical audio signal. The audio signal is then expanded or compressed to the desired time interval and subsequently recorded, as on a magnetic tape medium. As disclosed, the isolation operation involves the use of an anechoic chamber into which the sounds of the original delivery are introduced for subsequent conversion into an electrical signal.

3,777,072

EDITING PROCEDURES FOR DICTATION AND TYPING SYSTEMS

Robert A. Kolpek; Robert A. Rahenkamp, and William R. Stewart, Jr., all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,862
Int. Cl. G11b 27/02, 15/02, 27/08
U.S. Cl. 179—100.2 MD **20 Claims**



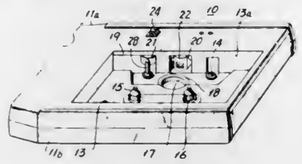
The present invention concerns methods and apparatus for editing information and involves procedures for editing of both audio and typed (digital) information. The system incorporates a dictation machine capable of storing sentences and paragraphs in assigned areas on a record medium together with address information indicative of the preferred sequence of playback of such information. The system further includes a transcribing unit and a typing station having facilities for recording and playing back digital signals representative of typed copy and further having provision for storing address information on magnetic card media indicative of locations of sentences on the typed copy which is in the preferred sequence as actually typed. Several sequences may be followed in achieving a final version of the typed copy.

3,777,073

TAPE CASSETTE ADAPTER HAVING DRIVE MEANS WITHOUT A FLYWHEEL

Noriyoshi Kokubo, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

Filed Mar. 30, 1972, Ser. No. 239,615
Claims priority, application Japan, Apr. 7, 1971, 46/25987; May 12, 1971, 46/38046; May 19, 1971, 46/40489; June 2, 1971, 46/45965; July 6, 1971, 46/59214; July 6, 1971, 46/59215; July 26, 1971, 46/66186
Int. Cl. G11b 31/00
U.S. Cl. 179—100.2 Z **6 Claims**



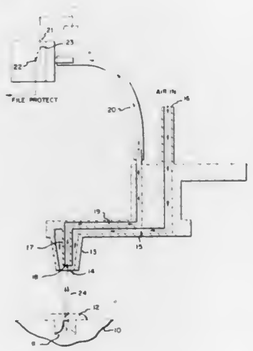
A cassette adapter comprises, essentially, a cartridge-shaped casing for containing a tape cassette, a tape driving pinch roller driven by rotating force transmitted thereto from a rotating capstan on the side of the tape driving device of the cartridge playing apparatus, and a fixed pin or stud for projecting into the cassette thus contained. The fixed pin thus inserted takes a position on the inner side of the tape installed in the cassette. The driving pinch roller, which is made thinner than the width of the tape and rotates positively, presses against the fixed pin only over the tape interposed therebetween and thus drives the tape by friction between it and the tape.

3,777,074

FILE PROTECT SYSTEM FOR MAGNETIC TAPE UNIT WITH DIAPHRAGM OPERATED SWITCH FOR SENSING PRESENCE OR ABSENCE OF WRITE ENABLE RING

Dennis R. Olmsted, Westminster, Colo., assignor to Storage Technology Corporation, Boulder, Colo.

Filed July 12, 1972, Ser. No. 271,172
Int. Cl. G11b 15/04
U.S. Cl. 179—100.2 D **5 Claims**



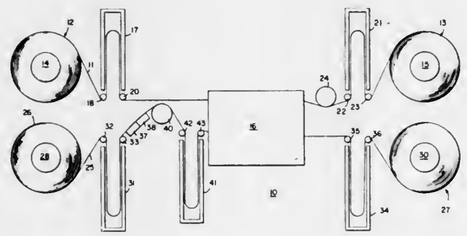
A file protect system for a magnetic recording unit includes a diaphragm actuated switch for sensing the presence of the reel ring. A supply port in a conical shaped projection guides air under pressure toward the position occupied by the reel ring. When the ring is not present, the uninterrupted flow of air creates a slight vacuum in a return port. The return port extends through the conical projection and is within and on the same center line as the supply port. Flexible tubing connects the return port to the diaphragm actuated switch. When a reel ring is present in the reel, the flow of air from the supply port is disrupted thereby creating a slight pressure increase in the return port. This pressure operates the diaphragm actuated switch thereby producing a NOT FILE PROTECT or WRITE ENABLE signal which allows the magnetic tape unit to write on the tape.

3,777,075

HIGH SPEED THERMAL DUPLICATION OF MAGNETIC TAPE

William B. Hendershot, III; Michael W. Tallent, both of San Jose; David Wald, Santa Clara, and Larry K. Whitlock, San Jose, all of Calif., assignors to Consolidated Video Systems, Inc., Santa Clara, Calif.

Filed Sept. 17, 1971, Ser. No. 181,404
Int. Cl. G11b 5/00
U.S. Cl. 179—100.2 B **49 Claims**



A system for high speed thermal duplication of a master magnetic tape onto a slave magnetic tape utilizing a master tape transport for guiding a master tape along a predetermined path between a supply station and a take-up station, and a slave tape transport for guiding a slave tape along a second predetermined path between a supply station and a take-up station, the master tape path and slave tape path being coincident over a predetermined length. A transfer station interposed in the paths of the master tape and slave tape transports includes an arrangement for clamping together under pressure the master tape and slave tape along the predetermined distance of path coincidence. A tape heater upstream from the pressure clamp heats the slave tape to a predetermined temperature prior to pressure contact against the master tape. The system provides arrangements for mechanical isolation of tape segments in the transfer area, tension control and equalization for the master and slave tapes, preconditioning of the slave tape and a variety of heaters. A system for AC assisted thermal duplication is also described.

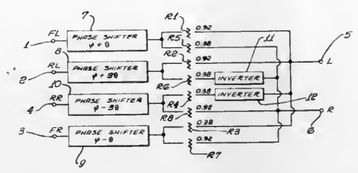
3,777,076

MULTI-DIRECTIONAL SOUND SYSTEM

Susumu Takahashi, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed July 3, 1972, Ser. No. 268,726
Claims priority, application Japan, July 2, 1971, 46/48674
Int. Cl. G11b 3/74
U.S. Cl. 179—100.4 ST **4 Claims**

A multi-directional sound system for use in the manufacture of matrix four channel stereophono discs comprises an encoder including a plurality of phase shifters for shifting the phases of a plurality of directional input signals from discrete sound sources by angles corresponding to the directions of the sound sources and a matrix circuit for producing two channel



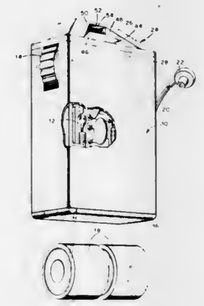
signals, and a decoder for decoding the two channel signals for reproducing the directional input signals.

3,777,077

HEARING AID HAVING RECESSED MICROPHONE

Donald Lee Johanson, Wayland, and Rolf Stutz, Weston, both of Md., assignors to Audivox, Inc., Newton, Mass.

Filed Sept. 18, 1972, Ser. No. 289,775
Int. Cl. H04r 25/04
U.S. Cl. 179—107 R **7 Claims**



A body type hearing aid in which the microphone port is recessed from both the front and top surfaces of the hearing aid housing to substantially minimize clothing noise and to shield the microphone from contamination. The upper portion of the housing is of a multi-facetted configuration for disposition of the microphone port therein in a position removed from the front and top surfaces of the housing while still maintaining a sufficient sound aperture for receipt of sounds emanating from points to the front and sides of a user.

3,777,078

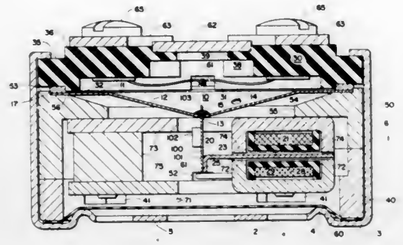
LINKAGE ARRANGEMENT IN PIVOTING ARMATURE TRANSDUCER

Radamis Boutros-Attia, Ottawa, Ontario; Conrad Lafrance, Lucerne, Quebec, and Kenneth Edwin Nixon, Ottawa, Ontario, all of Canada, assignors to Bell Canada Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Jan. 14, 1972, Ser. No. 217,926
Int. Cl. H04r 11/00
U.S. Cl. 179—114 A **3 Claims**

A linkage bar, having a rigid central portion and flexible end portions, links a pivoted armature to an acoustical diaphragm in an electroacoustic transducer. The armature carries an extension, normal to the plane of the armature, to which one end of the linkage is spot welded. The other end of the linkage bar is attached to the diaphragm. Longitudinal motion is thus coupled between the armature and the diaphragm while as-

sociated lateral motion caused by the pivoting of the armature is substantially absorbed by the flexible end portions. The spot welding of the linkage to the armature is an economical production process which provides reliable joints of consistant quality.

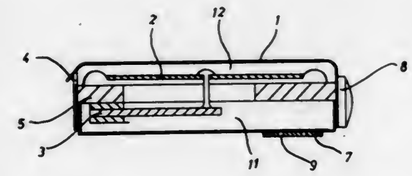


3,777,079

DIRECTIONAL MICROPHONE FOR HEAD MOUNTED MIDGET HEARING AIDS

Detlef Fischer, and Johannes G. A. Wittkowski, both of Hamburg, Germany, assignors to Willco-Horgerate Med. Apparatebau G.m.b.H., Hamburg, Germany

Filed Oct. 21, 1971, Ser. No. 191,404
Int. Cl. H04r *1/22*
U.S. Cl. 179—121 D **1 Claim**



A miniature microphone for a head-mounted midget hearing aid wherein the diaphragm divides the microphone housing into two separate chambers, the housing having a forward portion with a sound admitting aperture therein which is substantially non-restrictive to passage of sound waves therethrough so that the sound waves may freely enter one of the chambers within the housing; the microphone housing also having a wall portion at the rear of the microphone, said wall portion having a plurality of minute apertures therethrough and defining a transmission time delaying acoustic resistance admitting sound pressure variations into the other chamber of the housing.

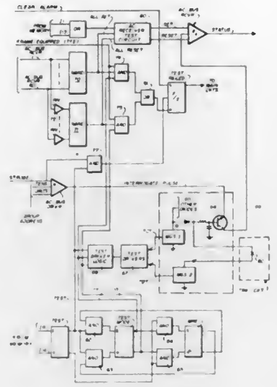
3,777,080

METHOD FOR DETECTING FAILURES IN TRUNK STATUS IDENTIFICATION CIRCUITRY

Richard A. Padgett, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 2, 1972, Ser. No. 293,977
Int. Cl. H04m *3/26*
U.S. Cl. 179—175.2 R **15 Claims**

An arrangement for detecting failures in the trunk status identification circuitry which is used to determine the status of calls passing through a system. A scanpoint test is performed once during each scan cycle to determine the condition of the scanpoint circuits and the AC bus drivers which normally activate the scanpoints. The AC bus drivers also are tested for both set and reset, each time prior to activating the AC bus drivers during normal system operation.

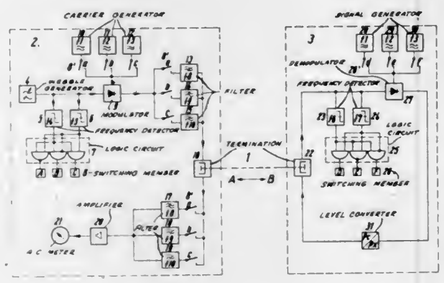


3,777,081

METHOD FOR MEASURING THE FREQUENCY-DEPENDENT ATTENUATION OF A TELECOMMUNICATIONS LINE, ESPECIALLY A TWO-WIRE LINE

Oskar Vierling, Ebermannstadt, and Hansjurgen Wieland, Darmstadt, both of Germany, assignors to said Vierling, by said Wieland

Filed Dec. 14, 1971, Ser. No. 207,860
Claims priority, application Germany, Jan. 20, 1971, P 21 02 511.6
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 **9 Claims**



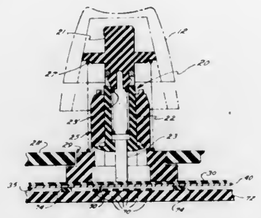
A method for measuring the frequency-dependent attenuation of a telecommunications line, especially a two-wire line, in both traffic directions, from one line end. The attenuation of the line is determined by modulation of the voltages at a measurement station with one or more carrier frequencies and transmitting the modulated voltages to another station via the line to be measured where the voltages are demodulated and converted while retaining their frequency into constant-level voltages. The constant-level voltages are transmitted via the line to be measured to the measurement station.

3,777,082

KEYBOARD SWITCH ASSEMBLY WITH IMPROVED MOVABLE CONTACT HAVING CANTILEVER SUPPORTED CENTRAL MEMBER WITH RADIALLY EXTENDING CONTACT FINGERS

Derek J. Hatley, Wyoming, and Harold R. Wilson, Holland, both of Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed Sept. 8, 1972, Ser. No. 287,508
Int. Cl. H01h *13/14*
U.S. Cl. 200—5 A **16 Claims**



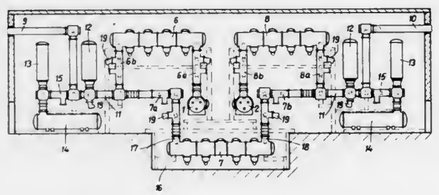
A mechanically operated keyboard with key stations having a multiplicity of electrical switch contacts for providing an encoded electrical data output signal corresponding to and uniquely identifying individual key stations includes an array of movable contacts each corresponding to an individual key station and which are formed in a sheet of conducting material mounted above a corresponding array of fixed contacts to form multiple contact electrical switches for each key station of the keyboard. Each movable contact has a central member suspended to the sheet of conducting material in cantilevered fashion and includes a plurality of peripherally spaced contact fingers joined to the central member such that the contact fingers adjacent the junction of the central member to the conducting sheet will contact associated fixed contacts of a key station only after the remaining contact fingers have come into contact with their associated fixed contacts. An electrical circuit coupled to the contact fingers provides a strobe output signal only when all of the electrical switch contacts associated with a given key station have been actuated as indicated by the closure between the contact finger adjacent the junction of the central member to the conducting sheet and its associated fixed contact.

3,777,083

PRESSURIZED GAS INSULATED SWITCHING INSTALLATION

Willi Olson, and Klaus Schlosser, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1972, Ser. No. 279,394
Claims priority, application Germany, Sept. 29, 1971, P 21 49 287.5
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 R **6 Claims**



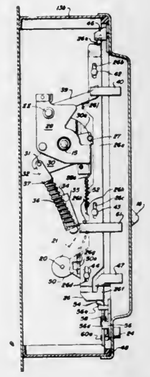
In a pressurized gas insulated switching installation having two branches that can be coupled, through power switches, with a type of bus-bar two-part ring-bar, the two parts of the ring-bar are connected with three power switches connected in series, and between the power switches the connection points for the branches are situated. The poles of the three power switches belonging to one phase are disposed in one common vertical plane and two horizontal planes.

3,777,084

SAFETY SWITCH WITH SEALABLE COVER AND INTERLOCK MEANS FOR PREVENTING OPERATION OF SEALING MEANS WHEN COVER IS FULLY OPEN

Tadeusz J. Rys, Monroe, Ohio, assignor to Square D. Company, Park Ridge, Ill.

Filed Sept. 20, 1972, Ser. No. 290,691
Int. Cl. H01h *9/22*
U.S. Cl. 200—50 A **5 Claims**



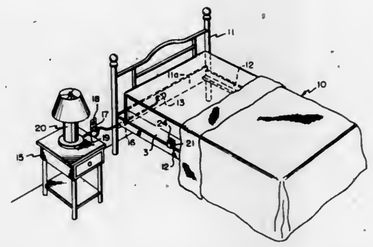
A safety switch having a reciprocable cover sealing cam member operable by a cover sealing handle and having first interlock means preventing movement of the switch blade operating handle and switch blades to ON position when the cover is open or is closed but not sealed. A second interlock means is provided preventing operation of the cover sealing handle and cam member when the cover is open, thereby preventing defeat of the first interlock means by manipulation of the cover sealing handle.

3,777,085

SURE FIND SAFETY BED LIGHT SWITCH

John J. Horn, 910 Split Rock Rd., Pelham Manor, N.Y.

Filed Feb. 7, 1972, Ser. No. 223,995
Int. Cl. H01r *13/70*
U.S. Cl. 200—51 LM **5 Claims**



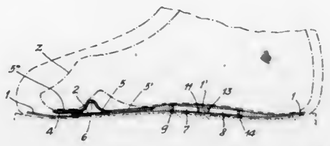
Bed mounted permanent and standard position switches for a remotely positioned bedroom light or lights, the switch being wired with only one leg of an electrica circuit to prevent fire and electrical hazards.

3,777,086

EQUIPMENT ON THE HUMAN BODY FOR GIVING SIGNALS, ESPECIALLY IN CONNECTION WITH ALARM SYSTEMS

Otto Riedo, Talbachliweg 18, CH-8048 Zurich, Switzerland

Filed Oct. 12, 1972, Ser. No. 297,168
Int. Cl. H01h *3/14*
U.S. Cl. 200—52 R **8 Claims**



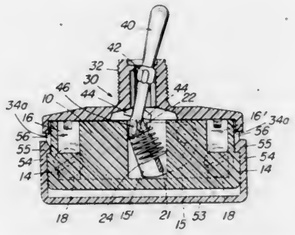
The invention provides equipment for use on the human body, for giving signal, especially in alarm systems, comprising a vehicle for attachment to a limb of the human body, and an actuating instrument incorporated in said vehicle and adapted to respond to movements of said vehicle such that a change of position of said limb and of said vehicle affects the actuating instrument to give an alarm.

3,777,087

LEVER OPERATED SWITCH

Louis A. Yeske, West Hartford, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed Feb. 29, 1972, Ser. No. 230,374
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 A **7 Claims**



A lever operated switch has a molded insulation body containing a snap action mechanism for moving movable contacts into and out of engagement with fixed contacts. Fixed contact terminals extend out of the body and a shield is snapped onto the body to protect the terminals. An insulation cover is snapped over the body and provides a mounting for a spring biased operating lever which has spurs that engage the body to limit inward pushing of the lever against the spring bias.

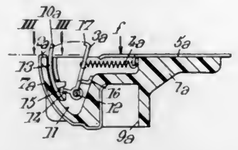
3,777,088

SPEED LIMITERS FOR INTERNAL COMBUSTION ENGINES WITH CONTROLLED COIL IGNITION

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Mar. 7, 1972, Ser. No. 232,536
Claims priority, application France, Mar. 16, 1971, 7109134
Int. Cl. H01h *35/10*; **F02d** *31/00*
U.S. Cl. 200—80 **5 Claims**

The speed limiter comprises, on an element rotated at a speed proportional to that of the engine, a contact fixed with respect to this element and a movable contact adapted to approach the fixed contact under the effect of the centrifugal force and against the effect of a return spring. One of these contacts is connected to the secondary winding of the ignition coil of the engine and the other to ground. When the speed of the engine reaches a predetermined threshold, the movable contact touches the fixed contact and cuts off the ignition of the engine by grounding said secondary winding. A screen of electrically insulating material is guided on said element and connected mechanically to the movable contact so that it is inserted between the two contacts as long as the speed of the engine is less than a limit itself less than said threshold but close to the latter and so that it retracts when this speed exceeds the said limit.

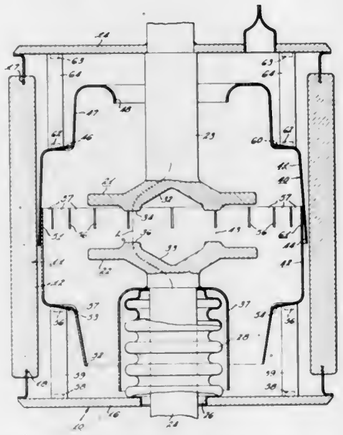


3,777,089

VACUUM INTERRUPTER

Allen R. Nitz, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 21, 1972, Ser. No. 282,130
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **12 Claims**



A vacuum type circuit interrupter is provided with an internal two-part shielding structure that operates as a unitary shield member for protecting the insulation of the interrupter from being impaired by arc generated metallic vapors condensating thereon. The shield structure provides a greater clearance between the shield surface and the contacts and the arc gap in a given diameter envelope than has heretofore been possible. The two-part shield structure is supported from adjacent end caps which eliminates the need for supporting the shield structure from the insulator housing.

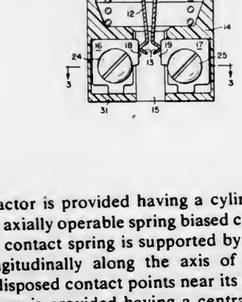
3,777,090

LINEAR CAM ACTUATED DIAPHRAGM SWITCH WITH LOST MOTION ACTUATOR

Michael Muller, Newport Beach, Calif., assignor to Datanetics Corporation, Fountain Valley, Calif.

Filed July 26, 1972, Ser. No. 275,209
Int. Cl. H01h *13/50, 3/48, 3/12*
U.S. Cl. 200—159 B **14 Claims**

A data key assembly having a keystem which is movably mounted in a housing. The housing also supports a flat diaphragm switch with an actuating surface which is oriented parallel to the direction of motion of the keystem. An actuating spring is coupled to the side of the keystem by a lot-motion connection which provides hysteresis in the key action, and the spring slides over the actuating surface to close the switch when the keystem is depressed.

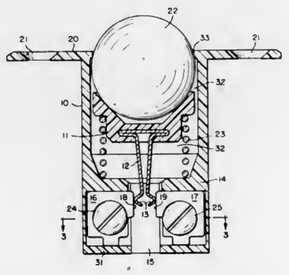


3,777,091

PUSHBUTTON SWITCH WITH ADJUSTABLE CONTACT PLATES FOR NORMALLY ON, NORMALLY OFF, AND MOMENTARY ACTION

John A. Palombo, Ansonia, and Carl M. Larime, Fairfield, both of Conn., assignors to General Signal Corporation, Rochester, N.Y.

Filed July 24, 1972, Ser. No. 274,764
Int. Cl. H01h *13/50*
U.S. Cl. 200—166 BC **12 Claims**



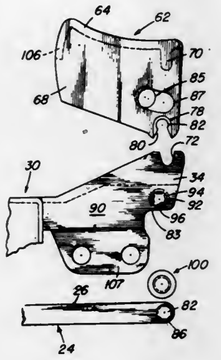
A contactor is provided having a cylindrical housing containing an axially operable spring biased contacting plunger. A U-shaped contact spring is supported by the plunger and extends longitudinally along the axis of the plunger having laterally disposed contact points near its ends. A contact supporting base is provided having a central opening extending axially within the base for the reception of the contact points. Contact plates are secured to the contact supporting base on opposite sides of the central opening and having contact ribs extending into the central opening for making electrical connection with the contact points. At least one of the contact plates can be selectively secured to the contact supporting base in one position or another for effecting circuit closures at respectively different operating positions of the plunger.

3,777,092

TRIGGER OPERATED ACTUATING MECHANISM FOR AN ELECTRIC SWITCH WITH INTEGRALLY MOLDED FULCRUM AND SNAP-ON CONNECTING MEANS ASSOCIATED WITH THE TRIGGER

Louis A. Yeske, Hartford, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed July 19, 1972, Ser. No. 273,302
Int. Cl. H01h *3/02, 9/06*
U.S. Cl. 200—172 R **4 Claims**



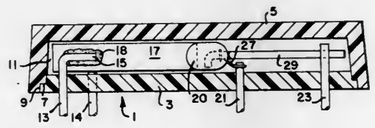
A trigger operated electric switch with a movable actuator which engages an over-center compression spring of an electric switch mechanism. The actuator is positioned between the switch casing and an actuator cover and is constrained to move rectilinearly therebetween, biased in one direction by a longitudinal spring. The trigger member has a fulcrum-type bearing molded integrally therewith and seated in a recess in the cover member. Skirt portions depend from the trigger member and provide a snap-on connection with the actuator when the bearing of the trigger-member is seated in the recess.

3,777,093

ELECTROMECHANICAL RELAY

Ronald Jay Sterns, 827 Daffodil Way, San Jose, Calif., and Francis Anthony Sutter, 7731 Rainbow Dr., San Jose, Calif.

Continuation of Ser. No. 82,361, Oct. 20, 1970, abandoned.
This application May 25, 1972, Ser. No. 257,053
Int. Cl. H01h *59/00*
U.S. Cl. 200—181 **5 Claims**



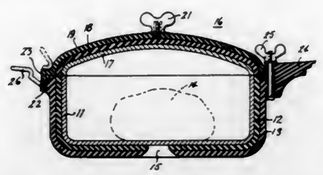
An improved relay incorporating a cantilever comprised of an elongated piezoelectric element joined to an electrical conductive armature with the armature portion of the cantilever positioned about contact means whereby the electrical circuit relationship is responsive to deflections in said piezoelectric element.

3,777,094

THERMALLY INSULATED COOKWARE FOR DYNAMIC INDUCTION FIELD HEATING AND COOKING APPARATUS

Philip H. Peters, Jr., Greenwich, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed Sept. 9, 1971, Ser. No. 179,010
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.49 **13 Claims**



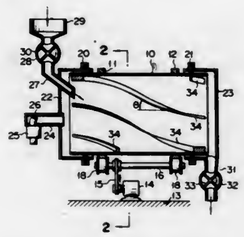
Thermally insulated cookware for use with dynamic induction field heating and cooking apparatus comprising a cooking utensil formed from an inner body member of metal susceptible to being inductively heated with high frequency magnetic induction fields. At least one exterior layer of thermally insulating material of high temperature plastic, ceramic, high temperature glass or the like is formed over substantially the entire exterior surface including the bottom of the inner metallic body member and comprises an insulating material that is substantially transparent to magnetic lines of flux. The inner metallic body member may comprise stainless steel, iron, titanium, porcelainized iron or steel, or the like and the exterior insulating covering may be a high temperature polyimid or polycarbonate plastic high temperature foam with a hardened exterior surface of plastic, a ceramic, a high temperature glass or the like. A window area preferably is formed in the exterior insulating coating which is transparent to infrared radiation rays for allowing an infrared responsive temperature sensor to view the temperature of the inner metallic body member during cooking and thereafter function to control this temperature at predetermined set levels. The exterior insulating surface preferably is formed with an attractive design providing asthetic appeal to the cookware and a lid may be provided for the cookware which also comprises an inner metallic member and an outer insulating member that allows foods contained within the cookware to be substantially surrounded by high temperature cooking surfaces which are insulated from the exterior. As a consequence, food may be maintained warm for substantially longer periods of time and very little heat loss takes place during the cooking process.

3,777,095

MICROWAVE HEATING APPARATUS

Tsuneo Muranaka, Kanagawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 15, 1972, Ser. No. 253,266
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **8 Claims**



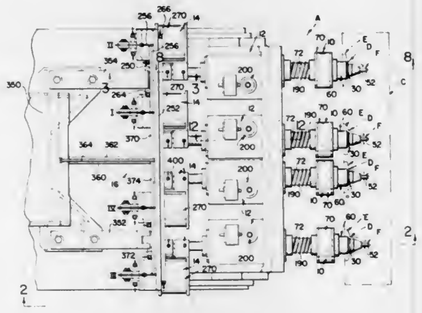
A microwave heating apparatus comprises a rotatable cylindrical heating chamber supplied with microwave energy, and means for feeding objects to be heated to said chamber and for taking out fully heated objects. Helically arranged, inwardly projecting metal strips are provided on the inner surface of the chamber for stirring and for successively forwarding the objects to be heated through the chamber to its outlet and for also agitating the microwaves so as to effect uniform application of microwave energy to the object.

3,777,096

APPARATUS FOR INDUCTIVELY HEATING VALVE SEATS

Anthony F. Del Paggio, Parma, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Division of Ser. No. 151,493, June 9, 1971, Pat. No. 3,743,809.
This application Dec. 1, 1972, Ser. No. 311,134
Int. Cl. H05b *5/06*
U.S. Cl. 219—10.57 **6 Claims**



A method and apparatus for simultaneously heating the conical surfaces of first and second valve seats lying generally in a given plane on an engine component, which method and apparatus comprises mounting two inductors for independent reciprocal and lateral movement with respect to a common frame and biased outwardly therefrom, moving the common frame toward the plane of the valve seats until each is stopped by contacting the engine component, locking the two inductors with respect to the common frame, moving the common frame away from the valve seats to provide the necessary coupling gap, and then energizing the inductors to inductively heat the valve seats preparatory to quench hardening thereof.

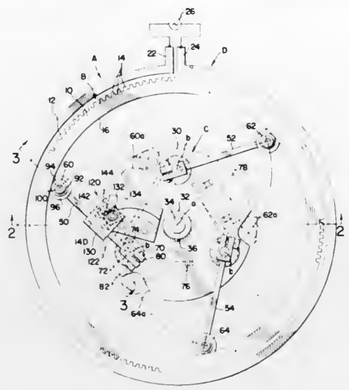
3,777,097

INDUCTION HEATING DEVICE FOR RING GEARS

Roger R. Budzinski, Seven Hills, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Mar. 8, 1973, Ser. No. 339,329
Int. Cl. H05b *5/00*
U.S. Cl. 219—10.59 **15 Claims**

An induction heating device for heating metal ring gears having an outer cylindrical periphery including the teeth and an inner cylindrical surface which is generally concentric with the periphery and with a central axis. The ring gear is rotated about the axis in close proximity with an encircling inductor whereby the teeth of the gear are inductively heated for subsequent quench hardening. In this device there is an improvement including a rotatable support member having at least three outwardly movable, pivoted arms which can be adjusted into a set position and means for allowing limited movement of the arms with respect to the set position.

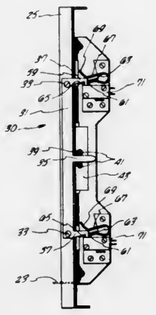


3,777,098

DOOR LATCH ASSEMBLY FOR A MICROWAVE COOKING OVEN

William R. Tapper, New Brighton, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sept. 18, 1972, Ser. No. 290,000
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **13 Claims**



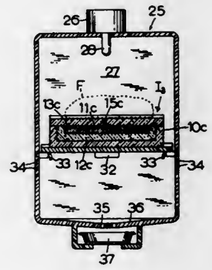
A door latch assembly for a microwave cooking oven is disclosed having a latch element mounted on the cantilevered end of the oven door and a latch receiving element mounted on the front face of the oven. The latch element includes a base member having a first aligning projection extending outwardly from the mid-length thereof, and a pair of hooked latches extending outwardly from the opposite ends thereof. The latch receiving element comprises a first fixed aperture formed adjacent the oven face for receiving the aligning projection of the latch element. The latch receiving element further includes a movable body having a pair of apertures for receiving the hooked latches of the latch element. The movable body also includes a pair of ported plates fixedly attached thereto. The plates include bearing surfaces adapted to engage and be moved downwardly by the latches. Upon further inward movement of the latches, the latches are adapted to extend into the plate ports and be secured therein by a pair of leaf springs, which function to move the plates and body upwardly in a secured position. To disengage the latches, the movable body is moved downwardly until the plate ports move out of engagement with the hook portions of the latches. The springs then function to urge the latches against the bearing surfaces of the plates to force the latches and the door away from the front face of the oven. A safety switch is connected to each port plate to be controlled by the hooked portions of the latches.

3,777,099

METHODS OF HEATING AN ARTICLE IN A MICROWAVE OVEN

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J.

Division of Ser. No. 704,389, Feb. 9, 1968, Pat. No. 3,701,872, which is a continuation-in-part of Ser. No. 470,809, July 9, 1965, abandoned, and a continuation-in-part of Ser. No. 483,144, Aug. 27, 1965, abandoned. This application Sept. 28, 1972, Ser. No. 293,006
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **13 Claims**



Methods of heating an article using microwave absorptive material, microwave absorptive combustible material, microwave nonabsorptive material, heat insulating material and/or heat conducting material are described.

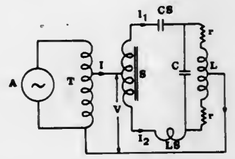
A process and an implement for converting microwave energy into heat energy which includes a body having a plurality of resistive particles therein. Upon subjecting the particles to microwave irradiation, a plurality of electric arcs are generated throughout the particles, thereby resulting in the microwave energy being converted into heat energy, and the electric arcs serving as a load for the microwave irradiation source. The implement is particularly useful with microwave ovens.

3,777,100

FREQUENCY MULTIPLYING DEVICE FOR INDUCTION HEATING APPLICATIONS

Joseph Trine, Oupeye, Belgium, assignor to Elphiac, Brussels, Belgium

Filed Dec. 8, 1972, Ser. No. 313,436
Claims priority, application Belgium, Dec. 10, 1971, 3632
Int. Cl. H05b *5/06*
U.S. Cl. 219—10.75 **3 Claims**



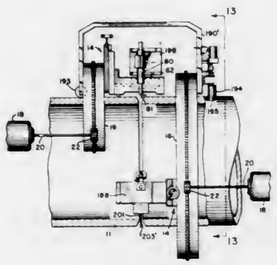
There is disclosed a frequency multiplying device for induction heating applications in which the supply voltage is applied between two central taps of a heating inductor and a saturable reactor. The extremities of the saturable reactor are con-

nected to those of a resonant circuit constituted by the heating inductor and a condenser in parallel therewith, through impedances such that the currents at supply frequency traversing them are of equal value and of symmetrical phases with respect to the phase of the supply voltage, the angle of each such phase being equal to 90° divided by the selected frequency multiplier and multiplied by an odd integer, so that these currents are in phase operation and their sum is nil.

3,777,101
WELDING TORCH OSCILLATOR

Richard B. Gwin, 2730 Nottingham St., Arlington; William L. Ballis, 661 Leap Rd., Hilliard; Claude W. Churchheus, Box 192, Laurelville, and Bruce L. Hutt, 2724 Elliott Ave., Valley View, all of Ohio

Division of Ser. No. 189,175, Oct. 14, 1971. This application May 16, 1972, Ser. No. 253,907
Int. Cl. B23k 9/02
U.S. Cl. 219—60 A **15 Claims**



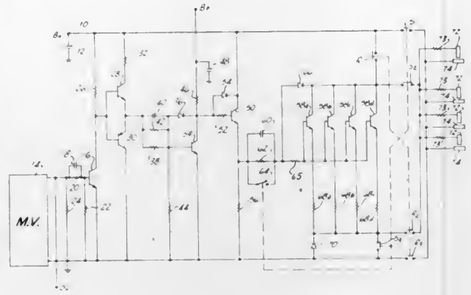
A welding head clamping and oscillating assembly is disclosed for use in a welding machine having means for supporting and moving the assembly along a joint to be welded. The assembly includes a support platform connected to the assembly supporting means of the welding machine and a support plate slidably mounted on the support platform for reciprocal movement in a direction transverse to the joint to be welded. A welding head clamp is pivotally mounted on the support plate for arcuate oscillating movement in a direction substantially parallel to the direction of the slidable mounting of the support plate and a reversible stepping motor is operatively connected to the clamp for oscillating the clamp about its pivot axis. An electrical control circuit is also provided for the stepping motor and includes logic circuitry for producing a pulse signal at a predetermined frequency and a binary counting circuit for counting a predetermined number of pulses from the signal and producing an output signal when the predetermined number of pulses is counted. The circuit includes means responsive to the output signal and operatively connected to the motor to drive the motor alternately in first and second directions in response to successive output signals from the binary counter thereby to oscillate the welding head clamp assembly about its pivot axis.

3,777,102
ELECTRICAL DISCHARGE MACHINING POWER SUPPLY CIRCUIT

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed July 19, 1972, Ser. No. 273,294
Int. Cl. B23p 1/08
U.S. Cl. 219—69 C **6 Claims**

A circuit for machining in a multiple gap set-up with multiple electrodes and a common workpiece or multiple electrodes and a like number of workpieces connected in circuit with a common source power supply circuit. A system is provided for reversing the polarity of electrode relative to workpiece in which the switching changeover is accomplished in the leads associated with the power source and the output switches themselves. Additionally, the circuit incorporates a special high gain current amplifier stage and a network con-

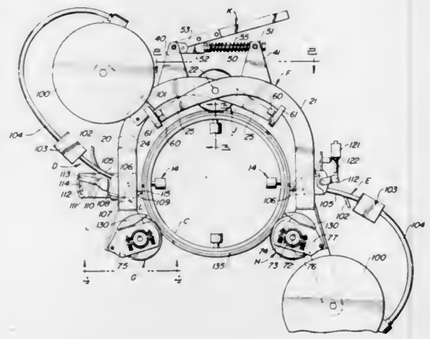


trolling the output switch triggering which incorporates an RC network for one polarity of cutting, which network is shunted by a selectively operated switching means for the other polarity of machining.

3,777,103
PIPE WELDING APPARATUS

Duncan A. White, and William O. Morrison, both of Kirtland, Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation of Ser. No. 7,730, Feb. 2, 1970, abandoned. This application Sept. 19, 1972, Ser. No. 290,319
Int. Cl. B23k 9/02
U.S. Cl. 219—60 A **9 Claims**

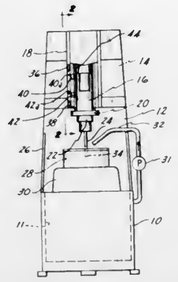


Welding apparatus for automatically welding in the groove formed by the adjacent ends of large diameter pipes comprised of welding heads mounted on a carriage having three coplanar guide wheels such that the end guide wheels are spaced at least greater than 180° from each other, which wheels forcibly engage the weld groove surfaces and guide the welding heads around the pipe in perfect alignment with the weld groove. Usually two welding heads are provided so that the welding is substantially continuous from start to finish.

3,777,104
ELECTRICAL DISCHARGE MACHINE RAM CYCLE CONTROL SYSTEM

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed May 30, 1972, Ser. No. 257,926
Int. Cl. B23p 1/14
U.S. Cl. 219—69 G **11 Claims**

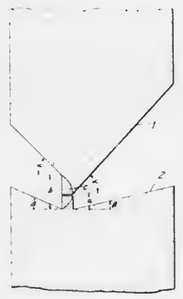


An electrode-carrying ram at controllable intervals is automatically retracted from the cavity being formed in the workpiece. This permits a coolant jet to be externally applied to the cavity to flush out the machining gap. Subsequently, the electrode is fed rapidly downwardly to a position just short of its former cutting level. At this point, the ram is returned to the control of an automatic servo feed system and normal cutting is resumed. A lower actuator is slidably mounted on a vertical track on the ram. Each time there is a downward stroke in the direction of the workpiece the lower actuator is moved slightly upwardly. This continuous progressive upward movement permits the ram and electrode to advance deeper into the workpiece cavity before the normal servo feed operation is restored. The upward movement of the actuator occurs automatically and without any requirement for operator attention.

3,777,105
METHOD FOR FORMING TRANSVERSE WELDED SEAMS BETWEEN VERTICALLY ORIENTED WORKPIECES HAVING V-SHAPED GROOVE AND BEVEL

Hans Fischer, Nurnberg, and Herbert Hellendrung, Oberhausen, both of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Sterkrade, Germany

Filed June 28, 1972, Ser. No. 267,046
Claims priority, application Germany, June 29, 1971, P 21 32 143.7
Int. Cl. B23k 9/18
U.S. Cl. 219—73 **6 Claims**

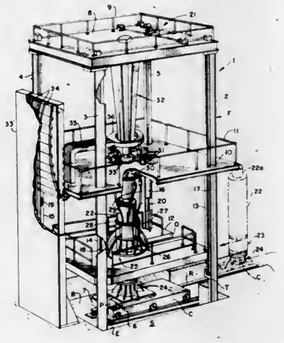


The welded seams are formed between facing edges of vertically oriented plate sections by submerged arc welding. The bottom edge of an upper section is formed with intersecting bevelled faces defining a V-shape nose in cross-section, and the upper edge of a lower thick plate section is formed with intersecting sloping faces defining a V-shape upwardly opening notch in cross-section. The sections are placed with the apices of the V-shape cross-sections in substantial alignment vertically to define opposite facing welding grooves having a common welding groove root. The faces defining the welding grooves are arranged at angles such that the welding groove sides diverge outwardly and upwardly from the root. Molten weld metal is progressively deposited along the welding grooves by submerged arc welding while the welding powder is supplied to the grooves both before and behind the pool of molten weld metal. The apparatus includes a welding wire feed guide, contact jaws for conducting current to the welding wire, a conductor for connecting the contact jaws to a source of welding current, and a powder feed pipe in the form of an inverted Y which is fixedly connected with the welding wire feed device. The outlet openings of the powder feed pipe are arranged, respectively, before and behind the contact jaws in the direction of weld formation. A pressure gas may be supplied to the powder feed pipe in advance of the Y junction.

3,777,106
ELECTROSLAG WELDING MACHINE

Albert W. Nuccel, Harrisburg, Pa., assignor to Teledyne, Inc., York, Pa.

Filed June 13, 1972, Ser. No. 262,191
Int. Cl. B23k 9/04
U.S. Cl. 219—76 **44 Claims**



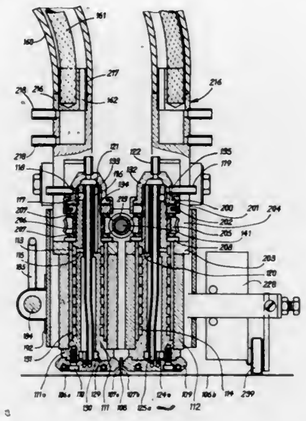
An electroslag welding machine for depositing or casting a layer of metal onto an article, comprising a frame means having means thereon for supporting an article, welding electrode means carried on a first movable portion of the frame means and disposed in close proximity to said article for depositing weld metal onto said article, cooling and shaping means carried on a second movable portion of the frame means spaced from the first movable portion and disposed in closely spaced relationship to said article to define a space therebetween, the welding electrode means extending into the space between the article and the cooling and shaping means, and drive means carried by the frame means and connected to at least one of said movable portions to cause movement thereof, said first and second movable portions being connected together for movement in unison to thus cause movement of said welding electrode means and said cooling and shaping means together relative to the article to deposit weld metal on the article and to cool and shape the weld metal deposited on said article.

3,777,107

ELECTRICAL WELDING MACHINE

Pierre Jean, Fontaine-La-Mallet, and Marcel Nias, Nantes, both of France, assignors to Gaz Transport, Paris and Etudes Et Realisations Industrielles, Nantes, France

Filed Mar. 9, 1972, Ser. No. 233,050
Claims priority, application France, Mar. 12, 1971, 7108657; Feb. 24, 1972, 7206200
Int. Cl. B23k *11/06*
U.S. Cl. 219—82 23 Claims



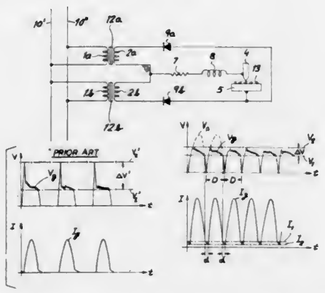
In an electrical welding machine adapted to weld flanges gripped between a pair of welding rollers, each welding roller is mounted on a pivotally mounted shaft, and the welding machine is driven by a pair of driving rollers adapted to grip the flanges, the driving rollers being mounted on pivotally mounted driving shafts which, when in driving position, are canted slightly toward the direction in which the machine travels, so that the machine is urged constantly toward the plates from which said flanges project.

3,777,108

MACHINING OF WORKPIECES BY ELECTRO-EROSION

Alfred Marie Aime Maillet, Yvelines, Versailles, France, assignor to Carel Fouche Languepin, Paris, France

Continuation-in-part of Ser. No. 127,217, March 23, 1971, abandoned. This application Nov. 13, 1972, Ser. No. 306,160
Claims priority, application France, Mar. 25, 1970, 7010718
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 P 10 Claims



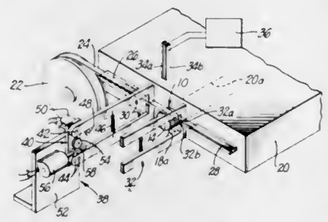
The energizing circuit of an electro-erosion system, connected across an electrode and a workpiece to be machined, comprises a source of alternating current with an operating frequency of up to 5,000 Hz from which an unbroken succession of voltage pulses is obtained by means of a full-wave raw-rectification circuit. A reactance common to both branches of that circuit, such as an inductance effectively in series therewith, maintains a residual potential difference across the erosion gap as the driving voltage of the source goes to zero, resulting in continuing ionization of a substantially stationary dielectric liquid in the gap to increase the service life of the electrode by limiting the amplitude of the current pulses.

3,777,109

PROCESS AND APPARATUS FOR REMOVING UNDESIRED WINDINGS FROM WIREWOUND ELEMENTS

John L. Chapman, Bloomington, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Apr. 20, 1972, Ser. No. 245,913
Int. Cl. B23k *1/04*
U.S. Cl. 219—85 10 Claims



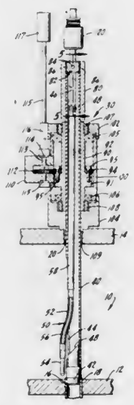
Apparatus and process for removing undesirable windings from a wirewound element wherein an elongate strip of brazing material is laid across the windings to be removed, at a substantial angle to the axis of the mandrel on which the wire is wound. An electric current is applied, for example by the use of parallel gap welding electrodes, to the brazing material at the place of contact with the windings so as to sever the windings in contact with the brazing material and the brazing material itself and simultaneously attach the severed brazing material ends to the respective ends of the severed windings. Then the resulting pieces of brazing material are grasped and pulled away from the mandrel thereby causing the attached severed windings to be removed from the mandrel.

3,777,110

WELDING GUN

Melvin G. Yohn, Canton, and Joseph P. Simon, Massillon, both of Ohio, assignors to Ecodyne Corporation, Chicago, Ill.

Filed Nov. 29, 1972, Ser. No. 310,317
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R 17 Claims



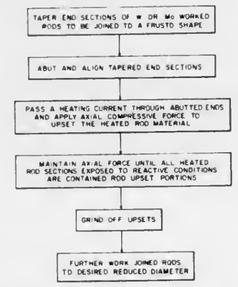
Welding apparatus for welding heat exchange tubes to tube sheets or headers for use in heat exchange equipment. The welding apparatus includes a welding electrode which is selectively retracted and extracted from within a hollow positioning member. The positioning tube with the welding electrode in its retracted position is dimensioned to permit insertion into the header through one of the holes in the plug sheet. The positioning tube includes a bushing which is threadedly received in the plug sheet hole and a fitting which is received by the heat exchange tube being welded so as to locate and center the positioning tube. The welding electrode may then be extracted through a groove in the positioning tube and caused to rotate through a gear mechanism to describe the required circular weld. Welding material and inert gas is supplied through the center of the welding electrode.

3,777,111

METHOD OF MAKING GREATLY ELONGATED TUNGSTEN OR MOLYBDENUM MEMBERS

Hermann J. Ehringer, West Orange, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1972, Ser. No. 251,956
Int. Cl. B23k *11/02*
U.S. Cl. 219—105 9 Claims



For making greatly elongated tungsten or molybdenum members, sintered or cast tungsten or molybdenum ingots are initially mechanically worked to the form of somewhat elongated rods, which are then joined to one another. The ends of the elongated rods which are to be joined are first tapered to a frustum configuration, and the tapered ends are abutted and electrically resistance heated to a plastic condition while simultaneously being forced together. This results in creating an upset of the plastic rod material, which upset is so controlled that all of the rod material which has been heated to a plastic condition and also exposed to reactive conditions is contained in the formed upset. The upset is then removed by grinding in order to remove from the now-joined rods any impurities which may have been entrapped during the welding operation, and the resulting greatly elongated rod is then further mechanically reduced in diameter to a final predetermined size.

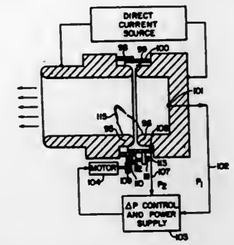
3,777,112

RECURRENT ARC HEATING PROCESS

Maurice G. Fey, Turtle Creek; Charles B. Wolf, Irwin; Frederick A. Azinger, Jr., Pittsburgh, and George A. Kemeny, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 124,517, March 15, 1971, which is a division of Ser. No. 790,417, Jan. 10, 1969, Pat. No. 3,629,553. This application Feb. 28, 1972, Ser. No. 229,806
Int. Cl. H05b *7/18*; B23k *9/00*
U.S. Cl. 219—121 P 2 Claims

Gas or fluid flows through a gap between electrodes having an arc therebetween at a very high velocity while a system voltage is continuously maintained sufficient to cause breakdown at the gap. The high velocity gas elongates the arc until the arc voltage required for electrical conduction exceeds the breakdown voltage of the gap whereupon sparkover occurs in the gap, the arc being thereafter elongated again by the gas passing through the gap until the voltage required to sustain arcing exceeds the breakdown voltage of the gap, the cycle of



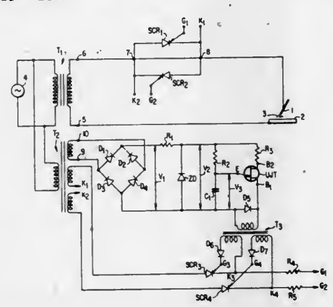
gap breakdown and elongation being repeated over and over again. The greatly extended arc provides for more efficient heating of the gas, better mixing and a more uniform temperature to which the gas is heated.

3,777,113

METHOD OF INTERMITTENT ARC WELDING USING POTASSIUM AND MAGNESIUM ELECTRODE ADDITIVES

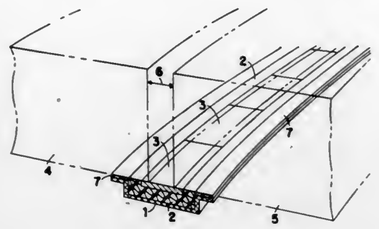
Masayasu Arikawa; Minoru Oishi; Masaharu Rokujo, all of Fujisawa, and Tatuyuke Ishibashi, Kamakura, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Continuation of Ser. No. 48,340, June 22, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,535
Claims priority, application Japan, June 21, 1969, 44/49113; Nov. 17, 1969, 44/92374; Nov. 17, 1969, 44/92376
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 1 Claim



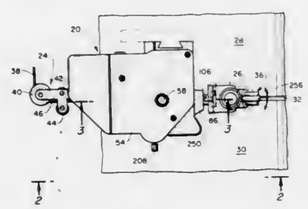
A consumable electrode arc welding process which can be used for welding in the horizontal, vertical or overhead positions which comprises applying a pulsating current to a welding electrode so that at recurring intervals a welding arc is periodically established and extinguished wherein the period of time in which the arc is extinguished ranges from 0.001 to 0.01 seconds. the arc is established for a first interval of between 0.001 to 0.01 seconds and wherein the ratio of the interval during which the arc is extinguished to the full cycle is 0.1 to 0.7. A consumable electrode useful in a consumable electrode arc welding process which comprises a mixture of potassium and magnesium or an alloy thereof wherein the quantity of potassium multiplied by the square of the quantity of magnesium exceeds 0.02. A consumable electrode arc welding apparatus comprising a welding current control circuit, a first circuit having at least one semiconductor controlled rectifying element connected in series with a welding electrode for enabling a welding current to be applied thereto, and a second circuit for controlling the gate of said element for effecting phase control such that when said welding current is applied to said electrode, it is of the pulsing type.

3,777,114
BACKUP TAPE FOR NARROW GAP WELDING
Richard W. Reynolds, 17306 Bryant Ln., Hazel Crest, Ill.
Filed Mar. 23, 1972, Ser. No. 237,434
Int. Cl. B23k 9/02
U.S. Cl. 219—160 4 Claims



A flexible backup for closing the gap across the bottom of plates to be arc welded comprising a flexible tape shaped to form a trough along the center of its length which is filled with a refractory and deoxidizing material and metal segments of a width sufficient to cover the gap. Adhesive material is provided along the length of the exposed sides of the tape for holding the tape to the parts to be welded.

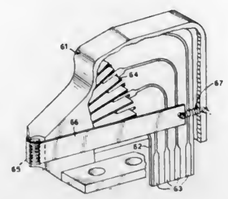
3,777,115
APPARATUS FOR CONTROLLING ELECTRODE OSCILLATION
Gasparas Kazlauskas, North Hollywood, and Kennison L. Vowell, Canoga Park, both of Calif., assignors to Astro-Arc Co., Sun Valley, Calif.
Filed Feb. 22, 1972, Ser. No. 227,886
Int. Cl. B23k 9/12
U.S. Cl. 219—125 R 19 Claims



A welding apparatus wherein the welding electrode is moved transversely in oscillating motion across the weld path, the electrode to be capable of dwelling at either the fore or aft point of maximum displacement of the transverse movement path, the voltage between the electrode and the workpiece is automatically maintained constant by means of an automatic voltage control mechanism.

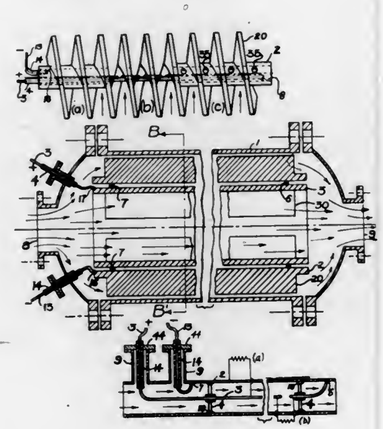
3,777,116
THERMOGRAPHIC PRINTING ARRANGEMENT
Riccardo Brescia, and Lucio Montanari, both of Turin, Italy, assignors to Ing. C. Olivetti & C., S.P.A., Torino, Italy
Filed Sept. 29, 1972, Ser. No. 293,732
Claims priority, application Italy, Oct. 4, 1971, 70244 A/71
Int. Cl. H05b 1/00
U.S. Cl. 219—216 4 Claims

A dot-matrix thermographic printing head is disclosed which is particularly adapted to print on the thermosensitive record while that record is in continuous relative motion with respect to said printing head (i.e., "in flight") comprising a plurality of printing surfaces each adapted to be selectively actuated and each having a printing surface in the form of a long thin rectangle. There is also disclosed spring arrangements which assure that changes in the length of the print heads due



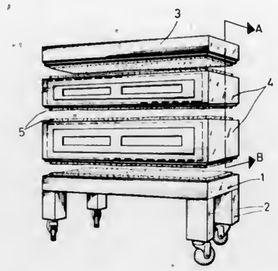
to electronic erosion are compensated for automatically. There is also disclosed electronic arrangements to prevent the head from overheating due to successive activations.

3,777,117
ELECTRIC HEAT GENERATING SYSTEM
Donald F. Othmer, 333 Jay St., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 805,718, March 10, 1969, Pat. No. 3,617,699. This application Jan. 18, 1971, Ser. No. 107,351
Int. Cl. H05b 3/00
U.S. Cl. 219—300 52 Claims



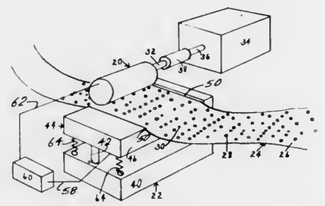
When an insulated conductor wire inside a steel tube carries alternating current as one leg of a circuit, and the tube itself carries the A.C. for the return leg, induction and magnetic effects develop which cause the A.C. flow to concentrate on the inner surface or skin of the tube, thus greatly increasing the resistance and the heat produced. No current is carried in the outer wall of tube; thus, there is no loss to ground or other surroundings. The heat-tube may be attached to or constructed so as to become an integral part of the wall of a pipe carrying a fluid, thus heating the pipe and the fluid. It may be the transport pipe itself, or it may heat an unenclosed body of fluid using heat supplied by direct contact of the fluid with both the conductor wire and the tube. The heat-tube may supply A.C. to other circuits either related or independent of the heating effect which may be quite unimportant in some of these cases.

3,777,118
BAKING OVEN
Juan Llordes Creus, Usandizaga 18, San Sebastian, Spain
Filed July 21, 1971, Ser. No. 164,768
Int. Cl. F27d 11/02
U.S. Cl. 219—394 1 Claim



A baking oven having several baking chambers to which heat generating electric power is independently furnished. An insulating lower panel has supporting legs, and another, also insulating, upper panel completes the ensemble. Between these two panels there are a plurality of modules of the same or different heights, independent of each other, which when mounted constitute the baking chambers. Each module incorporates insulating layers on its sides approximately twice as thick as those on its upper and lower faces.

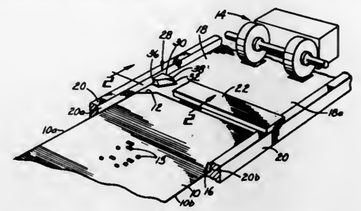
3,777,119
PERFORATED DOCUMENT READ HEAD
Richard V. Thomas, 8440-18th Ave. S.W., Seattle, Wash.
Filed Aug. 5, 1971, Ser. No. 169,442
Int. Cl. G06k 7/06
U.S. Cl. 235—61.11 A 25 Claims



A self-adjusting, self-cleaning low mass reading sensor for a perforated document wherein a conductive elastomeric element penetrates the perforations to make contact with a conductive element on the other side of the document. A plurality of biasing means urge the two conductive elements together and compensate for conductor wear. The abraded particles of the conductive elastomeric element become electrically nonconductive upon abrading.

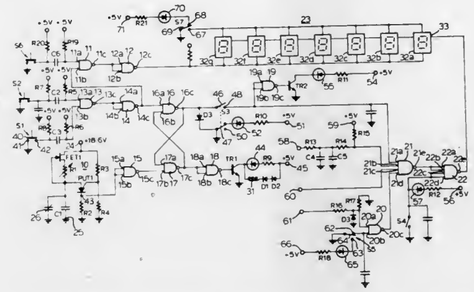
3,777,120
DEVICE FOR SELECTIVELY PASSING AND BLOCKING SHEETS OF PLANAR MATERIAL DEPENDING UPON THE ORIENTATION THEREOF
Joe L. Menger, and Bryce G. Thornton, both of Mentor, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed June 23, 1972, Ser. No. 265,852
Int. Cl. G06k 13/06
U.S. Cl. 235—61.11 R 4 Claims

A device for selectively passing or blocking credit cards introduced into a reading mechanism, passing the credit card for entry when, and only when, the card is oriented in a given position. The credit card has one corner thereof cut at a 45° angle. A pin is provided on the path of the credit card to coact with the corner of a leading edge thereof. The pin has a sloping angled surface which will coact with the angled cut of the



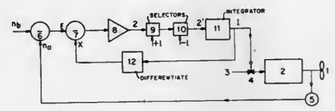
card and allow the pin to be depressed and pass the card thereby when the angled cut corner strikes the pin signifying proper orientation; the pin also has a vertical blocking surface which will block passage of the card by engaging any other corner of the card signifying improper orientation thereof.

3,777,121
ELECTRONIC COUNTER
Patrick J. Jamieson, Bramalea, Ontario, Canada, assignor to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada
Filed Nov. 6, 1972, Ser. No. 304,212
Int. Cl. H03k 5/18
U.S. Cl. 235—92 EA 9 Claims



An electronic counter is provided with a built-in timer and is fabricated primarily of logic gates having a NAND function. Two of these gates are cross-connected in such a way that one of them is latched so as not to change its output while a timing cycle is taking place. The presence of the timer enables the counter to give a direct readout in RPM, for example.

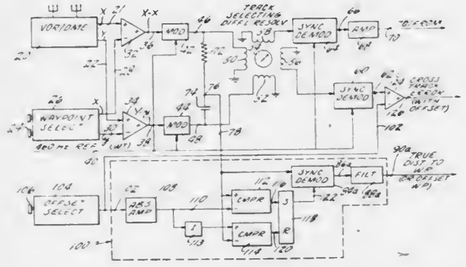
3,777,122
PROCESS AND APPARATUS FOR THE AUTOMATIC CONTROL OF A VARIABLE
Albertus C. H. Borsboom, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed July 30, 1971, Ser. No. 167,717
Int. Cl. G05b 11/01
U.S. Cl. 235—150.1 9 Claims



A control system for a variable wherein the maximum rate of change of the variable is controlled by limiting the error

signal. The error signal is controlled so that the control system operates linearly with time when the error signal exceeds the limit and proportionally and integrally when the error signal is less than the limit.

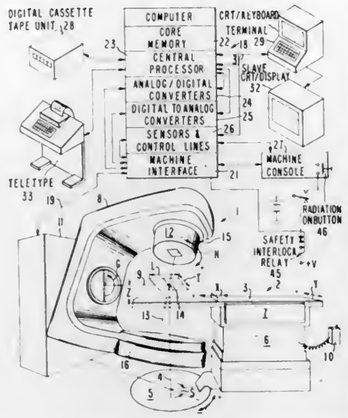
3,777,123
TRUE DISTANCE TO WAY POINT AND OFFSET COMPUTER
John E. Games, Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed July 3, 1972, Ser. No. 268,253
Int. Cl. G06g *7/78*
U.S. Cl. 235—150.27 **4 Claims**



Navigation equipment provides AC signals proportional to X and Y coordinates of an aircraft with respect to a selected way point which are applied to opposite ends of a series RC circuit, the center of which is used as an input to a triangle solving means, as is an offset indicating signal (designating the amount by which a parallel track to be flown is offset from the track to the way point) to provide a true distance to way point signal. When the offset amount is zero, true distance to way point is still achieved. True distance to way point without offset is provided by synchronously demodulating the center tap of the R/C circuit. True distance to way point is provided even when flying in a circle, or when flying a track which is offset from and parallel to a previously established track to a way point.

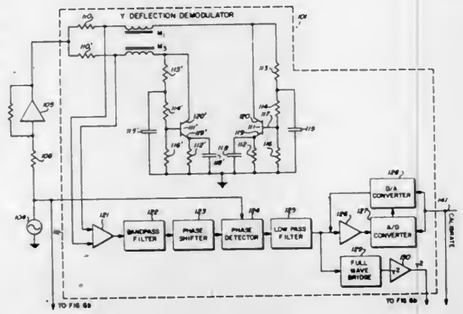
3,777,124
COMPUTER ASSISTED RADIATION THERAPY MACHINE
John M. Pavkovich, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Nov. 27, 1970, Ser. No. 93,332
Int. Cl. G06f *15/42*; **A61n** *5/00*
U.S. Cl. 235—151 **8 Claims**

A computer assisted radiation therapy machine is disclosed. The machine includes a rotatable gantry having a radiation source portion and a beam stopping portion. The gantry is rotatable about a patient treatment couch which is rectilinearly translatable in three orthogonal directions as well as being rotatable about the vertical axis. Geometric and dose parameters defining a prescribed treatment plan of radiation are stored in the memory of the computer. Positional signals are derived from the various movable controls and parts of the radiation machine. The prescribed treatment parameters are compared with the actual positionings of the elements and controls of the machine to derive an interlock output when at least one of said actual parameters differs from the respective



prescribed parameter. The interlock output is employed to inhibit application of radiation to the patient until the mistake is rectified.

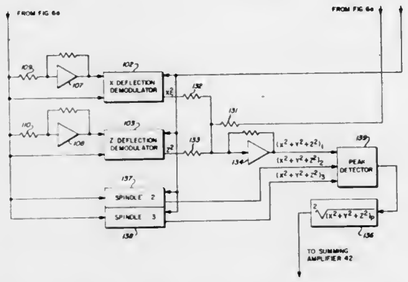
3,777,125
DEMODULATOR FOR MAGNETIC MILLING FORCE SENSORS
William J. Whetham, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jan. 26, 1972, Ser. No. 220,746
Int. Cl. G06g *7/66*; **G05b** *11/12*
U.S. Cl. 235—151.11 **7 Claims**



An improved system is provided for sensing spindle deflection of a milling machine and developing a feedrate control signal in accordance therewith to achieve optimum tool life consistant with high metal removal rate from a workpiece. A plurality of magnetic transducers are disposed adjacent the spindle or spindles of a milling machine, and each magnetic transducer is excited by an audio frequency signal such that, as deflection of a spindle brings the spindle closer to or moves it further from a transducer, a corresponding change in the impedance characteristics of the transducer is utilized to develop an a-c signal of a given amplitude. Signals developed from opposing transducers are fed to a differential amplifier to derive a difference signal which is demodulated by a phase detector, rectified and filtered, and then passed through a squaring circuit in order that signals corresponding to the square of the deflection sensed by each transducer pair may be mixed to provide a d-c voltage representing the sum of the squares representing the deflection components. The square root of

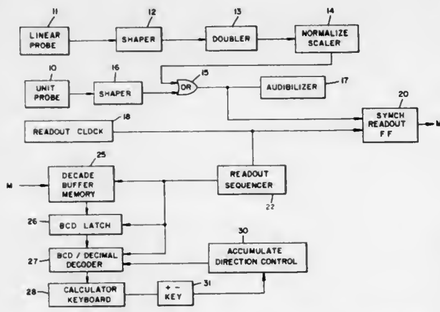
the sum of the squares is then taken to give a feedback signal proportional to the vector sum of spindle deflection for utilization as a feedrate correction signal. For milling machines utilizing multiple spindles simultaneously, a peak detector circuit is utilized to select the largest sum of the squares only for subsequent development of the feedrate correction signal.

Changes in the resistance of the magnetic transducers due to temperature variations encountered under normal operating conditions are compensated by placing the coil of each magnetic transducer in a series circuit which includes a field effect transistor biased to perform as a variable resistor responsive to a change in current flow through the coil by presenting an apparent resistance which opposes the change



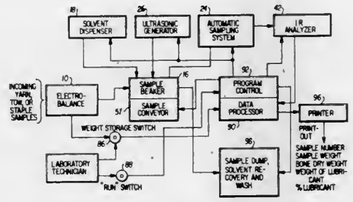
in current. Runout, which introduces an invalid deflection signal component by modulating the audio frequency reference signal according to the rate of spindle rotation, is compensated by observing the signal produced by runout from each tool holder, tool combination prior to machining, and then providing a continuous equal and opposite signal thereby leaving only the component due to actual spindle deflection. This signal also compensates for component drift. This function is carried out by a loop including a d-c amplifier which drives an A-D converter which, in turn drives a D-A converter which has its output coupled back to the input of the d-c amplifier. When activated, the calibrate circuit introduces trial signal levels until the output of the d-c amplifier is zero, thus negating the effect of runout.

3,777,126
MEASUREMENT TRANSDUCER CALCULATOR INTERFACE
Donald G. Hoff, Tiburon, Calif., assignor to Dietzgen Electronics, Inc., South San Francisco, Calif.
Continuation-in-part of Ser. No. 815,981, April 14, 1969. This application May 3, 1972, Ser. No. 249,936
Int. Cl. G06f *7/38, 15/02, 3/05*
U.S. Cl. 235—151.3 **8 Claims**



A measurement transducer/calculator interface for processing output signals from one or more measurement transducers for input to an electronic calculator. The interface is coupled for receiving and shaping pulse signals at the frequency generated by a measurement transducer. The data signals are processed, then temporarily accumulated in a buffer memory effectively compressing the data signals which are thereafter sequenced through a decoder into the calculator input at the highest rate for reliable keyboard entry into the calculator.

3,777,127
ANALYZER APPARATUS AND METHOD
Ronald J. Goetchius, and Michael John Collins, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.
Filed Apr. 17, 1972, Ser. No. 244,377
Int. Cl. G06g *7/58*
U.S. Cl. 235—151.3 **12 Claims**

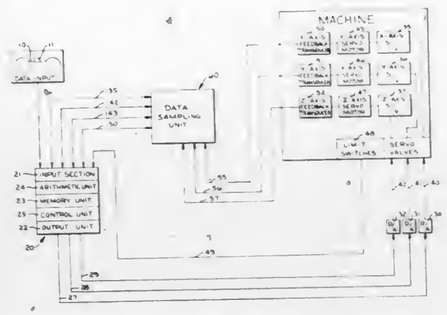


An apparatus for measuring and computing the amount of a soluble material, such as a finish, plasticizer, lubricants and the like, contained on a carrier material, such as plastics, metals, natural and synthetic fibers in the form of tow, yarns or staple fibers. A weighing means measures the weight of a fiber sample and produces a signal representative of the measured weight. A data processor stores the weight signal while the content of the soluble material in the sample is being measured. A sample container is supported by a conveyor means which moves the sample from a loading zone to a testing zone and thereafter to a disposal and washing station. Solvent dispensing means automatically dispense a predetermined volume of a solvent for the soluble material from a source into the sample container. Agitation means agitate the solvent to quickly disperse the soluble material on the sample into solution. A predetermined volume of the resulting solute is removed from the container automatically by solute measuring means and the measured amount of solute is fed to an analyzer which determines the proportion of soluble material in the solute. The analyzer produces a signal proportional to the soluble material weight on the fiber sample. The soluble material weight signal is supplied to a data processor which then computes the percent soluble material on the starting fiber sample.

3,777,128
INPUT DATA SAMPLING SCHEME FOR COMPUTER CONTROLLED MACHINE TOOLS
Edward E. Kirkham, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
Continuation of Ser. No. 35,480, May 7, 1970, abandoned. This application Mar. 31, 1972, Ser. No. 239,966
Int. Cl. G05b *19/18*; **G06f** *15/46*
U.S. Cl. 235—151.11 **16 Claims**

An apparatus and method for sampling input data to a computer which is controlling the operations of a machine tool. A general purpose digital computer is used to provide servo control signals to the various machine tool slides. The output digital signals of the computer are converted to analog signals by digital to analog converters and fed in the machine tool servo valves which, in turn, control servomotors which, in turn, drive the machine tool slides. Data is sent back to the computer from feedback transducers which are operably con-

nected to the machine tool slides. Means are provided between the feedback transducers and the computers for passing a sampling of the feedback data at periodic intervals. The computer is programmed to request data from the par-

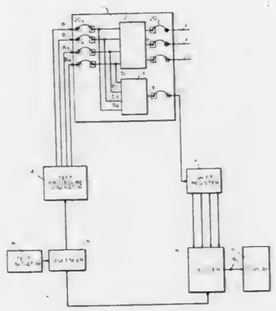


ticular feedback device at these intervals. The computer compares this sample of feedback data with the next previous sample of feedback data. This comparison tells the computer the direction, distance, and at what velocity the machine tool slide has moved.

3,777,129
FAULT DETECTION AND LOCALIZATION IN DIGITAL SYSTEMS

Madhukumar A. Mehia, Addison, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 22, 1972, Ser. No. 255,267
Int. Cl. G01r *31/04*
U.S. Cl. 235—151.3 **9 Claims**



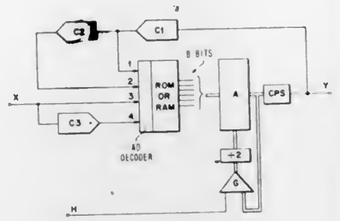
A method for synthesizing a test function which can detect and isolate a fault to the single input of a multiple input circuit and means for utilizing the resulting function is disclosed. The test circuit is a function only of the number of inputs to the circuit under test and not a function, as is the usual case, of what the circuit under test is performing.

3,777,130
DIGITAL FILTER FOR PCM ENCODED SIGNALS

Alain Croisier, Cagnes; Daniel J. Esteban, La Gaude; Marc E. Levillon, and Vladimir Riso, both of Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,345
Claims priority, application France, Dec. 17, 1970, 7047123
Int. Cl. G06f *1/02, 15/34*
U.S. Cl. 235—152 **4 Claims**

A digital filter either of a recursive or transversal type responsive to successive digitally encoded analog signal samples of m bits each. The filter comprises an accumulator for multiplying and summing a weighted hybrid value obtained from a memory medium addressed by a selected one of the m bits of each of N digitally encoded signal samples. If the bits of the N samples used for addressing the memory are derived from successive input signals only, then the filter is of the transversal type. If V of the N signals whose bits are used for addressing are from the input samples and R of the N signals

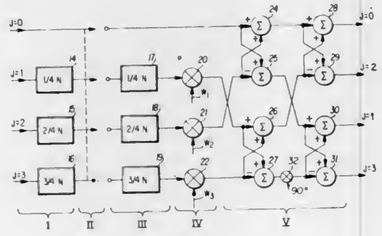


whose bits also are used for addressing are obtained from filter output signals, then the filter is recursive. By addressing the memory with the binary value of like bit positions of the signal samples, then a hybrid value may be stored, which hybrid value need only be multiplied and combined by the accumulator. This permits the use of a substantially smaller memory than that required if the digits of the signals looked up the completed weighted function.

3,777,131
HIGH BASE MULTIPLE RAIL FOURIER TRANSFORM SERIAL STAGE

Richard E. Llewellyn, Greenbelt, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 8, 1972, Ser. No. 224,501
Int. Cl. G06f *7/38, 15/34*
U.S. Cl. 235—156 **19 Claims**

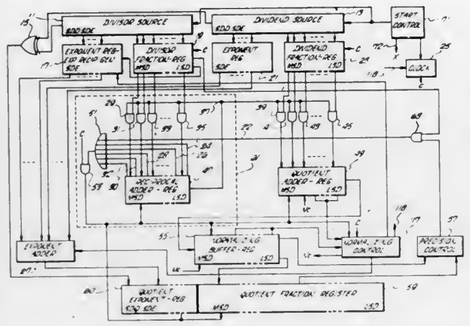


A serial processor section for use in a parallel-serial processor of a multiple-input Fast Fourier Transform (FFT) machine wherein a base higher than 2 is used for the expansion of the Cooley-Tukey algorithm. The serial processor section utilizes a plurality of serial processor stages, each having a number of rails equal to the number of the base used to expand the Fourier series equations, with each rail being an input and an output line to and from the stage. The multiple rails originate at the output of the parallel processor section and pass from serial stage to serial stage in the parallel-serial processor to derive the desired outputs therefrom. Appropriate delay means, multiplier means and summing circuits are utilized in the serial processor section in order to generate outputs therefrom in accordance with the Cooley-Tukey algorithm.

3,777,132
METHOD AND APPARATUS FOR OBTAINING THE RECIPROCAL OF A NUMBER AND THE QUOTIENT OF TWO NUMBERS

Walter Scott Bennett, Jr., Diamond Bar, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 23, 1972, Ser. No. 228,536
Int. Cl. G06f *7/52*
U.S. Cl. 235—164 **24 Claims**

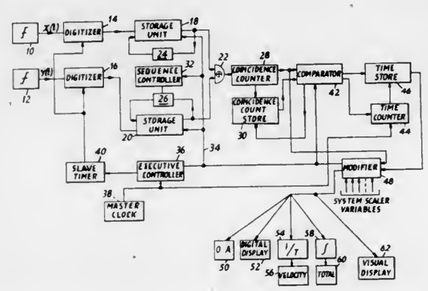


Binary division is performed by multiplying the reciprocal of a divisor by a dividend. The quotient is generated at the same time as the reciprocal of the divisor, the reciprocal being generated by a method and apparatus that multiplies the divisor by an evolving multiplier that forces the product to be a series of binary ones. Generation of the evolving multiplier is terminated at the end of one of its repeating periods, the multiplier thereby equaling the reciprocal of the divisor in all bits generated.

3,777,133
CROSS CORRELATOR

Maurice Sidney Beck, 10 Hazelhurst Rd., Bradford 9, Yorkshire; Gerald Musgrave, 3 Langley Ln., Tong Park, Baildon, Yorkshire, and Colin Norman Wormald, 109 Healey Ln., Batley, Yorkshire, England

Filed Jan. 24, 1972, Ser. No. 220,017
Claims priority, application Great Britain, Jan. 26, 1971, 3,193/71
Int. Cl. G06g *7/19*; **G06f** *15/34*
U.S. Cl. 235—181 **6 Claims**

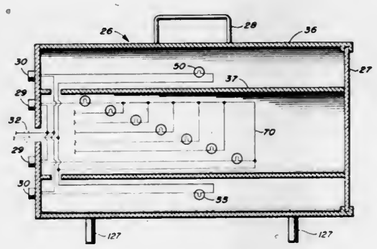


Apparatus for cross-correlating a pair of electrical signals in which each signal is converted into a binary signal and fed to a feedback shift register. One of the registers has a delay in its feedback path. When the registers are full, the shift registers are continuously recycled and their outputs continuously compared by an exclusive - NOR gate. A counter coupled to the exclusive - NOR gate counts the number of coincidences in a single cycle of the contents of the shift registers. This count is compared with the highest count attained in a previous cycle, the new count being held in a count store if higher than the previous highest count. The time between the start of the comparison and the time at which the highest count is obtained is stored in a separate time store. After each cycle the delay between the signals increases by one clock pulse. The time store then gives the delay for maximum correlation. In a further embodiment the invention operates with signals having three or more discrete levels in place of binary signals.

3,777,134
KEYBOARD ACTUATED LIGHTING INSTRUMENT

William B. Conner, 117 S. 4th St. Apt. 507, Allentown, Pa.

Filed Apr. 12, 1973, Ser. No. 350,526
Int. Cl. A63j *17/00*; **F21p** *5/02*; **G09b** *15/00*
U.S. Cl. 240—10 R **3 Claims**



A keyboard actuated lighting instrument, generally drum shaped, includes a circular shaped translucent member. A first cylindrical housing has one end thereof affixed to the translucent member. A second cylindrical housing, having a radius smaller than that of the first housing, is oriented concentric with the first housing so as to abut with the translucent member. A first plurality of partitioning members are affixed to and radially extend from the second housing to the first housing, the partitioning members having ends thereof in abuttment with the translucent member. A first plurality of different colored lamps are housed in the annular ring formed by the housings, one and one only of the lamps being housed, respectively, in each sector formed by the partitioning members. A second plurality of different colored lamps are oriented within the second housing. A circular wall is coupled to the opposite end of the first housing. Each one of a first plurality of switches, corresponding in number to the first plurality of lamps, is coupled to a single different lamp. Each one of a second plurality of switches, corresponding in number to the second plurality of lamps, is coupled to a different single lamp. Suitable means couple the first and second pluralities of switches to the exterior of the circular wall. Provision is made to electrically couple a potential source to the lamps and switches.

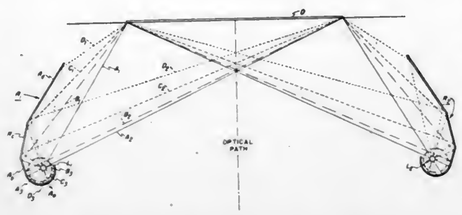
3,777,135
ILLUMINATION SYSTEM

James D. Rees, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 157,754, June 28, 1971, abandoned, which is a continuation of Ser. No. 813,201, April 3, 1969, abandoned. This application July 11, 1972, Ser. No. 270,750
Int. Cl. F21v *7/00*; **G03b** *27/54*
U.S. Cl. 240—41.35 R **13 Claims**

An illumination system having four lamps arranged orthogonally around a subject to be illuminated with each lamp positioned outside the corresponding adjacent edge of

the subject. A reflector system having a cylindrical surface and a plurality of flat reflectors are associated with each of



the lamps for directing light rays to the subject from the adjacent edge thereof to the edge opposite thereto.

3,777,136

UMBRELLA HAVING AN ELECTRIC LAMP

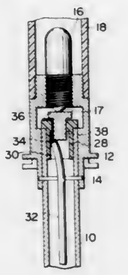
Shigekazu Okuda, Osaka-fu, Ohaki-fu, Japan

Filed June 23, 1972, Ser. No. 265,605

Claims priority, application Japan, July 7, 1971, 46/59318; Dec. 3, 1971, 46/113750

Int. Cl. F21r *33/00*

U.S. Cl. 240—6.42 **12 Claims**



An umbrella having a tubular stem, a handle member housing a power source attached to one end of the tubular stem, and an electric lamp mounted on the other end of the tubular stem, at the top of the umbrella. Water-proof seals are provided at each end of the hollow tubular stem by a solid terminal plug press-fitted into a synthetic resin sleeve which in turn is press-fitted into the tubular stem.

3,777,137

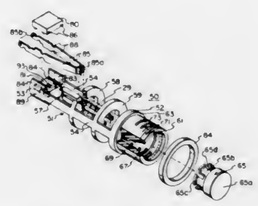
LAMP HOLDER ASSEMBLY

James J. Costanzo, River Grove, and Eugene R. Hrdlicka, Elmwood Park, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 29, 1972, Ser. No. 293,636

Int. Cl. F21v *21/00*

U.S. Cl. 240—52 R **1 Claim**



A lamp holder assembly includes a frame structure having an interior cavity within which to mount a lamp device including electric contact blades for positioning said lamp device within said cavity and providing electrical contact thereto, and further including a plurality of stepped motor surfaces of different diametrical dimension, each of said inner surfaces being slotted to matingly receive a correspondingly diametrically sized front end display cap. A plug member is removed from a base portion of the frame structure for inserting the pair of contact blades and thereafter the plug member is ultrasonically welded within the base portion to provide an integral one-piece structure for the frame structure. The frame structure is made of a dielectric material in order to obviate previously experienced electrical shorts to a conductive frame structure.

3,777,138

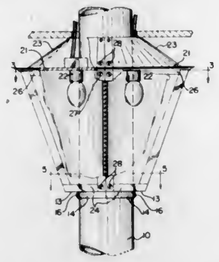
POST LANTERN FOR ATTACHMENT TO STRUCTURAL SUPPORT MEMBER

I. Harold Metzler, 3129 Garfield Ave., Highland, Ind.

Filed June 23, 1972, Ser. No. 265,578

Int. Cl. F21s *1/10*

U.S. Cl. 240—84 **5 Claims**



A post lantern for a structural support column fixed at one end to a base and at the other end to a support channel or the like. The lantern is formed with a housing including two symetrical sections. The sections each include complementary base sections provided with cut-outs which clampingly embrace the column. Each of the sections of the lantern includes upstanding corner posts, and connecting angles are used to secure the sections together and to clamp the lantern about the column. In house construction the lantern effectively disguises the appearance of an ordinary girder supporting post by converting it into an attractive decorative lamp.

3,777,139

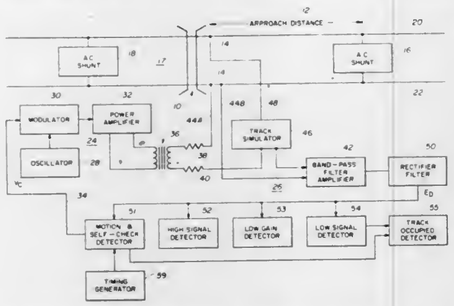
MOTION SENSOR SYSTEM

Richard V. Peel, 623 Greenhorn Dr., Diamond Bar, Calif.

Filed Dec. 3, 1970, Ser. No. 94,955

Int. Cl. B61l *1/06*

U.S. Cl. 246—125 **14 Claims**



A system for providing grade crossing protection by sensing the presence of trains exceeding a preselected velocity in an approach track section defined by shunts across the rails. Detector circuits provide fail-safe protection from defects in the associated track section such as a broken rail or low ballast impedance between rails. A time-sharing self-test subsystem simulates an approaching high speed train by applying a fraction of a second test signal to the system every few seconds to monitor the operation of the overall system; and a low gain detector checks the gain of the system to assure that the train's speed is accurately measured.

3,777,140

DEVICE FOR PRODUCING X-RAY PICTURES OF TEMPOROMANDIBULAR JOINT

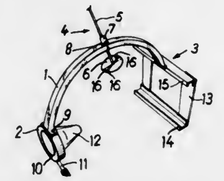
Hans Graf, Alte Landstrasse 98, 8803 Ruschlikon, Switzerland

Filed Aug. 11, 1971, Ser. No. 170,809

Claims priority, application Switzerland, Aug. 28, 1970, 1247/70

Int. Cl. G01n *23/04*

U.S. Cl. 250—490 **2 Claims**



An auxiliary device for producing dental X-ray pictures, comprising a bracket equipped with a film holder, and means for securing the bracket of the auxiliary device to the dental X-ray machine. The securing or attachment means is arranged at the bracket in a position opposite the film holder.

3,777,141

DEVICE FOR SECURING A FILM FOR DENTAL X-RAY TO A RIGHT-ANGLED FILM HOLDER AND AIMING ROD BY MEANS OF A RAY-PERMEABLE BITE BLOCK WITH FILM SUPPORT AND AN ANTAGONIST BITE PLATE

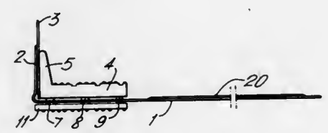
Svein Eggen, Weidemannsgate 6, 2600 Lillehammer, Norway

Filed July 10, 1972, Ser. No. 270,369

Claims priority, application Norway, Sept. 2, 1971, 3265/71

Int. Cl. G03b *17/26*

U.S. Cl. 250—521 **4 Claims**



A device for securing a film for dental X-ray in a right angle to a film holder and aiming rod.

3,777,142

HIGH RESOLUTION RADIOACTIVITY DISTRIBUTION DETECTION SYSTEM

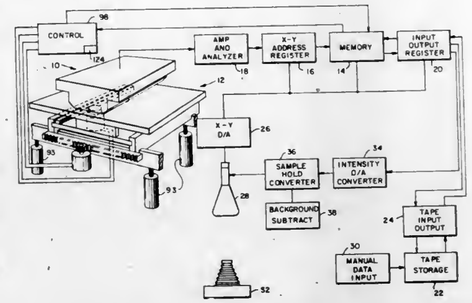
Raymond P. Grenier, Wilmington, Mass., and Earl B. Jacobson, Hoffman Estates, Ill., assignors to Baird-Atomic Inc., Bedford, Mass.

Filed July 8, 1971, Ser. No. 160,697

Int. Cl. G01t *1/20*

U.S. Cl. 250—327 **13 Claims**

Radiation emitted from a subject positioned on a programmable X,Y platform is detected by means of an array of sensing devices. The platform, which is in spaced relationship with the subject, is moved along its X and Y axes in incremental steps defining a programmed scanning pattern, each step being an integral multiple of the distance between adjacent sensing devices. The radioactive events, which are detected at each step, are temporarily held in a memory and then stored



on a recording medium. Upon completion of the programmed scanning sequence, the stored data which represents the radioactivity detected at each step is recalled from the recording medium and applied to a display via the memory for presentation as a combined pictorial representation of the detected radioactive events at each step.

3,777,143

WATER-BASE FLAW DETECTION METHOD

Dale D. Winans, 27115 Sunny Ridge Rd., Rolling Hills, Calif., and Amos G. Sherwin, 8330 Gainford St., Downey, Calif.

Filed Oct. 30, 1972, Ser. No. 302,284

Int. Cl. G01n *21/38*

U.S. Cl. 250—302 **6 Claims**

A method of detecting flaws in metallic and other insoluble surfaces which method utilizes a normally solid composition with coloring in a hot aqeuous solution. The hot aqueous solution is applied to the surface and upon drying solidifies. The surface coating is removed but the composition which has dried in surface openings and flaws is retained. The retained colored composition marks the location of surface discontinuities and, as it is a solidified composition, it is more resistant to over-removal, than the ordinary colored liquid composition now used, when the surface coating is being removed.

3,777,144

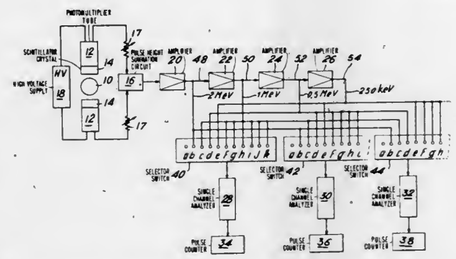
GAMMA SPECTROMETRY SYSTEM FOR SAMPLE ANALYSIS

Edward Rapkin, Short Hills, and Edward W. Thomas, Morris Plains, both of N.J., assignors to Intertechnique S.A., Plaisir, France

Filed Jan. 19, 1972, Ser. No. 218,969

Int. Cl. G01t *1/20, 7/00*

U.S. Cl. 250—366 **15 Claims**



A system for measuring the activities of gamma emitters of different energies in successive samples includes a transducer,

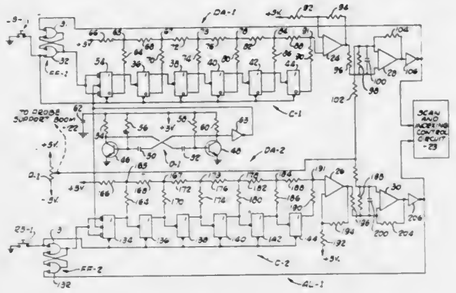
a plurality of linear amplifiers in cascade, and several single channel analyzers. Each single channel analyzer may be connected to the output of any one of the amplifiers by a switch which may also be used to select one of the several preset windows of the corresponding analyzer.

3,777,145

AUTOMATIC LIMIT SWITCH SYSTEM FOR A SCINTILLATION DEVICE AND METHOD OF OPERATION

Carl J. Brunnett, Mayfield Heights, and Basil N. Ioannou, Bedford, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed June 23, 1972, Ser. No. 265,624
Int. Cl. G01j *39/18*
U.S. Cl. 250—303 **14 Claims**



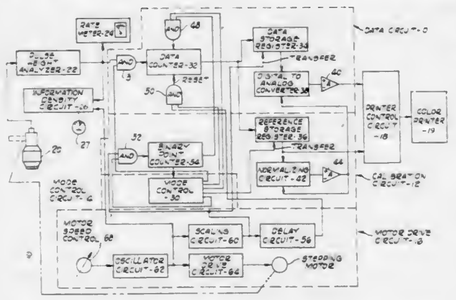
A scintillation scanner having an automatic limit switch system for setting the limits of travel of the radiation detection device which is carried by a scanning boom. The automatic limit switch system incorporates position responsive circuitry for developing a signal representative of the position of the boom, reference signal circuitry for developing a signal representative of a selected limit of travel of the boom, and comparator circuitry for comparing these signals in order to control the operation of a boom drive and indexing mechanism.

3,777,146

INFORMATION DENSITY SYSTEM FOR SCINTILLATION DEVICE AND METHOD OF OPERATION

Carl J. Brunnett, Mayfield Heights, and Basil N. Ioannou, Bedford, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed June 23, 1972, Ser. No. 265,481
Int. Cl. G01t *39/18*
U.S. Cl. 250—369 **15 Claims**



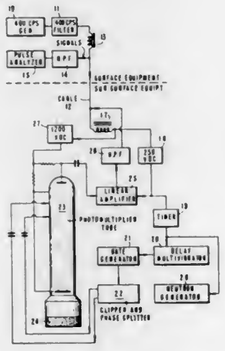
A scintillation scanner having an information density indicator system for counting the number of electrical pulses representative of radiation activity which occur during a predetermined increment of movement of a detection probe and dividing the number of counted pulses by a selected line spacing distance in order to provide direct indication of information density. The information density indicator system utilizes counting circuitry for counting the number of pulses which occur during a predetermined interval of time and scaling circuitry for scaling the number of pulses by a factor which is dependent upon a selected distance of line spacing. The system also incorporates storage circuitry and digital-to-analog conversion circuitry for storing and processing the signals for application to an indicator device.

3,777,147

GATED SPECTRAL WELL LOGGING RADIATION DETECTION SYSTEM AND METHOD

Wilmer A. Hoyer; Robert C. Rumble; Donald H. Britton, all of Houston, Tex., and John D. Ball, deceased, late of Lubbock, Tex. (by Verna D. Ball, executrix), assignors to Esso Production Research Company, Houston, Tex.

Division of Ser. No. 587,943, Oct. 14, 1966, Pat. No. 3,582,655. This application Feb. 5, 1970, Ser. No. 13,222
Int. Cl. G01v *5/00*
U.S. Cl. 250—264 **6 Claims**



A gamma ray well logging system comprising a gated gamma radiation detector system. The components of the gated detector system comprise a surface a.c. power source; first subsurface means adapted to change said a.c. power to d.c., which means includes silicon diode full wave rectifiers; a radiation detector adapted to detect and convert gamma rays to electrical signals; an amplifier powered by said d.c. adapted to amplify said signals, which means includes feedback circuits to reduce distortion of the electrical signals and produce a desired amplifier output impedance; means including a timer powered by said d.c. adapted to produce a positive pulse; means to shape said positive pulse and produce two pulses having amplitudes which produce minimum distortion and high on-off ratio of the radiation detector; and second subsurface means adapted to change said a.c. power source to other d.c. adapted to operate said detector.

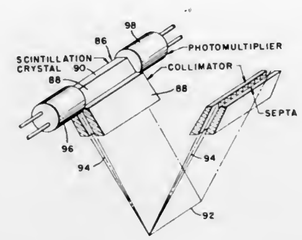
3,777,148

COLLIMATOR

Floro D. Miraldi, Cleveland Heights, Ohio, assignor to Case Western Reserve University, Cleveland, Ohio

Division of Ser. No. 48,166, June 22, 1970, Pat. No. 3,688,113. This application June 25, 1971, Ser. No. 156,926
Int. Cl. G21f *5/02*
U.S. Cl. 250—505 **2 Claims**

A collimator having a front and rear and a longitudinal axis passing from the front to the rear. Spaced septa between the front and the rear defining openings and including a plurality of longitudinal sides parallel to the longitudinal axis and converging downwardly at different angles to form channels which converge to a single focal line. The septa further include spaced parallel sides transverse to the longitudinal axis and intersecting with the longitudinal sides. The parallel sides form transverse channels which are non-focusing along the focal line.

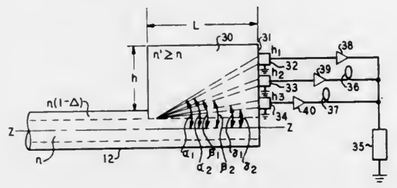


3,777,149

SIGNAL DETECTION AND DELAY EQUALIZATION IN OPTICAL FIBER TRANSMISSION SYSTEMS

Enrique Alfredo Jose Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 17, 1972, Ser. No. 272,371
Int. Cl. G02b *5/14*; **H01p** *3/12*
U.S. Cl. 250—209 **11 Claims**



A stripper at the end of an optical fiber selectively couples propagating signal components out of the fiber at characteristic angles. A linear array of photodetectors selectively responds to each of the coupled signal components or to groups of such components. When used simply as a mode or as a frequency separator, the detected signals are separately coupled to different output circuits. In a detector-equalizer embodiment, the signals, suitably delayed relative to each other, are coupled to a common output circuit.

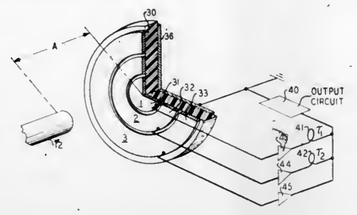
3,777,150

MODE DETECTION AND DELAY EQUALIZATION IN MULTIMODE OPTICAL FIBER TRANSMISSION SYSTEMS

Stewart Edward Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 17, 1972, Ser. No. 272,370
Int. Cl. G02b *5/14*; **H01p** *3/12*
U.S. Cl. 250—209 **10 Claims**

This application describes a detector-equalizer circuit for equalizing the dispersion produced in a multimode optical fiber. The circuit comprises an array of photodetectors whose physical configurations conform to the radiation pattern at the end of the optical fiber. The photodetectors selectively respond to each of the modes or to groups of modes propagating along the fiber. The several output signals thus produced are delayed an appropriate amount relative to each other, and then combined in time coincidence in a common output circuit.

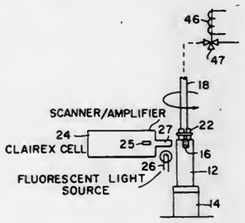


3,777,151

METHOD AND APPARATUS FOR SCANNING SURFACES

William L. Ortlieb, Uptown, Hoboken, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 685,543, Nov. 24, 1967, abandoned. This application Jan. 14, 1971, Ser. No. 106,586. The portion of the term of this patent subsequent to Oct. 13, 1980, has been disclaimed.
Int. Cl. G01n *21/30*
U.S. Cl. 250—201 **4 Claims**



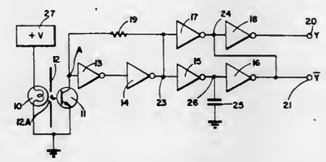
A method and apparatus for photo-electrically scanning surfaces having a registration mark thereon capable of reflecting light signals. Means are provided for mounting the object having the surface to be scanned, and suitable drive means are provided for controlling movement of the surface. The area of the surface to be scanned containing the registration mark is bathed with light emanating from a light source such as a fluorescent lamp excited by a filtered direct current supply. A scanner amplifier picks up the reflected light from the registration mark and uses the resulting signal to control the motion of the surface being scanned.

3,777,152

PHOTOTRANSISTOR BUFFER CIRCUIT

Adrian K. Dorsman, Bellflower, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed May 22, 1972, Ser. No. 255,507
Int. Cl. G01n *21/30*; **H03b** *1/00*; **H03k** *5/00*
U.S. Cl. 250—206 **10 Claims**

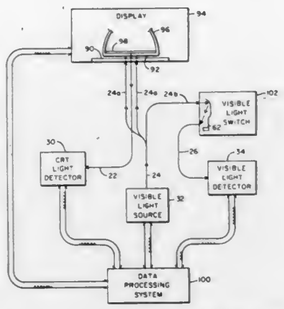


A phototransistor output amplifier circuit which provides noise rejection through positive feedback and generates complementary output pulses.

3,777,153
FIBER OPTICS LIGHT PEN

Brent F. Anderson; Charles W. Bytheway, both of Salt Lake City, and Don L. Olson, Bountiful, all of Utah, assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,205
Int. Cl. G02b 5/14
U.S. Cl. 250—227 **13 Claims**

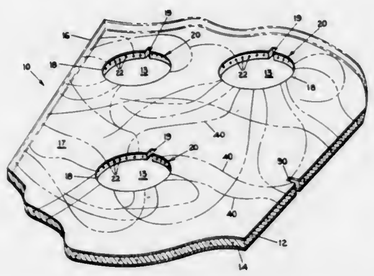


A light pen for operator interface with the cathode ray tube display of a data processing system is disclosed. The light pen incorporates two fiber optics bundles; a first circle of fibers for sensing the CRT light that is emitted from the display in the target area, and a second ring of fibers, concentric about the first circle of fibers, for projecting a visible ring of light on the display which ring of light can encircle the target area. The projected ring of light provides for ease of identification of the desired data by accurately aiming the light pen at the target area. Additionally provided within the light pen is a light switch for initiating an interrupt function signal that then permits the operator to modify the data within the target area.

3,777,154
OPTICAL DATA PROCESSING SYSTEM

Richard W. Lindsey, 501 Valencia Rd., Venice, Fla.

Filed Feb. 7, 1972, Ser. No. 224,164
Int. Cl. G02t 1/28
U.S. Cl. 250—227 **14 Claims**

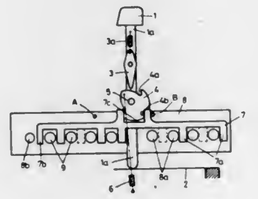


A circuit plane or "board" includes a plurality of optical-micro-circuit device sockets with optical interface windows around the periphery of each socket. Each socket is adapted to receive a wafer or like component which comprises an electrical micro-circuit having optical input and output devices at the periphery of which register with the interface windows of the socket. The windows are optically interconnected with optical interface windows of other sockets or with optical terminals along the edge of the "board" by means of optical fibers embedded in a potting material typically sandwiched between two thermally and electrically conductive plates. Operating power for the circuits is applied to the conductive plates to which the micro-circuits are electrically coupled. A plurality of circuit "boards" so formed can be stacked on one another and optically coupled by means of light transmitting end connectors including optical fibers therein to form a complete data processing system.

3,777,155
DATA INPUT SYSTEM FOR AN ELECTRICAL MACHINE

Bernhard Cramer, Pforzheim/Sonnenberg, and Wolfgang Andrich, Grunbach, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed July 10, 1972, Ser. No. 270,221
Int. Cl. G01d 5/34
U.S. Cl. 250—220 **3 Claims**

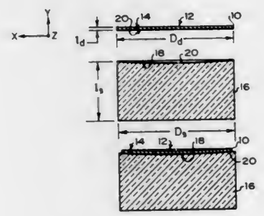


An input system for an electrical machine including a mechanism for connection between each key and a shutter therefor in the keyboard of the console of the machine. The shutter interrupts light from one or more sources to one or more photocells to provide a coded input for the machine. The shutter of each key is moved by the mechanism by a snap action to avoid the need for interlocked keys. Simultaneous inputs from two keys are avoided because the shutter is moved by the mechanism at a substantially greater rate than it is possible to actuate a key manually.

3,777,156
BENT DIFFRACTION CRYSTAL WITH GEOMETRICAL ABERRATION COMPENSATION

Donald L. Hammond, Los Altos Hills, and Hugo R. Fellner, Portola Valley, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 14, 1972, Ser. No. 225,977
Int. Cl. G01m 23/20
U.S. Cl. 250—227 **8 Claims**



A spherically bent diffraction crystal employed in an X-ray monochromator is provided with a nonuniform strain distribution to compensate for a geometrical aberration produced by nonconformity of the surface of the diffraction crystal to the Rowland circle of the monochromator.

3,777,157
WATER WASHABLE DYE PENETRANT COMPOSITION AND METHOD OF APPLICATION

Orlando G. Molina, Westminster, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

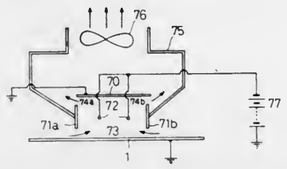
Filed Jan. 24, 1973, Ser. No. 326,359
Int. Cl. G01n 21/16
U.S. Cl. 250—302 **26 Claims**

A water washable dye penetrant composition for use in non-destructive testing of objects to locate voids and defects therein, containing an organic dye, preferably a fluorescent dye, a solvent for said dye, particularly an N-alkyl-2-pyrrolidone, e.g. N-methyl-2-pyrrolidone, and glycol monobutyl ether for thinning the dye penetrant solution substantially without changing any of its original functional characteristics, and particularly without affecting the sensitivity of the penetrant. In the method of application of the dye penetrant composition, such composition is applied to the surface of an object containing cracks and flaws, water is applied to the surface of the object, preferentially removing the glycol monobutyl ether vehicle or carrier, and momentarily leaving the remaining dye penetrant uniformly distributed on the surface, which is finally washed off the part, both the removal of the glycol ether component and the remaining dye penetrant occurring in the same washing operation. The part is then inspected under appropriate lighting conditions such as fluorescent or black light, to obtain colored traces from the dye penetrant remaining in the cracks and flaws.

3,777,158
CORONA DISCHARGE DEVICE FOR ELECTROPHOTOGRAPHY

Nin-ichi Kamogawa; Haruo Fujii, and Tohru Uchida, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1972, Ser. No. 217,599
Claims priority, application Japan, Jan. 16, 1971, 46/758
Int. Cl. G03g 15/02
U.S. Cl. 250—324 **2 Claims**



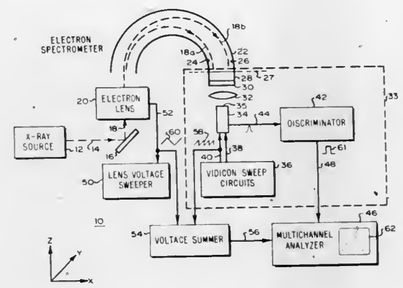
Corona discharge devices for electrophotography, comprising means to control the flow of the ion wind (which is understood to be an air stream induced by ion flow) so as to exhaust the same through an opening other than that where the photosensitive paper is charged, and to prevent blowing of the ion wind against the paper. Alternatively means are provided for preventing the ion wind from flowing out of the charging opening.

3,777,159
PARALLEL ENTRY DETECTOR SYSTEM

Donald L. Hammond, Los Altos Hills, and Charles E. Tyler, Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo-Alto, Calif.

Continuation of Ser. No. 119,802, March 1, 1971, abandoned. This application Nov. 9, 1972, Ser. No. 306,224
Int. Cl. G01t 1/36
U.S. Cl. 250—305 **3 Claims**

An imaging electron multiplier, a phosphor screen, and a vidicon camera tube are employed as a multichannel electron detector array at the output of an electron spectrometer. A sweep generator connected to an electron lens at the input of the spectrometer retards the incoming electrons in a controlled manner so that the electron energy spectrum is swept across the face of the imaging electron multiplier and, thus, across the face of the vidicon camera tube. The weighted sum of the sweep signal to the electron lens and the vertical scan signal to the vidicon camera tube is taken to provide a signal that corresponds to the original, unswept value of the energy of the electrons prior to their entering the electron lens. This signal is fed to the input of a multichannel analyzer. A pulse

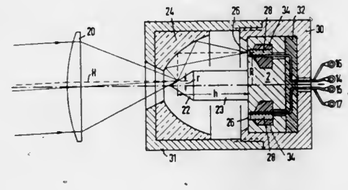


generated by the vidicon camera tube in response to each electron exiting the electron spectrometer causes the multichannel analyzer to sample the signal at its input. Thus, the original energy of each electron is measured and entered into the multichannel analyzer memory, regardless of where it struck the imaging electron multiplier. This eliminates distortion errors and scatter in the electron energy spectra caused by the nonrepeatability of the efficiency and noise of different detectors.

3,777,160
OPTICAL RADIATION DETECTING APPARATUS

Paul Bernt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 9, 1972, Ser. No. 224,717
Claims priority, application Germany, Mar. 22, 1971, P 21 13 712.2
Int. Cl. G01j 1/02
U.S. Cl. 250—338 **14 Claims**

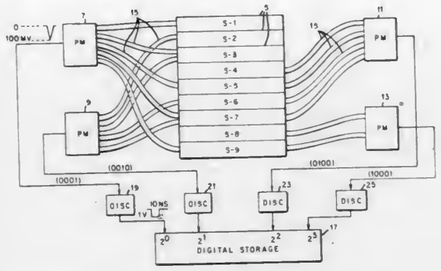


The invention relates to an infrared position detector for determining two-dimensional position changes of the radiator. Several ring-sector formed radiation detectors are arranged in the air gap of an annular magnet and an image of the radiator is produced on one of the respective detectors by means of a reflector serving as discriminator, as well as an elliptical mirror optic. Semiconductor detectors are used as radiation detectors. The position detector is suitable for long-wave radiation and has a very small time constant.

3,777,161
HODOSCOPE READOUT SYSTEM

Lap Yen Lee, Houston, Tex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 8, 1972, Ser. No. 304,863
Int. Cl. G01j 39/18
U.S. Cl. 250—361 11 Claims

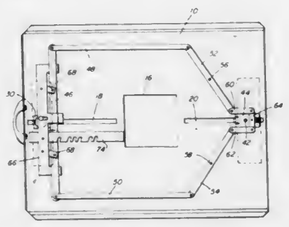


A readout system has been provided for reading out a radiation multidetector device with a reduced number of signal sensors. A radiation hodoscope, such as an array of scintillation counters, multiwire proportional counter array, or a set of multidetectors which do not receive signals simultaneously, is divided into equal numbered groups. A first group of signal terminals is connected to the equal numbered groups of detectors so that a signal from any one of the detectors of a group will be fed to an individual one of the first group of terminals. A second group of signal terminals is connected to the detector groups so that a signal from a particular numbered detector of each of the detector groups is connected to individual ones of the second group of terminals. Both groups of signal terminals are, in turn, coupled to signal sensors so that when a signal is simultaneously observed in one of the first group of terminals and one of the second group of terminals the specific detector detecting a radiation event is determined. The sensors are arranged in such a manner that a binary code is developed from their outputs which can be stored in a digital storage means according to the location of the event in the multidetector device.

3,777,162
CASSETTE LOCKING MECHANISM

Leonard F. Peyser, Briarcliff Manor, N.Y., assignor to The Machlett Laboratories, Incorporated, Springfield, Conn.

Filed May 18, 1972, Ser. No. 254,581
Int. Cl. G01b 41/16
U.S. Cl. 250—468 5 Claims

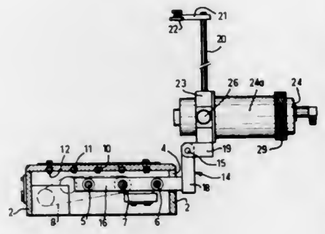


A positive functioning lock for retaining a film-bearing cassette in the Bucky tray utilized in X-ray systems, which lock efficiently clamps opposite sides of a cassette of any of the standardized sizes and locks the cassette firmly in position on the tray by means of a pin which engages a specific slot in a locking bar, which slot corresponds to the selected cassette size being used.

3,777,163
APPARATUS FOR SCANNING CHROMATOGRAMS AND THE LIKE

Guy Aubin, Saint Mande; Andre Abrioux, Drancy, and Jules Leroy, Vincennes, all of France, assignors to L'Oreal, Paris, France

Filed Jan. 21, 1972, Ser. No. 219,638
Claims priority, application France, Jan. 29, 1971, 7102994; Nov. 30, 1971, 7142935
Int. Cl. G01t 7/02
U.S. Cl. 250—491 24 Claims

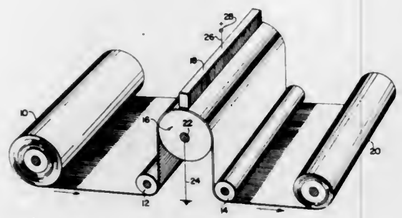


Apparatus for scanning chromatograms and the like comprise stationary magnetized table, magnetized means for holding a sheet on the table, and means responsive to a property of said chromatogram which varies from point to point thereon, said means, being mounted to move parallel to the top of the table.

3,777,164
ELECTRODE FOR SHEET MATERIAL SURFACE TREATMENT APPARATUS

Martin S. Osman, Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 29, 1972, Ser. No. 293,485
Int. Cl. B01k 1/00
U.S. Cl. 250—531 4 Claims

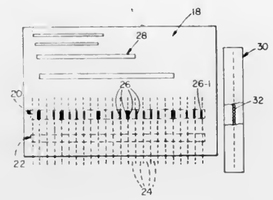


An improved electrode for use in apparatus for the treatment of the surface of a thin sheet of material includes an electrically conductive cylindrical core, a thin layer of dielectric material covering the cylindrical surface of the core, and an outer layer or sheath of electrically conductive material insulated from the core and completely surrounding the dielectric material. The electrode cooperates with one or more stationary electrodes in corona treatment apparatus to reduce the possibility of electrode arcing and to establish an electric field in the electrode gap with greater efficiency than the prior art.

3,777,165
SENSING APPARATUS

Jack A. Bryant, Boston, and Elihu Craig Thomson, Wellesley, both of Mass., assignors to Electronics Corporation of America, Cambridge, Mass.

Filed Mar. 31, 1972, Ser. No. 240,056
Int. Cl. G01n 21/30
U.S. Cl. 250—219 D 13 Claims

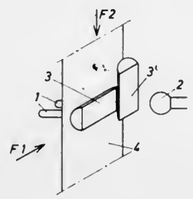


Scanning apparatus includes a linear array of sensors so that there is effectively a series of independent sensor elements disposed in aligned relation generally perpendicular to a scanning axis. Each sensor is arranged to provide a data output in response to a sensed code mark and an output channel is coupled to each sensor. Logic responsive to detection of a first code mark by a sensor of the array enables at least one code sensitive group of output channels and disables other output channels so that only a limited group of channels are rendered responsive to subsequently detected code marks.

3,777,166
CONTROL DEVICE FOR A MARK ON A CONTINUOUSLY MOVING BAND

Raymond Poupin, Fleury-les-Aubrais, France, assignor to Service D'Exploitation Industrielle Des Tabacs Et Des Allumettes, Paris, France

Continuation of Ser. No. 5,724, Jan. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 571,871, Aug. 11, 1966, abandoned. This application Sept. 15, 1972, Ser. No. 289,331
Int. Cl. G01n 21/30
U.S. Cl. 250—219 DR 1 Claim

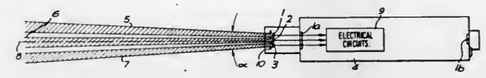


An arrangement for monitoring the presence, quality and location of markings on a moving band. Two photo-sensitive detectors are directed onto the moving band and provide a signal when a mark on the band passes beneath one of the detectors. The signal from the photosensitive detectors is processed for amplitude and frequency of occurrence. The amplitude processing determines whether the mark is of the desired quality and printed intensity, whereas proper location and spacing of the marking is determined from the pulse repetition frequency derived from the photosensitive detectors. A comparator monitors the pulse repetition frequency by comparing the pulse signal from the photosensitive detector with the pulse signal realized from a reference source.

3,777,167
DETECTING SYSTEMS

Richard Shepherd, Middlesborough, England, assignor to Decca Limited, London, England

Filed Nov. 29, 1971, Ser. No. 202,992
Claims priority, application Great Britain, Nov. 30, 1970, 56,678/70
Int. Cl. H01j 39/12
U.S. Cl. 250—219 WD 6 Claims

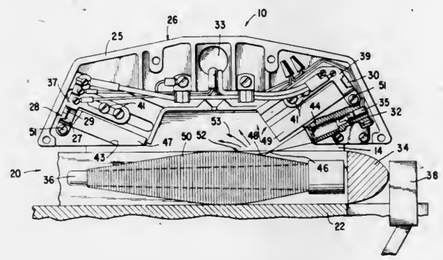


A detecting system for detecting the ends of hot steel billets. At least two and preferably three photoelectric detectors have adjacent fields of view. An electric circuit is arranged to signal when the output of one detector, the middle of the three, exceeds half the output of either of the other detectors. Other logical functions are provided to sense the beginning and end of a billet reliably.

3,777,168
PHOTOELECTRIC DETECTOR FOR BOBBIN OF A WEAVING LOOM

Eugene A. Sansone, Belle Meade, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,338
Int. Cl. D03d 45/12
U.S. Cl. 250—219 S 5 Claims

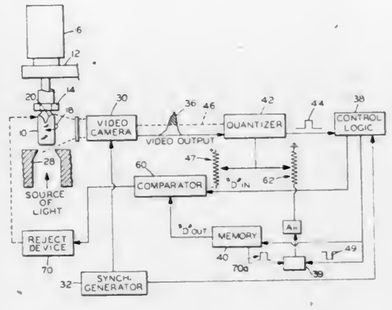


An improved photoelectric weft detector for fly-shuttle weaving looms utilizing photoelectric sensing means includes a first photocell positioned to sense specular and diffuse reflected light from a specified surface area of a bobbin, a second photocell positioned at approximately the same distance from the specified area of the bobbin to receive only diffuse reflected light and a third photocell mounted in proximity to the first photocell, which is adapted to receive both specular and diffuse reflected light and functions to inhibit the operation of the detector until the fly-shuttle is boxed. The photocells provide a voltage proportional to their resistance ratio for activiating a mechanism which replaces a bobbin upon exhaustion of the weft material. All of the photocells are provided with means for adjusting their distance to the specified area of the bobbin to increase their sensitivity to the light reflected therefrom.

3,777,169
METHOD AND MEANS FOR DETECTING FOREIGN PARTICLES IN LIQUID FILLED CONTAINERS

William H. Walter, East Granby, Conn., and Robert F. Mesnik, Yorktown Heights, N.Y., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Jan. 26, 1972, Ser. No. 221,008
Int. Cl. G06m 7/00; H04n 7/00
U.S. Cl. 250—218 10 Claims

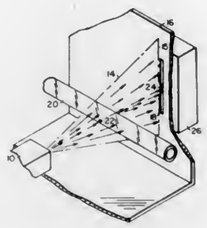


A liquid filled transparent container is spun momentarily and successive video frames are then taken by a camera while the liquid swirls in the stationary container. One or more of these video frames can be stored in memory in digitized form. Two or more digitized video frames are then compared electronically, by "subtracting" one from the other, to generate a reject signal when the "difference" exceeds some preset number of digitized pulses. The threshold voltage for the video frame being generated can be altered by reference to a stored video frame in order to increase the sensitivity of that frame at discrete points corresponding to voltages exceeding the threshold voltage in the stored frame and desensitized at all other points to reduce the liklihood of spurious signals.

3,777,171
METHOD AND APPARATUS FOR DETECTING FLAWS IN CONTINUOUS LENGTH TUBULAR GLASS

Arthur J. Hollenbeck, Montclair, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 26, 1971, Ser. No. 166,097
Int. Cl. G01n 21/32
U.S. Cl. 250—219 S 4 Claims

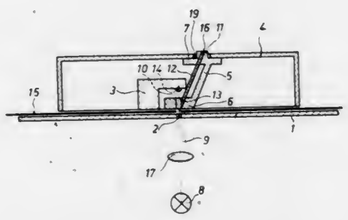


A method and apparatus for the detection of flaws caused by foreign matter and non-homogeneous bits of glass in the wall of continuous length tubular glass which comprises; directing a pair of narrow band high intensity laser beams, spaced 90° from each other about the axis of the glass tubing, through the tubing to impinge upon planar surfaces along a line immediately adjacent elongated slots in the planar surfaces. The passage of flow containing glass through the laser beams cause one or both of the beams to be deformed and fall on its adjacent slot to thereby activate a photocell positioned behind the slot and provide indicia of the presence and location of the flaw.

3,777,170
APPARATUS FOR PHOTOELECTRIC MONITORING

Peter Hoffmann, Frankfurt-Sindlingen, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed Oct. 21, 1971, Ser. No. 191,547
Claims priority, application Germany, Oct. 21, 1970, P 20 51 667.0
Int. Cl. G08c 9/06
U.S. Cl. 250—219 DC 13 Claims

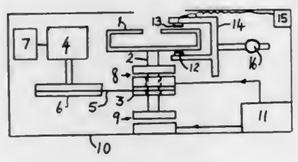


Apparatus for photoelectric scanning of perforated record members. The apparatus includes a light sensitive element and a light source. The light source projects a beam of light along a beam path toward the light sensitive element. A light deflecting member is provided for deflecting a portion of the beam of light from the beam path.

3,777,172
METHOD AND APPARATUS FOR MEASURING THE CLUMPING OF PLATELETS IN WHOLE BLOOD

Noel Clarke, Meadow Ct., Stillorgan Park, Blackrock, Ireland

Filed Oct. 29, 1971, Ser. No. 193,965
Claims priority, application Ireland, Oct. 29, 1970, 1382
Int. Cl. G01n 21/26
U.S. Cl. 250—575 21 Claims

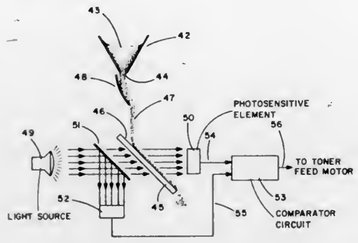


A method of measuring clumping of platelets in whole blood uses a centrifuge having at least one transparent treatment chamber, radiation sensing means for sensing light transmission through the chamber and agitation means giving a reproduceable amount, and number of cycles of, agitation to the contents of the or one chamber, a comparison being made between the measurement on an agitated and centrifuged test sample and the measurement on a centrifuged reference sample.

3,777,173
XEROGRAPHIC TONER CONCENTRATION MEASURING APPARATUS AND METHOD

James Edward Landrith, Wharton, N.J., assignor to Van Dyke Research, Whippany, N.J.

Filed Feb. 22, 1972, Ser. No. 227,978
Int. Cl. B05b 5/02
U.S. Cl. 250—575 17 Claims

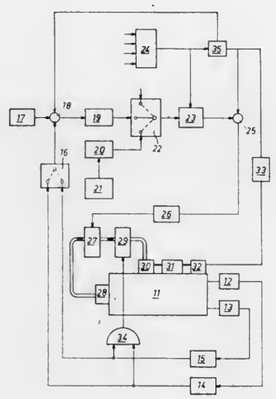


An arrangement for measuring the concentration of toner powder in a xerographic developer mixture by causing a sample of the developer to impinge upon a transparent plate. By providing the developer sample in the form of a turbulent stream, inclining the plate at the proper angle, and arranging the geometry of the measuring apparatus so that the stream impinges upon the transparent plate with the proper kinetic energy, a layer of toner powder is formed on the surface of a portion of the plate, the thickness of the toner layer increasing and decreasing with corresponding changes in the concentration of toner in the developer mixture. A photoelectric system is employed to monitor the light transmission of the toner-coated plate to provide a measure of toner concentration.

3,777,174
ELECTRONIC SPEED REGULATOR FOR INTERNAL COMBUSTION ENGINES

Franz Butscher, Eriskirch, and Werner Bader, Tettnang, both of Germany, assignors to Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany

Filed Feb. 23, 1972, Ser. No. 228,685
Claims priority, application Germany, Mar. 2, 1971, P 21 09 693.5
Int. Cl. H02p 9/02
U.S. Cl. 290—40 17 Claims

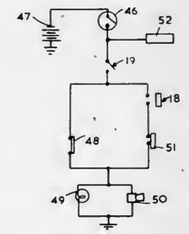


An electronic rotational speed control device for internal combustion engines of large power output with a desired-value adjustment for the rotational speed and filling of the internal combustion engine, a desired-actual-value comparison of the rotational speed, a control stage, an amplifier, and adjusting member with a servo-valve for the filling control which is provided with a motion pickup and a feedback; a pure rotational speed control stage with P-I-D behavior or a filling-rotational speed control stage can be selectively engaged while between the control stage and amplifier a filling-limit signal intended to limit the engine filling is compared with the filling-signal produced by the control stage whereby the respective smaller signal is transmitted to the amplifier; two measuring systems are provided for the rotational speed measurements which are utilized selectively for the supply of the rotational-speed existing-value and which can be connected by way of an OR-circuit so as to act, in case of excess rotational speed, on a stoppage mechanism of the internal combustion engine.

3,777,175
SAFETY ARRANGEMENTS FOR ROAD VEHICLES

Keith Lewis, and Robert Leonard Gleeson, both of Burnley, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 11, 1972, Ser. No. 242,955
Int. Cl. H02g 3/00
U.S. Cl. 307—10 SB 7 Claims

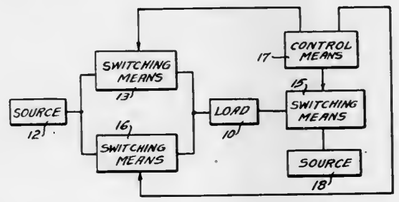


A safety arrangement for a road vehicle includes a means for detecting the presence of a passenger in a road vehicle comprising a flexible container within a passenger seat in the vehicle, and a fluid pressure operated electrical switch actuable by displacement of fluid from the container. There may also be provided a switch responsive to the vehicle gear selector mechanism, together with a warning device and switches associated with the driver's and passenger's safety harness, the arrangement being such that the warning device is actuated if a gear other than neutral is selected and harness for occupants of the vehicle is not secured.

3,777,176
ACTIVE CROWBAR FOR A SWITCHING MAGNET

Walter F. Praeg, Palos Park, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 5, 1972, Ser. No. 269,004
Int. Cl. H03k 3/00
U.S. Cl. 307—108 8 Claims



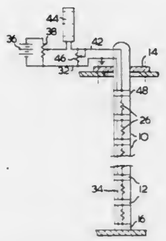
A first electrical source is connected to an electro-magnet by silicon-controlled rectifiers (SCR's) to produce a rapid rise

in current in the load. A second electrical source is then connected by SCR's to the load and the first is disconnected to produce a constant current in the load. A connection is then established to discharge the stored energy from the electromagnet, producing a rapid drop in current, and the second source is disconnected. The stored energy may be returned to the first electrical source.

3,777,177
STEP LEVEL PROBE

Alphonse A. Norkum, Box 86, Porcupine, Ontario, Canada; Joseph D. Corrigan, c/o Falconbridge Dominicana Corporation, Bonao, Dominican Republic, and Keith Davies, 308 Toke St., Timmins, Ontario, Canada

Filed Aug. 21, 1972, Ser. No. 282,008
Claims priority, application Canada, Oct. 6, 1971, 124560
Int. Cl. H01h *35/18*
U.S. Cl. 307—118 **14 Claims**

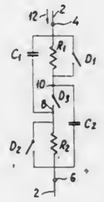


An elongated probe for measuring the depth of conductive liquids in a tank is built up of alternating hollow contact units and insulator units attached together. Preferably, for thick slurries the contact unit comprises a shrouded disc on an insulated arm so as to give the effect of conductive island surfaces spaced along the length of the probe, but away from its surface. The base of the hollow probe is preferably closed with a metal plug which can rest on the bottom of the tank. The probe construction is such that circuitry can be developed which will enable high and low level alarms to incorporated anti-splashing protection; a circuit to control liquid level by operating an inlet valve is also shown.

3,777,178
INTERRUPTER DEVICE FOR HIGH VOLTAGE DIRECT CURRENT

Jean Louis Gratzmuller, 66 Boulevard Maurice Barres, Neuilly, France

Filed Oct. 2, 1972, Ser. No. 294,293
Claims priority, application France, Sept. 30, 1971, 7135198
Int. Cl. H01h *9/42*
U.S. Cl. 307—136 **4 Claims**

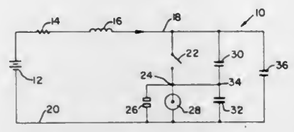


The overvoltages, occurring on the opening of circuit-breakers, are limited by successively inserting a series of resistances into the line to be broken, the residual current, at the time of the final break, being transferred to capacitors. Each of the preliminary circuit-breaker (D_1 or D_2) is associated with a resistance (R_1 or R_2) to be inserted and with a capacitor (C_1 or C_2), each of said capacitors being connected at two points of the circuit which are situated one at each side of the associated preliminary circuit-breaker (D_1 or D_2) and the final circuit-breaker (D_3).

3,777,179
VOLTAGE-DIVIDING DC CIRCUIT BREAKER AND METHOD

Michael A. Lutz, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 16, 1972, Ser. No. 298,042
Int. Cl. H01h *33/00*
U.S. Cl. 307—136 **8 Claims**

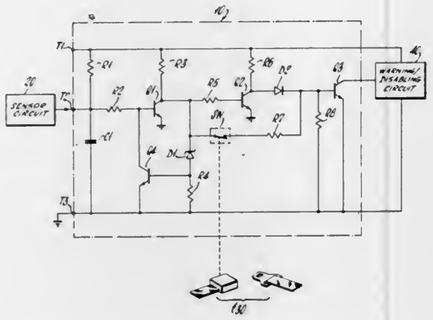


The voltage dividing DC circuit breaker comprises serially connected high voltage and low voltage switches to carry load current. Serial capacitors are connected in parallel thereto and a crossed field switching device is connected in parallel to the low voltage switch. When the low voltage and high voltage switches are opened, current is forced through the crossed field switching device. When the crossed field switching device is turned off, the arcing high voltage switch is forced below its chopping current. The open circuit voltage is divided across the capacitors.

3,777,180
SIGNAL-SEQUENCE CONTROL CIRCUIT

Paul A. Carlson, New Providence, N.J., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Apr. 27, 1972, Ser. No. 248,113
Int. Cl. H03k *19/08, 19/32*; **B60q** *9/00*
U.S. Cl. 307—216 **10 Claims**

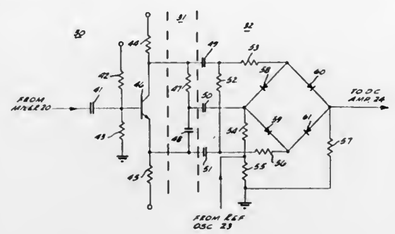


A circuit for receiving two signals indicating occupancy of an automobile seat and fastening of the associated seat belt, and operative to generate an output signal in response to either (1) the presence of only one signal or the other, or (2) the occurrence of both signals in an improper sequence.

3,777,181
PHASE DISCATECTOR

Charles F. Bancroft, Sherman Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 111,408, Feb. 1, 1971, abandoned. This application Apr. 27, 1972, Ser. No. 248,095
Int. Cl. H03k *5/20*
U.S. Cl. 307—232 **4 Claims**

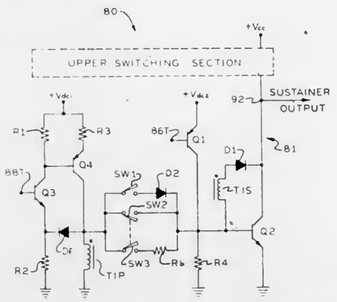


An improved circuit having both frequency discriminator and phase detector functions is disclosed. The circuit functions as a frequency discriminator for signals relatively far removed from a predetermined acquisition frequency range, thereby providing a coarse lock-on for acquisition. After acquisition the circuit functions as a phase detector for phase lock purposes. Thus, the discatector or dual function discriminator-phase detector eliminates the requirement for sweeping or presetting a voltage controlled oscillator when used in a phase lock loop wherein the open loop frequency drifts are larger than the acquisition range of the loop or where multiple channel operation is required.

3,777,182
TRANSISTOR CONTROL APPARATUS

Edwin F. Peters, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 8, 1972, Ser. No. 313,348
Int. Cl. H03k *5/01*
U.S. Cl. 307—268 **26 Claims**

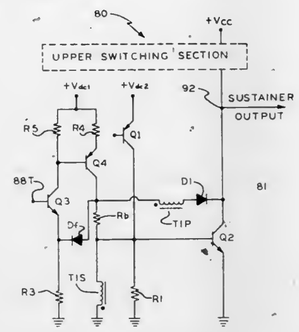


There is disclosed a system utilizing transistor control apparatus for supplying operating potentials which is particularly useful with load devices wherein at least two transversely oriented conductors are dielectrically isolated from a gaseous discharge medium between the conductors. The invention is illustrated in wave form generators, each having at least one output transistor. Novel transformer-diode clamping means are provided to reverse bias the collector-base junctions of the output transistors, to bring deeply saturated transistors out of saturation and enable them to turn off much more rapidly than was possible heretofore. The system shown thus produces a more effective wave form having steeper leading and trailing edges, the wave form in the embodiment shown being used as a sustaining voltage for cells in a gas discharge display/memory panel. The basic concept of a transformer-diode clamping circuit is described and disclosed herein.

3,777,183
TRANSISTOR CONTROL APPARATUS

Erwin F. Peters, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 8, 1972, Ser. No. 313,347
Int. Cl. H03k *5/01*
U.S. Cl. 307—268 **10 Claims**

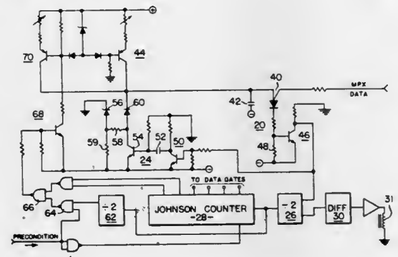


There is disclosed a system utilizing transistor control apparatus for supplying operating potentials which is particularly useful with load device wherein at least two transversely oriented conductors are dielectrically isolated from a gaseous discharge medium between the conductors. The invention is illustrated in wave form generators, each having at least one output transistor. Novel transformer-diode clamping means are provided which may automatically sense saturation of an output transistor and reverse bias the collector-base junctions of the output transistors, to bring deeply saturated transistors out of saturation and enable them to turn off much more rapidly than was possible heretofore, and to sense the driving current for the primary winding of the transformer to keep the output transistor biased near saturation. The system shown thus produces a more effective wave form having steeper leading and trailing edges, the wave form in the embodiment shown being used as a sustaining voltage for cells in a gas discharge display/memory panel.

3,777,184
STABILIZED PULSE GENERATOR WITH VARIABLE OUTPUT

James A. Smith, Rochester, N.Y., assignor to Health-Tronics, Inc., Victor, N.Y.

Int. Cl. H03k *5/04, 3/35*
U.S. Cl. 307—268 **4 Claims**



Each data channel includes signals defining two successive, approximately equal intervals thereby enabling reliable, error-

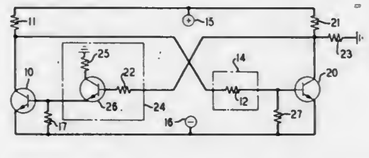
free signal transmission despite serious signal degradation due to limitations of the signalling medium. Typically, transmission is over ordinary telephone lines, which degrade sharply defined pulse signals from the transmitter almost to simple sine wave signals at the receiver. Modulation consists of variations in the sum of the two intervals, and the effects of distortion and degradation caused by the line are minimized. Frame synchronization is achieved by transmitting signals defining two intervals shorter than the shortest interval permitted in the data channel. The claims of this application are directed to the pulse generator of the transmitter, which includes a capacitor connected to be discharged through a programmable unijunction transistor. The capacitor is charged from a constant current source, and is given a small pedestal charge immediately after it is discharged.

3,777,185

MINIMIZATION AND LIMITING OF POWER DISSIPATION IN MULTIVIBRATORS AND THE LIKE

Herbert Anton Schneider, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 18, 1972, Ser. No. 298,640
Int. Cl. H03k 3/286
U.S. Cl. 307—291 **16 Claims**



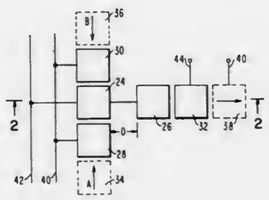
Power dissipation in multivibrators and other circuits having first and second cross-coupled transistors is minimized by providing base current for the first transistor from a potential intermediate the collector potential of the second transistor and the emitter potential of the first transistor. Further, power dissipation in conductive output transistors of such circuits is limited to a predetermined maximum value by monitoring each output transistor and maintaining it nonconductive unless the collector-emitter voltage thereof is less than the predetermined maximum.

3,777,186

CHARGE TRANSFER LOGIC DEVICE

Wen H. Chang, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1972, Ser. No. 268,415
Int. Cl. H01d 11/14
U.S. Cl. 307—304 **13 Claims**



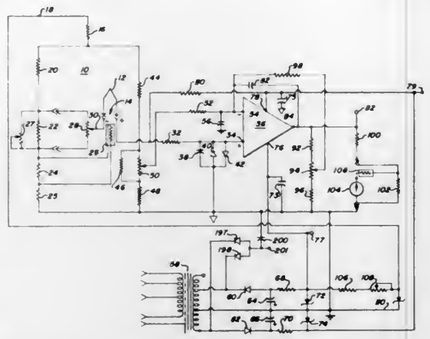
A monolithic charge transfer device wherein logic functions are performed is disclosed. A logical AND gate is provided which utilizes a quantized potential well formed in a surface region of a semi-conducting, or semi-insulating, material by a pattern of control electrodes. Various applications of the AND gate structure provide additional logical functions of Exclusive OR and Exclusive NOR gates.

3,777,187

CONTROLLER CIRCUIT

Mitchell I. Kohn, Chicago, Ill., assignor to Love Controls Corporation, Wheeling, Ill.

Filed May 1, 1972, Ser. No. 249,287
Int. Cl. H03k 5/20; H01v 1/00
U.S. Cl. 307—310 **11 Claims**



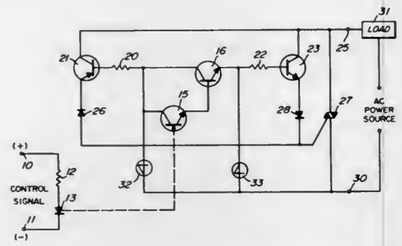
Temperature controllers including a sensing device, such as a thermocouple which is temperature compensated by means of a negative temperature coefficient resistance, and which generates a signal in response to the temperature of the thermocouple junction; an output circuit for manifesting a first output when a temperature limit is not exceeded and a second output when the limit is exceeded; a circuit which senses power interruption and forces the output circuit to manifest the first output for a limited time after the power is restored; and an alternative output circuit which provides a proportional controlling signal in response to the sensed temperature.

3,777,188

LIGHT SENSITIVE GATING OF TRIAL NEAR OR AT ZERO CROSSING POINT

Thomas Mazur, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 15, 1972, Ser. No. 289,381
Int. Cl. H03k 19/14, 3/42
U.S. Cl. 307—311 **8 Claims**



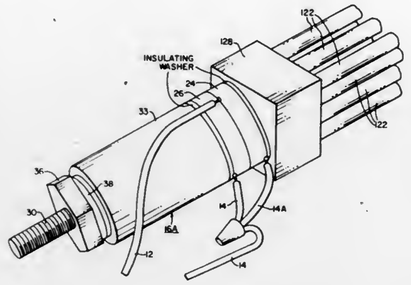
A light emitting diode is energized by a control voltage and light produced in response to the control voltage illuminates a photo-Darlington pair of transistors which provide a trigger to a triac connected in the load circuit to control current therethrough. Two unidirectional semiconductor switches are connected to the photo-Darlington pair in oppositely poled orientation so as to provide alternate current paths when voltage applied to the photo-Darlington pair exceeds a predetermined voltage in either polarity whereby the photo-Darlington pair is prevented from operating and producing a trigger for the triac.

3,777,189

ACOUSTIC ENERGY TRANSMISSION DEVICE

Dale D. Skinner, Turtle Creek; John H. Thompson, Pittsburgh, and Robert H. Whittaker, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 4, 1972, Ser. No. 250,395
Int. Cl. H01v 7/00
U.S. Cl. 310—8.3 **6 Claims**



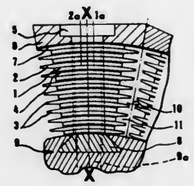
An apparatus for transmitting energy in the form of acoustic energy from one location to another, the energy being supplied at one location to the transmitting apparatus from an acoustic electric energy source through an electromechanical transducer and supplied at the other location by the transmitting apparatus to an electrical load through a second electromechanical transducer.

3,777,190

SUPERPOSED-STRIP FIELD WINDING FOR ROTARY ELECTRIC MACHINES

Jean C. Guimbal, 52, rue H. Dechaud, Saint-Etienne, France

Filed Sept. 22, 1971, Ser. No. 182,772
Claims priority, application France, Sept. 24, 1970, 7035597
Int. Cl. H02r 9/00
U.S. Cl. 310—60 **7 Claims**



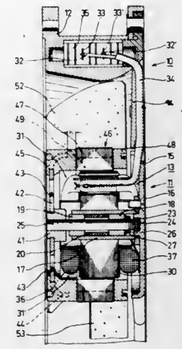
Channels for the circulation of cooling fluid are provided in field windings for rotary electrical machines by superposing conducting strips having edge portions arranged to form the cooling channels. In one form,the channels are formed by laterally offsetting alternate strips or groups of strips. In another form the channels are formed by alternate strips or groups of strips of different width. In still another form, edge portions of strips are of reduced thickness to provide the channels. Gaps between successive coils are kept uniform despite curvature of the rotor by varying the width of the strips.

3,777,191

DYNAMO ELECTRIC MACHINE CONSTRUCTION

Georg Papst, St. Georgen, Black Forest; Gunter Wrobel, Villingen, Black Forest, and Gerold Schneider, St. Georgen, all of Germany, assignors to Papst-Motoren KG, Schwarzwald, Germany

Filed Dec. 23, 1971, Ser. No. 211,538
Claims priority, application Germany, Jan. 8, 1971, P 21 00 663.3
Int. Cl. H02k 7/00
U.S. Cl. 310—67 **24 Claims**



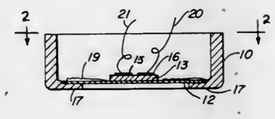
The rotor of a dynamo electric machine, one which is to be supported only at one end, is attached to the shaft by a disk-shaped steel element of circular outline which has outer marginal portions which are cast into the conductor portions of a squirrel cage rotor, the casting being, of aluminum for light weight and high conductivity; in a preferred form, the disk-shaped steel element is dished or bowed, and the marginal portions are bent-over, in contact with the magnetic elements of the rotor, or spaced therefrom by a distance sufficient to leave enough casting material adjacent the motor so that the resistivity of the short-circuited squirrel cage windings will be hardly increased by the presence of the steel element.

3,777,192

A METHOD FOR ADJUSTING THE RESONANT FREQUENCY AND MOTIONAL ELECTRICAL IMPEDANCE OF A VIBRATING DIAPHRAGM ELECTROACOUSTIC TRANSDUCER

Gilbert C. Barrow, Scituate, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Division of Ser. No. 79,219, Oct. 8, 1970. This application Mar. 20, 1972, Ser. No. 235,947
Int. Cl. H04r 17/00
U.S. Cl. 310—8.1 **7 Claims**



An operator applies a viscous paste over the surface of a clamped diaphragm in a transducer operating in a flexural resonant mode. The operator literally "paints on" the desired resonant frequency and impedance characteristic of the transducer. These characteristics are continuously monitored, on a suitable meter, while the operator is applying the paste.

3,777,193

RECTIFIER BRIDGE ASSEMBLY

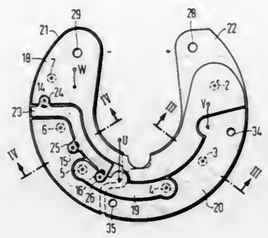
Hans-Friedrich Buehner, Pleimuhle, Germany, assignor to Siemens AG, Berlin and Munich, Germany

Filed Feb. 8, 1973, Ser. No. 330,885

Claims priority, application Germany, Feb. 24, 1972, P 22 08 794.1

Int. Cl. H02k *11/00*

U.S. Cl. 310—68 D **12 Claims**



A rectifier bridge assembly particularly suitable for use with an alternator having a voltage regulator controlled excitation winding, which assembly incudes two flat d.c. conductors lying in a single first plane, two or more a.c. conductors lying in a third plane, a layer of insulating material lying in a second plane, mechanically supported by the d.c. conductors and lying between the first and third planes, and two or more pairs of serially connected rectifiers arranged between the a.c. conductors and the d.c. conductors, one pole of the rectifiers in each pair of rectifiers being directly connected to one of the d.c. conductors and the other pole being directly connected to one of the a.c. conductors. A further d.c. conductor is disposed in the same plane as said a.c. conductors which further d.c. conductor is electrically insulated from the first mentioned d.c. conductors as well as from the a.c. conductors. The further d.c. conductor is directly connected to one pile of each of two or more further rectifiers and the other pole of each of the further rectifiers is directly connected to a diffeent one of the a.c. conductors. The said further conductor has a plurality of spaced tabs corresponding in number to the number of said a.c. conductors, which tabs extend out of the plane of said a.c. conductors to points respectively above the individual a.c. conductors. An excitation rectifier is directly mounted between said a.c. conductors and said ends of said tabs. The first mentioned rectifiers are mounted directly on one or the other of the first mentioned d.c. conductors within individual wells in the insulating layer. The further regulators are for use in the voltage regulator circuit of the excitation winding of the alternator. Instead of having the spaced tabs on the further conductors, the tabs may be on the a.c. conductors and extend above the further conductor.

3,777,194

SUBMERSIBLE MOTOR WITH PROTECTIVE END BELLS

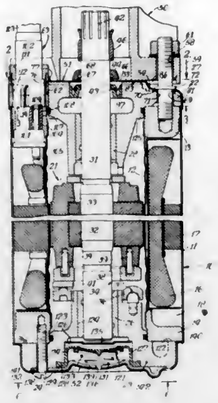
Edward J. Schaefer, and Alfred F. Refice, both of Bluffton, Ind., assignors to Franklin Electric Co., Bluffton, Ind.

Filed Oct. 6, 1971, Ser. No. 187,012

Int. Cl. H02k *5/10*

U.S. Cl. 310—87 **15 Claims**

This disclosure deals with an electric motor designed for use in a corrosive liquid. The heavy load supporting parts at the ends of the motor are made of a strong but corrodable metal, and these parts are protected against corrosion by covers of a corrosion-resistant material. Holes are formed in one of the end parts and its cover to receive a power input connector, and a corrosion-resistant sleeve is mounted in the holes and around the connector to protect this end part against corrosion and also to anchor a plug of the connector. One cover has aligning portions formed thereon which are adapted to fit matching aligning portions of a mechanism such as a pump to be driven by the motor. The other cover both protects the associated end part against corrosion and serves to support a pressure-equalizing device of the motor.



3,777,195

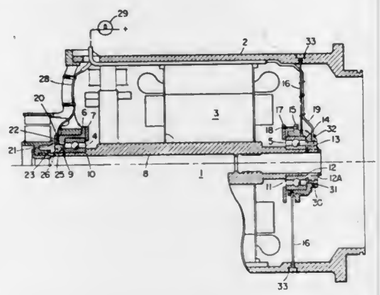
SUPPORT FOR GENERATOR BEARING

Frederick Milton Potter, Little Silver, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Feb. 8, 1972, Ser. No. 224,491

Int. Cl. B61f *17/00*; **F16c** *35/00*

U.S. Cl. 310—91 **9 Claims**



A support for a bearing for mounting a shaft for rotation relative to a member wherein the shaft and member have different temperature coefficients in which the bearing is supported firmly in a hub and a plurality of spokes support the hub from the member to prevent movement of the bearing relative to the member in a radial direction and permit limited movement of the bearing relative to the member in an axial direction to accommodate unequal changes in dimensions of the shaft and member due to temperature.

3,777,196

LOW-INERTIA SYNCHRONOUS INDUCTOR MOTOR

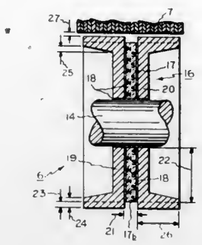
John H. Field, II, Needham, Mass., assignor to Sigma Instruments, Inc., Braintree, Mass.

Filed Oct. 20, 1972, Ser. No. 299,407

Int. Cl. H02k *21/12*

U.S. Cl. 310—156 **7 Claims**

The rotor structure of a synchronous inductor motor, such as a stepping motor, is of a compact, low-inertia and high-magnetic efficiency construction wherein a relatively thin axially-magnetized annular washer is fixed intermediate the wholly planar end surfaces of relatively lightweight back-to-back cup-shaped pole pieces and extends radially from a relatively large central shaft fully to the roots of the pole-piece teeth.



3,777,197

ATTACHMENT ASSEMBLY FOR STATOR WINDINGS

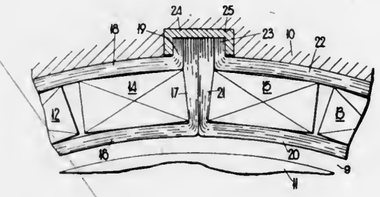
Thomas William Preston, Hednesford, and Albert Benjamin John Reece, Stafford, both of England, assignors to The English Electric Company Limited, London, England

Filed Jan. 3, 1973, Ser. No. 320,790

Claims priority, application Great Britain, Jan. 5, 1972, 521/72

Int. Cl. H02k *3/46*

U.S. Cl. 310—194 **17 Claims**



A dynamo electric machine which has a stator winding disposed in the rotor-stator air gap. The rotor winding comprises coils having straight axially extending side portions which are supported in trough members which have radially extending side walls the outer ends of which fit into slots in the stator core. The troughs may have cover plates also having side walls extending into the stator slots, and the troughs with the windings therein form a cylindrical structure in the air gap. This structure can be held in position closely adjacent the stator core by conformable packing or wedges associated with the side walls of the troughs and the stator slots.

3,777,198

INSULATED COIL FOR ARRANGEMENT IN A SLOT IN THE STATOR OR ROTOR OF AN ELECTRIC MACHINE

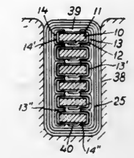
Anders R. Anderson, and Anders Bjorklund, both of Vasteras, Sweden, assignors to Allamanna Svenska Electriska Aktiebolaget, Vasteras, Sweden

Filed July 10, 1972, Ser. No. 270,440

Int. Cl. H02k *3/00*

U.S. Cl. 310—200 **15 Claims**

A coil positioned in the slot of a stator or rotor in an electric machine is formed of a bundle of conductors arranged close together and insulated from each other and from the slot. The conductor insulation consists of a layer of polymer and a tape of corona resistant insulating material running longitudinally of the conductor is adhered to the polymer layer. The tape surrounds the parts of the conductor facing the main insulation which surrounds the bundle of conductors and furthermore overlies at least those parts of the sides of the conductors which face the adjacent conductors which parts are situated nearest the sides facing the main insulation.



3,777,199

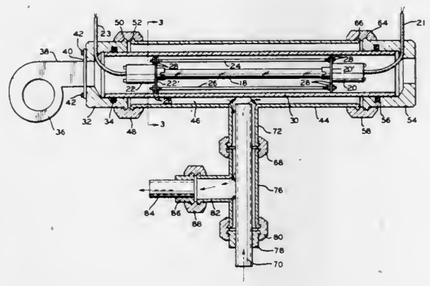
LIGHTING ARRANGEMENT

Noel Davis, Chagrin Falls, Ohio, assignor to Integrated Development & Manufacturing Company, Chagrin Falls, Ohio

Division of Ser. No. 30,662, April 22, 1970, Pat. No. 3,624,380. This application Sept. 27, 1971, Ser. No. 183,987

Int. Cl. H01j *61/52*

U.S. Cl. 313—27 **4 Claims**

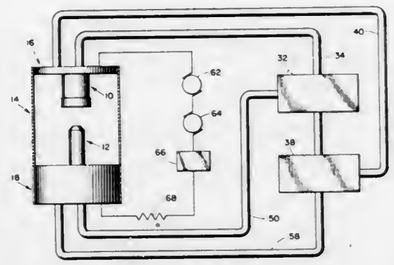


A lighting arrangement and lamp assembly particularly suitable for producing illumination with a minimum of the infrared range of wavelengths and especially suited for use in environmental growth chambers. The lamp assembly disclosed includes a tungsten-iodide lamp positioned in a first housing member formed from a material which is transparent to light of a substantial range of wavelengths including infrared. A second housing member formed from a light transmissive material is positioned about the first housing member in spaced relationship thereto. Means are provided to seal between the first and second housing members to provide a closed chamber through which illumination produced by the lamp must pass in order to escape from the assembly. Fan means function to pass cooling air through the first housing member and about the lamp positioned therein; and, means are provided for circulating water through the sealed chamber between the first and second housing members so that all the light passing from the assembly is filtered through the circulating water.

3,777,200
HIGH POWERED ARC ELECTRODES

Jesse H. Hall, Fairview Park; Clarence C. Gettelman, Westlake; John L. Pollack, North Olmsted, all of Ohio; Gary C. Goldman, Ann Arbor, Mich., and Arthur J. Decker, Lakewood, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 14, 1971, Ser. No. 143,508
Int. Cl. H01j *17/04*
U.S. Cl. 313—32 **13 Claims**

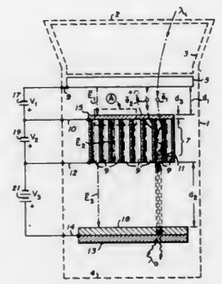


Nonconsumable metal electric arc electrodes capable of being operated in a variety of gases at various pressures, current, and powers. The cathode has a circular annulus tip to spread the emission area for improved cooling.

3,777,201
LIGHT AMPLIFIER TUBE HAVING AN ION AND LOW ENERGY ELECTRON TRAPPING MEANS

Bernard Caesar Einstein, Redwood Estates, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Division of Ser. No. 237,343, March 23, 1972, Continuation-in-part of Ser. No. 124,107, March 15, 1971. This application Dec. 11, 1972, Ser. No. 314,105
Int. Cl. H01j *31/26, 31/50, 43/00*
U.S. Cl. 313—65 R **6 Claims**

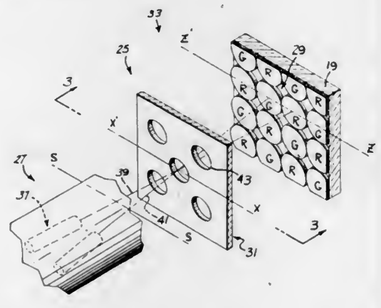


A light amplification device such as an image intensifier or low level sensing device is disclosed which includes a photocathode spaced from an aluminized target electrode and a microchannel plate intermediate said cathode and target. A thin non-self-supporting substantially optically transparent layer of material of a substance and thickness so as to be essentially transparent to high energy electrons, on the order of 100 to 1,000 electron volts, and light is situated atop the front end of the microchannel plate, covering the passages therein, in order to trap ions, which otherwise would travel to the photocathode, neutral gas ions, and to absorb scattered low energy electrons generated by secondary emission at the rim portion of the individual tubes in said microchannel plate, which would otherwise travel into the microchannel plate passages and to pass any light which passes through the photocathode and transmit any light which penetrates through the photocathode. The microchannel plate is spaced by a predetermined first distance from the photocathode, with its covered end facing the photocathode, and is spaced by a second distance, larger than the first distance, from the aluminized target electrode.

3,777,202
HIGH RESOLUTION CATHODE RAY TUBE SHADOW-MASK

Donald L. Say, Waterloo, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 153,695, June 16, 1971, Pat. No. 3,720,854. This application July 19, 1972, Ser. No. 273,158
Int. Cl. H01j *29/50*
U.S. Cl. 313—85 S **3 Claims**

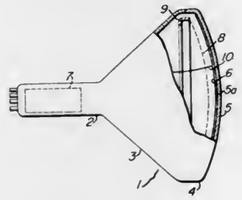


An improved aperture mask is provided for use in a two beam shadow mask type of color cathode ray tube. The mask is utilized in the formation and subsequent operation of a patterned screen including a repetitive array of two phosphor areas. The multitude of apertures defined by the interstitial webbing of the mask member are arrayed in a plurality of parallel rows having given directional orientations. Any three mutually adjacent apertures in any two adjacent parallel rows are oriented to form an isosceles right triangular relationship. The resultant screen associated therewith exhibits enhanced resolution and brightness.

3,777,203
COLOR PICTURE TUBE SHADOW MASK OF LOW CARBON SOFT STEEL

Junichi Yamada; Etuzo Terashima; Yasuji Takami; Kenji Fukuda, and Hiromitu Nakai, all of Mobara-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1972, Ser. No. 216,438
Int. Cl. H01j *29/06*
U.S. Cl. 313—85 S **2 Claims**

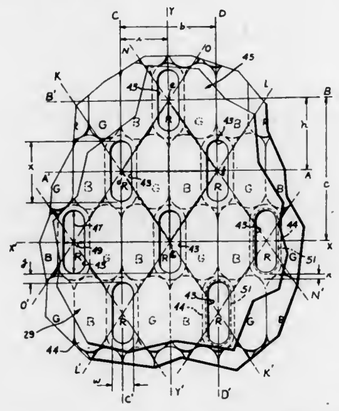


A color picture tube in which a color selective electrode is disposed in close proximity to a phosphor screen and is provided with a plurality of openings through which electron beams emanating from electron guns pass to impinge against the phosphor dots. The color selective electrode is made of a plate of soft steel containing 0.002 to 0.012 percent by weight of carbon for minimizing the formation of undesirable projections on the side wall surface of the openings.

3,777,204
TRI-COLOR CATHODE RAY TUBE EMPLOYING A SHADOW MASK HAVING ELONGATED APERTURES

John D. Robbins, and Louis R. Wanner, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,514
Int. Cl. H01j *29/06*
U.S. Cl. 313—85 S **13 Claims**

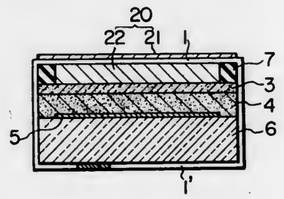


An improved aperture mask-screen combination is provided for use in a shadow mask color cathode ray tube employing three in-line electron beams. The mask having elongated apertures therein is utilized in the formation and subsequent operation of a patterned screen including repetitive arrays of three dot-type elongated phosphor areas. The multitude of elongated apertures, dimensioned by the interstitial webbing of the mask member, effect a display of enhanced brightness having a minimum of moire pattern distraction. The elongated apertures are discretely arrayed in a plurality of parallel horizontal rows with the apertures in alternate rows being aligned in similar columns.

3,777,205
METHOD FOR MAKING PHOTOELECTRIC DEVICE

Tadao Kohashi, Yokohama; Tadao Nakamura, and Shigeaki Nakamura, both of Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 794,677, Jan. 28, 1969, Pat. No. 3,616,003. This application July 6, 1971, Ser. No. 160,103
Claims priority, application Japan, Feb. 2, 1968, 43/6824
Int. Cl. H05b *33/06, 33/10, 33/12*
U.S. Cl. 313—108 A **3 Claims**



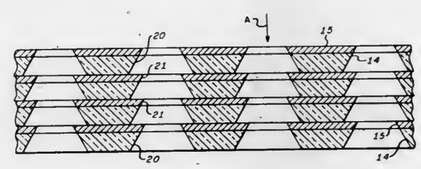
A method for manufacturing a photoelectric device having a plurality of photoconductive layers comprising the steps of forming on a surface of a semimanufactured article a layer of mixed suspension material consisting of powdery photoconductive material, binder material and volatile diluent, volatilizing said volatile diluent, repeating these steps to laminate the desired number of layers, and subjecting the laminated layers to a single heat treatment, thereby to set the photoconductive layers simultaneously.

. A photoelectric device including a spacer frame between the electrodes, said frame encircling at least one photoconductive layer.

3,777,206
ELECTRODES FOR GAS PLASMA DISPLAY PANELS AND METHOD OF MANUFACTURE THEREOF

James B. Armstrong, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,722
Int. Cl. H01j *17/04, 61/30*
U.S. Cl. 313—217 **4 Claims**

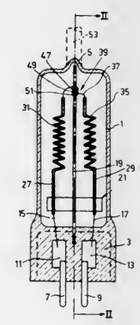


An electrode stack for gas plasma display panels comprises a plurality of dielectric plates each having tapered apertures therethrough. A metal film deposited on the surface of each plate that contains the narrow ends of the tapered apertures provides display electrodes, the film being deposited up to the peripheral edges of the apertures. The plates are stacked with respect to each other such that the surfaces of the plates containing the narrow ends of the apertures are adjacent to surfaces of other plates containing the wide ends of the apertures thereby exposing an effective metal electrode surface. A method involving a single-sided etching technique for manufacturing the electrode structure is disclosed.

3,777,207
HALOGEN FILAMENT LAMP HAVING STABILE FILAMENT SUPPORTING MEANS

Victor Rosalie Notelteirs, and Eduard Jozef Philomena Janssen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Continuation of Ser. No. 12,780, Feb. 19, 1970, abandoned. This application Mar. 28, 1972, Ser. No. 238,941
Int. Cl. H01k *1/18*
U.S. Cl. 313—222 **2 Claims**



A halogen filament lamp comprising an envelope having a pinch seal at one end and two series-arranged filaments within

the envelope coupled by a brace having at least end portions formed as mandrils which are screwed into the ends of the filaments remote from the pinch seal. The brace is fastened to a supporting wire projecting from the pinch seal.

3,777,208

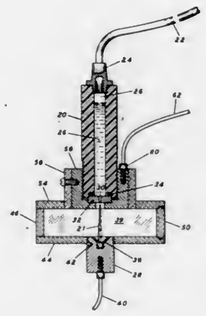
METHOD AND APPARATUS FOR PRODUCING RADIATION

Porter R. Ryason, San Anselmo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 608,245, Dec. 5, 1966, abandoned, which is a continuation-in-part of Ser. No. 263,830, March 8, 1963, abandoned. This application July 5, 1968, Ser. No. 747,044

Int. Cl. H01j *17/26, 61/28*

U.S. Cl. 313—231 **19 Claims**



The disclosure is of a method and apparatus for producing high energy radiation. A conducting liquid stream flowing between two electrodes is subjected to a large current pulse to cause the liquid stream to explode and produce radiation.

3,777,209

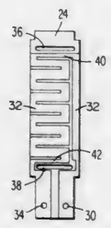
NON-THERMIONIC ELECTRON EMISSIVE TUBE COMPRISING A CERAMIC HEATER SUBSTRATE

Arthur Frederick McDonie; Richard Dale Faulkner, and James Lee Rhoads, all of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,259

Int. Cl. H01j *1/13, 1/14, 19/06*

U.S. Cl. 313—238 **8 Claims**



A non-thermionic electron emissive tube of the type comprising an evacuated envelope, an electron emissive cathode assembly in the envelope, and a collector anode for electrons emitted from the emissive layer. The cathode assembly comprises a thin ceramic substrate. On one face of the substrate is a non-thermionic cathode. On the opposite surface is a heater pattern of resistive metallizing.

3,777,210

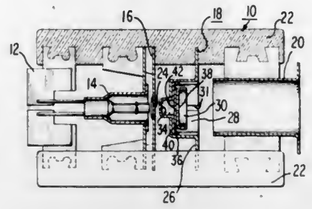
ELECTRON GUN AND METHOD OF ASSEMBLY

Richard Le Roy Spalding, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,219

Int. Cl. H01j *1/88, 19/42*

U.S. Cl. 313—256 **5 Claims**



An electron gun of the type comprising a series of electrodes in alignment along a gun axis. At least one of the electrodes comprises a support member with an aligned opening. An apertured member is inserted in the support member, the aperture being in alignment with the gun axis. The configuration of an inside portion of the support member is mechanically matched to the configuration of an outside portion of the apertured member, whereby the relative orientations of the members are mechanically determined on insertion of the apertured member into the support member by intimate physical contact of the inside and outside portions.

Also disclosed is a method of aligning an electron gun comprising the above electrode. The support member opening is fixed in alignment with other associated electron gun components. At least a portion of the apertured member is then inserted into the support member opening, the configurations of the members being such whereby an aperture in the apertured member is mechanically aligned along the gun axis by the inserting.

3,777,211

ADJUSTING DEVICE FOR A PARTICLE BEAM

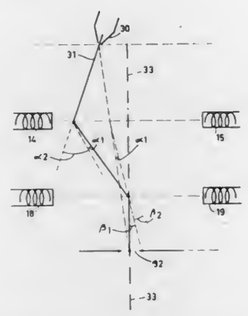
Wilhelmus Kuijpers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,887

Claims priority, application Netherlands, Aug. 27, 1970, 7012671

Int. Cl. H01j *29/70*

U.S. Cl. 315—31 R **9 Claims**



An adjusting device for a charged particle beam in which the two desired beam movement facilities i.e., a deflection and a transverse displacement, are adjustable independently of each other. This is realized by providing an adjustable coupling between each two deflector elements of two deflection systems which follow one another in the beam direction.

3,777,212

ELECTRONIC FLASH DEVICE

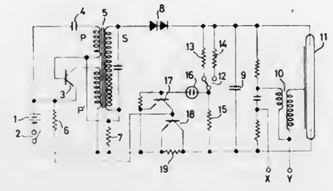
Yukio Mashimo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 15, 1972, Ser. No. 262,998

Claims priority, application Japan, June 18, 1971, 46/4643842

Int. Cl. H05b *37/00*

U.S. Cl. 315—241 P **8 Claims**



An electronic flash device comprising:
a direct current power source,
an oscillating device having a capacitor, and supplied with current from said power source,
a main capacitor for storing energy for flash illumination,
a charging circuit provided between said oscillating device and said main capacitor,
a detecting means for detecting the charging amount across the main capacitor,
a switching means controlled by said detecting means and connected to the charging circuit which opens to change the mode of oscillation of the oscillating device, and
a flashing tube connected to said main capacitor.

3,777,213

DARK TRACE CATHODE RAY TUBE ERASE SYSTEM

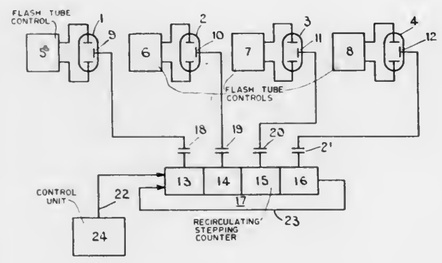
Harold Charles Arthur Hankins, Glosson, and Imad Shakir Torsun, Manchester, both of England, assignors to International Computers Limited, Putney, London, England

Filed Nov. 12, 1971, Ser. No. 198,224

Claims priority, application Great Britain, Feb. 20, 1970, 55,175/70

Int. Cl. H05b *41/36*

U.S. Cl. 315—323 **1 Claim**



A flash erasure system for erasing the display on a dark trace cathode ray tube. The system includes a number of flash tubes wich can be selected for operation in a predetermined sequence. This mode of operation allows a cooling and charging period for each tube before it is required to be used again.

3,777,214

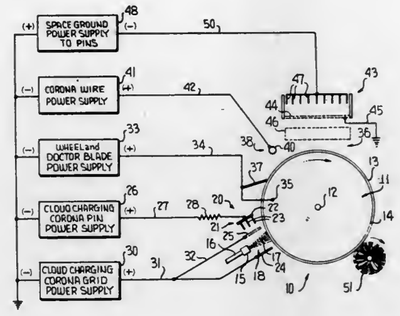
METHOD AND APPARATUS FOR ELECTROSTATICALLY CHARGING PARTICLES FOR PRINTING OR COATING

James R. A. Taylor, Chicago, and William A. Chambers, Harvey, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 787,977, Dec. 30, 1968, Pat. No. 3,635,157. This application Nov. 26, 1971, Ser. No. 202,373

Int. Cl. B41f *9/00;* **B05b** *5/00*

U.S. Cl. 317—3 **6 Claims**



Provisions for electrostatically charging particles, as in an electrostatic printing operation, include a corona source for providing ionization in a predetermined region, a plate electrode spaced from the corona source, a grid electrode adjacent the corona source and spaced from the plate electrode and a nozzle for directing a flow of the finely divided particles intermediate the plate and grid electrodes. The grid electrode draws ions from the corona source into the region intermediate the plate and grid electrodes. A rotatable drum may be provided proximate the region of electrostatic charging of the particles to receive the particles on the surface thereof for transportation to a printing or application zone. Alternatively, a stencil screen may be provided proximate the region of charging of the particles to direct passage of the particles therethrough to define a desired image upon a substrate proximate the stencil screen.

3,777,215

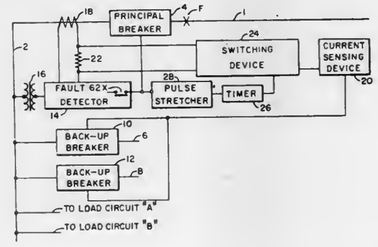
BREAKER FAILURE RELAY DEVICE

Conrad M. D'Esopo, South Easton, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 2, 1972, Ser. No. 259,129

Int. Cl. H02h *3/00*

U.S. Cl. 317—26 **6 Claims**

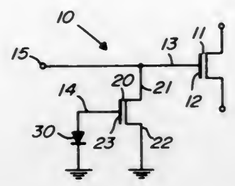


A device for sensing the failure of a principal breaker to interrupt the flow of fault current therethrough which is unaffected by the magnitude of the fault current to be interrupted.

3,777,216
AVALANCHE INJECTION INPUT PROTECTION CIRCUIT

William E. Armstrong, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Oct. 2, 1972, Ser. No. 294,407
Int. Cl. H02h 3/20
U.S. Cl. 317—31 4 Claims



A circuit is provided for protecting an insulated gate field-effect transistor (IGFET) circuit from damage caused by spurious, high voltage input resulting primarily from static charge. The protection circuit is another IGFET whose drain is connected to the gate of the IGFET to be protected and whose source is connected to a common terminal. Also included in the protection circuit is a p-n junction. The gate of the protection circuit IGFET is connected to the p-n junction whose other terminal is connected to the common terminal and which is connected to be reverse biased. The protection circuit IGFET goes into an avalanche condition when a spurious signal of a polarity to cause a reverse bias is of sufficient amplitude to start an injection of carriers from the drain to the gate. The avalanche condition is maintained until the drain voltage drops below the avalanche maintenance value, at which time the p-n junction permits the charge built up on the gate as a result of the avalanche, to leak to the substrate.

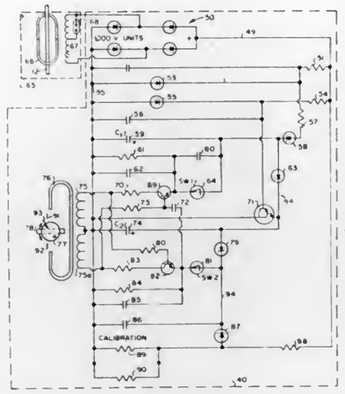
3,777,217
FAULT INDICATOR APPARATUS FOR FAULT LOCATION IN AN ELECTRICAL POWER DISTRIBUTION SYSTEM

Larry A. Groce, 2212-P E. Park Row, Arlington, Tex., and Darwin S. Renner, 1314 Cedar Hill Ave., Dallas, Tex.

Filed Jan. 10, 1972, Ser. No. 216,370
Int. Cl. H01h 47/32
U.S. Cl. 317—33 C 13 Claims

A current transformer is coupled to the cable to be monitored and furnishes both power and signal energy to the indicator apparatus. The power and signal energies are separated and the power regulated for constant performance over the entire operating current range. This range extends from the minimum no load cable current up through the highest fault amperes to be indicated. Two capacitors are charged by the power element. The first capacitor is discharged through a switch into one side of a center tapped indicator coil each time its firing voltage is reached. This causes the indicator to show "N" or normal. The second capacitor likewise discharges through a similar switch into the other side of the indicator coil, causing it to indicate the opposite, "F" or fault position. The firing point of the second switch is however higher than that of the first and does not normally fire since the peak voltage attained is that of the first switch. If now a portion of the signal energy from the input is added to the power supply of the second switch to make up the balance needed for firing, it will discharge the second capacitor. This occurs when the signal portion of the input rises to the value denoting fault current. In the relatively isolated instances when the second ("F") switch does fire it takes command and interrupts or prevents firing of the first. In series with each switch is a regeneratively connected transistor to return the switch to its initial or open position after each firing.

An added feature, for some uses, is a darlington device to rapidly dissipate power stored in the apparatus whenever the cable current goes to zero (or below minimum). This prevents

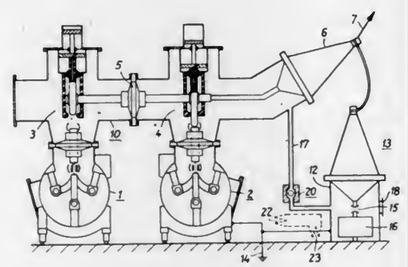


an "F" indication even in the presence of fault current, for some time interval after energy is resumed. This feature is optional.

3,777,218
METAL-CLAD HIGH-VOLTAGE SWITCHING SYSTEM

Claus Kessler, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 18, 1972, Ser. No. 289,604
Claims priority, application Germany, Sept. 30, 1971, P 21 49 435.9
Int. Cl. H02h 1/00
U.S. Cl. 317—59 7 Claims

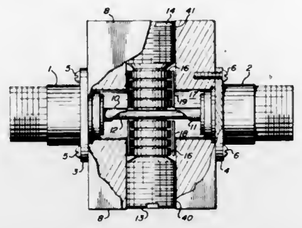


An overvoltage arrester for a metal-clad high-voltage switching system is provided in a separate housing which is filled with an insulating heavy gas. The separate housing contains a spark gap arranged in a heavy gas atmosphere which is the same as the insulating heavy gas filled within the metal encapsulation for the switching system. The separate housing is connected with the encapsulation via a valve-controlled gas line. The overvoltage arrester is particularly well suited for metal-clad high-voltage switching systems that are insulated by sulfur hexafluoride.

3,777,219
ELECTROMAGNETIC PULSE SUPPRESSOR

Richard D. Winters, Tempe, Ariz., assignor to General Semiconductor Industries, Inc., Tempe, Ariz.

Filed Aug. 14, 1972, Ser. No. 272,355
Int. Cl. H02h 3/22
U.S. Cl. 317—61.5 10 Claims

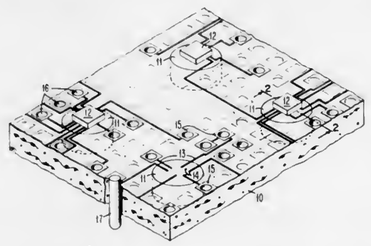


Apparatus is disclosed for protecting electronic circuitry against the damaging and destructive effects of fast rise time electromagnetic pulses. The apparatus is inserted between two coaxial cables, where the coaxial cables are used to interconnect electronic equipment. The housing of the apparatus electrically interconnects the sheaths of the coaxial cables and includes a central cavity having a solid conductor extending therethrough. The solid conductor provides an electrical path between the central conductors of the two coaxial cables. Protective devices, of the silicon junction avalanche type, fit within the cavity. These protective devices, or suppressors, are characterized by their small size, usually small discs, and their short duration, large current handling capability. One side of these discs is physically and electrically secured to the solid conductor while the other side is physically and electrically secured to the housing by a threaded element, such as a bolt. A plurality of serially connected discs may be used by stacking the discs within the cavity so that one side of the stack is adjacent the solid conductor with the bolt engaging the other side of the stack. The absence of leads in the above-described structure minimizes the inductive effects of the apparatus. In operation, a rapid potential increase on the central conductor, such as might occur due to an induced electromagnetic pulse, is dissipated through the one or more discs and thereby the discs suppress the damaging or destructive effect of the accompanying large current increase on the central conductor within the coaxial cables.

3,777,220
CIRCUIT PANEL AND METHOD OF CONSTRUCTION

Philip A. Tatusko, Endwell, and Richard A. Williams, Candor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,825
Int. Cl. H05k 1/04
U.S. Cl. 317—101 A 14 Claims

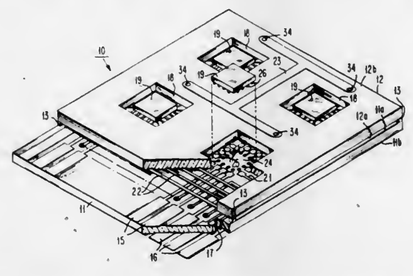


A hybrid circuit panel formed of both organic and inorganic materials to provide discrete areas of panel surface having different coefficients of expansion thereby providing mounting sites for semiconductor devices which have a coefficient of expansion approximating the semiconductor device. A construction method is disclosed in which previously formed inorganic substrates are placed in openings of semi-cured organic polymeric material containing inorganic fibers. The composite is compressed under heat and pressure to cause limited flow of the organic material and subsequent curing to thereby grip the inserted inorganic substrates. The organic substrate can be formed of a single layer of curable resin or a plurality of sheets of semi-cured resin laid up to form a composite panel. Conventional printed circuit techniques of either the subtractive or additive processes are used to form conductors on the surface of the inorganic and organic materials alike to thereby allow direct attachment of the semiconductor devices. This arrangement eliminates one level of packaging frequently used in the past, and provides a stable attachment between the devices and their substrates.

3,777,221
MULTI-LAYER CIRCUIT PACKAGE

Philip A. Tatusko, Endwell, and Richard A. Williams, Candor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,327
Int. Cl. H05k 5/00
U.S. Cl. 317—101 CP 13 Claims



A pair of planar, inorganic substrates, each having generally parallel signal lines formed on a major surface, are oriented so that the circuit bearing surfaces face each other in spaced parallel relationship with the circuit lines of the two signal planes being orthogonally arranged with respect to each other and joined at selected crossover points. One substrate has circuit lines on its signal plane connected with land areas to which integrated circuit chips are attached, and the other substrate is smaller with portions cut out to expose the attached circuit chips. Circuit tabs permit edge connection to one substrate and provision is made for circuit changes adjacent the chip attachment sites. The non-adjacent major surfaces of the two substrates are optionally used as ground and voltage planes.

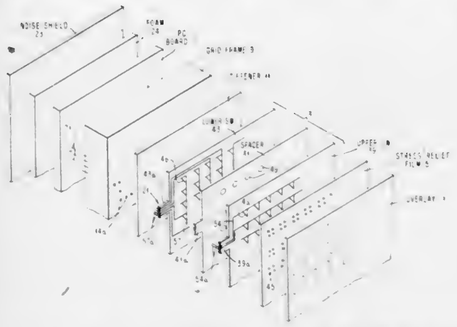
3,777,222
MODULAR TOUCH SENSITIVE INDICATING PANELS WITH TOUCH AND LIGHT TRANSMISSIVE OVERLAY COVER MEMBRANE CONTAINING VISIBLE PRINTED INDICIA

Thomas J. Harris, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1972, Ser. No. 252,822
Int. Cl. H02b 1/04; G06c 7/02
U.S. Cl. 317—112 36 Claims

Presently described touch sensitive indicating panels have thin but durably constructed plastic overlay membranes serving to: (a) transmit touch actuation pressure to underlying elastic diaphragm switch contacts arrayed at selected points of a pre-dimensioned grid; (b) transmit rear projection light indi-

cations received through spaces between switch grid conductors from suitably positioned light sources; (c) transmit alphanumeric light indications from suitably located arrays of light sources; (d) allow viewing of fixed information behind panels through suitably located areas; (e) display permanent indicia of artwork and nomenclature designating touch sensing and rear projection sites and functions; and (f) complete a housing enclosure. Panels for various host systems (e.g. computers, peripheral terminals, etc.) are assembled in various shapes and function types from a limited inventory of modular touch switches and control circuits. In the switch modules crossed grids of spaced conductors, which are prefabricated on transparent flexible support films, have pairs of



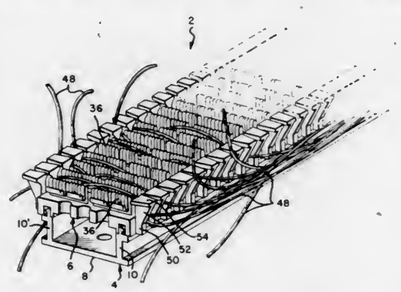
spaced parallel contact segments subject to flexure into contact at positions offset from the grid intersections. The grids have predetermined dimensions of intersection spacing and the offset contact pairs have specific design features for enhanced integrity and reliability of contact operation. Modular sensing circuits perform the functions of: scanning contacts of the panel switch modules for touch closure conditions; representing locations of closure conditions at predetermined locations; providing audible feedback (beep tone) of contact sensing, and translating sensed contact conditions into panel light indications and/or electrical control functions. Various arrangements are described for producing complex control and indicating effects based upon combinational sensing of particular contact sequences.

3,777,223

MODULAR ELECTRICAL JUNCTION AND INTERCONNECTION MEANS WITH SUPPORTING MEANS FOR TERMINAL BLOCKS

William Bruce Chandler, and George Hails Foster, Jr., both of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 26, 1972, Ser. No. 292,466
Int. Cl. H01r 9/22; H02b 1/04
U.S. Cl. 317—118 **4 Claims**



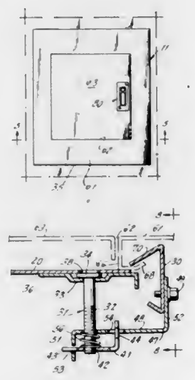
Electrical junction means for interconnecting a multiplicity of wires comprises a channel-shaped frame member having a plurality of mounting blocks secured thereto. Electrical terminals mounted on the mounting blocks provide interconnections among wires extending to the junction zone. The individual mounting blocks are removably secured to the frame in predetermined locations by means of latch arms and keys in the mounting blocks.

3,777,224

MOUNTING MEANS FOR TRIM PLATE OF PANELBOARD

James Frank Meacham, Bellmar, N.J., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Sept. 5, 1972, Ser. No. 286,143
Int. Cl. H02b 1/04
U.S. Cl. 317—120 **13 Claims**



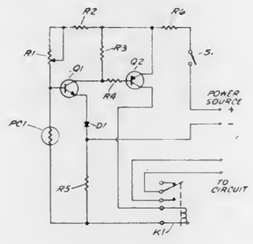
A panelboard is provided with a lightweight trim plate mounted by means that are totally concealed when the cover of the trim plate is closed. This mounting means includes deflectable rails mounted to the panelboard enclosure and having hook-like formations which snap behind cooperating hook-like stiffening ribs of the trim plate to mount the latter to the enclosure. Adjusting means for operating the rails to a clamping position are concealed when the trim plate door is closed.

3,777,225

LOW POWER LIGHT CONTROLLED SWITCHING DEVICE

Lester A. Dixon, 5731 Castle Dr., Huntington Beach, Calif.

Filed Apr. 24, 1972, Ser. No. 246,991
Int. Cl. H01h 47/24; H05b 37/02, 39/04
U.S. Cl. 317—130 **9 Claims**



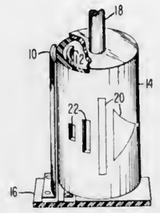
A low current photosensitive sensing arrangement is exposed to a light environment. If light conditions cause the light level to increase above a preselected intensity, the arrangement operates automatically to activate the electronic circuits attached thereto. If the light level decreases below the preselected intensity, the arrangement automatically deactivates the electronic circuits attached thereto.

3,777,226

PROGRAMMABLY VARIABLE CAPACITOR FOR USE IN A CAPACITIVE FUNCTION GENERATOR

Zong-Shyong Luo, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 2, 1972, Ser. No. 294,351
Int. Cl. H01g 5/01
U.S. Cl. 317—249 R **4 Claims**



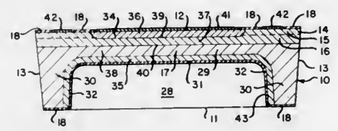
A programmably variable capacitor is provided having capacitive values which vary as functionally determined by preselected variations in the physical properties of a dielectric which is translatable along a path central to plates of the capacitor, the capacitive variations providing, when a fixed electric potential is applied across a series circuit including the capacitor and a resistor, a variation in the electric current flow which is representative of the capacitive value of the capacitor.

3,777,227

DOUBLE DIFFUSED HIGH VOLTAGE, HIGH CURRENT NPN TRANSISTOR

Surinder Krishna, Greensburg, and John R. Davis, Jr., Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 21, 1972, Ser. No. 282,624
Int. Cl. H01l 5/00
U.S. Cl. 317—235 R **4 Claims**



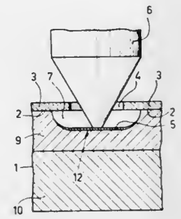
An NPN transistor with high voltage and high current capacities is provided in a semiconductor body having a thin internal portion and a thick integral peripheral portion. The thin portion has a substantially uniform width of greater than about 28 microns and oppositely facing surface areas each of greater than about 0.10 cm^2. The thick peripheral portion has a width greater than about 150 microns and annular dimension i.e. radial width greater than 10 microns. The base region has two contiguous impurity portions. A first impurity portion adjoins a major, preferably planar surface of the semiconductor body at the peripheral portion and has an impurity concentration of boron of at least 1×10^{19} atoms per cubic centimeter at the surface and a steep impurity concentration gradient to provide good ohmic and thermal properties. A second contiguous impurity portion is in internal portions of the body between emitter and collector regions and has a lower impurity concentration of gallium and/or aluminum and shallower impurity concentration gradient than the first impurity portion. Preferably, first and second impurity portions of the base region are formed by the simultaneous diffusion of boron and gallium and/or aluminum.

3,777,228

SCHOTTKY JUNCTION IN A CAVITY

Teunis Willem Van Steenbergen, Hilversum, and Jan Arie Gerrit De Waal, Emmasingel, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,758
Claims priority, application Netherlands, Nov. 19, 1968, 6816449
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R **4 Claims**



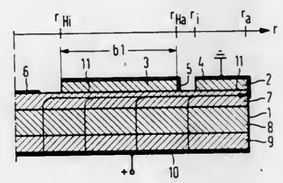
The invention relates to a method of manufacturing a semiconductor device having a schottky junction, for example, a schottky diode, in which a masking layer which is provided with a window is provided on a semiconductor body and at the area of the window a cavity extending to below the masking layer is provided in but not through said semiconductor body, the schottky electrode layer which extends to below the masking layer but not up to the masking layer being provided in said cavity by vapour-deposition or sputtering. The invention also relates to a semiconductor device manufactured by said method. A pressure contact is preferably provided on the schottky electrode layer.

3,777,229

THYRISTOR WITH AUXILIARY EMITTER WHICH TRIGGERS FIRST

Joachim Burtscher; Karl Peter Frohmader; Alfred Porst, and Peter Voss, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 1, 1972, Ser. No. 277,072
Claims priority, application Germany, Aug. 6, 1971, P 21 39 559.5
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R **6 Claims**

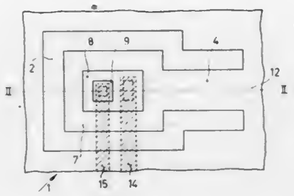


A thyristor having an auxiliary emitter located between the main emitter and the trigger or gate electrode, the auxiliary emitter being broader in its cross-sectional radial width than about 1 mm so that destructive breakdown of the main thyristor is prevented.

3,777,230
SEMICONDUCTOR DEVICE WITH ISOLATED CIRCUIT ELEMENTS

Claude Jan Principe Frederic Le Can, and Walter Steinmaier, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 153,590, June 16, 1971, abandoned.
This application Feb. 5, 1973, Ser. No. 329,846
Claims priority, application Netherlands, June 20, 1970, 7009091
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R 11 Claims

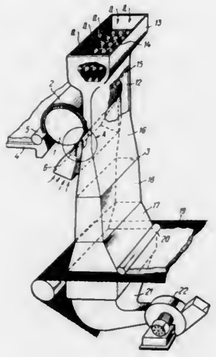


An integrated circuit comprising at least an insulated transistor which is connected to a transistor, the circuit elements being provided in a surface layer of a semiconductor device which is present on a base layer or substrate of the same one conductivity type and has a lower resistivity. The insulated transistor is present within a cup-shaped insulation zone of the opposite conductivity type. The said resistor is at least partly formed by the lateral resistor in the surface layer between the active part of the transistor and an aperture in the insulation zone through which the resistor is electrically connected to the substrate.

3,777,231
DEVICE FOR FORMING A LAYER OF FIBROUS MATERIAL OF HOMOGENEOUS STRUCTURE

Alexandr Evgenievich Guschin, Kovensky prospekt 13, Leningrad, U.S.S.R.

Filed Sept. 27, 1972, Ser. No. 292,829
Int. Cl. B29j 1/00; H05f 3/06
U.S. Cl. 317—262 R 2 Claims



In the device, provision is made for an electrostatic neutralizer for charged fibres, said neutralizer being installed at the inlet of a wind tunnel, whereas a slit-type jet nozzle is installed at the place where a serrated drum ajoins the wind tunnel, said nozzle extending along the entire length of the drum to deliver air to the zone of fibres removal from the serrated drum.

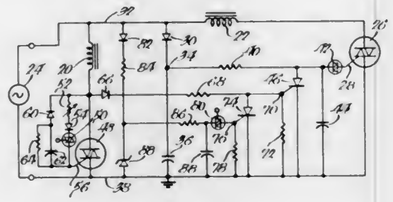
ERRATUM

For Class 317—234 see:
Patent No. 3,777,238

3,777,232
MOTOR START WINDING SWITCH CONTROLLED BY PHASE OF MAIN WINDING CURRENT

Richard E. Woods, Markle, and William H. Hohman, Bluffton, both of Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Sept. 6, 1972, Ser. No. 286,761
Int. Cl. H02p 1/44
U.S. Cl. 318—221 E 35 Claims

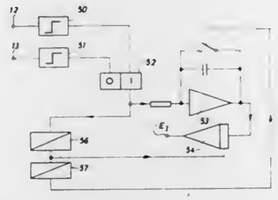


In a motor circuit for an AC motor having a main winding and a start winding, a control circuit utilizes a change in phase between the start winding current relative to the phase of another motor circuit signal to remove a trigger signal from a thyristor in series with the start winding in order to remove power from the start winding when the motor reaches a preselected cut-out speed. In one embodiment a change with motor speed of the relative phase between the main winding current and the applied voltage is utilized. Another embodiment utilizes the change with motor speed of the relative phase between the main winding current and the start winding current.

3,777,233
METHOD AND DEVICE FOR DETERMINING THE SPEED OF A MEMBER

Luc Yves Natens, Berchem, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Oct. 22, 1971, Ser. No. 191,850
Claims priority, application Great Britain, Oct. 23, 1970, 50,498/70
Int. Cl. H02p 5/16
U.S. Cl. 318—313 6 Claims

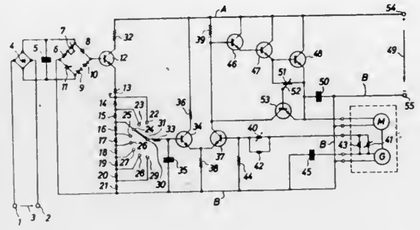


A method and apparatus for controlling the rotational speed of a roller. The actual speed of the roller which is compared with a set speed in order to determine the deviation or error, is derived by means of a pulse disc which bears a plurality of pulse producing fields. The time interval which is required for each pulse flank to pass successively beyond two detectors is measured, and the inverse value of said interval instantly indicates the actual roller speed so that at each angular position of the roller, the roller speed may be exactly controlled.

3,777,234
CIRCUIT ARRANGEMENT FOR REGULATING THE SPEED OF A DC MOTOR

August Luger, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 889,632, Dec. 31, 1969, abandoned.
This application Sept. 13, 1971, Ser. No. 180,008
Int. Cl. H02p 5/16
U.S. Cl. 318—326 11 Claims

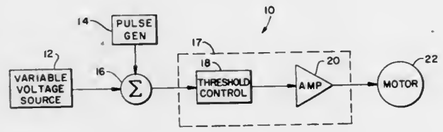


A circuit arrangement for controlling the speed of a DC motor by comparing a first voltage, which varies with the speed of the motor, with a second, control voltage, and varying the current fed to the motor in accordance with the resultant of the two voltages. A bridge circuit including a first current amplifier supplies a constant control voltage (the second voltage); the control voltage is compared with the first voltage by a differential amplifier. The resultant voltage is fed to a second current amplifier the output of which controls current input to the motor. The first voltage is preferably supplied by a generator driven in synchronism with the motor, and the second voltage is preferably supplied by a bridge having a semi-conductor in one branch thereof. The circuit includes temperature-dependent resistances which compensate for temperature variations in the generator, as well as in the circuit arrangement generally.

3,777,235
VARIABLE DC MOTOR POWER SOURCE

Abbott W. Lahti, Cambridge, Mass., assignor to Power Systems, Inc., Cambridge, Mass.

Filed July 19, 1971, Ser. No. 163,613
Int. Cl. H02p 5/34
U.S. Cl. 318—341 13 Claims

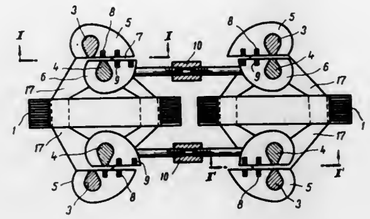


Precise control of fractional horse power DC motors is provided by a DC power source having a negative feedback amplifier, the signal at the output of the amplifier being controlled by a voltage derived from a potentiometer. A pulsed voltage having a peak amplitude somewhat less than the dead band voltage threshold of the amplifier is applied to an input terminal of the amplifier for low speed control of the motor. Peak current limiting with a load compensator operates to reduce the output voltage of the power source after a short circuit is removed.

3,777,236
RECIPROCATING MOTOR

Jan Hrubes, and Alois Dubansky, both of Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

Filed Oct. 25, 1972, Ser. No. 300,743
Claims priority, application Czechoslovakia, Oct. 26, 1971, 7542/71
Int. Cl. H02k 33/18
U.S. Cl. 318—122 5 Claims

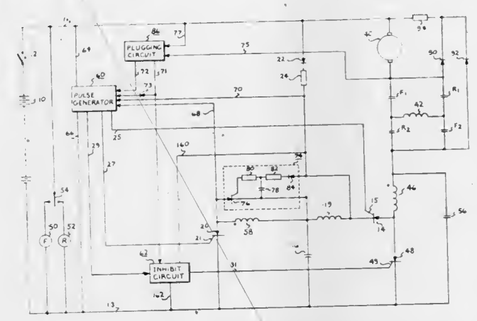


A motion electromagnet is provided having a main magnetic circuit with an exciting coil. An auxiliary magnetic circuit under the influence of the magnetic flux of the main magnetic circuit has a movable and a stationary part with movable and stationary windings respectively therein which are off-set with a constant air gap maintained between the stationary and movable parts. Energizing the exciting coil of the main magnetic circuit moves the movable parts of the auxiliary magnetic circuit into alignment with the stationary part. By symmetrically duplicating the main and auxiliary magnetic circuits, and alternately activating the main magnetic circuits via their respective exciting coils by a switching device, an oscillating movement in the electromagnet is produced.

3,777,237
DIRECT CURRENT POWER CONTROL CIRCUIT

Albert W. Anderson, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Mar. 3, 1972, Ser. No. 231,487
Int. Cl. H02p 5/12
U.S. Cl. 318—345 15 Claims



A control circuit for controlling the effective power to a load from a power source of substantially constant direct current voltage in which the amount of effective power delivered to the load is controlled by controlling the percentage of time that the load and the power source are interconnected. Included within the system is a switching device preferably of the solid-state type which is alternately placed in the conductive and nonconductive state to vary the percentage of time. Two forms are included, the first being essentially a low power

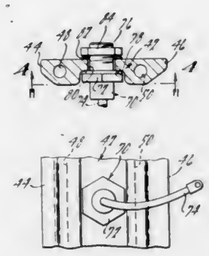
form and the second a dual level type of control system in which it is possible to alternate selectively between two modes of operation to operate the control circuit in a high and low power mode. Also provided is the application of the dual mode system to a direct current motor control system for providing what in the art is known as plugging.

3,777,238

ARRANGEMENT FOR MOUNTING SEMI-CONDUCTIVE DEVICES TO HEAT SINKS

Eugene W. Rabut, Shelby Twp., Macomb County, Mich., assignor to The Udylite Corporation, Warren, Mich.

Continuation of Ser. No. 88,341, Nov. 10, 1970, abandoned.
This application June 5, 1972, Ser. No. 268,223
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 10 Claims



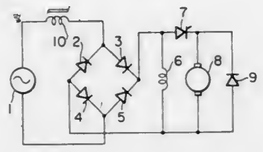
This disclosure pertains to a rectifier system which includes a plurality of diodes in the secondary circuit of a main transformer to provide rectification for the energy flowing therefrom, and a plurality of semi-conductive rectifier devices for controlling current to the primary windings thereto. The diodes are stud mounted and adapted to be self locked between a pair of channel portions of an electrically conductive heat sink, whereas the semi-conductive rectifier devices are stud mounted to extending flange portions of a novel heat sink bracket. The bracket is comprised of a base portion wherefrom is extended from one surface an extending flange. A bore is disposed in the flange portion, a preselected distance from the base, for self lockingly receiving the semi-conductive rectifier device. The bracket itself is fastened to a main heat sink by means of an epoxy which is heat conductive and electrically insulated.

3,777,239

VOLTAGE REGULATOR FOR DC POWER SOURCE

Tsutomu Seri, Kadoma, and Shinogu Abe, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza Kadoma, Kadoma-shi, Osaka-fu, Japan

Filed Aug. 16, 1972, Ser. No. 281,121
Claims priority, application Japan, Aug. 19, 1971, 46/63512
Int. Cl. H02p 9/00
U.S. Cl. 318—345 4 Claims



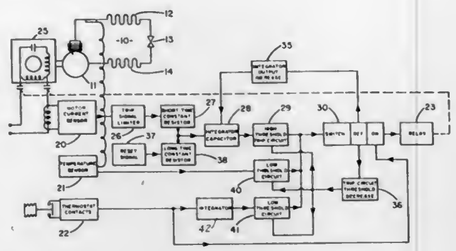
In a DC power source in which a silicon controlled rectifier is connected in series with a DC circuit of a single phase AC bridge rectifier so that the phase of the firing angle may be controlled to control the load voltage upon the armature of a D.C. motor, a saturable reactor is inserted in series with the AC power source of said bridge rectifier.

3,777,240

THERMOSTAT CHATTER PROTECTION FOR REFRIGERATION COMPRESSOR MOTORS

Donald E. Neill, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 188,275, Oct. 12, 1971, abandoned.
This application Sept. 21, 1972, Ser. No. 290,925
Int. Cl. H02h 7/08
U.S. Cl. 318—471 5 Claims



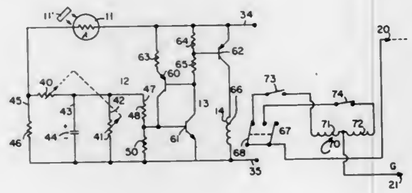
The motor of a reciprocating refrigeration compressor is provided with a motor control and protection system, which includes means for preventing the contacts of the motor relay from welding or otherwise being damaged by vibration of the system thermostat. The motor relay is energized or de-energized by a solid state switch, which is controlled by two or more trip circuits in response to a condition of operation of the system. A current sensor provides a signal proportional to motor current which is summed with an opposite polarity reset signal and integrated to provide a signal to a first trip circuit. The room thermostat contacts close in response to a demand for refrigeration and provide a current through the switch means to energize the relay. When the thermostat contacts stay open for a short period of time, the open circuit voltage across them is integrated and eventually trips a second trip circuit which actuates the switch means to a nonconducting condition, thereby de-energizing the relay and preventing damage to the relay contacts. A feedback circuit raises the output of the integration circuit and decreases the trip threshold of the first trip circuit to trip the first trip circuit, whereby a period of time must elapse while the reset signal is integrated to the reset level before the relay contacts can be closed again. If the contact chatter lasts only a very short time, the signal due to integrating the voltage across them will not be sufficient to cause an unnecessary trip.

3,777,241

CONTROL SPECIFICALLY FOR ANIMAL BUILDINGS

Caleb M. Wenger, and Lester E. Wenger, both of R.D. No. 1, Quarryville, Pa.

Filed May 24, 1971, Ser. No. 146,043
Int. Cl. H02p 1/22
U.S. Cl. 318—480 12 Claims



A control for animal buildings which includes a sensing variable resistor, which may for example change its resistance

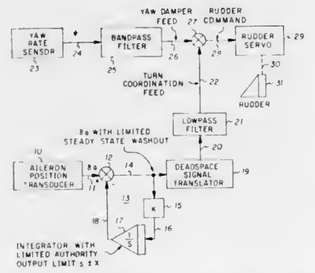
with change of sunlight, temperature, wind velocity, wind direction, or evaporation. It operates louver covers to admit or exclude sunlight, air, wind etc. to an animal building, preferably of the type which has louvers in a sloping roof directed toward the south. A circuit is included which has a sensing resistor, transistor switch operated by the sensing resistor, a relay operated by the switching transistors and in the preferred embodiment a reversible motor drum and cables operated by the relay. There are electronic time delay means between the sensing resistors, and the transistor switching unit.

3,777,242

TURN COORDINATION CONTROL WITH DEAD SPACE AND LIMITED WASHOUT

Robert F. Tribuno; Thomas E. Foster, both of Santa Monica, Calif.; David W. Mineck, Cedar Rapids, Iowa, and Edwin R. Hattendorf, Mission Viejo, Calif., assignors to Collins Radio Company, Dallas, Tex.

Filed Dec. 21, 1972, Ser. No. 317,472
Int. Cl. G05b 11/01
U.S. Cl. 318—586 5 Claims



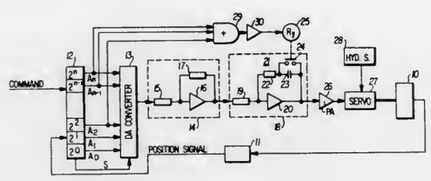
A turn coordination feed which, unlike conventional linear control operates on a combined zero-linear coordination basis. Small aileron position input signals are precluded from the coordination function and those exceeding a predetermined threshold are utilized in normal linear coordination control. An amplitude related limited washout and dead space translator coact to permit desired low threshold uncoordinated maneuver while maintaining steady state washout of airleron position signals.

3,777,243

POSITIONING CONTROL APPARATUS

Nobuo Taguchi, and Takehiko Ono, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan

Filed Feb. 14, 1972, Ser. No. 225,888
Claims priority, application Japan, Feb. 18, 1971, 46/7172
Int. Cl. G05b 6/02
U.S. Cl. 318—621 5 Claims



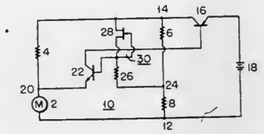
A positioning control system for positioning a movable member includes a comparator for comparing a controlled variable with a command variable to provide an actuating or error signal. An electric controller provides an electrical manipulated variable signal from the actuating or error signal. A detector will detect when the actuating signal is smaller than a predetermined value to thereby cause the electric controller to change and thereby increase the lag characteristic thereof such that the movable member is quickly and accurately positioned.

3,777,244

SPEED CONTROL DEVICE FOR A D.C. MOTOR

Shinya Kosaka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed July 12, 1972, Ser. No. 271,196
Claims priority, application Japan, July 12, 1971, 46/51578; July 16, 1971, 46/53385; July 20, 1971, 46/54010; July 23, 1971, 46/55011; July 26, 1971, 46/55773; July 29, 1971, 46/56989; Aug. 6, 1971, 46/59372; Aug. 6, 1971, 46/59373
Int. Cl. H02p 5/16
U.S. Cl. 318—331 63 Claims



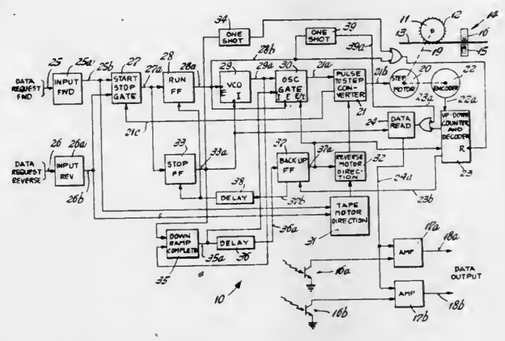
A speed control device of a D.C. motor including a comparator for detecting voltage corresponding to the rotation speed of the D.C. motor from the detection terminal of a bridge circuit having one of its arms connected to the D.C. motor and comparing the voltage thus detected with the reference voltage so as to control the amount of current running through a power supply control transistor disposed between the power supply terminal of the bridge circuit and the D.C. power source and maintain the rotation speed of the D.C. motor, characterized in that said speed control device comprises a reference voltage generating circuit consisting of a field effect transistor and a reference voltage across the reference resistor.

3,777,245

CLOSED LOOP STEPPING MOTOR CONTROL FOR A TAPE READER

Joe C. May, Cheshire, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed June 23, 1972, Ser. No. 265,658
Int. Cl. G05b 19/40
U.S. Cl. 318—685 10 Claims



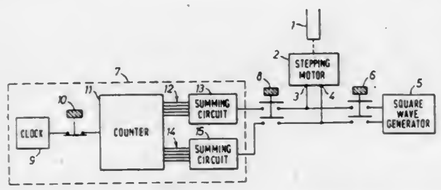
A tape reader having a reading station past which tape having transverse rows of holes is moved by a drive system that includes a stepping motor with the system, after a stop command, inhibiting further reading while continuing to move the tape a plurality of rows and then reversing the tape movement

for only the extent that it continued moving after the stop command thereby enabling the system to move the tape at a faster rate than if the system was required to have the ability to stop immediately at any one of the rows.

3,777,246
ROTARY DRIVE SYSTEMS

Anthony Michael Preston Barnes, Camberley, England, assignor to Recording Designs Limited, Camberley, England

Filed Sept. 17, 1970, Ser. No. 73,077
Claims priority, application Great Britain, Sept. 25, 1969, 47,157/69
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **2 Claims**

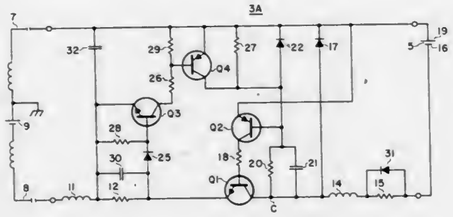


A rotary drive system for use for example, in a transport system for a magnetic tape recorder, comprises a stepping motor adapted to be driven by the output of a function generator. The generator is arranged to generate a waveform, for example a sinusoidal waveform, composed of a plurality of contiguous voltage steps. The generator is such that, when a control means is operated to stop said motor, the generated waveform is frozen in the state obtaining at the time of said operation of the control means, so that the motor does not receive a further voltage step and stops substantially instantaneously.

3,777,247
BATTERY CHARGING CIRCUIT FOR SUBSCRIBER CARRIER EQUIPMENT

Neale A. Zellmer, Belmont, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 1, 1972, Ser. No. 230,619
Int. Cl. G05f *1/56;* **H02j** *7/06*
U.S. Cl. 320—2 **13 Claims**

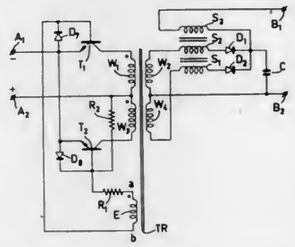


This charging circuit is a two-port network with an input port connected through a cable pair to a central office talking battery, and an output port connected across a local subscriber battery. The charging circuit comprises a switching transistor, an inductor, and a current sensing resistor connected in series with the talking battery and the local battery through the lines of the cable pair; and a commutating diode connected across the series combination of the inductor and the local battery. The transistor switch connects the inductor and local battery to and disconnects them from the talking battery during charging of the local battery. When the switch is closed, the inductor stores energy while the local battery receives a charging current from the talking battery. When the switch is open, the magnetic field on the inductor collapses to provide a current through the commutating diode for charging the local battery. The magnitude of the charging current that is drawn from the office battery and is sensed by the resistor is compared with a reference voltage on a reference diode in a second transistor which controls the operation of the transistor switch in order to draw a relatively constant current from the talking battery.

3,777,248
DIRECT-CURRENT CONVERTER

Johannes Volkert Vermolen, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,929
Claims priority, application Netherlands, Feb. 9, 1971, 7101662
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **9 Claims**

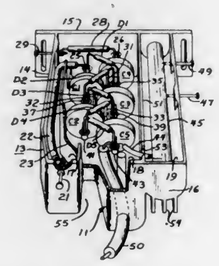


A direct-current converter comprises an oscillator circuit and a smoothing capacitor. The oscillator circuit and the smoothing capacitor are isolated from each other by one or more windings of a saturable choke. The wattless loss which would occur in each half period is eliminated in that an additional winding on the choke core saturates the choke after disappearance of the switch-on phenomenon. The additional winding carries the output current.

3,777,249
MULTIPLIER ASSEMBLY

Christ J. Dumas, 4600 S. Wisconsin Ave., Forest View, Ill.

Continuation of Ser. No. 229,905, Feb. 28, 1972, abandoned.
This application Mar. 14, 1973, Ser. No. 340,968
Int. Cl. H02m *7/00*
U.S. Cl. 321—8 **3 Claims**

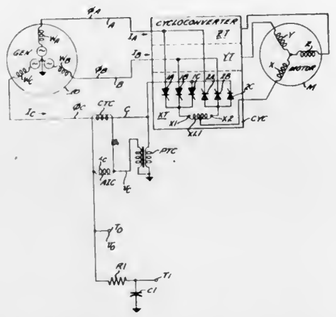


A voltage multiplier assembly for high voltage application which provides a unique mechanical and dielectric construction to improve the dielectric breakdown characteristics and inhibit corona discharge in the components of the assembly.

3,777,250
FILTER FOR REPLACING NOTCHES IN ELECTRIC WAVES

Ernst K. Kaeser; Allois F. Geiersbach, both of Milwaukee, and Manfred E. Neumann, New Berlin, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 7, 1973, Ser. No. 358,135
Int. Cl. H02m *1/12*
U.S. Cl. 321—9 R **19 Claims**

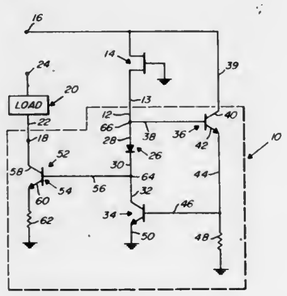


A wave filter arrangement reproduces the output voltage from a generator on a reduced scale with any notches in the generator output voltage caused by flow of current through the generator impedance replaced in the replica wave. A step-down current transformer derives a reduced magnitude replica of the current flowing through the generator, a step-down potential transformer generates a reduced magnitude replica of the output voltage from the generator, and an auxiliary inductance, which is a scale model of the generator subtransient reactance, is connected across the current transformer secondary winding so that the replica of the generator voltage and the voltage drop across the auxiliary inductance are additive and remove notches and other distortions from the reduced scale reproduction of the generator voltage.

3,777,251
CONSTANT CURRENT REGULATING CIRCUIT

James B. Cecil, Mesa, and Walter R. Davis, Tempe, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 3, 1972, Ser. No. 294,723
Int. Cl. G05f *3/08*
U.S. Cl. 323—4 **9 Claims**

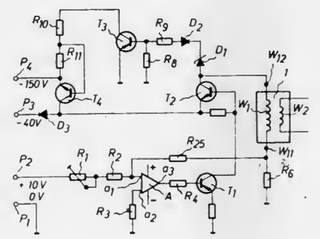


Circuitry for providing a constant current to a load includes a source of current and a regulating circuit interposed between the current source and the load. The regulating circuit includes a current shunting transistor coupled to the output of the current source and a feedback transistor also coupled to the output of the current source and to the base of the current shunting transistor. A diode connected between the current shunting transistor and the current source is chosen to have a dynamic admittance substantially equal to the transconductance of the current shunting transistor to provide the latter with unity voltage gain. A variation in current output of the source is accommodated by the current shunting transistor so that a substantially constant voltage at the output thereof is maintained. An output circuit including a transistor, coupled to the output of the current shunting transistor and to the load, and controlled by the output voltage, provides a substantially constant current to the load despite current variations from the current source.

3,777,252
CONSTANT CURRENT SOURCE FOR THE OPERATION OF MULTIPLE COIL SYSTEMS

Hans-Hinrich Leszke, Kiel, Germany, assignor to Dr.-Ing. Rudolf Heil GmbH

Filed Feb. 1, 1973, Ser. No. 328,741
Claims priority, application Germany, Feb. 5, 1972, P 22 05 468.8
Int. Cl. G05f *1/56, 1/62*
U.S. Cl. 323—4 **11 Claims**



A constant current source for the operation of multiple coil systems, utilizing a static winding and one or more dynamic windings effective at a common air gap, including a constant operational voltage source, a corrective element between the operation voltage source and static winding, and a current control system operative to control the correcting element, in which a corresponding higher operational voltage is applied to the static winding in the presence of subtractive voltages induced in the static winding as a result of the dynamic winding, with the corresponding higher operational voltage being derived from an independent voltage source or from the charge on one or more capacitors, arranged for charging to the lower operational voltage and adapted to be connected in series to provide a multiple of such voltage.

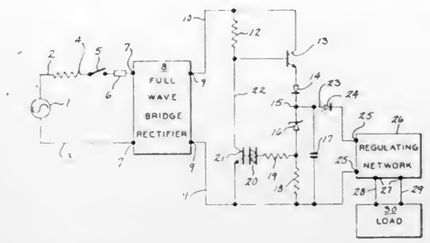
3,777,253
LOW POWER LOSS VOLTAGE SUPPLY CIRCUIT

John E. Callan, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Oct. 24, 1972, Ser. No. 299,999
Int. Cl. G05f *1/40*
U.S. Cl. 323—22 T **3 Claims**

A low power loss, direct current power supply has a pair of D.C. feed lines and a first electrical switch that transmits

direct current from the feed lines to an energy storage element feeding the output of the power supply. A first voltage responsive current gate is across the energy storage element, and a



second voltage responsive current gate is joined to the circuit of the first gate to control a second electrical switch for shunting of the first switch.

3,777,254

NUCLEAR MAGNETIC RESONANCE SPECTROMETER WITH JOINTLY FUNCTIONING EXTERNAL AND INTERNAL RESONANCE STABILIZATION SYSTEMS

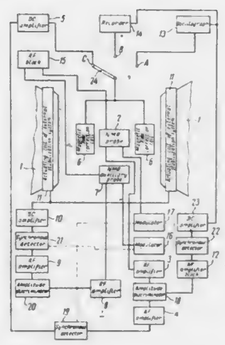
Jury Lvovich Kleiman, Fontanka, 126, kv. 25; Nikolai Viktorovich Morkovin, Krasnoputilovskaya, 53, kv. 43, and Vladimir Antonovich Pavlenko, ulitsa Tipanova, 5, kv. 77, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 789,887, Jan. 8, 1969, abandoned. This application Mar. 12, 1971, Ser. No. 123,915

Claims priority, application U.S.S.R., Jan. 15, 1968, 1,210,942

Int. Cl. G01n *27/78*

U.S. Cl. 324—.5 R **3 Claims**



A nuclear magnetic resonance spectrometer comprising an electromagnet accommodated in a housing with coils disposed within the magnetic field between the poles of the electromagnet. The electrical axes of the coils are oriented perpendicularly to the pole faces of the electromagnet. The coils are connected to the output of an internal nuclear magnetic resonance stabilization system. An analytical nuclear magnetic resonance probe is disposed in the zone defined by the coils and connected to the input of the internal nuclear magnetic resonance stabilization system. A reference nuclear magnetic resonance probe is disposed within the magnetic field of the electromagnet and is located so as to be outside the zone defined by the coils. An external nuclear magnetic resonance stabilization system is connected to the reference nuclear magnetic resonance probe and nuclear magnetic resonance signals derived from the analytical nuclear magnetic resonance probe are recorded. The external and internal stabilization systems operate simultaneously.

3,777,255

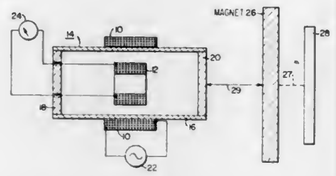
POSITION SENSOR UTILIZING A PRIMARY AND SECONDARY SHIELDED FROM ONE ANOTHER BY A FERROMAGNETIC SHIELD AND A MAGNET WHOSE POSITION RELATIVE TO THE SHIELD CHANGES THE SHIELDING

Frederick J. Young, Swissvale, and Richard A. Elco, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1972, Ser. No. 301,019

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 PS **11 Claims**



A position sensitive system including an exciting winding, a sensing winding, a ferromagnetic shield therebetween, and a magnet, the shield and the magnet being relatively movable. The magnetic skin depth is a function of the distance between the shield and the magnet, whereby voltage induced in the sensing coil by the exciting coil is a function of that distance. For any given set of parameters there will be a range wherein the depth of the magnetic skin of the shield is increased as the distance between the shield and the magnet is reduced, whereby voltage induced in the sensing coil increases as said distance decreases, and vice versa. This provides transducer capability which may be applied to proximity detection, mechanical excursion detection, and other uses. Examples of specific adaptations are as a position detector and, when coupled to either an elastic diaphragm or piston, as a pressure transducer.

3,777,256

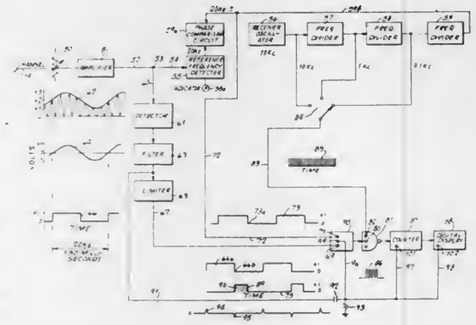
DELAY DISTORTION MEASUREMENT SYSTEM

John M. Harrison, Gossville, N.H., assignor to North Electronics Corporation, Concord, N.H.

Filed Feb. 14, 1972, Ser. No. 225,855

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **7 Claims**



A method of measuring frequency delay distortion of a communication channel comprising, generating at a sending end of said channel a plurality of sustained sine wave signals distributed throughout a frequency spectrum of said channel, modulating at a lower frequency each of said sine wave signals in repetitive progression for a preselected period of each,

transmitting the modulated signals over said channel to its distant end, and at said distant end, locally generating a signal of frequency substantially that of said modulating frequency, detecting and filtering said modulated incoming signals, and measuring the difference in time between that at which each said detected and filtered signal goes to zero and that at which said locally generated signal goes to zero, for adjacent cycles timewise thereof respectively, the frequency of the locally generated signal being synchronized with the incoming modulating frequency upon receipt of one of said sine wave signals employed as a reference frequency, or alternatively, following receipt of all of said series of sine wave signals and a constant correction applied in accordance with the measured delay of the reference frequency.

3,777,257

APPARATUS WITH CAPACITIVE PROBES FOR MEASURING THE LOCATION AND DISPOSITION OF AN INTERFACE BETWEEN TWO MEDIA

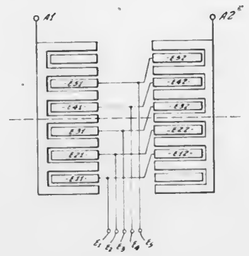
Heribert Geisselmann, Wohlen/Aargau, Switzerland, assignor to Camille Bauer Messinstruments Aktiengesellschaft, Wohlen/Aargau, Switzerland

Filed May 2, 1972, Ser. No. 249,634

Claims priority, application Switzerland, May 6, 1971, 6742/71

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **10 Claims**



Apparatus for measuring location and disposition of an interface between two media exhibiting a difference in dielectric constants or electric conductivity and including a column of pairs of capacitors arranged in a direction along which the location and disposition of the interface may vary, the media influencing the value of the capacitors. The capacitors of a pair having first common electrode configuration connected to an input line and second, individual, galvanically separated electrodes connected to a differential amplifier; electrical pulses are fed sequentially to the input lines and coupled to the differential amplifier through the pairs of capacitors. Imbalance on the differential amplifier output is referenced against pulse count reached when the imbalance occurs.

3,777,258

METHOD AND ARRANGEMENT FOR MEASURING THE QUANTITY OF MOISTURE IN SMOKING GOODS

Waldemar Wochnowski, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

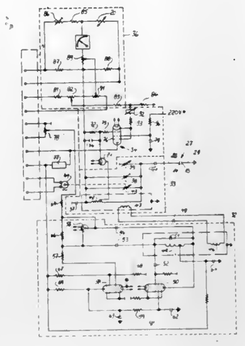
Filed Sept. 13, 1972, Ser. No. 288,665

Claims priority, application Germany, Sept. 16, 1971, P 21 46 386.5

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 QS **16 Claims**

Tobacco moving along a conveyor belt is compressed with a force several times the force of the dead weight of the tobacco. The compressed tobacco has an electric field applied through a first and second electrode positioned on the same side thereof. The electrodes constitute a capacitor which is part of a tuned circuit and under resonance conditions the



signal derived from the tuned circuit has a magnitude corresponding to the percentage of moisture in the tobacco.

3,777,259

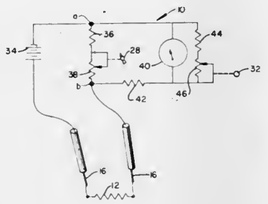
APPARATUS FOR DETERMINING THE RESISTANCE PER UNIT LENGTH OF A RESISTIVE CONDUCTOR

Henry H. Clinton, Walnut St., R.F.D. 1, Ivoryton, Conn.

Filed Apr. 2, 1973, Ser. No. 347,357

Int. Cl. G01r *27/02*

U.S. Cl. 324—62 **7 Claims**



A device is provided for testing resistive ignition wire to provide an indication of the resistance of such wire in terms of resistance units per unit length of wire under test. A manually operable adjustment knob has an associated dial calibrated in length units. When a wire of given length is to be tested, the adjustment knob is set to such length and an associated meter is thereby conditioned to provide a scale reading related directly to the resistance of the test wire per unit length thereof.

3,777,260

GRID FOR MAKING ELECTRICAL CONTACT

Phillip J. Davies, La Grangeville; Angelo S. Gasparri, Poughkeepsie, and Daniel J. McAtee, Rhinebeck, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

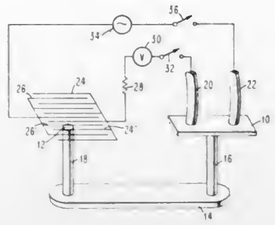
Filed Dec. 14, 1972, Ser. No. 315,264

Int. Cl. G01r *27/14*

U.S. Cl. 324—64 **6 Claims**

This specification discloses a checker for checking electrical continuity. The checker uses a grid of lines as a probe to make electrical contact to points on the circuit being checked.

This probe relies on the close spacing between the lines of the grid to make the connection to the points as opposed to the



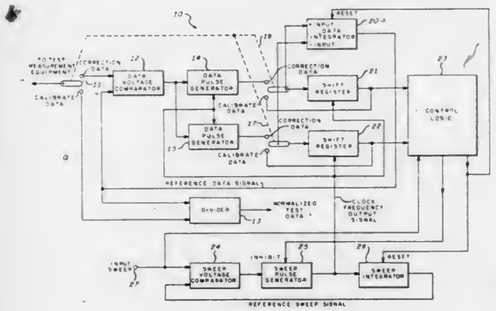
accurate registration between the position of the lines of the grid with the position of the points to be contacted.

3,777,261

CALIBRATION APPARATUS AND METHOD FOR USE WITH SWEEP RATE TEST MEASUREMENT EQUIPMENT

Harry F. Strenglein, Clearwater, and David E. Kent, Palm Harbor, both of Fla., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 27, 1971, Ser. No. 173,512
Int. Cl. G01r 15/12, 1/02
U.S. Cl. 324—73 R 16 Claims



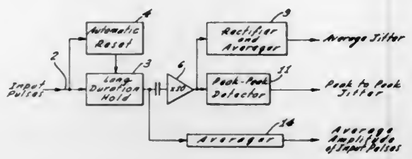
An apparatus used in conjunction with sweep rate test measurement equipment to normalize output data produced by the test equipment which includes a comparator that is responsive to correction data produced by the test equipment while the test equipment is coupled to a standard device having known parameters. A reference data signal is also applied to the comparator simultaneously with the correction data and the comparator produces difference signals representative of deviations in magnitude between the correction data and the reference data signals which are stored in shift registers at the sweep rate of the test equipment. The test equipment is subsequently coupled to prime equipment having unknown parameters for test measurement and the stored difference signals are combined with the test data from the prime equipment in a divider circuit which produces output test data that is normalized to the known parameters of the standard equipment.

3,777,262

PULSE AMPLITUDE VARIATION DETECTOR

Richard E. Vahlstrom, Villa Park; Donald C. Nutten, Newport Beach; Dennis R. Bayne, Placentia, and Stanley Oster, Anaheim, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed June 7, 1971, Ser. No. 150,273
Int. Cl. G01r 19/16
U.S. Cl. 324—103 P 4 Claims



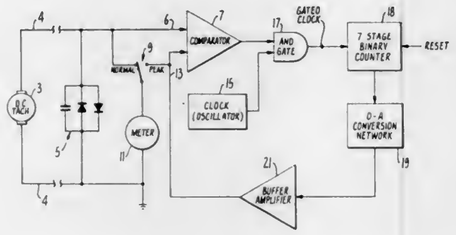
A long term hold circuit accepts a train of input pulses having amplitude variation "jitter" thereon, and feeds simultaneously into an averager and an AC amplifier, the AC amplifier feeding simultaneously into another averager and a peak-to-peak detector.

3,777,263

PEAK HOLDING CIRCUIT

Robert R. Perron, Beverly, and Harvey L. Pastan, Chestnut Hill, both of Mass., assignors to The Eastern Company, Naugatuck, Conn.

Filed Feb. 17, 1972, Ser. No. 227,174
Int. Cl. G01r 19/16
U.S. Cl. 324—103 P 1 Claim



A peak holding circuit is provided wherein an analog voltage from a tachometer is converted to and stored as a digital value and the digital value is converted back to an analog voltage and compared continuously with the tachometer output and corrected when the digital value falls below that of said output. A practical application of the circuit is described wherein the peak value of an anemometer is stored for indefinite lengths of time.

3,777,264

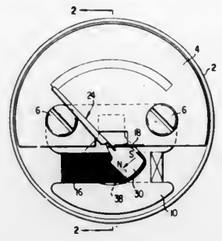
METER MOVEMENTS

Virgil Erbert, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.

Continuation-in-part of Ser. No. 114,312, Feb. 10, 1971, abandoned. This application Jan. 17, 1972, Ser. No. 218,388
Int. Cl. G01r 1/00, 1/02
U.S. Cl. 324—146 17 Claims

A moving magnet meter movement in which a pointer is mounted on a support member for pivoting about an axis. The pointer and the support member are formed of substantially flat sheet material interconnected by opposing surfaces adjacent the pivot axis for confining the pointer to swinging about said pivot axis with a minimum of frictional drag. A

vane on the pointer is magnetized and an electromagnetic coil is positioned adjacent the vane to cause the pointer to swing



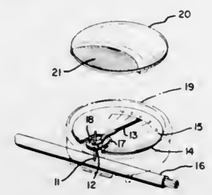
about the pivot axis in response to the magnetic field associated with the coil.

3,777,265

INDUCTION AMMETER WITH SELF INDUCED RESTORING TORQUE

Lester R. Vold, Perkasie, Pa., assignor to Electro-Mechanical Instrument Div., VLN Corp., Perkasie, Pa.

Filed Jan. 19, 1973, Ser. No. 325,069
Int. Cl. G01r 1/20, 1/16
U.S. Cl. 324—146 8 Claims



In a moving magnet meter a dial blank of soft magnetic material has tabs which are aligned with the poles of the moving magnet to establish the zero setting of the pointer. The pointer is rotationally deflected over the dial by the magnetic field which is established transverse to the line of the tabs by current flowing through a conductor carrying current to be measured. With no current in the conductor the magnetic axis of the magnet aligns itself with the induced pole arms in the tabs as a path of minimum reluctance. The tabs can be easily adjusted to control the sensitivity of the meter and the magnitude of the restoring torque.

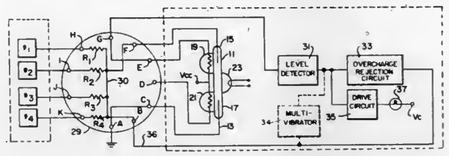
3,777,266

PROGRAMMABLE INTEGRATOR

Edward M. Marwell, Mount Kisco, and Eugene P. Finger, Brewster, both of N.Y., assignors to Curtis Instruments, Inc., Mount Kisco, N.Y.

Filed July 26, 1972, Ser. No. 275,329
Int. Cl. G09f 9/00; G01r 11/44
U.S. Cl. 324—182 14 Claims

A method and apparatus is disclosed for measuring the operational use of a physical system. The apparatus includes an integrator having a reversible coulometer including a bored tube made of a transparent or translucent material with a pair of electrodes connected to each end thereof. A transparent electrolyte is positioned in the bore between two columns of an opaque electrolytically platable metal. A pair of light sensitive elements, spaced from one another, are positioned on one side of the tube, and a source of light is positioned on the opposite side of the tube. At least one source of current having an amplitude which is a function of the use of the system being measured is connected to the electrodes of the coulometer through an interconnector plug. The plug includes a plurality of weighting resistors, one for each source of current, which appropriately adjust the relative contribution of each current source to the total current conducted through the coulometer. A new plug is connected between the coulometer and the current sources at the end of each integrating interval so that current conduction through the coulometer is reversed. The values of the weighting resistors may be varied from plug to plug to vary the effect that machine use has on the integrating interval.

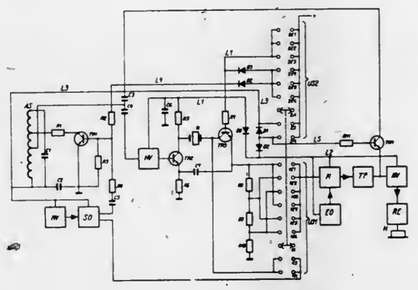


3,777,267

APPARATUS FOR SEARCHING FOR PEOPLE WHO ARE BURIED OR TRAPPED AND EQUIPPED WITH THE SAME TYPE OF APPARATUS

Hans Van der Floe, Selzach; Herbert Kully, Solothurn; Vacalv Stverak, Solothurn, and Stephan Affolter, Solothurn, all of Switzerland, assignors to Autophan Aktiengesellschaft, Solothurn, Switzerland

Filed Dec. 18, 1972, Ser. No. 315,863
Claims priority, application Switzerland, Dec. 24, 1971, 18895/71
Int. Cl. H04b 1/40
U.S. Cl. 325—18 9 Claims



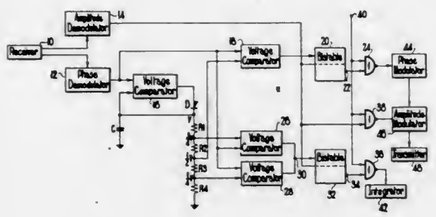
Apparatus for searching and determining the location of a transmitter carried on a person buried or trapped by a landslide, cave-in, and the like wherein the apparatus consists of a single unit having a selectively operative transmitter stage portion and a selectively operable receiver stage portion, a portable power supply, the receiver having an antenna and an input circuit wherein the efficiency of the input circuit is selectively adjustable in step-like manner to at least two different values by utilization of a transistor along with an optional resistor interposed between the transistor and the antenna, an input amplifier for receiving and amplifying the input signal, a manually operative progressively adjustable attenuation damping element electrically connected to the input amplifier and the input circuit, a receiver oscillator having an output frequency different from the normal frequency of the receiver, the output signal from the receiver oscillator being fed into a mixing stage along with the signal from the attenuation damping amplifier being fed into the mixing stage for comparison and mixing of the two signals, the mixing stage output signal being fed to a filter stage for initial filtering, the output signal from the filter stage being fed to an amplifier stage for amplification and feeding through a control element

to an earphone-type device for converting the electrical signal into an audio detectable signal, the attenuation damping element comprising a manually operable switch including at least two switch segments each having a plurality of corresponding contacts and switch positions, the number of switch positions for controlling the receiver exceeding the number of steps available for adjusting the attenuation damping element, some of the contacts of the first switch segment being electrically connected to the attenuation damping element for effecting adjustment of the damping element upon changing the switch to different switch positions, some of the contacts of the second switch segment being electrically connected to the input circuit for effecting the control voltage provided to the transistor for adjustably changing the efficiency of the input circuit, the two switch segments being manually interconnected and operative such that a different total damping effect is obtained for each different switch receiving position with the total damping effect being a function of the selected efficiency of the input circuit in combination with the selected adjustments of the damping element.

3,777,268
DEGRADATION DETECTION IN A PCM SYSTEM

Donald Jack Cleobury, Hinckley, England, and Bernard Wilson, deceased, late of Conventry, England, assignors to The General Electric Company Limited, London, England

Filed Sept. 27, 1971, Ser. No. 183,770
Claims priority, application Great Britain, Sept. 28, 1970, 46,059/70
Int. Cl. H03k *9/10, 13/32*
U.S. Cl. 325—38 R **10 Claims**



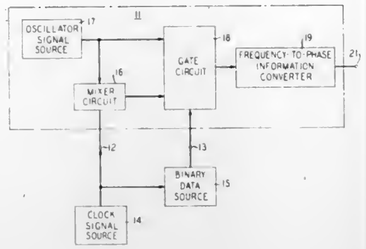
An arrangement for detecting the degradation of a received PCM signal before it becomes bad enough to cause serious errors. Ancillary threshold detectors operate at levels on either side of the basic threshold. A falling signal level or rising noise level causes a received pulse to fall in the range between the ancillary levels, producing a warning signal to indicate a degraded signal. As described, the warning signals are integrated over a period of time to produce a time average. The arrangement is useful in repeaters of a radio relay system.

3,777,269
BINARY MODULATOR FOR COHERENT PHASE-SHIFT KEYED SIGNAL GENERATION

Douglas MacPherson Brady, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 12, 1972, Ser. No. 243,254
Int. Cl. H04l *27/20*
U.S. Cl. 325—163 **10 Claims**

A binary modulator for encoding the two states of an input binary signal which is synchronized to a clock signal into two phase deviations of a frequency modulated coherent phase-shift keyed signal. The modulator first encodes the binary signal into a frequency modulated coherent frequency-shift keyed signal having first and second frequencies which differ by a multiple of the clock frequency. Phase-to-frequency conversion apparatus is then provided for translating the information contained in the frequencies of the frequency-shift keyed

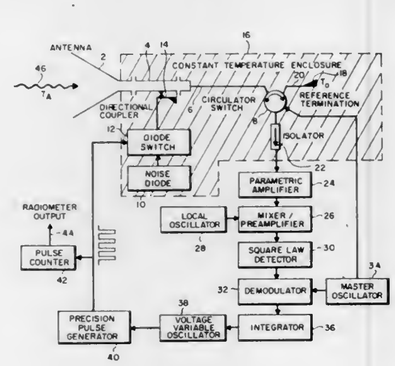


signal into phase shifts of a second signal which is the desired frequency modulated coherent phase-shift keyed signal.

3,777,270
PRECISION VARIABLE PULSE RATE NULLING RADIOMETER

Walter H. Hardy, Vancouver, Canada, and Kenneth W. Gray, Poolbrook Malvern, Worcestershire, England, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 12, 1972, Ser. No. 252,799
Int. Cl. H04b *1/00*
U.S. Cl. 325—363 **2 Claims**

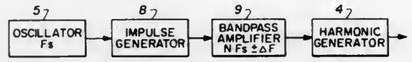


A radiometer system comprising an antenna; a reference signal source; sampling means connected to receive and alternately pass signals from said antenna and from said reference source; a constant amplitude noise source; switch means connected to add the output of said noise source to the signals from said antenna before said signals from said antenna are applied to said sampling means; a constant temperature enclosure enclosing said reference source, said sampling means, said noise source, and said switch means, and maintaining the enclosed components at a known temperature; comparison means connected to receive and compare the signals passed by said sampling means and to emit an error signal indicative of any difference between the signals from said reference source and the sum of the signals from said antenna and the output of said noise source; and means responsive to said error signal for controlling actuation of said switch.

3,777,271
GENERATION OF MICROWAVE FREQUENCY COMBS WITH NARROW LINE SPACING

Frederick John Telewski, Portland, Oreg., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 4, 1971, Ser. No. 186,367
Int. Cl. H01b *19/00*
U.S. Cl. 328—16 **6 Claims**

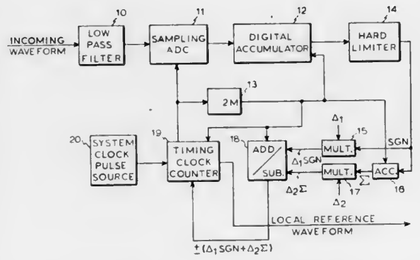


A harmonic generator such as a step recovery diode device is driven by two or more input signals of different frequencies to produce a comb spectrum consisting of lines at multiples of the input signal frequencies interspersed with lines at the frequencies of the intermodulation products.

3,777,272
DIGITAL SECOND-ORDER PHASE-LOCKED LOOP

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Jack K. Holes, 9412 Cattaraugus, Los Angeles; Christopher Carl, 420 S. Madison, Apt. 209, Pasadena, and Carl R. Tegnelia, 1800 State St., South Pasadena, all of Calif.

Filed Sept. 18, 1972, Ser. No. 290,030
Int. Cl. H03k *9/00;* **H03d** *3/24*
U.S. Cl. 329—104 **10 Claims**

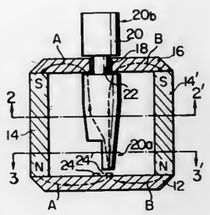


A digital second-order phase-locked loop is disclosed in which a counter driven by a stable clock pulse source is used to generate a reference waveform of the same frequency as an incoming waveform, and to sample the incoming waveform at zero-crossover points of the reference waveform. The samples are converted to digital form and accumulated over M cycles, reversing the sign of every second sample. After every M cycles, the accumulated value of samples is hard limited to a value SGN = ±1 and multiplied by a value Δ_1 equal to a number n_1 of fractions of a cycle. The SGN values are accumulated to form a value Σ which is multiplied by a value Δ_2 equal to a number n_2 of fractions of a cycle, where n_1 is greater than n_2. The product $\Delta_2 \Sigma$ is added to the product Δ_1 SGN at the end of every M cycles to form an error signal in digital form. That error signal is used to advance or retard the counter according to the sign of the sum by an amount equal to the sum $\Delta_1 \mathrm{SGN} + \Delta_2 \Sigma$, this continually synchronizing the output waveform of the counter with the incoming waveform.

3,777,273
ANGULAR POSITION DETECTOR USING MAGNETIC ELEMENTS

Kosaku Baba, Yokohama City, and Kiyoshi Wazawa, Fujisawa City, both of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Apr. 27, 1972, Ser. No. 248,192
Claims priority, application Japan, Nov. 8, 1971, 46/88269
Int. Cl. H03d *1/46*
U.S. Cl. 329—200 **4 Claims**

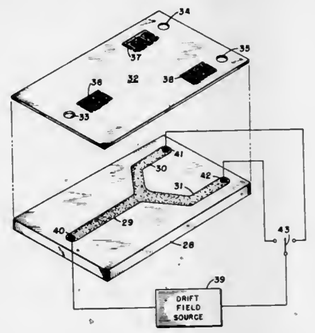


An angular position detector comprising means for establishing a magnetic field wherein a magnetic flux distributes in such a manner as to vary in accordance with the angular position of a rotary shaft. At least one pair of magnet effective elements each having a parameter varied in accordance with a density of a magnetic flux passing therethrough are placed in the magnetic field and incorporated in an electric circuit. The electric circuit connects the magnet effective elements in series to each other and impress a d-c voltage which is then divided into a voltage representing the variation of the parameter of the elements, namely, the angular position of the rotary shaft.

3,777,274
ELECTRONIC INTERACTION GUIDE STRUCTURE FOR ACOUSTIC SURFACE WAVES

David Abraham, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 32,315, April 27, 1970, abandoned. This application Jan. 18, 1972, Ser. No. 218,732
Int. Cl. H03f *3/04*
U.S. Cl. 330—5.5 **12 Claims**



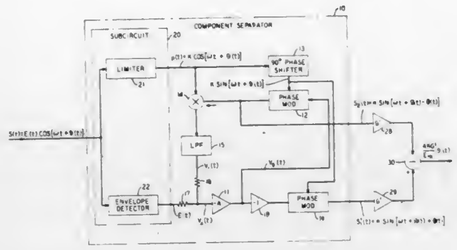
Acoustic surface waves are produced in a lossy piezoelectric material and are guided therealong due to the interaction between the acoustic waves and a drift electron flow established in an adjacent semiconductor matrial; i.e., the drift electrons impart energy sufficient to sustain propagation of the acoustic surface waves only in the desired direction defined by the drift electron path or channel.

3,777,275

LINEAR AMPLIFICATION WITH NONLINEAR DEVICES

Donald Clyde Cox, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 31, 1972, Ser. No. 222,243
Int. Cl. H03f 3/38
U.S. Cl. 330—10 5 Claims



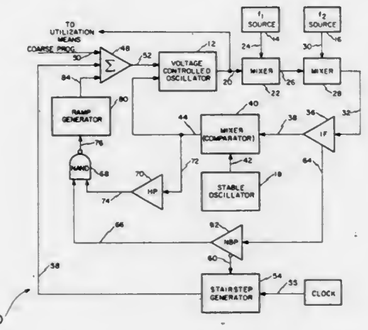
Available nonlinear amplifying devices are used to produce bandpass linear amplification of a signal having amplitude variations. The input signal is transformed into two constant amplitude phase modulated components which together contain in their phase fluctuations the total information content of the input. The components are amplified separately by devices which preserve phase, and the recombination of the amplified components reproduces a linearly amplified replica of the original input. The technique is primarily useful at high frequencies and can be modified to provide frequency translation.

3,777,276

PHASE LOCK LOOP WITH AUTOMATIC STEP BY STEP SEARCH SWEEP FOLLOWED BY LINEAR SEARCH SWEEP

Ira Klein, Brooklyn, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1973, Ser. No. 326,225
Int. Cl. H03b 3/04
U.S. Cl. 331—4 8 Claims



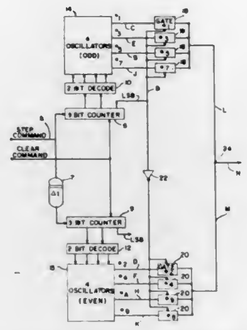
Disclosed is a phase-locking oscillator loop circuit in conjunction with automatic circuitry for searching for and forcing a phase locked condition with respect to a reference frequency, in which condition the oscillator of the loop operates at a frequency which is a function of first and second input frequencies. The automatic circuitry is characterized by means for step by step searching from a first coarse frequency approximation, with transition to a linear sweep until the lock frequency is achieved. The step by step search automatically reiterates if the desired frequency is passed.

3,777,277

DISCRETE STEP FREQUENCY SWEEP

Robert H. Naber, Mt. Vernon, N.H., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1973, Ser. No. 335,265
Int. Cl. H03b 23/00
U.S. Cl. 331—49 9 Claims



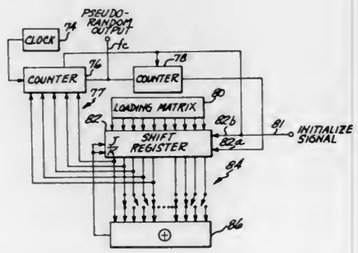
A frequency sweep generator for generating a repetitive series of constant amplitude, stable, discrete step frequency outputs. Eight crystal oscillators of increasingly higher frequencies are divided into odd and even groups of four oscillators each. Dual selecting circuits each comprising a three bit binary counter triggered by a periodic step command, a two bit decoder and four sampling gates, alternately select in numerical sequence one oscillator output from each of the groups. A delay circuit delays the step command one full period before triggering the even group binary counter. Each oscillator output is energized for a duration of two step command periods and the least significant bit of the odd group binary counter alternately selects the odd and even groups of parallel gates for a single step command period thus allowing each frequency output to warm up and stabilize due to advanced turn-on of the next required oscillator prior to sampling its output. The outputs of eight sampling gates are connected in common to provide a serial output.

3,777,278

PSEUDO-RANDOM FREQUENCY GENERATOR

Henrie L. Majeau, Bellevue, and Kermit J. Thompson, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 10, 1971, Ser. No. 179,416
Int. Cl. H03b 29/00
U.S. Cl. 331—78 6 Claims



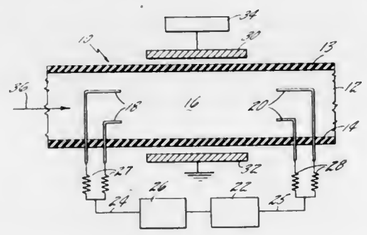
A frequency generator includes a clock source, a variable modulus counter, a fixed-modulus counter, a shift register and an exclusive-OR circuit. In order to obtain a truly pseudo-random sequence of frequencies at the output of the variable-modulus counter, for use in coding voice intercommunications or the like, pulses derived from the pseudo-random frequencies by the fixed modulus counter are used to clock the shift register which develops the pseudo-random sequence in conjunction with the exclusive-OR circuit and the variable-modulus counter.

3,777,279

DEPOSITION OF POWER IN A MOVING GAS STREAM BY ELECTRIC DISCHARGE MEANS

Alan C. Eckbreth, Glastonbury; Arthur E. Mensing, East Hartford, and Russell G. Meyerand, Jr., Glastonbury, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 30, 1972, Ser. No. 239,736
Int. Cl. H01s 3/09, 3/22
U.S. Cl. 331—94.5 8 Claims



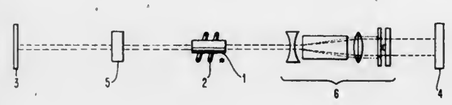
An alternating electric field is capactively coupled to a direct current electric discharge to enhance the power deposition while maintaining the discharge in a diffuse glow mode. The invention is explained in the practical context of laser applications.

3,777,280

LASER GENERATOR OF TE WAVE GUIDE MODES

Dieter Pohl, Adliswil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1972, Ser. No. 265,014
Claims priority, application Sweden, Aug. 12, 1971, 11891/71
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 19 Claims



Propagating radiation with rotationally symmetric optical modes of the TE_{01} (and TM_{01}) type show promising properties for future applications. For their generation, laser cavities inherently enhance the rotationally symmetric TEM^*_{01} (and TEM^*_{10}) laser modes. These cavities must suppress the otherwise usual fundamental TEM_{00} mode, and in addition discriminate against unwanted same order modes like the linearly polarized TEM_{01} and TEM_{10} laser modes.

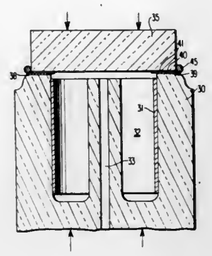
A birefringent crystal zero degree calcite inserted into the cavity applies higher losses at the aperture to the extraordinary beam showing the TEM^*_{10} mode. Thus, the ordinary beam showing the wanted TEM^*_{01} laser mode is favored. Mode selection is further assisted by a Galilean telescope-like setup of the crystal. Discrimination against fundamental mode and higher order modes may be improved by the insertion of circular or ring shaped apertures in the telescope arrangement.

3,777,281

SEAL AND METHOD OF MAKING SAME

Urs E. Hochuli, 7011 Southwork Ter., Hyattsville, Md.

Filed Aug. 3, 1970, Ser. No. 60,401
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 8 Claims



Gold films are used as an alloying flux to form 5 micron thick film seals mostly below 300°C. Pyrex was sealed to Quartz, ULE*, Cervit*, Germanium, Gallium Arsenide, (GaAs), invar and copper. The seals can also be used as current feed throughs and as graded seals and are particularly applicable to gas laser devices.

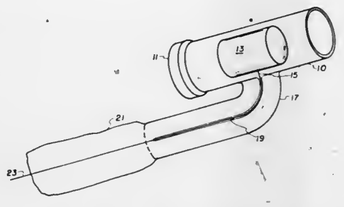
*Trademarks

3,777,282

METAL VAPOR LASER TUBE

William E. Richards, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1972, Ser. No. 223,201
Int. Cl. H01s 3/02, 3/22; H01j 61/26
U.S. Cl. 331—94.5 6 Claims

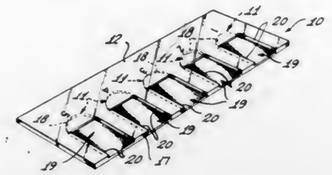


A metal vapor laser tube is comprised of an enclosure preferably in an elongate tubular form containing an amount of a metallic element. The material of the enclosure is selected to be electrically non-conductive and also for its ability to withstand elevated temperatures. The enclosure also has at least one window capable of transmitting energy at the wavelength of emission of the metallic element contained within the enclosure. Two electrodes, preferably in the form of cylinders, are oppositely disposed within the enclosure and an electrical conductor is connected to each electrode for external connection to a source of electrical energy. An extension of the enclosure is provided proximate to each electrode for containing the respective electrical conductors within a hollow capillary portion of the extension and also including an end portion of the extension which is sealed around the terminal of the electrical conductor to render it pressure-tight. The tube may be fabricated of quartz and the end portions of the extensions may comprise glass sealed to the quartz of the extensions which include the hollow capillary portion and also sealed around the terminal of each respective electrical conductor.

3,777,283
TRANSPARENT SLIDE FOR THE EXAMINATION OF LIQUID SPECIMENS

Carlos D. Elkins, 1414 S. Fairplain Ave., Whittier, Calif.

Filed Apr. 21, 1972, Ser. No. 246,203
Int. Cl. G02b 21/34
U.S. Cl. 331—94.5 8 Claims

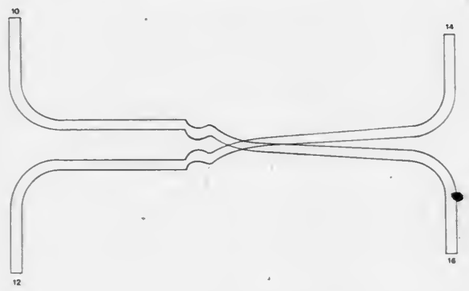


A transparent plastic slide having a plurality of covered examination chambers defined between generally parallel and uniformly spaced sidewalls integral with the slide, to hold specimen liquid in layers of substantially uniform depth for examination. Each chamber is formed as a laterally opening pocket having a semi-circular edge wall and an open side facing toward one edge of the slide, and a channel extends from each open side to the edge of the slide. The sidewalls are sufficiently close together to cause specimen liquid to be drawn into, and to fill, the chamber by capillary action when a quantity of the liquid is placed in the channel at the open side, such capillary action being sufficient to hold the liquid in the chamber when the edge of the slide is tapped gently against a suitable surface to remove excess liquid from the channel.

3,777,284
DIRECTIONAL PHASE-SHIFTING COUPLER

Richard V. Schultz, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1972, Ser. No. 238,266
Int. Cl. H01p 5/14, 3/08
U.S. Cl. 333—10 5 Claims



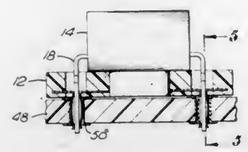
A coupling technique for selectively obtaining, within limits, any amplitude and phase relationship between the coupled and through ports of a stripline coupler.

3,777,285
ELECTRICAL SOCKET ADAPTOR MEMBER

John Edward Barr, Brea, Calif., assignor to International Telephone and Telegrsph Corporation, New York, N.Y.

Filed June 19, 1972, Ser. No. 263,926
Int. Cl. H05k 1/02
U.S. Cl. 339—17 CF 3 Claims

An electrical socket adaptor member for interconnecting an electrical circuit element having a plurality of electrical contacts extending therefrom with a mounting member having conductive members positioned therein. A body of insulation material has a plurality of openings extending from a first side of the insulating material to a second side thereof. Conductive spring members in the insulation have a portion secured from the periphery of the openings and extending away from the conductive material. The conductive spring members have a portion thereof which is expandable to contact the conductive

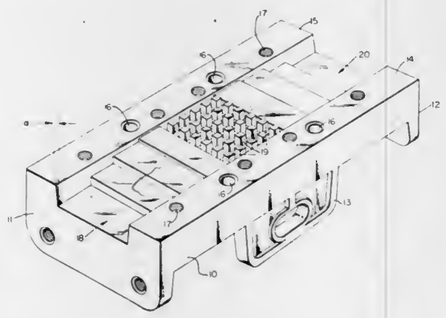


members of the mounting members. The conductive spring members expand to contact the conductive members upon insertion of the electrical circuit element contacts. The insulation material is molded around the conductive spring members. Each of the circuit elements of the electrical contacts are positioned in one of the openings in the insulation material and contact an internal surface of conductive spring members. The external surface of the spring members contact the conductive members of the mounting member.

3,777,286
DIE CAST WAVEGUIDE LOW PASS FILTER

Herman W. Cramm, Rolling Hills Estates; Clifford L. Gorby, Englewood, and Juri G. Leetmaa, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 7, 1972, Ser. No. 278,667
Int. Cl. H03h 7/10, 9/00
U.S. Cl. 333—70 S 6 Claims

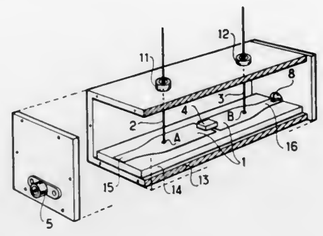


A microwave low pass filter of the so-called "waffle iron" type is disclosed. The filter utilizes die cast construction techniques and cast-in dowel holes for dimensional fidelity, close tolerances and precise alignment. The filter uses fewer parts than previous devices and can be easily assembled without the use of jigs, fixtures or special bonding techniques. Die cast construction techniques are made possible in the filter design by departing from the optimum electrical design of such components.

3,777,287
WIDE BAND POLARIZING T-CONNECTION

Guy Louvel, Antony, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed June 26, 1972, Ser. No. 266,018
Claims priority, application France, June 25, 1971, 7123371
Int. Cl. H01p 5/08, 3/08
U.S. Cl. 333—84 M 4 Claims

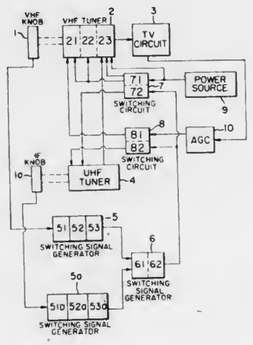


Device enabling a double polarization of two active circuits connected in hyperfrequency to be produced while avoiding a prohibitive proportion of stationary waves comprising two microstrips connected by a capacitor for blocking the continuous voltage ensuring the high frequency connection between the active circuits and two quarter wave lines connected perpendicularly to these microwaves. The distance between the two connection points and the quarter wave lines is equal to three quarters of a wavelength of the central frequency of the operation band.

3,777,288
PLURAL BAND CHANNEL SELECTOR HAVING SELECTOR KNOBS CONTROLLING RESPECTIVE ONES OF A PLURALITY OF TUNERS

Osamu Fujita, and Takaya Kitao, both of Fujisawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 25, 1972, Ser. No. 256,743
Claims priority, application Japan, May 31, 1971, 46/37951
Int. Cl. H03j 5/12
U.S. Cl. 334—1 8 Claims

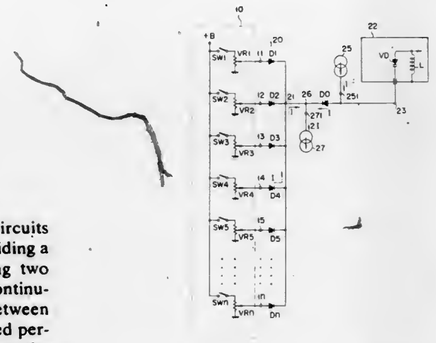


A channel selector is provided which has means for detecting the channel selector knobs of a VHF and UHF tuner touched by a viewer so that in response to the signal from the detecting means, the VHF or UHF tuner may be automatically energized whereas the other tuner is deactivated. Thus, only the desired tuner is energized in channel selection, and the channel selection may be made in one step.

3,777,289
SELECTOR HAVING CONSTANT CURRENT SOURCES AND COMPENSATING DIODE FOR REDUCING AMBIENT TEMPERATURE EFFECTS ON VARACTOR TUNER

Shinichi Makino, Fujisawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 14, 1972, Ser. No. 314,948
Claims priority, application Japan, Dec. 16, 1971, 46/101404; Mar. 31, 1972, 47/32443
Int. Cl. H03j 5/04
U.S. Cl. 334—15 7 Claims

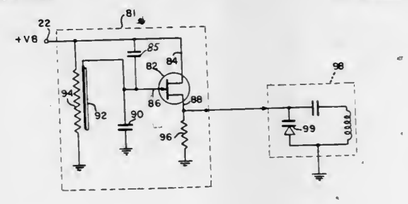


A channel selecting apparatus comprising a D.C. voltage source for generating different amounts of D.C. voltage corresponding to the respective channels, a plurality of channel diodes connected to the D.C. voltage, a common compensation diode connected between the diodes and an electronic tuner, the common compensation diode having the same characteristics as the channel diodes, and a pair of constant current sources for supplying currents to the channel diode and the compensation diode, thereby enabling the variable capacitance diode of the electronic tuner to be supplied with a specific voltage for selecting a given channel exactly as originally generated.

3,777,290
TOUCH TUNING AND CONTROL CIRCUITS

Carl R. Pittman, and James A. Long, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Division of Ser. No. 94,896, Dec. 3, 1970, Pat. No. 3,691,298.
This application May 24, 1972, Ser. No. 256,403
Int. Cl. H03j 3/06
U.S. Cl. 334—15 5 Claims



An electronic circuit for adjusting the volume and tone of an audio signal is controlled by appropriately bridging contacts included therein with a human finger or other conductive means. The length of time that a contact is bridged, or closed, determines the conductive state of a field effect transistor associated therewith. One such FET controls the gain of an audio amplifier whereby the amplitude of the audio signal is controlled. The conductive state of a second such FET con-

trols the biasing voltage on a junction transistor to control the shunting of the high frequency components of the audio signals.

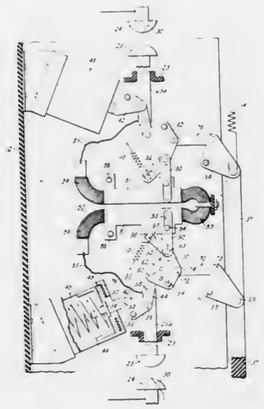
The audio output is coupled to varactor tuning means so that a change in the conductive state of an FET changes the frequency to which the varactor tuning means is tuned.

3,777,291

ELECTRIC SWITCH WITH MAGNETIC-ASSIST MEANS TO ASSIST SWITCH IN CLOSING AND REMAINING CLOSED AGAINST HIGH CURRENTS

Peter J. Kroon, Swarthmore, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Nov. 20, 1972, Ser. No. 308,155
Int. Cl. H01h 77/10
U.S. Cl. 335—16 **11 Claims**



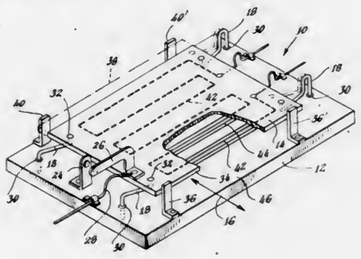
An electric switch includes magnetic-assist means for assisting the switch in closing and remaining closed against high currents. The magnetic-assist means develops a magnetic force acting in a switch-closing direction, even when the switch contacts are substantially fully separated. A toggle-type linkage connected between the magnetic-assist means and the movable contact of the switch limits to a relatively low value the portion of the magnetic force transmitted to the movable contact until the movable contact has passed through a substantial portion of its closing stroke.

3,777,292

LINEAR MOTOR RELAY

John E. Fulenwider, Concord, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sept. 25, 1972, Ser. No. 291,959
Int. Cl. H01h 67/04
U.S. Cl. 335—126 **15 Claims**



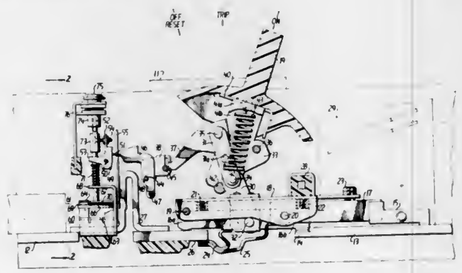
A linear motor relay is described for use in controlling switches and the like. The relay includes an electromagnetic drive in the form of a generally planar movable element and a generally planar stationary element. In one embodiment, a printed circuit conductor pattern is located on one element for coaction with longitudinal segments of a magnetic field produced by strips of unipolar permanently magnetic material located on the other element. In another embodiment an electromagnetic drive is obtained with coacting planar windings located on both the movable and stationary elements. A small layered structure may be formed capable of high output force for controlling a plurality of switches. A latching feature is provided to maintain the movable element in the position to which it has been driven by the electromagnetic drive. Stops are employed to retain a group of conductor turns in coacting relationship with a longitudinal segment of the magnetic field for bidirectional control upon a reversal of current flow.

3,777,293

NO-FUSE CIRCUIT BREAKER

Satoru Tuzuki, Takamatsu, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Oct. 30, 1972, Ser. No. 302,270
Int. Cl. H01h 71/74
U.S. Cl. 335—176 **8 Claims**



A no-fuse circuit breaker having a releasable contact mechanism and a trip mechanism therefor, wherein the trip mechanism comprises main and auxiliary magnetic circuits having main and auxiliary pole portions spaced apart in parallel relation and defining corresponding air gap portions, an armature member movably disposed between the main and auxiliary poles for movement in a direction perpendicular to the pole portions and being arranged to be adjustable in distance from at least one of the pole portions upon being rotated, and means for resiliently supporting the armature member such that when a predetermined overload current flows, the armature moves toward the main pole portion to reduce the main air gap, whereby a trip may be released by engagement therewith of a member connected to the armature.

3,777,294

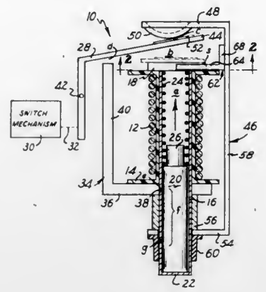
ELECTROMAGNETIC SWITCH

Aime J. Grenier, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 20, 1972, Ser. No. 308,206
Int. Cl. H01f 7/08
U.S. Cl. 335—236 **10 Claims**

An electromagnetic switch having a flux producing solenoid and a movable armature attractable to the solenoid upon the occurrence of a predetermined current level and duration is provided with flux path means in the form of members of low reluctance arranged so that the flux circuit comprises a plurality of loops, each loop having one or more reluctances which are variable and dependent upon the position of a

movable core located within the solenoid and the position of the armature. The arrangement is such that increased pulse resistance is obtained without substantially effecting the operation of the switch upon sustained overloads of a predetermined amount and duration.



3,777,295

MAGNETIC PARTICLE CORE

Alfred M. Laing, Butler, Pa., assignor to Magnetics, Inc., Butler, Pa.

Division of Ser. No. 80,476, Oct. 16, 1970, Pat. No. 3,666,571, which is a division of Ser. No. 714,805, March 21, 1968, Pat. No. 3,607,462. This application Apr. 3, 1972, Ser. No. 240,858
Int. Cl. H01f 3/00
U.S. Cl. 335—297 **10 Claims**

Magnetic particle cores suitable for phase shifting applications having a permeability substantially above 275 and core losses below 0.24 ohms per henry per unit of inductance at 1800 Hertz are produced by a novel combination of steps including one or more of the following: reduction of pre-powder anneal additives, selective distribution of magnetic particle sizes, adding flexibility to the electrical insulation applied to the magnetic particles, elevated pressure compacting, surface etching of the pressure compacted core after hydrogen anneal, and an oxidation heat treatment following surface etching. Surface etching and oxidation combine to increase the breakstrength and improve other properties of various permeability cores, for example, from 125 through 300 permeability.

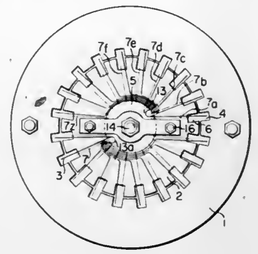
3,777,296

ELECTROMAGNETIC INDUCTION APPARATUS

Masayuki Ohyama, and Takefumi Nakamizo, both of Toyonaka-shi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 8, 1972, Ser. No. 251,539
Claims priority, application Japan, May 10, 1971, 46/31016; June 16, 1971, 46/43119; June 18, 1971, 46/44372; June 18, 1971, 46/44404; June 18, 1971, 46/44405
Int. Cl. H01f 21/00
U.S. Cl. 336—120 **18 Claims**

An electromagnetic induction apparatus is provided which comprises outer and inner cores and first and second windings on the outer and inner cores. Depending upon the relative angular position between the first and second windings the effects of the magnetic fluxes produced by the first and second windings upon the other or the degree of the inductive coupling between the first and second windings may be varied, so that the output voltage may be varied accordingly. That is, the magnetic flux which is produced by one winding remains unchanged in magnitude, and links the other winding, changes its direction, or the number of turns of the other winding linked with the magnetic flux produced by said one winding is increased or decreased. Hence the output voltage is varied. The leakage impedances may be minimized.

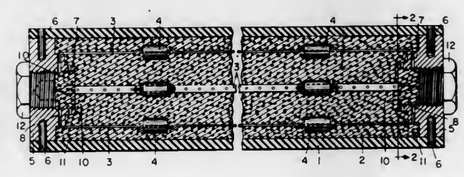


3,777,297

ELECTRIC FUSE FOR ELEVATED CIRCUIT VOLTAGES

Edward J. Knapp, Jr., Newburyport, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Oct. 27, 1972, Ser. No. 301,356
Int. Cl. H01h 85/12
U.S. Cl. 337—161 **9 Claims**



An electric fuse having plug terminals conductively interconnected by fuse links has means forming part of the plug terminals and performing the dual function of (1) forming lugs for conductively connecting the fuse links to the plug terminals and of (2) positively positioning the ends of the fuse links relative to the plug terminals preparatory to establishing the aforementioned conductive connection between the fuse links and the plug terminals.

ERRATUM

For Class 339—17 see:
Patent No. 3,777,285

3,777,298

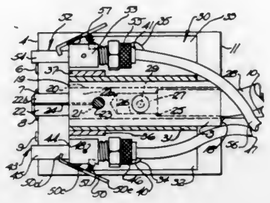
ELECTRICAL CONNECTOR

Albert P. Newman, Cincinnati, Ohio, assignor to Empire Products, Inc., Cincinnati, Ohio

Filed Dec. 2, 1971, Ser. No. 204,194
Int. Cl. H01r 3/04
U.S. Cl. 339—16 R **9 Claims**

A connector for electrical and fluid conduits. The connector comprises first and second body members, the first body member having one or more male electrical contacts and one or more male fluid conduit couplers. The second body member has one or more female electrical contacts and one or more female fluid conduit couplers. The first and second body members are adapted to be joined in abutting relationship

with their respective male and female electrical contacts and their respective male and female fluid conduit couplers in engagement. Latch means are provided to maintain the first and second body members in joined relationship and protective



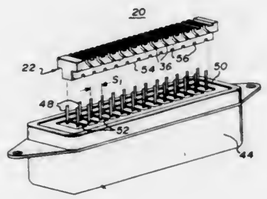
means are provided for the various male and female electrical contacts and male and female fluid conduit couplers when the first and second body members are in their joined or separated conditions.

3,777,299

WIRING ADAPTER

Earl F. Nickerson, Langhorne, and John M. Cole, New Hope, both of Pa., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Oct. 6, 1972, Ser. No. 295,605
Int. Cl. H05k *1/04*
U.S. Cl. 339—17 L **19 Claims**



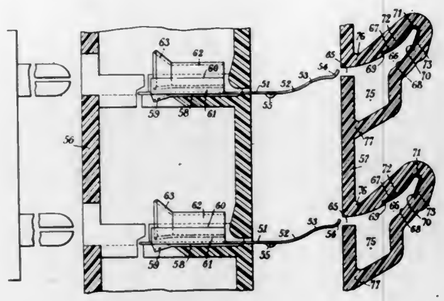
A wiring adapter for disposition intermediate a plurality of first conductors having a first predetermined spacing and a plurality of second conductors having a second predetermined spacing different than the spacing between the first conductors to permit a convenient, simple, and rapid interconnection therebetween. The device comprises a generally elongate base member formed preferably of electrically insulating material and having a series of generally parallel transverse first recesses disposed in one surface thereof and two further series of recesses each series extending down a respective surface on either side of the base member, the series of recesses on one side communicating with the even ones of the first series of recesses and the recesses extending down the other side of the base member communicating with the odd ones of the first series of recesses. The side recesses extend at an oblique angle with respect to the longitudinal axis of the base member, each pair of alternated, opposed side recesses generally defining a Vee, the apex of which is arranged to engage a respective pair of aligned parallel conductors in a socket member or the like, wherein the pitch of the parallel conductors may be selectively altered to conform to that defined by the series of first recesses.

3,777,300

SAFETY OUTLET AND PLUG DEVICE

Philippe De Villemeur, Maisons Alfort, France, assignor to Etablissements A. Gregoire et L. Barilleau, Alfort, France

Filed Mar. 18, 1971, Ser. No. 125,777
Claims priority, application France, Mar. 19, 1970, 7009881
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **4 Claims**



This safety current outlet and plug device is preferably of the continuous type, i.e. constituting a kind of skirting-board along a wall or the like. The electric contact between the prongs of the cap, plug or connector and the electric conductors of the current outlet is obtained by causing the elastic deformation of the prongs consisting to this end of a very flexible conducting and elastic metal blade of very reduced thickness, for instance of the order of 0.1 to 0.3 millimeter, of which the front portion is adapted to engage a rigid surface of the female member which produces a substantial deformation of said blade which is sufficient for ensuring a satisfactory and reliable electric contact between said blade and an electric conductor inserted in said current outlet.

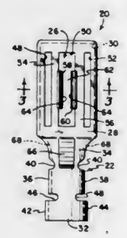
Thus, a current outlet may be obtained wherein any direct access to anyone of its conductors is positively prevented when using a rigid member, so that a safety current outlet is obtained.

3,777,301

TERMINALS AND CONNECTORS FOR INTERCONNECTING CONDUCTORS AND MALE CONTACTS

Leonard H. Michaels, Warrenville, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Filed Nov. 29, 1972, Ser. No. 310,329
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 S **13 Claims**



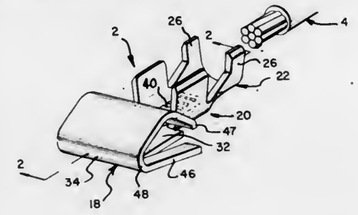
A generally dish-shaped terminal includes female contact structure for receiving a projecting male terminal and includes a wire gripping portion. The contact structure includes two or more arms integral at both ends with a planar portion of the terminal, and each arm carries a contact segment interfacing with similar contact segments to receive male terminals of different shapes, including blade terminals and round and square post or pin terminals, with an interference fit. Connectors including terminals mounted in cavities in insulating housings are used when covering or protecting of the terminals is desired.

3,777,302

ELECTRICAL CONTACT TERMINAL HAVING CLOSED ENTRY RECEPTACLE AND CONNECTOR

Allen Edwin Travis, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 26, 1971, Ser. No. 202,325
Int. Cl. H01r *15/12*
U.S. Cl. 339—223 R **1 Claim**



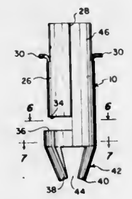
Stamped and formed electrical contact terminal comprises a crimp portion of U-shaped cross section and a contact portion in the form of a tongue extending from the crimp portion. The tongue is reversely bent and has a locking section extending into the crimp portion. Upon crimping of the crimp portion onto a wire, the locking section is locked to the crimped connection to provide a closed entry receptacle. Connector housing for the disclosed terminal has a cavity such that the terminal need not be preferentially oriented during insertion.

3,777,303

HOLE LINER FOR PRINTED CIRCUIT BOARDS

Cletus McDonough, Elmhurst, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Filed Mar. 15, 1972, Ser. No. 234,958
Int. Cl. H01r *11/22*; **H05k** *1/18*
U.S. Cl. 339—258 R **5 Claims**



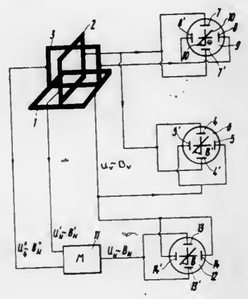
A hole liner includes a metal body insertable into a hole in a printed circuit board for holding a component lead to be soldered to the board. An upper stop limits insertion, while a resilient latch near the lower end of the body engages the lower surface of the board to prevent withdrawal of the liner. The lower end of the body includes jaws for gripping a component lead inserted into the liner, and at least one of the jaws is connected to the resilient latch. The outer surfaces of the jaws are angled inwardly to aid insertion of the body into the hole, and upon insertion the jaws contract and the latch is resiliently forced inwardly. Upon full insertion the latch moves to its latching position in engagement with the undersurface of the board. The mouth or gap defined by the jaws is smaller than the component lead, so that when the lead is inserted the latch is further extended, thus firmly holding the liner in place on the board.

3,777,304

INDICATOR

Tore Gulich, Marie Dalsvagen 48 D, Malmo, and Lennart Stigmark, Fack 24500, Staffanstorp, both of Sweden

Filed Feb. 28, 1972, Ser. No. 230,055
Int. Cl. G01r *33/02*
U.S. Cl. 340—4 R **4 Claims**



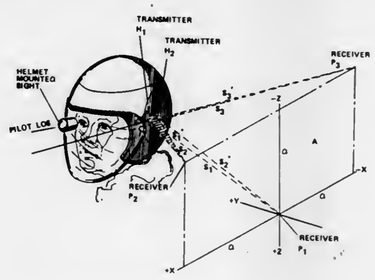
This invention relates to an indicating device for the navigation of vehicles along power cables, especially of ships along underwater cables, wherein a system of coils is mounted on the ship, which coils are adapted to sense the magnetic field surrounding the cables.

3,777,305

ULTRASONIC ANGLE MEASUREMENT SYSTEM

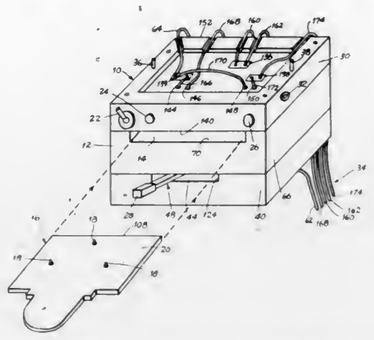
Ronald G. Stoutmeyer, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1972, Ser. No. 242,540
Int. Cl. G01s *5/18*
U.S. Cl. 340—16 R **8 Claims**



An ultrasonic angle measuring system having three system-spatially fixed receivers and two transmitters mounted on a helmet wherein the time lapse information at the receivers of signals from the transmitters establishes the location and orientation of the helmet with respect to a reference position.

3,777,306
VEHICLE ELECTRONIC SECURITY DEVICE
Lester T. Speckhoff, St. Louis, Mo., assignor to Arthur G. Simpson, St. Louis, Mo., a part interest
Filed Oct. 16, 1972, Ser. No. 297,593
Int. Cl. B60r *25/04*
U.S. Cl. 340—64 **14 Claims**

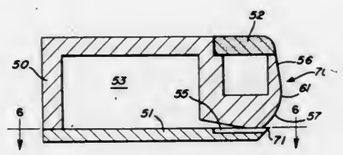


An electronic security device for interposition in the ignition circuit of a motor vehicle and including a receptacle having coded indicia along at least one inner surface thereof corresponding to coded indicia of a card adapted for insertion in the receptacle, and transport means for transporting the card within the receptacle to cause juxtaposition of the coded indicia of the card with the coded indicia of the receptacle, the device including primary electrical switch means electrically connected therein so that juxtaposition of the coded indicia closes the ignition circuit through the device.

ERRATUM

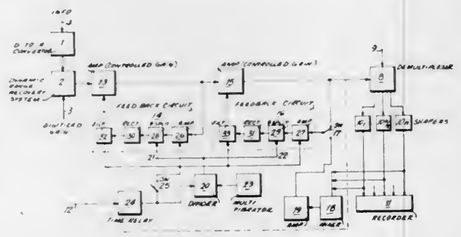
For Class 340—147 see:
Patent No. 3,777,308

3,777,307
CATCHER FOR A JET DROP RECORDER
Peter L. Duffield, Kettering, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Dec. 20, 1972, Ser. No. 317,073
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **11 Claims**



There is disclosed an elongated catcher for use with a jet drop recorder which comprises a convex catching face and a recessed drop ingesting blade. The catcher is preferably grounded and positioned in spaced relation to an electrically charged deflection ribbon so as to create a static electrical field between the deflection ribbon and the face of the catcher. Drops of recording fluid which are deflected by the electrical field impact against the backwardly sloping upper portion of the catching face and then flow downwardly along the curving surface of the catching face to the upper surface of the blade. The captured recording fluid, which has preferably spread out into a continuous film, is then ingested into an internal cavity via a series of channels in the upper surface of the blade. To prevent build up of accumulated spray at the top of the catcher there is provided a porous upper surface which connects with a special compartment within the catcher. This compartment is separate from a larger main compartment into which is delivered the ink which is ingested by the blade. Each of these compartments has its own vacuum source for drawing off the liquid accumulated therein.

3,777,308
DEVICE FOR INFORMATION PLAYBACK IN MULTICHANNEL DIGITAL SEISMIC RECORDING SYSTEM
Gennady Mikhailovich Borkovsky, Khoroshevskoe shosse, 16, kv. 11; Alexander Alexandrovich Drozdov, ulitsa Valovaya, 6/8, kv. 75; Vladimir Markovich Kriesburg, ulitsa Junykh Lenintsev, 105 korpus 1, kv. 59, and Anatoly Andreevich Tsukanov, Frunzenskaya Naberezhnaya 48, kv. 107, all of Moscow, U.S.S.R.
Division of Ser. No. 866,944, Oct. 16, 1969, abandoned. This application July 6, 1972, Ser. No. 269,405
Claims priority, application U.S.S.R., Oct. 16, 1968, 1277321; Dec. 26, 1968, 1294493
Int. Cl. G01v *1/28*; **H03k** *13/00*
U.S. Cl. 340—147 CN **2 Claims**

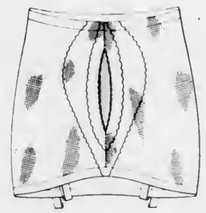


A device for information playback in multichannel digital seismic recording systems based on the compression of the dynamic range of signals and consisting in that information recorded in digital multiplex form as values of signal samples in channels having respective gains is read off the carrier and converted into amplitude pulse multiplex signals accounting for the respective gains, thus recovering the original dynamic range of signals of a channel, compressing in a similar manner the recovered dynamic range of channel signals to a value acceptable for visual display, the channel signals obtained in the compressed dynamic range being demultiplexed and visually displayed.

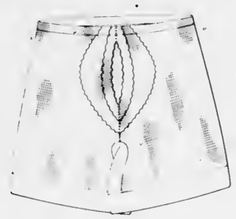
DESIGNS

DECEMBER 4, 1973

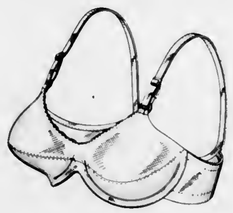
229,453
GIRDLE
Sallyann Zanca Salisky, Westwood, N.J., assignor to International Playtex Corporation, New York, N.Y.
Filed Sept. 2, 1971, Ser. No. 177,528
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



229,454
PANTY GIRDLE
Sallyann Zanca Salisky, Westwood, N.J., assignor to International Playtex Corporation, New York, N.Y.
Filed Sept. 2, 1971, Ser. No. 177,527
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



229,455
BRASSIERE
Frank C. Wolfson, New York, N.Y., assignor to International Playtex Corporation, New York, N.Y.
Filed May 10, 1971, Ser. No. 142,111
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



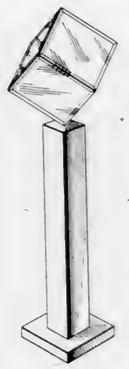
229,456
SHOE SOLE
Stanley Norman Plampton, East Tilbury, and Leonard Philip John Spooner, Grays, England, assignors to Bata Shoe Company, Incorporated, Belcamp, Md.
Filed Apr. 24, 1972, Ser. No. 247,223
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321



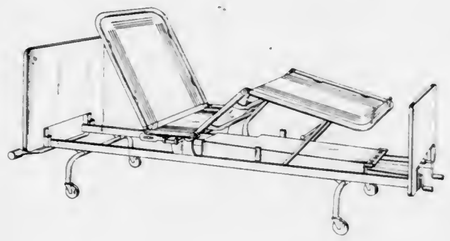
229,457
CHILD'S DRESSING TABLE OR SIMILAR ARTICLE
Nathanael W. Mathieson, Meadow Lark Road, Vernon, Conn. 06086
Filed Dec. 17, 1970, Ser. No. 26,544
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14



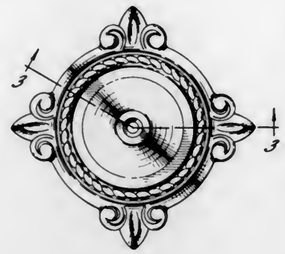
229,458
DISPLAY CUBE WITH PEDESTAL STAND
Marshall C. Schneider, Newton Center, Mass., assignor to Charles D. Burnes Co.
Filed May 26, 1971, Ser. No. 147,296
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—20



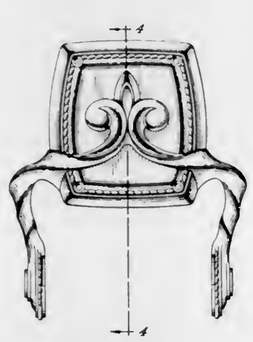
229,459
BED
Roland A. Benoit, Danielson, and Richard H. Duprey, Dayville, Conn., assignors to Interroyal Corporation, New York, N.Y.
Filed Aug. 23, 1972, Ser. No. 282,950
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



229,460
POST FOR SOAP DISH HOLDERS OR THE LIKE
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,445
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—86



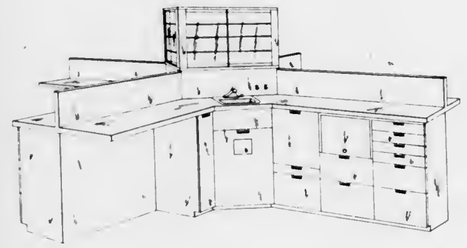
229,461
TISSUE HOLDER
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,268
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



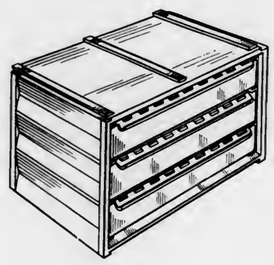
229,462
DISPLAY RACK FOR SHOES
Michael Wahl, Searington, Long Island, N.Y., assignor to Wahl Associates, Inc., Long Island City, N.Y.
Filed May 20, 1971, Ser. No. 145,590
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—116



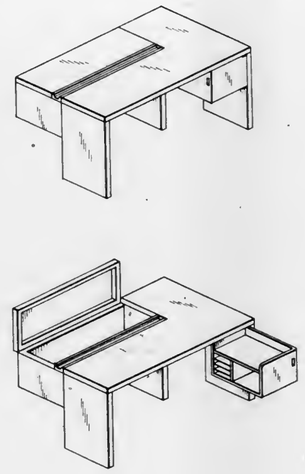
229,463
CABINET AND SERVICE UNIT FOR DENTAL CLINICS, DENTAL OFFICES AND THE LIKE PROVIDING A PLURALITY OF CUBICLES
Kenneth C. Marshall, Clayton, Mo., Peter G. Sotiropoulos, Belleville, Ill., and Anton M. Piros, St. Louis County, Mo., assignors to The Orthodontic Education and Research Foundation, St. Louis, Mo.
Filed Aug. 2, 1971, Ser. No. 168,511
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



229,464
STACKABLE CHEST OF DRAWERS
Alfredo Martini, Via della Giardina, Monza, Italy
Filed Oct. 12, 1970, Ser. No. 25,474
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—165



229,465
DESK
Franz Hero and Karl Odermatt, Stafa, Zurich, Switzerland, assignors to Interlubke Gebr. Lubke KG, Wiedenbruck, Germany
Filed Feb. 28, 1972, Ser. No. 229,628
Claims priority, application Germany Aug. 26, 1971
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—168



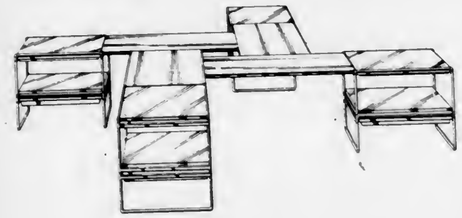
229,466
DISPLAY, DISPENSING AND STORAGE CABINET
Harvey J. Smith, Greensboro, N.C., assignor to Modern Metal Products Company, Greensboro, N.C.
Filed Sept. 17, 1971, Ser. No. 181,646
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—170



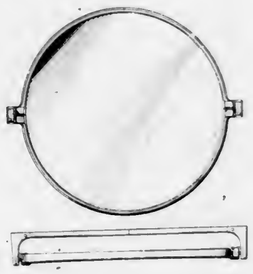
229,467
TABLE
Arnold P. Ginsburg, Los Angeles, Calif.
(1794 Kelton Ave., West Los Angeles, Calif. 90025)
Filed Mar. 1, 1972, Ser. No. 231,064
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—179



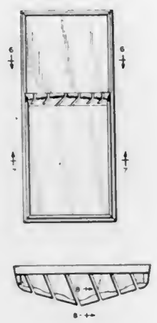
229,468
TABLE
Arnold P. Ginsburg, Los Angeles, Calif.
(1794 Kelton Ave., West Los Angeles, Calif. 90025)
Filed Mar. 2, 1972, Ser. No. 231,443
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—179



229,469
MIRROR
Jacques Firdmann, Venon, France, assignor to Etablissements Allibert, Monestier-de-Clermont, Isere, France
Filed Mar. 23, 1972, Ser. No. 237,612
Claims priority, application France Sept. 24, 1971
Term of patent 7 years
Int. Cl. D6—*07*
U.S. Cl. D6—243



229,470
KNIFE HOLDER OR SIMILAR ARTICLE
Ross F. Pollard, Amesbury, Mass., assignor to Towle Manufacturing Company, Newburyport, Mass.
Filed Sept. 5, 1972, Ser. No. 286,021
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—74



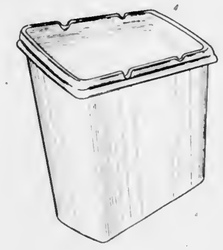
229,471
ICE BUCKET
George Biondi, Via del Parione 6, Florence, Italy, and Renzo Fanucchi, Via Provenciale, Lucehese 6, Pescia, Italy
Continuation-in-part of design application Ser. No. 24,539, Aug. 17, 1970, which is a continuation of design application Ser. No. 14,788, Dec. 4, 1968, both now abandoned. This application Mar. 3, 1971, Ser. No. 120,793
Claims priority, application Italy June 5, 1968
Term of patent 3½ years
Int. Cl. D7—*02*
U.S. Cl. D7—78



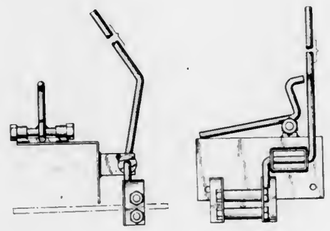
229,472
KNIFE
Walter Wells Collins, Atlanta, Ga., assignor to Adventure Products, Inc., Atlanta, Ga.
Filed Apr. 4, 1972, Ser. No. 241,100
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—150



229,473
NEWSPAPER COLLECTION CONTAINER
Charles T. Henry, 7114 Kingsbury Blvd., University City, Mo. 63130
Filed July 18, 1972, Ser. No. 272,764
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—191



229,474
POULTRY HOUSE TRACTION CABLE CLAMP
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed July 28, 1971, Ser. No. 167,083
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D8—44



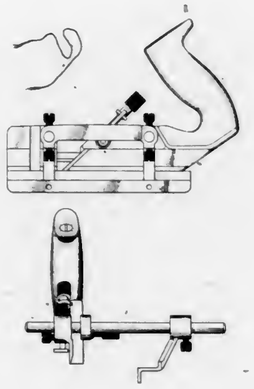
229,475
SCREWDRIVER HAVING AN INSULATING HANDLE
Cesare Uboldi, Milan, Italy, assignor to Cesare Uboldi & Figlie S.p.A., Milan, Italy
Filed Nov. 9, 1971, Ser. No. 197,198
Claims priority, application Italy May 31, 1971
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—82



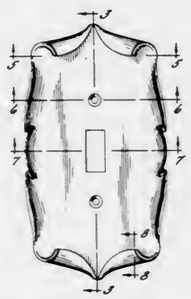
229,476
SHARPENING ROD
Robert N. Farquharson, Bradford, Pa., assignor to W. R. Case & Sons Cutlery Co., Bradford, Pa.
Filed Mar. 15, 1971, Ser. No. 124,653
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—93



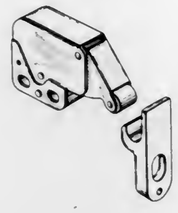
229,477
PLANE
Ronald David Carter, Leamington Spa, England, assignor to Stanley Works (Great Britain) Limited, Woodside, Sheffield, England
Filed Oct. 6, 1971, Ser. No. 187,238
Claims priority, application Great Britain June 23, 1970
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—101



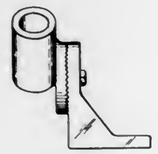
229,478
ESCUTCHEON
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed June 1, 1971, Ser. No. 149,121
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



229,479
SPRING LATCH
Giancarlo Borsani, Via A. Volta 112, 21047 Saronno, Italy
Filed July 19, 1972, Ser. No. 273,303
Claims priority, application Italy Jan. 19, 1972
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—203



229,480
ADJUSTABLE MOORING BRACKET
Donald Brushaber, Livingston Township, N.J., assignor to Monarch Tool and Manufacturing Co., Fairfield, N.J.
Filed Aug. 13, 1971, Ser. No. 171,785
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—232



229,481
SCREW
Thomas P. O'Donnell, New York, N.Y. (220 Highland Blvd., Brooklyn, N.Y. 11207)
Original design application Aug. 16, 1968, Ser. No. 13,167, now Patent No. 225,970, dated Jan. 16, 1973. Divided and this application Aug. 6, 1970, Ser. No. 24,343
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267



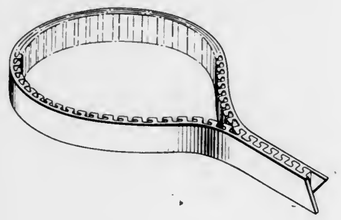
229,482
BOTTLE
Paul Suhard, Paris, France, assignor to Union de Brasseries, Paris, France
Filed Feb. 3, 1972, Ser. No. 223,395
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—147



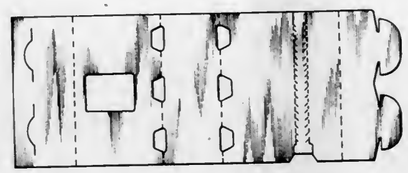
229,483
CONTAINER FOR LIQUIDS
Gary L. Cutler, East Lansing, Mich., assignor to Cutler Plastics Corporation, Lansing, Mich.
Filed Apr. 14, 1972, Ser. No. 244,354
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175



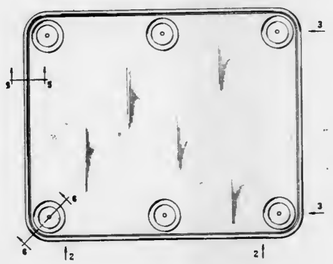
229,484
CORRUGATED STRAP FASTENER
Dwight C. Brown, 5712 N. 20th St., Arlington, Va. 22205
Filed Aug. 16, 1972, Ser. No. 281,004
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—252

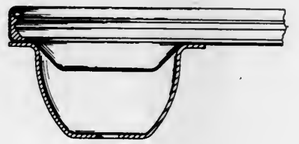


229,485
CONTAINER BLANK
Steven H. Petersen, Holland, Mich., assignor to Steketee-Van Huis, Holland, Mich.
Filed Nov. 26, 1971, Ser. No. 202,715
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—245



229,486
SUPPORT TRAY
Ralph E. Roper, Indianapolis, Ind., assignor to Wallace Expanding Machines, Inc., Indianapolis, Ind.
Filed Jan. 7, 1972, Ser. No. 216,332
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—53



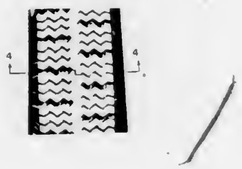


229,487
TIRE
Harold D. Fetty, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 3, 1971, Ser. No. 204,792
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151

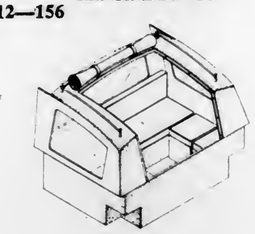


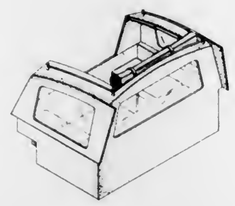
229,488
TIRE
Gilbert Joseph Hoke, Kenmore, N.Y., assignor to Dunlop Tire and Rubber Corporation, Buffalo, N.Y.
Filed July 20, 1971, Ser. No. 164,486
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151



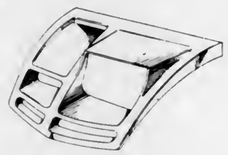


229,489
AUXILIARY CAB FOR A PICKUP TRUCK
Frank Hopkins, Jr., 4770 Fee Road, Bridgeton, Mo. 63044
Filed Feb. 24, 1972, Ser. No. 229,248
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156

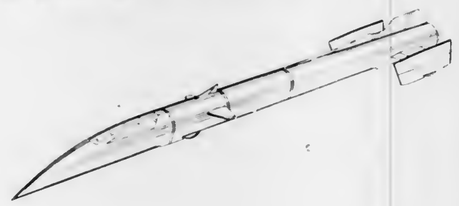




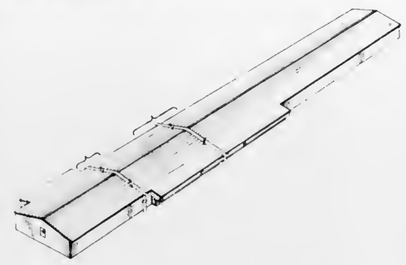
229,490
SNOWMOBILE ENGINE COWLING
Thomas Scott, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed May 10, 1972, Ser. No. 252,162
Claims priority, application Canada Apr. 5, 1972
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—173



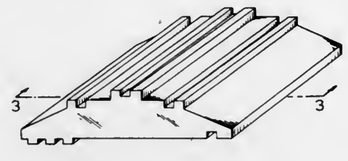
229,491
RACING VEHICLE
Craig N. Breedlove, 2412 Amsler St., Torrance, Calif. 91305
Filed Jan. 7, 1972, Ser. No. 216,340
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—85



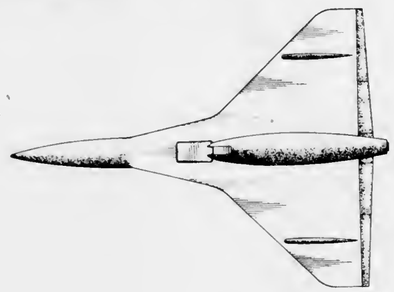
229,492
HI-RISE POULTRY BUILDING
George E. France, Rte. 2, Box 60, Oswego, Ill. 60543
Filed May 8, 1972, Ser. No. 251,602
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R

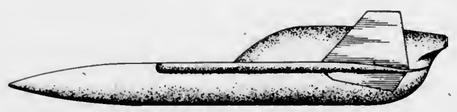


229,493
FRAMING SECTION
Reginald Ernest Feakins, Sea Ridge, Frank's Bay, Southampton, Bermuda
Filed Aug. 16, 1971, Ser. No. 172,356
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

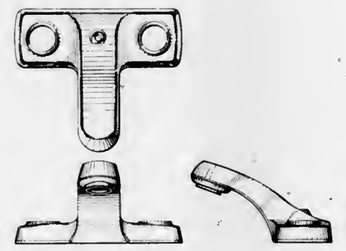


229,494
JET POWERED REMOTELY PILOTED VEHICLE
Leroy I. Sather, 2532 14th W., Seattle, Wash. 98119
Filed Aug. 25, 1971, Ser. No. 175,029
Term of patent 3½ years
Int. Cl. D22—*03*
U.S. Cl. D22—11

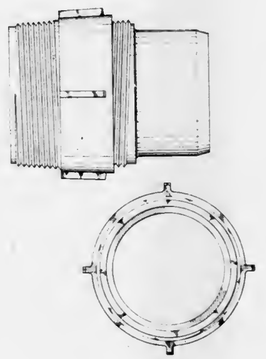




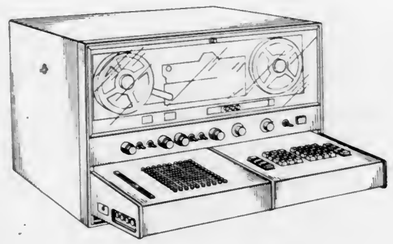
229,495
LAVATORY FITTING
Harper Landell, Fort Washington, Pa., assignor to Speakman Company, Wilmington, Del.
Filed June 2, 1972, Ser. No. 259,359
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



229,496
TRAILER WASTE OUTLET COUPLING WITH REVERSELY THREADED MEMBERS
Claude E. Hand, 1402 3rd St., La Grande, Oreg. 97850
Filed July 28, 1971, Ser. No. 167,092
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



229,497
PROGRAMMABLE TESTER FOR TESTING DIGITAL AND ANALOG CIRCUIT BOARDS AND LOGIC CIRCUITS
John O. Pierce, County of Ventura, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed July 12, 1971, Ser. No. 161,412
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1 Q



229,498
TELEVISION ANTENNA
Harvey R. Brandt and Nicholas Werner, Somerville, N.J., assignors to Gavin Electronics Division, Antennacraft Company
Filed Nov. 15, 1972, Ser. No. 306,799
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F





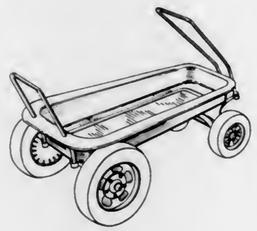
229,499
BATTERY CHARGER OR SIMILAR ARTICLE
Donald K. Krumin and Richard J. Toth, Fort Lauderdale, Fla., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 13, 1971, Ser. No. 188,631
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 B



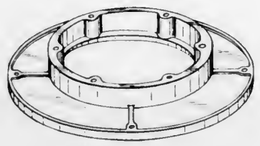
229,500
BATTERY CHARGER OR SIMILAR ARTICLE
Donald K. Krumin and Richard J. Toth, Fort Lauderdale, Fla., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 13, 1971, Ser. No. 188,632
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 B



229,501
WAGON
Mario A. Pasin, Oakbrook, Ill., assignor to Radio Steel & Mfg. Co., Chicago, Ill.
Filed Apr. 14, 1972, Ser. No. 244,320
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



229,502
DRIVING PAD RISER FOR DISC FLOOR SURFACING MACHINE
James E. Thielen, New Brighton, Minn. (2501 Hudson Road, St. Paul, Minn. 55101)
Filed Mar. 1, 1971, Ser. No. 120,001
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D37—1

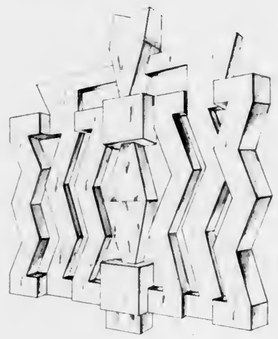


229,503
COMB FOR MOWERS AND THE LIKE
Dale A. Klemenhagen, 5216 Shoreview Ave. S. 55417; Merton F. Snyder, 3325 W. 55th St. 55410; and William C. Lindquist, 5302 30th Ave. S. 55417, all of Minneapolis, Minn.
Filed May 20, 1971, Ser. No. 145,601
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 R

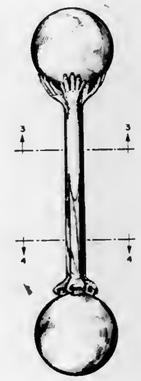




229,504
TALISMAN
Hari S. Van Hoefen, 803 S. Price Road, Ladue, Mo. 63124
Filed Nov. 24, 1972, Ser. No. 309,073
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—15



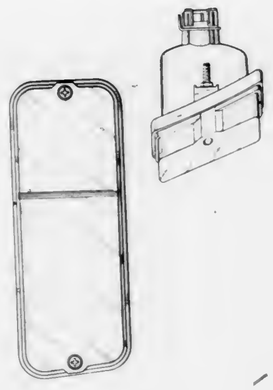
229,505
JEWELRY FINDING
James J. Ryan, 9080 Wesleyan Road, Philadelphia, Pa. 19136
Filed Oct. 12, 1972, Ser. No. 297,166
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 R



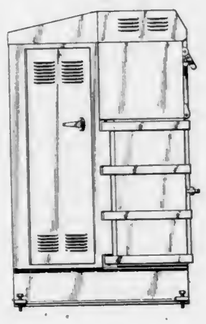
229,506
LAMP OR THE LIKE
Eric W. Chadwick, Saratoga, Calif., assignor to TC Products, Palo Alto, Calif.
Filed Nov. 19, 1969, Ser. No. 20,186
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—20 E



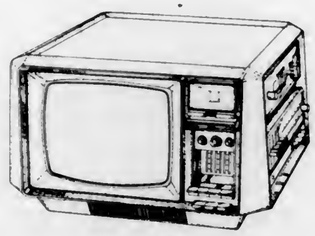
229,507
SIDE LIGHT FOR MOTOR CARS
Gianpaolo Boano, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed Aug. 9, 1971, Ser. No. 170,423
Claims priority, application Italy Feb. 19, 1971
Term of patent 7 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R



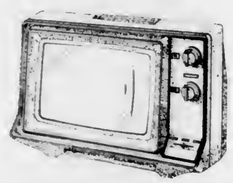
229,508
REFUSE BALER
Jay R. Guhl, San Leandro, Calif., assignor of a fractional part interest to W. Dean Park, San Leandro, Calif.
Filed Aug. 6, 1971, Ser. No. 169,882
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 B



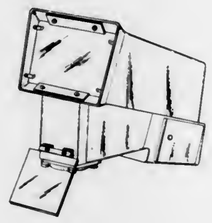
229,509
COMBINED RADIO RECEIVER, TAPE PLAYER, CLOCK AND TELEVISION RECEIVER
Kumi Yanagisawa, Fumiharu Ohta, Susumu Ezawa, and Masaharu Katayama, Saigiyou, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 6, 1972, Ser. No. 241,885
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D



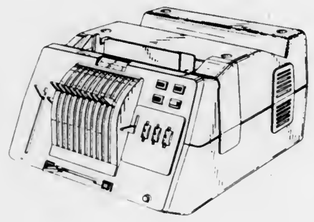
229,510
TELEVISION RECEIVER
Masaharu Katayama and Noriyuki Arai, Saijo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 30, 1970, Ser. No. 26,708
Claims priority, application Japan July 9, 1970
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



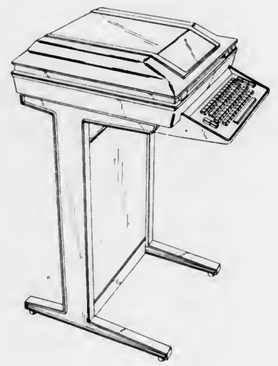
229,511
MACROSCOPE PROJECTION UNIT
Kenneth Eldred Parker, 6121 Belen St., Long Beach, Calif. 90815
Filed Oct. 14, 1971, Ser. No. 189,490
Term of patent 7 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N



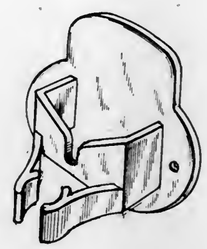
229,512
PRINTING MACHINE
Alan G. R. Ashton, Oxted, and Edward J. Cordell, Chelmsford, England, assignors to English Numbering Machines Limited, London, England
Filed May 4, 1972, Ser. No. 250,465
Claims priority, application Great Britain Dec. 8, 1971
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B



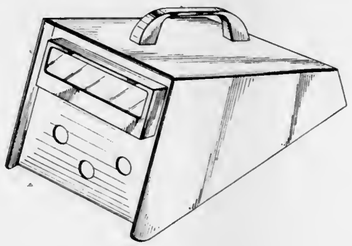
229,513
COMBINED KEYBOARD AND ELECTRONIC DATA PRINTER
Harold William Bermender, Jr., Hamden, Conn., assignor to Mite Corporation, New Haven, Conn.
Filed July 1, 1971, Ser. No. 159,092
Term of patent 7 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R

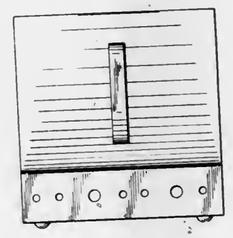


229,514
STETHOSCOPE WALL MOUNTED BRACKET
Ben Einhorn, 4858 Topeka Drive, Tarzana, Calif. 91356
Filed July 28, 1971, Ser. No. 167,070
Term of patent 3½ years
Int. Cl. D24—*99*; D14—*03*
U.S. Cl. D83—1 F

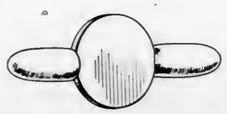


229,515
LABORATORY INSTRUMENT CASE
John P. Salsgiver, Acton, Mass., assignor to United Technical Corporation, Concord, Mass.
Filed June 8, 1971, Ser. No. 151,168
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F





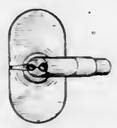
229,516
SAFETY COTTON SWAB
Ronald J. Scheurer, Portland, Oreg., assignor of a fractional part interest to Paul J. Willoughby, Portland, Oreg.
Filed Jan. 14, 1972, Ser. No. 218,044
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 J

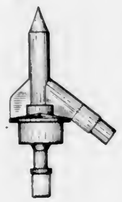


229,517
BOTTLE SLING
John C. Wilson, Anaheim, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed May 22, 1972, Ser. No. 255,932
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—8 R

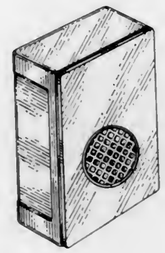


229,518
DISPENSING PIN FOR MEDICAL ADMINISTRATION EQUIPMENT
Albert Frank Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 26, 1971, Ser. No. 192,703
Term of patent 7 years
Int. Cl. D24—*04*
U.S. Cl. D83—12 A





229,519
CONTAINER FOR A MESSAGE TRANSMITTER AND CIGARETTES
June Wood, Scottsdale, Ariz., assignor to Aero Electronics Development Co., Inc., Tempe, Ariz.
Filed June 21, 1971, Ser. No. 155,385
Term of patent 14 years
Int. Cl. D27—*06*
U.S. Cl. D85—2 B



229,520
PIPE
John J. Lamberti, New York, N.Y. (% Hotel Breslin, Broadway at 29th St., New York, N.Y. 10001)
Filed June 8, 1972, Ser. No. 244,323
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 A



229,521
LOCK CHAMBER TENT FOR AIR RAID SHELTERS
Launo Laakkonen, Helsinki, Finland, assignor to Temet Oy, Helsinki, Finland
Filed May 30, 1972, Ser. No. 258,210
Claims priority, application Finland Dec. 13, 1971
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D88—3 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF DECEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Kongsberg Vapenfabrikk: *See—*
Westrum, Thorbjorn, 3,776,164.

AAI Corporation: *See—*
Abbott, David D., 3,776,137.
Dix, Michael P.; and La Costa, Nicholas J., 3,776,136.

AB Hagglund & Soner: *See—*
Kjellqvist, Olof Gunnar, 3,776,103.

Abbott, David D., to AAI Corporation. Projectile and cartridge arrangement. 3,776,137, Cl. 102-41.000.

Abe, Katsuo, to Hitachi, Ltd. Cathode ray tubes. 3,777,057, Cl. 178-7.800.

Abe, Kinichi. Process for manufacture of rigid foams. 3,776,746, Cl. 106-75.000.

Abe, Shinogu: *See—*
Seri, Tsutomu; and Abe, Shinogu, 3,777,239.

Abendschein, Frederic H., to Borg-Warner Corporation. Oil separator for refrigeration compressor. 3,776,668, Cl. 418-97.000.

Abraham, David, to United States of America, Navy. Electronic interation guide structure for acoustic surface waves. 3,777,274, Cl. 330-5.500.

Abrioux, Andre: *See—*
Aubin, Guy; Abrioux, Andre; and Leroy, Jules, 3,777,163.

ACF Industries, Incorporated: *See—*
Fowler, James M.; Kemp, Willard E.; and Tomlin, Jerry B., 3,776,506.
Tomlin, Jerry B.; and Helenberg, John, 3,776,507.

Adams, Anthony E.; Yearsley, Gerald A.; Simmons, Marion I.; and Yager, Billy P., to Texas Instruments, Incorporated. Automatic semiconductor bonding machine. 3,776,447, Cl. 228-3.000.

Adams, John B., Jr., to Du Pont de Nemours, E. I., and Company. Thiadiazine fungicides and miticides. 3,777,025, Cl. 424-246.000.

Adams, Richard C.: *See—*
Monahan, Thomas J.; and Adams, Richard C., 3,776,804.

Adams, Roy L.: *See—*
Anderson, Loren E.; Adams, Roy L.; and Welse, Gordon D., 3,776,660.

Addressograph-Multigraph Corporation: *See—*
Menger, Joe L.; and Thornton, Bryce G., 3,777,120.

Adler, Karl-Heinz: *See—*
Misch, Wolfgang; Domain, Helmut; and Adler, Karl-Heinz, 3,776,322.

Adler, Laszlo; and Whaley, Hubert L., to United States of America, Atomic Energy Commission. Ultrasonic flaw determination by spectral analysis. 3,776,026, Cl. 73-67.700.

Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, to Atomenergikommissionen. Dispersion-strengthened zirconium products. 3,775,823, Cl. 29-182.500.

Aeroseal Corporation: *See—*
Lazarus, Stokes, 3,776,775.

Affolter, Stephan: *See—*
Van Der Eloe, Hans; Kully, Herbert; and Affolter, Stephan, 3,777,267.

Agfa-Gevaert Aktiengesellschaft: *See—*
Lohmer, Karl; and Verburg, Werner, 3,776,733.
Luger, August, 3,777,234.
Matejec, Reinhart; Meyer, Rudolf; Moll, Franz; Ranz, Erwin; and Weyde, Edith, 3,776,730.
Nassenstein, Heinrich; and Eggers, Joachim, 3,776,727.
Ohschlager, Hans; and Riester, Oskar, 3,776,738.

Agfa-Gevaert N.V.: *See—*
Natens, Luc Yves, 3,777,233.

Aglietti, Giancarlo: *See—*
Ligorati, Ferdinando; Aglietti, Giancarlo; and Nova, Vittorio Emanuele, 3,776,945.

Ahlgren, Nils Harald; and Jahr, Odd, to Uddemann Byggteknik AB. Gripping device. 3,776,586, Cl. 294-102.00r.

Aisin Seiki Kabushiki Kaisha: *See—*
Ooya, Junichiro; Oomura, Koji; Takayama, Katsuki; and Kazutaka, Kuwana, 3,776,604.

Aiuppa, Francesco. Rake attachment for power sweeper. 3,775,952; Cl. 56-16.400.

Akaishi, Takayuki: *See—*
Enomoto, Koji; Akaishi, Takayuki; and Ishimaru, Wataru, 3,776,048.

Akens, Robert L.: *See—*
Charles, James; and Akens, Robert L., 3,776,520.

Akrell, Carl: *See—*
Wiitig, Karl; Wimmer, Guenther; Court, Patrick R. J.; and Akrell, Carl, 3,777,053.

Aktiebolaget Electrolux: *See—*
Blomberg, Peter Erik, 3,775,996.

Aktiebolaget Gotaverken: *See—*
Jungle, Nils Ake Curt, 3,776,449.

Aktiebolaget Partner: *See—*
Gustafsson, Lennart, 3,776,331.

Aktiebolaget Svenska Flaktfabriken: *See—*
Olbrant, Goran; Citron, Bengt; Rosby, Sven-Olof; and Sandblad, Krister, 3,775,806.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Dandliker, Rene; and Mottier, Francois, 3,776,636.

Aktieselskabet Niro Atomizer: *See—*
Damgaard-Iversen, Jorgen; and Kruse, Flemming, 3,776,688.

Akzo N.V.: *See—*
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, 3,776,954.

Akzona Incorporated: *See—*
Stalioraitis, Joseph S.; and Wilhelmy, Charles S., 3,776,959.

Alderton, Howard Kenneth, to Cam Gears Limited. Braking systems. 3,776,607, Cl. 303-22.00r.

Alesson, Thomas; and Dennis, Theodore B., to Datron Systems, Inc. Aerodynamic condensate discharge trap and system. 3,776,254, Cl. 137-183.000.

Alexeeva, Inna Vladimirovna: *See—*
Chernetsky, Vladimir Panteleevich; and Alexeeva, Inna Vladimirovna, 3,776,899.

Alkem Alpha-Chemie und-Metallurgie G.m.b.H.: *See—*
Scheffler, Knut; Muller, Henricus M.; and Cappel, Aldo, 3,776,856.

Alkema, Henk J.: *See—*
Dautzenberg, Frits M.; and Alkema, Henk J., 3,776,837.

Allamanna Svenska Electriska Aktiebolaget: *See—*
Anderson, Anders R.; and Bjorklund, Anders, 3,777,198.

Allen Bradley Company: *See—*
Callan, John E., 3,777,253.

Allen, Craig R.; and Celto, John E., to United States of America, Navy. Voice privacy system. 3,777,064, Cl. 179-1.5fs.

Allen, Ernest E., to Fisher Controls Company, Inc. Valve including noise reducing means. 3,776,278, Cl. 137-625.380.

Alley, Lee Joe, to Borg-Warner Corporation. Pressure transfer unit with bellows. 3,776,267, Cl. 137-494.000.

Allied Chemical Corporation: *See—*
Gould, Lawrence P.; and Hoffman, Robert J., 3,777,007.
Lee, Lester Tsung-Cheng, 3,776,890.
Lipscomb, Walter Peter; and Turner, Garland L., 3,776,796.
Mayer, Richard E.; Birenzvige, Amnon; and Weedon, Gene C., 3,776,806.
Pez, Guido P., 3,776,932.

Allied Farm Equipment, Inc.: *See—*
Eberhart, Russell C., 3,776,316.

Allied Steel & Tractor Products, Incorporated: *See—*
Century, Bernard A.; and Linsay, Michael, 3,775,998.

Allis-Chalmers Corporation: *See—*
Kalser, Ernst K.; Geiersbach, Allois F.; and Neumann, Manfred E., 3,777,250.
Nitz, Allen R., 3,777,089.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Sandblom, Henry; and Torok, Vilmos, 3,776,476.

Alul, Husni R.; and McEwan, Gilbert J., to Monsanto Company. Process for the manufacture of aromatic substituted alkanes. 3,776,962, Cl. 260-624.00c.

Aluminum Company of America: *See—*
Rawlins, Charles B., 3,777,047.

Alza Corporation: *See—*
Zaffaroni, Alejandro, 3,777,015.

Amchem Products, Inc.: *See—*
Hall, Wilbur S.; and Steinerecher, Lester, 3,776,848.
Kiefer, Thomas J.; and Nagatani, Masamichi, 3,776,782.

Ameracc Esna Corporation: *See—*
Silva, Frank A., 3,777,050.

American Cyanamid Company: *See—*
Blank, Werner Josef, 3,776,879.
Remers, William Alan; and Weiss, Martin Joseph, 3,776,923.

American Cyanamid Corporation: *See—*
Epstein, Joseph William; and Goldman, Leon, 3,776,922.

American Home Products Corporation: *See—*
Levin, Howard J., 3,777,019.

American Hospital Corporation: *See—*
McPhee, Charles J., 3,776,229.

American Maize-Products Company: *See—*
Van Patten, Eric M.; and Freck, James A., 3,777,039.

American Motors Corporation: *See—*
Marshall, Charles J., 3,776,256.

American Optical Corporation: *See—*

Dianetti, Joseph C.; and Swaminathan, Krishnaiyer, 3,776,620.

American Potato Company: *See—*
Veeneman, John L.; Thomas, Marion L.; and Deveraux, Harry R., 3,776,126.

American Standard, Inc.: *See—*
Fichter, Barry S., 3,776,460.

American-Telephone and Telegraph Company: *See—*
Opperhauser, Calvin F., 3,775,869.

AMP Incorporated: *See—*
Chandler, William Bruce; and Foster, George Hails, Jr., 3,777,223.
Kopenhaver, Kenneth Oscar, 3,775,828.
Travis, Allen Edwin, 3,777,302.
Ziegler, George William, Jr.; and Demler, Henry William, Jr., 3,777,051.

Amteck, Inc.: *See—*
Mursinna, Richard C.; and Martindale, David L., 3,775,989.

Anastasio, Frank J.; Brundage, Clinton F.; and Strakosch, Clarence P., to Rockwell International Corporation, mesne. Method of handling books. 3,776,404, Cl. 214-152.000.

Anchor Hocking Corporation: *See—*
Roberts, Cecil P., 3,775,944.

Anders, Edward O.; and Nichols, Lloyd G., to Global Marine Inc. Air cushion vehicle with retractable skirt assembly. 3,776,360, Cl. 180-127.000.

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Anderson, George A.; Burne, Frederick A.; Neunaber, Neil O.; and McFadden, Edward L., to Olin Corporation. Heat exchanger. 3,776,303, Cl. 165-82.000.

Anderson, Lester F.; Fink, William C.; and Colville, William T., to Sylvania Electric Products, Inc. Photographic flashlamp unit. 3,776,686, Cl. 431-93.000.

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Anderson, Paul L., to Sandoz-Wander, Inc. N-substituted amino-N-nitroso-aminoacetonitriles as anti-anginal agents. 3,777,026, Cl. 424-248.000.

Anderson, Raymond E.; and Mackes, Ronald C., to Best Quality Plastics, Inc. Slip pallet. 3,776,145, Cl. 108-51.000.

Anderson, Ronald H., to Lee, Raymond, Organization, Inc., The. Illuminated sign. 3,775,886, Cl. 40-130.00r.

Andrich, Wolfgang: *See—*
Cramer, Bernhard; and Andrich, Wolfgang, 3,777,155.

Angele, Eugen, to Pfaff Industriemaschinen GmbH. Material pressure foot for sewing machines. 3,776,159, Cl. 112-235.000.

Angstadt, John W.: *See—*
Wright, Edward S.; Angstadt, John W.; and Krolopp, Otto C., 3,776,382.

Annis, Rupert E., Jr.; and Kyritsis, William T., to USM Corporation. Method for injection molding articles of foam material involving autogenous flow. 3,776,989, Cl. 264-53.000.

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Antioletti, Attilio; and Madonini, Nino, to Industrie Pirelli S.p.A. Extrusion head for producing a resistant element of a conveyor, belt, driving belt and the like. 3,776,670, Cl. 425-114.000.

Applied Fiberoptics and Scientific Specialties, Inc.: *See—*
Kloots, Jacobus; and Buhler, Rato, 3,776,614.

Applied Power Inc.: *See—*
Knutson, Dale A., 3,776,099.

Arai, Hiroshi; and Ohta, Jun, to Toyota Jidoshi Kogyo Kabushiki Kaisha. Anti-skid control system. 3,776,357, Cl. 180-82.00r.

Araki, Tadashi: *See—*
Ito, Yukihiko; Araki, Tadashi; Kawai, Yoshio; and Kameyama, Iwao, 3,776,669.

Arbon, Dennis Charles, to Walker Crosweller & Company Limited. Fluid flow systems. 3,776,272, Cl. 137-596.000.

Arezzi, Raffaele: *See—*
Soverini, Arrigo; Sironi, Giuseppe; and Arezzi, Raffaele, 3,777,013.

Arikawa, Masayasu; Oishi, Minoru; Rokujyo, Masaharu; and Ishihashi, Tatuyuke, to Kobe Steel, Ltd. Method of intermittent arc welding using potassium and magnesium electrode additives. 3,777,113, Cl. 219-137.000.

Arl, Christopher: *See—*
United States of America, National Acronautics and Space Administration, 3,777,272.

Armstrong Cork Company: *See—*
Ehle, George E.; and Peraro, James S., 3,776,123.

Armstrong, James B., to Sperry Rand Corporation. Electrodes for gas plasma display panels and method of manufacture thereof. 3,777,206, Cl. 313-217.000.

Armstrong, James C.: *See—*
Mac Glashan, Paul V., 3,776,009.

Armstrong, William E., to Motorola, Inc. Avalanche injection input protection circuit. 3,777,216, Cl. 317-31.000.

Arneson, Edwin L., to Federal Paper Board Company, Inc. Bottle carton. 3,776,376, Cl. 206-65.00e.

Arpin, Daniel: *See—*
Monin, Claude; and Arpin, Daniel, 3,777,068.

Arrington, Thomas B.; and Moody, Leonard A., to Universal Oil Products Company. Method for continuously casting a hollow billet. 3,776,296, Cl. 164-85.000.

Arrow-Hart, Inc.: *See—*
Yeske, Louis A., 3,777,087.
Yeske, Louis A., 3,777,092.

Artamonov, Viktor Leonidovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

Artbauer, Jan, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. High voltage system, particularly cable. 3,777,045, Cl. 174-28.000.

Artz, Gerd; Schumacher, Alfred; Marzinkewitsch, Rene; Hirschfelder, Horst-Dieter; and Vortkamp, Klaus, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Driven rolling assembly with adjustable rolling gap. 3,776,014, Cl. 72-240.000.

Arvey Corporation: *See—*
Milano, Gerard M., 3,776,798.

Arvin Industries, Inc.: *See—*
Pittman, Carl R.; and Long, James A., 3,777,290.
Scheitlin, George E.; and Bentley, David Ray, 3,775,979.

Asada, Eiichi; and Nakagome, Minoru, to Shoei Chemical Industries Co., Ltd. Electrical resistance composition and resistance element. 3,776,772, Cl. 117-227.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kanno, Kyusei, 3,776,115.
Miyakawa, Seinan; and Shimoda, Mitsuhiko, 3,776,116.

Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., to General Electric Company. Article handling system. 3,776,416, Cl. 221-21.000.

Ashton, Wallace T.: *See—*
Baker, Bernard R.; and Ashton, Wallace T., 3,776,909.

Ashworth, Robert H., to United States Steel Corporation. Method of embossing the surface of a metal workpiece. 3,776,828, Cl. 204-129.650.

Ask, Emil Julius. Self-priming high-pressure pump. 3,776,657, Cl. 415-53.000.

Assmos, Friedrich: *See—*
Ganier, Wolfgang; and Assmos, Friedrich, 3,775,962.

Astro-Arc Co.: *See—*
Kazlauskas, Gasparas; and Vowell, Kennison L., 3,777,115.

Atadan, Erdem Munir, to Du Pont de Nemours, E. I., and Company. Electrolytic recovery of metal values from ore concentrates. 3,776,826, Cl. 204-107.000.

Atchisson, Maxwell G. Weapon conversion bolt assembly device. 3,776,095, Cl. 89-128.000.

Atkins, Henry M. Message accentuation device. 3,775,883, Cl. 40-106.250.

Atkinson, Wallace B., to Long Manufacturing Co., Inc. Combination lock construction. 3,776,006, Cl. 70-74.000.

Atomenergikommissionen: *See—*
Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, 3,775,823.

Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamanoto, Hisao, to Sumitomo Chemical Company, Limited. 5-Phenylbenzomorphan derivatives and salts thereof. 3,776,914, Cl. 260-293.540.

Atwater, Wayne G., to Triax Company, The. Automatic warehousing system. 3,776,399, Cl. 214-16.40a.

Aubert, Jean. Movable gate system for a hydraulic dam. 3,775,983, Cl. 61-26.000.

Aubin, Guy; Abrioux, Andre; and Leroy, Jules, to L'Oreal. Apparatus for scanning chromatograms and the like. 3,777,163, Cl. 250-491.000.

Audivox, Inc.: *See—*
Johanson, Donald Lee; and Stutz, Rolf, 3,777,077.

Auer, Norbert: *See—*
Scherg, Gustav; Auer, Norbert; Obereder, Horst; and Stollmayer, Nikolaus, 3,776,063.

Auerbach, Victor, to RCA Corporation. Controllable heat pipe. 3,776,304, Cl. 165-96.000.

Aus der Au, Hans-Rudolf: *See—*
Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, 3,777,000.

Austin, Forrest L., to Selectivend, Inc., mesne. Article vending mechanism. 3,776,417, Cl. 221-67.000.

Automated Building Components New Zealand Limited: *See—*
Dagley, Edgar Edward, 3,775,789.

Automated Manufacturing Systems, Inc.: *See—*
Campbell, Robert L., Jr., 3,776,052.

Automobiles Peugeot: *See—*
Dupont, Michel; Lacroix, Henri; and Lagardes, Jacques, 3,775,947.
Piret, Jean, 3,776,066.

Autophon Aktiengesellschaft: *See—*

Van Der Eloe, Hans; Kully, Herbert; and Affolter, Stephan, 3,777,267.

Autotrol Corporation: *See—*
Torpey, Wilbur N., 3,776,841.

Avco Corporation: *See—*
Loughry, Don J., 3,777,054.

Avera, William W., to Bahnson Company, The. Insulated panel joint assembly. 3,775,921, Cl. 52-471.000.

Avery-Hardoll Limited: *See—*
Phillips, Hugh Edmund, 3,776,423.

Awano, Koichi: *See—*
Suzuki, Toshio; Awano, Koichi; and Ogino, Katsuhisa, 3,777,002.

Awata, Norio: *See—*
Ogawa, Yasuhiro; Nooya, Kazuo; Awata, Norio; and Yamakawa, Yukio, 3,775,960.

AWT Systems, Inc.: *See—*
Evans, Paul R.; and Graham, Donald H., 3,776,150.

Azinger, Frederick A., Jr.: *See—*
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A., 3,777,112.

Azote et Produits Chimiques S.A.: *See—*
Quanquin, Bernard; Trimbach, Honore; and Pierre, Dumont, 3,776,713.

Azuma, Kuninori; and Nakai, Miyoji, to Matsushita Electric Industrial Co., Ltd. Collective dry cell unit. 3,776,778, Cl. 136-132.000.

B&W Incorporated: *See—*
Dockins, Roy Raymond, Jr., 3,776,258.

Baba, Kosaku; and Wazawa, Kiyoshi, to Nissan Motor Company, Limited. Angular position detector using magnetic elements. 3,777,273, Cl. 329-200.000.

Bader, Erich; Koert, Hubert; and Brod, Gerd, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Cold hardening polymerizable composition. 3,776,871, Cl. 260-28.50d.

Bader, Werner: *See—*
Butscher, Franz; and Bader, Werner, 3,777,174.

Badia, Frank A.: *See—*
Casey, James T.; and Badia, Frank A., 3,776,473.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Hagen, Helmut; and Becke, Friedrich, 3,776,870.
Hagen, Helmut; Becke, Friedrich; and Niemeyer, Juergen, 3,776,910.

Baghuis, Ludovicus Hendrikus, to Stempel, D., AG. Piston valve. 3,776,791, Cl. 156-91.000.

Baglai, Vitaly Mikhailovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

Bahnson Company, The: *See—*
Avera, William W., 3,775,921.

Bailey, Wayne W.; and McCarthy, Paul R., to Gulf Research & Development Company. Aluminum complex soap grease. 3,776,846, Cl. 252-32.700.

Bair, Scott S., to Development Company of America. Prefabricated wall panel. 3,775,916, Cl. 52-125.000.

Baird-Atomic, Inc.: *See—*
Grenier, Raymond P.; and Jacobson, Earl B., 3,777,142.

Baker, Bernard R.; deceased (by Baker, Reba; legal representative); and Ashton, Wallace T., to United States of America, Health, Education, and Welfare. 4,6-Diamono-1 (p-benzyloxyphenyl)-1,2-dihydro-2,2-dimethyl-s-triazines. 3,776,909, Cl. 260-249.900.

Baker, Frank George Morley, to Prodorite Limited. Tanks for the continuous treatment of elongated metal workpieces. 3,776,414, Cl. 220-71.000.

Baker, John R.; and Williams, Edward G., to Xerox Corporation. Method for manufacturing a tetrafluoroethylene polymer-coated roll. 3,776,760, Cl. 117-72.000.

Baker, Kenneth D., to Engelhard Minerals & Chemicals Corporation. Gold plating electrolyte. 3,776,821, Cl. 204-43.00g.

Baker, Kenneth D., to Engelhard Minerals & Chemicals Corporation. Gold plating electrolyte. 3,776,822, Cl. 204-46.000.

Baker, Michael E.: *See—*
Duclo, Marley J.; and Baker, Michael E., 3,776,354.

Baker, Philip D., to General Electric Company. Liquid spray device. 3,776,465, Cl. 239-251.000.

Baker, Philip G.; Cook, Gerald H.; and Downey, Rogers B., to Polaroid Corporation. System for rupturing pod containing processing fluid for photographic material. 3,776,425, Cl. 222-101.000.

Baker, Reba: *See—*
Baker, Bernard R.; and Ashton, Wallace T., 3,776,909.

Baker, Robert C. Racket. 3,776,644, Cl. 401-7.000.

Balducci, Walter O., to Emhart Corporation. Latch assembly. 3,776,582, Cl. 292-92.000.

Baldwin, Ralph B.: *See—*
Boboltz, Charles E.; Zwald, Frederick K.; and Baldwin, Ralph B., 3,776,289.

Balint, Valer: *See—*
Ban, Akos; Nagy, Sandor; and Balint, Valer, 3,776,312.

Ball, John D.: *See—*
Hoyer, Wilmer A.; Rumble, Robert C.; Britton, Donald H.; and Ball, John D., 3,777,147.

Ball, Verna D.: *See—*
Hoyer, Wilmer A.; Rumble, Robert C.; Britton, Donald H.; and Ball, John D., 3,777,147.

Ballard, Norman Edmund, to Rolls-Royce (1971) Limited. High temperature resistant coating. 3,776,747, Cl. 106-84.000.

Ballard, Thomas B. Washing machine with oscillating work support. 3,776,246, Cl. 134-153.000.

Ballis, William L.: *See—*
Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; and Hutt, Bruce L., 3,777,101.

Ban, Akos; Nagy, Sandor; and Balint, Valer, to Koolaj-es Gazipari Tervezo Vallalat. Well bottom treatment. 3,776,312, Cl. 166-302.000.

Bancroft, Charles F., to Hughes Aircraft Company. Phase discatector. 3,777,181, Cl. 307-232.000.

Banc, James. Motorcycle towing device. 3,776,572, Cl. 280-292.000.

Banyu Pharmaceutical Co., Ltd.: *See—*
Hidaka, Hiroyoshi; Matsumoto, Ikuo; and Yoshizawa, Junji, 3,776,913.

Bapgstedt, Gerd. Transfer apparatus. 3,776,393, Cl. 214-1.00b.

Barenyi, Bela; and Haselmann, Heinrich, to Daimler-Benz Aktiengesellschaft. Vehicle body. 3,776,589, Cl. 296-28.00r.

Baril, Albert, Jr.: *See—*
Mayer, Mayer, Jr.; and Baril, Albert, Jr., 3,775,814.

Barlow, Harry Campbell: *See—*
Buck, Raymond Herbert; and Barlow, Harry Campbell, 3,776,769.

Barlow, John, to G.K.N. Group Services Limited. Production of composite materials. 3,776,612, Cl. 308-238.000.

Barnes, Anthony Michael Preston, to Recording Designs Limited. Rotary drive systems. 3,777,246, Cl. 318-696.000.

Barnes, Derek; and Mathur, Vishwa N. P., to MacMillan Bloedel Limited. Method for drying materials with microwave energy. 3,775,860, Cl. 34-1.000.

Barnes Engineering Company: *See—*
Kemezys, Vincent A., 3,776,649.

Barnett, Edward M. Periodontal and dental cleanser and periodontal stimulator. 3,775,848, Cl. 132-89.000.

Barouh, Victor; and Glenn, Robert. Correction material and method for the manufacture thereof. 3,776,756, Cl. 117-36.400.

Barr, John Edward, to International Telephone and Telegraph Corporation. Electrical socket adaptor member. 3,777,285, Cl. 339-17.0cf.

Barrow, Gilbert C., to Massa Division, Dynamics Corporation of America. Method for adjusting the resonant frequency and motional electrical impedance of a vibrating diaphram electroacoustic transducer. 3,777,192, Cl. 310-8.100.

Barsby, James B.: *See—*
Pitesky, Isadore; and Barsby, James B., 3,776,227.

Barthelemy, Philippe: *See—*
Mola, Michel; Barthelemy, Philippe; Bentz, Gerard; and Galey, Jean, 3,776,295.

Bartlett, William W. Fence post construction. 3,776,522, Cl. 256-47.000.

Bartram, Nail C.: *See—*
Waters, Robert S.; Doyle, Edward J.; Rogers, Meyric K.; and Bartram, Nail C., 3,775,861.

Barwasser, Hans Gunter: *See—*
Meckler, Helmut; and Barwasser, Hans Gunter, 3,775,908.

Basi, Jagtar S.; and Hull, Edward M., to International Business Machines Corporation. Method for protecting GaAs wafer surfaces. 3,776,789, Cl. 156-17.000.

Bass, James H.; and Smith, Robert P., to Parker-Hannifin Corporation. Engine starter valve. 3,776,266, Cl. 137-489.000.

Bassick, Joseph. Controlled atmosphere-solid waste disposal system. 3,776,474, Cl. 241-23.000.

Battelle Development Corporation: *See—*
Williford, John F.; and Pilger, James P., 3,776,297.

Baucheron, Alphonse, to Tele-Pictures Establishment. Antivibration support for viewing gear. 3,776,494, Cl. 248-18.000.

Bauer, Sigrid; Sikora, Helga; and Frass, Hans Werner, to Kalle Aktiengesellschaft. Light-sensitive copying composition containing a light insensitive polymer and a light sensitive heterocyclic compound. 3,776,735, Cl. 96-115.00r.

Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, to Heraeus-Schott Quarzschmelze GmbH. Quartz glass elements. 3,776,809, Cl. 161-164.000.

Bayer Aktiengesellschaft: *See—*
Bossert, Friedrich; and Vater, Wulf, 3,777,030.
Sasse, Klaus; and Eue, Ludwig, 3,776,919.
Weitzel, Hans; and Striegler, Hellmut, 3,776,768.

Bayne, Dennis R.: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; Bayne, Dennis R.; and Oster, Stanley, 3,777,262.

Beam, Jimmie V. Device for cleaning exhaust products. 3,775,948, Cl. 55-238.000.

Beard, Myron Gould: *See—*
Wen, Lian-Tong; and Beard, Myron Gould, 3,776,489.

Beasley, Gordon Frank; and Whitehurst, George, to Lucas, Joseph, (Industries) Limited. Control apparatus for fuel injection system. 3,776,210, Cl. 123-139.0am.

Beck & Co. (Meters) Limited: *See—*
Phillips, Hugh Edmund, 3,776,423.

Beck, Edward G., Jr. Jig for use in apparatus for securing an elongated metal member to a flat metal sheet. 3,776,538, Cl. 269-46.000.

Beck, Leonard R. Simplified valve assembly. 3,776,510, Cl. 251-333.000.

Beck, Maurice Sidney; Musgrave, Gerald; and Wormald, Colin Norman. Cross correlator. 3,777,133, Cl. 235-181.000.
Becka, Michael M.: *See—*
Kamborian, Jacob S.; and Caris, Costa, 3,775,797.
Becke, Friedrich: *See—*
Hagen, Helmut; and Becke, Friedrich, 3,776,870.
Hagen, Helmut; Becke, Friedrich; and Niemeyer, Juergen, 3,776,910.
Becker, James F., to Downingtown Division, Beloit Corporation. Wrapper selector and dispenser. 3,776,081, Cl. 83-272.000.
Beckley, Gary H.: *See—*
Davin, Donald R.; and Beckley, Gary H., 3,776,326.
Beckman Instruments, Inc.: *See—*
Zichis, Joseph, 3,777,014.
Beckner, Charles E. Snow removal attachment device for rotary-type mowers. 3,775,878, Cl. 37-43.001.
Beezer, Earl F.: *See—*
Forthmann, Frederick F., Jr.; and Beezer, Earl F., 3,776,441.
Behrens, Volker; Weirich, Walter; and Rosenberg, Harry, to Gewerschaft Eisenhutte Westfalia. Control arrangements for mine roof support props. 3,776,098, Cl. 91-29.000.
Bell & Howell Company: *See—*
Browder, Lewis B., 3,776,622.
Browder, Lewis B., 3,776,623.
Bell Canada-Northern Electric Research Limited: *See—*
Boutros-Attia, Radamis; La France, Conrad; and Nixon, Kenneth Edwin, 3,777,078.
Bell, Oliver A., Jr., to Colt Industries Operating Corporation. Electrical discharge machining power supply circuit. 3,777,102, Cl. 219-69.00c.
Bell, Oliver A., Jr., to Colt Industries Operating Corporation. Electrical discharge machine ram cycle control system. 3,777,104, Cl. 219-69.00g.
Bell Telephone Laboratories, Incorporated: *See—*
Brady, Douglas Mac Pherson, 3,777,269.
Cox, Donald Clyde, 3,777,275.
Marcatili, Enrique Alfredo Jose, 3,777,149.
Miller, Stewart Edward, 3,777,150.
Schneider, Herbert Anton, 3,777,185.
Stidham, James Richard; and Thelemaque, Louis Emanuel, 3,777,058.
Belmont Boats: *See—*
Weeks, Smith, 3,776,168.
Bendix Corporation, The: *See—*
Potter, Frederick Milton, 3,777,195.
Wertheimer, Harry P.; and Peterson, William A., Jr., 3,776,209.
Benjamin, John Stanwood, to International Nickel Company, Inc. The. Dispersion-strengthened superalloys. 3,776,704, Cl. 29-182.500.
Benjamin, Milton L., to Erickson Tool Company. Spade drill. 3,776,656, Cl. 408-233.000.
Bennett, Walter Scott, Jr., to Burroughs Corporation. Method and apparatus for obtaining the reciprocal of a number and the quotient of two numbers. 3,777,132, Cl. 235-164.000.
Bennetts, John F. Fishing lure. 3,775,892, Cl. 43-42.140.
Benson, Gustav E.; and Taylor, Everett W., to Owens-Corning Fiberglas Corporation. Apparatus for treating and collecting yarn. 3,776,183, Cl. 118-235.000.
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., to Cutters Machine Company, Inc. Electrically controlled cloth spreading machine. 3,776,542, Cl. 270-31.000.
Benteler Werke AG: *See—*
Lachenmayer, Wilhelm, 3,776,993.
Bentley, David Ray: *See—*
Scheitlin, George E.; and Bentley, David Ray, 3,775,979.
Bentz, Gerard: *See—*
Mola, Michel; Barthelemy, Philippe; Bentz, Gerard; and Galey, Jean, 3,776,295.
Berg, Walter; Hanel, Gottfried; and Elster, Heinz, to Walzmaschinenfabrik August Schmitz GmbH. Method of rolling cutlery pieces. 3,776,012, Cl. 72-203.000.
Bergeron, Julien. Winch for snowmobiles. 3,776,515; Cl. 254-166.000.
Berglund, Harold A.; and Thomas, David F., to Waterous Company. Ice cream pump. 3,776,667, Cl. 417-454.000.
Bergstrom, Sune; and Jovall, Jan. Dihydro-PGE 1. 3,776,938, Cl. 260-468.00d.
Bergstrom, Sune; and Jovall, Jan. Dihydro-PGF1α. 3,776,939, Cl. 260-468.00d.
Bernath, John, to Du-Kote Corporation. Dry lubrication. 3,776,762, Cl. 117-93.1go.
Bernstein, Irwin B.; and Cooper, Abraham, to Sherwin-Williams Company, The. Catalytic oxidation of naphthalene. 3,776,824, Cl. 204-78.000.
Bernt Paul, to Siemens Aktiengesellschaft. Optical radiation detecting apparatus. 3,777,160, Cl. 250-338.000.
Beroza, Morton: *See—*
McGovern, Terrence P.; Beroza, Morton; and Fiori, Bart J., 3,777,017.
Bessho, Motoaki: *See—*
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,776,946.
Besson, Rene; Schneiter, Ali; and Meister, Rene, to Ebauches S.A. Calendar timepiece. 3,775,965, Cl. 58-58.000.
Best, Howard S.; and Spycher, Anthony A., to Corning Glass Works. Successive lens polishing apparatus. 3,775,909, Cl. 51-110.000.
Best Quality Plastics, Inc.: *See—*
Anderson, Raymond E.; and Mackes, Ronald C., 3,776,145.
Beste, Lawrence Forwood: *See—*
Jung, Shee Lup; and Beste, Lawrence Forwood, 3,776,997.
Betts, E. Douglas; Hanson, Donald K.; and Stephenson, Donald K., to Outboard Marine Corporation. Exhaust muffler. 3,776,366, Cl. 181-57.000.
Beveridge, Archibald D.: *See—*
Mercer, Cecil S.; Beveridge, Archibald D.; and McDowall, Frederick A., 3,775,930.
Bich, Claude H. Writing implement. 3,776,646, Cl. 401-199.000.
Bielenberg, Max J.: *See—*
Quinn, Lawrence R.; and Bielenberg, Max J., 3,776,016.
Bigelow-Sanford, Inc.: *See—*
Norris, Alan H.; and Lacy, William R., 3,776,163.
Shah, Jashwant J., 3,775,955.
Billings, Roy O. Hose minder. 3,776,403, Cl. 214-137.000.
Birenzvige, Amnon: *See—*
Mayer, Richard E.; Birenzvige, Amnon; and Weedon, Gene C., 3,776,806.
Biscardi, Charles T., to Merit Metal Products Corporation. Deterrent spring clip. 3,776,583, Cl. 292-307.00r.
Bishop, Matthey, Inc.: *See—*
Hunter, James B., 3,776,701.
Bisinger, John M.; and Verwolf, David H., to Multi-Channel Response Corporation. Response-evoking apparatus. 3,775,864, Cl. 35-9.00a.
Bjorklund, Anders: *See—*
Anderson, Anders R.; and Bjorklund, Anders, 3,777,198.
Blackwell, Jennings P., to Phillips Petroleum Company. Arylene sulfide polymer coating compositions. 3,776,880, Cl. 260-37.00r.
Blake, Donald L., to Rockwell International Corporation. Textile bobbin. 3,776,486, Cl. 242-118.300.
Blanck, Charles M. Drawing lead sharpener. 3,776,286, Cl. 144-28.500.
Blank, Werner Josef, to American Cyanamid Company. High solids methylated urea-formaldehyde coating compositions. 3,776,879, Cl. 260-33.40r.
Blattner, Hans; and Schindler, Walter, to Ciba-Geigy Corporation. 2,3-Dihydro-1H-thienobenzothie-pino[4,5-c] pyrroles as CNS-depressants. 3,777,032, Cl. 424-274.000.
Blaw Knox Construction Equipment Inc.: *See—*
Davin, Donald R.; and Beckley, Gary H., 3,776,326.
Blaw-Knox Food and Chemical Equipment, Inc.: *See—*
Wright, Edward S.; Angstadt, John W.; and Kroiopp, Otto C., 3,776,382.
Bleier, Gerhard: *See—*
Strauch, Ernst; and Bleier, Gerhard, 3,776,617.
Bleyle, Merrill, to Grace, W. R., & Co. Acrylamide polymer and method of flocculating an aqueous suspension of solid particles therewith. 3,776,892, Cl. 260-80.730.
Blohm & Voss A.G.: *See—*
Krakow, Heinz, 3,776,010.
Blomberg, Peter Erik, to Aktiebolaget Electrolux. Tiltable air-cooled absorption refrigeration apparatus of the inert gas type. 3,775,996, Cl. 62-490.000.
Blues, Ernes Thomson: *See—*
Bryce-Smith, Derek; and Blues, Ernes Thomson, 3,776,931.
Blurton, Keith F.: *See—*
Oswin, Harry G.; and Blurton, Keith F., 3,776,832.
Boboltz, Charles E.; Zwald, Frederick K.; and Baldwin, Ralph B., to Oliver Machinery Company. Cutting tool holder. 3,776,289, Cl. 144-230.000.
Bockelman, William M.: *See—*
Mayo, Frederick W.; Spires, Billy G.; and Bockelman, William M., 3,776,689.
Bockstie, Lawrence G., Jr., to Corning Glass Works. Flame-proof protective coating for electrical film resistors. 3,776,741, Cl. 106-15.0fp.
Boden, Donald; and Young, Leslie, to Resil Processes Limited. Ingot mold with hat top hangers. 3,776,503, Cl. 249-106.000.
Body, Alfred C., to Standard Products Company, The. Waste disposal system and method. 3,775,978, Cl. 60-317.000.
Boeing Company, The: *See—*
Majeau, Henrie L.; and Thompson, Kermit J., 3,777,278.
Whetham, William J., 3,777,125.
Boggs, Roger L., to Caterpillar Tractor Company. Track-over-tire driving arrangement. 3,776,291, Cl. 152-182.000.
Boiko, Georgy Alexandrovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.
Bond, James R., to Hoechst Fibers Incorporated. Electrostatic texturing process and apparatus therefor. 3,775,959, Cl. 57-77.300.
Bondarenko, Oleg Petrovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

Bonneville, Jean, to Nouvelle Societe Bruey S.A. Sports shoe spikes. 3,775,874, Cl. 36-67.00d.
Bonvicini, Gene F. Sprayer attachment for leaf blower. 3,776,459, Cl. 239-77.000.
Bookout, Floyd V., to Rock-Ola Manufacturing Corporation. Selection system for vending machine. 3,776,418, Cl. 221-125.000.
Boor, John, Jr., to Shell Oil Company. Cyclic ether polymerization process. 3,776,862, Cl. 260-2.00a.
Booth, Bruce F.; Veilleux, Pierre; and Hall, Richard William, to Enterprises International, Inc. Log sorter. 3,776,378, Cl. 209-73.000.
Borden, Douglas G.: *See—*
Williams, Jack L. R.; Laakso, Thomas M.; and Borden, Douglas G., 3,776,737.
Bordenca, Carl, to SCM Corporation. Selective herbicide composition and process. 3,776,714, Cl. 71-98.000.
Borg-Warner Corporation: *See—*
Abendschein, Frederic H., 3,776,668.
Alley, Lee Joe, 3,776,267.
Syria, Ronald L., 3,776,044.
Wentworth, Robert S., Jr., 3,776,560.
Borg-Warner-Stieber GmbH: *See—*
Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, 3,776,562.
Borkovsky, Gennady Mikhailovich; Drozdov, Alexander Alexandrovich; Kreisburg, Vladimir Markovich; and Tsukanov, Anatoly Andreevich. Device for information playback in multichannel digital seismic recording system. 3,777,308, Cl. 340-147.0cn.
Borshoom, Albertus C. H., to Shell Oil Company. Process and apparatus for the automatic control of a variable. 3,777,122, Cl. 235-150.100.
Boscaino, Lorenzo. Auxiliary tread for traction tire. 3,776,292, Cl. 152-225.000.
Bosch, Robert, G.m.b.H.: *See—*
Espenschied, Helmut, 3,776,056.
Misch, Wolfgang; Domain, Helmut; and Adler, Karl-Heinz, 3,776,322.
Stumpp, Gerhard, 3,776,208.
Bossert, Friedrich; and Vater, Wulf, to Bayer Aktiengesellschaft. Sulphur-containing 1,4-dihydropyridine derivatives for cornary vessel dilating. 3,777,030, Cl. 424-266.000.
Bott, John A. Spare tire hoist. 3,776,511, Cl. 254-1.000.
Bourns, Inc.: *See—*
Chapman, John L., 3,777,109.
Boutros-Attia, Radamis; La France, Conrad; and Nixon, Kenneth Edwin, to Bell Canada-Northern Electric Research Limited. Linkage arrangement in pivoting armature transducer. 3,777,078, Cl. 179-114.000.
Bowen, Mack D., to Tech-Air Corporation. Apparatus and method for determining the temperature of a flowing gas. 3,776,039, Cl. 73-341.000.
Bowman, Brian, to British Steel Corporation. Arc furnace electrodes. 3,777,042, Cl. 13-18.000.
Bowman, Raymond D., to Cavalier Corporation. Control apparatus for dual price vending machine. 3,776,339, Cl. 194-10.000.
BP Chemical International, Limited: *See—*
Failey, Harry; and Yeomans, Bertram, 3,776,951.
Bradford, Nevin Dornan: *See—*
Cottrell, Arnold George; Bradford, Nevin Dornan; and Lovett, Terence Oliver, 3,776,843.
Bradley, Gordon Frank: *See—*
McKay, Robert Bruce; and Bradley, Gordon Frank, 3,776,749.
Brady, Douglas Mac Pherson, to Bell Telephone Laboratories, Incorporated. Binary modulator for coherent phase-shift keyed signal generation. 3,777,269, Cl. 325-163.000.
Brady, Edward R.: *See—*
Talmo, Robert Eugene; and Brady, Edward R., 3,775,839.
Brauss, Albert. Overspeed and positioning device for a shaft. 3,776,368, Cl. 182-19.000.
Brazzel, Ronald D., to Howe-Baker Engineers Inc. Absorption control. 3,775,946, Cl. 55-58.000.
Breitschwerdt, Werner, to Daimler-Benz Aktiengesellschaft. Instrument panel for vehicles. 3,776,359, Cl. 180-90.000.
Brent, Burton David. Safety guard for dermatome instrument. 3,776,236, Cl. 128-305.000.
Brent, Burton David. Portable stand with magnetic bar surgical instrument holder for use on an operating cart or table. 3,776,387, Cl. 211-60.00t.
Brescia, Riccardo; and Montanari, Lucio, to Olivetti, Ing., C., & C., S.p.A. Thermographic printing arrangement. 3,777,116, Cl. 219-216.000.
Breslow, Jeffrey D.: *See—*
Glass, Marvin I.; and Breslow, Jeffrey D., 3,776,548.
Bridgehouse, Scott, to Lift-All Company, Inc. Synthetic fiber sling construction. 3,776,585, Cl. 294-74.000.
Bright, James A., to General Motors Corporation. Method and apparatus for making clear ice. 3,775,992, Cl. 62-73.000.
Bristol-Myers Company: *See—*
Essery, John Michael; and Cheney, Lee Cannon, 3,776,907.
British Iron and Steel Research Association, The: *See—*
Hawkins, Richard John, 3,777,041.
British Steel Corporation: *See—*
Bowman, Brian, 3,777,042.
Britton, Donald H.: *See—*
Hoyer, Wilmer A.; Rumble, Robert C.; Britton, Donald H.; and Ball, John D., 3,777,147.
Brod, Gerd: *See—*
Bader, Erich; Koert, Hubert; and Brod, Gerd, 3,776,871.
Brooks, Maurice E.: *See—*
Riegel, Herbert; Schindler, Harvey P.; Sze, Margan C.; and Brooks, Maurice E., 3,776,967.
Bross, Charles Frederick, to Pennwalt Corporation. Article packaging machine. 3,775,941, Cl. 53-246.000.
Browder, Lewis B., to Bell & Howell Company. Sequential picture apparatus with continuous film feed. 3,776,622, Cl. 352-119.000.
Browder, Lewis B., to Bell & Howell Company. Rapid rewind sound motion camera or projector. 3,776,623, Cl. 352-124.000.
Brown & Root, Inc.: *See—*
Rochelle, William R.; and Smith, Leif H., 3,775,987.
Brown Boveri & Cie AG: *See—*
Houpert, Bernd; and Reich, Andreas, 3,776,777.
Brown Boveri & Company Limited: *See—*
Crocs, Nicolaus, 3,776,663.
Brown, Cicero C. Rotating drive assembly. 3,776,320, Cl. 173-163.000.
Brown, D. S., Company, The: *See—*
Brown, Delmont D., 3,776,654.
Brown, Delmont D., to Brown, D. S., Company, The. Expansion joint and bridge joint seals. 3,776,654, Cl. 404-65.000.
Brown, Lemuel G.: *See—*
Brown, Russell L.; and Brown, Lemuel G., 3,775,926.
Brown, Paul A., to Metpath, Inc. Cervical scraper. 3,776,219, Cl. 128-2.00b.
Brown, Richard E.; Cavanagh, Paul; and Shavel, John, Jr., to Warner-Lambert Company. Tetraloncoxy acetic acids and esters thereof. 3,776,944, Cl. 260-473.00f.
Brown, Russell L.: *See—*
Brown, Russell L.; and Brown, Lemuel G. (said Brown, Lemuel G., assor. to said), 3,775,926.
Brown, Russell L.; and Brown, Lemuel G., said Brown, Lemuel G., assor. to said Brown, Russell L. Shock absorbing chair rail assembly. 3,775,926, Cl. 52-717.000.
Browne, David W.: *See—*
Watkins, Ernest R., Jr.; and Browne, David W., 3,776,990.
Bruestle, Andrew W. Automatic loader for cartons. 3,776,324, Cl. 177-116.000.
Bruker-Physik AG: *See—*
Haas, Jorg, 3,776,057.
Brumm, Karl; and Lamprecht, Rudolf, to General Motors Corporation. Headlamp cleaner arrangements. 3,775,803, Cl. 15-250.290.
Brundage, Clinton F.: *See—*
Anastasio, Frank J.; Brundage, Clinton F.; and Strakosch, Clarence P., 3,776,404.
Brunnett, Carl J.; and Ioannou, Basil N., to Picker Corporation. Automatic limit switch system for a scintillation device and method of operation. 3,777,145, Cl. 250-303.000.
Brunnett, Carl J.; and Ioannou, Basil N., to Picker Corporation. Information density system for scintillation device and method of operation. 3,777,146, Cl. 250-369.000.
Bruno, Juan F.; and Rietras, Richard E. Patient turning apparatus. 3,775,781, Cl. 5-61.000.
Bruschke, Joost M. M.; and Minor, Ronald E., to Eskimo Pie Corporation. Apparatus for producing confection bars. 3,776,671, Cl. 425-62.000.
Brutanza Engineering, Inc.: *See—*
Duclo, Marley J.; and Baker, Michael E., 3,776,354.
Bryan, Carl E., to Grocers Baking Company. Lifting platform. 3,776,402, Cl. 214-75.00t.
Bryant, Emerson C.: *See—*
Mallory, Edwin E.; and Bryant, Emerson C., 3,776,802.
Bryant, Jack A.; and Thomson, Elihu Craig, to Electronics Corporation of America. Sensing apparatus. 3,777,165, Cl. 250-555.000.
Bryant, Spurgeon O.; and Keith, Samuel S. Service reminder apparatus. 3,776,177, Cl. 116-133.000.
Bryce-Smith, Derek; and Blues, Ernes Thomson. Copper-containing compounds. 3,776,931, Cl. 260-438.100.
BTR Industries, Limited: *See—*
Cameron, James Brisbane; and Walton-Knight, Bernard Piet, 3,776,996.
Buck, Raymond Herbert; and Barlow, Harry Campbell, to United Kingdom Atomic Energy Authority. Metallising pastes. 3,776,769, Cl. 117-212.000.
Buckbee-Mears Company: *See—*
Johnson, E. Curtis; and Hillis, Benjamin F., 3,776,820.
Budd, Allan L.; and Wilkins, Paul E., to Monitor Labs Inc. Calibration system for gas analyzers. 3,776,023, Cl. 73-1.00r.
Budzinski, Roger R., to Park-Ohio Industries, Inc. Induction heating device for ring gears. 3,777,097, Cl. 219-10.590.
Buehler, Arthur; Schuetz, Hans Ulrich; Macuszzahl, Dieter; Harris, Melvin; and Guth, Christian, to Ciba Limited. Process for improving the crease resistance and the abrasion resistance of a textile material. 3,776,767, Cl. 117-138.400.
Buehner, Hans-Friedrich, to Siemens Aktiengesellschaft. Rectifier bridge assembly. 3,777,193, Cl. 310-68.00d.
Bueler, Richard C., to Wagner Electric Corporation. Control valve. 3,776,602, Cl. 303-6.00c.
Bueler, Richard C., to Wagner Electric Corporation. Control valve. 3,776,603, Cl. 303-6.00c.
Buhler, Rato: *See—*

Kloots, Jacobus; and Buhler, Rato, 3,776,614.
Builder, Carl H.; and Sessler, Carl W., to Marquardt Corporation, The. Liquid air engine. 3,775,977, Cl. 60-260.000.
Bumb, Frank C., Jr. Tape guide and magnetic head-pressure pad spacer. 3,777,070, Cl. 179-100.20z.
Bunker Ramo Corporation: *See—*
De Jongh, Rudi Theodoor; and Stickdorn, Helmut Oskar, 3,776,330.
Parks, Howard L., 3,775,844.
Bures, Ladislav: *See—*
Rajonha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, 3,775,956.
Burget, Bohumir: *See—*
Rajonha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, 3,775,956.
Burke, John R.: *See—*
Powell, Harold R.; Dunn, Cornelius C.; and Burke, John R., 3,775,942.
Burlbert, Lawrence. Attachment type rabbit feeder. 3,776,190, Cl. 119-18.000.
Burne, Frederick A.: *See—*
Anderson, George A.; Burne, Frederick A.; Neunaber, Neil O.; and McFadden, Edward L., 3,776,303.
Burners, Inc.: *See—*
Mayo, Frederick W.; Spires, Billy G.; and Bockelman, William M., 3,776,689.
Burnett & Rolfe, Limited: *See—*
Ruddick, Maurice, 3,776,260.
Burroughs Corporation: *See—*
Bennett, Walter Scott, Jr., 3,777,132.
Luo, Zung-Shyung, 3,777,226.
White, Howard P., 3,776,545.
Burt, Harold S.; and Carvalho, Vasco O., to Conveyor Systems, Inc. Apparatus for depalletizing articles and stacking empty pallets. 3,776,396, Cl. 214-8.50a.
Burton, John, Machine Corporation: *See—*
Rice, Harold B., 3,775,829.
Burtscher, Joachim; Frohmader, Karl Peter; Prost, Alfred; and Voss, Peter, to Siemens Aktiengesleeschaft. Thyristor with auxiliary emitter with triggers first. 3,777,229, Cl. 317-235.00r.
Bushick, Ronald D.; and Hirschler, Alfred E., to Sun Oil Company. Catalytic conversion of polycyclic aromatic hydrocarbons in the presence of hydrogen. 3,776,968, Cl. 260-668.00f.
Buss Ltd.: *See—*
Sutter, Fritz; and Ronner, Fritz, 3,776,529.
Butscher, Franz; and Bader, Werner, to Motoren- und Turbinen-Union Friedrichshafen GmbH. Electronic speed regulator for internal combustion engines. 3,777,174, Cl. 290-40.000.
Buzogany, Alexander S., to Roller Bearing Company of America. Corrugated elastic shim and shaft and hub. 3,776,653, Cl. 403-372.000.
Bytheway, Charles W.: *See—*
Anderson, Brent F.; Bytheway, Charles W.; and Olson, Don L., 3,777,153.
Bzostak, Henryk, to Union Special Machine Company. Flat stitch forming and cover thread laying mechanisms for sewing machines. 3,776,157, Cl. 112-162.000.
Cachat, John F., to Park Ohio Industries, Inc. Method of producing a ring gear and flywheel assembly. 3,775,831, Cl. 29-447.000.
Cahen, Raymond M.: *See—*
Debus, Henri Robert; Van Tongelen, Marcel; Cahen, Raymond M.; and Daniels, Calvin Lee, 3,776,965.
Calberg, Willis G., to Eastman Kodak Company. Film discriminating and winding apparatus. 3,776,438, Cl. 225-93.000.
Calbiochem: *See—*
Drell, William; and Gueffroy, Donald E., 3,776,903.
California Computer Products, Inc.: *See—*
Parks, Robert G.; and Jimerson, Bruce D., 3,776,113.
Callan, John E., to Allen Bradley Company. Lower power loss voltage supply circuit. 3,777,253, Cl. 323-22.00t.
Cam Gears Limited: *See—*
Alderton, Howard Kenneth, 3,776,607.
Camacho, Daniel Gamez. Paper cutter for cutting specially coded stationery forms. 3,776,085, Cl. 83-449.000.
Cameron, James Brisbane; and Walton-Knight, Bernard Pict, to BTR Industries, Limited. Methods of prnviding end fittings of hoses. 3,776,996, Cl. 264-242.000.
Camille Bauer Messinstruments Aktiengesellschaft: *See—*
Geisselmann, Heribert, 3,777,257.
Camon Inc.: *See—*
Stewart, John Kenneth, 3,776,153.
Campbell, John M., to Carrier Corporation. Probe mounting structure. 3,776,027, Cl. 73-70.000.
Campbell, Robert L., Jr., to Automated Manufacturing Systems, Inc. Apparatus for molding hollow plastic articles. 3,776,052, Cl. 74-230.17a.
Camps, Javier Sanglas. Wheel hub assembly. 3,776,597, Cl. 301-6.00v.
Canadian Patents and Development Limited: *See—*
Capes, Charles Edward; McIlhinney, Allan Edward; and Tweddle, Thomas Allen, 3,776,601.
Canon Kabushiki Kaisha: *See—*
Mashimo, Yukio, 3,777,212.
Cantarano, Marcus. Electrophotographic method of imagewise particle transfer employing alternating modulated field. 3,776,722, Cl. 96-1.00r.
Cantor, Abraham; and Winicov, Murray W., to West Laboratories, Inc. Disinfectant composition. 3,777,022, Cl. 424-150.000.
Capablanca, Fernando A.; and Whitney, Douglas E. Circular playing surface having coded indicia. 3,776,554, Cl. 273-131.0ab.
Capes, Charles Edward; McIlhinney, Allan Edward; and Tweddle, Thomas Allen, to Canadian Patents and Development Limited. Method and apparatus for conveying particulate material upwardly in a gas stream. 3,776,601, Cl. 302-64.000.
Cappel, Aldo: *See—*
Scheffler, Knut; Muller, Henricus M.; and Cappel, Aldo, 3,776,856.
Carbide Form Grinding, Inc.: *See—*
Pereman, Morris, 3,776,078.
Cardi, Paul. Fail-safe device for thermostatic valves. 3,776,457, Cl. 236-34.500.
Caris, Costa: *See—*
Kamborian, Jacob S.; and Caris, Costa, 3,775,797.
Carlson, Arthur B., to Conco Inc. Product-carrying basket. 3,776,410, Cl. 220-19.000.
Carlson, Duane E. Container crusher. 3,776,129, Cl. 100-98.00r.
Carlson, Paul A., to Wagner Electric Corporation. Signal-sequence control circuit. 3,777,180, Cl. 307-216.000.
Carlstedt, Paul A.: *See—*
Erickson, Arlen J.; and Carlstedt, Paul A., 3,776,546.
Carman, Kenneth K., to Koppers Company, Inc. Gear type coupling. 3,775,997, Cl. 64-9.000.
Carmel, Edwin L.; and Schirmer, Olaf W., to Pullman Incorporated. Trailer landing gear arrangement. 3,776,569, Cl. 280-106.00t.
Carnes, James D.; Young, Bill M.; and Totty, Kenneth D., to Halliburton Company. Method of controlling loose sands and the like. 3,776,311, Cl. 166-295.000.
Carney, William M. Water ski stowing device. 3,776,437, Cl. 224-42.45r.
Carr, Norman L.; and Ko, Daniel Y. C., to Gulf Research & Development Company. Process for preparing a monoalkyl aromatic. 3,776,971, Cl. 260-671.00p.
Carrier Corporation: *See—*
Campbell, John M., 3,776,027.
Neill, Donald E., 3,777,240.
Cartee, Thomas E.: *See—*
Smith, Jag G., Jr.; Michal, David H.; Cartee, Thomas E.; and Rothrock, Burton J., 3,775,810.
Carvalho, Vasco O.: *See—*
Burt, Harold S.; and Carvalho, Vasco O., 3,776,396.
Carver, William M., Jr., to Sears, Roebuck and Co. Zipper. 3,775,812, Cl. 24-205.11r.
Casas-Robert, Ramon, to Mefina S.A. Presser foot for a sewing machine. 3,776,160, Cl. 112-235.000.
Casavant, Roger M.; Larson, Wesley S.; and Panicci, Richard L., to Chen, Allen S., mesne. Shoe covering apparatus. 3,775,793, Cl. 12-1.00r.
Casco Products Corporation: *See—*
Welk, Horace B., Jr., 3,776,043.
Case Western Reserve University: *See—*
Miraldi, Floro D., 3,777,148.
Casey, James T.; and Badia, Frank A., to International Nickel Company Inc., The. Highly reflective aluminum flake. 3,776,473, Cl. 241-15.000.
Cashdollar, Robert E., Sr. Degassing of slag coated melt. 3,776,534, Cl. 266-34.00v.
Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,776,461.
Cassella Farbewerke Mainkur Aktiengesellschaft: *See—*
Wiatrowski, Stefan; Heid, Christian; and Keil, Karl-Heinz, 3,776,690.
Castonguay, Roger A.: *See—*
Menashi, Wilson P.; Wenckus, Joseph F.; and Castonguay, Roger A., 3,777,009.
Caterpillar Tractor Company: *See—*
Boggs, Roger L., 3,776,291.
Grawey, Charles E., 3,776,792.
Cauffiel, Ford B. Tapered pole construction and manufacture of same. 3,775,835, Cl. 29-477.300.
Cavalier Corporation: *See—*
Bowman, Raymond D., 3,776,339.
Cavanagh, Paul: *See—*
Brown, Richard E.; Cavanagh, Paul; and Shavel, John, Jr., 3,776,944.
Cawthorn, Trevor Lewis, to Cooper Roller Bearings Company Limited. Shaft seals. 3,776,559, Cl. 277-56.000.
Cecil, James B.; and Davis, Walter R., to Motorola, Inc. Constant current regulating circuit. 3,777,251, Cl. 323-4.000.
Celanese Corporation: *See—*
Goetchfus, Ronald O.; and Collins, Michael John, 3,777,127.
Juelke, Charles V.; and Trapasso, Louis E., 3,776,887.
Lloyd, Neil E.; and Mather, Walter B., III, 3,775,958.
Montgomery, Robert Terry, 3,776,808.
Stackman, Robert William, 3,776,883.
Zey, Edward Gustave; and Stubbeman, Robert Frank, 3,776,963.
Celto, John E.: *See—*
Allen, Craig R.; and Celto, John E., 3,777,064.
Central Quality Industries, Inc.: *See—*
Ficholz, Arthur H.; and McCambridge, James E., 3,775,951.
Centro Sperimental Metallurgico S.p.A.: *See—*

Imberti, Bruno, 3,776,532.
Century, Bernard A.; and Linsay, Michael, to Allied Steel & Tractor Products, Incorporated. Safety clutch. 3,775,998, Cl. 64-30.00d.
Cerbai, Guido; and Turbanti, Luigi. Heterocyclic amine esters of 2-phenyl or 2-propyl-4-pentynoic acid. 3,776,908, Cl. 260-247.20b.
Certain-Teed Products Corporation: *See—*
Heilmayr, Peter F., 3,776,672.
Ceskoslovenska akademie ved: *See—*
Hrubes, Jan; and Dubansky, Alois, 3,777,236.
Chadha, Rajendra Nath, to Stauffer Chemical Company, mesne. Method of curing organic siloxane polymers and copolymers. 3,776,977, Cl. 260-825.000.
Chambers, Bruce B.; and Radabaugh, Gary L., to Textron, Inc. Explosion venting wall. 3,775,915, Cl. 52-1.000.
Chambers, William A.: *See—*
Taylor, James R. A.; and Chambers, William A., 3,777,214.
Chandler, William Bruce; and Foster, George Hails, Jr., to AMP Incorporated. Modular electrical junction and interconnection means with supporting means for terminal blocks. 3,777,223, Cl. 317-118.000.
Chang, Wen H., to International Business Machines Corporation. Charge transfer logic device. 3,777,186, Cl. 307-304.000.
Chant, Peter R., to Shell Oil Company. Apparatus for mineral-finned foam production. 3,776,702, Cl. 23-284.000.
Chapman, James Ronald: *See—*
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., 3,776,542.
Chapman, John L., to Bourns, Inc. Process and apparatus for removing undesired windings from wirewound elements. 3,777,109, Cl. 219-85.000.
Charles, James; and Akens, Robert L., to J.P.C., Inc. Energy absorbing highway guardrail. 3,776,520, Cl. 256-13.100.
Chartet, Andre, to Societe Anonyme des Usines Chausson. Process for manufacturing expanded and corrugated heat exchanger cores from metal strip material. 3,776,015, Cl. 72-324.000.
Chase-Shawmut Company, The: *See—*
Knapp, Edward J., Jr., 3,777,297.
Chechak, Jonas J.: *See—*
Eastman, Donald R.; Chechak, Jonas J.; and Merrill, Stewart H., 3,776,757.
Chekotilo, Leonty Vasilievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.
Chemtoy Corporation: *See—*
Kalish, Jerome Barton, 3,775,898.
Chemut Corporation: *See—*
Goffredo, Daniel L.; and Shakley, Conrad Dale, 3,776,800.
Chen, Allen S., mesne: *See—*
Casavant, Roger M.; Larson, Wesley S.; and Panicci, Richard L., 3,775,793.
Chen, Ying-Ho; and Lunsford, Carl Dalton, to Robins, A. H., Company. 2-(p-Phenylbenzyl) oxazolines in treating inflammation. 3,777,031, Cl. 424-272.000.
Cheney, Lee Cannon: *See—*
Essery, John Michael; and Cheney, Lee Cannon, 3,776,907.
Cheng, Bao-Ding, to Colgate-Palmolive Company. Detergents containing tetrahydroxysuccinic acid and salts thereof. 3,776,851, Cl. 252-89.000.
Chernetsky, Vladimir Panteleevich; and Alexeeva, Inna Vladimirovna, to Institute Mikrobiologii Im. Akad. DK. Zaboltongo. Method for the preparation of O-substituted-6-azacytinines and 6-azacytidine. 3,776,899, Cl. 260-211.50r.
Chevron Research Company: *See—*
Nicksic, Stephen W.; and Suzuki, Shigeto, 3,777,010.
Ryason, Porter R., 3,777,208.
Chistyakov, Evgeny Georgievich: *See—*
Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich, 3,776,833.
Chore-Time Equipment, Inc.: *See—*
Murto, Robert A., 3,776,191.
Choufoer, Johannes H.; Van Kerkvoort, Willem J.; Van der Meij, Pieter H.; and Schrueder, Thomas, to Shell Oil Company. Process for the preparation of a crude-oil composition with a depressed pour point. 3,776,247, Cl. 137-13.000.
Christenberry, Thomas T., Jr. Instructional display device. 3,775,867, Cl. 35-17.000.
Christensen, Borge Johannes Ravn; and Jacobsen, Preben Bob. Can with an extensible pouring spout with sealing plug. 3,776,434, Cl. 222-525.000.
Christensen, Jens Jude, 50% to Ruscoe, W. J., Company. Spreadable covering material. 3,776,876, Cl. 260-29.70r.
Christensson, Od W., to Christenssons Maskiner & Patenter Aktiebolag. Foil for closing easily openable packages. 3,776,450, Cl. 229-7.00r.
Christenssons Maskiner & Patenter Aktiebolag: *See—*
Christensson, Od W., 3,776,450.
Chrobak, Strickland Inc.: *See—*
Turner, John S.; and Fremer, William A., 3,776,499.
Chugai Saiyaku Kabushiki Kaisha: *See—*
Sagawa, Takao; Hirano, Seiji; Tanaka, Nobuhiko; and Togashi, Kunihiko, 3,777,023.
Chunga, Lorenzo, Sr., to Creative Products Lines Inc. Telescopic drinking straw. 3,776,458, Cl. 239-33.000.
Church, Herman S., to Teledyne Mid-American Corporation. Method of molding rubber articles. 3,776,998, Cl. 264-294.000.
Churchheus, Claude W.: *See—*
Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; and Hutt, Bruce L., 3,777,101.
Chvertko, Anatoly Ivanovich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.
Ciba Limited: *See—*
Buchler, Arthur; Schuetz, Hans Ulrich; Maeusezahl, Dieter; Harris, Melvin; and Guth, Christian, 3,776,767.
Ciba-Geigy AG: *See—*
Hegar, Gert; and Riat, Henri, 3,776,918.
Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, 3,777,000.
Martin, Henry; Janiak, Stefan; Pissiotas, Gerog; and Rohr, Otto, 3,776,904.
Martin, Henry; Dittrich, Volker; Pissiotas, Georg; and Rohr, Otto, 3,777,024.
McKay, Robert Bruce; and Bradley, Gordon Frank, 3,776,749.
Nikles, Erwin, 3,777,036.
Ciba-Geigy Corporation: *See—*
Blattner, Hans; and Schindler, Walter, 3,777,032.
Spivack, John D., 3,776,884.
Storm, Elmar; Joerg, Hans; and Vogel, Christian, 3,776,912.
Treichler, Hans-Joerg; and Richen, Jakob Nuesch, 3,776,815.
Zweidler, Reinhard; Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, 3,776,905.
Cincinnati Milacron Inc.: *See—*
Smith, William R., 3,776,435.
Circuit Equipment Corporation: *See—*
Rooks, Gerald T., 3,776,097.
Cistone, David R., to Kerr Glass Manufacturing Corporation. Closure. 3,776,407, Cl. 215-9.000.
Cities Service Company: *See—*
Roth, Shirley H., 3,776,765.
Cities Service Oil Company: *See—*
Rai, Charanjit, 3,776,860.
Citizen Watch Co., Ltd.: *See—*
Nagashima, Mitsoyoshi, 3,776,277.
Citron, Bengt: *See—*
Olbrant, Goran; Citron, Bengt; Rosby, Sven-Olof; and Sandblad, Krister, 3,775,806.
Civardi, Frank Peter: *See—*
Harrington, Gene Norman; and Civardi, Frank Peter, 3,776,790.
Clapham, Thomas J. Magnetic Clock. 3,775,963, Cl. 58-23.00d.
Clark, Burton P.: *See—*
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,776,416.
Clark, Frederick G., to Eastman Machine Company. Knife sharpening mechanism. 3,775,913, Cl. 51-246.000.
Clark, Joseph N.: *See—*
Toporcer, Louis H.; and Clark, Joseph N., 3,776,934.
Clark, Kenneth G.; De Pass, Ernest T.; Manfredonia, Abraham J.; and Reiter, Eugene A., to Union Camp Corporation. Holder for large box blanks. 3,776,109, Cl. 93-49.00r.
Clark, Robert S. Method for the production of structural bodies. 3,777,001, Cl. 264-337.000.
Clarke, James F.; and Deprez, Thomas A. Apparatus for grinding toothed face members. 3,776,213, Cl. 125-11.00c.
Clarke, Noel. Method and apparatus for measuring the clumping of platelets in whole blood. 3,777,172, Cl. 250-575.000.
Clayton, Ralph S. Doorless passbox for X-ray cassettes and the like. 3,776,110, Cl. 95-1.000.
Clendenen, Roland L., to Shell Oil Company. Alumina-transition metal oxide ceramic products of enhanced ductility. 3,776,744, Cl. 106-73.400.
Cleobury, Donald Jack; and Wilson, Bernard; deceased (by Wilson, Margaret Winifred; administratrix), to General Electric Company Limited, The. Degradation detection in a PCM system. 3,777,268, Cl. 325-38.00r.
Clinton, Henry H. Apparatus for the resistance per unit length of a resistive conductor. 3,777,259, Cl. 324-62.000.
Clouth Gummiwerke AG: *See—*
Gilles, Martin; and Thiel, Anton, 3,776,094.
Gilles, Martin; and Thiel, Anton, 3,776,571.
Coates, John Robert, to Molins Limited. Packet forming. 3,776,105, Cl. 93-12.00r.
Coch, Lester, to Waldes Kohinoor, Inc. System for wet impact plating. 3,776,186, Cl. 118-603.000.
Coffman, John R., to Lewbill Industries, Inc. Combination heating and humidifying system. 3,776,214, Cl. 126-113.000.
Cohen, Arthur Elson. Musical instrument, similar to the according and the like, for easily producing rapid harmonic sequences. 3,776,089, Cl. 84-376.000.

Cole, John M.: *See—*
Nickerson, Earl F.; and Cole, John M., 3,777,299.
Colgate-Palmolive Company: *See—*
Cheng, Bao-Ding, 3,776,851.
Ortlieb, William L., 3,777,151.
Colgate-Palmolive Company, mesne: *See—*
Huey, Raymond H., 3,776,234.
Schaar, Charles H., 3,776,232.
Schaar, Charles H., 3,776,233.
Colianni, William D. Machine frame structure. 3,776,178, Cl. 116-137.00a.
Collins, Michael John: *See—*
Goetchfus, Ronald O.; and Collins, Michael John, 3,777,127.
Collins Radio Company: *See—*
Tribuno, Robert F.; Foster, Thomas E.; Mineck, David W.; and Hattendorf, Edwin R., 3,777,242.
Collins, Richard A.; and Martin, John F., to USM Corporation. Shoe inseaming machine with upper pre-tensioning means. 3,775,795, Cl. 12-13.200.
Colt Industries Operating Corporation: *See—*
Bell, Oliver A., Jr., 3,777,102.
Bell, Oliver A., Jr., 3,777,104.
Columbia Pictures Industries, Inc.: *See—*
Lewis, John Hopkins, 3,776,626.
Colville, William T.: *See—*
Anderson, Lester F.; Fink, William C.; and Colville, William T., 3,776,686.
Comalco Limited: *See—*
Eislers, Visvaldis, 3,776,144.
Comando, Edward N. Bed stirrup for pelvic examinations. 3,776,540, Cl. 264-328.000.
Cominco Ltd.: *See—*
McIver, Peter John, 3,777,008.
Commonwealth Scientific and Industrial Research Organization: *See—*
Holan, George, 3,776,925.
Compagnie Industrielle des Telecommunications: *See—*
Louvel, Guy, 3,777,287.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Monin, Claude; and Arpin, Daniel, 3,777,068.
Conco Inc.: *See—*
Carlson, Arthur B., 3,776,410.
Condon, John J. Dental handpiece attachment. 3,775,849, Cl. 32-59.000.
Conklin, George W.: *See—*
McClure, James D.; and Conklin, George W., 3,776,935.
Conley, John E. Automatic feeder. 3,776,194, Cl. 119-52.00b.
Conley, Thomas F.; and Gylland, Ernest F., Jr., to Westinghouse Electric Corporation. Variable capacity multiple compressor refrigeration system. 3,775,995, Cl. 62-196.000.
Conner, William B. Keyboard actuated lighting instrument. 3,777,134, Cl. 240-10.00r.
Consolidated Engineering Company: *See—*
Reuter, Brian R., 3,776,599.
Consolidated Video Systems, Inc.: *See—*
Hendershot, William B., III; Tallent, Michael W.; Wald, David; and Whitlock, Larry K., 3,777,075.
Continental Can Company, Inc.: *See—*
Rarey, Kenneth W.; and Kennedy, John B., Jr., 3,776,132.
Taylor, James R. A.; and Chambers, William A., 3,777,214.
Continental Oil Company: *See—*
Mitterer, Adolph V., 3,777,003.
Conveyor Specialties Company: *See—*
Kampfer, Richard H., 3,776,349.
Conveyor Systems, Inc.: *See—*
Burt, Harold S.; and Carvalho, Vasco O., 3,776,396.
Cook, Gerald H.: *See—*
Baker, Philip G.; Cook, Gerald H.; and Downey, Rogers B., 3,776,425.
Cooke Engineering Company: *See—*
Gross, Ronald E., 3,776,699.
Cooley, Denton A., to Sherwood Medical Industries Inc. Aspirator needle. 3,776,239, Cl. 128-347.000.
Coon, Donald F., Jr., to Peabody Barnes Inc. Centrifugal self-priming pump. 3,776,659, Cl. 415-200.000.
Cooper, Abraham: *See—*
Bernstein, Irwin B.; and Cooper, Abraham, 3,776,824.
Cooper Roller Bearings Company Limited: *See—*
Cawthorn, Trevor Lewis, 3,776,559.
Copolymer Rubber & Chemical Corporation: *See—*
Prescott, Elsworth; and Copus, Edward F., 3,775,933.
Coppock, Charles L.: *See—*
Kelley, Donald W.; White, James F., Jr.; Winslow, Ronald B.; and Coppock, Charles L., 3,776,877.
Copus, Edward F.: *See—*
Prescott, Elsworth; and Copus, Edward F., 3,775,933.
Corning Glass Works: *See—*
Best, Howard S.; and Spycher, Anthony A., 3,775,909.
Bockstie, Lawrence G., Jr., 3,776,741.
Meas, Raymond J., 3,776,482.
Teter, Michael P., 3,776,638.
Corno, Silvio, to Snam Progetti S.p.A. L.R.S.R.-Brevetti. Method to determine the neutron absorption and multiplication parameters for cluster-type nuclear fuel elements. 3,776,813, Cl. 176-19.00r.
Corrigan, Joseph D.: *See—*
Norkum, Alphonse A.; Corrigan, Joseph D.; and Davies, Keith, 3,777,177.
Costanio, James J.; and Hrdlicka, Eugene R., to GTE Automatic Electric Laboratories Incorporated. Lamp holder assembly. 3,777,137, Cl. 240-52.00r.
Cotter, John Lawrence: *See—*
Rothenbuhler, Howard E.; Melder, Robert C.; and Cotter, John Lawrence, 3,776,047.
Cottrell, Arnold George; Bradford, Nevin Dornan; and Lovett, Terence Oliver, to Imperial Chemical Industries Limited. Solid fire-extinguishing compositions. 3,776,843, Cl. 252-7.000.
Court, Patrick R. J.: *See—*
Wiitig, Karl; Wimmer, Guenther; Court, Patrick R. J.; and Akrell, Carl, 3,777,053.
Cover, Paul F.; and Kemper, Clyde F., to United Company, The. Simulation evaluation method. 3,776,527, Cl. 259-91.000.
Cox, Donald Clyde, to Bell Telephone Laboratories, Incorporated. Linear amplification with nonlinear devices. 3,777,275, Cl. 330-10.000.
Cox, John M.; Kunst, Robert J.; and Szala, Norman M., to Pullman Incorporated. Railway passenger vehicle step and door construction. 3,776,143, Cl. 105-343.000.
Cragar Industries, Inc.: *See—*
Droke, Darrell W.; Ochampaugh, Donald R.; and Krumm, Andrew G., 3,776,211.
Cramer, Bernhard; and Andrich, Wolfgang, to International Standard Electric Corporation. Data input system for an electrical machine. 3,777,155, Cl. 250-229.000.
Cramm, Herman W.; Gorby, Clifford L.; and Leetma, Juri G., to Hughes Aircraft Company. Die cast waveguide low pass filter. 3,777,286, Cl. 333-70.00s.
Craven, James Milton, to Du Pont de Nemours, E. I., and Company. Process for finishing surfaces. 3,776,752, Cl. 117-10.000.
Crawford, Richard W.; Rigdon, Lester P.; and Thompson, Richard J., to United States of America, Atomic Energy Commission. Method and reagent for determining nitrogen oxides. 3,776,697, Cl. 23-232.00r.
Creative Products Lines Inc.: *See—*
Chunga, Lorenzo, Sr., 3,776,458.
Creme, Nicholas and Cosma: *See—*
Nye, Norman H.; and Medkeff, Arthur T., 3,776,674.
Crest/Good Manufacturing Company: *See—*
Mullen, John L., 3,776,373.
Creus, Juan Llordes. Baking oven. 3,777,118, Cl. 219-394.000.
Critelli, Louis J., Jr.: *See—*
Schaller, Joseph P.; Jorgensen, E. Chris; and Critelli, Louis J., Jr., 3,776,551.
Croes, Nicolaus, to Brown Boveri & Company Limited. Aerodynamic pressure-wave machine. 3,776,663, Cl. 417-64.000.
Croisier, Alain; Esteban, Daniel J.; Levilion, Marc E.; and Riso, Vladimir, to International Business Machines Corporation. Digital filter for PCM encoded signals. 3,777,130, Cl. 235-152.000.
Crossan, Irvin D.: *See—*
Toporcer, Louis H.; and Crossan, Irvin D., 3,776,933.
Crowther, Sam, to Ethyl Corporation. Process for starting operation of a fused salt electrolytic cell. 3,776,823, Cl. 204-60.000.
Cunningham, Arthur L.; and Mathai, John, to Sherwin-Williams Company, The. Modified ester resins. 3,776,868, Cl. 260-23.0ep.
Curtis Instruments, Inc.: *See—*
Marwell, Edward M.; and Finger, Eugene P., 3,777,266.
Curtis, John S.; and Miller, Lee A. Plastic pipe bending jig. 3,776,539, Cl. 269-81.000.
Curtiss-Wright Corporation: *See—*
DeBruyne, Neil A.; and Ryffel, Henry H., 3,776,067.
Cutler-Hammer, Inc.: *See—*
Telewski, Frederick John, 3,777,271.
Cutters Exchange, Inc.: *See—*
Gratsch, Jack M., 3,776,155.
Cutters Machine Company, Inc.: *See—*
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., 3,776,542.
CX Processing Laboratories, Inc.: *See—*
Erickson, Arlen J.; and Carlstedt, Paul A., 3,776,546.
Cylpik Incorporation: *See—*
Van Schoyck, Quentin, 3,775,954.
Czekay, Arno; Kramer, Bruno; and Kaiser, Karl, to Knapsack Aktiengesellschaft. Process for the manufacture of suspension polyvinyl chloride of porous structure and high apparent density. 3,776,894, Cl. 260-12.80w.
Dagley, Edgar Edward, to Automated Building Components New Zealand Limited. Timber connectors and/or machines for making the same. 3,775,789, Cl. 10-52.000.
Daimler-Benz Aktiengesellschaft: *See—*
Barenyi, Bela; and Haselmann, Heinrich, 3,776,589.
Breitschwerdt, Werner, 3,776,359.
Scherenberg, Hans, 3,776,355.
Daiwa Boseki Kabushiki Kaisha: *See—*
Kihara, Hidetoshi; and Tsuzuki, Kanemitsu, 3,775,957.
Dalmasso, Claudio, to Olivetti, Ing. C., & C. S.p.A. Integrated circuit package and construction technique. 3,775,838, Cl. 29-577.000.
Dalton, Thomas B., to Westran Corporation. Two stage fluid pump. 3,776,665, Cl. 417-252.000.
D'Amato, Nicholas J. Non-clogging closure cap. 3,776,424, Cl. 222-94.000.

Damgaard-Iversen, Jorgen; and Kruse, Flemming, to Aktieselskabet Niro Atomizer. Method for operating a rotating kiln plant for the production of cement as well as a plant for carrying out the method. 3,776,688, Cl. 432-14.000.
D'Amico, John Joseph, to Monsanto Company. 1,1-Di(aminoalkylthio)-2,2-dicyanoethylenes. 3,776,891, Cl. 260-79.50b.
D'Amico, John Joseph, to Monsanto Company. 2-(N-2-cyanoethyldithiocarbamylmethylene) benzimidazoles. 3,776,920, Cl. 260-309.200.
Damm, David A.; and McKim, Robert G., to Owens-Illinois, Inc. Apparatus and method for monitoring the status of a radio frequency thickness gauge. 3,776,380, Cl. 209-111.500.
Dandliker, Rene; and Mottier, Francois, to Aktiengesellschaft Brown, Boveri & Cie. Process and apparatus for investigating the coherence of light radiation. 3,776,636, Cl. 356-106.000.
Daniel, Edmond, to Societe Creusot-Loire. Apparatus for facilitating the passage of rigid connectors coupling flexible elements around a rotary member. 3,776,516, Cl. 254-190.00r.
Daniels, Alma U.; and Iler, Ralph K., to Du Pont de Nemours, E. I., and Company. Aluminum oxide based articles of jewelry. 3,776,706, Cl. 29-182.500.
Daniels, Calvin Lee: *See—*
Debus, Henri Robert; Van Tongelen, Marcel; Cahen, Raymond M.; and Daniels, Calvin Lee, 3,776,965.
Dannals, Leland E., to Uniroyal, Inc. Alkyl-sulfoxide and alkyl-sulfone terminated oligomers as emulsifiers in emulsion polymerizations. 3,776,874, Cl. 260-29.6ta.
D'Assignies, Jean. Hydraulic speed checker and cooling means. 3,776,332, Cl. 188-290.000.
Datonetics Corporation: *See—*
Muller, Michael, 3,777,090.
Datron Systems, Inc.: *See—*
Alesson, Thomas; and Dennis, Theodore B., 3,776,254.
Daughtry, Arthur C., to Esso Production Research Company. Method and apparatus for making remote pipeline connections. 3,775,986, Cl. 61-72.300.
Dautzenberg, Frits M.; and Alkema, Henk J., to Shell Oil Company. Motor fuel production process. 3,776,837, Cl. 208-65.000.
Dautzenberg, Frits M.; Kouwenhoven, Herman W.; and Naber, Jaap E., to Shell Oil Company. Sulfur oxide-acceptors having high initial activity with good chemical and physical stability and process for their preparation. 3,776,854, Cl. 252-196.000.
Davenport, William K. Spray mix applicator. 3,776,468, Cl. 239-310.000.
Davidge, Roger William: *See—*
Ford, Lionel Houston; Davidge, Roger William; and Evans, Anthony Glyn, 3,776,759.
Davidson, David M.: *See—*
Paulson, William T.; and Davidson, David M., 3,776,755.
Davidson, Edmund Benjamin, to RCA Corporation. Stabilized photoresist composition. 3,776,736, Cl. 96-115.00r.
Davies, Jenkin Eric; and Van Dijk, Jan, to U.S. Philips Corporation. Compounds having pharmacological properties. 3,777,034, Cl. 424-285.000.
Davies, Keith: *See—*
Norkum, Alphonse A.; Corrigan, Joseph D.; and Davies, Keith, 3,777,177.
Davies, Phillip J.; Gasparri, Angelo S.; and McAtee, Daniel J., to International Business Machines Corporation. Grid for making electrical contact. 3,777,260, Cl. 324-64.000.
Davin, Donald R.; and Beckley, Gary H., to Blaw Knox Construction Equipment Inc. Paving machine. 3,776,326, Cl. 180-9.200.
Davis, John Howard; and Hendy, Brian Norman, to Imperial Chemical Industries Limited. Method of producing reinforced thermoplastic materials. 3,776,751, Cl. 117-4.000.
Davis, John R., Jr.: *See—*
Krishna, Surinder; and Davis, John R., Jr., 3,777,227.
Davis, Noel, to Integrated Development & Manufacturing Company. Lighting arrangement. 3,777,199, Cl. 313-27.000.
Davis, Richard L.: *See—*
Davis, Richard L.; and Wolfram, Jerome K. (said Wolfram assor. to said), 3,776,517.
Davis, Richard L.; and Wolfram, Jerome K., said Wolfram assor. to said Davis, Richard L. Winch for use on sailboats. 3,776,517, Cl. 254-150.00r.
Davis, Walter R.: *See—*
Cecil, James B.; and Davis, Walter R., 3,777,251.
Dawson, William F.; and Shemic, Milo, to Descon Concordia Systems, Ltd., c/o Sage, Gray Todd & Sims. Erection method for structural system. 3,775,928, Cl. 52-741.000.
Day, J. H., Company, The: *See—*
Updegrove, Louis B., 3,775,863.
Day, Winteron U.: *See—*
Dunning, Charles E.; and Day, Winteron U., 3,776,807.
De Groft, Walter J., to Sanford Research Company. Apparatus for securing nib in plastic writing instrument. 3,776,673, Cl. 425-125.000.
De Groot, Jacob: *See—*
Lathouwers, Franciscus Johannes Maria; and De Groot, Jacob, 3,775,841.
De Jongh, Rudi Theodoor; and Stickdorn, Helmut Oskar, to Bunker Ramo Corporation. Braking device for adjustment apparatus. 3,776,330, Cl. 188-67.000.
De Lucia, John R. Combination flashlight and propellant discharge device. 3,776,429, Cl. 222-162.000.
De Pass, Ernest T.: *See—*
Clark, Kenneth G.; De Pass, Ernest T.; Manfredonia, Abraham J.; and Reiter, Eugene A., 3,776,109.
De Pont de Nemours, E. I., and Company: *See—*
Jung, Shee Lup; and Beste, Lawrence Forwood, 3,776,997.
Schreyer, Ralph C., 3,776,886.
De Treitas, Elias Martins, to Industria Termica Brasileira S/A. Dispensing closure for a container. 3,776,433, Cl. 222-519.000.
De Waal, Jan Aric Gerrit: *See—*
Van Steenbergen, Teunis Willem; and De Waal, Jan Aric Gerrit, 3,777,228.
DeBruyne, Neil A.; and Ryffel, Henry H., to Curtiss-Wright Corporation. Planetary gear transmission. 3,776,067, Cl. 74-801.000.
Debus, Henri Robert; Van Tongelen, Marcel; Cahen, Raymond M.; and Daniels, Calvin Lee, to Labofina S.A. Selective conversion of diethylcyclohexanes to gem-structured tetramethylcyclohexanes. 3,776,965, Cl. 260-666.00r.
Decca Limited: *See—*
Shepherd, Richard, 3,777,167.
Decker, Arthur J.: *See—*
Hall, Jesse H.; Gettelman, Clarence C.; Pollack, John L.; Goldman, Gary C.; and Decker, Arthur J., 3,777,200.
Deering Milliken Research Corporation: *See—*
Habib, Emile E., 3,776,753.
Deknatel, Inc.: *See—*
Ludwig, Philip, 3,776,666.
Del Paggio, Anthony F., to Park-Ohio Industries, Inc. Apparatus for inductively heating valve seats. 3,777,096, Cl. 219-10.570.
Demler, Henry William, Jr.: *See—*
Ziegler, George William, Jr.; and Demler, Henry William, Jr., 3,777,051.
Dennis, Theodore B.: *See—*
Alesson, Thomas; and Dennis, Theodore B., 3,776,254.
DePalma, Joseph S. Temperature responsive automatic fire extinguisher. 3,776,313, Cl. 169-19.000.
Deprez, Thomas A.: *See—*
Clarke, James F.; and Deprez, Thomas A., 3,776,213.
Descon Concordia Systems, Ltd., c/o Sage, Gray Todd & Sims: *See—*
Dawson, William F.; and Shemic, Milo, 3,775,928.
D'Esopo, Conrad M., to Westinghouse Electric Corporation. Breaker failure relay device. 3,777,215, Cl. 317-26.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Bader, Erich; Koert, Hubert; and Brod, Gerd, 3,776,871.
Kleeman, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,776,948.
Devan, Frank; and Devan, Fred, to Devon Tape Corporation. Automatic random size box sealer. 3,775,937, Cl. 53-75.000.
Devan, Fred: *See—*
Devan, Frank; and Devan, Fred, 3,775,937.
Development Company of America: *See—*
Bair, Scott S., 3,775,916.
Deveraux, Harry R.: *See—*
Veeneman, John L.; Thomas, Marion L.; and Deveraux, Harry R., 3,776,126.
DeVillemeur, Philippe, to Etablissements A. Gregoire et L Basilleau. Safety outlet and plug device. 3,777,300, Cl. 339-21.00r.
Devon Tape Corporation: *See—*
Devan, Frank; and Devan, Fred, 3,775,937.
Di Nuzzi, Robert D.: *See—*
Hapgood, William H.; and Di Nuzzi, Robert D., 3,776,148.
Diancetti, Joseph C.; and Swaminathan, Krishnaiyer, to American Optical Corporation. Ophthalmometer having alternative viewing and measuring systems. 3,776,620, Cl. 351-13.000.
Dickey, Weldon G. Flow conductor coupling. 3,776,577, Cl. 285-31.000.
Dickey-John Corporation: *See—*
Anson, James H.; and O'Neal, Donald E., 3,776,642.
Dicom Industries: *See—*
Young, Alan M.; and Webb, Edwin Y., 3,776,488.
Diepers, Heinrich; and Musebeck, Horst, to Siemens Aktiengesellschaft. Method of producing a composite conductor band for use in making a tubular superconductor. 3,775,840, Cl. 29-599.000.
Dietzgen Electronics, Inc.: *See—*
Hoff, Donald G., 3,777,126.
Dines, Martin P.: *See—*
Tyler, William E., III; and Dines, Martin P., 3,776,972.
Dinter, Manfred E.: *See—*
Kuhlmann-Schaefer, Wilhelm H.; and Dinter, Manfred E., 3,776,593.
Dissen, Israel J.: *See—*
Scardiglia, Frank; Dissen, Israel J.; and Hokama, Takeo, 3,776,980.
Dittrich, Volker: *See—*
Martin, Henry; Dittrich, Volker; Pissiotas, Georg; and Rohr, Otto, 3,777,024.
Dix, Michael P.; and La Costa, Nicholas J., to AAI Corporation. Ammunition arrangement. 3,776,136, Cl. 102-38.000.
Dixon, Lester A. Low power light controlled switching device. 3,777,225, Cl. 317-130.000.
Dobner, Richard G.; and Hebert, Donald G., to Singer Company, The. Printer paper guide which compensates for the thickness of document pack. 3,776,341, Cl. 197-127.00r.
Dock, Everett H.; and Heilhecker, Joe R., to Esso Production Research Company. Tool assembly. 3,776,472, Cl. 239-591.000.

Dockins, Roy Raymond, Jr., to B&W Incorporated. Well pipe valve. 3,776,258, Cl. 137-269.000.
Dodich, Nicholas A.: *See—*
Peyman, Gholam A.; and Dodich, Nicholas A., 3,776,238.
Domain, Helmut: *See—*
Misch, Wolfgang; Domain, Helmut; and Adler, Karl-Heinz, 3,776,322.
Donaldson Company, Inc.: *See—*
Van Doeren, Richard E., 3,776,364.
Donnelly Mirrors, Inc.: *See—*
Hatley, Derek J.; and Wilson, Harold R., 3,777,082.
Donovan, John S. Gas operated firearm. 3,776,096, Cl. 89-174.000.
Donskikh, Petr Alexandrovich: *See—*
Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich, 3,776,833.
Doppelt, Mandel A. Carrying case with a trimming and reinforcement frame on the ends of case. 3,776,334, Cl. 190-41.00r.
Doret, Michel: *See—*
Doret, Raymond; and Doret, Michel, 3,775,853.
Doret, Raymond; and Doret, Michel. Portable drafting instrument. 3,775,853, Cl. 33-27.00c.
Dornia Baubeschlag GmbH & Co., KG: *See—*
Jentsch, Dietrich, 3,776,611.
Dorsman, Adrian K., to North American Rockwell Corporation. Phototransistor buffer circuit. 3,777,152, Cl. 250-206.000.
Dotzauer, Oswald, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Apparatus for shifting containers. 3,776,345, Cl. 198-24.000.
Dougherty, Earle T. Sliding portal and operating device therefore. 3,775,906, Cl. 49-358.000.
Douklias, Nikolaos, to Siemens Aktiengesellschaft. Coherent optical multichannel correlator. 3,776,616, Cl. 350-162.0sf.
Dow Chemical Company, The: *See—*
Kohrumel, Richard William, 3,776,259.
Smith, Grant N.; and Taylor, Yvonne S., 3,776,693.
Dow Corning Corporation: *See—*
Frye, Cecil L.; and Klosowski, Jerome M., 3,776,915.
Toporcer, Louis H.; and Crossan, Irvin D., 3,776,933.
Toporcer, Louis H.; and Clark, Joseph N., 3,776,934.
Downey, Rogers B.: *See—*
Baker, Philip G.; Cook, Gerald H.; and Downey, Rogers B., 3,776,425.
Downingtown Division, Beloit Corporation: *See—*
Becker, James F., 3,776,081.
Doyle, Edward J.: *See—*
Waters, Robert S.; Doyle, Edward J.; Rogers, Meyric K.; and Bartram, Nail C., 3,775,861.
Doyle, Joseph E., to Master Electronics Corporation. Indicator device which can be illuminated. 3,776,176, Cl. 116-129.001.
Dragerwerk AG: *See—*
Wachter, Karl-August, 3,775,949.
Dravo Corporation: *See—*
Vlnaty, Joseph, 3,776,533.
Drell, William; and Gueffroy, Donald E., to Calbiochem. Process of preparing 6-azauracil. 3,776,903, Cl. 260-248.0as.
Dresser Industries, Inc.: *See—*
Eggleton, Cecil Howard, Jr.; and Henry, William Franklin, 3,776,514.
Spidell, William H.; and Wilson, Billy F., 3,776,323.
Wetterhorn, Richard H., 3,776,041.
Wolk, Piero, 3,776,321.
Driesenga, Edwin J.: *See—*
Ryn, Edwin Van; and Driesenga, Edwin J., 3,775,830.
Driscoll, John J.; and Whall, James M., to Polaroid Corporation. Photographic film processing apparatus. 3,776,118, Cl. 95-89.001.
Driver, Wilbur B., Co.: *See—*
Starr, Carrol Dean; and Wang, Teh Po, 3,776,781.
Droke, Darrell W.; Ochampaugh, Donald R.; and Krumm, Andrew G., to Cragar Industries, Inc. Adjustable limit for the advance of an ignition distributor. 3,776,211, Cl. 123-146.50a.
Drozdov, Alexander Alexandrovich: *See—*
Borkovsky, Gennady Mikhailovich; Drozdov, Alexander Alexandrovich; Kreisburg, Vladimir Markovich; and Tsukanov, Anatoly Andrecvich, 3,777,308.
Drumm, Arthur E. Apparatus for producing brush sections. 3,776,596, Cl. 300-2.000.
Du Pont de Nemours, E. I., and Company: *See—*
Adams, John B., Jr., 3,777,025.
Atadan, Erdem Munir, 3,776,826.
Craven, James Milton, 3,776,752.
Daniels, Alma U.; and Iler, Ralph K., 3,776,706.
Kalil, James, 3,776,986.
Mrowca, Joseph J., 3,776,929.
Du-Kote Corporation: *See—*
Bernath, John, 3,776,762.
Dubansky, Alois: *See—*
Hrubes, Jan; and Dubansky, Alois, 3,777,236.
Dubuit, Louis Gilbert. Automatic bottle handling machines. 3,776,346, Cl. 198-33.0ad.
Duclo, Marley J.; and Baker, Michael E., to Brutanza Engineering, Inc. Snowmobile engine and torque converter mount. 3,776,354, Cl. 180-64.00r.
Dudek, Maria B., to Fried Krupp Huttenwerke AG. Steel composition capable of being cold rolled. 3,776,720, Cl. 75-126.00m.
Duffield, Peter L., to Mead Corporation, The. Catcher for a jet drop recorder. 3,777,307, Cl. 346-75.000.
Duffy, Patrick J.: *See—*
Werra, Bruno R.; and Duffy, Patrick J., 3,776,042.
Dumas, Christ J. Multiplier assembly. 3,777,249, Cl. 321-8.000.
Dunkley, James L.; and Smith, Bruce E., to Motorola, Inc. Method of producing high speed transistors and resistors simultaneously. 3,776,786, Cl. 148-175.000.
Dunkley, Willis Robert, Jr.: *See—*
Talbot, Wilburn D.; and Dunkley, Willis Robert, Jr., 3,775,799.
Dunn, Cornelius C.: *See—*
Powell, Harold R.; Dunn, Cornelius C.; and Burke, John R., 3,775,942.
Dunning, Charles E.; and Day, Winteron U., to Kimberly-Clark Corporation. Air formed adhesive bonded webs and method for forming such webs. 3,776,807, Cl. 161-124.000.
Dupont, Michel; Lacroix, Henri; and Lagardes, Jacques, to Automobiles Peugeot and Regie National des Usines Renault. Gas-removing box for a liquid circuit. 3,775,947, Cl. 55-159.000.
Dvoracek, Louis M., to Union Oil Company of California. Fouling rate reduction in hydrocarbon streams. 3,776,835, Cl. 208-48.0aa.
Dvorsky, Daniel A. Ski boot binding plate protector and walking aid. 3,775,875, Cl. 36-72.00a.
Dyck, Gerhard J., to Dyckes Sprinkler Co., Ltd. Plastic hose, riser and clamping system. 3,776,463, Cl. 239-204.000.
Dyckes Sprinkler Co., Ltd.: *See—*
Dyck, Gerhard J., 3,776,463.
Dyczynski, Karol T. Elevating mechanism. 3,776,328, Cl. 187-17.000.
Dzsida, Laszlo: *See—*
Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, 3,776,717.
E-Z Up Industries, Inc.: *See—*
Ganis, Joseph Francis, 3,776,549.
Earps, Hugh B.: *See—*
Pearson, James W.; Price, Gareth G.; and Earps, Hugh B., 3,776,847.
Eastern Company, The: *See—*
Perron, Robert R.; and Pastan, Harvey L., 3,777,263.
Eastman, Donald R.; Chechak, Jonas J.; and Merrill, Stewart H., to Eastman Kodak Company. Electrographic formation of dye images. 3,776,757, Cl. 117-37.0le.
Eastman Kodak Company: *See—*
Calberg, Willis G., 3,776,438.
Eastman, Donald R.; Chechak, Jonas J.; and Merrill, Stewart H., 3,776,757.
Edwards, Evan A., 3,776,114.
Frost, David A.; and Schieven, Stanley R., 3,776,732.
Gade, John N., 3,776,405.
Miller, Donald N., 3,776,774.
Reitter, George M., 3,776,483.
Williams, Jack L. R.; Laakso, Thomas M.; and Borden, Douglas G., 3,776,737.
Eastman Machine Company: *See—*
Clark, Frederick G., 3,775,913.
Ebauches S.A.: *See—*
Besson, Rene; Schneiter, Ali; and Meister, Rene, 3,775,965.
Eberhart, Russell C., to Allied Farm Equipment, Inc. Electronic control for crop thinning. 3,776,316, Cl. 172-6.000.
Ebner, George A.; and Ebner, Marjorie J. Apparatus and propeller for entraining fluid in liquids. 3,776,531, Cl. 261-87.000.
Ebner, Marjorie J.: *See—*
Ebner, George A.; and Ebner, Marjorie J., 3,776,531.
Eckbreth, Alan C.; and Mensing, Arthur E., to United Aircraft Corporation. Deposition of power in a moving gas stream by electric discharge means. 3,777,279, Cl. 331-94.500.
Eckert, Charles F.; and Pinkowski, Norman J., to Uniroyal, Inc. Bonding EPDM rubber to general purpose butadiene polymer rubber. 3,776,811, Cl. 161-253.000.
Ecodyne Corporation, mesne: *See—*
Yohn, Melvin G.; and Simon, Joseph P., 3,777,110.
Eden, Jamal S., to Goodrich, B. F., Company, The. Preparation of unsaturated aldehydes and acids. 3,776,952, Cl. 260-533.00n.
Edwards, Evan A., to Eastman Kodak Company. Photographic apparatus. 3,776,114, Cl. 95-31.0fm.
Edwards, William M., to McCall Printing Company, The. Reversible tip-on machine. 3,776,543, Cl. 270-53.000.
Eggen, Svein. Device for securing a film for dental X-ray to a right-angled film holder and aiming rod by means of a ray-permeable bite block with film support and an antagonist bite plate. 3,777,141, Cl. 250-521.000.
Eggers, Joachim: *See—*
Nassenstein, Heinrich; and Eggers, Joachim, 3,776,727.
Eggleton, Cecil Howard, Jr.; and Henry, William Franklin, to Dresser Industries, Inc. Overload regulator for lever hoists. 3,776,514, Cl. 254-167.000.
Ehle, George E.; and Peraro, James S., to Armstrong Cork Company. Partition adaptor and ventilating air divider. 3,776,123, Cl. 98-40.00d.

Ehringer, Hermann O., to Westinghouse Electric Corporation. Method of making greatly elongated tungsten or molybdenum members. 3,777,111, Cl. 219-105.000.
Einstein, Bernard Caesar, to Litton Systems, Inc. Light amplifier tube having an ion and low energy electron trapping means. 3,777,201, Cl. 313-65.00r.
Eisai Co., Ltd.: *See—*
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,776,946.
Eisentraut, Anna M., to Nuclear-Medical Laboratories, Inc. Test for thyroid hormone. 3,776,698, Cl. 23-230.00b.
Eising, John P., to Smith, A. O., Corporation. Direct fired water heater thermal compensating dip tube. 3,776,456, Cl. 236-93.000.
Eislers, Visvaldis, to Comalco Limited. Railway wagon. 3,776,144, Cl. 105-406.00r.
Elco, Richard A.: *See—*
Young, Frederick J.; and Elco, Richard A., 3,777,255.
Electro-Mechanical Instrument Div., VLN Corporation: *See—*
Void, Lester R., 3,777,265.
Electronics Corporation of America: *See—*
Bryant, Jack A.; and Thomson, Elihu Craig, 3,777,165.
Elemelt Limited: *See—*
Gell, Philip Anthony Maunsell; Merritt, Frederick Maynard; and Steitz, William Richards, 3,777,040.
Elitex, Zavody textilniho strojirenstvi generalni reditelstvi: *See—*
Lutovsky, Josef; and Prasil, Vladimir, 3,776,479.
Rajonha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, 3,775,956.
Elkins, Carlos D. Transparent slide for the examination of liquid specimens. 3,777,283, Cl. 331-94.500.
Elliott, Stanley B. Visual-type hygrometer. 3,776,038, Cl. 73-335.000.
Ellman, Julius; and Lerner, George. Liquid eliminating doll with valve means actuated by external magnetic device. 3,775,901, Cl. 46-239.000.
Elphiac: *See—*
Trine, Joseph, 3,777,100.
Elpower Corporation: *See—*
Johnson, Bruce L., 3,776,779.
Elsner, Bertram F.; and Elsner, Frank, Jr., to Elsner Engineering. Roll banding machine. 3,775,939, Cl. 53-212.000.
Elsner Engineering: *See—*
Elsner, Bertram F.; and Elsner, Frank, Jr., 3,775,939.
Elsner, Frank, Jr.: *See—*
Elsner, Bertram F.; and Elsner, Frank, Jr., 3,775,939.
Elster, Heinz: *See—*
Berg, Walter; Hancl, Gottfried; and Elster, Heinz, 3,776,012.
Emelyanenko, July Georgievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.
Emerson Electric Co.: *See—*
Visos, Charles D.; Love, John J.; and Smith, Carl A., 3,776,268.
Wright, James A., 3,776,684.
Emerson, L. Frank, to GTE Sylvania Incorporated. Frequency to voltage converter employing Hall effect cell with signal hysteresis and normalizing. 3,776,606, Cl. 303-21.0cf.
Emery Industries, Inc.: *See—*
Staker, Donald D.; Plantholt, Richard H.; and Kriege, David J., 3,776,928.
Emery, William B., to Korry Manufacturing Company. Alternately released and detained reciprocable actuating mechanism. 3,776,049, Cl. 74-110.000.
Emge, Gene F., to Kochring Company. Self clearing container part conveyor system. 3,775,862, Cl. 34-105.000.
Emhart Corporation: *See—*
Balducci, Walter O., 3,776,582.
Kulig, Constantine W.; and Rydlewicz, Alexander H., 3,776,342.
Walter, William H.; and Mesnik, Robert F., 3,777,169.
Empire Products, Inc.: *See—*
Newman, Albert P., 3,777,298.
Endo, Tsunehiko. Process for producing sputtered films. 3,776,830, Cl. 204-192.000.
Energetics Science Inc.: *See—*
Oswin, Harry G.; and Blurton, Keith F., 3,776,832.
Engel, Paul: *See—*
Mac Glashan, Paul V., 3,776,009.
Engelhard Minerals & Chemicals Corporation: *See—*
Baker, Kenneth D., 3,776,821.
Baker, Kenneth D., 3,776,822.
Engelhart, John E.: *See—*
Lundberg, Charles A., Jr.; and Engelhart, John E., 3,776,924.
English Clays Lovering Pochin & Company, Limited: *See—*
Richards, Dennis Maunder, 3,776,748.
English Electric Company, Limited, The: *See—*
Preston, Thomas William; and Reece, Albert Benjamin John, 3,777,197.
Enomoto, Koji; Akaishi, Takayuki; and Ishimaru, Wataru, to Nissan Motor Company, Limited. Automatic power transmission control system. 3,776,048, Cl. 74-866.000.
Enskat, Albert G.: *See—*
Watson, Donald W.; and Enskat, Albert G., 3,776,544.
Ensslin, Fritz; Frenzel, Gerhard; and Lobermann, Erich, to Preussag Aktiengesellschaft- Metall. Disposal of plastics. 3,776,147, Cl. 410-7.00a.
Enterprises International, Inc.: *See—*
Booth, Bruce F.; Veilleux, Pierre; and Hall, Richard William, 3,776,378.
Environment/One Corporation: *See—*
Peters, Philip H., Jr., 3,777,094.
Envirotech Corporation: *See—*
Richter, Paul D.; Janchus, Robert M.; and Shen, Shih C., 3,776,386.
Epple, Donald G., to Nalco Chemical Company. Polymeric flexographic ink. 3,776,758, Cl. 117-38.000.
Epstein, Joseph William; and Goldman, Leon, to American Cyanamid Corporation. Indole carboxaldehydes. 3,776,922, Cl. 260-326.50b.
Erb, Wick D. Walking beam conveyor and eccentric construction therefor. 3,776,351, Cl. 198-219.000.
Erbert, Virgil, to Rolamite, Incorporated. Meter movements. 3,777,264, Cl. 324-146.000.
Erich, Malcolm: *See—*
Grassman, Willard F.; and Erich, Malcolm, 3,775,802.
Erickson, Arlen J.; and Carlstedt, Paul A., to CX Processing Laboratories, Inc. Selective article director multiposition gate. 3,776,546, Cl. 271-64.000.
Erickson, John W., to Kobe, Inc. Pitot tube for pitot pump. 3,776,658, Cl. 415-88.000.
Erickson Tool Company: *See—*
Benjamin, Milton L., 3,776,656.
Ernst, Otto: *See—*
Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, 3,777,000.
Eskimo Pie Corporation: *See—*
Bruschke, Joost M. M.; and Minor, Ronald E., 3,776,671.
Espenschied, Helmut, to Bosch, Robert, G.m.b.H. Gear shifting assembly for change-speed transmission. 3,776,056, Cl. 74-364.000.
Essery, John Michael; and Cheney, Lee Cannon, to Bristol-Myers Company. 7-[D-(α-Amino-α-phenyl-, 2-thienyl- and 3-thienylacetamino)]-3-(1,2,3-thiadiazol-4- or 5-yl)-carbonylthiomethyl-3-cephem-4-carboxylic acids. 3,776,907, Cl. 260-243.00c.
Essex International, Inc.: *See—*
Hartz, Marvin E.; and Witek, Roman J., Jr., 3,776,495.
Esso Production Research Company: *See—*
Daughtry, Arthur C., 3,775,986.
Dock, Everett H.; and Heilhecker, Joe R., 3,776,472.
Hoyer, Wilmer A.; Rumble, Robert C.; Britton, Donald H.; and Ball, John D., 3,777,147.
Maurer, William C.; Heilhecker, Joe K.; and Lock, Everett H., 3,776,558.
Murray, Kenneth J.; Hopkins, Don J.; and Lederman, Peter B., 3,776,309.
Esso Research and Engineering Company: *See—*
Lundberg, Charles A., Jr.; and Engelhart, John E., 3,776,924.
Singhal, Gopal H.; and Turkos, Robert E., 3,776,936.
Singhal, Gophal H.; and Lesser, Joseph H., 3,776,921.
Tyler, William E., III; and Dines, Martin P., 3,776,972.
Zielinski, James, 3,776,955.
Esteban, Daniel J.: *See—*
Croisier, Alain; Esteban, Daniel J.; Levilion, Marc E.; and Riso, Vladimir, 3,777,130.
Etablissements A. Gregoire et L. Basilleau: *See—*
DeVillemeur, Philippe, 3,777,300.
Etablissements Hutchinson Compagnie Nationale du Caoutchouc: *See-See—*
Lamboley, Gilbert Andre, 3,775,982.
Ethyl Corporation: *See—*
Crowther, Sam, 3,776,823.
Pearson, Tillmon H.; and Nelson, Gunner E., 3,776,850.
Ethyl Development Corporation: *See—*
Mattheis, Harley H., 3,776,388.
Etudes et Realisations Industrielles: *See—*
Jean, Pierre; and Nias, Marcel, 3,777,107.
Euc, Ludwig: *See—*
Sasse, Klaus; and Euc, Ludwig, 3,776,919.
Evans, Anthony Glyn: *See—*
Ford, Lionel Houston; Davidge, Roger William; and Evans, Anthony Glyn, 3,776,759.
Evans, Paul R.; and Graham, Donald H., to AWT Systems, Inc. Fluidized bed system for solid wastes. 3,776,150, Cl. 110-8.00r.
Ewing, Alvin L. Remotely controlled mining machine. 3,776,592, Cl. 299-1.000.
Excelermatic, Inc.: *See—*
Kraus, Charles E., 3,776,051.
Failey, Harry; and Yeomans, Bertram, to BP Chemical International, Limited. Production of tetramethyl suberic acid. 3,776,951, Cl. 260-533.00a.
Fairey Winches Limited: *See—*
Hamilton, William Roy, 3,776,519.
Falk, David O.: *See—*
Norton, Charles J.; and Falk, David O., 3,776,310.
Fall, Herbert S.: *See—*
Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., 3,776,608.
Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., to Fall, Herbert S. Circulating ball bearing slide. 3,776,608, Cl. 308-3.800.

Fall, Martin K.: *See—*
Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., 3,776,608.
Fall, Maxwell S.: *See—*
Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., 3,776,608.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Neeb, Rudolf; Mundlos, Eberhard; and Mohr, Reinhard, 3,776,691.
Smerz, Otto; Linke, Werner; Schaff, Alfred; and Hess, Peter, 3,776,766.
Farley, David L.: *See—*
Jessup, Robert L.; and Farley, David L., 3,776,578.
Farrar, Ralph C.: *See—*
Naylor, Floyd E.; and Farrar, Ralph C., 3,776,893.
Farris, Russell E., Jr.: *See—*
Stanley, Lester N.; and Farris, Russell E., Jr., 3,776,898.
Farrow and Jackson Limited: *See—*
Nicholls, Arthur Ernest, 3,776,285.
Faulkner Engineering Limited: *See—*
Faulkner, Frederick Arthur, 3,776,045.
Faulkner, Frederick Arthur, to Faulkner Engineering Limited. Tool driving unit. 3,776,045, Cl. 74-20.000.
Faulkner, Richard Dale: *See—*
McDonie, Arthur Frederick; Faulkner, Richard Dale; and Rhoads, James Lee, 3,777,209.
Fay, James Eugene. Apparatus for continuous production of spiral pipe. 3,776,448, Cl. 228-5.000.
Fazioli, William A., to Norton Company. Splash-proof vibratory apparatus. 3,776,526, Cl. 259-72.000.
Federal Paper Board Company, Inc.: *See—*
Arneson, Edwin L., 3,776,376.
Fedosenko, Igor Grigorievich; Kononenko, Vadim Grigorievich; Morgolenko, Anatoly Sergeevich; and Selivanov, Gennady Dmitrievich. High-speed pressing machine. 3,776,020, Cl. 72-445.000.
Fedotov, Mikhail Nikitovich: *See—*
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.
Fegen, James F., to Richco Plastic Company. Support for circuit boards. 3,777,052, Cl. 174-138.00d.
Fellner, Hugo R.: *See—*
Hammond, Donald L.; and Fellner, Hugo R., 3,777,156.
Fergason, James L.; and Goldberg, Newton N., to Westinghouse Electric Corporation. Iodine containing cholesteric compounds. 3,776,927, Cl. 260-397.200.
Ferroco Engineering Limited: *See—*
Groh, Louis; and Jones, Harry Joseph, 3,776,013.
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A., to Westinghouse Electric Corporation. Recurrent arc heating process. 3,777,112, Cl. 219-121.00p.
Ficholz, Arthur H.; and McCambridge, James E., to Central Quality Industries, Inc. Vacuum cleaner. 3,775,951, Cl. 55-417.000.
Fichter, Barry S., to American Standard, Inc. Spray nozzle. 3,776,460, Cl. 239-101.000.
Field, Crosby. Ice making machine and method. 3,775,991, Cl. 62-72.000.
Field John H., to Sigma Instruments, Inc. Low-inertia synchronous inductor motor. 3,777,196, Cl. 310-156.000.
Fine, Morris M.: *See—*
Leak, Vance G.; and Fine, Morris M., 3,776,718.
Finger, Eugene P.: *See—*
Marwell, Edward M.; and Finger, Eugene P., 3,777,266.
Fink, William C.: *See—*
Anderson, Lester F.; Fink, William C.; and Colville, William T., 3,776,686.
Fiori, Bart J.: *See—*
McGovern, Terrence P.; Beroza, Morton; and Fiori, Bart J., 3,777,017.
First National City Bank, mesne: *See—*
Morrison, Robert C.; and Kamienski, Conrad W., 3,776,964.
Fischer & Porter Company: *See—*
Herzl, Peter J., 3,776,033.
Fischer, Detlef; and Wittkowski, Johannes G. A., to Willco-Horgerate Med. Apparatebau G.m.b.H. Directional microphone for head mounted midget hearing aids. 3,777,079, Cl. 179-121.00d.
Fischer, Hans; and Hellendrung, Herbert, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Method for forming transverse welded seams between vertically oriented workpieces having V-shaped groove and bevel. 3,777,105, Cl. 219-73.000.
Fisher Controls Company, Inc.: *See—*
Allen, Ernest E., 3,776,278.
Fisher, H. L., Mfg. Co., Inc.: *See—*
Melind, Julius J., 3,776,420.
Fisher, Jere D. Ski boot holder. 3,775,794, Cl. 12-1.00r.
Fismer, William L. Apparatus for lifting flasks, molds and patterns. 3,776,300, Cl. 164-403.000.
Fisons Pharmaceuticals Limited: *See—*
Fitzmaurice, Colin; and Lee, Thomas Brian, 3,777,033.
Fitzmaurice, Colin; and Lee, Thomas Brian, to Fisons Pharmaceuticals Limited. Bis-chromonyl pharmaceutical composition and methods. 3,777,033, Cl. 424-283.000.
Fjermestad, Arnold R.; Lea, Albert; and Nellis, William M., to National Cooperatives, Inc. Automatic milking apparatus. 3,776,189, Cl. 119-14.280.
Flagge, Andrew, to Thor Power Tool Company. Dual safety control for a power tool. 3,775,911, Cl. 51-170.00t.
Flasch, John Robert: *See—*
Lerner, Robert Wendell; Hayati, Hosscin; and Flasch, John Robert, 3,776,881.
Flatland, Lloyd P. Dental handpiece. 3,775,851, Cl. 32-26.000.
Fleissner, Heinz, to Vepa AG. Apparatus for the continuous treatment of thick, voluminous textile materials. 3,776,004, Cl. 68-5.00e.
Fletcher, Ian John: *See—*
Zweidler, Reinhard; Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, 3,776,905.
Fluchter, Horst; and Rossmann, Christian, to Henkel & Cie G.m.b.H. Pickling solutions. 3,776,852, Cl. 252-143.000.
Fluid Kinetics Corporation: *See—*
Richards, John F., 3,776,365.
FMC Corporation: *See—*
Lobunez, Walter, 3,776,969.
Ouska, Ralph C., 3,776,401.
Pepmeier, Carl R.; and Lowe, Edward G., 3,775,936.
Foderaro, Anthony J., to Picker Corporation. X-ray apparatus having a telescopic columnar support. 3,776,500, Cl. 248-333.000.
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Ford Motor Company: *See—*
Simko, Aladar O., 3,776,207.
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Forthmann, Frederick F., Jr.; and Beezer, Earl F., 3,776,441.
Foster, Betty J.; and Tummala, Rad R., to International Business Machines Corporation. Method of sealing electrodes to glass with a glass frit. 3,775,999, Cl. 65-50.000.
Foster, George Hails, Jr.: *See—*
Chandler, William Bruce; and Foster, George Hails, Jr., 3,777,223.
Foster, Thomas E.: *See—*
Tribuno, Robert F.; Foster, Thomas E.; Mineck, David W.; and Hattendorf, Edwin R., 3,777,242.
Foster Wheeler Corporation: *See—*
Gillette, Robert P.; and Kunz, Henry P., 3,776,478.
Fountain, Gerald F., to Ponder & Best, Inc. Condition responsive alert signal for a movie camera. 3,776,625, Cl. 352-170.000.
Foust, Michael L.: *See—*
Rice, Charles A.; and Foust, Michael L., 3,775,782.
Fowler, James M.; Kemp, Willard E.; and Tomlin, Jerry B., to ACF Industries, Incorporated. Valve structure having fluid pressure actuated sealing members. 3,776,506, Cl. 251-172.000.
Fowley, Ronald D.: *See—*
Holbrook, Le Grand K.; and Fowley, Ronald D., 3,776,231.
Fr. Hesser Maschinenfabrik A.G.: *See—*
Kuhnle, Paul, 3,775,945.
France, Jimmie J., to Westinghouse Air Brake Company. Equal flow dual steering system. 3,776,356, Cl. 180-79.20r.
Frank, Wilh., GmbH: *See—*
Frank, Wilhelm, 3,775,905.
Frank, Wilhelm, to Frank, Wilh., GmbH. Closure arrangement for a window or door opening employing a slidable and tiltable panel. 3,775,905, Cl. 49-153.000.
Franklin Electric Co., Inc.: *See—*
Schaefer, Edward J.; and Refice, Alfred F., 3,777,194.
Woods, Richard E.; and Hohman, William H., 3,777,232.
Franklin, William E.; and Rowland, Stanley P., to United States of America, Agriculture. Recurable crosslinked cellulosic fabrics from methylol reagents and polycarboxylic acids. 3,776,692, Cl. 8-116.300.
Frass, Hans Werner: *See—*
Bauer, Sigrid; Sikora, Helga; and Frass, Hans Werner, 3,776,735.
Frazier, Larry C., to National-Standard Company. Method of incorporating tire beads into a tire. 3,776,793, Cl. 156-132.000.
Freck, James A.: *See—*
Van Patten, Eric M.; and Freck, James A., 3,777,039.
Freeman Supply Company, The: *See—*
Rusk, Gerald R.; and Kock, Robert E., 3,776,299.
Fremer, William A.: *See—*
Turner, John S.; and Fremer, William A., 3,776,499.
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French, Fred W., to Noranda Metal Industries, Inc. Tubing with inner baffle fins and method of producing it. 3,776,018, Cl. 72-367.000.
Frenzel, Gerhard: *See—*
Ensslin, Fritz; Frenzel, Gerhard; and Lobermann, Erich, 3,776,147.

Fresard, Marcel, to Mefina S.A. Screw operator for clutch with adjustable stop. 3,776,336, Cl. 192-95.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Artz, Gerd; Schumacher, Alfred; Marzinkewitsch, Rene; Hirschfelder, Horst-Dieter; and Vortkamp, Klaus, 3,776,014.
Fried Krupp Huttenwerke AG: *See—*
Dudek, Maria B., 3,776,720.
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Fritsch, Udo H. Enclosure for coiled garden hose. 3,776,262, Cl. 137-355.160.
Frohmader, Karl Peter: *See—*
Burtscher, Joachim; Frohmader, Karl Peter; Prost, Alfred; and Voss, Peter, 3,777,229.
Frosch, Albert; and Schmackpfeffer, Arno, to International Business Machines Corporation. Method of exposure for ghost line suppression. 3,776,633, Cl. 355-132.000.
Frost, David A.; and Schieven, Stanley R., to Eastman Kodak Company. Liquid trapping means for in-camera processed photographic product. 3,776,732, Cl. 96-76.000.
Frost, John W.; and Stibbe, Paul H., to TEC Systems, Inc. Web handling apparatus. 3,776,440, Cl. 226-97.000.
Fruehauf Corporation: *See—*
Schwartz, Robert B., 3,776,400.
Fry, Cyril Harold. Stretcher. 3,775,784, Cl. 5-81.00r.
Frye, Cecil L.; and Klosowski, Jerome M., to Dow Corning Corporation. Tetrasila-adamantanc compounds. 3,776,915, Cl. 260-293.560.
Fuji Photo Film Co., Ltd.: *See—*
Ichikawa, Kohei, 3,776,481.
Iwano, Harohiko; Hayashi, Katsumi; Iijima, Yoo; and Shimamura, Isao, 3,776,731.
Kato, Hisatoyo; and Takeda, Hideo, 3,776,696.
Kato, Kazunobu; and Ohkubo, Kinji, 3,776,761.
Kumasaka, Isao, 3,776,734.
Sato, Akira; Ikeda, Tadashi; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; and Takei, Haruo, 3,776,739.
Fujii, Haruo: *See—*
Kamogawa, Nin-Ichi; Fujii, Haruo; and Uchida, Tohru, 3,777,158.
Fujii, Hiroshi: *See—*
Takagi, Kiyoshi; Kawamura, Susumu; and Fujii, Hiroshi, 3,776,764.
Fujita, Keiich, to Fujita Kenzo Kogyo Co., Ltd. Roofing panel with drainage means. 3,775,925, Cl. 52-534.000.
Fujita Kenzo Kogyo Co., Ltd.: *See—*
Fujita, Keiich, 3,775,925.
Fujita, Osamu; and Kitao, Takaya, to Matsushita Electric Industrial Co., Ltd. Plural band channel selector having selector knobs controlling respective ones of a plurality of tuners. 3,777,288, Cl. 334-1.000.
Fujiwara, Yoshiyasu. Air vent. 3,776,255, Cl. 137-202.000.
Fukuda, Kenji: *See—*
Yamada, Junichi; Terashima, Etuzo; Takami, Yasuji; Fukuda, Kenji; and Nakai, Hiromitu, 3,777,203.
Fukumoto, Shigeru, to Kabushiki Kaisha Suncrux Research Office. Time indicating apparatus. 3,775,964, Cl. 58-50.00r.
Fulenwider, John E., to GTE Laboratories Incorporated. Linear motor relay. 3,777,292, Cl. 335-126.000.
Fulton & Partners, Inc.: *See—*
Fulton, James P.; and Rinaldi, Joseph A., 3,775,919.
Fulton Industries, Inc.: *See—*
Grove, John L., 3,776,367.
Fulton, James P.; and Rinaldi, Joseph A., to Fulton & Partners, Inc. Modular structures. 3,775,919, Cl. 52-236.000.
Futaki, Kiyoshi: *See—*
Suzuki, Shigeyoshi; Kobayashi, Norio; and Futaki, Kiyoshi, 3,776,728.
Gaboriault, Albert G. Method of exercise for pectoral muscle development. 3,776,547, Cl. 272-57.00r.
Gade, John N., to Eastman Kodak Company. Apparatus for unloading cartridges from trays. 3,776,405, Cl. 214-310.000.
Gadefelt, Bengt Georg, to Saab-Scania Aktiebolag. System for controlling the supply of air to an internal combustion engine. 3,775,971, Cl. 60-13.00n.
Gadet, Raymond, to Societe Nouvelle de Roulements. Integrated freewheel mechanisms. 3,776,335, Cl. 192-41.000.
GAF Corporation: *See—*
Levinos, Steven, 3,776,754.
Nehmsmann, Louis J.; and Schenck, Leslie M., 3,776,985.
Stanley, Lester N.; and Farris, Russell E., Jr., 3,776,898.
Tellier, Jacques C. T., 3,776,849.
Gage, Arthur F.; and Stamm, Alex F., to Rockwell International Corporation. Friction welding apparatus. 3,776,446, Cl. 228-2.000.
Gagnon, Robert A. Toy truck-pull. 3,775,902, Cl. 46-244.00a.
Galauner, Bela: *See—*
Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, 3,776,717.
Gale, Edwin J., to Stanley Aviation Corporation. Coupling assemblies. 3,776,579, Cl. 285-233.000.
Galey, Jean: *See—*
Mola, Michel; Barthelemy, Philippe; Bentz, Gerard; and Galey, Jean, 3,776,295.
Galian, John N.; and Karkut, Ernest W., said Karkut assor. to Total Systems Corporation. Calling system utilizing a telephone. 3,777,065, Cl. 179-6.0ta.
Gallant, Reginald R., to Linbro Chemical Co., Inc. Serial dilution apparatus. 3,776,700, Cl. 23-259.000.
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Ganiaris, Neophytos, to Struthers Patent Corporation, mesne. Alternating filters for ice-wash water in coffee concentration. 3,775,990, Cl. 62-58.000.
Ganier, Wolfgang; and Assmos, Friedrich, to Gebruder Junghans G.m.b.H., Firms. Circuit arrangement for the drive of a clockwork mechanism regulator-oscillator of a timepiece. 3,775,962, Cl. 58-23.00a.
Ganis, Joseph Francis, to E-Z Up Industries, Inc. Basketball backboard support assembly. 3,776,549, Cl. 273-1.50r.
Garan, Incorporated: *See—*
Mazzenga, Anthony, 3,775,775.
Gariboldi, Franco, to Officine Moncenisio, gia Anonima Bauchiero. Knitting of stocking toes on circular knitting machines. 3,776,000, Cl. 66-9.006.
Garrett Corporation, The: *See—*
Perpall, Robert C., 3,775,972.
Gasc, Jean-Claude; and Pierdet, Andre, to Roussel-UCLAF. Novel delta 1,3,5(10)-estratrienes. 3,776,902, Cl. 260-239.55r.
Gasparri, Angelo S.: *See—*
Davies, Phillip J.; Gasparri, Angelo S.; and McAtee, Daniel J., 3,777,260.
Gauthier, Joseph Aldege; and Shank, Louis Marcel. Animal traps. 3,775,896, Cl. 43-81.000.
Gautier, Pieter A.; Van der Plas, Franciscus J. F.; and Verbrugge, Pieter A., to Shell Oil Company. Linear monoolefin production. 3,776,974, Cl. 260-683.00d.
Gax Transport: *See—*
Jean, Pierre; and Nias, Marcel, 3,777,107.
Gearhart-Owen Industries, Inc.: *See—*
Young, James Douglas, 3,776,307.
Gebruder Junghans G.m.b.H., Firms: *See—*
Ganier, Wolfgang; and Assmos, Friedrich, 3,775,962.
Gee, Shu W., to United States of America, National Aeronautics and Space Administration. Terminal guidance system. 3,776,455, Cl. 235-150.220.
Gehrke, Ronald L. Animal leash. 3,776,198, Cl. 119-109.000.
Geiersbach, Allois F.: *See—*
Kalser, Ernst K.; Geiersbach, Allois F.; and Neumann, Manfred E., 3,777,250.
Geisselmann, Heribert, to Camille Bauer Messinstruments Aktiengesellschaft. Apparatus with capacitive probes for measuring the location and disposition of an interface between two media. 3,777,257, Cl. 324-61.00r.
Gelbein, Abraham P., to Lummus Company, The. Process for the manufacture of aromatic nitriles. 3,776,937, Cl. 260-465.00b.
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Gell, Philip Anthony Maunsell; Merritt, Frederick Maynard; and Steitz, William Richards, to Toledo Engineering Co., Inc. and Elemelt Limited. Protection of glass melting furnace electrode. 3,777,040, Cl. 13-6.000.
General Electric Company: *See—*
Anderson, Albert W., 3,777,237.
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,776,416.
Baker, Philip D., 3,776,465.
Foldes, Stephen, 3,776,719.
Kroon, Peter J., 3,777,291.
Plescia, Joseph J., 3,776,025.
Senft, Stephen P.; and Sterling, Vaughn C., 3,776,685.
Settle, Joseph F., 3,776,439.
Stenger, Richard E.; and Richey, John M., 3,775,975.
General Electric Company Limited, The: *See—*
Cleobury, Donald Jack; and Wilson, Bernard, 3,777,268.
General Kinematics Corporation: *See—*
Musschoot, Albert, 3,776,352.
General Mills Chemicals, Inc.: *See—*
Glaser, David W.; and Lovald, Roger A., 3,776,865.
General Mills, Inc.: *See—*
Tsuchiya, Takuzo, 3,776,470.
General Motors Corporation: *See—*
Bright, James A., 3,775,992.
Brumm, Karl; and Lamprecht, Rudolf, 3,775,803.
General Semiconductor Industries, Inc.: *See—*
Winters, Richard D., 3,777,219.
General Signal Corporation: *See—*
Palombo, John A.; and Larime, Carl M., 3,777,091.
General Tire & Rubber Company, The: *See—*
Hofelt, Clarence, Jr.; and Rongone, Francis C., 3,775,854.
Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz Joseph; Pearl, David R.; and Oswell, Robert J., 3,776,072.
Pearl, David R.; and Wolfson, Lawrence S., 3,776,074.
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Gertsch AG: *See*—
Smulka, Thomas Gordon, 3,776,566.

Getson, John Charles, to Stauffer Chemical Company. Preparation of modified organopolysiloxanes in a solvent system. 3,776,875, Cl. 260-31.20r.

Gettelman, Clarence C.: *See*—
Hall, Jesse H.; Gettelman, Clarence C.; Pollack, John L.; Goldman, Gary C.; and Decker, Arthur J., 3,777,200.

Gewerschaft Eisenhutte Westfalia: *See*—
Behrens, Volker; Weirich, Walter; and Rosenberg, Harry, 3,776,098.

Gibson, Robert V.,: *See*—
Gould, Edson B., III, 3,776,040.

Gilbert, Joseph G. Composition and method for the treatment of damaged skin. 3,777,016, Cl. 424-80.000.

Gill, Raymond B.; and McMahon, Floyd J., to Westinghouse Air Brake Company. Pendulum light sensor. 3,776,315, Cl. 172-45.000.

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Gillemot, George W.; and Thompson, John T. Bonding device and anchorage for shielded cables. 3,777,049, Cl. 174-78.000.

Gilles, Martin; and Thiel, Anton, to Clouth Gummiwerke AG. Flexible structural member for a vehicle casing. 3,776,094, Cl. 89-36.00a.

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Gilstrap, James Thomas. Press head insulator. 3,775,880, Cl. 38-66.000.

Gilvar, Martin; Wykes, Robert E.; and Mercer, Charles S., to Morgan Construction Company. Coupling device. 3,776,575, Cl. 285-18.000.

Girling Limited: *See*—
Harvey, Dennis Francis, 3,776,610.

Gits Bros. Mfg. Co., Inc.: *See*—
Jackson, Richard H.; and Warner, Dale J., 3,775,836.

G.K.N. Group Services Limited: *See*—
Barlow, John, 3,776,612.

Glanzstoff AG: *See*—
Witzler, Franz; and Koepp, Hans-Martin, 3,776,882.

Glaser, David W.; and Lovald, Roger A., to General Mills Chemicals, Inc. Water-reducible acid terminated polymeric fat acid polyamide resins useful as flexographic ink binders. 3,776,865, Cl. 260-18.00n.

Glass, Marvin, & Associates: *See*—
Glass, Marvin I.; and Breslow, Jeffrey D., 3,776,548.

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Gleeson, Robert Leonard: *See*—
Lewis, Keith; and Gleeson, Robert Leonard, 3,777,175.

Glenn, Robert: *See*—
Barouh, Victor; and Glenn, Robert, 3,776,756.

Global Marine Inc.: *See*—
Anders, Edward O.; and Nichols, Lloyd G., 3,776,360.

Globe Rubber Works, Inc.: *See*—
Somerville, Richard C., 3,775,821.

Glory Kogyo Kabushiki Kaisha: *See*—
Hatanaka, Yoshihiro, 3,775,940.

Goan, John Cecil, to Great Lakes Carbon Corporation. Aminated carbon fibers. 3,776,829, Cl. 204-164.000.

Gock, Eberhard: *See*—
Gerlach, Johannes; and Gock, Eberhard, 3,777,005.

Goddard, Robert V. Apparatus for attaching hooks to trotline and for setting trotline. 3,775,894, Cl. 43-54.50a.

Godley, Lisbeth N.: *See*—
Kamborian, Jacob S.; and Caris, Costa, 3,775,797.

Goetchfus, Ronald O.; and Collins, Michael John, to Celanese Corporation. Analyzer apparatus and method. 3,777,127, Cl. 235-151.300.

Goetter, Erwin H.: *See*—
Smrekar, Clarence E.; and Goetter, Erwin H., 3,775,811.

Goffredo, Daniel L.; and Shakley, Conrad Dale, to Chemut Corporation. Etching apparatus. 3,776,800, Cl. 156-345.000.

Goldberg, Newton N.: *See*—
Fergason, James L.; and Goldberg, Newton N., 3,776,927.

Goldman, Gary C.: *See*—
Hall, Jesse H.; Gettelman, Clarence C.; Pollack, John L.; Goldman, Gary C.; and Decker, Arthur J., 3,777,200.

Goldman, Leon: *See*—
Epstein, Joseph William; and Goldman, Leon, 3,776,922.

Goodrich, B. F., Company, The: *See*—
Eden, Jamal S., 3,776,952.
Schneider, Wolfgang, 3,776,966.

Goodrich, John J.; and Waxlax, Chester E., to St. Regis Paper Company. Gusseted type bags. 3,776,451, Cl. 229-55.000.

Goodyear Tire & Rubber Company, The: *See*—
Ruof, Edgar J., 3,776,605.

Gorby, Clifford L.: *See*—
Cramm, Herman W.; Gorby, Clifford L.; and Leetma, Juri G., 3,777,286.

Gordon, Harry W.; and Schaffner, Carl P., to Schmid, Julius, Inc. Compositions containing polyenic macrolide and aryl derivative of aliphatic acid and method for treating hyperlipidaemia. 3,777,018, Cl. 424-117.000.

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Schiavone, Donald J., 3,777,046.

Gould, Lawrence P.; and Hoffman, Robert J., to Allied Chemical Corporation. Anti-caking additives for inorganic salts. 3,777,007, Cl. 423-268.000.

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Grace, W. R., & Co.: *See*—
Bleyle, Merrill, 3,776,892.
Harrison, William B.; and Keene, Edwin E., 3,776,421.
Rundell, Clark A.; and McDaniel, Carl V., 3,777,006.
Simpson, Edgar Alan, 3,776,859.

Graf, Hans. Device for producing X-ray pictures of temporomandibular joint. 3,777,140, Cl. 250-490.000.

Graham, Donald H.: *See*—
Evans, Paul R.; and Graham, Donald H., 3,776,150.

Granville, James E. Ski safety strap. 3,776,565, Cl. 280-11.35n.

Grassman, Willard F.; and Erich, Malcolm, to Silco, Inc. Mop frame. 3,775,802, Cl. 15-147.00a.

Gratsch, Jack M., to Cutters Exchange, Inc. Sew-off means for automatic sewing machines. 3,776,155, Cl. 112-121.150.

Gratzmuller, Jean Louis. Interrupter device for high voltage direct current. 3,777,178, Cl. 307-136.000.

Grawey, Charles E., to Caterpillar Tractor Company. Belted oval pneumatic tube-tire. 3,776,792, Cl. 156-124.000.

Gray, Darwyn T.: *See*—
Lynch, Edward J.; and Gray, Darwyn T., 3,776,028.

Gray, Kenneth W.: *See*—
Hardy, Walter H.; and Gray, Kenneth W., 3,777,270.

Gray, Robert C.: *See*—
Hoy, Robert P.; and Gray, Robert C., 3,776,397.

Great Lakes Carbon Corporation: *See*—
Goan, John Cecil, 3,776,829.

Greenfield, Stanley A.: *See*—
Miller, George A.; and Greenfield, Stanley A., 3,776,942.

Grenier, Aime J., to Texas Instruments, Incorporated. Electromagnetic switch. 3,777,294, Cl. 335-236.000.

Grenier, Raymond P.; and Jacobson, Earl B., to Baird-Atomic, Inc. High resolution radioactivity distribution detection system. 3,777,142, Cl. 250-327.000.

Gresham, James Tyson: *See*—
Thomas, Gordon D.; and Gresham, James Tyson, 3,776,797.

Griffith, Jerry L.; and Kinsworthy, Donald D., to Lau Incorporated. Electrodialytic demineralizing unit for humidification purposes. 3,776,530, Cl. 261-4.000.

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Grimme, Henry L., Jr., to Raypak, Inc., mesne. Water cleaning treatment. 3,776,842, Cl. 210-23.000.

Groce, Larry A.; and Renner, Darwin S. Fault indicator apparatus for fault location in an electrical power distribution system. 3,777,217, Cl. 317-33.00c.

Grocers Baking Company: *See*—
Bryan, Carl E., 3,776,402.

Groh, Louis; and Jones, Harry Joseph, to Ferroco Engineering Limited. Bar twister guide. 3,776,013, Cl. 72-231.000.

Gross, Ronald E., to Cooke Engineering Company. Red cell rinser. 3,776,699, Cl. 23-259.000.

Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, to Borg-Warner-Stieber GmbH. Adjustable mandrel for clamping a work piece. 3,776,562, Cl. 279-2.000.

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Costanio, James J.; and Hrdlicka, Eugene R., 3,777,137.
Mehia, Madhokumar A., 3,777,129.
Padgett, Richard A., 3,777,080.
Zellmer, Neale A., 3,777,247.

GTE Laboratories Incorporated: *See*—
Fulenwider, John E., 3,777,292.

GTE Sylvania Incorporated: *See*—
Emerson, L. Frank, 3,776,606.
Robbins, John D.; and Wanner, Louis R., 3,777,204.
Say, Donald L., 3,777,202.

Gueffroy, Donald E.: *See*—
Drell, William; and Gueffroy, Donald E., 3,776,903.

Guffey, Hoyt Randuff: *See*—
Valant, Gary Michael; and Guffey, Hoyt Randuff, 3,776,703.

Guimbal, Jean C. Superposed-strip field winding for rotary electric machines. 3,777,190, Cl. 310-60.000.

Gulf Research & Development Company: *See*—
Bailey, Wayne W.; and McCarthy, Paul R., 3,776,846.
Carr, Norman L.; and Ko, Daniel Y. C., 3,776,971.
Hill, Robert William, 3,776,979.
Kelly, Kenneth K.; and Matthews, Joseph S., 3,776,901.
Ko, Daniel Y. C.; and Stahlfeld, Donald L., 3,776,836.
Kramer, Edward W.; and Mitchell, Edward, 3,776,283.

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Guly, Vyacheslav Dmitrievich: *See*—
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.

Gundlach, Robert W., to Xerox Corporation. Photoelectrophoretic imaging system. 3,776,628, Cl. 355-3.000.

Gunkel, Rudolf: *See*—
Gelhard, Lgon; and Gunkel, Rudolf, 3,776,141.

Guschin, Alexandr Evgenievich. Device for forming a layer of fibrous material of homogeneous structure. 3,777,231, Cl. 317-262.00r.

Gustafsson, Lennart, to Aktiebolaget Partner. Brake-device for power saws. 3,776,331, Cl. 188-166.000.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See*—
Fischer, Hans; and Hellendrung, Herbert, 3,777,105.

Guth, Christian: *See*—
Buehler, Arthur; Schuetz, Hans Ulrich; Maeusezahl, Dieter; Harris, Melvin; and Guth, Christian, 3,776,767.

Gutmann, Walter: *See*—
Nicolet, Rene; Gutmann, Walter; and Volker, Theodor, 3,776,982.

Guyer, Raymond H.; and Leehl, Robert G., to United States of America, Atomic Energy Commission. Article removal device for glovebox. 3,776,284, Cl. 141-65.000.

Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; and Hutt, Bruce L. Welding torch oscillator. 3,777,101, Cl. 219-60.00a.

Gylland, Ernest F., Jr.: *See*—
Conley, Thomas F.; and Gylland, Ernest F., Jr., 3,775,995.

Haas, Jorg, to Bruker-Physik AG. Control device for one-hand operation. 3,776,057, Cl. 74-471.000.

Habib, Emile E., to Deering Milliken Research Corporation. Synthetic suede fabrics. 3,776,753, Cl. 117-11.000.

Hagaman, Smith M. Golf club swing training apparatus. 3,776,555, Cl. 273-186.00r.

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Hall, Richard William: *See*—
Booth, Bruce F.; Veilleux, Pierre; and Hall, Richard William, 3,776,378.

Hall, Wilbur S.; and Steinerecher, Lester, to Amchem Products, Inc. Process and composition for coating metals. 3,776,848, Cl. 252-49.500.

Hallamore, Alfred S. Process air automatic self-cleaning air filtration system. 3,775,950, Cl. 55-242.000.

Halliburton Company: *See*—
Carnes, James D.; Young, Bill M.; and Totty, Kenneth D., 3,776,311.
Jessup, Robert L.; and Farley, David L., 3,776,578.
Knox, Lloyd C., 3,776,250.

Hamilton, William Roy, to Fairey Winches Limited. Cable handling apparatus. 3,776,519, Cl. 254-175.500.

Hammer, Frank E., to Searle, G. D., & Co. Stabilization of reduced coenzymes. 3,776,900, Cl. 260-211.50r.

Hammer, Klaus-Dieter: *See*—
Gruber, Ehrenfried; Klenk, Ludwig; and Hammer, Klaus-Dieter, 3,776,799.

Hammond, Donald L.; and Fellner, Hugo R., to Hewlett-Packard Company. Bent difraction crystal with geometrical aberration compensation. 3,777,156, Cl. 250-280.000.

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Handy, Harry C. Set-up tool. 3,775,857, Cl. 33-185.00r.

Hanel, Gottfried: *See*—
Berg, Walter; Hanel, Gottfried; and Elster, Heinz, 3,776,012.

Haney, Robert L. Formation of well packers. 3,776,561, Cl. 277-116.800.

Hanke, David E., to Kimberly-Clark Corporation. Self-lubricating compound for use in hygienic and medical applications and suppositories made therefrom. 3,776,001, Cl. 128-271.000.

Hankins, Harold Charles Arthur; and Torsun, Imad Shakir, to International Computers, Limited. Dark trace cathode ray tube erase system. 3,777,213, Cl. 315-323.000.

Hansen, Claus M.; and Norgaard, Ejvind N., to Smidth, F. L., & Co. Sandwich diaphragm for mill. 3,776,477, Cl. 241-72.000.

Hansen, Niels: *See*—
Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, 3,775,823.

Hansen, Richard L., to Minnesota Mining and Manufacturing Company. Solar control products. 3,776,805, Cl. 161-2.000.

Hansman, George: *See*—
Griggs, Carl L.; and Hansman, George, 3,775,870.

Hanson, Donald K.: *See*—
Betts, E. Douglas; Hanson, Donald K.; and Stephenson, Donald K., 3,776,366.

Hapgood, William H.: *See*—
Teich, Wesley W.; and Hapgood, William H., 3,776,149.

Hapgood, William H.; and Di Nuzzi, Robert D., to Raytheon Company. Incinerator. 3,776,148, Cl. 110-8.00a.

Hardy Company, The: *See*—
Wheeler, Philip T., 3,775,882.

Hardy, Walter H.; and Gray, Kenneth W., to Rockwell International Corporation. Precision variable pulse rate nulling radiometer. 3,777,270, Cl. 325-363.000.

Hargraves, William J. Sewage treatment venting system. 3,776,383, Cl. 210-199.000.

Harnischfeger Corporation: *See*—
Witwer, Wallace J., 3,776,518.

Harrington, Gene Norman; and Civardi, Frank Peter, to Inmont Corporation. Suede-like materials. 3,776,790, Cl. 156-79.000.

Harris, Leroy S., to K-G Industries, Inc. Compacting roll structure and method. 3,775,820, Cl. 29-118.000.

Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, to Sharps Associates. 5,5-Dimethyl-10-hydroxy-8-(3-methyl-2-octyl)-2-(2-propynyl)-1,2,3,4-tetrahydro-5H(1)-benzopyrano (3,4-d)pyridine as an anti-diarrheal agent. 3,777,028, Cl. 424-263.000.

Harris, Melvin: *See*—
Buehler, Arthur; Schuetz, Hans Ulrich; Maeusezahl, Dieter; Harris, Melvin; and Guth, Christian, 3,776,767.

Harris, Paul Anthony, to Lucas, Joseph, (Industries) Limited. Speed limiting systems for internal combustion engines. 3,776,204, Cl. 123-102.000.

Harris, Thomas J., to International Business Machines Corporation. Modular touch sensitive indicating panels with touch and light transmissive overlay cover membrane containing visible printed indicia. 3,777,222, Cl. 317-112.000.

Harrison, Arthur Denwood Richard, to University of Survey, The. Apparatus for applying liquid samples to a surface. 3,776,184, Cl. 118-243.000.

Harrison, John, to Spra-Con Company, The. Article induction system. 3,776,344, Cl. 198-20.000.

Harrison, John M., to North Electronics Corporation. Delay distortion measurement system. 3,777,256, Cl. 324-57.00r.

Harrison, William B.; and Keene, Edwin E., to Grace, W. R., & Co. Mechanism for separating a container closure from a stack of closures. 3,776,421, Cl. 221-251.000.

Hart, Herman. Safety guard and dust and debris collector attachment for a drill. 3,776,647, Cl. 408-241.00g.

Hartz, Marvin E.; and Witek, Roman J., Jr., to Essex International, Inc. Mounting device. 3,776,495, Cl. 248-71.000.

Harvey, Dennis Francis, to Girling Limited. Servo motors. 3,776,610, Cl. 308-3.500.

Harvey, Edward H. Lumber sorter. 3,776,379, Cl. 209-73.000.

Haselmann, Heinrich: *See*—
Barenyi, Bela; and Haselmann, Heinrich, 3,776,589.

Hashimoto, Kametaro: *See*—
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Ishihara, Ko; Serino, Yoichi; Mitani, Seishu; and Imanishi, Kunizo, 3,776,705.

Haskell, Weston W., to Shell Oil Company. Gas temperature measurement having strongly temperature-dependent light absorption properties. 3,776,635, Cl. 356-43.000.

Haspert, John C. Method for mechanized seam mining. 3,776,594, Cl. 299-18.000.

Hastwell, Peter J.: *See*—
Smith, Ian E.; Hastwell, Peter J.; and Vermeulen, Marinus C., 3,776,632.

Hatanaka, Yoshihiro, to Glory Kogyo Kabushiki Kaisha. Coin-guiding device in coin wrapper. 3,775,940, Cl. 53-212.000.

Hatley, Derek J.; and Wilson, Harold R., to Donnelly Mirrors, Inc. Keyboard switch assembly with improved movable contact having cantilever supported central member with radially extending contact fingers. 3,777,082, Cl. 200-5.00a.

Hattendorf, Edwin R.: *See*—
Tribuno, Robert F.; Foster, Thomas E.; Mineck, David W.; and Hattendorf, Edwin R., 3,777,242.

Hauck, Albert. Dividing apparatus. 3,776,076, Cl. 83-167.000.

Hauermann, Rudi. Welded cable pulley. 3,776,059, Cl. 74-230.500.
Hauni-Werke Kurber & Co.: *See—*
Wochnowski, Waldemar, 3,777,258.
Hawkins, Richard John, to British Iron and Steel Research Association, The. Electroslag refining apparatus. 3,777,041, Cl. 13-17.000.
Hawthorne, Vaughn T., to Keystone Industries, Inc. Single acting impact absorbing device. 3,776,391, Cl. 213-8.000.
Hayashi, Katsumi: *See—*
Iwano, Harohiko; Hayashi, Katsumi; Iijima, Yoo; and Shimamura, Isao, 3,776,731.
Hayati, Hossein: *See—*
Lerner, Robert Wendell; Hayati, Hossein; and Flasch, John Robert, 3,776,881.
Hayes, Thomas A.; and Krause, Theodore R., to VCA Corporation. Molded plastic compact with mirror member. 3,776,245, Cl. 132-83.00r.
Hayssen Manufacturing Company, mesne: *See—*
Saffron, Ronald George, 3,776,680.
Hazard, Robert E., to Polytop Corporation. Safety closure useable on threaded container neck. 3,776,428, Cl. 222-153.000.
Hazen Research, Inc.: *See—*
Lankenau, Arthur W.; and Lake, James L., 3,777,004.
Heberlein & Co., AG: *See—*
Wanger, Freddy, 3,776,270.
Hebert, Donald G.: *See—*
Dobner, Richard G.; and Hebert, Donald G., 3,776,341.
Hecht, Richard, to United Aircraft Corporation. Circular involute reflector for providing a variable pathlength. 3,776,637, Cl. 356-106.000.
Hegar, Gert; and Riat, Henri, to Ciba-Geigy AG. Halogeno-6-hydroxy-pyridone-(2) compounds. 3,776,918, Cl. 260-296.00r.
Hegler, Wilhelm. Apparatus for the manufacture of plastic tubing of special cross-sectional configuration. 3,776,679, Cl. 425-325.000.
Heid, Christian: *See—*
Wiatrowski, Stefan; Heid, Christian; and Keil, Karl-Heinz, 3,776,690.
Heide, Bastiaan Adriaan; Muller, Johannes Jacobus; and Kock, Theodorus Joannes, to Lever Brothers Company. Catalysts. 3,776,858, Cl. 252-431.00r.
Heilhecker, Joe K.: *See—*
Maurer, William C.; Heilhecker, Joe K.; and Lock, Everett H., 3,776,558.
Heilhecker, Joe R.: *See—*
Dock, Everett H.; and Heilhecker, Joe R., 3,776,472.
Heilmayr, Peter F., to Certain-Teed Products Corporation. Method and apparatus for producing siding. 3,776,672, Cl. 425-72.000.
Heinc, Helmut A., 1/2 to Propper Manufacturing Co., Inc. and 1/2 to Optotechnik Heinc KG. Ophthalmoscope with interconnected illumination and lens carrier systems. 3,776,619, Cl. 351-12.000.
Heise, Karl A.: *See—*
Slingsby, Thomas W.; Neville, Hugh C.; and Heise, Karl A., 3,776,119.
Heiszwolf, Gerard J.: *See—*
Verbrugge, Peter A.; and Heiszwolf, Gerard J., 3,776,975.
Helenberg, John: *See—*
Tomlin, Jerry B.; and Helenberg, John, 3,776,507.
Hell, Rudolf, Dr.-Ing., GmbH: *See—*
Leszke, Hans-Hinrich, 3,777,252.
Hellendrung, Herbert: *See—*
Fischer, Hans; and Hellendrung, Herbert, 3,777,105.
Hellermann, Eberhard: *See—*
Lingg, Gerhard; and Hellermann, Eberhard, 3,776,395.
Hendershot, William B., III; Tallent, Michael W.; Wald, David; and Whitlock, Larry K., to Consolidated Video Systems, Inc. High speed thermal duplication of magnetic tape. 3,777,075, Cl. 179-100.20b.
Henderson, Donald W.; deceased (by Seitz, Joseph A.; executor); and Henderson, Shirley W., to Henderson, Shirley W. Underwater hull inspection. 3,776,574, Cl. 283-1.000.
Henderson, Homer I. Cushion mounting. 3,776,536, Cl. 267-35.000.
Henderson, Joseph D., to Telex Computer Products, Inc. Vacuum column for reel servo. 3,776,487, Cl. 242-182.000.
Henderson, Shirley W.: *See—*
Henderson, Donald W.; and Henderson, Shirley W., 3,776,574.
Hendy, Brian Norman: *See—*
Davis, John Howard; and Hendy, Brian Norman, 3,776,751.
Henkel & Cie G.m.b.H.: *See—*
Fluchter, Horst; and Rossmann, Christian, 3,776,852.
Henry, William Franklin: *See—*
Eggleton, Cecil Howard, Jr.; and Henry, William Franklin, 3,776,514.
Heraeus-Schott Querzschmelze GmbH: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, 3,776,809.
Heran, Robert F. Method and apparatus for heating work pieces. 3,776,687, Cl. 432-6.000.
Hercules Incorporated: *See—*
Zebree, David L., 3,776,135.
Herman, Edward B. Lens holding structure for welder's helmet. 3,775,774, Cl. 2-8.000.
Hertel, Karl. Turning tool. 3,775,817, Cl. 29-96.000.
Herzl, Peter J., to Fischer & Porter Company. Vortex-type mass flowmeters. 3,776,033, Cl. 73-194.00b.
Hess, Peter: *See—*
Smerz, Otto; Linke, Werner; Schaff, Alfred; and Hess, Peter, 3,776,766.
Hetzel, Max, to Omega Louis Brandt et Freres, S.A. Motion transformer. 3,776,050, Cl. 74-142.000.
Hewlett-Packard Company: *See—*
Hammond, Donald L.; and Fellner, Hugo R., 3,777,156.
Hammond, Donald L.; and Tyler, Charles E., 3,777,159.
Hidaka, Hiroyoshi: *See—*
Hidaka, Hiroyoshi; Matsumoto, Ikuo; and Yoshizawa, Junji, 3,776,913.
Hidaka, Hiroyoshi; Matsumoto, Ikuo; and Yoshizawa, Junji, to Banyu Pharmaceutical Co., Ltd. and Hidaka, Hiroyoshi. Certain dithio-carbamate derivatives of 5-hydroxymethyl-picolinic acid. 3,776,913, Cl. 260-293.690.
Higuchi, Nori. Safety buckle. 3,775,813, Cl. 24-230.00a.
Hill, J. Donald; and Robinson, Thomas C., to Tecna Corporation. Surgical tool and method of providing a surgical opening. 3,776,237, Cl. 128-305.000.
Hill, Marion E.; and Lerom, Michael W., to United States of America, Atomic Energy Commission. Nitrodifluoraminopolyaromatic compounds. 3,776,958, Cl. 260-576.000.
Hill, Robert William, to Gulf Research & Development Company. Olefin block copolymer fluidized-bed polymerization process. 3,776,979, Cl. 260-878.00b.
Hillis, Benjamin F.: *See—*
Johnson, E. Curtis; and Hillis, Benjamin F., 3,776,820.
Himel, Ernst C., to Massey-Ferguson Industries Limited. Locking mechanism. 3,776,007, Cl. 70-86.000.
Hindle, Edward David: *See—*
Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, 3,775,823.
Hirano, Seiji: *See—*
Sagawa, Takao; Hirano, Seiji; Tanaka, Nobuhiko; and Togashi, Kunihiko, 3,777,023.
Hironaka, Nobuyuki: *See—*
Yamaguchi, Masaya; and Hironaka, Nobuyuki, 3,776,253.
Hirschfelder, Horst-Dieter: *See—*
Artz, Gerd; Schumacher, Alfred; Marzinkewitsch, Rene; Hirschfelder, Horst-Dieter; and Vortkamp, Klaus, 3,776,014.
Hirschler, Alfred E.: *See—*
Bushick, Ronald D.; and Hirschler, Alfred E., 3,776,968.
Hitachi, Ltd.: *See—*
Abe, Katsuo, 3,777,057.
Oshita, Tomomi; and Suzuki, Minoru, 3,776,243.
Yamada, Junichi; Terashima, Etuzo; Takami, Yasuji; Fukuda, Kenji; and Nakai, Hiromitu, 3,777,203.
Hitco: *See—*
Vasterling, Paul F., 3,775,969.
Hobrough, Gilbert L., to Hobrough Limited. Hexagonal patch printing for orthophoto printers. 3,777,055, Cl. 178-6.700.
Hobrough Limited: *See—*
Hobrough, Gilbert L., 3,777,055.
Hochuli, Urs E. Seal and method of making same. 3,777,281, Cl. 331-94.500.
Hoechst Fibers Incorporated: *See—*
Bond, James R., 3,775,959.
Hoener, Ralph H., Jr. Window wall washing device for high-rise buildings. 3,775,804, Cl. 15-302.000.
Hofelt, Clarence, Jr.; and Rongone, Francis C., to General Tire & Ruhber Company, The. Checking station for tires of different sizes. 3,775,854, Cl. 33-174.00r.
Hofer, Gerhard: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, 3,776,809.
Hoff, Donald G., to Dietzgen Electronics, Inc. Measurement transducer calculator interface. 3,777,126, Cl. 235-151.300.
Hoffman, Peter, to Olympia Werke AG. Apparatus for photoelectric monitoring. 3,777,170, Cl. 250-561.000.
Hoffman, Robert J.: *See—*
Gould, Lawrence P.; and Hoffman, Robert J., 3,777,007.
Hoffmann-La Roche Inc.: *See—*
Magid, Louis, 3,777,029.
Hohman, William H.: *See—*
Woods, Richard E.; and Hohman, William H., 3,777,232.
Hokama, Takeo: *See—*
Scardiglia, Frank; Dissen, Israel J.; and Hokama, Takeo, 3,776,980.
Holan, George, to Commonwealth Scientific and Industrial Research Organization. Cyclic organic compounds. 3,776,925, Cl. 260-333.000.
Holbrook, Le Grand K.; and Fowley, Ronald D., to Medical Development Corporation. Urinary drainage apparatus. 3,776,231, Cl. 128-275.000.
Hollenbeck, Arthur J., to Westinghouse Electric Corporation. Method and apparatus for detecting flaws in continuous length tubular glass. 3,777,171, Cl. 250-572.000.
Hollingsworth, Elvin R., to Overmyer Corporation. Apparatus for forming a blown bottle having a chime in the shoulder portion thereof. 3,776,711, Cl. 65-261.000.
Holmes, Jack K.: *See—*
United States of America, National Aeronautics and Space Administration, 3,777,272.
Holt, John K., to International Oceanographic Corporation. Shrimp trawl with electronic excitation device. 3,775,891, Cl. 43-9.000.
Honeywell Inc.: *See—*
Stauffer, Norman L., 3,776,639.

Wilwerding, Dennis J., 3,776,112.
Hope, Frederick John Charles; and Pigney, James Malcolm, to Self Energising Disc Brakes Limited. Brake wear and adjustment device. 3,776,329, Cl. 188-1.00a.
Hopkins, Don J.: *See—*
Murray, Kenneth J.; Hopkins, Don J.; and Lederman, Peter B., 3,776,309.
Horn, John J. Sure find safety bed light switch. 3,777,085, Cl. 200-51.01n.
Hornman, Johannes Petrus: *See—*
Van Esdonk, Johannes; Jacobs, Jacobus Hubertus; Hornman, Johannes Petrus; and Van de Laar, Wilhelmus Johannes, 3,776,613.
Horrocks, Raymond G., to Scott & Fetzer Company, The. Cutting blade for removing material from an electrically conductive cable. 3,775,847, Cl. 30-353.000.
Horwitz, Robert P. Propulsion system for a boat. 3,776,173, Cl. 115-12.00r.
Hosegood, Samuel Brittan: *See—*
Lockett, George Edward; and Hosegood, Samuel Brittan, 3,776,814.
Houghton, Connie H. Water conserving apparatus. 3,776,261, Cl. 137-337.000.
Houpert, Bernd; and Reich, Andreas, to Brown Boveri & Cie AG. Unitary assembly of serially connected fuel cells. 3,776,777, Cl. 136-86.00r.
Howard, Arthur G.; and McHugh, John P. Humidifier means. 3,776,215, Cl. 126-113.000.
Howard, Robert C., to Wyomissing Corporation. Furcated garment. 3,776,002, Cl. 66-87.000.
Howe-Baker Engineers Inc.: *See—*
Brazzel, Ronald D., 3,775,946.
Hoy, Robert P.; and Gray, Robert C., to Mechaneer, Inc. Armature winding apparatus with improved armature loading mechanism. 3,776,397, Cl. 214-8.50k.
Hoyer, Wilmer A.; Rumble, Robert C.; Britton, Donald H.; and Ball, John D.; deceased (by Ball, Verna D.; executrix), to Esso Production Research Company. Gated spectral well logging radiation detection system and method. 3,777,147, Cl. 250-264.000.
Hrdlicka, Eugene R.: *See—*
Costanio, James J.; and Hrdlicka, Eugene R., 3,777,137.
Hrubes, Jan; and Dubansky, Alois, to Ceskoslovenska akademie ved. Reciprocating motor. 3,777,236, Cl. 318-122.000.
Hubenthal, Aloys. Fuel cut-off lock. 3,776,263, Cl. 137-384.800.
Hubler, Ernst: *See—*
Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, 3,777,000.
Hudson, Perry D. Combustion products pressure generators intermittent burner cycle and engines. 3,775,973, Cl. 60-39.250.
Huey, Raymond H., to Colgate-Palmolive Company, mesne. Disposable diaper with adhesive tape tah fasteners. 3,776,234, Cl. 128-287.000.
Hugener, Hanspeter: *See—*
Volker, Theodor; and Hugener, Hanspeter, 3,776,976.
Hughes Aircraft Company: *See—*
Bancroft, Charles F., 3,777,181.
Cramm, Herman W.; Gorhy, Clifford L.; and Leetma, Juri G., 3,777,286.
Lutz, Michael A., 3,777,179.
Hughes, John H. Apparatus for making uniform semi-split shakes. 3,776,287, Cl. 144-13.000.
Hughes, John H. Uniform semi-split shake and method and apparatus for making shakes. 3,776,290, Cl. 144-326.000.
Hughes, Richard E. Tongue strap. 3,776,197, Cl. 119-96.000.
Hull, Edward M.: *See—*
Basi, Jagtar S.; and Hull, Edward M., 3,776,789.
Hunt, Duane A., to Matthews, Donnell R., Jr. Distributor adjusting mechanism. 3,776,206, Cl. 123-117.00r.
Hunter, James B., to Bishop, Matthey, Inc. Catalyst supporting structure. 3,776,701, Cl. 23-288.00r.
Hutt, Bruce L.: *See—*
Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; and Hutt, Bruce L., 3,777,101.
Hy-Way Heat Systems, Inc.: *See—*
Miller, John H., 3,776,199.
I-T-E Imperial Corporation: *See—*
Meacham, James Frank, 3,777,224.
Iben, Kurt-Werner, to Messerschmitt-Bolkow-Blohm GmbH Gesellschaft mit beschrankter Haftung. On-board cargo loading device for airplanes. 3,776,492, Cl. 244-137.00r.
Ichikawa, Kohei, to Fuji Photo Film Co., Ltd. Apparatus for taking up a web. 3,776,481, Cl. 242-56.00a.
Ideal Toy Corporation: *See—*
Thorn, Herbert; and Ieda, Michael, 3,775,900.
Ieda, Michael: *See—*
Thorn, Herbert; and Ieda, Michael, 3,775,900.
Ihara, Yasuharu, to Nippon Gakki Seizo Kahushiki Kaisha. Sound producing passage for musical wind instruments. 3,776,090, Cl. 84-380.000.
Iijima, Yoo: *See—*
Iwano, Harohiko; Hayashi, Katsumi; Iijima, Yoo; and Shimamura, Isao, 3,776,731.
Ikari, Yoshikatsu; and Yokoyama, Shoichiro, to Industrial Science & Technology, Agency of. Method for treatment of sulfite spent liquor. 3,776,897, Cl. 260-124.00r.
Ikeda, Hiroshi; Yoneda, Motoaki; and Ishii, Minoru, to Onahama Seiren Kabushiki Kaisha. System for continuous manufacture of copper anodes for electro-refining. 3,776,017, Cl. 72-338.000.
Ikeda, Tadashi: *See—*
Sato, Akira; Ikeda, Tadashi; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; and Takei, Haruo, 3,776,739.
Ikegami, Yoshizo, to Konan Camera Research Institute. Method of and apparatus for measuring dimensional quantities. 3,776,640, Cl. 356-160.000.
Iler, Ralph K.: *See—*
Daniels, Alma U.; and Iler, Ralph K., 3,776,706.
Ilford Limited: *See—*
Ridley, Kenneth Arthur, 3,776,442.
Illinois Tool Works Inc.: *See—*
Schlueter, David F.; and Morgan, JOhn Edward, 3,775,935.
Image Analysing Computers Limited: *See—*
Pieters, Leon Andre, 3,777,056.
Imanishi, Kunizo: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Ishihara, Ko; Serino, Yoichi; Mitani, Seishu; and Imanishi, Kunizo, 3,776,705.
Imberti, Bruno, to Centro Sperimental Metallurgico S.p.A. Device for plugging the pour of rotating reactors. 3,776,532, Cl. 266-1.000.
Imperial Chemical Industries Limited: *See—*
Cottrell, Arnold George; Bradford, Nevin Dornan; and Lovett, Terence Oliver, 3,776,843.
Davis, John Howard; and Hendy, Brian Norman, 3,776,751.
Reed, David Arthur, 3,775,826.
Stacey, Gilbert Joseph, 3,776,911.
Wood, Herbert Leslie, 3,776,787.
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, to Eisai Co., Ltd. Chlorphenesin derivatives. 3,776,946, Cl. 260-480.00r.
Industria Termica Brasileira S/A: *See—*
De Treitas, Elias Martins, 3,776,433.
Industrial Science & Technology, Agency of: *See—*
Ikari, Yoshikatsu; and Yokoyama, Shoichiro, 3,776,897.
Industrie Pirelli S.p.A.: *See—*
Antioletti, Attilio; and Madonini, Nino, 3,776,670.
Oriani, Agostino, 3,775,824.
Ingham, Kenneth, to Winster Hose, Limited. Reinforced flexible hose and method of manufacturing same. 3,776,794, Cl. 156-143.000.
Inject-O-Meter Manufacturing Co., Inc.: *See—*
Stamps, Otis C.; and Neikirk, David W., 3,776,192.
Inmont Corporation: *See—*
Harrington, Gene Norman; and Civardi, Frank Peter, 3,776,790.
Inoue, Eiichi: *See—*
Ohno, Genjt; and Inoue, Eiichi, 3,776,630.
Inoue, Kiyoshi. Method of dehurring workpieces. 3,776,827, Cl. 204-129.460.
Inoue, Touru; and Terashima, Kenzi, to Nippon Sheet Glass Co., Ltd. Process for producing tempered glass sheet. 3,776,707, Cl. 65-29.000.
Institute Mikrobiologii Im. Akad. DK. Zaboltongo: *See—*
Chernetsky, Vladimir Pantelecvich; and Alexeeva, Inna Vladimirovna, 3,776,899.
Institute of Gas Technology, The: *See—*
Wurm, Jaroslav, 3,775,970.
Institute of Paper Chemistry, The: *See—*
McKee, Robert C., 3,776,029.
Integrated Development & Manufacturing Company: *See—*
Davis, Noel, 3,777,199.
International Business Machines Corporation: *See—*
Basi, Jagtar S.; and Hull, Edward M., 3,776,789.
Chang, Wen H., 3,777,186.
Croisier, Alain; Esteban, Daniel J.; Levilion, Marc E.; and Riso, Vladimir, 3,777,130.
Davies, Phillip J.; Gasparri, Angelo S.; and McAtee, Daniel J., 3,777,260.
Foster, Betty J.; and Tummala, Rad R., 3,775,999.
Frosch, Albert; and Schmackpfeffer, Arno, 3,776,633.
Harris, Thomas J., 3,777,222.
Kolpek, Robert A.; Rahenkamp, Robert A.; and Stewart, William R., Jr., 3,777,072.
Levy, M. Frank; and Schmitt, George P., 3,776,729.
Pohl, Dieter, 3,777,280.
Tatusku, Philip A.; and Williams, Richard A., 3,777,220.
Tatusku, Philip A.; and Williams, Richard A., 3,777,221.
Wilkey, Frank, Jr., 3,777,059.
International Computers, Limited: *See—*
Hankins, Harold Charles Arthur; and Torsun, Imad Shakir, 3,777,213.
International Engineering Concessionaires Limited: *See—*
Trigg, Jack Victor Haig, 3,776,031.
International Erfinder- und Patentanstalt: *See—*
Veloso, Alberto E., 3,777,011.
Veloso, Alberto E., 3,777,012.
International Harvester Company: *See—*
Quick, Donald Jonathan, 3,775,879.
Yeh, Rudolph E., 3,776,100.
International Nickel Company, Inc. The: *See—*
Benjamin, John Stanwood, 3,776,704.
Casey, James T.; and Badia, Frank A., 3,776,473.
International Oceanographic Corporation: *See—*
Holt, John K., 3,775,891.

International Standard Electric Corporation: *See—*
Cramer, Bernhard; and Andrich, Wolfgang, 3,777,155.
International Telephone and Telegraph Corporation: *See—*
Barr, John Edward, 3,777,285.
Schlatter, Gerald Lance, 3,776,024.
Talmo, Robert Eugene; and Brady, Edward R., 3,775,839.
Intertechnique S.A.: *See—*
Rapkin, Edward; and Thomas, Edward W., 3,777,144.
Ioannou, Basil N.: *See—*
Brunnett, Carl J.; and Ioannou, Basil N., 3,777,145.
Brunnett, Carl J.; and Ioannou, Basil N., 3,777,146.
Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Block polymers derived from vinyl quaternary nitrogen monomers and polyalkylene oxide condensates. 3,776,983, Cl. 260-901.000.
Iowa State University Research Foundation, Inc.: *See—*
Magilton, James H.; and Swift, Curran S., 3,776,241.
Nicholas, David C., 3,777,066.
Ishida, Yutaka: *See—*
Watanabe, Nobuatsu; Kusuno, Hideaki; and Ishida, Yutaka, 3,776,845.
Ishihara, Ko: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Ishihara, Ko; Serino, Yoichi; Mitani, Seishu; and Imanishi, Kunizo, 3,776,705.
Ishihashi, Tatuyuke: *See—*
Arikawa, Masayasu; Oishi, Minoru; Rokujyo, Masaharu; and Ishihashi, Tatuyuke, 3,777,113.
Ishii, Minoru: *See—*
Ikeda, Hiroshi; Yoneda, Motoaki; and Ishii, Minoru, 3,776,017.
Ishikawa, Yuji; Numata, Mitsuhiro; and Tomisiige, Teruki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Method of friction welding and apparatus therefor. 3,775,834, Cl. 29-470.300.
Ishimaru, Wataru: *See—*
Enomoto, Koji; Akaishi, Takayuki; and Ishimaru, Wataru, 3,776,048.
Isuneo, Iwami: *See—*
Tomita, Tamaki; Kusakabe, Takesi; Kurimoto, Mikishi; Isuneo, Iwami; Keniti, Iwami; Nomura, Kenzi; and Yoshikazu, Sano, 3,775,837.
Ito, Kiyoji. Shock absorbing steering shaft assembly. 3,776,062, Cl. 74-492.000.
Ito, Yukihiko; Araki, Tadashi; Kawai, Yoshio; and Kameyama, Iwao, to Kurcha Kagaku Kogyo Kabushiki Kaisha. Apparatus for collecting centrifigally spun filaments. 3,776,669, Cl. 425-8.000.
Ivon, Vasily Vladimirovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.
Iwano, Harohiko; Hayashi, Katsumi; Iijima, Yoo; and Shimamura, Isao, to Fuji Photo Film Co., Ltd. Developer for photographic negatives used for printing. 3,776,731, Cl. 96-66.400.
Jachim, Frank J. Container for fish lures. 3,775,895, Cl. 43-54.50r.
Jackson, Richard H.; and Warner, Dale J., to Gits Bros. Mfg. Co., Inc. Shaft seal method of manufacturing. 3,775,836, Cl. 29-483.000.
Jacobs, Jacobus Hubertus: *See—*
Van Esdonk, Johannes; Jacobs, Jacobus Hubertus; Hornman, Johannes Petrus; and Van de Laar, Wilhelmus Johannes, 3,776,613.
Jacobsen, Preben Bob: *See—*
Christensen, Borge Johannes Ravn; and Jacobsen, Preben Bob, 3,776,434.
Jacobson, Earl B.: *See—*
Grenier, Raymond P.; and Jacobson, Earl B., 3,777,142.
Jahr, Odd: *See—*
Ahlgren, Nils Harald; and Jahr, Odd, 3,776,586.
James, Michael Joseph, to Micro & Precision Mouldings (Cheltenham) Limited. Catches. 3,776,580, Cl. 292-17.000.
Jamieson, Patrick J., to Rothmans of Pall Mall Canada Limited. Electronic counter. 3,777,121, Cl. 235-92.0ca.
Janchus, Robert M.: *See—*
Richter, Paul D.; Janchus, Robert M.; and Shen, Shih C., 3,776,386.
Janiak, Stefan: *See—*
Martin, Henry; Janiak, Stefan; Pissiotas, Gerog; and Rohr, Otto, 3,776,904.
Janiszewski, Kasimir. Die set. 3,776,086, Cl. 83-637.000.
Jankovsky, Josef: *See—*
Sevcik, Zdenek; and Jankovsky, Josef, 3,776,282.
Janome Sewing Machine Co., Ltd.: *See—*
Tamiya, Yoshimichi, 3,776,130.
Janssen, Eduard Jozef Philomena: *See—*
Noteltiers, Victor Rosallie; and Janssen, Eduard Jozef Philomena, 3,777,207.
Jarvis, Francis L.: *See—*
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,776,416.
Jean, Pierre; and Nias, Marcel, to Gax Transport and Etudes et Realisations Industrielles. Electrical welding machine. 3,777,107, Cl. 219-82.000.
Jeney, Peter, to Tourpac AG. Packaging apparatus and method. 3,775,932, Cl. 53-22.00a.
Jensen, Jens Christian Balling: *See—*
Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, 3,775,823.
Jentsch, Dietrich, to Dorma Baubeschlag GmbH & Co., KG. Automatic door closer. 3,776,611, Cl. 308-36.100.
Jespersen, Herbert A., to Outboard Marine Corporation. All-terrain vehicle. 3,776,325, Cl. 180-6.480.
Jessup, Artie D., to United States of America, National Aeronautics and Space Administration. Lyophilized spore dispenser. 3,776,432, Cl. 222-193.000.
Jessup, Robert L.; and Farley, David L., to Halliburton Company. High pressure rotatable pipe connection. 3,776,578, Cl. 285-94.000.
Jimerson, Bruce D.: *See—*
Parks, Robert G.; and Jimerson, Bruce D., 3,776,113.
Joannon, Jean J. Device for discharging liquid for injection or washing purposes. 3,776,469, Cl. 239-446.000.
Joerg, Hans: *See—*
Storm, Elmar; Joerg, Hans; and Vogel, Christian, 3,776,912.
Johanson, Donald Lee; and Stutz, Rolf, to Audivox, Inc. Hearing aid having recessed microphone. 3,777,077, Cl. 179-107.00r.
Johnson, Arthur J. Outdoor ground tile. 3,775,918, Cl. 52-169.000.
Johnson, Bruce L., to Elpower Corporation. Celled battery electrolyte containing a polyglycol polymer and a process for locating same within a lead-acid cell. 3,776,779, Cl. 136-157.000.
Johnson, Donald L. Blade assemblies for flacing apparatus. 3,776,288, Cl. 144-235.000.
Johnson, E. Curtis; and Hillis, Benjamin F., to Buckbee-Mears Company. Method of forming miniature electrical conductors. 3,776,820, Cl. 204-15.000.
Johnson, Edward J., to Stanley Works, The. Pruner. 3,775,846, Cl. 30-262.000.
Johnson, Irving S., to Lilly, Eli, and Company. Psoriosis treatment with mycophenolic acid. 3,777,020, Cl. 424-180.000.
Johnson, Kurt Theodore, to Seeburg Corporation of Delaware, The. Credit pulse generating system for vending machines. 3,776,338, Cl. 194-9.00r.
Johnston, James R.; and Moertel, George B., to Textron, Inc. Apparatus for forming slide fastener stops. 3,775,815, Cl. 29-207.5st.
Jones, Cecil E. P. Chord playing attachment for string musical instruments. 3,776,088, Cl. 84-317.000.
Jones, Charles Wright, to Xepex Industries, Inc. Apparatus for filling and sealing cartons for holding liquids. 3,775,943, Cl. 53-282.000.
Jones, Clarence O., Jr., to Niagara Machine & Tool Works. Inertia balancing means for power presses. 3,776,046, Cl. 74-50.000.
Jones, Harry Joseph: *See—*
Groh, Louis; and Jones, Harry Joseph, 3,776,013.
Jones, Jerry O.; and Osburn, Michael R., to United States of America, Navy. Shot vortex arming device. 3,776,140, Cl. 102-70.20r.
Jones, Lloyd Leslie Llewellyn. Data supports for numerical data. 3,776,454, Cl. 235-61.12r.
Jones, R. A., & Company, Inc., mesne: *See—*
La Mers, Herbert, 3,776,801.
Jongetjes, Hendrik, to Koninklijke Papierfabrieken van Gelder Lonen N.V. Process for making paper containing latex with carboxyl group. 3,776,812, Cl. 162-168.000.
Jorgensen, E. Chris: *See—*
Schaller, Joseph P.; Jorgensen, E. Chris; and Critelli, Louis J., Jr., 3,776,551.
Jovall, Jan: *See—*
Bergstrom, Sune; and Jovall, Jan, 3,776,938.
Bergstrom, Sune; and Jovall, Jan, 3,776,939.
Joyce, Benjamin Norman, Sr. Variable volume rotary vane pump having an integral opposed reciprocating piston internal combustion engine. 3,776,203, Cl. 123-56.00c.
J.P.C., Inc.: *See—*
Charles, James; and Akens, Robert L., 3,776,520.
Judelshon Industries, Inc.: *See—*
Stoffels, Carl A., 3,776,070.
Juelke, Charles V.; and Trapasso, Louis E., to Celanese Corporation. Flame retardant polyester products prepared from halo-substituted-aryloxy-alkanols. 3,776,887, Cl. 260-47.00c.
Julian Engineering Company: *See—*
Julian, John A., 3,776,122.
Julian, John A., to Julian Engineering Company. Atmosphere circulation system. 3,776,122, Cl. 98-33.000.
Junes, Norman E.; and Stanyer, William R. Skyline logging carriage. 3,776,390, Cl. 212-122.000.
Jung, Shee Lup; and Beste, Lawrence Forwood, to De Pont de Nemours, E. I., and Company. Process for the preparation of stretch resistant polypivalolactane fibers. 3,776,997, Cl. 264-290.000.
Jungle, Nils Ake Curt, to Aktiebolaget Gotaverken. Welding machine for connecting tubes to a wall. 3,776,449, Cl. 228-29.000.
Jurd, Leonard; King, Alfred Douglas, Jr.; and Stanley, William L., to United States of America, Agriculture. Cinnamyl phenols useful as antimicrobial agents. 3,777,037, Cl. 424-341.000.
Just, George E.: *See—*
Just, George E.; and Simonovitch, Chaim (said Simonovitch assor. to said), 3,776,940.
Just, George E.; and Simonovitch, Chaim (said Simonovitch assor. to said), 3,776,941.

Just, George E.; and Simonovitch, Chaim, said Simonovitch assor. to said Just, George E. Intermediates for producing prostaglandins. 3,776,940, Cl. 260-468.00g.
Just, George E.; and Simonovitch, Chaim, said Simonovitch assor. to said Just, George E. Intermediates for producing prostaglandins. 3,776,941, Cl. 260-468.00g.
K-G Industries, Inc.: *See—*
Harris, Leroy S., 3,775,820.
Kabas, Guglielmo: *See—*
Zweidler, Reinhard; Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, 3,776,905.
Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
Artbauer, Jan, 3,777,045.
Kabushiki Kaisha Daini Sukosha: *See—*
Matsuura, Eiichi, 3,775,966.
Kabushiki Kaisha Suncrux Research Office: *See—*
Fukumoto, Shigeru, 3,775,964.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Kihara, Hidetoshi; and Tsuzuki, Kanemitsu, 3,775,957.
Kagei, Kengo: *See—*
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,776,946.
Kaiser Aluminum & Chemical Corporation: *See—*
Traut, Richard T., 3,777,048.
Kaiser, Karl: *See—*
Czekay, Arno; Kramer, Bruno; and Kaiser, Karl, 3,776,894.
Kalil, James, to Du Pont de Nemours, E. I., and Company. Preparation of tetraisopropyl thioperoxydiphosphate. 3,776,986, Cl. 260-985.000.
Kalish, Jerome Barton, to Chemtoy Corporation. Multiple stream bubble blower. 3,775,898, Cl. 46-7.000.
Kalle Aktiengesellschaft: *See—*
Bauer, Sigrid; Sikora, Helga; and Frass, Hans Werner, 3,776,735.
Gruber, Ehrenfried; Klenk, Ludwig; and Hammer, Klaus-Dieter, 3,776,799.
Kallenbach, Stanely E.: *See—*
Pande, Kailash C.; and Kallenbach, Stanely E., 3,776,889.
Kaiser, Ernst K.; Geiersbach, Allois F.; and Neumann, Manfred E., to Allis-Chalmers Corporation. Filter for replacing notches in electric waves. 3,777,250, Cl. 321-9.00r.
Kamborian, Jacob S.; deceased (by Godley, Lisbeth N.; Becka, Michael M.; and Kamborian, Jacob S., Jr.; executors); and Caris, Costa, said Caris assor. to said Kamborian, Jacob S.; deceased. Method and machine for lasting. 3,775,797, Cl. 12-145.000.
Kamborian, Jacob S.; deceased: *See—*
Kamborian, Jacob S.; and Caris, Costa (said Caris assor. to said), 3,775,797.
Kamborian, Jacob S., Jr.: *See—*
Kamborian, Jacob S.; and Caris, Costa, 3,775,797.
Kameyama, Iwao: *See—*
Ito, Yukihiko; Araki, Tadashi; Kawai, Yoshio; and Kameyama, Iwao, 3,776,669.
Kamienski, Conrad W.: *See—*
Morrison, Robert C.; and Kamienski, Conrad W., 3,776,964.
Kamogawa, Nin-Ichi; Fujii, Haruo; and Uchida, Tohru, to Konishiroku Photo Industry Co., Ltd. Corona discharge device for electrophotography. 3,777,158, Cl. 250-324.000.
Kamogawa, Toshiro; Okino, Yoshihiro; Sato, Isao; and Okuno, Noboru, to Matsushita Electric Industrial Co., Ltd. Color television signal recording and reproducing system. 3,777,060, Cl. 178-5.4cd.
Kampfer, Richard H., to Conveyor Specialties Company. Fabricated flexible conveyor chain. 3,776,349, Cl. 198-195.000.
Kangafuchi Boseki Kabushiki Kaisha: *See—*
Ogawa, Yasuhiro; Nooya, Kazuo; Awata, Norio; and Yamakawa, Yukio, 3,775,960.
Kanno, Kyusei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera shutter system. 3,776,115, Cl. 95-53.0eb.
Kansai Paint Company Limited: *See—*
Nakayama, Yasuharu, 3,776,866.
Kanter, Jerome J. Magnetic thermocouple device. 3,776,780, Cl. 136-228.000.
Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, to Tatabanyai Szenbanyak. Method for processing of red mud. 3,776,717, Cl. 75-38.000.
Karig, Horace E., to United States of America, Navy. Lox heat sink system for underwater thermal propulsion system. 3,775,976, Cl. 60-39.330.
Karkut, Ernest W.: *See—*
Galian, John N.; and Karkut, Ernest W., 3,777,065.
Karlowitz, Bela. Method for emission control for spark ignition engines. 3,776,212, Cl. 123-191.0sp.
Kashio, Toshio, to Casio Computer Co., Ltd. Nozzle device for ink jet printing equipments. 3,776,461, Cl. 239-125.000.
Kasle Steel Corporation: *See—*
Morrison, James J., 3,776,146.
Katayama, Masayoshi, to Tokico Ltd. Variable displacement type fluid pump or motor. 3,776,102, Cl. 91-483.000.
Kato, Hisatoyo; and Takeda, Hideo, to Fuji Photo Film Co., Ltd. Liquid sensitometry of photographic emulsion. 3,776,696, Cl. 23-230.00r.
Kato, Kazunobu; and Ohkubo, Kinji, to Fuji Photo Film Co., Ltd. Support for an image-receiving material for the silver salt diffusion transfer process. 3,776,761, Cl. 117-76.00p.
Katz, Norman H., to United States of America, Atomic Energy Commission, mesne. Process for massively hydriding zirconium-uranium fuel elements. 3,776,508, Cl. 252-301.10r.
Kawai, Yoshio: *See—*
Ito, Yukihiko; Araki, Tadashi; Kawai, Yoshio; and Kameyama, Iwao, 3,776,669.
Kawamura, Susumu: *See—*
Takagi, Kiyoshi; Kawamura, Susumu; and Fujii, Hiroshi, 3,776,764.
Kawasaki, Kauru, to Tenchi Kikai Kabushiki Kaisha. Cream feeder for apparatus for producing confectionery. 3,776,185, Cl. 118-406.000.
Kazlauskas, Gasparas; and Vowell, Kennison L., to Astro-Arc Co. Apparatus for controlling electrode oscillation. 3,777,115, Cl. 219-125.00r.
Kazutaka, Kuwana: *See—*
Ooya, Junichiro; Oomura, Koji; Takayama, Katsuki; and Kazutaka, Kuwana, 3,776,604.
Kearney & Trecker Corporation: *See—*
Kirkham, Edward E., 3,777,128.
Kee Lox Manufacturing Company: *See—*
Woerner, Warren H., 3,776,864.
Keeler Brass Company: *See—*
Ryn, Edwin Van; and Driesenga, Edwin J., 3,775,830.
Keene, Edwin E.: *See—*
Harrison, William B.; and Keene, Edwin E., 3,776,421.
Keil, Karl-Heinz: *See—*
Wiatrowski, Stefan; Heid, Christian; and Keil, Karl-Heinz, 3,776,690.
Keiot, Jules. Spinning wheel. 3,776,055, Cl. 74-242.150.
Keith, Samuel S.: *See—*
Bryant, Spurgeon Q.; and Keith, Samuel S., 3,776,177.
Kelchner, Roland: *See—*
Pirker, Rudolf; and Kelchner, Roland, 3,776,216.
Kelley, Donald W.; White, James F., Jr.; Winslow, Ronald B.; and Coppock, Charles L., to Thuron Industries, Inc. Method of producing extruded thermoset polyurethanes. 3,776,877, Cl. 260-31.80m.
Kelley, Louis E., to Rohm & Haas Company. Bonded non-woven fabric. 3,776,810, Cl. 161-170.000.
Kelly, Kenneth K.; and Matthews, Joseph S., to Gulf Research & Development Company. Reaction of ketoximes with carboxylic acid amide-sulfur trioxide complexes. 3,776,901, Cl. 260-239.30a.
Kelton, Robert L. Animated mechanical steer having spring biased head. 3,776,553, Cl. 273-105.200.
Kemeny, George A.: *See—*
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A., 3,777,112.
Kemczys, Vincent A., to Barnes Engineering Company. Locking ball joint. 3,776,649, Cl. 403-90.000.
Kemp, Willard E.: *See—*
Fowler, James M.; Kemp, Willard E.; and Tomlin, Jerry B., 3,776,506.
Kemper, Clyde F.: *See—*
Cover, Paul F.; and Kemper, Clyde F., 3,776,527.
Keniti, Iwami: *See—*
Tomita, Tamaki; Kusakabe, Takesi; Kurimoto, Mikishi; Isuneo, Iwami; Keniti, Iwami; Nomura, Kenzi; and Yoshikazu, Sano, 3,775,837.
Kennedy, John B., Jr.: *See—*
Rarey, Kenneth W.; and Kennedy, John B., Jr., 3,776,132.
Kent, David E.: *See—*
Strenglein, Harry F.; and Kent, David E., 3,777,261.
Kerr Glass Manufacturing Corporation: *See—*
Cistone, David R., 3,776,407.
Keserin, Ivan, to Metallgesellschaft Aktiengesellschaft. Corona-discharge electrode mounting. 3,775,827, Cl. 29-275.000.
Kessler, Claus, to Siemens Aktiengesellschaft. Metal-clad high-voltage switching system. 3,777,218, Cl. 317-59.000.
Kessler, Milton. Insulated runner system for plastic cap molds. 3,776,676, Cl. 425-250.000.
Keyser, Lewis R., to Price Brothers Company. Pipe assembly. 3,776,576, Cl. 285-27.000.
Keystone Industries, Inc.: *See—*
Hawthorne, Vaughn T., 3,776,391.
Khan, Amir U., to United States of America, Agriculture. Combination threshing and separating machine. 3,776,242, Cl. 130-27.00t.
Khan, Waheed N. Cover element disc dispenser. 3,776,818, Cl. 195-139.000.
Kiefer, Thomas J.; and Nagatani, Masamichi, to Amchem Products, Inc. Polyester and polyamide adhesion improvers. 3,776,782, Cl. 148-6.15z.
Kicley & Mueller, Inc.: *See—*
O'Connor, Joseph, Jr., 3,776,265.
O'Connor, Joseph, Jr., 3,776,279.
Kihara, Hidetoshi; and Tsuzuki, Kanemitsu, to Daiwa Boseki Kabushiki Kaisha and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Rotary spinning chamber for an open-end spinning machine. 3,775,957, Cl. 57-58.890.
Kilby, Jack S. System for disabling incoming telephone calls. 3,777,067, Cl. 179-81.00r.
Kimberly-Clark Corporation: *See—*
Dunning, Charles E.; and Day, Winteron U., 3,776,807.
Hanke, David E., 3,776,001.
Thomas, Gordon D.; and Gresham, James Tyson, 3,776,797.
Kimmel, Ardean. Small diameter irrigation pump. 3,776,664, Cl. 417-243.000.

King, Alfred Douglas, Jr.: *See—*
Jurd, Leonard; King, Alfred Douglas, Jr.; and Stanley, William L., 3,777,037.

Kinsworthy, Donald D.: *See—*
Griffith, Jerry L.; and Kinsworthy, Donald D., 3,776,530.

Kirkham, Edward E., to Kearney & Trecker Corporation. Input data sampling scheme for computer controlled machine tools. 3,777,128, Cl. 235-151.110.

Kirkhof Manufacturing Corporation: *See—*
Medendorp, Roger L., 3,776,374.

Kissell, Ronald E., to Owens-Corning Fiberglas Corporation. Jacketed fibrous duct and method and apparatus for applying the jacket to the duct. 3,776,803, Cl. 156-499.000.

Kitao, Takaya: *See—*
Fujita, Osamu; and Kitao, Takaya, 3,777,288.

Kittleman, Edmund T.; and Zuech, Ernest A., to Phillips Petroleum Company. Olefin conversion using complexes of Mn, Tc, and Re with organoaluminum. 3,776,973, Cl. 260-683.00d.

Kjellqvist, Olof Gunnar, to AB Hagglund & Soner. Hydraulic engine having a flat slide. 3,776,103, Cl. 91-487.000.

Kjoller, John: *See—*
Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, 3,775,823.

Kleeman, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of monoacetin and glycerine. 3,776,948, Cl. 260-491.000.

Kleiman, Jury Lvovich; Morkovin, Nikolai Viktorovich; and Pavlenko, Vladimir Antonovich. Nuclear magnetic resonance spectrometer with jointly functioning external and internal resonance stabilization systems. 3,777,254, Cl. 324-.50r.

Klein, Ira, to United States of America, Navy. Phase lock loop with automatic step by step search sweep followed by linear search sweep. 3,777,276, Cl. 331-4.000.

Kleinschmidt, Johann O.: *See—*
Papajewski, Reinhold; and Kleinschmidt, Johann O., 3,776,161.

Klenk, Ludwig: *See—*
Gruber, Ehrenfried; Klenk, Ludwig; and Hammer, Klaus-Dieter, 3,776,799.

Kliot, Jules. Hand loom. 3,776,280, Cl. 139-33.000.

Klippan GmbH: *See—*
Weman, Per Olof, 3,776,570.

Kloots, Jacobus; and Buhler, Rato, to Applied Fiberoptics and Scientific Specialties, Inc. Microscope with remote image system. 3,776,614, Cl. 350-35.000.

Klopfer, Emil; Stelzle, Martin; and Schneble, Edwin, to Maschinenfabrik Fahr AG. Power-takeoff assembly for connecting farm implements to a vehicle. 3,776,327, Cl. 180-14.00h.

Klosowski, Jerome M.: *See—*
Frye, Cecil L.; and Klosowski, Jerome M., 3,776,915.

Knapp, Edward J., Jr., to Chase-Shawmut Company, The. Electric fuse for elevated circuit voltages. 3,777,297, Cl. 337-161.000.

Knapsack Aktiengesellschaft: *See—*
Czekay, Arno; Kramer, Bruno; and Kaiser, Karl, 3,776,894.

Knavish, Leonard A.; and Schornhorst, James R., to PPG Industries, Inc. Apparatus for refining glass. 3,776,710, Cl. 65-134.000.

Knox, Lloyd C., to Halliburton Company. Float collar with differential fill feature. 3,776,250, Cl. 137-71.000.

Knutson, Dale A., to Applied Power Inc. Automatic release and centering device. 3,776,099, Cl. 91-358.00a.

Ko, Daniel Y. C.: *See—*
Carr, Norman L.; and Ko, Daniel Y. C., 3,776,971.

Ko, Daniel Y. C.; and Stahlfeld, Donald L., to Gulf Research & Development Company. Reforming process in two stages at different pressures. 3,776,836, Cl. 208-65.000.

Kobayashi, Daizo: *See—*
Shimizu, Noboro; Yoshida, Sadao; Kubota, Kunihiro; Kobayashi, Daizo; and Ohara, Takashi, 3,776,947.

Kobayashi, Kenji: *See—*
Atsumi, Toshio; Kobayashi, Kenji; Takehayashi, Yoshiaki; and Yamanoto, Hisao, 3,776,914.

Kobayashi, Norio: *See—*
Suzuki, Shigeyoshi; Kobayashi, Norio; and Futaki, Kiyoshi, 3,776,728.

Kobayashi, Shigekazu: *See—*
Yoshioka, Yoshihide; Kobayashi, Shigekazu; and Mizobe, Akio, 3,776,994.

Kobayashi, Yugoro, to Ricoh Co., Ltd. Method and apparatus for developing for diazo type copying machines. 3,776,117, Cl. 95-89.00g.

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Erickson, John W., 3,776,658.

Kobe Steel, Ltd.: *See—*
Arikawa, Masayasu; Oishi, Minoru; Rokujyo, Masaharu; and Ishihashi, Tatuyuke, 3,777,113.
Nakanishi, Sadayuki, 3,776,505.

Koch Adler AG: *See—*
Scholl, Hans, 3,776,162.

Kock, Robert E.: *See—*
Rusk, Gerald R.; and Kock, Robert E., 3,776,299.

Kock, Theodorus Joannes: *See—*
Heide, Bastiaan Adriaan; Muller, Johannes Jacobus; and Kock, Theodorus Joannes, 3,776,858.

Koehring Company: *See—*
Emge, Gene F., 3,775,862.
Spridco, Jack P., 3,775,980.

Koepp, Hans-Martin: *See—*
Witzler, Franz; and Koepp, Hans-Martin, 3,776,882.

Koert, Hubert: *See—*
Bader, Erich; Koert, Hubert; and Brod, Gerd, 3,776,871.

Kohashi, Kadao; Nakamura, Tadao; and Nakamura, Shigeaki, to Matsushita Electric Industrial Co., Ltd. Method for making photoelectric device. 3,777,205, Cl. 313-108.00a.

Kohler, Terry J., to Vollrath Co., The. Wash basin and soap dish combinations. 3,775,779, Cl. 4-166.000.

Kohn, Mitchell I., to Love Controls Corporation. Controller circuit. 3,777,187, Cl. 307-310.000.

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Ogawa, Akira, 3,777,062.

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Kolesnikov, Valery Afanasievich: *See—*
Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich, 3,776,833.

Kollerov, Vyacheslav Viktorovich: *See—*
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.

Kolpek, Robert A.; Rahenkamp, Robert A.; and Stewart, William R., Jr., to International Business Machines Corporation. Editing procedures for dictation and typing systems. 3,777,072, Cl. 179-100.2md.

Komakine, Chukei. Method for inhibiting the formation of malodors from poultry farms. 3,776,188, Cl. 119-1.000.

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Ikegami, Yoshizo, 3,776,640.

Koninklijke Papierfabrieken van Gelder Lonen N.V.: *See—*
Jongetjes, Hendrik, 3,776,812.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kamogawa, Nin-Ichi; Fujii, Haruo; and Uchida, Tohru, 3,777,158.

Kononenko, Vadim Grigorievich: *See—*
Fedosenko, Igor Grigorievich; Kononenko, Vadim Grigorievich; Morgolenko, Anatoly Sergeevich; and Selivanov, Gennady Dmitrievich, 3,776,020.
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich. High-speed hammer. 3,776,021, Cl. 72453.000.

Kontis, George E.: *See—*
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,776,416.

Koolaj-es Gazipari Tervezo Vallalat: *See—*
Ban, Akos; Nagy, Sandor; and Balint, Valer, 3,776,312.

Kopenhaver, Kenneth Oscar, to AMP Incorporated. Apparatus and method for field-repairing high-voltage electrical connector lead assemblies. 3,775,828, Cl. 29-401.000.

Koppers Company, Inc.: *See—*
Carman, Kenneth K., 3,775,997.

Korner, Tassilo: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, 3,776,809.

Korry Manufacturing Company: *See—*
Emery, William B., 3,776,049.

Kosaka, Shinya, to Olympus Optical Co., Ltd. Speed control device for a D. C. motor. 3,777,244, Cl. 318-331.000.

Koshar, Robert J.; and Mitsch, Ronald A., to Minnesota Mining and Manufacturing Company. Preparation of bis(perfluoroalkylsulfonyl) methanes. 3,776,960, Cl. 260-607.00a.

Kouwenhoven, Herman W.: *See—*
Dautzenberg, Frits M.; Kouwenhoven, Herman W.; and Naber, Jaap E., 3,776,854.

Kraft, Kenneth A., to Mohr, John, & Sons. Method and apparatus for packaging poultry utilizing controllably actuated positive pressure lifting means. 3,775,931, Cl. 53-22.00b.

Krafter Corporation: *See—*
Runge, Heinz, 3,776,073.

Krafto Corporation: *See—*
Zinkgraf, Bernhard A.; and Williams, Jack Leroy, 3,776,419.

Kraftwerk Union Aktiengesellschaft: *See—*
Michel, Rupprecht, 3,776,306.

Krage, Richard F.: *See—*
Yeager, Harold Everett; Krage, Richard F.; and Wilhite, Benjamin Melvin, 3,776,223.

Krakow, Heinz, to Blohm & Voss A.G. Device for helically deforming a band to form a tube. 3,776,010, Cl. 72-12.000.

Kramer, Bruno: *See—*
Czekay, Arno; Kramer, Bruno; and Kaiser, Karl, 3,776,894.

Kramer, Edward W.; and Mitchell, Edward, to Gulf Research & Development Company. Vapor recovery system. 3,776,283, Cl. 141-45.000.

Krampe, Josef. Plier. 3,776,071, Cl. 81-415.000.

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Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber KG. Saving motion for control means on knitting machines. 3,776,003, Cl. 66-154.00a.

Krause, Theodore R.: *See—*
Hayes, Thomas A.; and Krause, Theodore R., 3,776,245.

Kreisburg, Vladimir Markovich: *See—*
Borkovsky, Gennady Mikhailovich; Drozdov, Alexander Alexandrovich; Kreisburg, Vladimir Markovich; and Tsukanov, Anatoly Andreevich, 3,777,308.

Kremer, Leon V., to Minnesota Mining and Manufacturing Company. Sprayable compositions. 3,776,873, Cl. 260-29.10r.

Kriege, David J.: *See—*
Staker, Donald D.; Plantholt, Richard H.; and Kriege, David J., 3,776,928.

Krishna, Surinder; and Davis, John R., Jr., to Westinghouse Electric Corporation. Double diffused high voltage, high current NPN transistor. 3,777,227, Cl. 317-235.00r.

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Krolopp, Otto C.: *See—*
Wright, Edward S.; Angstadt, John W.; and Krolopp, Otto C., 3,776,382.

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Krumm, Andrew G.: *See—*
Droke, Darrell W.; Ochampaugh, Donald R.; and Krumm, Andrew G., 3,776,211.

Kruse, Flemming: *See—*
Damgaard-Iversen, Jorgen; and Kruse, Flemming, 3,776,688.

Kubo, Kakuzo, to Tokyo Seimitsu Co., Ltd. Automatic sizing device for measuring apparatus. 3,775,910, Cl. 51-165.770.

Kubota, Kunihiro: *See—*
Shimizu, Noboro; Yoshida, Sadao; Kubota, Kunihiro; Kobayashi, Daizo; and Ohara, Takashi, 3,776,947.

Kuehn, Donald E.; and Lyon, John Keith, to TRW Inc. Loop fastener gun assembly. 3,776,444, Cl. 227-130.000.

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Van Der Eloe, Hans; Kully, Herbert; and Affolter, Stephan, 3,777,267.

Kumasaka, Isao, to Fuji Photo Film Co., Ltd. Photosensitive aluminum plate of improved storage stability. 3,776,734, Cl. 96-86.00r.

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Kunst, Robert J.: *See—*
Cox, John M.; Kunst, Robert J.; and Szala, Norman M., 3,776,143.

Kunz, Henry P.: *See—*
Gillette, Robert P.; and Kunz, Henry P., 3,776,478.

Kuraray Co., Ltd.: *See—*
Shibatani, Kyoichiro; and Naguta, Shiro, 3,776,863.
Yoshioka, Yoshihide; Kobayashi, Shigekazu; and Mizobe, Akio, 3,776,994.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Ito, Yukihiko; Araki, Tadashi; Kawai, Yoshio; and Kameyama, Iwao, 3,776,669.

Kurimoto, Mikishi: *See—*
Tomita, Tamaki; Kusakabe, Takesi; Kurimoto, Mikishi; Isuneo, Iwami; Keniti, Iwami; Nomura, Kenzi; and Yoshikazu, Sano, 3,775,837.

Kusakabe, Takesi: *See—*
Tomita, Tamaki; Kusakabe, Takesi; Kurimoto, Mikishi; Isuneo, Iwami; Keniti, Iwami; Nomura, Kenzi; and Yoshikazu, Sano, 3,775,837.

Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, to Ciba-Geigy AG. Method of producing a thick-walled cured plastics moulding. 3,777,000, Cl. 264-327.000.

Kushnarenko, Sergei Grigorievich: *See—*
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.

Kusuno, Hideaki: *See—*
Watanabe, Nobuatsu; Kusuno, Hideaki; and Ishida, Yutaka, 3,776,845.

Kuzmin, Valery Vyacheslavovich: *See—*
Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich, 3,776,833.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Terada, Osamu; Yagi, Hitoshi; and Nakamura, Shizuko, 3,776,816.

Kyritsis, William T.: *See—*
Annis, Rupert E., Jr.; and Kyritsis, William T., 3,776,989.

La Costa, Nicholas J.: *See—*
Dix, Michael P.; and La Costa, Nicholas J., 3,776,136.

La France, Conrad: *See—*
Boutros-Attia, Radamis; La France, Conrad; and Nixon, Kenneth Edwin, 3,777,078.

La Mers, Herbert, to Jones, R. A., & Company, Inc., mesne. Labeling apparatus. 3,776,801, Cl. 156-350.000.

Laakso, Thomas M.: *See—*
Williams, Jack L. R.; Laakso, Thomas M.; and Borden, Douglas G., 3,776,737.

Labofina S.A.: *See—*
Debus, Henri Robert; Van Tongelen, Marcel; Cahen, Raymond M.; and Daniels, Calvin Lee, 3,776,965.

Lacheij, Gerardos E.; and Van Amerongen, Gerrit J., to Shell Oil Company. Process for the production for aqueous dispersions of modified synthetic conjugated diene polymers. 3,776,872, Cl. 260-29.7at.

Lachenmayer, Wilhelm, to Benteler Werke AG. Method of manufacturing tubular articles. 3,776,993, Cl. 264-159.000.

Lacroix, Henri: *See—*
Dupont, Michel; Lacroix, Henri; and Lagardes, Jacques, 3,775,947.

Lacy, William R.: *See—*
Norris, Alan H.; and Lacy, William R., 3,776,163.

Ladeur, Peter, to Shell Oil Company. Hydrocracking process for lube oil over Ni-Mo- and Ni-W on SiO_2-ZrO_2. 3,776,839, Cl. 208-110.000.

Ladish Co.: *See—*
Werra, Bruno H., 3,775,832.
Werra, Bruno R.; and Duffy, Patrick J., 3,776,042.

Lagardes, Jacques: *See—*
Dupont, Michel; Lacroix, Henri; and Lagardes, Jacques, 3,775,947.

Lahti, Abbott W., to Power Systems Inc. Variable DC motor power source. 3,777,235, Cl. 318-341.000.

Laing, Alfred M., to Magnetics, Inc. Magnetic particle core. 3,777,295, Cl. 335-297.000.

Lake, James L.: *See—*
Lankenau, Arthur W.; and Lake, James L., 3,777,004.

Lakomsky, Viktor Iosifovich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.

Lambert, Lucian T. Anchor. 3,776,172, Cl. 114-208.000.

Lambert, Ronald D.: *See—*
Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., 3,776,608.

Lambotey, Gilbert Andre, to Etablissements Hutchinson Compagnie Nationale du Caoutchouc. Anti-pollution barrier. 3,775,982, Cl. 61-1.00f.

Lamprecht, Rudolf: *See—*
Brumm, Karl; and Lamprecht, Rudolf, 3,775,803.

Land, Edwin H., to Polaroid Corporation. Photographic cassette for making and storing transparencies incorporating programmed film strip with opaque reflective segments. 3,776,624, Cl. 352-130.000.

Land, Edwin H., to Polaroid Corporation. Color diffusion transfer photographic products, processes and compositions. 3,776,726, Cl. 96-3.000.

Lando, David Jacob, to Western Electric Company, Incorporated. Method of selectively depositing a metal on a surface of a substrate. 3,776,770, Cl. 117-212.000.

Landor, Walter, Associates, mesne: *See—*
Worland, Donovan, 3,776,621.

Landrith, James Edward, to Van Dyk Research Corporation. Xerographic toner concentration measuring apparatus and method. 3,777,173, Cl. 250-575.000.

Lane, Edward Sydney: *See—*
Grimes, John Herbert; and Lane, Edward Sydney, 3,776,987.

Lane, Henry G. Capless can detecting and turning apparatus. 3,776,377, Cl. 209-73.000.

Langucpin, Carel Fouche: *See—*
Maillet, Alfred Marie Aime, 3,777,108.

Lankenau, Arthur W.; and Lake, James L., to Hazen Research, Inc. Process for heap leaching ores. 3,777,004, Cl. 423-20.000.

Lanza Ltd.: *See—*

Nicolet, Rene; Gutmann, Walter; and Volker, Theodor, 3,776,982.

Lanzerath, Gunter Franz: *See—*
Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, 3,776,562.

Larime, Carl M.: *See—*
Palombo, John A.; and Larime, Carl M., 3,777,091.

Larson, Wesley S.: *See—*
Casavant, Roger M.; Larson, Wesley S.; and Panicci, Richard L., 3,775,793.

Laser Alignment, Inc.: *See—*
Roodvoets, Roger J.; and Nielsen, Edward G., 3,775,929.

Latash, Jury Vadimovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

Lathouwers, Franciscus Johannes Maria; and De Groot, Jacob, to U.S. Philips Corporation. Method of adjusting the dimensions of sintered ferromagnetic cores. 3,775,841, Cl. 29-605.000.

Lau Incorporated: *See—*
Griffith, Jerry L.; and Kinsworthy, Donald D., 3,776,530.

Lawson, John B., to Lawson-Hemphill, Inc. Yarn handling apparatus. 3,776,480, Cl. 242-47.010.

Lawson-Hemphill, Inc.: *See—*
Lawson, John B., 3,776,480.

Layton, Jack D., to Layton Manufacturing Company. Earth working machine including scrapper blade means. 3,776,318, Cl. 172-777.000.

Layton Manufacturing Company: *See—*
Layton, Jack D., 3,776,318.

Lazar, Ferenc: *See—*
Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, 3,776,717.

Lazarus, Stokes, to Aroseal Corporation. Removal of ice by a self-heating mixture. 3,776,775, Cl. 134-42.000.

Lea, Albert: *See—*
Fjermestad, Arnold R.; Lea, Albert; and Nellis, William M., 3,776,189.

Leak, Vance G.; and Fine, Morris M., to United States of America, Interior. Recovery of cooper and steel from scrap. 3,776,718, Cl. 75-63.000.

Lear Siegler, Inc.: *See—*
Tersch, Richard W., 3,776,011.

Leblond, Christian, to Pont-A-Mousson S.A. Valve having an eccentric butterfly member and sealing element for said valve. 3,776,509, Cl. 251-306.000.

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LeCan, Claude Jan Principe Frederic; and Steinmaier, Walter, to U.S. Philips Corporation. Semiconductor device with isolated circuit elements. 3,777,230, Cl. 317-235.00r.

Lederman, Peter B.: *See—*
Murray, Kenneth J.; Hopkins, Don J.; and Lederman, Peter B., 3,776,309.

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Lee, Arthur: *See—*
Schrack, Frank C.; and Lee, Arthur, 3,776,369.

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Anderson, Ronald H., 3,775,886.

Lee, Thomas Brian: *See—*
Fitzmaurice, Colin; and Lee, Thomas Brian, 3,777,033.

Leebl, Robert G.: *See—*
Guyer, Raymond H.; and Leebl, Robert G., 3,776,284.

Leetma, Juri G.: *See—*
Cramm, Herman W.; Gorby, Clifford L.; and Leetma, Juri G., 3,777,286.

Leitl, Leo C. Germicidal toiletry cabinet for different personal hygiene items. 3,776,694, Cl. 21-102.000.

Lemelson, Jerome H. Container and retaining means. 3,776,372, Cl. 206-7.00h.

Lemelson, Jerome H. Game apparatus. 3,776,552, Cl. 273-130.00r.

Lemin, Alan J.; Steinhards, Arnolds; and Swank, George, to Upjohn Company, The. Herbicidal method and compositions comprising diphenamid and 2,4-D. 3,776,716, Cl. 71-117.000.

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Leonard, Donald L., to Vermont American Corporation. Thread forming tap. 3,775,792, Cl. 10-152.00t.

Lerner, George: *See—*
Ellman, Julius; and Lerner, George, 3,775,901.

Lerner, Robert Wendell; Hayati, Hosscin; and Flasch, John Robert, to Stauffer Chemical Company. Coating composition. 3,776,881, Cl. 260-37.0sb.

Lerom, Michael W.: *See—*
Hill, Marion E.; and Lerom, Michael W., 3,776,958.

Leroy, Jules: *See—*
Aubin, Guy; Abrioux, Andre; and Leroy, Jules, 3,777,163.

Les Fabriques d'Assortiments Reunies: *See—*
Tuetey, Paul, 3,775,968.

Lesser, Joseph H.: *See—*
Singhal, Gophal H.; and Lesser, Joseph H., 3,776,921.

Leszke, Hans-Hinrich, to Hell, Rudolf, Dr.-Ing., GmbH. Constant current source for the operation of multiple coil systems. 3,777,252, Cl. 232-4.000.

Letsche, Hermann, to Maschinenfabrik Arbach G. Machine for slitting tubular fabrics. 3,776,077, Cl. 83-175.000.

Levaux, Rene G.: *See—*
Wood, Ernest C.; and Samuels, Peter B., 3,775,825.

Lever Brothers Company: *See—*
Heide, Bastiaan Adriaan; Muller, Johannes Jacobus; and Kock, Theodorus Joannes, 3,776,858.

Leverance, Robert A.; and Moore, Morrison B., III, to United States of America, Navy. Muzzle blast suppressor. 3,776,093, Cl. 89-14.00d.

Levilion, Marc E.: *See—*
Croisier, Alain; Esteban, Daniel J.; Levilion, Marc E.; and Riso, Vladimir, 3,777,130.

Levin, Howard J., to American Home Products Corporation. Stabilized chlorpormazine hydrochloride solutions for use in disposable cartridges. 3,777,019, Cl. 424-175.000.

Levinos, Steven, to GAF Corporation. Production of luminescent screens. 3,776,754, Cl. 117-33.5em.

Levinson, Melvin L. Methods for heating an article in a microwave oven. 3,777,099, Cl. 219-10.550.

Levy, M. Frank; and Schmitt, George P., to International Business Machines Corporation. Photosensitive dielectric composition and process of using the same. 3,776,729, Cl. 96-35.100.

Lewbill Industries, Inc.: *See—*
Coffman, John R., 3,776,214.

Lewis, John Hopkins, to Columbia Pictures Industries, Inc. Film advancing and positioning apparatus. 3,776,626, Cl. 352-194.000.

Lewis, Keith; and Gleeson, Robert Leonard, to Lucas, Joseph, (Industries) Limited. Safety arrangements for road vehicles. 3,777,175, Cl. 307-10.0sb.

Libow, Mitchell: *See—*
Steinberg, Morris; and Libow, Mitchell, 3,776,079.

Licentia Patentverwaltungs-G.m.b.H.: *See—*
Pirker, Rudolf; and Kelchner, Roland, 3,776,216.

Lift-All Company, Inc.: *See—*
Bridgehouse, Scott, 3,776,585.

Ligorati, Ferdinando; Aglietti, Giancarlo; and Nova, Vittorio Emanuele, to Societa Italiana Resine S.p.A. Method of depolymerizing polyethylene terephthalate. 3,776,945, Cl. 260-475.00d.

Lilly, Eli, and Company: *See—*
Johnson, Irving S., 3,777,020.

Linbro Chemical Co., Inc.: *See—*
Gallant, Reginald R., 3,776,700.

Lincoln Electric Company, The: *See—*
White, Duncan A.; and Morrison, William O., 3,777,103.

Lindner, Paul, to Witco Chemical Company. Water-in-oil emulsions. 3,776,857, Cl. 252-308.000.

Lindsey, Richard W. Optical data processing system. 3,777,154, Cl. 250-227.000.

Linger, Harrison K. Artist's tool and brush receptacle and conditioner. 3,776,371, Cl. 206-1.700.

Lingg, Gerhard; and Hellermann, Eberhard, to Mannesmann Aktiengesellschaft. Conveyor system with pallets, preferably for airport baggage handling. 3,776,395, Cl. 214-6.0ba.

Linke, Werner: *See—*
Smerz, Otto; Linke, Werner; Schaff, Alfred; and Hess, Peter, 3,776,766.

Linsay, Michael: *See—*
Century, Bernard A.; and Linsay, Michael, 3,775,998.

Linstromberg, William J.; and Nichols, Duane C., to Whirlpool Corporation. Refrigerator or the like with externally mounted water valve. 3,775,994, Cl. 62-177.000.

Lion Fat & Oil Co., Ltd.: *See—*
Yamane, Izumi; Saika, Daini; and Tomidokoro, Susumu, 3,776,956.

Lionello, Marini. Apparatus for acting of and reshaping the damaged bodywork of automobile vehicles. 3,776,022, Cl. 72-455.000.

Lipscomb, Walter Peter; and Turner, Garland L., to Allied Chemical Corporation. Process and apparatus for production of a nonwoven web. 3,776,796, Cl. 156-181.000.

Little, Arthur D., Inc.: *See—*
Menashi, Wilson P.; Wenckus, Joseph F.; and Castonguay, Roger A., 3,777,009.

Little, Carl H., to Weber-Knapp Company. Door pull. 3,775,808, Cl. 16-124.000.

Little, William S., Jr., to Xerox Corporation. Method of producing X-ray diffraction grating. 3,776,995, Cl. 264-219.000.

Litton Business Systems, Inc.: *See—*
Price, Roy H., 3,776,648.

Litton Systems, Inc.: *See—*
Einstein, Bernard Caesar, 3,777,201.
Marbury, Fendall, Jr., 3,776,167.

Tapper, William R., 3,777,098.

Livingston, Clifton W. Mining method and method of land reclamation. 3,775,984, Cl. 61-35.000.

Llewellyn, Richard E., to Westinghouse Electric Corporation. High base multiple rail fourier transform serial stage. 3,777,131, Cl. 235-156.000.

Lloyd, Neil E.; and Mather, Walter B., III, to Celanese Corporation. Pneumatic false twisting interlacer. 3,775,958, Cl. 57-77.300.

Lobermann, Erich: *See—*
Ensslin, Fritz; Frenzel, Gerhard; and Lobermann, Erich, 3,776,147.

Lobunez, Walter, to FMC Corporation. Production of methyl chloroform from ethylene and chlorine. 3,776,969, Cl. 260-668.00r.

Lock, Everett H.: *See—*
Maurer, William C.; Heilhecker, Joe K.; and Lock, Everett H., 3,776,558.

Lockadoo, James Lawrence. Holder for thin flat plastic containers, particularly for blood serum. 3,776,411, Cl. 220-20.000.

Lockett, George Edward; and Hosegood, Samuel Brittan, to United Kingdom Atomic Energy Authority. High temperature nuclear reactors. 3,776,814, Cl. 176-87.000.

Lockheed Aircraft Corporation: *See—*
Richter, Alfred G., Jr., 3,776,319.

Lofink, Joseph P., to Universal Lancaster Corporation. Meter overpressure protection device. 3,776,035, Cl. 73-199.000.

Loftin, William E. Apparatus for coping a wall. 3,776,501, Cl. 249-2.000.

Lohmer, Karl; and Verburg, Werner, to Agfa-Gevaert Aktiengesellschaft. Photographic material of emulsions of different gamma and sensitivity. 3,776,733, Cl. 96-68.000.

Lonardo, Robert. Arm splint. 3,776,225, Cl. 128-77.000.

Long, James A.: *See—*
Pittman, Carl R.; and Long, James A., 3,777,290.

Long Manufacturing Co., Inc.: *See—*
Atkinson, Wallace B., 3,776,006.

Lonza Ltd.: *See—*
Volker, Theodor; and Hugener, Hanspeter, 3,776,976.

L'Oreal: *See—*
Aubin, Guy; Abrioux, Andre; and Leroy, Jules, 3,777,163.

Lorusso, Anthony M.: *See—*
Smiddy, Joseph F., 3,776,222.

Loughry, Don J., to Avco Corporation. Vertical synchronization time base error corrector. 3,777,054, Cl. 178-6.6sf.

Louvel, Guy, to Compagnie Industrielle des Telecommunications. Wide band polarizing T-connection. 3,777,287, Cl. 333-84.00m.

Lovald, Roger A.: *See—*
Glaser, David W.; and Lovald, Roger A., 3,776,865.

Love Controls Corporation: *See—*
Kohn, Mitchell I., 3,777,187.

Love, John J.: *See—*
Visos, Charles D.; Love, John J.; and Smith, Carl A., 3,776,268.

Lovett, Terence Oliver: *See—*
Cottrell, Arnold George; Bradford, Nevin Dornan; and Lovett, Terence Oliver, 3,776,843.

Lowe, Edward G.: *See—*
Pepmeier, Carl R.; and Lowe, Edward G., 3,775,936.

Luberoff, Benjamin J.: *See—*
Gelbein, Abramham P.; Luberoff, Benjamin J.; Sze, Morgan C.; and Whitehead, Richard T., 3,776,949.

Lucas, Joseph, (Industries) Limited: *See—*
Beasley, Gordon Frank; and Whitehurst, George, 3,776,210.
Harris, Paul Anthony, 3,776,204.
Lewis, Keith; and Gleeson, Robert Leonard, 3,777,175.

Ludwig, Philip, to Deknatel, Inc. Portable pump. 3,776,666, Cl. 417-411.000.

Luger, August, to Agfa-Gevaert Aktiengesellschaft. Circuit arrangement for regulating the speed of a DC motor. 3,777,234, Cl. 318-326.000.

Luiz, Joseph W. Claw assembly for milking machines. 3,776,196, Cl. 119-14.360.

Lummus Company, The: *See—*
Gelbein, Abraham P., 3,776,937.
Gelbein, Abramham P.; Luberoff, Benjamin J.; Sze, Morgan C.; and Whitehead, Richard T., 3,776,949.
Riegel, Herbert; Schindler, Harvey P.; Sze, Margan C.; and Brooks, Maurice E., 3,776,967.

Lundberg, Charles A., Jr.; and Engelhart, John E., to Esso Research and Engineering Company. N-[2-(4,5,6,7-Tetrahydrobenzothienyl)]-ureas. 3,776,924, Cl. 260-332.20r.

Lunsford, Carl Dalton: *See—*
Chen, Ying-Ho; and Lunsford, Carl Dalton, 3,777,031.

Luo, Zung-Shyung, to Burroughs Corporation. Progammably variable capacitor for use in a capacitive function generator. 3,777,226, Cl. 317-249.00r.

Lutovsky, Josef; and Prasil, Vladimir, to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi. Method of and device for detecting the yarn end from a crosswound bobbin in automatic yarn winding machines. 3,776,479, Cl. 242-35.60r.

Lutz, Michael A., to Hughes Aircraft Company. Voltage-dividing DC circuit breaker and method. 3,777,179, Cl. 307-136.000.

Luxfer USA Limited, mesne: *See—*
Mink, Wilbur H., 3,776,412.

Lynch, Edward J.; and Gray, Darwyn T., to United States of America, National Aeronautics and Space Administration. Three-axis, adjustable loading structure. 3,776,028, Cl. 73-88.00r.

Lynes, Inc.: *See—*
Malone, Billy C., 3,776,308.

Lyon, John Keith: *See—*
Kuehn, Donald E.; and Lyon, John Keith, 3,776,444.

Lysov, Nikolai Nikiforovich: *See—*
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.

M & J Valve Company: *See—*
Wailes, Rodney A.; and Ottenstein, Sidney Allan, 3,776,249.

Mac Glashan, Paul V., to Engel, Paul and Armstrong, James C. Key ring. 3,776,009, Cl. 70-459.000.

Machlett Laboratories, Incorporated: *See—*
Peyser, Leonard F., 3,777,162.

Maciorowski, Anthony E. Method for encoding punch cards. 3,776,452, Cl. 234-1.000.

Maciula, Andrew; Tiederman, William G.; and Reed, Robert E., to Oklahoma State University. Hydroclone for simultaneously separating immiscible heavier liquids and solids from a liquid medium. 3,776,385, Cl. 210-304.000.

Mackes, Ronald C.: *See—*
Anderson, Raymond E.; and Mackes, Ronald C., 3,776,145.

MacLean-Fogg Lock Nut Co.: *See—*
Grube, William L., 3,775,791.
Grube, William L., 3,775,833.

Macleay, Ronald Edward, to Pennwalt Corporation. Method of curing polymers with azo compound. 3,776,885, Cl. 260-46.50g.

MacMillan Bloedel Limited: *See—*
Barnes, Derek; and Mathur, Vishwa N. P., 3,775,860.

Madonini, Nino: *See—*
Antioletti, Attilio; and Madonini, Nino, 3,776,670.

Maennchen, Joachim Klauss: *See—*
Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, 3,776,562.

Macuszahl, Dieter: *See—*
Buchler, Arthur; Schuetz, Hans Ulrich; Macuszahl, Dieter; Harris, Melvin; and Guth, Chrisfian, 3,776,767.

Magerlein, Helmut: *See—*
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, 3,776,954.

Magid, Louis, to Hoffmann-La Roche Inc. Chewable multivitamin tablets containing aluminum nitrotinate. 3,777,029, Cl. 424-266.000.

Magilton, James H.; and Swift, Curran S., to Iowa State University Research Foundation, Inc. System and method for controlling vascular responses. 3,776,241, Cl. 128-400.000.

Magnetics, Inc.: *See—*
Laing, Alfred M., 3,777,295.

Maida, Osamu, to Nippon Kogaku K.K. Automatic exposure determining device. 3,776,111, Cl. 95-10.0cd.

Maier, Ludwig, to Monsanto Company. Process for simultaneous production of halomethylphosphonic dihalides, bis-(halomethyl)-phosphinic halides and methylhalomethylphosphinic halides. 3,776,953, Cl. 260-543.00p.

Maillet, Alfred Marie Aime, to Languepin, Carel Fouche. Machining of workpieces by electro-erosion. 3,777,108, Cl. 219-69.00p.

Majeau, Henric L.; and Thompson, Kermit J., to Boeing Company, The. Pseudo-random frequency generator. 3,777,278, Cl. 331-78.000.

Makino, Shinichi, to Tokyo Shibaura Electric Co., Ltd. Channel selector having constant current sources and compensating diode for reducing ambient temperature effects on varactor tuner. 3,777,289, Cl. 334-15.000.

Mallory, Edwin E.; and Bryant, Emerson C., to National Standard Company. Tire building apparatus (case 1). 3,776,802, Cl. 156-420.000.

Malone, Billy C., to Lynes, Inc. Safety valve arrangement for controlling communication between the interior and exterior of a tubular member. 3,776,308, Cl. 166-187.000.

Mammino, Joseph, to Xerox Corporation. Liquid developer cleaning system. 3,776,631, Cl. 355-15.000.

Manfredonia, Abraham J.: *See—*
Clark, Kenneth G.; De Pass, Ernest T.; Manfredonia, Abraham J.; and Reiter, Eugene A., 3,776,109.

Mann, Thomas A.; and Villani, Frank J., to Schering Corporation. 2-Amino-6-phenalkyl-aminopyridines and derivatives thereof. 3,776,917, Cl. 260-296.00r.

Mannesmann Aktiengesellschaft: *See—*
Lingg, Gerhard; and Hellermann, Eberhard, 3,776,395.
Vogt, Gerd, 3,776,298.

Marathon Oil Company: *See—*
Norton, Charles J.; and Falk, David O., 3,776,310.

Marbury, Fendall, Jr., to Litton Systems, Inc. Semi-submersible tender. 3,776,167, Cl. 114-43.500.

Marcatili, Enrique Alfredo Jose, to Bell Telephone Laboratories, Incorporated. Signal detection and delay equalization in optical fiber transmission systems. 3,777,149, Cl. 250-209.000.

Marcus, Paul. Injection blow molding method. 3,776,991, Cl. 264-89.000.

Marker, Hannes. Stabilizer for boots for crosscountry skiing. 3,775,866, Cl. 36-2.5al.

Marker, Hannes. Toe iron for safety ski bindings. 3,776,568, Cl. 280-11.35t.
Markovitz, Mark. Epoxy resins containing phenolic accelerators and organic titanates. 3,776,978, Cl. 260-831.000.
Markwitz, Bernhard. Inflatable swimming supports. 3,775,788, Cl. 9-344.000.
Marmel, Noah S. Method and tumbler gage for measuring key cuts. 3,775,855, Cl. 33-174.00f.
Marosi, Michael N.: *See*—
Venkata, Reddi, 3,776,783.
Marouka, Hiroyuki, to Nissan Motor Company, Limited. Ignition timing control system. 3,776,205, Cl. 123-117.00r.
Marquardt Corporation, The: *See*—
Builder, Carl H.; and Sessler, Carl W., 3,775,977.
Marsh, David John: *See*—
Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, 3,775,823.
Marshall, Charles J., to American Motors Corporation. Fuel evaporative control system. 3,776,256, Cl. 137-202.000.
Martin, Henry; Janiak, Stefan; Pissiotas, Georg; and Rohr, Otto, to Ciba-Geigy AG. 5-Nitrofurfurylideanalkyl derivatives, process for their manufacture and their use as feedstuff additives. 3,776,904, Cl. 260-240.00a.
Martin, Henry; Dittrich, Volker; Pissiotas, Georg; and Rohr, Otto, to Ciba-Geigy AG. Synergistically activated biocidal compositions. 3,777,024, Cl. 424-200.000.
Martin, John F.: *See*—
Collins, Richard A.; and Martin, John F., 3,775,795.
Martin, Robert W. Flexible tool holder. 3,775,923, Cl. 51-392.000.
Martindale, David L.: *See*—
Mursinna, Richard C.; and Martindale, David L., 3,775,989.
Martyn, Viktor Mikhailovich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.
Marwell, Edward M.; and Finger, Eugene P., to Curtis Instruments, Inc. Programmable integrator. 3,777,266, Cl. 324-182.000.
Marzinkewitsch, Rene: *See*—
Artz, Gerd; Schumacher, Alfred; Marzinkewitsch, Rene; Hirschfelder, Horst-Dieter; and Vortkamp, Klaus, 3,776,014.
Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Reinforcement for tires. 3,776,293, Cl. 152-359.000.
Maschinenfabrik Arbach G.: *See*—
Letsche, Hermann, 3,776,077.
Maschinenfabrik Fahr AG: *See*—
Klopfer, Emil; Stelzle, Martin; and Schneble, Edwin, 3,776,327.
Mashimo, Yukio, to Canon Kabushiki Kaisha. Electronic flash device. 3,777,212, Cl. 315-241.00p.
Massa Division, Dynamics Corporation of America: *See*—
Barrow, Gilbert C., 3,777,192.
Massey-Ferguson Industries Limited: *See*—
Himel, Ernst C., 3,776,007.
Master Electronics Corporation: *See*—
Doyle, Joseph E., 3,776,176.
Matejec, Reinhart; Meyer, Rudolf; Moll, Franz; Ranz, Erwin; and Weyde, Edith, to Agfa-Gevaert Aktiengesellschaft. Treatment of an imagewise exposed and developed silver halide emulsion layer containing a catalase actiye or peroxide active catalyst with perxide. 3,776,730, Cl. 96-50.00r.
Mathai, John: *See*—
Cunningham, Arthur L.; and Mathai, John, 3,776,868.
Mathauser, William R. Bicycle brake arrangement. 3,776,333, Cl. 188-344.000.
Mather, Walter B., III: *See*—
Lloyd, Neil E.; and Mather, Walter B., III, 3,775,958.
Mathur, Vishwa N. P.: *See*—
Barnes, Derek; and Mathur, Vishwa N. P., 3,775,860.
Matisa Materiel Industriel S.A.: *See*—
Sauterel, Gerard, 3,775,859.
Matsud, Jon T., to United States of America, Navy. Parachute decoupling apparatus. 3,776,493, Cl. 244-147.000.
Matsumoto, Ikuo: *See*—
Hidaka, Hiroyoshi; Matsumoto, Ikuo; and Yoshizawa, Junji, 3,776,913.
Matsushita Electric Industrial Co., Ltd.: *See*—
Azuma, Kuninori; and Nakai, Miyoji, 3,776,778.
Fujita, Osamu; and Kitao, Takaya, 3,777,288.
Kamogawa, Toshiro; Okino, Yoshihiro; Sato, Isao; and Okuno, Noboru, 3,777,060.
Kohashi, Kadao; Nakamura, Tadao; and Nakamura, Shigeaki, 3,777,205.
Seri, Tsutomu; and Abe, Shinogu, 3,777,239.
Tsukamoto, Masahide; and Ohtsuka, Tetsuro, 3,776,615.
Matsuura, Eiichi, to Kabushiki Kaisha Daini Sukosha. Day-and-date changing device for a wrist watch. 3,775,966, Cl. 58-58.000.
Matsuzaki, Kiyoto: *See*—
Sobajima, Katsonobu; and Matsuzaki, Kiyoto, 3,776,588.
Mattel, Inc.: *See*—
Soulakis, George; and Whittington, Jimmie L., 3,775,897.
Mattheis, Harley H., to Ethyl Development Corporation. Display tray. 3,776,388, Cl. 211-86.000.
Matthews, Donnell R., Jr.: *See*—
Hunt, Duane A., 3,776,206.
Matthews, Douglas Frederick, to Redland Tiles Limited. Manufacture of tiles. 3,776,075, Cl. 83-110.000.
Matthews, Joseph S.: *See*—
Kelly, Kenneth K.; and Matthews, Joseph S., 3,776,901.
Mattor, John A., to Scott Paper Company. Carboxy Poly(vinyl benzal)resin. 3,776,888, Cl. 260-73.00r.
Maurer, William C.; Heilhecker, Joe K.; and Lock, Everett H., to Esso Production Research Company. Tandem packing for a reciprocating pump. 3,776,558, Cl. 277-9.000.
Maurino, William J.: *See*—
Putzer, Raymond M.; and Maurino, William J., 3,776,683.
Maus, Helmut: *See*—
Reifenhaeuser, Toni; and Maus, Helmut, 3,776,080.
Mausner, Marvin; and Rachels, Julian A., Jr., to Witco Chemical Corporation. Dry powder bubblebath composition. 3,776,861, Cl. 252-545.000.
May, John D. Tree moving apparatus. 3,775,876, Cl. 37-2.00r.
May, Sue C., to Superior Electric Company, The. Closed loop stepping motor control for a tape reader. 3,777,245, Cl. 318-685.000.
Mayer, Mayer, Jr.; and Baril, Albert, Jr., to United States of America, Agriculture. Electrostatic yarn bulking apparatus. 3,775,814, Cl. 28-1.200.
Mayer, Richard E.; Birenzvige, Amnon; and Weedon, Gene C., to Allied Chemical Corporation. Filament comprising a polymer blend of polyester and polyamide containing an organic phosphorus compound. 3,776,806, Cl. 161-88.000.
Mayo, Frederick W.; Spires, Billy G.; and Bockelman, William M., to Burners, Inc. Apparatus for heating localized areas of pipe. 3,776,689, Cl. 432-183.000.
Mazur, Thomas, to Motorola, Inc. Light sensitive gating of trial near or at zero crossing point. 3,777,188, Cl. 307-311.000.
Mazzenga, Anthony, to Garan, Incorporated. Design coding for coordinated garment sets. 3,775,775, Cl. 2-80.000.
McAtee, Daniel J.: *See*—
Davies, Phillip J.; Gasparri, Angelo S.; and McAtee, Daniel J., 3,777,260.
McBrien, Roger Willaim. Laboratory support clamp structure. 3,775,807, Cl. 16-114.00r.
McCall Printing Company, The: *See*—
Edwards, William M., 3,776,543.
McCambridge, James E.: *See*—
Ficholz, Arthur H.; and McCambridge, James E., 3,775,951.
McCann, John J.; and Scarpetti, Julius J., to Polaroid Corporation. Stimulus print. 3,776,725, Cl. 96-2.000.
McCann, Milton H., to Wheeling Stamping Company. Tube annealing method. 3,776,785, Cl. 148-13.000.
McCarthy, Charles D.: *See*—
Foley, Charles F.; and McCarthy, Charles D., 3,776,485.
McCarthy, Paul R.: *See*—
Bailey, Wayne W.; and McCarthy, Paul R., 3,776,846.
McClure, James D.; and Conklin, George W., to Shell Oil Company. Process for the production of polyisocyanates. 3,776,935, Cl. 260-453.0pc.
McClure, Robert E., Jr. Fence post spade. 3,775,924, Cl. 52-155.000.
McDaniel, Carl V.: *See*—
Rundell, Clark A.; and McDaniel, Carl V., 3,777,006.
McDermott, Ray J., & Co., Inc.: *See*—
Shaw, Clarence W., 3,775,985.
McDonic, Arthur Frederick; Faulkner, Richard Dale; and Rhoads, James Lee, to RCA Corporation. Non-thermionic electron emissive tube comprising a ceramic heater substrate. 3,777,209, Cl. 313-238.000.
McDonough, Cletus, to Molex Incorporated. Hole liner for printed circuit boards. 3,777,303, Cl. 339-258.00r.
McDowall, Frederick A.: *See*—
Mercer, Cecil S.; Beveridge, Archibald D.; and McDowall, Frederick A., 3,775,930.
McEwan, Gilbert J.: *See*—
Alul, Husni R.; and McEwan, Gilbert J., 3,776,962.
McEwen, James Eric, to Multi Fittings Limited. Water closet coupling. 3,775,780, Cl. 4-252.00r.
McFadden, Edward L.: *See*—
Anderson, George A.; Burne, Frederick A.; Neunaber, Neil O.; and McFadden, Edward L., 3,776,303.
McFarland, Harold A., to Medical Development Corporation. Dynamic cervical support. 3,776,224, Cl. 128-75.000.
McGee, Roger V., Jr. Trotline dispenser. 3,775,893, Cl. 43-54.50a.
McGovern, Terrence P.; Beroza, Morton; and Fiori, Bart J., to United States of America, Agriculture. Esters of 1,4-benzodioxan-2-carboxylic acid as attractants for the European chafer. 3,777,017, Cl. 424-84.000.
McHugh, John P.: *See*—
Howard, Arthur G.; and McHugh, John P., 3,776,215.
McIlhinney, Allan Edward: *See*—
Capes, Charles Edward; McIlhinney, Allan Edward; and Tweddle, Thomas Allen, 3,776,601.
McIntyre, Kevin M. Detecting impaired heart mechanical performing and apparatus therefor. 3,776,221, Cl. 128-205.000.
McIver, Peter John, to Cominco Ltd. Solid polyphosphoric acid. 3,777,008, Cl. 423-316.000.

McKay, Robert Bruce; and Bradley, Gordon Frank, to Ciba-Geigy AG. Diarylide pigment compositions. 3,776,749, Cl. 106-288.00q.
McKee, Robert C., to Institute of Paper Chemistry, The. Apparatus and method for testing the runnability of corrugating medium. 3,776,029, Cl. 73-88.00r.
McKim, Robert G.: *See*—
Damm, David A.; and McKim, Robert G., 3,776,380.
McKinnon, Richard L., to Specialized Products, Inc. Apparatus for stirring grain. 3,776,512, Cl. 259-102.000.
McLaughlin, Charles S. Golf club swing training device. 3,776,556, Cl. 273-186.00a.
McLeod, John H., Jr., to Thoreson-McCosh, Inc. Valve for vacuum loader. 3,776,600, Cl. 302-59.000.
McMahon, Floyd J.: *See*—
Gill, Raymond B.; and McMahon, Floyd J., 3,776,315.
McPnee, Charles J., to American Hospital Corporation. Medical liquid administration set for rate or volume delivery. 3,776,229, Cl. 128-214.00e.
McWabb, James R. Basketball retrieval and return device. 3,776,550, Cl. 273-1.50a.
Meacham, James Frank, to I-T-E Imperial Corporation. Mounting means for trim plate of panelboard. 3,777,224, Cl. 317-120.000.
Meacham, James H., to Westinghouse Electric Corporation. Technique for all-digital television sync generation. 3,777,063, Cl. 178-69.50g.
Mead Corporation, The: *See*—
Duffield, Peter L., 3,777,307.
Sanders, Frederick W., 3,776,742.
Meas, Raymond J., to Corning Glass Works. Winding apparatus. 3,776,482, Cl. 242-67.10r.
Mechaneer, Inc.: *See*—
Hoy, Robert P.; and Gray, Robert C., 3,776,397.
Meckler, Helmut; and Barwasser, Hans Gunter, to Wernicke & Co. K.G. Machine for grinding the rim of a spectacle lens. 3,775,908, Cl. 51-72.00r.
Medema, Dirk: *See*—
Van der Ven, Servaas; and Medema, Dirk, 3,776,895.
Medendorp, Roger L., to Kirkhof Manufacturing Corporation. Anti-theft display container for magnetic tape cartridge. 3,776,374, Cl. 206-45.140.
Medical Development Corporation: *See*—
Holbrook, Le Grand K.; and Fowley, Ronald D., 3,776,231.
McFarland, Harold A., 3,776,224.
Medkeff, Arthur T.: *See*—
Nye, Norman H.; and Medkeff, Arthur T., 3,776,674.
Mednikow, Leon. Aircraft-landing strip device. 3,776,166, Cl. 114-43.500.
Medovar, Boris Izrailevich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.
Meerhott, William K.: *See*—
Moravec, Vincent J., Jr.; and Meerhott, William K., 3,776,840.
Mefina S.A.: *See*—
Casas-Robert, Ramon, 3,776,160.
Fresard, Marcel, 3,776,336.
Mehia, Madhokumar A., to GTE Automatic Electric Laboratories Incorporated. Fault detection and localization in digital systems. 3,777,129, Cl. 235-151.300.
Meister, Rene: *See*—
Besson, Rene; Schneiter, Ali; and Meister, Rene, 3,775,965.
Melder, Robert C.: *See*—
Rothenbuhler, Howard E.; Melder, Robert C.; and Cotter, John Lawrence, 3,776,047.
Melind, Julius J., to Fisher, H. L., Mfg. Co., Inc. Turret type feeder for spray machine. 3,776,420, Cl. 221-211.000.
Melling, Richard; and Pickard John, to Triplex Safety Glass Company Limited. Method of toughening glass sheets. 3,776,709, Cl. 65-114.000.
Melsom, Henry Roy Francis: *See*—
Mitchell, David Thomas Somerled; and Melsom, Henry Roy Francis, 3,775,805.
Menashi, Wilson P.; Wenckus, Joseph F.; and Castonguay, Roger A., to Little, Arthur D., Inc. Method for direct melt synthesis of intermetallic compounds. 3,777,009, Cl. 423-508.000.
Menger, Joe L.; and Thornton, Bryce G., to Addressograph-Multigraph Corporation. Device for selectively passing and blocking sheets of planar material depending upon the orientation thereof. 3,777,120, Cl. 235-61.11r.
Menia, Daniell. Punch wheel in machines for composing lead type lines. 3,776,370, Cl. 199-56.000.
Menn, Julius J.: *See*—
Teach, Eugene G.; and Menn, Julius J., 3,777,035.
Mensing, Arthur E.: *See*—
Eckbreth, Alan C.; and Mensing, Arthur E., 3,777,279.
Mercer, Cecil S.; Beveridge, Archibald D.; and McDowall, Frederick A., to Swift & Company. Paper pulp baling method and apparatus. 3,775,930, Cl. 53-32.000.
Mercer, Charles S.: *See*—
Gilvar, Martin; Wykes, Robert E.; and Mercer, Charles S., 3,776,575.
Merck & Co., Inc.: *See*—
Peterson, Louis H.; and Rogers, Edward F., 3,776,943.
Merit Metal Products Corporation: *See*—
Biscardi, Charles T., 3,776,583.
Merrill, Stewart H.: *See*—
Eastman, Donald R.; Chechak, Jonas J.; and Merrill, Stewart H., 3,776,757.
Merritt, Frederick Maynard: *See*—
Gell, Philip Anthony Maunsell; Merritt, Frederick Maynard; and Steitz, William Richards, 3,777,040.
Mesa, Bernardo E. Rotary engine with sun gear drive. 3,776,202, Cl. 123-8.470.
Mesnik, Robert F.: *See*—
Walter, William H.; and Mesnik, Robert F., 3,777,169.
Messerschmitt-Bolkow-Blohm G.m.b.H.: *See*—
Weis, Dieter, 3,776,490.
Messerschmitt-Bolkow-Blohm GmbH Gesellschaft mit beschrankter Haftung: *See*—
Iben, Kurt-Werner, 3,776,492.
Metaframe Corporation: *See*—
Willinger, Allan H., 3,776,195.
Metallgesellschaft Aktiengesellschaft: *See*—
Gerlach, Johannes; and Gock, Eberhard, 3,777,005.
Keserin, Ivan, 3,775,827.
Metpath, Inc.: *See*—
Brown, Paul A., 3,776,219.
Metzler, I. Harold. Post lantern for attachment to structural support member. 3,777,138, Cl. 240-84.000.
Meyer, Engelbert A., to Warren Fastener Corporation. Self-retaining fastener. 3,775,927, Cl. 52-718.000.
Meyer, Gerhard: *See*—
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, 3,776,954.
Meyer, Hans. Graded gauge. 3,775,858, Cl. 33-168.00r.
Meyer, Robert W.; and Pedrick, John L., to Scott Paper Company. Method and apparatus for distributing fluids. 3,776,471, Cl. 239-553.500.
Meyer, Rudolf: *See*—
Matejec, Reinhart; Meyer, Rudolf; Moll, Franz; Ranz, Erwin; and Weyde, Edith, 3,776,730.
Michal, David H.: *See*—
Smith, Jag G., Jr.; Michal, David H.; Cartee, Thomas E.; and Rothrock, Burton J., 3,775,810.
Michales, Leonard H., to Molex Incorporated. Terminals and connectors for interconnecting conductors and male contracts. 3,777,301, Cl. 339-217.00s.
Michel, Rupprecht, to Kraftwerk Union Aktiengesellschaft. Air-cooled condensation apparatus. 3,776,306, Cl. 165-111.000.
Micro & Precision Mouldings (Cheltenham) Limited: *See*—
James, Michael Joseph, 3,776,580.
Miki, Masamitsu. Method for producing sleeves or sheets for feeder heads formed in metal casting and an apparatus therefor. 3,776,992, Cl. 264-122.000.
Milano, Gerard M., to Arvey Corporation. Method of making pouches. 3,776,798, Cl. 156-269.000.
Milbourne, Banjamin K., Jr. Safety closure. 3,776,406, Cl. 215-9.000.
Miller, Dennis Brian, to Western Electric Company, Incorporated. Methods and apparatus for imparting a desired orientation to an article. 3,776,394, Cl. 214-1.00r.
Miller, Donald N., to Eastman Kodak Company. Process for internal cleaning of electrodes. 3,776,774, Cl. 134-7.000.
Miller, Emery P., to Ransburg Electro-Coating Corporation. Material deposition apparatus for an organometallic. 3,776,181, Cl. 118-49.500.
Miller, George A.; and Greenfield, Stanley A., to Rohm and Haas Company. Substituted 1-(2-hydroxybenzylidene)-4-alkoxycarbonylthiosemicarbazides and related compounds. 3,776,942, Cl. 260-470.000.
Miller, Henry F.: *See*—
Shichman, Daniel; Miller, Henry F.; and Ren, Mann, 3,776,054.
Miller, John H., to Hy-Way Heat Systems, Inc. Regenerative heat exchanger. 3,776,199, Cl. 122-33.000.
Miller, Lee A.: *See*—
Curtis, John S.; and Miller, Lee A., 3,776,539.
Miller, Richard A., to Rusco Industries, Inc. Self-lock type adjustable width bedframe. 3,775,783, Cl. 5-201.000.
Miller, Stewart Edward, to Bell Telephone Laboratories, Incorporated. Mode detection and delay equalization in multimode optical fiber transmission systems. 3,777,150, Cl. 250-209.000.
Mills, King L., to Phillips Petroleum Company. Carbon black pelleting process. 3,776,750, Cl. 106-307.000.
Mine Safety Appliances Company: *See*—
Wise, Layton A., 3,776,422.
Mineck, David W.: *See*—
Tribuno, Robert F.; Foster, Thomas E.; Mineck, David W.; and Hattendorf, Edwin R., 3,777,242.
Mink, Wilhur H., to Luxfer USA Limited, mesne. Gas cylinder structure and valve-protecting element therefor. 3,776,412, Cl. 220-85.00p.
Minnesota Mining and Manufacturing Company: *See*—
Hansen, Richard L., 3,776,805.
Koshar, Robert J.; and Mitsch, Ronald A., 3,776,960.

Kremer, Leon V., 3,776,873.
Mitsch, Ronald A., 3,776,950.

Minolta Camera Kabushiki Kaisha: *See—*
Ogawa, Hasaya, 3,776,629.

Minor, Ronald E.: *See—*
Bruschke, Joost M. M.; and Minor, Ronald E., 3,776,671.

Minter, Herbert F.; and Smith, James D. B., to Westinghouse Electric Corporation. Dry-cleaning composition and method. 3,776,853, Cl. 252-171.000.

Miraldi, Floro D., to Case Western Reserve University. Collimator. 3,777,148, Cl. 250-505.000.

Misch, Wolfgang; Domain, Helmut; and Adler, Karl-Heinz, to Bosch, Robert, G.m.b.H. Electronic slip control. 3,776,322, Cl. 172-2.000.

Mitani, Seishu: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Ishihara, Ko; Serino, Yoichi; Mitani, Seishu; and Imanishi, Kunizo, 3,776,705.

Mitchell, David Thomas Somerled; and Melsom, Henry Roy Francis. Hunting Oilfield Services Limited Clearing solid material from elongate tubes and passages. 3,775,805, Cl. 15-304.000.

Mitchell, Edward: *See—*
Kramer, Edward W.; and Mitchell, Edward, 3,776,283.

Mitsch, Ronald A.: *See—*
Koshar, Robert J.; and Mitsch, Ronald A., 3,776,960.

Mitsch, Ronald A., to Minnesota Mining and Manufacturing Company. N-Cyanophosphinimides. 3,776,950, Cl. 260-551.00c.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ohnishi, Masaru; and Yoshizawa, Michi, 3,776,627.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Ishikawa, Yuji; Numata, Mitsuhiro; and Tomisiige, Teruki, 3,775,834.

Mitsubishi Paper Mills, Ltd.: *See—*
Suzuki, Shigeyoshi; Kobayashi, Norio; and Futaki, Kiyoshi, 3,776,728.

Mittendorf, Theodore H. Adjustable pillow apparatus. 3,775,785, Cl. 5-341.000.

Mitterer, Adolph V., to Continental Oil Company. Continuous vat leaching process. 3,777,003, Cl. 423-20.000.

Miyakawa, Seinan; and Shimoda, Mitsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electric camera shutter with energy controls. 3,776,116, Cl. 95-53.0eb.

Mizobe, Akio: *See—*
Yoshioka, Yoshihide; Kobayashi, Shigekazu; and Mizobe, Akio, 3,776,994.

Mobil Oil Corporation: *See—*
Theissen, Robert J., 3,776,715.
Theissen, Robert J., 3,776,961.

Moertel, George B.: *See—*
Johnston, James R.; and Moertel, George B., 3,775,815.

Mohn, Heinrich: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, 3,776,809.

Mohr, John, & Sons: *See—*
Kraft, Kenneth A., 3,775,931.

Mohr, Reinhard: *See—*
Neeb, Rudolf; Mundlos, Eberhard; and Mohr, Reinhard, 3,776,691.

Mola, Michel; Barthelemy, Philippe; Bentz, Gerard; and Galey, Jean, to Societe Civile d'Etudes de Centrifugation. Method of continuous rotary casting of metal utilizing a liquefied gas to facilitate solidification. 3,776,295, Cl. 164-66.000.

Molex Incorporated: *See—*
McDonough, Cletus, 3,777,303.
Michales, Leonard H., 3,777,301.

Molina, Orlando G., to North American Rockwell Corporation. Water washable dye penetrant composition and method of application. 3,777,157, Cl. 250-302.000.

Molins Limited: *See—*
Coates, John Robert, 3,776,105.

Moll, Franz: *See—*
Matejec, Reinhart; Meyer, Rudolf; Moll, Franz; Ranz, Erwin; and Weyde, Edith, 3,776,730.

Molloy, Robert E.; and Ritter, John A., to Ortner Freight Car Co. Spring loaded railway car. 3,776,142, Cl. 105-253.000.

Molly, Hane. Hydrostatic drive unit. 3,775,981, Cl. 60-490.000.

Molus, Michael H., to Monogram Industries, Inc. Diaphragm pump for a recirculating toilet. 3,776,107, Cl. 92-99.000.

Monaghan, Frank. Diagnostic swab with stored culture medium. 3,776,220, Cl. 128-2.00w.

Monahan, Thomas J.; and Adams, Richard C., to Schjeldahl, G. T., Company. Intermittent drive mechanism. 3,776,804, Cl. 156-515.000.

Monier Research & Development Pty. Ltd.: *See—*
Wilkinson, Horace Allan, 3,776,677.

Monin, Claude; and Arpin, Daniel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Current-analyzing and coding device usable particularly in telecommunications for number dialing by means of a key set. 3,777,068, Cl. 179-84.50s.

Monitor Labs Inc.: *See—*
Budd, Allan L.; and Wilkins, Paul E., 3,776,023.

Monogram Industries, Inc.: *See—*
Molus, Michael H., 3,776,107.

Monsanto Company: *See—*
Alul, Husni R.; and McEwan, Gilbert J., 3,776,962.
D'Amico, John Joseph, 3,776,891.
D'Amico, John Joseph, 3,776,920.
Maier, Ludwig, 3,776,953.
Phillips, Wendell Gary, 3,776,916.
Ratts, Kenneth Wayne, 3,776,984.
Strazik, William F.; and Perry, Eli, 3,776,970.
Williams, David L., 3,776,819.

Montanari, Lucio: *See—*
Brescia, Riccardo; and Montanari, Lucio, 3,777,116.

Montecatini Edison S.p.A.: *See—*
Soverini, Arrigo; Sironi, Giuseppe; and Arezzi, Raffaele, 3,777,013.

Montgomery, Robert Terry, to Celanese Corporation. Supported ribbons. 3,776,808, Cl. 161-141.000.

Moody, Leonard A.: *See—*
Arrington, Thomas B.; and Moody, Leonard A., 3,776,296.

Moore, H. Daniel. Form board for child education. 3,775,868, Cl. 35-22.00a.

Moore, Morrison B., III: *See—*
Leverance, Robert A.; and Moore, Morrison B., III, 3,776,093.

Moravec, Vincent J., Jr.; and Meerbott, William K., to Shell Oil Company. Regeneration of platinum-germanium reforming catalyst. 3,776,840, Cl. 208-139.000.

Morgan Construction Company: *See—*
Gilvar, Martin; Wykes, Robert E.; and Mercer, Charles S., 3,776,575.

Morgan, JOhn Edward: *See—*
Schlueter, David F.; and Morgan, JOhn Edward, 3,775,935.

Morgan, Paul E., to USM Corporation. Automatic progressive hem forming mechanism. 3,776,156, Cl. 112-141.000.

Morgan, Willis Emu. Non-slip retention means for use on a wearers head. 3,776,244, Cl. 132-46.00r.

Morgolenko, Anatoly Sergeevich: *See—*
Fedosenko, Igor Grigorievich; Kononenko, Vadim Grigorievich; Morgolenko, Anatoly Sergeevich; and Selivanov, Gennady Dmitrievich, 3,776,020.

Morkovin, Nikolai Viktorovich: *See—*
Kleiman, Jury Lvovich; Morkovin, Nikolai Viktorovich; and Pavlenko, Vladimir Antonovich, 3,777,254.

Morley, Fred W. Automatic sandwich grill. 3,776,124, Cl. 99-335.000.

Morris, Drew W. Apparatus for crushing cans. 3,776,128, Cl. 100-53.000.

Morrison, James J., to Kasle Steel Corporation. Pallet and method of manufacture. 3,776,146, Cl. 108-51.000.

Morrison, Robert C.; and Kamienski, Conrad W., to First National City Bank, mesne. Organolithium polymerization initiators. 3,776,964, Cl. 260-665.00r.

Morrison, William O.: *See—*
White, Duncan A.; and Morrison, William O., 3,777,103.

Moser, Erich, to RENA Buromaschinenfabrik GmbH and Co., Firma. Recording instrument with mosaic printing head. 3,776,340, Cl. 197-1.00r.

Moses, Sidney A., to United States of America, Army. Ganged arming device. 3,776,138, Cl. 102-70.20r.

Mosley, Fred E. Crane. 3,776,513, Cl. 254-150.0fh.

Motoren- und Turbinen-Union Friedrichshafen GmbH: *See—*
Butscher, Franz; and Bader, Werner, 3,777,174.

Motoren- und Turbinen-Union Munchen GmbH: *See—*
Riemerschmid, Fritz, 3,776,467.

Motorola, Inc.: *See—*
Armstrong, William E., 3,777,216.
Cecil, James B.; and Davis, Walter R., 3,777,251.
Dunkley, James L.; and Smith, Bruce E., 3,776,786.
Mazur, Thomas, 3,777,188.

Mottier, Francois: *See—*
Dandliker, Rene; and Mottier, Francois, 3,776,636.

Mrowca, Joseph J., to Du Pont de Nemours, E. I., and Company. Phosphinite, phosphonite, thiophosphinite, and dithiophosphonite compounds of palladium and platinum. 3,776,929, Cl. 260-429.00r.

Mugnier, Lucien, to Utica Tool Company, Inc. Wire stripper. 3,776,069, Cl. 81-9.50a.

Mullen, John L., to Crest/Good Manufacturing Company. System for replacing faucet handles. 3,776,373, Cl. 206-16.00r.

Muller, Henricus M.: *See—*
Scheffler, Knut; Muller, Henricus M.; and Cappel, Aldo, 3,776,856.

Muller, Johannes Jacobus: *See—*
Heide, Bastiaan Adriaan; Muller, Johannes Jacobus; and Kock, Theodorus Joannes, 3,776,858.

Muller, Michael, to Datonetics Corporation. Linear cam actuated diaphragm switch with lost motion actuator. 3,777,090, Cl. 200-159.00b.

Multi Fittings Limited: *See—*
McEwen, James Eric, 3,775,780.

Multi-Channel Response Corporation: *See—*
Bisinger, John M.; and Verwolf, David H., 3,775,864.

Mundlos, Eberhard: *See—*
Neeb, Rudolf; Mundlos, Eberhard; and Mohr, Reinhard, 3,776,691.

Muranaka, Tsuneo, to Tokyo Shibaura Electric Co., Ltd. Microwave heating apparatus. 3,777,095, Cl. 219-10.550.

Murphy, Edmund, to Ruckluft Patent AG, mesne. Art of evaporative cooling. 3,775,993, Cl. 62-95.000.

Murray, Kenneth J.; Hopkins, Don J.; and Lederman, Peter B., to Esso Production Research Company. Viscous surfactant water flooding. 3,776,309, Cl. 166-273.000.

Mursinna, Richard C.; and Martindale, David L., to Amteck, Inc. Rotary cryogenic couplings. 3,775,989, Cl. 62-55.000.

Murto, Robert A., to Chore-Time Equipment, Inc. Conveyor and trough feeder for poultry and the like. 3,776,191, Cl. 119-18.000.

Muse, Edward T., to Smoker Products, Inc. Electric meat smoker. 3,776,127, Cl. 99-482.000.

Musebeck, Horst: *See—*
Diepers, Heinrich; and Musebeck, Horst, 3,775,840.

Musgrave, Gerald: *See—*
Beck, Maurice Sidney; Musgrave, Gerald; and Wormald, Colin Norman, 3,777,133.

Musschoot, Albert, to General Kinematics Corporation. Sealed drive for vibratory material handling device. 3,776,352, Cl. 198-220.0db.

Muzhzhavlev, Konstantin Dmitrievich: *See—*
Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich, 3,776,833.

Mwanyoha, Bakari. Shelving support. 3,776,497, Cl. 248-205.00a.

Myers, Jack N. Ornamental container. 3,776,413, Cl. 220-9.00r.

Myers, Reginald Lewis. Retainer and attachment means. 3,775,922, Cl. 52-367.000.

N L Industries, Inc.: *See—*
Anderson, Loren E.; Adams, Roy L.; and Welse, Gordon D., 3,776,660.

Naber, Jaap E.: *See—*
Dautzenberg, Frits M.; Kouwenhoven, Herman W.; and Naber, Jaap E., 3,776,854.

Naber, Robert H., to United States of America, Navy. Discrete step frequency sweep. 3,777,277, Cl. 331-49.000.

Nagashima, Mitsoyoshi, to Citizen Watch Co., Ltd. Fluid switching device. 3,776,277, Cl. 137-625.600.

Nagata, Shiro: *See—*
Shibatani, Kyoichiro; and Nagata, Shiro, 3,776,863.

Nagatani, Masamichi: *See—*
Kiefer, Thomas J.; and Nagatani, Masamichi, 3,776,782.

Nagy, Sandor: *See—*
Ban, Akos; Nagy, Sandor; and Balint, Valer, 3,776,312.

Nakagome, Minoru: *See—*
Asada, Eiichi; and Nakagome, Minoru, 3,776,772.

Nakai, Hiromitu: *See—*
Yamada, Junichi; Terashima, Etuzo; Takami, Yasuji; Fukuda, Kenji; and Nakai, Hiromitu, 3,777,203.

Nakai, Miyoji: *See—*
Azuma, Kuninori; and Nakai, Miyoji, 3,776,778.

Nakamizo, Takefumi: *See—*
Ohyama, Masayuki; and Nakamizo, Takefumi, 3,777,296.

Nakamura, Shigeaki: *See—*
Kohashi, Kadao; Nakamura, Tadao; and Nakamura, Shigeaki, 3,777,205.

Nakamura, Shizuko: *See—*
Terada, Osamu; Yagi, Hitoshi; and Nakamura, Shizuko, 3,776,816.

Nakamura, Tadao: *See—*
Kohashi, Kadao; Nakamura, Tadao; and Nakamura, Shigeaki, 3,777,205.

Nakamura, Yashuharu: *See—*
Sato, Akira; Ikeda, Tadashi; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; and Takei, Haruo, 3,776,739.

Nakanishi, Sadayuki, to Kobe Steel, Ltd. Valve. 3,776,505, Cl. 251-163.000.

Nakayama, Yasuharu, to Kansai Paint Company Limited. Malcinization process. 3,776,866, Cl. 260-18.00r.

Nakazawa, Yoshiyuki: *See—*
Sato, Akira; Ikeda, Tadashi; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; and Takei, Haruo, 3,776,739.

Nalco Chemical Company: *See—*
Epple, Donald G., 3,776,758.
Newkirk, John D., 3,776,957.

Nasco Engineering Incorporated: *See—*
Gill, Victor A., 3,776,152.

Nassenstein, Heinrich; and Eggers, Joachim, to Agfa-Gevaert Aktiengesellschaft. Transmission holograms. 3,776,727, Cl. 96-27.00h.

Natens, Luc Yves, to Agfa-Gevaert N.V. Method and device for determining the speed of a member. 3,777,233, Cl. 318-313.000.

National Cooperatives, Inc.: *See—*
Fjermestad, Arnold R.; Lea, Albert; and Nellis, William M., 3,776,189.

National Gypsum Company: *See—*
Schneller, Joseph W., 3,775,920.

National Patent Development Corporation: *See—*
Vit, Jaroslav, 3,776,825.

National Service Industries, Inc.: *See—*
Griggs, Carl L.; and Hansman, George, 3,775,870.

National Standard Company: *See—*
Mallory, Edwin E.; and Bryant, Emerson C., 3,776,802.

National Starch and Chemical Corporation: *See—*
Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 3,776,983.
Sirota, Julius, 3,776,869.

National-Standard Company: *See—*
Frazier, Larry C., 3,776,793.

Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich. Plasma arc furnace. 3,777,044, Cl. 13-33.000.

Nayfa, James E. Composition and method for treating fibrous material. 3,776,844, Cl. 252-8.750.

Naylor, Floyd E.; and Farrar, Ralph C., to Phillips Petroleum Company. Multifunctional initiators. 3,776,893, Cl. 260-83.700.

Neeb, Rudolf; Mundlos, Eberhard; and Mohr, Reinhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for dyeing and printing textile materials containing acid groups with basic dyestuffs. 3,776,691, Cl. 8-177.0ab.

Neefe, Charles W. Method of rapidly reshaping cornea to eliminate refractive errors. 3,776,230, Cl. 128-260.000.

Nehmsmann, Louis J.; and Schenck, Leslie M., to GAF Corporation. Continuous production of primary and secondary phosphate ester admixture. 3,776,985, Cl. 260-980.000.

Neikirk, David W.: *See—*
Stamps, Otis C.; and Neikirk, David W., 3,776,192.

Neil, Peter C., to Standard Oil Company. Thermoforming apparatus. 3,776,681, Cl. 425-346.000.

Neill, Donald E., to Carrier Corporation. Thermostat chatter protection for refrigeration compressor motors. 3,777,240, Cl. 318-471.000.

Nellis, William M.: *See—*
Fjermestad, Arnold R.; Lea, Albert; and Nellis, William M., 3,776,189.

Nelson, Gunner E.: *See—*
Pearson, Tillmon H.; and Nelson, Gunner E., 3,776,850.

Neumann, Friedrich E.: *See—*
Winkler, Hans J. S.; and Neumann, Friedrich E., 3,776,981.

Neumann, Manfred E.: *See—*
Kaiser, Ernst K.; Geiersbach, Allois F.; and Neumann, Manfred E., 3,777,250.

Neunaber, Neil O.: *See—*
Anderson, George A.; Burne, Frederick A.; Neunaber, Neil O.; and McFadden, Edward L., 3,776,303.

Neville, Hugh C.: *See—*
Slingsby, Thomas W.; Neville, Hugh C.; and Heise, Karl A., 3,776,119.

Newkirk, John D., to Nalco Chemical Company. Method for removing copper from aqueous solutions of acrylamide. 3,776,957, Cl. 260-561.00n.

Newman, Albert P., to Empire Products, Inc. Electrical connector. 3,777,298, Cl. 339-16.00r.

Newton, Albert E., to USM Corporation. Adhesive extruders. 3,776,426, Cl. 222-146.0he.

Niagara Machine & Tool Works: *See—*
Jones, Clarence O., Jr., 3,776,046.

Nias, Marcel: *See—*
Jean, Pierre; and Nias, Marcel, 3,777,107.

Nicholas, David C., to Iowa State University Research Foundation, Inc. Method and system for synchronizing the transmission of digital data while providing variable length filler code. 3,777,066, Cl. 178-69.50r.

Nicholls, Arthur Ernest, to Farrow and Jackson Limited. Apparatus for filling containers with liquid. 3,776,285, Cl. 141-386.000.

Nichols, Duane C.: *See—*
Linstromberg, William J.; and Nichols, Duane C., 3,775,994.

Nichols, George E., to Standard Products Company, The. Ferrule for snowmobile track. 3,776,598, Cl. 305-38.000.

Nichols, Lloyd G.: *See—*
Anders, Edward O.; and Nichols, Lloyd G., 3,776,360.

Nickerson, Earl F.; and Cole, John M., to Thomas & Betts Corporation. Wiring adapter. 3,777,299, Cl. 339-17.001.

Nicksic, Stephen W.; and Suzuki, Shigeto, to Chevron Research Company. H_2S removal. 3,777,010, Cl. 423-573.000.

Nicolet, Rene; Gutmann, Walter; and Volker, Theodor, to Lanza Ltd. Process for the production of impact resistant transparent polymers of vinyl chloride and acrylic acid ester. 3,776,982, Cl. 260-884.000.

Nielsen, Edward G.: *See—*
Roodvoets, Roger J.; and Nielsen, Edward G., 3,775,929.

Niemeyer, Juergen: *See—*
Hagen, Helmut; Becke, Friedrich; and Niemeyer, Juergen, 3,776,910.

Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Ishihara, Ko; Serino, Yoichi; Mitani, Seishu; and Imanishi, Kunizo. Sintered alloy having wear resistance at high temperature. 3,776,705, Cl. 29-182.000.

Nikles, Erwin, to Ciba-Geigy AG. Pesticidal preparations containing carbamates. 3,777,036, Cl. 424-300.000.

Nippon Carbon Co., Ltd.: *See—*
Watanabe, Nobuatsu; Kusuno, Hideaki; and Ishida, Yutaka, 3,776,845.

Nippon Electric Glass Company, Limited: *See—*
Takagi, Kiyoshi; Kawamura, Susumu; and Fujii, Hiroshi, 3,776,764.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Ihara, Yasuharu, 3,776,090.
Ogi, Mikio, 3,776,087.
Suzuki, Shigeo, 3,776,091.

Nippon Kogaku K.K.: *See—*
Maida, Osamu, 3,776,111.

Nippon Kokan Kabushiki Kaisha: *See—*

Yamaguchi, Masaya; and Hironaka, Nobuyuki, 3,776,253.

Nippon Paint Co., Ltd.: *See—*
Watanabe, Nobuatsu; Kusuno, Hideaki; and Ishida, Yutaka, 3,776,845.

Nippon Sheet Glass Co., Ltd.: *See—*
Inoue, Touru; and Terashima, Kenzi, 3,776,707.

Nippon Shokubai Kogaku Kogyo Co., Ltd.: *See—*
Shimizu, Noboro; Yoshida, Sadao; Kubota, Kunihiro; Kobayashi, Daizo; and Ohara, Takashi, 3,776,947.

Nissan Motor Company, Limited: *See—*
Baba, Kosaku; and Wazawa, Kiyoshi, 3,777,273.
Enomoto, Koji; Akaishi, Takayuki; and Ishimaru, Wataru, 3,776,048.
Marouka, Hiroyuki, 3,776,205.
Sobajima, Katsonobu; and Matsuzaki, Kiyoto, 3,776,588.

Nisson Motor Company, Limited: *See—*
Yoshizawa, Katuyuki, 3,776,337.

Nitz, Allen R., to Allis-Chalmers Corporation. Vacuum interrupter. 3,777,089, Cl. 200-144.00b.

Nixon, Kenneth Edwin: *See—*
Boutros-Attia, Radamis; La France, Conrad; and Nixon, Kenneth Edwin, 3,777,078.

Nock, John M., to Westvaco Corporation. Method in forming a carton with integral handle. 3,776,108, Cl. 93-39.00r.

Nomura, Kenzi: *See—*
Tomita, Tamaki; Kusakabe, Takesi; Kurimoto, Mikishi; Isunco, Iwami; Keniti, Iwami; Nomura, Kenzi; and Yoshikazu, Sano, 3,775,837.

Nooya, Kazuo: *See—*
Ogawa, Yasuhiro; Nooya, Kazuo; Awata, Norio; and Yamakawa, Yukio, 3,775,960.

Noranda Metal Industries, Inc.: *See—*
French, Fred W., 3,776,018.

Norgaard, Ejvind N.: *See—*
Hansen, Claus M.; and Norgaard, Ejvind N., 3,776,477.

Norkum, Alphonse A.; Corrigan, Joseph D.; and Davies, Keith. Step level probe. 3,777,177, Cl. 307-118.000.

Norris, Alan H.; and Lacy, William R., to Bigelow-Sanford, Inc. Method of changing yarn supply in a tufting machine. 3,776,163, Cl. 112-266.000.

North American Rockwell Corporation: *See—*
Dorsman, Adrian K., 3,777,152.
Molina, Orlando G., 3,777,157.

North Electronics Corporation: *See—*
Harrison, John M., 3,777,256.

Northcutt, Marvin J.; and Roeschlein, Eugene R., to United States of America, Navy. Optical divider point assembly for harmonic spectrum analysis. 3,776,641, Cl. 356-171.000.

Northcutt, Michael E. Orthodontic apparatus. 3,775,850, Cl. 32-14.00a.

Northrop Corporation: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; Bayne, Dennis R.; and Oster, Stanley, 3,777,262.

Norton, Charles J.; and Falk, David O., to Marathon Oil Company. Polyalkeneoxides and polyvinyl-pyrrolidones mobility control agent and process. 3,776,310, Cl. 166-275.000.

Norton Company: *See—*
Fazioli, William A., 3,776,526.
Perry, James H., 3,776,475.

Noteltiers, Victor Rosallie; and Janssen, Eduard Jozef Philomena, to U.S. Philips Corporation. Halogen filament lamp having stabile filament supporting means. 3,777,207, Cl. 313-222.000.

Nouvelle Societe Bruey S.A.: *See—*
Bonneville, Jean, 3,775,874.

Nova, Vittorio Emanuele: *See—*
Ligorati, Ferdinando; Aglietti, Giancarlo; and Nova, Vittorio Emanuele, 3,776,945.

Nuccel, Albert W., to Teledyne, Inc. Electroslag welding machine. 3,777,106, Cl. 219-76.000.

Nuclear-Medical Laboratories, Inc.: *See—*
Eisentraut, Anna M., 3,776,698.

Numata, Mitsuhiro: *See—*
Ishikawa, Yuji; Numata, Mitsuhiro; and Tomisiige, Teruki, 3,775,834.

Nunes, John F., Jr. Sod handling method. 3,776,314, Cl. 172-1.000.

Nussbaumer, Thomas. Control device for controlling a pneumatic piston. 3,776,101, Cl. 91-420.000.

Nutten, Donald C.: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; Bayne, Dennis R.; and Oster, Stanley, 3,777,262.

Nye, Norman H.; and Medkeff, Arthur T., to Creme, Nicholas and Cosma. Apparatus to form elongate plastic articles. 3,776,674, Cl. 425-134.000.

Obenshain, George R.: *See—*
Yakubek, Louis P.; and Obenshain, George R., 3,776,348.

Obereder, Horst: *See—*
Scherg, Gustav; Auer, Norbert; Obereder, Horst; and Stollmayer, Nikolaus, 3,776,063.

Ochampaugh, Donald R.: *See—*
Droke, Darrell W.; Ochampaugh, Donald R.; and Krumm, Andrew G., 3,776,211.

Ochiai, Tadashi, to Tokyo Shibaura Electric Co., Ltd. Printer. 3,776,131, Cl. 101-93.00c.

O'Connor, Joseph, Jr., to Kieley & Mueller, Inc. Control valve and process control system. 3,776,265, Cl. 137-487.500.

O'Connor, Joseph, Jr., to Kieley & Mueller, Inc. System for changing fluid movement into electrical energy. 3,776,279, Cl. 137-802.000.

Oefinger, Richard W., to USM Corporation. Fastener driving tool with slidable fastener guide. 3,776,443, Cl. 227-10.000.

Offer, Robert J., to Tenneco Inc. Replaceable element coolant filter. 3,776,384, Cl. 210-209.000.

Officine Moncenisio, gia Anonima Bauchiero: *See—*
Gariboldi, Franco, 3,776,000.

Ogawa, Akira, to Kokusai Denshin Denwa Kabushiki Kaisha. Transmission system for a time-divisional multiples PSK signal. 3,777,062, Cl. 178-69.50r.

Ogawa, Hasaya, to Minolta Camera Kabushiki Kaisha. Electrophotographic duplicator. 3,776,629, Cl. 355-8.000.

Ogawa, Yasuhiro; Nooya, Kazuo; Awata, Norio; and Yamakawa, Yukio, to Kanegafuchi Boseki Kabushiki Kaisha. Sewing thread and a method of preparing same. 3,775,960, Cl. 57-140.00r.

Ogi, Mikio, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with variable impedance playboard providing portamento. 3,776,087, Cl. 84-1.240.

Ogino, Katsuhisa: *See—*
Suzuki, Toshio; Awano, Koichi; and Ogino, Katsuhisa, 3,777,002.

Ohara, Takashi: *See—*
Shimizu, Noboro; Yoshida, Sadao; Kubota, Kunihiro; Kobayashi, Daizo; and Ohara, Takashi, 3,776,947.

Ohkubo, Kinji: *See—*
Kato, Kazunobu; and Ohkubo, Kinji, 3,776,761.

Ohnishi, Masaru; and Yoshizawa, Michi, to Mitsubishi Denki Kabushiki Kaisha. Electrophotographic apparatus using photosensitive member with electrically high insulating layer. 3,776,627, Cl. 355-3.000.

Ohno, Genjt; and Inoue, Eiichi, to Research and Development Laboratories of Ohno Co., Ltd. Electrostatic printing method and apparatus. 3,776,630, Cl. 355-10.000.

Ohschlager, Hans; and Riester, Oskar, to Agfa-Gevaert Aktiengesellschaft. Silver halide emulsions sensitized with a combination of oxazoline or dihydrooxazine cyanine dyes and mercapto or selenol compounds. 3,776,738, Cl. 96-126.000.

Ohta, Jun: *See—*
Arai, Hiroshi; and Ohta, Jun, 3,776,357.

Ohtsuka, Tetsuro: *See—*
Tsukamoto, Masahide; and Ohtsuka, Tetsuro, 3,776,615.

Ohyama, Masayuki; and Nakamizo, Takefumi. Electromagnetic induction apparatus. 3,777,296, Cl. 336-120.000.

Oishi, Minoru: *See—*
Arikawa, Masayasu; Oishi, Minoru; Rokujyo, Masaharu; and Ishihashi, Tatuyuke, 3,777,113.

Okazaki, Kanzo: *See—*
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,776,946.

Okino, Yoshihiro: *See—*
Kamogawa, Toshiro; Okino, Yoshihiro; Sato, Isao; and Okuno, Noboru, 3,777,060.

Oklahoma State University: *See—*
Maciula, Andrew; Tiederman, William G.; and Reed, Robert E., 3,776,385.

Okuda, Shigekazu. Umbrella having an electric lamp. 3,777,136, Cl. 240-642.000.

Okuno, Noboru: *See—*
Kamogawa, Toshiro; Okino, Yoshihiro; Sato, Isao; and Okuno, Noboru, 3,777,060.

Olbrant, Goran; Citron, Bengt; Rosby, Sven-Olof; and Sandhlad, Krister, to Aktiebolaget Svenska Flaktfabriken. Removing and collecting dust from traveling material. 3,775,806, Cl. 15-306.00a.

O'Leary, Kevin J. Partial replacement of ruthenium with tin in electrode coatings. 3,776,834, Cl. 204-290.00f.

Olin Corporation: *See—*
Anderson, George A.; Burne, Frederick A.; Neunaber, Neil O.; and McFadden, Edward L., 3,776,303.

Oliver, James E. Fluid operated positive displacement rotating energy converter. 3,776,104, Cl. 91-47.000.

Oliver Machinery Company: *See—*
Boboltz, Charles E.; Zwald, Frederick K.; and Baldwin, Ralph B., 3,776,289.

Olivetti, Ing., C., & C., S.p.A.: *See—*
Brescia, Riccardo; and Montanari, Lucio, 3,777,116.
Dalmasso, Claudio, 3,775,838.
Veneria, Giovanni Bessolo, 3,776,675.

Olmsted, Dennis R., to Storage Technology Corporation. File protect system for magnetic tape unit with diaphragm operated switch for sensing presence or absence of write enable ring. 3,777,074, Cl. 179-100.20d.

Olson, Don L.: *See—*
Anderson, Brent F.; Bytheway, Charles W.; and Olson, Don L., 3,777,153.

Olympia Werke AG: *See—*
Hoffman, Peter, 3,777,170.

Olympus Optical Co., Ltd.: *See—*
Kosaka, Shinya, 3,777,244.

Omark Industries, Inc.: *See—*
Pomeroy, Raymond Visher, 3,776,445.

Omega Louis Brandt et Freres, S.A.: *See—*
Hetzel, Max, 3,776,050.

Onahama Seiren Kabushiki Kaisha: *See—*
Ikeda, Hiroshi; Yoneda, Motoaki; and Ishii, Minoru, 3,776,017.

O'Neal, Donald E.: *See—*

Anson, James H.; and O'Neal, Donald E., 3,776,642.

O'Neill Corporation: *See—*
O'Neill, Raymond J., 3,777,043.

O'Neill, Raymond J., to O'Neill Corporation. Apparatus and method for cooling a refractory lining. 3,777,043, Cl. 13-32.000.

Ono, Takehiko: *See—*
Taguchi, Nobuo; and Ono, Takehiko, 3,777,243.

Oomura, Koji: *See—*
Ooya, Junichiro; Oomura, Koji; Takayama, Katsuki; and Kazutaka, Kuwana, 3,776,604.

Ooya, Junichiro; Oomura, Koji; Takayama, Katsuki; and Kazutaka, Kuwana, to Aisin Seiki Kabushiki Kaisha. Digital type brake control device. 3,776,604, Cl. 303-21.0eb.

Oppenheimer, Jess. Sound sequence interval changing structure. 3,777,071, Cl. 179-100.20k.

Opperhauser, Calvin F., to American-Telephone and Telegraph Company. Apparatus for manually encoding a data record. 3,775,869, Cl. 35-48.00r.

Optical Coating Laboratory, Inc.: *See—*
Spellman, Vernon C., 3,776,535.

Optical Systems Corporation: *See—*
Wiitig, Karl; Wimmer, Guenther; Court, Patrick R. J.; and Akrell, Carl, 3,777,053.

Optotechnik Heine KG: *See—*
Heine, Helmut A., 3,776,619.

Oriani, Agostino, to Industrie Pirelli S.p.A. Apparatus for restoring the initial work-hardened condition in a conductor portion annealed by welding. 3,775,824, Cl. 29-203.00r.

Ormskirk, Hoscar NR: *See—*
Wilde, Dennis; and Ormskirk, Hoscar NR, 3,776,712.

Ortlieb, William L., to Colgate-Palmolive Company. Method and apparatus for scanning surfaces. 3,777,151, Cl. 250-201.000.

Ortner Freight Car Co.: *See—*
Molloy, Robert E.; and Ritter, John A., 3,776,142.

Osburn, Michael R.: *See—*
Jones, Jerry O.; and Osburn, Michael R., 3,776,140.

Oshita, Tomomi; and Suzuki, Minoru, to Hitachi, Ltd. Hair curler. 3,776,243, Cl. 132-33.00r.

Osman, Martin S., to Polaroid Corporation. Electrode for sheet material surface treatment apparatus. 3,777,164, Cl. 250-531.000.

Oster, Stanley: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; Bayne, Dennis R.; and Oster, Stanley, 3,777,262.

Oswell, Robert J.: *See—*
Gerber, Heinz Joseph; Pearl, David R.; and Oswell, Robert J., 3,776,072.

Oswin, Harry G.; and Blurton, Keith F., to Energetics Science Inc. Electrochemical detection cell. 3,776,832, Cl. 204-195.00r.

Othmer, Donald F. Electric heat generating system. 3,777,117, Cl. 219-300.000.

Ottenstein, Sidney Allan: *See—*
Wailes, Rodney A.; and Ottenstein, Sidney Allan, 3,776,249.

Oulton, Robert F. Aircraft with compound wing. 3,776,491, Cl. 244-42.0cb.

Ouska, Ralph C., to FMC Corporation. Clamp mechanism for rotary car dumper. 3,776,401, Cl. 214-55.000.

Outboard Marine Corporation: *See—*
Betts, E. Douglas; Hanson, Donald K.; and Stephenson, Donald K., 3,776,366.
Jespersen, Herbert A., 3,776,325.

Overmyer Corporation: *See—*
Hollingsworth, Elvin R., 3,776,711.

Owens-Corning Fiberglas Corporation: *See—*
Benson, Gustav E.; and Taylor, Everett W., 3,776,183.
Kissell, Ronald E., 3,776,803.
Marzocchi, Alfred, 3,776,293.

Owens-Corning Fiberglass Corporation: *See—*
Pearson, Lee E., 3,776,409.

Owens-Illinois, Inc.: *See—*
Damm, David A.; and McKim, Robert G., 3,776,380.
Peters, Edwin F., 3,777,182.
Peters, Erwin F., 3,777,183.
Yakubek, Louis P.; and Obenshain, George R., 3,776,348.

Oxlade, Kenneth David. Surface vehicles with venture attachment. 3,776,587, Cl. 296-1.00s.

Packaging Industries Inc.: *See—*
Rohdin, Howard A., 3,776,375.

Padgett, Richard A., to GTE Automatic Electric Laboratories Incorporated. Method for detecting failures in trunk status identification circuitry. 3,777,080, Cl. 179-175.20r.

Page, Geoffrey A.: *See—*
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,776,721.

Paielli, Michael F. Load transferring coupling device. 3,776,573, Cl. 280-405.00a.

Palombo, John A.; and Larime, Carl M., to General Signal Corporation. Pushbutton switch with adjustable contact plates for normally on, normally off, and momentary action. 3,777,091, Cl. 200-166.0bc.

Pande, Kailash C.; and Kallenbach, Stanely E., to Powers Chemco, Inc. Allyl carbamate esters of hydroxy-containing polymers. 3,776,889, Cl. 260-77.5cr.

Panicci, Richard L.: *See—*
Casavant, Roger M.; Larson, Wesley S.; and Paniccí, Richard L., 3,775,793.

Papajewski, Reinhold; and Kleinschmidt, Johann O., to Singer-Werke G.m.b.H. Thread trimming device for lockstitch sewing machines. 3,776,161, Cl. 112-252.000.

Papst, Georg; Wrobel, Gunter; and Schneider, Gerold, to Papst-Motoren KG. Dynamo electric machine construction. 3,777,191, Cl. 310-67.000.

Papst-Motoren KG: *See—*
Papst, Georg; Wrobel, Gunter; and Schneider, Gerold, 3,777,191.

Park Ohio Industries, Inc.: *See—*
Cachat, John F., 3,775,831.

Park-Ohio Industries, Inc.: *See—*
Budzinski, Roger R., 3,777,097.
Del Paggio, Anthony F., 3,777,096.

Parker-Hannifin Corporation: *See—*
Bass, James H.; and Smith, Robert P., 3,776,266.
Schmiel, Herbert H., 3,776,273.

Parks, Howard L., to Bunker Ramo Corporation. Method of fabricating a multiwafer electrical circuit structure. 3,775,844, Cl. 29-626.000.

Parks, Robert G.; and Emerson, Bruce D., to California Computer Products, Inc. Optical arrangement for graphical plotters. 3,776,113, Cl. 95-12.000.

Parmann, Gunnar, to Rieber & Son Plastic-Industri A/S. Apparatus for producing radially-expanded socket ends on thermoplastic pipe lengths. 3,776,682, Cl. 425-384.000.

Pars, Harry George: *See—*
Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, 3,777,028.

Parsons, Paul Donald: *See—*
Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, 3,775,823.

Paschal, Forrest A.: *See—*
Stuart, Gerald L.; and Paschal, Forrest A , 3,776,398.

Paschal, Forrest, Machinery Company: *See—*
Stuart, Gerald L.; and Paschal, Forrest A., 3,776,398.

Pastan, Harvey L.: *See—*
Perron, Robert R.; and Pastan, Harvey L., 3,777,263.

Patil, Pandit G., to PPG Industries, Inc. Multiple-glazed unit for high sound transmission loss. 3,775,914, Cl. 52-172.000.

Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich. Method of electroslag remelting. 3,776,294, Cl. 164-52.000.

Patzer, Helmut Karl: *See—*
Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, 3,776,562.

Paulson, William T.; and Davidson, David M., to Standard Register Company, The. Business sheet having removable transfer means and method of making. 3,776,755, Cl. 117-36.400.

Pavkovich, John M., to Varian Associates. Computer assisted radiation therapy machine. 3,777,124, Cl. 235-151.000.

Pavlenko, Vladimir Antonovich: *See—*
Kleiman, Jury Lvovich; Morkovin, Nikolai Viktorovich; and Pavlenko, Vladimir Antonovich, 3,777,254.

Pavlov, Leonid Viktorovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

Payne, Paul H., Jr. Metal spraying apparatus. 3,776,462, Cl. 239-134.000.

Peabody Barnes Inc.: *See—*
Coon, Donald F., Jr., 3,776,659.

Pearl, David R.: *See—*
Gerber, Heinz Joseph; Pearl, David R.; and Oswell, Robert J., 3,776,072.

Pearl, David R.; and Wolfson, Lawrence S., to Gerber Garment Technology, Inc. Transfer apparatus for an automated tool carriage. 3,776,074, Cl. 83-71.000.

Pearson, James W.; Price, Gareth G.; and Earps, Hugh B., to Shell Oil Company. Lubricating oil composition. 3,776,847, Cl. 252-33.000.

Pearson, Lee E., to Owens-Corning Fiberglass Corporation. Glass fiber container and method of construction. 3,776,409, Cl. 220-3.000.

Pearson, Tillmon H.; and Nelson, Gunner E., to Ethyl Corporation. Detergent formulations. 3,776,850, Cl. 252-89.000.

Peck & Hale, Inc.: *See—*
Strecker, William V., 3,776,169.

Pedersen, Herbert N.: *See—*
Gordon, Norman R.; and Pedersen, Herbert N., 3,775,816.

Pedrick, John L.: *See—*
Meyer, Robert W.; and Pedrick, John L., 3,776,471.

Pecgat, Alain Edouard, to Societe Anonyme des Usines Chausson. Apparatus for cutting a tube into segments. 3,776,082, Cl. 83-304.000.

Peel, Richard V. Motion sensor system. 3,777,139, Cl. 246-125.000.

Pennwalt Corporation: *See—*
Bross, Charles Frederick, 3,775,941.

Macleay, Ronald Edward, 3,776,885.
Powell, Harold R.; Dunn, Cornelius C.; and Burke, John R., 3,775,942.
Pepmeier, Carl R.; and Lowe, Edward G., to FMC Corporation. Apparatus for centering circular articles. 3,775,936, Cl. 53-137.000.
Peraro, James S.: *See—*
Ehle, George E.; and Peraro, James S., 3,776,123.
Percourt, Virginia S. Collapsible and portable signalling device. 3,775,887, Cl. 40-125.00g.
Pereman, Morris, to Carbide Form Grinding, Inc. Apparatus for cutting continous slide fastener chains into slide fasteners of predetermined length. 3,776,078, Cl. 83-210.000.
Peretz, Bernard G. Audible fire alarm and method of making the same. 3,776,175, Cl. 116-105.000.
Perison, Ronald C., Sr., to Standard Mirror Company, Inc. Shatterproof rear vision mirror assembly fabrication. 3,776,618, Cl. 350-288.000.
Perpall, Robert C., to Garrett Corporation, The. Heat exchanger mounting. 3,775,972, Cl. 60-13.00r.
Perrin, Jacques. Method of stabilization of plant roots and extracts thus stabilized. 3,777,021, Cl. 424-195.000.
Perron, Robert R.; and Pastan, Harvey L., to Eastern Company, The. Peak holding circuit. 3,777,263, Cl. 324-103.00p.
Perry, Eli: *See—*
Strazik, William P.; and Perry, Eli, 3,776,970.
Perry, Harold W.; and Swinford, Martin E., to Richardson Ink Co. Solventless non-polluting vehicles for heat-set inks. 3,776,867, Cl. 260-21.000.
Perry, James H., to Norton Company. Automatic pulp grinder control. 3,776,475, Cl. 241-33.000.
Pessen, David W. Quick-release mechanism for self-locking mating worms. 3,776,060, Cl. 74-424.700.
Peter, Lothar: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,776,651.
Peter, Oskar E.: *See—*
Peter, Oskar E.; and Peter, Lothar (said Peter, Lothar, assor. to said), 3,776,651.
Peter, Oskar E.; and Peter, Lothar, said Peter, Lothar, assor. to said Peter, Oskar E. Hub connection for use with hollow shafts. 3,776,651, Cl. 403-248.000.
Peters, Allen; and Ryan, William J. Stabilizable scaffolding support bracket. 3,776,498, Cl. 248-221.000.
Peters, Edwin F., to Owens-Illinois, Inc. Transistor control apparatus. 3,777,182, Cl. 307-268.000.
Peters, Erwin F., to Owens-Illinois, Inc. Transistor control apparatus. 3,777,183, Cl. 307-268.000.
Peters, James R., to Universal Products Development Corporation. Self-watering flower pot. 3,775,904, Cl. 47-38.100.
Peters, Philip H., Jr., to Environment/One Corporation. Thermally insulated cookware for dynamic induction field heating and cooking apparatus. 3,777,094, Cl. 219-10.490.
Peterson, John L., to United States of America, Health, Education, and Welfare. Scintillation analysis system. 3,776,695, Cl. 23-230.0pc.
Peterson, Louis H.; and Rogers, Edward F., to Merck & Co., Inc. 4-(and 5-) -Loweralkoxycarbonylamino-1-naphthyl-N-loweralkylcarbamates. 3,776,943, Cl. 260-471.00c.
Peterson, William A., Jr.: *See—*
Wertheimer, Harry P.; and Peterson, William A., Jr., 3,776,209.
Petrow, Henry G., to Prototech Company. Gold-coated platinum-metal black catalytic structure and method of preparation. 3,776,776, Cl. 136-86.00c.
Peyman, Gholam A.; and Dodich, Nicholas A., to University of California, The Regents of the. Ophthalmic instrument. 3,776,238, Cl. 128-305.000.
Peyser, Leonard F., to Machlett Laboratories, Incorporated. Cassette locking mechanism. 3,777,162, Cl. 250-468.000.
Pez, Guido P., to Allied Chemical Corporation. Metal-organo compounds with sterically exposed metal-metal bonds, and a method for their production. 3,776,932, Cl. 260-429.300.
Pfaff Industriemaschinen GmbH: *See—*
Angele, Eugen, 3,776,159.
Pfeffer, William J. Paint brush wiper. 3,776,415, Cl. 220-90.000.
Phillips Fibers Corporation: *See—*
Womer, Walter D., 3,775,961.
Phillips, Hugh Edmund, to Avery-Hardoll Limited and Beck & Co. (Meters) Limited. Liquid dispensing apparatus for blends of two or more liquids. 3,776,423, Cl. 222-26.000.
Phillips Petroleum Company: *See—*
Blackwell, Jennings P., 3,776,880.
Kittleman, Edmund T.; and Zuech, Ernest A., 3,776,973.
Mills, King L., 3,776,750.
Naylor, Floyd E.; and Farrar, Ralph C., 3,776,893.
Trepka, William J.; and Sonnenfeld, Richard J., 3,776,896.
Wu, Yu-Lin, 3,776,930.
Phillips, Wendell Gary, to Monsanto Company. Certain N-phenacyl pyridinium halides. 3,776,916, Cl. 260-294.900.
Pichette, Edmond A. Fluid-stabilized shaft. 3,776,609, Cl. 308-9.000.
Pickard John: *See—*
Melling, Richard; and Pickard John, 3,776,709.
Picker Corporation: *See—*
Brunnett, Carl J.; and Ioannou, Basil N., 3,777,145.
Brunnett, Carl J.; and Ioannou, Basil N., 3,777,146.
Foderaro, Anthony J., 3,776,500.
Piegza, Henry J., to WSF Industries, Inc. False walled pressure vessel. 3,776,257, Cl. 137-206.000.
Pielkenwood-Vinitex N.V.: *See—*
van Galen, Piet; and van Nes, Johannes G. Th., Jr., 3,776,217.
Pierdet, Andre: *See—*
Gase, Jean-Claude; and Pierdet, Andre, 3,776,902.
Pierre, Dumont: *See—*
Quanquin, Bernard; Trimbach, Honore; and Pierre, Dumont, 3,776,713.
Pieters, Leon Andre, to Image Analysing Computers Limited. Video signal level correction circuitry. 3,777,056, Cl. 178-7.100.
Pigney, James Malcolm: *See—*
Hope, Frederick John Charles; and Pigney, James Malcolm, 3,776,329.
Pike, John Francis. Containers. 3,775,903, Cl. 47-37.000.
Pilger, James P.: *See—*
Williford, John F.; and Pilger, James P., 3,776,297.
Pilipchuk, Viktor Romanovich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.
Pilkington Brothers Limited: *See—*
Wilde, Dennis; and Ormskirk, Hoscar NR, 3,776,712.
Pinkowski, Norman J.: *See—*
Eckert, Charles F.; and Pinkowski, Norman J., 3,776,811.
Pipe Machinery Company, The: *See—*
Urbanic, Robert F., 3,776,655.
Piret, Jean, to Automobiles Peugeot and Regie Nationale des Usines Renault. Automatic transmissions. 3,776,066, Cl. 74-763.000.
Pirker, Rudolf; and Kelchner, Roland, to Licentia Patentverwaltungs-G.m.b.H. Self-cleaning oven. 3,776,216, Cl. 126-197.000.
Pisciotta, Immacolata. Dressmaker chalk sharpener. 3,776,068, Cl. 76-82.000.
Pish, Paul. Linear to rotary motor. 3,776,106, Cl. 92-33.000.
Pissiotas, Georg: *See—*
Martin, Henry; Dittrich, Volker; Pissiotas, Georg; and Rohr, Otto, 3,777,024.
Pissiotas, Gerog: *See—*
Martin, Henry; Janiak, Stefan; Pissiotas, Gerog; and Rohr, Otto, 3,776,904.
Pitesky, Isadore; and Barsby, James B. Portable hyperventilation relieving device. 3,776,227, Cl. 128-203.000.
Pittman, Carl R.; and Long, James A., to Arvin Industries, Inc. Touch tuning and control circuits. 3,777,290, Cl. 334-15.000.
Plantholt, Richard H.: *See—*
Staker, Donald D.; Plantholt, Richard H.; and Kriege, David J., 3,776,928.
Plescia, Joseph J., to General Electric Company. Exhaust machine leak detector and shut off. 3,776,025, Cl. 73-45.100.
Pogany, Alfred: *See—*
Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, 3,776,717.
Pohl, Dieter, to International Business Machines Corporation. Laser generator of TE wave guide modes. 3,777,280, Cl. 331-94.500.
Polaroid Corporation: *See—*
Baker, Philip G.; Cook, Gerald H.; and Downey, Rogers B., 3,776,425.
Driscoll, John J.; and Whall, James M., 3,776,118.
Land, Edwin H., 3,776,624.
Land, Edwin H., 3,776,726.
McCann, John J.; and Scarpetti, Julius J., 3,776,725.
Osman, Martin S., 3,777,164.
Polidora, Frank J. Windshield visor. 3,776,590, Cl. 296-95.00r.
Pollack, John L.: *See—*
Hall, Jesse H.; Gettelman, Clarence C.; Pollack, John L.; Goldman, Gary C.; and Decker, Arthur J., 3,777,200.
Polytop Corporation: *See—*
Hazard, Robert E., 3,776,428.
Pomeroy, Raymond Visher, to Omark Industries, Inc. Pneumatic fastener driving device. 3,776,445, Cl. 227-130.000.
Ponder & Best, Inc.: *See—*
Fountain, Gerald F., 3,776,625.
Pont-A-Mousson S.A.: *See—*
Leblond, Christian, 3,776,509.
Post, Robert L., Sr. Animal feeder. 3,776,193, Cl. 119-51.500.
Potter, Frederick Milton, to Bendix Corporation, The. Support for generator bearing. 3,777,195, Cl. 310-91.000.
Poupin, Raymond, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Control device for a mark on a continuously moving band. 3,777,166, Cl. 250-555.000.
Poutsma, Tjeerd J. Machine to separate pods or similar discrete fruit from its associate vine or plant. 3,775,953, Cl. 56-126.000.
Powell, Harold R.; Dunn, Cornelius C.; and Burke, John R., to Pennwalt Corporation. Vacuum stoppering apparatus with pegboard shelf adjustment. 3,775,942, Cl. 53-264.000.
Power Systems Inc.: *See—*
Lahti, Abbott W., 3,777,235.
Powers Chemco, Inc.: *See—*
Pande, Kailash C.; and Kallenbach, Stanely E., 3,776,889.
PPG Industries, Inc.: *See—*
Knavish, Leonard A.; and Schornhorst, James R., 3,776,710.
Patil, Pandit G., 3,775,914.
Seymour, Samuel L., 3,776,708.

Simon, Martin J., 3,776,878.
Praeg, Walter F., to United States of America, Atomic Energy Commission. Active crowbar for a switching magnets. 3,777,176, Cl. 307-108.000.
Prasil, Vladimir: *See—*
Lutovsky, Josef; and Prasil, Vladimir, 3,776,479.
Precision Flexmold, Inc.: *See—*
Putzer, Raymond M.; and Maurino, William J., 3,776,683.
Precision Plumbing Products, Inc.: *See—*
Watts, James B., 3,776,269.
Preformed Line Products Co.: *See—*
Smrekar, Clarence E.; and Goetter, Erwin H., 3,775,811.
Prescott, Elsworth; and Copus, Edward F., to Copolymer Rubber & Chemical Corporation. Method of packaging friable bales of elastomeric material. 3,775,933, Cl. 53-24.000.
Preston, Thomas William; and Reece, Albert Benjamin John, to English Electric Company, Limited, The. Attachment assembly for stator windings. 3,777,197, Cl. 310-194.000.
Preussag Aktiengesellschaft: *See—*
Kuhlmann-Schaefer, Wilhelm H.; and Dinter, Manfred E., 3,776,593.
Preussag Aktiengesellschaft- Metall: *See—*
Ensslin, Fritz; Frenzel, Gerhard; and Lobermann, Erich, 3,776,147.
Price Brothers Company: *See—*
Keyser, Lewis R., 3,776,576.
Price, Gareth G.: *See—*
Pearson, James W.; Price, Gareth G.; and Earps, Hugh B., 3,776,847.
Price, Roy H., to Litton Business Systems, Inc. Looseleaf binder mechanism. 3,776,648, Cl. 402-17.000.
Probst, Richard O., to Ransburg Electro-Coating Corporation. Electrostatic deposition apparatus. 3,776,187, Cl. 118-626.000.
Procter & Gamble Company, The: *See—*
Sutphin, Richard A., 3,775,938.
Prodorite Limited: *See—*
Baker, Frank George Morley, 3,776,414.
Proffit, Lester M. Swimming pool cleaner. 3,776,464, Cl. 239-229.000.
Propper Manufacturing Co., Inc.: *See—*
Heine, Helmut A., 3,776,619.
Propst, Robert L. Log cutting apparatus. 3,776,083, Cl. 83-324.000.
Prost, Alfred: *See—*
Burtscher, Joachim; Frohmader, Karl Peter; Prost, Alfred; and Voss, Peter, 3,777,229.
Prototech Company: *See—*
Petrow, Henry G., 3,776,776.
Pullman Incorporated: *See—*
Carmel, Edwin L.; and Schirmer, Olaf W., 3,776,569.
Cox, John M.; Kunst, Robert J.; and Szala, Norman M., 3,776,143.
Puretic, Mario J. Fish impeller. 3,775,890, Cl. 43-6.500.
Purity Packaging Limited: *See—*
Smith, Lewis W., 3,775,934.
Purnell, Michael G.: *See—*
Waszink, Remco P.; and Purnell, Michael G., 3,776,302.
Putzer, Raymond M.; and Maurino, William J., to Precision Flexmold, Inc. Apparatus for molding articles. 3,776,683, Cl. 425-440.000.
Quanquin, Bernard; Trimbach, Honore; and Pierre, Dumont, to Azote et Produits Chimiques S.A. KCl-phosphate granules. 3,776,713, Cl. 71-33.000.
Quick, Donald Jonathan, to International Harvester Company. Bucket for earth moving machines. 3,775,879, Cl. 37-118.00r.
Quinn, Lawrence R.; and Bielenberg, Max J., to Roura Iron Works, Inc. Punching and extrusion die. 3,776,016, Cl. 72-327.000.
R. F. Inc., mesne: *See—*
Rice, Charles A.; and Foust, Michael L., 3,775,782.
Rabinow, Jacob. Dynamically-balanced phonograph arm. 3,776,557, Cl. 274-23.00r.
Rahut, Eugene W., to Udylite Corporation, The. Arrangement for mounting semi-conductive device to heat sinks. 3,777,238, Cl. 317-234.00r.
Rachels, Julian A., Jr.: *See—*
Mausner, Marvin; and Rachels, Julian A., Jr., 3,776,861.
Radabaugh, Gary L.: *See—*
Chambers, Bruce B.; and Radabaugh, Gary L., 3,775,915.
Rager, Charles E. Buoy mooring device. 3,775,787, Cl. 9-8.00r.
Rahenkamp, Robert A.: *See—*
Kolpek, Robert A.; Rahenkamp, Robert A.; and Stewart, William R., Jr., 3,777,072.
Rai, Charanjit, to Cities Service Oil Company. Reforming catalyst. 3,776,860, Cl. 252-455.00r.
Rajonha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, to Elitex, Zavody textilniho strojirenstvi Generalni reditelstvi. Device for separating fibrous material for use with textile machines. 3,775,956, Cl. 57-58.910.
Raney, William E.; and Siebert, Milan J. Device for pushing and pulling implements, including cables, into and from conduits and the like. 3,776,179, Cl. 118-8.000.
Ransburg Electro-Coating Corporation: *See—*
Miller, Emery P., 3,776,181.
Probst, Richard O., 3,776,187.
Ranz, Erwin: *See—*
Matejec, Reinhart; Meyer, Rudolf; Moll, Franz; Ranz, Erwin; and Weyde, Edith, 3,776,730.
Rapkin, Edward; and Thomas, Edward W., to Intertechnique S.A. Gamma spectrometry system for sample analysis. 3,777,144, Cl. 250-366.000.
Rarey, Kenneth W.; and Kennedy, John B., Jr., to Continental Can Company, Inc. Falling developer curtain printing and coating. 3,776,132, Cl. 101-129.000.
Ratcliffe, Elsie: *See—*
Ratcliffe, Harry; and Ratcliffe, Elsie, 3,776,235.
Ratcliffe, Harry; and Ratcliffe, Elsie. Portable female urinal. 3,776,235, Cl. 128-295.000.
Rathmell, Richard K. Ski boot with latchable articulated leg holder. 3,775,872, Cl. 36-2.5al.
Ratts, Kenneth Wayne, to Monsanto Company. S-Dichloromethyl oxyphosphorus thioates. 3,776,984, Cl. 260-943.000.
Rau, Karlheinz: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, 3,776,809.
Rawlins, Charles B., to Aluminum Company of America. Spacer damper. 3,777,047, Cl. 174-42.000.
Ray, William E. Polyurethane foam insert for overexpanded rocket engine nozzles to prevent start transient sideloads. 3,776,466, Cl. 239-265.150.
Ray-Chaudhuri, Dilip K.: *See—*
Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 3,776,983.
Raymond, Jan W.; and Taketani, Hideo, to United States of America, Atomic Energy Commission. Hydriding process. 3,776,855, Cl. 252-301.10r.
Raypak, Inc., mesne: *See—*
Grimme, Henry L., Jr., 3,776,842.
Raytheon Company: *See—*
Hapgood, William H.; and Di Nuzzi, Robert D., 3,776,148.
Teich, Wesley W.; and Hapgood, William H., 3,776,149.
Razdan, Raj Kumar: *See—*
Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, 3,777,028.
RCA Corporation: *See—*
Auerbach, Victor, 3,776,304.
Davidson, Edmund Benjamin, 3,776,736.
McDonie, Arthur Frederick; Faulkner, Richard Dale; and Rhoads, James Lee, 3,777,209.
Spalding, Richard Le Roy, 3,777,210.
Williams, Richard, 3,776,634.
Recording Designs Limited: *See—*
Barnes, Anthony Michael Preston, 3,777,246.
Redland Tiles Limited: *See—*
Matthews, Douglas Frederick, 3,776,075.
Reece, Albert Benjamin John: *See—*
Preston, Thomas William; and Reece, Albert Benjamin John, 3,777,197.
Reed, Clifton G. Instrument mount. 3,776,496, Cl. 248-182.000.
Reed, David Arthur, to Imperial Chemical Industries Limited. Clip applicator. 3,775,826, Cl. 29-212.00d.
Reed, Robert E.: *See—*
Maciula, Andrew; Tiederman, William G.; and Reed, Robert E., 3,776,385.
Reed, Robert G.: *See—*
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., 3,776,542.
Rees, James D., to Xerox Corporation. Illumination system. 3,777,135, Cl. 240-41.35r.
Refice, Alfred F.: *See—*
Schaefer, Edward J.; and Refice, Alfred F., 3,777,194.
Regie National des Usines Renault: *See—*
Dupont, Michel; Lacroix, Henri; and Lagardes, Jacques, 3,775,947.
Regie Nationale des Usines Renault: *See—*
Piret, Jean, 3,776,066.
Rehm, Frederick H.: *See—*
Stevenson, Elbert H., 3,776,795.
Reich, Andreas: *See—*
Houpert, Bernd; and Reich, Andreas, 3,776,777.
Reidy, Regina. Sewing aid device for, and method of, setting a sleeve in the armhole of a bodice. 3,776,436, Cl. 223-1.000.
Reifenhaeuser, Toni; and Maus, Helmut, to Reifenhaeuser, Toni. Cutting apparatus. 3,776,080, Cl. 83-262.000.
Reifenhaeuser, Toni: *See—*
Reifenhaeuser, Toni; and Maus, Helmut, 3,776,080.
Reinert, Charles P.; and Tutt, Samuel F., to Winona Research, Inc. Biological product and process for treating and restoring honeycombs infected with bacillus larvae (American Foulbrood disease). 3,775,786, Cl. 6-12.00r.
Reinis, Gedeminas J.: *See—*
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,776,721.
Reiter, Eugene A.: *See—*
Clark, Kenneth G.; De Pass, Ernest T.; Manfredonia, Abraham J.; and Reiter, Eugene A., 3,776,109.
Reitter, George M., to Eastman Kodak Company. Receptacle for a roll, reel or cassette of photographic film. 3,776,483, Cl. 242-71.001.
Remane, Peter. Containers with valve filled with a fluid under pressure. 3,776,427, Cl. 222-394.000.
Remers, William Alan; and Weiss, Martin Joseph, to American Cyanamid Company. 2-Nitro-4-oxo-4,5,6,7,-tetrahydroindole. 3,776,923, Cl. 260-326.160.

Ren, Mann: *See—*
Shichman, Daniel; Miller, Henry F.; and Ren, Mann, 3,776,054.
RENA Buromaschinenfabrik GmbH and Co., Firma: *See—*
Moser, Erich, 3,776,340.
Renker, Heinz, to Siemens Aktiengesellschaft. Method of producing insulated semiconductors regions. 3,776,788, Cl. 156-17.000.
Renner, Darwin S.: *See—*
Groce, Larry A.; and Renner, Darwin S., 3,777,217.
Research and Development Laboratories of Ohno Co., Ltd.: *See—*
Ohno, Genjt; and Inoue, Eiichi, 3,776,630.
Research Corporation: *See—*
Story, Paul H., 3,776,926.
Resil Processes Limited: *See—*
Boden, Donald; and Young, Leslie, 3,776,503.
Reuter, Brian R., to Consolidated Engineering Company. Self-purging, pneumatic conveying apparatus including fluid flow pumps on scales, with agitator, vacuum filled, with material dryer, and of varied means of sequential value operation. 3,776,599, Cl. 30-3.000.
Reynolds, David L.: *See—*
Youngblood, Douglas J.; and Reynolds, David L., 3,776,838.
Reynolds, R. J., Tobacco Company: *See—*
Smith, Jag G., Jr.; Michal, David H.; Cartee, Thomas E.; and Rothrock, Burton J., 3,775,810.
Reynolds, Richard W. Backup tape for narrow gap welding. 3,777,114, Cl. 219-160.000.
Reznitsky, Alexandr Mikhailovich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.
Rheinmetall G.m.b.H.: *See—*
Sabranski, Udo; Weber, Theodor; and Werner, Wolfram, 3,776,165.
Rhoads, James Lee: *See—*
McDonie, Arthur Frederick; Faulkner, Richard Dale; and Rhoads, James Lee, 3,777,209.
Riat, Henri: *See—*
Hegar, Gert; and Riat, Henri, 3,776,918.
Ribich, Thomas A., to Weldon Tool Company, The. Rotating cutting tool. 3,775,819, Cl. 29-103.00a.
Rice, Arthur A. Stethoscope headset. 3,776,362, Cl. 181-24.000.
Rice, Charles A.; and Foust, Michael L., to R. F. Inc., mesne. Inflatable aquatic rescue board and method of rescue. 3,775,782, Cl. 5-82.000.
Rice, Harold B., to Burton, John, Machine Corporation. Method and apparatus for removing screw caps from containers. 3,775,829, Cl. 29-426.000.
Rich, Edward L. Paint spray mask locating assembly. 3,776,180, Cl. 118-301.000.
Richards, Dennis Maunder, to English Clays Lovering Pochin & Company, Limited. Method of preparing surfacing composition for roads airfield runway and the like. 3,776,748, Cl. 106-280.000.
Richards, John F., to Fluid Kinetics Corporation. Fluid blow-off silencer. 3,776,365, Cl. 181-50.000.
Richards, William E., to United States of America, Navy. Metal vapor laser tube. 3,777,282, Cl. 331-94.500.
Richardson Ink Co.: *See—*
Perry, Harold W.; and Swinford, Martin E., 3,776,867.
Richco Plastic Company: *See—*
Fegen, James F., 3,777,052.
Richey, John M.: *See—*
Stenger, Richard E.; and Richey, John M., 3,775,975.
Richmond Graphic Systems, Inc.: *See—*
Slingsby, Thomas W.; Neville, Hugh C.; and Heise, Karl A., 3,776,119.
Richter, Alfred G., Jr., to Lockheed Aircraft Corporation. Accessory for a right angle drill tool. 3,776,319, Cl. 173-36.000.
Richter, Paul D.; Janchus, Robert M.; and Shen, Shih C., to Envirotech Corporation. Apparatus for rotary filters. 3,776,386, Cl. 210-398.000.
Ricoh Co., Ltd.: *See—*
Kobayashi, Yugoro, 3,776,117.
Ridley, Kenneth Arthur, to Ilford Limited. Steering device for travelling web. 3,776,442, Cl. 226-198.000.
Rieber & Son Plastic-Industri A/S: *See—*
Parmann, Gunnar, 3,776,682.
Riedo, Otto. Equipment on the human body for giving signals, especially in connection with alarm systems. 3,777,086, Cl. 200-52.00n.
Riegel, Herbert; Schindler, Harvey P.; Sze, Margan C.; and Brooks, Maurice E., to Lummus Company, The. Dehydrogenation process. 3,776,967, Cl. 260-666.00a.
Rieger, Helmuth: *See—*
Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, 3,776,562.
Riehen, Jakob Nuesch: *See—*
Treichler, Hans-Joerg; and Riehen, Jakob Nuesch, 3,776,815.
Riemerschmid, Fritz, to Motoren- und Turbinen-Union Munchen GmbH. Means for actuating a multiple tube jet defector device. 3,776,467, Cl. 239-265.350.
Riester, Oskar: *See—*
Ohschlager, Hans; and Riester, Oskar, 3,776,738.
Rietras, Richard E.: *See—*
Bruno, Juan F.; and Rietras, Richard E., 3,775,781.
Rigdon, Lester P.: *See—*
Crawford, Richard W.; Rigdon, Lester P.; and Thompson, Richard J., 3,776,697.
Riggs & Lombard, Inc.: *See—*
Wilcox, Harold R., 3,776,252.
Riley, Jack C., 50% to Taft, Russell E. and Taft, Andrey D. Apparatus for effecting chemical treatment of a liquid flowing through a pipe. 3,776,274, Cl. 137-599.000.
Riley, John R. Material spreader system with hydraulic drive and speed control means. 3,776,431, Cl. 222-178.000.
Rinaldi, Joseph A.: *See—*
Fulton, James P.; and Rinaldi, Joseph A., 3,775,919.
Riso, Vladimir: *See—*
Croisier, Alain; Esteban, Daniel J.; Levilion, Marc E.; and Riso, Vladimir, 3,777,130.
Ritter, John A.: *See—*
Molloy, Robert E.; and Ritter, John A., 3,776,142.
Ritzerfeld, Gerhard. Moistening apparatus and method for duplicator sheets. 3,776,133, Cl. 101-147.000.
Robbins, John D.; and Wanner, Louis R., to GTE Sylvania Incorporated. Tri-color cathode ray tube employing a shadow mask having elongated apertures. 3,777,204, Cl. 313-85.00s.
Roberts, Cecil P., to Anchor Hocking Corporation. Roller sealing means for sealing containers with closure caps. 3,775,944, Cl. 53-334.000.
Roberts, Timothy, Jr. Stool specimen test kit. 3,775,777, Cl. 4-1.000.
Robins, A. H., Company: *See—*
Chen, Ying-Ho; and Lunsford, Carl Dalton, 3,777,031.
Robinson, Thomas C.: *See—*
Hill, J. Donald; and Robinson, Thomas C., 3,776,237.
Rochelle, William R.; and Smith, Leif H., to Brown & Root, Inc. Method and apparatus for laying a submergible elongate structure. 3,775,987, Cl. 61-72.300.
Rock-Ola Manufacturing Corporation: *See—*
Bookout, Floyd V., 3,776,418.
Rockwell International Corporation: *See—*
Blake, Donald L., 3,776,486.
Gage, Arthur F.; and Stamm, Alex F., 3,776,446.
Hardy, Walter H.; and Gray, Kenneth W., 3,777,270.
Volpe, Richard L., 3,776,281.
Rockwell International Corporation, mesne: *See—*
Anastasio, Frank J.; Brundage, Clinton F.; and Strakosch, Clarence P., 3,776,404.
Roedel, Paul. Patty-former. 3,775,809, Cl. 17-32.000.
Roeschlein, Eugene R.: *See—*
Northcutt, Marvin J.; and Roeschlein, Eugene R., 3,776,641.
Rogers, Edward F.: *See—*
Peterson, Louis H.; and Rogers, Edward F., 3,776,943.
Rogers, Meyric K.: *See—*
Waters, Robert S.; Doyle, Edward J.; Rogers, Meyric K.; and Bartram, Nail C., 3,775,861.
Rogers, Robert Kenneth. Apparatus for dyeing and/or washing fabric. 3,776,005, Cl. 68-5.00c.
Rohdin, Howard A., to Packaging Industries Inc. Free-standing blister package. 3,776,375, Cl. 206-45.340.
Rohm & Haas Company: *See—*
Kelley, Louis E., 3,776,810.
Rohm and Haas Company: *See—*
Miller, George A.; and Greenfield, Stanley A., 3,776,942.
Rohm, Gunter Horst. Hand gun for signaling or warning purposes. 3,775,888, Cl. 42-58.000.
Rohr, Otto: *See—*
Martin, Henry; Janiak, Stefan; Pissiotas, Gerog; and Rohr, Otto, 3,776,904.
Martin, Henry; Dittrich, Volker; Pissiotas, Georg; and Rohr, Otto, 3,777,024.
Rokujyo, Masaharu: *See—*
Arikawa, Masayasu; Oishi, Minoru; Rokujyo, Masaharu; and Ishihashi, Tatuyuke, 3,777,113.
Rolamite, Incorporated: *See—*
Erbert, Virgil; 3,777,264.
Rolle, Albert L., to United States of America, Navy. Acoustic lens. 3,776,361, Cl. 18-.50a.
Roller Bearing Company of America: *See—*
Buzogany, Alexander S., 3,776,653.
Rolls-Royce (1971) Limited: *See—*
Ballard, Norman Edmund, 3,776,747.
Rongone, Francis C.: *See—*
Hofelt, Clarence, Jr.; and Rongone, Francis C., 3,775,854.
Ronner, Fritz: *See—*
Sutter, Fritz; and Ronner, Fritz, 3,776,529.
Roodvoets, Roger J.; and Nielsen, Edward G., to Laser Alignment, Inc. Method for installing ceilings. 3,775,929, Cl. 52-747.000.
Rooks, Gerald T., to Circuit Equipment Corporation. Beveling machine and method. 3,776,097, Cl. 90-16.000.
Rosaen, Nils O. Flow indicator device with sealing means. 3,776,037, Cl. 73-228.000.
Rosby, Sven-Olof: *See—*
Olbrant, Goran; Citron, Bengt; Rosby, Sven-Olof; and Sandblad, Krister, 3,775,806.
Rose, Jack B., to Rowin, Incorporated. Steering wheel control device. 3,776,064, Cl. 74-557.000.
Rosenberg, Harry: *See—*
Behrens, Volker; Weirich, Walter; and Rosenberg, Harry, 3,776,098.

Ross, Irving D., Jr., to Youngstown Steel Door Company, The. Sealing cam interlock. 3,776,581, Cl. 292-39.000.
Ross, Richard T., to Scott Paper Company. Method and apparatus for applying small amounts of liquid substance to a web. 3,776,763, Cl. 117-105.300.
Ross, Stephen T.; and Zirkle, Charles, to Smithkline Corporation. Anorectic compositions comprising N-pyridylalkyl -β-alkoxy-β-trifluoromethylphenalkylamines. 3,777,027, Cl. 424-263.000.
Ross, Thurston H., Jr.: *See—*
Gould, Edson B., III, 3,776,040.
Rossmann, Christian: *See—*
Fluchter, Horst; and Rossmann, Christian, 3,776,852.
Roth, Edward. Three wheeled motor vehicle. 3,776,353, Cl. 180-27.000.
Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an N-4-substituted aminoarylsulfonamide intumescent agent. 3,776,765, Cl. 117-136.000.
Rothenbuhler Engineering Company: *See—*
Rothenbuhler, Howard E.; Melder, Robert C.; and Cotter, John Lawrence, 3,776,047.
Rothenbuhler, Howard E.; Melder, Robert C.; and Cotter, John Lawrence, to Rothenbuhler Engineering Company. Means for oscillating one of a pair of relatively rotatable members. 3,776,047, Cl. 74-70.000.
Rothmans of Pall Mall Canada Limited: *See—*
Jamieson, Patrick J., 3,777,121.
Rothrock, Burton J.: *See—*
Smith, Jag G., Jr.; Michal, David H.; Cartee, Thomas E.; and Rothrock, Burton J., 3,775,810.
Roura Iron Works, Inc.: *See—*
Quinn, Lawrence R.; and Bielenberg, Max J., 3,776,016.
Roussel-UCLAF: *See—*
Gasc, Jean-Claude; and Pierdet, Andre, 3,776,902.
Rowan, Robert L. Simulator for teaching suturing techniques. 3,775,865, Cl. 35-17.000.
Rowe, Wilson S., to United States Steel Corporation. Method of processing stainless steel strips or sheets. 3,776,784, Cl. 148-12.000.
Rowin, Incorporated: *See—*
Rose, Jack B., 3,776,064.
Rowland, Stanley P.: *See—*
Franklin, William E.; and Rowland, Stanley P., 3,776,692.
Roy, Prodyot; and Young, Robert S., to United States of America, Atomic Energy Commission. Device for measuring oxygen activity in liquid sodium. 3,776,831, Cl. 204-195.00s.
Royer, Clady J. Earth excavating apparatus. 3,776,317, Cl. 172-777.000.
Royka, Stephen F.; and Weiler, Ernest A., to Xerox Corporation. Liquid transfer electrophotographic development process. 3,776,723, Cl. 96-1.0ly.
Ruckluft Patent AG, mesne: *See—*
Murphy, Edmund, 3,775,993.
Ruddick, Maurice, to Burnett & Rolfe, Limited. Beer kegs and like containers. 3,776,260, Cl. 137-321.000.
Rumble, Robert C.: *See—*
Hoyer, Wilmer A.; Rumble, Robert C.; Britton, Donald H.; and Ball, John D., 3,777,147.
Rundell, Clark A.; and McDaniel, Carl V., to Grace, W. R., & Co. Process for preparing zeolitic bodies having high strength characteristics. 3,777,006, Cl. 423-118.000.
Runge, Heinz, to Krafter Corporation. Method and apparatus for preparing cheese cuts. 3,776,073, Cl. 83-47.000.
Ruof, Edgar J., to Goodyear Tire & Rubber Company, The. Electrically controlled braking system. 3,776,605, Cl. 303-21.00a.
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, to Akzo N.V. Process for the production of thiphosgene. 3,776,954, Cl. 260-543.000.
Rusco Industries, Inc.: *See—*
Miller, Richard A., 3,775,783.
Ruscoe, W. J., Company: *See—*
Christensen, Jens Jude, 3,776,876.
Rushforth, Calvin: *See—*
Tine, Sebastian David; and Rushforth, Calvin, 3,776,200.
Rusk, Gerald R.; and Kock, Robert E., to Freeman Supply Company, The. Guide bushing assembly for flask, patterns, and the like. 3,776,299, Cl. 164-385.000.
Ryan, William J.: *See—*
Peters, Allen; and Ryan, William J., 3,776,498.
Ryason, Porter R., to Chevron Research Company. Method and apparatus for producing radiation. 3,777,208, Cl. 313-231.000.
Rydlewicz, Alexander H.: *See—*
Kulig, Constantine W.; and Rydlewicz, Alexander H., 3,776,342.
Ryffel, Henry H.: *See—*
DeBruyne, Neil A.; and Ryffel, Henry H., 3,776,067.
Ryn, Edwin Van; and Driesenga, Edwin J., to Keeler Brass Company. Method of assembling a drawer pull. 3,775,830, Cl. 29-434.000.
Rys, Tadeusz J., to Square D Company. Safety switch with sealable cover and interlock means for preventing operation of sealing means when cover is fully open. 3,777,084, Cl. 200-50.00a.
Rzyankin, Alexandr Ivanovich: *See—*
Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich, 3,776,833.
Saab-Scania Aktiebolag: *See—*
Gadefelt, Bengt Georg, 3,775,971.
Sabet, Huschang. Exhaust arrangement in a rotary-piston internal combustion engine. 3,776,201, Cl. 123-13.000.
Sabranski, Udo; Weber, Theodor; and Werner, Wolfram, to Rheinmetall G.m.b.H. Device for cutting steel ropes, hawsers, chains, cables and the like under the water surface. 3,776,165, Cl. 114-221.00a.
Saffron, Ronald George, to Hayssen Manufacturing Company, mesne. Extruder movement. 3,776,680, Cl. 425-326.000.
Sagawa, Takao; Hirano, Seiji; Tanuka, Nobuhiko; and Togashi, Kunihiko, to Chugai Saiyaku Kabushiki Kaisha. Macrotetrolide miticide and insecticide. 3,777,023, Cl. 424-200.000.
Saika, Daini: *See—*
Yamane, Izumi; Saika, Daini; and Tomidokoro, Susumu, 3,776,956.
Salem, Hassan Raddy Ardel, to Universal Telewriters (Pty) Limited. Information display device. 3,775,881, Cl. 40-28.00c.
Samuels, Peter B.: *See—*
Wood, Ernest C.; and Samuels, Peter B., 3,775,825.
Sandblad, Krister: *See—*
Olbrant, Goran; Citron, Bengt; Rosby, Sven-Olof; and Sandblad, Krister, 3,775,806.
Sandblom, Henry; and Torok, Vilmos, to Allmanna Svenska Elektriska Aktiebolaget. Control means for grinding machines. 3,776,476, Cl. 241-34.000.
Sanders, Frederick W., to Mead Corporation, The. Non-cockling conductive ink. 3,776,742, Cl. 106-22.000.
Sanderson, Edward. Sheet metal joint. 3,776,652, Cl. 403-282.000.
Sandin, Nels T. Reverse image pantographic apparatus. 3,775,852, Cl. 33-23.00e.
Sandoz-Wander, Inc.: *See—*
Anderson, Paul L., 3,777,026.
Sanford Research Company: *See—*
De Groft, Walter J., 3,776,673.
Sansone, Eugene A., to Singer Company, The. Photoelectric detectors for bobbin of a weaving loom. 3,777,168, Cl. 250-561.000.
Sansui Electric Co., Ltd.: *See—*
Takahashi, Susumu, 3,777,076.
Saslawsky, Sheldon, to Textron, Inc. Blow molding apparatus. 3,776,678, Cl. 425-310.000.
Sasse, Klaus; and Euc, Ludwig, to Bayer Aktiengesellschaft. 2-Acylamino-1,3,4-thiadiazole-(thi)-one (5) compounds and herbicidal compositions. 3,776,919, Cl. 260-306.80d.
Sato, Akira; Ikeda, Tadashi; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; and Takei, Haruo, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,776,739, Cl. 96-137.000.
Sato, Isao: *See—*
Kamogawa, Toshiro; Okino, Yoshihiro; Sato, Isao; and Okuno, Noboru, 3,777,060.
Sauterel, Gerard, to Matisa Materiel Industriel S.A. Method and apparatus for measuring the inclination of a railway track. 3,775,859, Cl. 33-338.000.
Savin Business Machines Corporation: *See—*
Smith, Ian E.; Hastwell, Peter J.; and Vermeulen, Marinus C., 3,776,632.
Sawbie, Hewlett. Accumulating conveyor. 3,776,347, Cl. 198-127.00r.
Say, Donald L., to GTE Sylvania Incorporated. High resolution cathode ray tube shadow-mask. 3,777,202, Cl. 313-85.00s.
Scalf, Charles E.: *See—*
Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., 3,776,608.
Scardiglia, Frank; Dissen, Israel J.; and Hokama, Takeo, to Velsicol Chemical Corporation. Polyesters of methylcylohexendicarboxylic anhydride. 3,776,980, Cl. 260-872.000.
Scarpetti, Julius J.: *See—*
McCann, John J.; and Scarpetti, Julius J., 3,776,725.
Schaar, Charles H., to Colgate-Palmolive Company, mesne. Diaper with thigh-opening closure means. 3,776,232, Cl. 128-287.000.
Schaar, Charles H., to Colgate-Palmolive Company, mesne. Edge contourable diaper. 3,776,233, Cl. 128-287.000.
Schaefer, Edward J.; and Refice, Alfred F., to Franklin Electric Co., Inc. Submersible motor with protective end bells. 3,777,194, Cl. 310-87.000.
Schaff, Alfred: *See—*
Smerz, Otto; Linke, Werner; Schaff, Alfred; and Hess, Peter, 3,776,766.
Schaffner, Carl P.: *See—*
Gordon, Harry W.; and Schaffner, Carl P., 3,777,018.
Schaller, Joseph P.; Jorgensen, E. Chris; and Critelli, Louis J., Jr., to Skill Sports, Inc. Resilient resin foam polyhedron and bat. 3,776,551, Cl. 273-95.00a.
Scheffler, Knut; Muller, Henricus M.; and Cappel, Aldo, to Alkem Alpha-Chemie und-Metallurgie G.m.b.H. Process for the wet chemical combustion of organic material. 3,776,856, Cl. 252-301.10v.
Scheitlin, George E.; and Bentley, David Ray, to Arvin Industries, Inc. Exhaust gas manifold. 3,775,979, Cl. 60-322.000.
Schenck, Leslie M.: *See—*
Nehmsmann, Louis J.; and Schenck, Leslie M., 3,776,985.
Scherenberg, Hans, to Daimler-Benz Aktiengesellschaft. Installation for the prevention of slipping of the drive wheel of motor vehicles. 3,776,355, Cl. 180-77.00r.
Scherg, Gustav; Auer, Norbert; Obereder, Horst; and Stollmayer, Nikolaus, to Vereinigte Osterreichische Eisin- und Stahlwerke Ak-

tiengesellschaft. Arrangement for forcing two abutments apart. 3,776,063, Cl. 74-520.000.

Schering Corporation: *See—*
Mann, Thomas A.; and Villani, Frank J., 3,776,917.

Schiavone, Donald J., to Gould Inc. Elastomeric spacer and/or damper for electrical conductors. 3,777,046, Cl. 174-42.000.

Schick Incorporated: *See—*
Waters, Robert S.; Doyle, Edward J.; Rogers, Meyric K.; and Bartram, Nail C., 3,775,861.

Schieven, Stanley R.: *See—*
Frost, David A.; and Schieven, Stanley R., 3,776,732.

Schindler, Harvey P.: *See—*
Riegel, Herbert; Schindler, Harvey P.; Sze, Margan C.; and Brooks, Maurice E., 3,776,967.

Schindler, Herbert; and Winter, Gerhard. Machine for pre-shaping shoe parts. 3,775,796, Cl. 12-54.300.

Schindler, Walter: *See—*
Blattner, Hans; and Schindler, Walter, 3,777,032.

Schirmer, Olaf W.: *See—*
Carmel, Edwin L.; and Schirmer, Olaf W., 3,776,569.

Schjeldahl, G. T., Company: *See—*
Monahan, Thomas J.; and Adams, Richard C., 3,776,804.

Schlaepfer, Hans: *See—*
Zweidler, Reinhard; Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, 3,776,905.

Schlage, Ernest L., to Schlage Lock Company. Removable cylinder for a lockset. 3,776,008, Cl. 70-368.000.

Schlage Lock Company: *See—*
Schlage, Ernest L., 3,776,008.

Schlatter, Gerald Lance, to International Telephone and Telegraph Corporation. Densitometer components. 3,776,024, Cl. 73-32.000.

Schlegel Manufacturing Company, The: *See—*
Weaver, John L.; and Smoot, Edward H., 3,775,907.

Schlosser, Klaus, to Siemens Aktiengesellschaft. Pressurized gas insulated switching installation. 3,777,083, Cl. 200-48.00r.

Schlueter, David F.; and Morgan, JOhn Edward, to Illinois Tool Works Inc. Container and carrier assembling machine. 3,775,935, Cl. 53-48.000.

Schmackpfeffer, Arno: *See—*
Frosch, Albert; and Schmackpfeffer, Arno, 3,776,633.

Schmid, Julius, Inc.: *See—*
Gordon, Harry W.; and Schaffner, Carl P., 3,777,018.

Schmidt, Henry. Tile setting template. 3,775,856, Cl. 33-180.00r.

Schmiel, Herbert H., to Parker-Hannifin Corporation. Directional control valve. 3,776,273, Cl. 137-596.120.

Schmitt, George P.: *See—*
Levy, M. Frank; and Schmitt, George P., 3,776,729.

Schneble, Edwin: *See—*
Klopfer, Emil; Stelzle, Martin; and Schneble, Edwin, 3,776,327.

Schneider, Gerold: *See—*
Papst, Georg; Wrobel, Gunter; and Schneider, Gerold, 3,777,191.

Schneider, Herbert Anton, to Bell Telephone Laboratories, Incorporated. Minimization and limiting of power dissipation in multivibrators and the like. 3,777,185, Cl. 307-291.000.

Schneider, Wolfgang, to Goodrich, B. F., Company, The. Catalytic isomerization process for the production of 5-ethylidenebicyclo(2.2.1) hept-2-enes. 3,776,966, Cl. 260-666.0py.

Schneiter, Ali: *See—*
Besson, Rene; Schneiter, Ali; and Meister, Rene, 3,775,965.

Schneller, Joseph W., to National Gypsum Company. Laminated gypsum partition. 3,775,920, Cl. 52-241.000.

Scholl, Hans, to Koch Adler AG. Method for producing patch pockets on articles of clothing. 3,776,162, Cl. 112-262.000.

Schornhorst, James R.: *See—*
Knavish, Leonard A.; and Schornhorst, James R., 3,776,710.

Schrack, Frank C.; and Lee, Arthur. Automatic/manual lubrication system for power tools. 3,776,369, Cl. 184-15.00r.

Schreyer, Gerd: *See—*
Kleeman, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,776,948.

Schreyer, Ralph C., to De Pont de Nemours, E. I., and Company. Polyesters from 1,4-dialkyl-1,4-cyclohexane-dicarboxylic acid and organic diols. 3,776,886, Cl. 260-47.00c.

Schrueder, Thomas: *See—*
Choufoer, Johannes H.; Van Kerkvoort, Willem J.; Van der Meij, Pieter H.; and Schrueder, Thomas, 3,776,247.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Dotzauer, Oswald, 3,776,345.

Schuetz, Hans Ulrich: *See—*
Buehler, Arthur; Schuetz, Hans Ulrich; Macuszahl, Dieter; Harris, Melvin; and Guth, Christian, 3,776,767.

Schultz, Richard V., to United States of America, Navy. Directional phase-shifting coupler. 3,777,284, Cl. 333-10.000.

Schumacher, Alfred: *See—*
Artz, Gerd; Schumacher, Alfred; Marzinkewitsch, Rene; Hirschfelder, Horst-Dieter; and Vortkamp, Klaus, 3,776,014.

Schwartz, Robert B., to Fruehauf Corporation. Trailer construction. 3,776,400, Cl. 214-38.0ba.

SCM Corporation: *See—*
Bordenca, Carl, 3,776,714.

Scott & Fetzer Company, The: *See—*
Horrocks, Raymond G., 3,775,847.

Scott Paper Company: *See—*
Mattor, John A., 3,776,888.
Meyer, Robert W.; and Pedrick, John L., 3,776,471.
Ross, Richard T., 3,776,763.
Wald, Stephen A., 3,776,408.

Searle, G. D., & Co.: *See—*
Hummer, Frank E., 3,776,900.

Sears, Roebuck and Co.: *See—*
Carver, William M., Jr., 3,775,812.

Seckerson, Clifford A., to TRW Inc. Fastener. 3,776,092, Cl. 85-5.00r.

Seeburg Corporation of Delaware, The. *See—*
Johnson, Kurt Theodore, 3,776,338.

Segerstad, Carl Gustaf Hard AF. Device in V-belt transmissions. 3,776,053, Cl. 74-230.17e.

Seitz, Joseph A.: *See—*
Henderson, Donald W.; and Henderson, Shirley W., 3,776,574.

Selectivend, Inc., mesne: *See—*
Austin, Forrest L., 3,776,417.

Self Energising Disc Brakes Limited: *See—*
Hope, Frederick John Charles; and Pigney, James Malcolm, 3,776,329.

Selivanov, Gennady Dmitrievich: *See—*
Fedosenko, Igor Grigorievich; Kononenko, Vadim Grigorievich; Morgolenko, Anatoly Sergeevich; and Selivanov, Gennady Dmitrievich, 3,776,020.

Semler, Herbert J. Portable self-contained electrical cardiometric device with three fixed-position nonuniformly spaced input probes. 3,776,228, Cl. 128-2.06r.

Senft, Stephen P.; and Sterling, Vaughn C., to General Electric Company. Flashlamp primer precoating. 3,776,685, Cl. 431-93.000.

Seri, Tsutomu; and Abe, Shinogu, to Matsushita Electric Industrial Co., Ltd. Voltage regulator for DC power source. 3,777,239, Cl. 318-345.000.

Serino, Yoichi: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Ishihara, Ko; Serino, Yoichi; Mitani, Seishu; and Imanishi, Kunizo, 3,776,705.

Serko, Richard A. Raised stop for ski boot of the pivoted ankle cuff type. 3,775,871, Cl. 36-2.5al.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
Gouy, Jean-Claude, 3,776,343.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
Poupin, Raymond, 3,777,166.

Sessler, Carl W.: *See—*
Builder, Carl H.; and Sessler, Carl W., 3,775,977.

Setler, Karl: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, 3,776,809.

Settle, Joseph F., to General Electric Company. Fail-safe liquid pumping and flow control system. 3,776,439, Cl. 266-38.000.

Sevcik, Zdenek; and Jankovsky, Josef, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Method of and apparatus for metering and storing weft yarn for intermittent insertion into the shed of shuttleless looms. 3,776,282, Cl. 139-122.000.

Seymour, Samuel L., to PPG Industries, Inc. Controlling the shape of a sheet of glass during cooling. 3,776,708, Cl. 65-114.000.

Shah, Jashwant J., to Bigelow-Sanford, Inc. Composite false-twist yarns, method and apparatus. 3,775,955, Cl. 57-34.0at.

Shakley, Conrad Dale: *See—*
Goffredo, Daniel L.; and Shakley, Conrad Dale, 3,776,800.

Shank, Louis Marcel: *See—*
Gauthier, Joseph Aldege; and Shank, Louis Marcel, 3,775,896.

Sharps Associates: *See—*
Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, 3,777,028.

Shavel, John, Jr.: *See—*
Brown, Richard E.; Cavanagh, Paul; and Shavel, John, Jr., 3,776,944.

Shaw, Clarence W., to McDermott, Ray J., & Co., Inc. Apparatus for laying submarine pipelines. 3,775,985, Cl. 601-72.100.

Shaw, Clifford D. Front axle beam press. 3,776,019, Cl. 72-404.000.

Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich. Magnesium electrolyzer. 3,776,83, Cl. 204-243.00r.

Shekhter, Semen Yakovlevich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.

Sheldon, Robert; and Strauss, Bruce P., to United States of America, Atomic Energy Commission. Method for centering and restraining coils in an electromagnet. 3,775,842, Cl. 29-606.000.

Shell Oil Company: *See—*
Boor, John, Jr., 3,776,862.
Borsboom, Albertus C. H., 3,777,122.
Chant, Peter R., 3,776,702.
Choufoer, Johannes H.; Van Kerkvoort, Willem J.; Van der Meij, Pieter H.; and Schrueder, Thomas, 3,776,247.
Clendenen, Roland L., 3,776,744.
Dautzenberg, Frits M.; and Alkema, Henk J., 3,776,837.
Dautzenberg, Frits M.; Kouwenhoven, Herman W.; and Naber, Jaap E., 3,776,854.

Gautier, Pieter A.; Van der Plas, Franciscus J. F.; and Verbrugge, Pieter A., 3,776,974.
Haskell, Weston W., 3,776,635.
Kolb, Robert H., 3,776,034.
Lacheij, Gerardos E.; and Van Amerongen, Gerrit J., 3,776,872.
Ladeur, Peter, 3,776,839.
McClure, James D.; and Conklin, George W., 3,776,935.
Moravec, Vincent J., Jr.; and Meerbott, William K., 3,776,840.
Pearson, James W.; Price, Gareth G.; and Earps, Hugh B., 3,776,847.
Titus, Paul E., 3,776,248.
Van der Ven, Servaas; and Medema, Dirk, 3,776,895.
Verbrugge, Peter A.; and Heiszwolf, Gerard J., 3,776,975.
Vogel, Charles B., 3,776,032.
Winkler, Hans J. S.; and Neumann, Friedrich E., 3,776,981.

Shemie, Milo: *See—*
Dawson, William F.; and Shemie, Milo, 3,775,928.

Shen, Shih C.: *See—*
Richter, Paul D.; Janchus, Robert M.; and Shen, Shih C., 3,776,386.

Shepard, David. Method for etch resist coating of plated holes in printed circuit boards. 3,776,771, Cl. 117-212.000.

Shepherd, John B. Sign board or poster holder. 3,775,885, Cl. 40-124.100.

Shepherd, Richard, to Decca Limited. Detecting systems. 3,777,167, Cl. 250-560.000.

Sherwin, Amos G.: *See—*
Winans, Dale D.; and Sherwin, Amos G., 3,777,143.

Sherwin-Williams Company, The: *See—*
Bernstein, Irwin B.; and Cooper, Abraham, 3,776,824.
Cunningham, Arthur L.; and Mathai, John, 3,776,868.
Usmani, Athar M., 3,776,724.

Sherwood Medical Industries Inc.: *See—*
Cooley, Denton A., 3,776,239.

Shibatani, Kyoichiro; and Nagata, Shiro, to Kuraray Co., Ltd. Process for the production of propylene oxide polymers. 3,776,863, Cl. 260-2.00a.

Shichman, Daniel; Miller, Henry F.; and Ren, Mann, to Uniroyal, Inc. Power transmission belts. 3,776,054, Cl. 74-233.000.

Shimada, Katsutoshi: *See—*
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,776,946.

Shimamura, Isao: *See—*
Iwano, Harohiko; Hayashi, Katsumi; Iijima, Yoo; and Shimamura, Isao, 3,776,731.

Shimizu, Giichi: *See—*
Shimizu, Giichi; and Takahashi, Teiji (said Takahashi assor. to said), 3,776,567.

Shimizu, Giichi; and Takahashi, Teiji, said Takahashi assor. to said Shimizu, Giichi. Heel piece. 3,776,567, Cl. 280-11.35t.

Shimizu, Noboro; Yoshida, Sadao; Kubota, Kunihiro; Kobayashi, Daizo; and Ohara, Takashi, to Nippon Shokuhai Kogaku Kogyo Co., Ltd. Continuous esterification process. 3,776,947, Cl. 260-486.00r.

Shimoda, Mitsuhiko: *See—*
Miyakawa, Seinan; and Shimoda, Mitsuhiko, 3,776,116.

Shoei Chemical Industries Co., Ltd.: *See—*
Asada, Eiichi; and Nakagome, Minoru, 3,776,772.

Shumaker, Charles Storer, to Wean United, Inc. Coil centering device. 3,776,484, Cl. 242-78.600.

Si Lite, Incorporated: *See—*
Wiley, Robert L., 3,776,504.

Sibthorpe, Anthony M. Vessel having a control fin, for example, a keel or rudder, and mechanism for use therein. 3,776,171, Cl. 114-141.000.

Siebert, Milan J.: *See—*
Raney, William E.; and Siebert, Milan J., 3,776,179.

Sielmakh, Viktor Alexeevich: *See—*
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.

Siemens Aktiengesellschaft: *See—*
Bernt Paul, 3,777,160.
Buchner, Hans-Friedrich, 3,777,193.
Diepers, Heinrich; and Muscheck, Horst, 3,775,840.
Douklias, Nikolaos, 3,776,616.
Kessler, Claus, 3,777,218.
Renker, Heinz, 3,776,788.
Schlosser, Klaus, 3,777,083.

Siemens Aktiengesleeschaft: *See—*
Burtscher, Joachim; Frohmader, Karl Peter; Prost, Alfred; and Voss, Peter, 3,777,229.

Sigma Instruments, Inc.: *See—*
Field John H., 3,777,196.

Sikora, Helga: *See—*
Bauer, Sigrid; Sikora, Helga; and Frass, Hans Werner, 3,776,735.

Silco, Inc.: *See—*
Grassman, Willard F.; and Erich, Malcolm, 3,775,802.

Silva, Frank A., to Amerace Esna Corporation. Shielding tape grounding device for high voltage cables. 3,777,050, Cl. 174-78.000.

Silver, Jack. Gas turbine engine. 3,775,974, Cl. 60-39.340.

Silver Top Manufacturing Company, Inc.: *See—*
Struben, Francis L., 3,775,917.

Silvertz, Christian; and Soltys, Joseph F. Electroless silvering composition and method. 3,776,740, Cl. 106-1.000.

Simko, Aladar O., to Ford Motor Company. Engine constant rate exhaust gas recirculation system. 3,776,207, Cl. 123-119.00a.

Simmons, Carl Edward, to United Aircraft Products, Inc. Heat transfer system. 3,776,305, Cl. 165-107.000.

Simmons, Marion I.: *See—*
Adams, Anthony E.; Yearsley, Gerald A.; Simmons, Marion I.; and Yager, Billy P., 3,776,447.

Simon, Joseph P.: *See—*
Yohn, Melvin G.; and Simon, Joseph P., 3,777,110.

Simon, Martin J., to PPG Industries, Inc. Additive for acrylic lacquers. 3,776,878, Cl. 260-32.200.

Simonovitch, Chaim: *See—*
Just, George E.; and Simonovitch, Chaim, 3,776,940.
Just, George E.; and Simonovitch, Chaim, 3,776,941.

Simpson, Arthur G.: *See—*
Speickhoff, Lester T., 3,777,306.

Simpson, Edgar Alan, to Grace, W. R., & Co. Automotive exhaust conversion catalyst. 3,776,859, Cl. 252-462.000.

Singer Company, The: *See—*
Dobner, Richard G.; and Hebert, Donald G., 3,776,341.
Sansone, Eugene A., 3,777,168.

Singer-Werke G.m.b.H.: *See—*
Papajewski, Reinhold; and Kleinschmidt, Johann O., 3,776,161.

Singhal, Gopal H.; and Turkos, Robert E., to Esso Research and Engineering Company. Thiocarbamic acid ester pesticides. 3,776,936, Cl. 260-455.00a.

Singhal, Gophal H.; and Lesser, Joseph H., to Esso Research and Engineering Company. Hydantoin acyl halides and their use as insecticides. 3,776,921, Cl. 260-309.500.

Sirola, Frank. Tool holder with cutter clamping means. 3,775,818, Cl. 29-96.000.

Sironi, Giuseppe: *See—*
Soverini, Arrigo; Sironi, Giuseppe; and Arezzi, Raffaele, 3,777,013.

Sirota, Julius, to National Starch and Chemical Corporation. Urethane adhesives comprising a blend of a castor oil based isocyanate prepolymer with a terpene phenolic resin. 3,776,869, Cl. 260-24.000.

Skill Sports, Inc.: *See—*
Schaller, Joseph P.; Jorgensen, E. Chris; and Critelli, Louis J., Jr., 3,776,551.

Skinner, Dale D.; Thompson, John H.; and Whittaker, Robert H., to Westinghouse Electric Corporation. Acoustic energy transmission device. 3,777,189, Cl. 310-8.300.

Slemmons, Arthur J. Air foil with vortex generators. 3,776,170, Cl. 114-103.000.

Slingsby, Thomas W.; Neville, Hugh C.; and Heise, Karl A., to Richmond Graphic Systems, Inc. Diffusion transfer printing plate processor. 3,776,119, Cl. 95-89.00a.

Slyvakov, Vladimir Egorovich. Device for cutting braided chemical fibers. 3,776,084, Cl. 83-342.000.

Small, Donald I. Disposable plastic slipper. 3,775,873, Cl. 36-11.500.

Smerz, Otto; Linke, Werner; Schaff, Alfred; and Hess, Peter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for improving the processing properties of polyester filaments and fibres. 3,776,766, Cl. 117-138.80f.

Smiddy, Joseph F., 1/4 to Lorusso, Anthony M. Fiber optic entubator and method of entubation of the trachea through the nasopharynx. 3,776,222, Cl. 128-6.000.

Smidth, F. L., & Co.: *See—*
Hansen, Claus M.; and Norgaard, Ejvind N., 3,776,477.

Smith, A. O., Corporation: *See—*
Eising, John P., 3,776,456.

Smith, Bruce E.: *See—*
Dunkley, James L.; and Smith, Bruce E., 3,776,786.

Smith, Carl A.: *See—*
Visos, Charles D.; Love, John J.; and Smith, Carl A., 3,776,268.

Smith, Charles A., Jr. Neckpiece. 3,775,776, Cl. 2-149.000.

Smith, Charles C.: *See—*
Smith, Victor P.; and Smith, Charles C., 3,776,537.

Smith, Grant N.; and Taylor, Yvonne S., to Dow Chemical Company, The. Dry cleaning composition and process. 3,776,693, Cl. 8-142.000.

Smith, Hoyt L.: *See—*
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., 3,776,542.

Smith, Ian E.; Hastwell, Peter J.; and Vermeulen, Marinus C., to Savin Business Machines Corporation. Cleaning mechanism for photoconductive surfaces. 3,776,632, Cl. 355-15.000.

Smith, Irving. Self-erecting display box. 3,775,884, Cl. 40-124.100.

Smith, Jag G., Jr.; Michal, David H.; Cartee, Thomas E.; and Rothrock, Burton J., to Reynolds, R. J., Tobacco Company. Expandable collar. 3,775,810, Cl. 24-30.50s.

Smith, James A. Stabilized pulse generator with variable output. 3,777,184, Cl. 307-260.000.

Smith, James D. B.: *See—*
Minter, Herbert F.; and Smith, James D. B., 3,776,853.

Smith, Leif H.: *See—*
Rochelle, William R.; and Smith, Leif H., 3,775,987.

Smith, Lewis W., to Purity Packaging Limited. Method of and apparatus for applying caps to containers. 3,775,934, Cl. 53-38.000.

Smith, Robert P.: *See—*
Bass, James H.; and Smith, Robert P., 3,776,266.

Smith, Victor P.; and Smith, Charles C., to Tappan Company, The. Loader for power presses. 3,776,537, Cl. 269-13.000.
Smith, William R., to Cincinnati Milacron Inc. Pallet. 3,776,435, Cl. 222-566.000.
Smithkline Corporation: *See—*
Ross, Stephen T.; and Zirkle, Charles, 3,777,027.
Smoker Products, Inc.: *See—*
Muse, Edward T., 3,776,127.
Smoot, Edward H.: *See—*
Weaver, John L.; and Smoot, Edward H., 3,775,907.
Smrekar, Clarence E.; and Goetter, Erwin H., to Preformed Line Products Co. Appliance for linear bodies. 3,775,811, Cl. 24-122.600.
Smulka, Thomas Gordon, to Gertsch AG. Safety ski binding. 3,776,566, Cl. 280-11.35m.
Snam Progetti S.p.A. L.R.S.R.-Brevetti: *See—*
Corno, Silvio, 3,776,813.
Sobajima, Katsonobu; and Matsuzaki, Kiyoto, to Nissan Motor Company, Limited. Safety arrangement for vehicle body closure structures. 3,776,588, Cl. 296-146.000.
Societa Italiana Resine S.p.A.: *See—*
Ligorati, Ferdinando; Aglietti, Giancarlo; and Nova, Vittorio Emanuele, 3,776,945.
Societe Anonyme Automobiles Citroen: *See—*
Grosseau, Albert, 3,777,088.
Societe Anonyme des Usines Chausson: *See—*
Chartet, Andre, 3,776,015.
Peegat, Alain Edouard, 3,776,082.
Societe Civile d'Etudes de Centrifugation: *See—*
Mola, Michel; Barthelemy, Philippe; Bentz, Gerard; and Galey, Jean, 3,776,295.
Societe Creusot-Loire: *See—*
Daniel, Edmond, 3,776,516.
Societe Nationale Industrielle Aerospatiale: *See—*
Leomand, Gerard C., 3,776,139.
Societe Nouvelle de Roulements: *See—*
Gadet, Raymond, 3,776,335.
Sodeco Societe des Compteurs de Geneve S.A.: *See—*
Wenger, Claude, 3,776,134.
Soltys, Joseph F.: *See—*
Silvertz, Christian; and Soltys, Joseph F., 3,776,740.
Somerville, Richard C., to Globe Rubber Works, Inc. Elastomeric feed roller. 3,775,821, Cl. 29-129.000.
Sonnenfeld, Richard J.: *See—*
Trepka, William J.; and Sonnenfeld, Richard J., 3,776,896.
Soulakis, George; and Whittington, Jimmie L., to Mattel, Inc. Intersection deflector for toy vehicle tracks. 3,775,897, Cl. 46-1.00k.
Soverini, Arrigo; Sironi, Giuseppe; and Arezzi, Raffaele, to Montecatini Edison S.p.A. Process for the preparation of synthetic rutile starting from ilmenite. 3,777,013, Cl. 423-610.000.
Spadini, Paolo. Watch with adjustable time-dependent signal transmission. 3,775,967, Cl. 58-57.500.
Spalding, Richard Le Roy, to RCA Corporation. Electron gun and method of assembly. 3,777,210, Cl. 313-256.000.
Specialized Products, Inc.: *See—*
McKinnon, Richard L., 3,776,512.
Speickhoff, Lester T., 1/2 to Simpson, Arthur G. Vehicle electronic security device. 3,777,306, Cl. 340-64.000.
Spellman, Vernon C., to Optical Coating Laboratory, Inc. Method for evaporating aluminum. 3,776,535, Cl. 266-34.00r.
Sperry Rand Corporation: *See—*
Anderson, Brent F.; Bytheway, Charles W.; and Olson, Don L., 3,777,153.
Armstrong, James B., 3,777,206.
Strenglein, Harry F.; and Kent, David E., 3,777,261.
Spidell, William H.; and Wilson, Billy F., to Dresser Industries, Inc. System for operating an electrical device and a selectively fired perforator utilizing a common transmission channel. 3,776,323, Cl. 175-4.510.
Spires, Billy G.: *See—*
Mayo, Frederick W.; Spires, Billy G.; and Bockelman, William M., 3,776,689.
Spivack, John D., to Ciba-Geigy Corporation. Compositions stabilized with bis-(hindered phenol)-alkylene diphosphonates and phosphono-acetates. 3,776,884, Cl. 260-45.85b.
Spoor, Paul A.: *See—*
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,776,416.
Spra-Con Company, The: *See—*
Harrison, John, 3,776,344.
Spridco, Jack P., to Kochring Company. Hydrostatic transmission. 3,775,980, Cl. 60-462.000.
Spycher, Anthony A.: *See—*
Best, Howard S.; and Spycher, Anthony A., 3,775,909.
Square D Company: *See—*
Rys, Tadeusz J., 3,777,084.
St. Regis Paper Company: *See—*
Goodrich, John J.; and Waxlax, Chester E., 3,776,451.
Stacey, Gilbert Joseph, to Imperial Chemical Industries Limited. 2-Amino-5-oxo-5,6-dihydro-s-triazolo [1,5-c]pyrimidines. 3,776,911, Cl. 260-256.40f.
Stackman, Robert William, to Celanese Corporation. Flame retardant polyester compositions. 3,776,883, Cl. 260-45.75b.
Stahlfeld, Donald L.: *See—*
Ko, Daniel Y. C.; and Stahlfeld, Donald L., 3,776,836.
Staker, Donald D.; Plantholt, Richard H.; and Kriege, David J., to Emery Industries, Inc. Crystal modifier and method for solvent separation of fatty materials. 3,776,928, Cl. 260-404.800.
Stalioraitis, Joseph S.; and Wilhelmy, Charles S., to Akzona Incorporated. Preparation of amine oxides in non-polar solvent systems. 3,776,959, Cl. 260-583.00d.
Stamm, Alex F.: *See—*
Gage, Arthur F.; and Stamm, Alex F., 3,776,446.
Stamps, Otis C.; and Neikirk, David W., to Inject-O-Meter Manufacturing Co., Inc. Animal feeding apparatus. 3,776,192, Cl. 119-51.110.
Standard Mirror Company, Inc.: *See—*
Perison, Ronald C., Sr., 3,776,618.
Standard Oil Company: *See—*
Neil, Peter C., 3,776,681.
Standard Products Company, The: *See—*
Body, Alfred C., 3,775,978.
Nichols, George E., 3,776,598.
Standard Register Company, The: *See—*
Paulson, William T.; and Davidson, David M., 3,776,755.
Stang Hydronics Inc.: *See—*
Walls, John H., 3,775,912.
Stanley Aviation Corporation: *See—*
Gale, Edwin J., 3,776,579.
Stanley, Lester N.; and Farris, Russell E., Jr., to GAF Corporation. Azo dyestuffs containing as the terminal coupling component a pyrrolidonoaniline. 3,776,898, Cl. 260-156.000.
Stanley, William L.: *See—*
Jurd, Leonard; King, Alfred Douglas, Jr.; and Stanley, William L., 3,777,037.
Stanley Works, The: *See—*
Johnson, Edward J., 3,775,846.
Stanyer, William R.: *See—*
Junes, Norman E.; and Stanyer, William R., 3,776,390.
Starke, Richard A. Water purification. 3,776,524, Cl. 259-4.000.
Starr, Carrol Dean; and Wang, Teh Po, to Driver, Wilbur B., Co. Thermocouple with nickel-silicon-magnesium alloy negative element. 3,776,781, Cl. 136-239.000.
Stauffer Chemical Company: *See—*
Getson, John Charles, 3,776,875.
Lerner, Robert Wendell; Hayati, Hossein; and Flasch, John Robert, 3,776,881.
Teach, Eugene G.; and Menn, Julius J., 3,777,035.
Stauffer Chemical Company, mesne: *See—*
Chadha, Rajendra Nath, 3,776,977.
Stauffer, Norman L., to Honeywell Inc. Frequency responsive focus detecting apparatus. 3,776,639, Cl. 356-126.000.
Steinberg, Morris: *See—*
Steinberg, Morris; and Libow, Mitchell (said Libow assor. to said), 3,776,079.
Steinberg, Morris; and Libow, Mitchell, said Libow assor. to said Steinberg, Morris. Guillotine chopper arrangement. 3,776,079, Cl. 83-225.000.
Steinerecher, Lester: *See—*
Hall, Wilbur S.; and Steinerecher, Lester, 3,776,848.
Steinhards, Arnolds: *See—*
Lemin, Alan J.; Steinhards, Arnolds; and Swank, George, 3,776,716.
Steinmaier, Walter: *See—*
LeCan, Claude Jan Principe Frederic; and Steinmaier, Walter, 3,777,230.
Steitz, William Richards: *See—*
Gell, Philip Anthony Maunsell; Merritt, Frederick Maynard; and Steitz, William Richards, 3,777,040.
Stelzle, Martin: *See—*
Klopfer, Emil; Stelzle, Martin; and Schneble, Edwin, 3,776,327.
Stempel, D., AG: *See—*
Baghuis, Ludovicus Hendrikus, 3,776,791.
Stenger, Richard E.; and Richey, John M., to General Electric Company. Fuel distribution system. 3,775,975, Cl. 60-39.320.
Stephenson, Donald K.: *See—*
Betts, E. Douglas; Hanson, Donald K.; and Stephenson, Donald K., 3,776,366.
Sterling, Vaughn C.: *See—*
Senft, Stephen P.; and Sterling, Vaughn C., 3,776,685.
Sterns, Ronald Jay; and Sutter, Francis Anthony. Electromechanical relay. 3,777,093, Cl. 200-181.000.
Stevenson, Elbert H., 50% interest to Rehm, Frederick H. Method of joining the ends of multi-layer printing forms. 3,776,795, Cl. 156-157.000.
Stewart, John Kenneth, to Camon Inc. Self-propelled tie destroying machine. 3,776,153, Cl. 110-10.000.
Stewart, William R., Jr.: *See—*
Kolpek, Robert A.; Rahenkamp, Robert A.; and Stewart, William R., Jr., 3,777,072.
Stibbe, Paul H.: *See—*
Frost, John W.; and Stibbe, Paul H., 3,776,440.
Stickdorn, Helmut Oskar: *See—*
De Jongh, Rudi Theodoor; and Stickdorn, Helmut Oskar, 3,776,330.
Stidham, James Richard; and Thelemaque, Louis Emanuel, to Bell Telephone Laboratories, Incorporated. Operator positions having both dedicated and shared loop facilities. 3,777,058, Cl. 179-27.000.
Stigmark, Lennart: *See—*
Gulich, Tore; and Stigmark, Lennart, 3,777,304.

Stiltner, Marshall A. Valve seal. 3,776,276, Cl. 137-625.180.
Stoffels, Carl A., to Judelshon Industries, Inc. Roll slitting machine with air-support roll. 3,776,070, Cl. 82-52.000.
Stolle Corporation, The: *See—*
Stolle, Ralph J., 3,776,182.
Stolle, Ralph J., to Stolle Corporation, The. Can treating apparatus. 3,776,182, Cl. 118-62.000.
Stollmayer, Nikolaus: *See—*
Scherg, Gustav; Auer, Norbert; Obereder, Horst; and Stollmayer, Nikolaus, 3,776,063.
Storage Technology Corporation: *See—*
Olmsted, Dennis R., 3,777,074.
Storm, Elmar; Joerg, Hans; and Vogel, Christian, to Ciba-Geigy Corporation. 1-(Alkenylthiocarbonyl)-decahydroquinolines. 3,776,912, Cl. 260-283.00s.
Story, Paul H., to Research Corporation. Method for macrocylic lactones. 3,776,926, Cl. 260-343.000.
Stoutmeyer, Ronald G., to United States of America, Navy. Ultrasonic angle measurement system. 3,777,305, Cl. 340-16.00r.
Strakosch, Clarence P.: *See—*
Anastasio, Frank J.; Brundage, Clinton F.; and Strakosch, Clarence P., 3,776,404.
Strauch, Ernst; and Bleier, Gerhard. Method of providing the cylindrical inner surface of a lens mount with rolls and lens mount provided therewith. 3,776,617, Cl. 350-245.000.
Strauss, Bruce P.: *See—*
Sheldon, Robert; and Strauss, Bruce P., 3,775,842.
Strazik, William F.; and Perry, Eli, to Monsanto Company. Process for the separation of styrene from ethylbenezene. 3,776,970, Cl. 260-669.00a.
Strecker, William V., to Peck & Hale, Inc. Container stowing system. 3,776,169, Cl. 114-72.000.
Strenglein, Harry F.; and Kent, David E., to Sperry Rand Corporation. Apparatus and method for use with sweep rate test measurement equipment. 3,777,261, Cl. 324-73.00r.
Striegler, Hellmut: *See—*
Weitzel, Hans; and Striegler, Hellmut, 3,776,768.
Strimel, Robert S., to Tinius Olsen Testing Machine Co., Inc. Extensometer. 3,776,030, Cl. 73-93.000.
Struben, Francis L., to Silver Top Manufacturing Company, Inc. Suspended skirting for below dwelling. 3,775,917, Cl. 52-169.000.
Struthers Patent Corporation, mesne: *See—*
Ganiaris, Neophytos, 3,775,990.
Stuart, Gerald L.; and Paschal, Forrest A., to Paschal, Forrest, Machinery Company. Brick regrouping apparatus. 3,776,398, Cl. 214-8.50c.
Stubbeman, Robert Frank: *See—*
Zey, Edward Gustave; and Stubbeman, Robert Frank, 3,776,963.
Stumpf, Gunter. Cloth folding machine. 3,776,541, Cl. 270-31.000.
Stumpp, Gerhard, to Bosch, Robert, G.m.b.H. Fuel injection apparatus for spark plug-ignited internal combustion engines. 3,776,208, Cl. 123-119.00r.
Stutz, Rolf: *See—*
Johanson, Donald Lee; and Stutz, Rolf, 3,777,077.
Subsurface Machine and Manufacturing Inc.: *See—*
Winberg, Douglas F., 3,776,595.
Sugita, Kazuhiro: *See—*
Unno, Kunihiko; and Sugita, Kazuhiro, 3,776,065.
Sumitomo Chemical Company, Limited: *See—*
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamanoto, Hisao, 3,776,914.
Summat, Fritz: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, 3,776,809.
Sun Oil Company: *See—*
Bushick, Ronald D.; and Hirschler, Alfred E., 3,776,968.
Superior Electric Company, The: *See—*
May, Sue C., 3,777,245.
Sutphin, Richard A., to Procter & Gamble Company, The. Case loading machine. 3,775,938, Cl. 53-164.000.
Sutter, Francis Anthony: *See—*
Sterns, Ronald Jay; and Sutter, Francis Anthony, 3,777,093.
Sutter, Fritz; and Ronner, Fritz, to Buss Ltd. Process for the dosable conveying of materials and device for carrying out the process. 3,776,529, Cl. 259-185.000.
Suzuki, Minoru: *See—*
Oshita, Tomomi; and Suzuki, Minoru, 3,776,243.
Suzuki, Shigeo, to Nippon Gakki Seizo Kabushiki Kaisha. Foldable percussion musical instrument. 3,776,091, Cl. 84-403.000.
Suzuki, Shigeto: *See—*
Nicksic, Stephen W.; and Suzuki, Shigeto, 3,777,010.
Suzuki, Shigeyoshi; Kobayashi, Norio; and Futaki, Kiyoshi, to Mitsubishi Paper Mills, Ltd. Method of producing offset printing plate. 3,776,728, Cl. 96-29.001.
Suzuki, Toshio; Awano, Koichi; and Ogino, Katsuhisa. Method for modifying the surface of a polyolefin film. 3,777,002, Cl. 264-343.000.
Svensson, Jan Axel. Apparatus for drawing liquid such as blood. 3,776,218, Cl. 128-2.00f.
Swaminathan, Krishnaiyer: *See—*
Dianetti, Joseph C.; and Swaminathan, Krishnaiyer, 3,776,620.
Swank, George: *See—*
Lemin, Alan J.; Steinhards, Arnolds; and Swank, George, 3,776,716.
Swift & Company: *See—*
Mercer, Cecil S.; Beveridge, Archibald D.; and McDowall, Frederick A., 3,775,930.
Swift, Curran S.: *See—*
Magilton, James H.; and Swift, Curran S., 3,776,241.
Swinford, Martin E.: *See—*
Perry, Harold W.; and Swinford, Martin E., 3,776,867.
Sylvania Electric Products, Inc.: *See—*
Anderson, Lester F.; Fink, William C.; and Colville, William T., 3,776,686.
Syria, Ronald L., to Borg-Warner Corporation. Electronic accelerometer system. 3,776,044, Cl. 73-516.0lm.
Szala, Norman M.: *See—*
Cox, John M.; Kunst, Robert J.; and Szala, Norman M., 3,776,143.
Sze, Margan C.: *See—*
Riegel, Herbert; Schindler, Harvey P.; Sze, Margan C.; and Brooks, Maurice E., 3,776,967.
Sze, Morgan C.: *See—*
Gelbein, Abramham P.; Luberoff, Benjamin J.; Sze, Morgan C.; and Whirchead, Richard T., 3,776,949.
Taft, Andrey D.: *See—*
Riley, Jack C., 3,776,274.
Taft, John R. Tissue paper moistening. 3,776,773, Cl. 134-6.000.
Taft, Russell E.: *See—*
Riley, Jack C., 3,776,274.
Taguchi, Nobuo; and Ono, Takehiko, to Tokyo Shibaura Electric Company, Ltd. Positioning control apparatus. 3,777,243, Cl. 318-621.000.
Takagi, Kiyoshi; Kawamura, Susumu; and Fujii, Hiroshi, to Nippon Electric Glass Company, Limited. Method for sealing glass, metal or ceramics with mixture of PbO Glass and β-eucryptite containing glass. 3,776,764, Cl. 117-124.00a.
Takahashi, Susumu, to Sansui Electric Co., Ltd. Multi-directional sound system. 3,777,076, Cl. 179-100.4st.
Takahashi, Teiji: *See—*
Shimizu, Giichi; and Takahashi, Teiji, 3,776,567.
Takami, Yasuji: *See—*
Yamada, Junichi; Terashima, Etuzo; Takami, Yasuji; Fukuda, Kenji; and Nakai, Hiromitu, 3,777,203.
Takayama, Katsuki: *See—*
Ooya, Junichiro; Oomura, Koji; Takayama, Katsuki; and Kazutaka, Kuwana, 3,776,604.
Takebayashi, Yoshiaki: *See—*
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamanoto, Hisao, 3,776,914.
Takeda, Hideo: *See—*
Kato, Hisatoyo; and Takeda, Hideo, 3,776,696.
Takei, Haruo: *See—*
Sato, Akira; Ikeda, Tadashi; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; and Takei, Haruo, 3,776,739.
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Taketani, Hideo: *See—*
Raymond, Jan W.; and Taketani, Hideo, 3,776,855.
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Hendershot, William B., III; Tallent, Michael W.; Wald, David; and Whitlock, Larry K., 3,777,075.
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Sagawa, Takao; Hirano, Seiji; Tanaka, Nobuhiko; and Togashi, Kunihiko, 3,777,023.
Tappan Company, The: *See—*
Smith, Victor P.; and Smith, Charles C., 3,776,537.
Tapper, William R., to Litton Systems, Inc. Door latch assembly for a microwave cooking oven. 3,777,098, Cl. 219-10.550.
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Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, 3,776,717.
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Benson, Gustav E.; and Taylor, Everett W., 3,776,183.
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Smith, Grant N.; and Taylor, Yvonne S., 3,776,693.
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Frost, John W.; and Stibbe, Paul H., 3,776,440.

Tech-Air Corporation: *See—*
Bowen, Mack D., 3,776,039.
Tecna Corporation: *See—*
Hill, J. Donald; and Robinson, Thomas C., 3,776,237.
Tegnelia, Carl R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,777,272.
Teich, Wesley W.; and Hapgood, William H., to Raytheon Company. Incinerator ash disposal system. 3,776,149, Cl. 110-8.00r.
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Baucheron, Alphonse, 3,776,494.
Teledyne, Inc.: *See—*
Nuccel, Albert W., 3,777,106.
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Telewski, Frederick John, to Cutler-Hammer, Inc. Generation of microwave frequency combs with narrow line spacing. 3,777,271, Cl. 328-16.000.
Telex Computer Products, Inc.: *See—*
Henderson, Joseph D., 3,776,487.
Tellier, Jacques C. T., to GAF Corporation. Liquid electrophotographic developers. 3,776,849, Cl. 252-62.500.
Tenchi Kikai Kabushiki Kaisha: *See—*
Kawasaki, Kauru, 3,776,185.
Tenneco Inc.: *See—*
Offer, Robert J., 3,776,384.
Terada, Osamu; Yagi, Hitoshi; and Nakamura, Shizuko, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing steroid dehydrogenase. 3,776,816, Cl. 195-66.00r.
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Yamada, Junichi; Terashima, Etuzo; Takami, Yasuji; Fukuda, Kenji; and Nakai, Hiromitu, 3,777,203.
Terashima, Kenzi: *See—*
Inoue, Touru; and Terashima, Kenzi, 3,776,707.
Tersch, Richard W., to Lear Siegler, Inc. Double die gear rolling machine. 3,776,011, Cl. 72-94.000.
Teter, Michael P., to Corning Glass Works. Veiling glare measurement system and method. 3,776,638, Cl. 356-124.000.
Texaco Inc.: *See—*
Youngblood, Douglas J.; and Reynolds, David L., 3,776,838.
Texas Instruments, Incorporated: *See—*
Adams, Anthony E.; Yearsley, Gerald A.; Simmons, Marion I.; and Yager, Billy P., 3,776,447.
Grenier, Aime J., 3,777,294.
Valant, Gary Michael; and Guffey, Hoyt Randuff, 3,776,703.
Textron, Inc.: *See—*
Chambers, Bruce B.; and Radabaugh, Gary L., 3,775,915.
Johnston, James R.; and Moertel, George B., 3,775,815.
Saslawsky, Sheldon, 3,776,678.
Theissen, Robert J., to Mobil Oil Corporation. Halophenoxy benzoic acid herbicides. 3,776,715, Cl. 71-111.000.
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Stidham, James Richard; and Thelemaque, Louis Emanuel, 3,777,058.
Thiel, Anton: *See—*
Gilles, Martin; and Thiel, Anton, 3,776,094.
Gilles, Martin; and Thiel, Anton, 3,776,571.
Thomas & Betts Corporation: *See—*
Nickerson, Earl F.; and Cole, John M., 3,777,299.
Thomas, David F.: *See—*
Berglund, Harold A.; and Thomas, David F., 3,776,667.
Thomas, Edward W.: *See—*
Rapkin, Edward; and Thomas, Edward W., 3,777,144.
Thomas, Gordon D.; and Gresham, James Tyson, to Kimberly-Clark Corporation. Non-woven roll towel material and method of producing the same. 3,776,797, Cl. 156-220.000.
Thomas, Marion L.: *See—*
Veeneman, John L.; Thomas, Marion L.; and Deveraux, Harry R., 3,776,126.
Thomas, Richard V. Perforated document read head. 3,777,119, Cl. 235-61.11a.
Thompson, Jerome B. Baking process and compositions for its practice. 3,777,038, Cl. 426-19.000.
Thompson, John H.: *See—*
Skinner, Dale D.; Thompson, John H.; and Whittaker, Robert H., 3,777,189.
Thompson, John T.: *See—*
Gillemot, George W.; and Thompson, John T., 3,777,049.
Thompson, Kermit J.: *See—*
Majeau, Henric L.; and Thompson, Kermit J., 3,777,278.
Thompson, Richard J.: *See—*
Crawford, Richard W.; Rigdon, Lester P.; and Thompson, Richard J., 3,776,697.
Thomson, Elihu Craig: *See—*
Bryant, Jack A.; and Thomson, Elihu Craig, 3,777,165.
Thor Power Tool Company: *See—*
Flagge, Andrew, 3,775,911.
Thoreson-McCosh, Inc.: *See—*
McLeod, John H., Jr., 3,776,600.
Thorn, Herbert; and Ieda, Michael, to Ideal Toy Corporation. Toy doll. 3,775,900, Cl. 46-120.000.
Thornton, Bryce G.: *See—*
Menger, Joe L.; and Thornton, Bryce G., 3,777,120.
Thornton-Trump, Walter. High level washing and dusting apparatus for aircraft and the like. 3,775,798, Cl. 15-21.00e.
Thuron Industries, Inc.: *See—*
Kelley, Donald W.; White, James F., Jr.; Winslow, Ronald B.; and Coppock, Charles L., 3,776,877.
Tice, Joseph. Guide rail support. 3,776,350, Cl. 198-204.000.
Tiederman, William G.: *See—*
Maciula, Andrew; Tiederman, William G.; and Reed, Robert E., 3,776,385.
Tigert, Allen R. Set and core construction. 3,776,563, Cl. 280-11.131.
Tinc, Sebastian David; and Rushforth, Calvin, to Watts Regulator Company. Automatic self-testing low-water cut-off. 3,776,200, Cl. 122-504.000.
Tinius Olsen Testing Machine Co., Inc.: *See—*
Strimel, Robert S., 3,776,030.
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Tinnerman, George A. Fastening means for a rotational fastener and method. 3,775,790, Cl. 10-86.00f.
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Titus, Paul E., to Shell Oil Company. Pipeline transportation of waxy products. 3,776,248, Cl. 139-13.000.
Togashi, Kunihiko: *See—*
Sagawa, Takao; Hirano, Seiji; Tanaka, Nobuhiko; and Togashi, Kunihiko, 3,777,023.
Tokico Ltd.: *See—*
Katayama, Masayoshi, 3,776,102.
Tokyo Seimitsu Co., Ltd.: *See—*
Kubo, Kakuzo, 3,775,910.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Makino, Shinichi, 3,777,289.
Muranaka, Tsuneo, 3,777,095.
Ochiai, Tadashi, 3,776,131.
Takemura, Yasuo, 3,777,061.
Tokyo Shibaura Electric Company, Ltd.: *See—*
Taguchi, Nobuo; and Ono, Takehiko, 3,777,243.
Tuzuki, Satoru, 3,777,293.
Toledo Engineering Co., Inc.: *See—*
Gell, Philip Anthony Maunsell; Merritt, Frederick Maynard; and Steitz, William Richards, 3,777,040.
Tomidokoro, Susumu: *See—*
Yamane, Izumi; Saika, Daini; and Tomidokoro, Susumu, 3,776,956.
Tomisiige, Teruki: *See—*
Ishikawa, Yuji; Numata, Mitsuhiro; and Tomisiige, Teruki, 3,775,834.
Tomita, Tamaki; Kusakabe, Takesi; Kurimoto, Mikishi; Isuneo, Iwami; Keniti, Iwami; Nomura, Kenzi; and Yoshikazu, Sano, to Toyoda Machine Works, Limited. Numerically controlled machine tool with automatic tool changing apparatus. 3,775,837, Cl. 29-568.000.
Tomlin, Jerry B.: *See—*
Fowler, James M.; Kemp, Willard E.; and Tomlin, Jerry B., 3,776,506.
Tomlin, Jerry B.; and Helenberg, John, to ACF Industries, Incorporated. Means to rotate spherical plug valve. 3,776,507, Cl. 251-248.000.
Toporcer, Louis H.; and Crossan, Irvin D., to Dow Corning Corporation. Method of preparing amidosilanes. 3,776,933, Cl. 260-448.20c.
Toporcer, Louis H.; and Clark, Joseph N., to Dow Corning Corporation. Methylvinyldi-(-N-methylacetamido) silane. 3,776,934, Cl. 260-448.20n.
Torok, Vilmos: *See—*
Sandblom, Henry; and Torok, Vilmos, 3,776,476.
Torpey, Wilbur N., to Autotrol Corporation. Method and apparatus for the biological treatment of waste water. 3,776,841, Cl. 210-17.000.
Torsun, Imad Shakir: *See—*
Hankins, Harold Charles Arthur; and Torsun, Imad Shakir, 3,777,213.
Total Systems Corporation: *See—*
Galian, John N.; and Karkut, Ernest W. (said Karkut assor. to), 3,777,065.
Toto, Louis R. Vehicular composting machine and method for aerobically decomposing waste materials. 3,776,528, Cl. 259-183.000.
Totty, Kenneth D.: *See—*
Carnes, James D.; Young, Bill M.; and Totty, Kenneth D., 3,776,311.
Tourpac AG: *See—*
Jeney, Peter, 3,775,932.
Toyoda Koki Kabushiki Kaisha: *See—*
Unno, Kunihiko; and Sugita, Kazuhiro, 3,776,065.
Toyoda Machine Works, Limited: *See—*
Tomita, Tamaki; Kusakabe, Takesi; Kurimoto, Mikishi; Isuneo, Iwami; Keniti, Iwami; Nomura, Kenzi; and Yoshikazu, Sano, 3,775,837.
Toyota Jidoshi Kogyo Kabushiki Kaisha: *See—*
Arai, Hiroshi; and Ohta, Jun, 3,776,357.
Trap, Hendrikus Johan Lodewijk, to U.S. Philips Corporation. Glass. 3,776,743, Cl. 106-53.000.
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Trapasso, Louis E.: *See—*
Juelke, Charles V.; and Trapasso, Louis E., 3,776,887.

Traut, Richard T., to Kaiser Aluminum & Chemical Corporation. Molding process for splicing cable and product formed. 3,777,048, Cl. 174-73.00r.
Travis, Allen Edwin, to AMP Incorporated. Electrical contact terminal having closed entry receptacle and connector. 3,777,302, Cl. 339-223.00r.
Treichler, Hans-Joerg; and Richen, Jakob Nuesch, to Ciba-Geigy Corporation. Process for the manufacture of cephalosporin C. 3,776,815, Cl. 195-36.00r.
Trepka, William J.; and Sonnenfeld, Richard J., to Phillips Petroleum Company. Organolithium polymerization initiators. 3,776,896, Cl. 260-94.20m.
Triax Company, The: *See—*
Atwater, Wayne G., 3,776,399.
Tribuno, Robert F.; Foster, Thomas E.; Mineck, David W.; and Hattendorf, Edwin R., to Collins Radio Company. Turn coordination control with dead space and limited washout. 3,777,242, Cl. 318-586.000.
Trigg, Jack Victor Haig, to International Engineering Concessionaires Limited. Tensile member with tension indicator. 3,776,031, Cl. 73-95.000.
Trimbach, Honore: *See—*
Quanquin, Bernard; Trimbach, Honore; and Pierre, Dumont, 3,776,713.
Trine, Joseph, to Elphiac. Frequency multiplying device for induction heating applications. 3,777,100, Cl. 219-10.750.
Triplett, Frank Lewis. Spray applicator. 3,776,226, Cl. 128-172.000.
Triplex Safety Glass Company Limited: *See—*
Melling, Richard; and Pickard John, 3,776,709.
Trubamn, Abraham, to United States of America, Navy. Anti-leakage system for boiler safety valves. 3,776,251, Cl. 137-71.000.
Truhan, Andrew. Controlled environmental apparatus for industry. 3,776,121, Cl. 98-33.00r.
TRW Inc.: *See—*
Kuehn, Donald E.; and Lyon, John Keith, 3,776,444.
Seckerson, Clifford A., 3,776,092.
Updike, Stanley H., 3,776,275.
Tsikulenko, Anatoly Konstantinovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.
Tsipura, Leonid Nikolaevich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.
Tsuchiya, Takuzo, to General Mills, Inc. Variable nozzle. 3,776,470, Cl. 239-534.000.
Tsukamoto, Masahide; and Ohtsuka, Tetsuro, to Matsushita Electric Industrial Co., Ltd. Liquid crystal display device. 3,776,615, Cl. 350-160.0lc.
Tsukanov, Anatoly Andreevich: *See—*
Borkovsky, Gennady Mikhailovich; Drozdov, Alexander Alexandrovich; Kreisburg, Vladimir Markovich; and Tsukanov, Anatoly Andreevich, 3,777,308.
Tsuzuki, Kanemitsu: *See—*
Kihara, Hidetoshi; and Tsuzuki, Kanemitsu, 3,775,957.
Tuetey, Paul, to Les Fabriques d'Assortiments Reunies. Drive mechanism for a watch having a balance motor. 3,775,968, Cl. 58-116.00r.
Tummala, Rad R.: *See—*
Foster, Betty J.; and Tummala, Rad R., 3,775,999.
Turbanti, Luigi: *See—*
Cerbai, Guido; and Turbanti, Luigi, 3,776,908.
Turkos, Robert E.: *See—*
Singhal, Gopal H.; and Turkos, Robert E., 3,776,936.
Turner, Garland L.: *See—*
Lipscomb, Walter Peter; and Turner, Garland L., 3,776,796.
Turner, John S.; and Fremer, William A., to Chrobak, Strickland Inc. Adjustable mounting apparatus for column shoring bracket. 3,776,499, Cl. 248-298.000.
Tutt, Samuel F.: *See—*
Reinert, Charles P.; and Tutt, Samuel F., 3,775,786.
Tuzuki, Satoru, to Tokyo Shibaura Electric Company Ltd. No-fuse circuit breaker. 3,777,293, Cl. 335-176.000.
Tweddle, Thomas Allen: *See—*
Capes, Charles Edward; McIlhinney, Allan Edward; and Tweddle, Thomas Allen, 3,776,601.
Tyler, Charles E.: *See—*
Hammond, Donald L.; and Tyler, Charles E., 3,777,159.
Tyler, William E., III; and Dines, Martin P., to Esso Research and Engineering Company. Ligand complexes of CU(1) salts. 3,776,972, Cl. 260-677.00a.
Uchida, Tohru: *See—*
Kamogawa, Nin-Ichi; Fujii, Haruo; and Uchida, Tohru, 3,777,158.
Uddemann Byggteknik AB: *See—*
Ahlgren, Nils Harald; and Jahr, Odd, 3,776,586.
Udylite Corporation, The: *See—*
Rabut, Eugene W., 3,777,238.
Unger, Paul. Releasing heel retainer. 3,776,564, Cl. 280-11.35t.
Union Camp Corporation: *See—*
Clark, Kenneth G.; De Pass, Ernest T.; Manfredonia, Abraham J.; and Reiter, Eugene A., 3,776,109.
Union Oil Company of California: *See—*
Dvoracek, Louis M., 3,776,835.
Union Special Machine Company: *See—*
Bzostak, Henryk, 3,776,157.
Uniroyal, Inc.: *See—*
Dannals, Leland E., 3,776,874.
Eckert, Charles F.; and Pinkowski, Norman J., 3,776,811.
Shichman, Daniel; Miller, Henry F.; and Ren, Mann, 3,776,054.
Uniroyal Societe Anonyme: *See—*
Leblond, Jean R., 3,776,999.
United Aircraft Corporation: *See—*
Eckbreth, Alan C.; and Mensing, Arthur E., 3,777,279.
Games, John E., 3,777,123.
Hecht, Richard, 3,776,637.
United Aircraft Products, Inc.: *See—*
Simmons, Carl Edward, 3,776,305.
United Company, The: *See—*
Cover, Paul F.; and Kemper, Clyde F., 3,776,527.
United Filtration Corporation: *See—*
Wohnlich, Joseph P., 3,776,661.
United Kingdom Atomic Energy Authority: *See—*
Buck, Raymond Herbert; and Barlow, Harry Campbell, 3,776,769.
Ford, Lionel Houston; Davidge, Roger William; and Evans, Anthony Glyn, 3,776,759.
Lockett, George Edward; and Hosegood, Samuel Brittan, 3,776,814.
United States of America
Agriculture: *See—*
Franklin, William E.; and Rowland, Stanley P., 3,776,692.
Jurd, Leonard; King, Alfred Douglas, Jr.; and Stanley, William L., 3,777,037.
Khan, Amir U., 3,776,242.
Mayer, Mayer, Jr.; and Baril, Albert, Jr., 3,775,814.
McGovern, Terrence P.; Beroza, Morton; and Fiori, Bart J., 3,777,017.
Army: *See—*
Moses, Sidney A., 3,776,138.
Atomic Energy Commission: *See—*
Adler, Laszlo; and Whaley, Hubert L., 3,776,026.
Crawford, Richard W.; Rigdon, Lester P.; and Thompson, Richard J., 3,776,697.
Gordon, Norman R.; and Pedersen, Herbert N., 3,775,816.
Guyer, Raymond H.; and Leebl, Robert G., 3,776,284.
Hill, Marion E.; and Lerom, Michael W., 3,776,958.
Lee, Lap Yen, 3,777,161.
Praeg, Walter F., 3,777,176.
Raymond, Jan W.; and Taketani, Hideo, 3,776,855.
Roy, Prodyot; and Young, Robert S., 3,776,831.
Sheldon, Robert; and Strauss, Bruce P., 3,775,842.
Tinkle, Marvin C., 3,776,988.
Atomic Energy Commission, mesne: *See—*
Katz, Norman H., 3,776,508.
Health, Education, and Welfare: *See—*
Baker, Bernard R.; and Ashton, Wallace T., 3,776,909.
Peterson, John L., 3,776,695.
Interior: *See—*
Leak, Vance G.; and Fine, Morris M., 3,776,718.
National Aeronautics and Space Administration: *See—*
Gee, Shu W., 3,776,455.
Hall, Jesse H.; Gettelman, Clarence C.; Pollack, John L.; Goldman, Gary C.; and Decker, Arthur J., 3,777,200.
Jessup, Artie D., 3,776,432.
Lynch, Edward J.; and Gray, Darwyn T., 3,776,028.
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Holmes, Jack K.; Arl, Christopher; and Tegnelia, Carl R. Digital second-order phase-locked loop. 3,777,272, Cl. 329-104.000.
Navy: *See—*
Abraham, David, 3,777,274.
Allen, Craig R.; and Celto, John E., 3,777,064.
French, Dana, 3,776,058.
Jones, Jerry O.; and Osburn, Michael R., 3,776,140.
Karig, Horace E., 3,775,976.
Klein, Ira, 3,777,276.
Leverance, Robert A.; and Moore, Morrison B., III, 3,776,093.
Matsud, Jon T., 3,776,493.
Naber, Robert H., 3,777,277.
Northcutt, Marvin J.; and Roeschlein, Eugene R., 3,776,641.
Richards, William E., 3,777,282.
Rolle, Albert L., 3,776,361.
Schultz, Richard V., 3,777,284.
Stoutmeyer, Ronald G., 3,777,305.
Trubamn, Abraham, 3,776,251.
United States Steel Corporation: *See—*
Ashworth, Robert H., 3,776,828.
Rowe, Wilson S., 3,776,784.
Universal Fence Inc.: *See—*
Weiland, Edward E., 3,776,523.
Universal Lancaster Corporation: *See—*
Lofink, Joseph P., 3,776,035.
Universal Maschinenfabrik Dr. Rudolf Schieber KG: *See—*

Krause, Erich, 3,776,003.
Universal Oil Products Company: *See—*
Arrington, Thomas B.; and Moody, Leonard A., 3,776,296.
Universal Products Development Corporation: *See—*
Peters, James R., 3,775,904.
Universal Telewriters (Pty) Limited: *See—*
Salem, Hassan Raddy Ardel, 3,775,881.
University of California, The Regents of the: *See—*
Peyman, Gholam A.; and Dodich, Nicholas A., 3,776,238.
University of Survey, The: *See—*
Harrison, Arthur Denwood Richard, 3,776,184.
Unno, Kunihiko; and Sugita, Kazuhiro, to Toyoda Koki Kabushiki Kaisha. Automatic balancing apparatus for a rotating body. 3,776,065, Cl. 74-573.000.
Updegrove, Louis B., to Day, J. H., Company, The. Method and apparatus for drying particulate materials. 3,775,863, Cl. 34-166.000.
Updike, Stanley H., to TRW Inc. Reactor bypass system. 3,776,275, Cl. 137-625.400.
Upjohn Company, The: *See—*
Lemin, Alan J.; Steinhards, Arnolds; and Swank, George, 3,776,716.
Urbanic, Robert F., to Pipe Machinery Company, The. Carbide thread chaser set and method of cutting threads therewith. 3,776,655, Cl. 408-1.000.
U.S. Philips Corporation: *See—*
Davies, Jenkin Eric; and Van Dijk, Jan, 3,777,034.
Kuijpers, Wilhelmus, 3,777,211.
Lathouwers, Franciscus Johannes Maria; and De Groot, Jacob, 3,775,841.
LeCan, Claude Jan Principe Frederic; and Steinmaier, Walter, 3,777,230.
Noteltiers, Victor Rosallic; and Janssen, Eduard Jozef Philomena, 3,777,207.
Trap, Hendrikus Johan Lodewijk, 3,776,743.
Trap, Hendrikus Johan Lodewijk, 3,776,745.
Van Esdonk, Johannes; Jacobs, Jacobus Hubertus; Hornman, Johannes Petrus; and Van de Laar, Wilhelmus Johannes, 3,776,613.
Van Steenbergen, Teunis Willem; and De Waal, Jan Arie Gerrit, 3,777,228.
Vermolen, Johannes Volkert, 3,777,248.
Us, Vasily Ivanovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.
Ushitani, Kenzi: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Ishihara, Ko; Serino, Yoichi; Mitani, Seishu; and Imanishi, Kunizo, 3,776,705.
USM Corporation: *See—*
Annis, Rupert E., Jr.; and Kyritsis, William T., 3,776,989.
Collins, Richard A.; and Martin, John F., 3,775,795.
Morgan, Paul E., 3,776,156.
Newton, Albert E., 3,776,426.
Oefinger, Richard W., 3,776,443.
Usmani, Athar M., to Sherwin-Williams Company, The. Electrophotographic composition of zinc oxide and a resin binder. 3,776,724, Cl. 96-1.800.
Utica Tool Company, Inc.: *See—*
Mugnier, Lucien, 3,776,069.
Vahlstrom, Richard E.; Nutten, Donald C.; Bayne, Dennis R.; and Oster, Stanley, to Northrop Corporation. Pulse amplitude variation detector. 3,777,262, Cl. 324-103.00p.
Valant, Gary Michael; and Guffey, Hoyt Randuff, to Texas Instruments, Incorporated. Method of growing 1-0-0 orientation high perfection single crystal silicon by adjusting a focus coil. 3,776,703, Cl. 23-301.0sp.
Vamos, Gyorgy: *See—*
Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, 3,776,717.
Van Amerongen, Gerrit J.: *See—*
Lacheij, Gerardos E.; and Van Amerongen, Gerrit J., 3,776,872.
Van de Laar, Wilhelmus Johannes: *See—*
Van Esdonk, Johannes; Jacobs, Jacobus Hubertus; Hornman, Johannes Petrus; and Van de Laar, Wilhelmus Johannes, 3,776,613.
Van Der Eloe, Hans; Kully, Herbert; and Affolter, Stephan, to Autophon Aktiengesellschaft. Apparatus for searching for people who are buried or trapped and equipped with the same type of apparatus. 3,777,267, Cl. 325-18.000.
Van der Meij, Pieter H.: *See—*
Choufoer, Johannes H.; Van Kerkvoort, Willem J.; Van der Meij, Pieter H.; and Schrueder, Thomas, 3,776,247.
Van der Plas, Franciscus J. F.: *See—*
Gautier, Pieter A.; Van der Plas, Franciscus J. F.; and Verbrugge, Pieter A., 3,776,974.
Van der Ven, Servaas; and Medema, Dirk, to Shell Oil Company. Production of cycloalkene polymers having improved processability. 3,776,895, Cl. 260-93.100.
Van Dijk, Jan: *See—*
Davies, Jenkin Eric; and Van Dijk, Jan, 3,777,034.
Van Doeren, Richard E., to Donaldson Company, Inc. Noise reduction apparatus and method. 3,776,364, Cl. 181-48.000.
Van Dyk Research Corporation: *See—*
Landrith, James Edward, 3,777,173.
Van Esdonk, Johannes; Jacobs, Jacobus Hubertus; Hornman, Johannes Petrus; and Van de Laar, Wilhelmus Johannes, to U.S. Philips Corporation. Gas-discharge display panel. 3,776,613, Cl. 316-20.000.
van Galen, Piet; and van Nes, Johannes G. Th., Jr., to Pielkenwood-Vinitex N.V. Nursing box for babies or similar purposes. 3,776,217, Cl. 128-1.00b.
Van Gerven, Gerardus Wilhelmus. Apparatus for replacing tubular lamps and the like which are difficult of access. 3,776,584, Cl. 294-21.000.
Van Kerkvoort, Willem J.: *See—*
Choufoer, Johannes H.; Van Kerkvoort, Willem J.; Van der Meij, Pieter H.; and Schrueder, Thomas, 3,776,247.
van Nes, Johannes G. Th., Jr.: *See—*
van Galen, Piet; and van Nes, Johannes G. Th., Jr., 3,776,217.
Van Patten, Eric M.; and Freck, James A., to American Maize-Products Company. High amylose starch additive in leavened pastry doughs. 3,777,039, Cl. 99-92.000.
Van Schoyck, Quentin, to Cylpik Incorporation. Method and apparatus for facilitating the harvesting of fruit from fruit trees. 3,775,954, Cl. 56-329.000.
Van Steenbergen, Teunis Willem; and De Waal, Jan Arie Gerrit, to U.S. Philips Corporation. Schottky junction in a cavity. 3,777,228, Cl. 317-235.00r.
Van Tongelen, Marcel: *See—*
Debus, Henri Robert; Van Tongelen, Marcel; Cahen, Raymond M.; and Daniels, Calvin Lee, 3,776,965.
Varian Associates: *See—*
Pavkovich, John M., 3,777,124.
Vasterling, Paul F., to Hitco. Chain with elastomeric material. 3,775,969, Cl. 59-78.000.
Vater, Wulf: *See—*
Bossert, Friedrich; and Vater, Wulf, 3,777,030.
VCA Corporation: *See—*
Hayes, Thomas A.; and Krause, Theodore R., 3,776,245.
Veeneman, John L.; Thomas, Marion L.; and Deveraux, Harry R., to American Potato Company. Automatic deep fat fryer. 3,776,126, Cl. 99-404.000.
Veilleux, Pierre: *See—*
Booth, Bruce F.; Veilleux, Pierre; and Hall, Richard William, 3,776,378.
Veloso, Alberto E., to International Erfinder- und Patentanstalt. Process for extracting metal plating, scrap or ore in a fused electrolyte cell. 3,777,011, Cl. 423-592.000.
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Velsicol Chemical Corporation: *See—*
Scardiglia, Frank; Dissen, Israel J.; and Hokama, Takeo, 3,776,980.
Veneria, Giovanni Bessolo, to Olivetti, Ing., C., & C., S.p.A. Injection moulding press with means for separating scrap material from the molded articles. 3,776,675, Cl. 425-134.000.
Veneziani, Marco Antonio. Rotary brush. 3,775,800, Cl. 15-28.000.
Venkata, Reddi, to Marosi, Michael N. Aluminum coating. 3,776,783, Cl. 148-6.270.
Vepa AG: *See—*
Fleissner, Heinz, 3,776,004.
Verbrugge, Peter A.; and Heiszwolf, Gerard J., to Shell Oil Company. Disproportionation process. 3,776,975, Cl. 260-683.00d.
Verbrugge, Pieter A.: *See—*
Gautier, Pieter A.; Van der Plas, Franciscus J. F.; and Verbrugge, Pieter A., 3,776,974.
Verburg, Werner: *See—*
Lohmer, Karl; and Verburg, Werner, 3,776,733.
Vereinigte Osterreichische Eisin- und Stahlwerke Aktiengesellschaft: *See—*
Scherg, Gustav; Auer, Norbert; Obereder, Horst; and Stollmayer, Nikolaus, 3,776,063.
Vermeulen, Marinus C.: *See—*
Smith, Ian E.; Hastwell, Peter J.; and Vermeulen, Marinus C., 3,776,632.
Vermolen, Johannes Volkert, to U.S. Philips Corporation. Direct-current converter. 3,777,248, Cl. 321-2.000.
Vermont American Corporation: *See—*
Leonard, Donald L., 3,775,792.
Verwolf, David H.: *See—*
Bisinger, John M.; and Verwolf, David H., 3,775,864.
Victor Company of Japan, Limited: *See—*
Kokubo, Noriyoshi, 3,777,073.
Vierling, Oskar: *See—*
Vierling, Oskar; and Wieland, Hansjurgen (said Wieland assor. to said), 3,777,081.
Vierling, Oskar; and Wieland, Hansjurgen, said Wieland assor. to said Vierling, Oskar. Method for measuring the frequency-dependent attenuation of a telecommunications line, especially a two-wire line. 3,777,081, Cl. 179-175.300.
Villani, Frank J.: *See—*
Mann, Thomas A.; and Villani, Frank J., 3,776,917.

Visos, Charles D.; Love, John J.; and Smith, Carl A., to Emerson Electric Co. Stepped opening fluid pressure operated gas valve. 3,776,268, Cl. 137-495.000.
Vit, Jaroslav, to National Patent Development Corporation. Electrolytic treatment. 3,776,825, Cl. 204-81.000.
Vlnaty, Joseph, to Dravo Corporation. Apparatus for continuous heat processing of ore pellets. 3,776,533, Cl. 266-24.000.
Vogel, Charles B., to Shell Oil Company. Method and apparatus for detecting an inflow of fluid into a well. 3,776,032, Cl. 73-155.000.
Vogel, Christian: *See—*
Storm, Elmar; Joerg, Hans; and Vogel, Christian, 3,776,912.
Vogt, Gerd, to Mannesmann Aktiengesellschaft. Apparatus for controlling the pressure force in multi-roll drives for equipment withdrawing an ingot from a continuous casting machine along a curved path. 3,776,298, Cl. 164-154.000.
Void, Lester R., to Electro-Mechanical Instrument Div., VLN Corporation. Induction ammeter with self induced restoring torque. 3,777,265, Cl. 324-146.000.
Volker, Theodor: *See—*
Nicolet, Rene; Gutmann, Walter; and Volker, Theodor, 3,776,982.
Volker, Theodor; and Hugener, Hanspeter, to Lonza Ltd. Process for the production of polymers containing N-substituted acrylic acid amides and/or methacrylic acid amides. 3,776,976, Cl. 260-78.0ua.
Vollrath Co., The: *See—*
Kohler, Terry J., 3,775,779.
Volpe, Richard L., to Rockwell International Corporation. Weft carrier for shuttleless looms. 3,776,281, Cl. 139-122.00n.
Von Der Pfordten, Hans J. Method and apparatus for determining bacterial growth. 3,776,817, Cl. 195-103.50r.
Voropaev, Alexandr Petrovich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.
Vortkamp, Klaus: *See—*
Artz, Gerd; Schumacher, Alfred; Marzinkewitsch, Rene; Hirschfelder, Horst-Dieter; and Vortkamp, Klaus, 3,776,014.
Voss, Peter: *See—*
Burtscher, Joachim; Frohmader, Karl Peter; Prost, Alfred; and Voss, Peter, 3,777,229.
Vowell, Kennison L.: *See—*
Kazlauskas, Gasparas; and Vowell, Kennison L., 3,777,115.
Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See—*
Sevcik, Zdenek; and Jankovsky, Josef, 3,776,282.
Wachter, Karl-August, to Dragerwerk AG. Safety air supply device. 3,775,949, Cl. 55-312.000.
Wagner Electric Corporation: *See—*
Bueler, Richard C., 3,776,602.
Bueler, Richard C., 3,776,603.
Carlson, Paul A., 3,777,180.
Wagner, Laszlo: *See—*
Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, 3,776,717.
Wailes, Rodney A.; and Ottenstein, Sidney Allan, to M & J Valve Company. Pipeline flow control system and method. 3,776,249, Cl. 137-14.000.
Wald, David: *See—*
Hendershot, William B., III; Tallent, Michael W.; Wald, David; and Whitlock, Larry K., 3,777,075.
Wald, Stephen A., to Scott Paper Company. Nursing unit. 3,776,408, Cl. 215-11.00c.
Waldecker, Donald E. Folding wall shelf. 3,776,389, Cl. 211-90.000.
Waldes Kohinoor, Inc.: *See—*
Coch, Lester, 3,776,186.
Walker Crosweller & Company Limited: *See—*
Arhon, Dennis Charles, 3,776,272.
Walker, Harold L. Pressurized continuous flow liquid applicator with shut-off valve. 3,776,645, Cl. 401-188.000.
Walker, Kurt. Dispenser for a moist flexible sheet material. 3,775,801, Cl. 15-104.930.
Walls, John H., to Stang Hydronics Inc. Horizontal-axis vehicle gate incorporating locking mechanism. 3,775,912, Cl. 49-131.000.
Walter, William H.; and Mesnik, Robert F., to Emhart Corporation. Method and means for detecting foreign particles in liquid filled containers. 3,777,169, Cl. 250-565.000.
Walton-Knight, Bernard Piet: *See—*
Cameron, James Brisbane; and Walton-Knight, Bernard Piet, 3,776,996.
Walzmaschinenfabrik August Schmitz GmbH: *See—*
Berg, Walter; Hancl, Gottfried; and Elster, Heinz, 3,776,012.
Wang, Teh Po: *See—*
Starr, Carrol Dean; and Wang, Teh Po, 3,776,781.
Wanger, Freddy, to Heberlein & Co., AG. Fluid coupling for the transmission of control signals. 3,776,270, Cl. 137-580.000.
Wanner, Louis R.: *See—*
Robbins, John D.; and Wanner, Louis R., 3,777,204.
Warner, Dale J.: *See—*
Jackson, Richard H.; and Warner, Dale J., 3,775,836.
Warner, James. Injection process. 3,776,525, Cl. 259-7.000.
Warner-Lambert Company: *See—*
Brown, Richard E.; Cavanagh, Paul; and Shavel, John, Jr., 3,776,944.
Kuhnl, Leopold K., 3,775,845.
Warren Fastener Corporation: *See—*
Meyer, Engelbert A., 3,775,927.
Waszink, Remco P.; and Purnell, Michael G., to Westinghouse Electric Corporation. Tube and shell heat exchanger. 3,776,302, Cl. 165-82.000.
Watanabe, Nobuatsu; Kusuno, Hideaki; and Ishida, Yutaka, to Nippon Paint Co., Ltd. and Nippon Carbon Co., Ltd. Dry film lubricant consisting of synthetic resin, fluorinated graphite, and solid lubricants such as molybdenum disulfide, graphite, and polytetrfluoroethylene. 3,776,845, Cl. 252-12.000.
Waterous Company: *See—*
Berglund, Harold A.; and Thomas, David F., 3,776,667.
Waters, Robert S.; Doyle, Edward J.; Rogers, Meyric K.; and Bartram, Nail C., to Schick Incorporated. Hair dryer. 3,775,861, Cl. 34-99.000.
Watkins, Ernest R., Jr.; and Browne, David W. Method of forming solid structures from a continuously supplied liquid. 3,776,990, Cl. 264-54.000.
Watson, Donald W.; and Enskat, Albert G., to Xerox, Inc., mesne. Automatic loading apparatus. 3,776,544, Cl. 271-3.000.
Watts, James B., to Precision Plumbing Products, Inc. Priming unit for distributing priming water to multiple sewer line water traps. 3,776,269, Cl. 137-561.00a.
Watts Regulator Company: *See—*
Tinc, Sebastian David; and Rushforth, Calvin, 3,776,200.
Waxlax, Chester E.: *See—*
Goodrich, John J.; and Waxlax, Chester E., 3,776,451.
Wazawa, Kiyoshi: *See—*
Baba, Kosaku; and Wazawa, Kiyoshi, 3,777,273.
Wean United, Inc.: *See—*
Shumaker, Charles Storer, 3,776,484.
Weaver, John L.; and Smoot, Edward H., to Schlegel Manufacturing Company, The. Roof side rail weather seal. 3,775,907, Cl. 49-491.000.
Weaver, Richard L. Apparatus for construction of monolithic silo. 3,776,502, Cl. 249-33.000.
Webb, Edwin Y.: *See—*
Young, Alan M.; and Webb, Edwin Y., 3,776,488.
Weber, Theodor: *See—*
Sabranski, Udo; Weber, Theodor; and Werner, Wolfram, 3,776,165.
Weber-Knapp Company: *See—*
Little, Carl H., 3,775,808.
Weedon, Gene C.: *See—*
Mayer, Richard E.; Birenzvige, Amnon; and Weedon, Gene C., 3,776,806.
Weeks, Smith, to Belmont Boats. High speed boat hull. 3,776,168, Cl. 114-56.000.
Weiberg, Horst: *See—*
Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, 3,776,562.
Weiberg, Otto: *See—*
Kleeman, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,776,948.
Weigert, Wolfgang: *See—*
Kleeman, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,776,948.
Weiland, Edward E., to Universal Fence Inc. Structural tube assembly. 3,776,523, Cl. 256-73.000.
Weiler, Ernest A.: *See—*
Royka, Stephen F.; and Weiler, Ernest A., 3,776,723.
Weinert, Robert S. Portable safety railing. 3,776,521, Cl. 256-24.000.
Weirich, Walter: *See—*
Behrens, Volker; Weirich, Walter; and Rosenberg, Harry, 3,776,098.
Weis, Dieter, to Messerschmitt-Bolkow-Blohm G.m.b.H. Missile with thrust vector and aerodynamic control. 3,776,490, Cl. 244-3.210.
Weiss, Martin. Clamp arm on a single thread sewing machine for holding fabric fasteners. 3,776,154, Cl. 112-114.000.
Weiss, Martin Joseph: *See—*
Remers, William Alan; and Weiss, Martin Joseph, 3,776,923.
Weitzel, Hans; and Striegler, Hellmut, to Bayer Aktiengesellschaft. Strengthened fibre fleeces. 3,776,768, Cl. 117-140.00a.
Weldon Tool Company, The: *See—*
Ribich, Thomas A., 3,775,819.
Welk, Horace B., Jr., to Casco Products Corporation. Fluidic angular displacement sensor. 3,776,043, Cl. 73-490.000.
Welse, Gordon D.: *See—*
Anderson, Loren E.; Adams, Roy L.; and Welse, Gordon D., 3,776,660.
Weman, Per Olof, to Klippan GmbH. Air bag for motor vehicles for the prevention of injuries in collisions. 3,776,570, Cl. 280-150.0ab.
Wen, Lian-Tong; and Beard, Myron Gould. Sonic boom eliminator. 3,776,489, Cl. 244-1.00n.
Wenckus, Joseph F.: *See—*
Menashi, Wilson P.; Wenckus, Joseph F.; and Castonguay, Roger A., 3,777,009.
Wendt, Richard E., Jr. Method of making temperature responsive apparatus. 3,775,843, Cl. 29-612.000.
Wenger, Caleb M.; and Wenger, Lester E. Control specifically for animal buildings. 3,777,241, Cl. 318-480.000.

Wenger, Claude, to Sodeco Societe des Compteurs de Geneve S.A. Apparatus for printing tickets. 3,776,134, Cl. 101-226.000.
Wenger, Lester E.: *See—*
Wenger, Caleb M.; and Wenger, Lester E., 3,777,241.
Wenham, Douglas Lee. Vacuum relief valves. 3,776,264, Cl. 137-469.000.
Wentworth, Robert S., Jr., to Borg-Warner Corporation. Bellows type fluid seal. 3,776,560, Cl. 277-88.000.
Werner, Wolfram: *See—*
Sabranski, Udo; Weber, Theodor; and Werner, Wolfram, 3,776,165.
Wernicke & Co. K.G.: *See—*
Meckler, Helmut; and Barwasser, Hans Gunter, 3,775,908.
Werra, Bruno H., to Ladish Co. Method of manufacturing shrouded gaskets. 3,775,832, Cl. 29-450.000.
Werra, Bruno R.; and Duffy, Patrick J., to Ladish Co. Aseptic sampler fitting. 3,776,042, Cl. 73-421.00b.
Wertheimer, Harry P.; and Peterson, William A., Jr., to Bendix Corporation, The. Fuel injector manifold and mounting arrangement. 3,776,209, Cl. 123-119.00r.
West Laboratories, Inc.: *See—*
Cantor, Abraham; and Winicov, Murray W., 3,777,022.
Western Electric Company, Incorporated: *See—*
Lando, David Jacob, 3,776,770.
Miller, Dennis Brian, 3,776,394.
Westinghouse Air Brake Company: *See—*
France, Jimmie J., 3,776,356.
Gill, Raymond B.; and McMahon, Floyd J., 3,776,315.
Westinghouse Electric Corporation: *See—*
Conley, Thomas F.; and Gylland, Ernest F., Jr., 3,775,995.
D'Esopo, Conrad M., 3,777,215.
Ehringer, Hermann O., 3,777,111.
Fergason, James L.; and Goldberg, Newton N., 3,776,927.
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A., 3,777,112.
Hollenbeck, Arthur J., 3,777,171.
Krishna, Surinder; and Davis, John R., Jr., 3,777,227.
Llewellyn, Richard E., 3,777,131.
Meacham, James H., 3,777,063.
Minter, Herbert F.; and Smith, James D. B., 3,776,853.
Skinner, Dale D.; Thompson, John H.; and Whittaker, Robert H., 3,777,189.
Waszink, Remco P.; and Purnell, Michael G., 3,776,302.
Young, Frederick J.; and Elco, Richard A., 3,777,255.
Westran Corporation: *See—*
Dalton, Thomas B., 3,776,665.
Westrum, Thorbjorn, to A/S Kongsberg Vapenfabrikk. Apparatus for filling and, if desired, emptying inert gas poor in oxygen into or from holds in ships, respectively. 3,776,164, Cl. 114-.50r.
Westvaco Corporation: *See—*
Nock, John M., 3,776,108.
Wetterhorn, Richard H., to Dresser Industries, Inc. Oil filled pressure gauge. 3,776,041, Cl. 73-414.000.
Weyde, Edith: *See—*
Matejec, Reinhart; Meyer, Rudolf; Moll, Franz; Ranz, Erwin; and Weyde, Edith, 3,776,730.
Whaley, Hubert L.: *See—*
Adler, Laszlo; and Whaley, Hubert L., 3,776,026.
Whall, James M.: *See—*
Driscoll, John J.; and Whall, James M., 3,776,118.
Wheeler, Philip T., to Hardy Company, The. Tag. 3,775,882, Cl. 40-10.00c.
Wheeling Stamping Company: *See—*
McCann, Milton H., 3,776,785.
Whetham, William J., to Boeing Company, The. Demodulator for magnetic milling force sensors. 3,777,125, Cl. 235-151.110.
Whitehead, Richard T.: *See—*
Gelbein, Abraham P.; Luberoff, Benjamin J.; Sze, Morgan C.; and Whitehead, Richard T., 3,776,949.
Whirlpool Corporation: *See—*
Linstromberg, William J.; and Nichols, Duane C., 3,775,994.
White, Duncan A.; and Morrison, William O., to Lincoln Electric Company, The. Pipe welding apparatus. 3,777,103, Cl. 219-60.00a.
White, Howard P., to Burroughs Corporation. Unitary ledger feeder and stacker with refeed from a stacker hold position. 3,776,545, Cl. 271-4.000.
White, James F., Jr.: *See—*
Kelley, Donald W.; White, James F., Jr.; Winslow, Ronald B.; and Coppock, Charles L., 3,776,877.
Whitehurst, George: *See—*
Beasley, Gordon Frank; and Whitehurst, George, 3,776,210.
Whitlock, Larry K.: *See—*
Hendershot, William B., III; Tallent, Michael W.; Wald, David; and Whitlock, Larry K., 3,777,075.
Whitney, Douglas E.: *See—*
Capablanca, Fernando A.; and Whitney, Douglas E., 3,776,554.
Whittaker, Robert H.: *See—*
Skinner, Dale D.; Thompson, John H.; and Whittaker, Robert H., 3,777,189.
Whittington, Jimmie L.: *See—*
Soulakis, George; and Whittington, Jimmie L., 3,775,897.
Wiatrowski, Stefan; Heid, Christian; and Keil, Karl-Heinz, to Cassella Farbewerke Mainkur Aktiengesellschaft. Process for dycing textiles made of polyester or cellulose triacetate. 3,776,690, Cl. 8-174.000.
Wieland, Hansjurgen: *See—*
Vierling, Oskar; and Wieland, Hansjurgen, 3,777,081.
Wiitig, Karl; Wimmer, Guenther; Court, Patrick R. J.; and Akrell, Carl, to Optical Systems Corporation. Converter for CATV. 3,777,053, Cl. 178-5.100.
Wilburn, Karl E. Powder horn. 3,775,889, Cl. 42-90.000.
Wilcox, Harold R., to Riggs & Lombard, Inc. Self-regulating system for mixing liquids. 3,776,252, Cl. 137-99.000.
Wilde, Dennis; and Ormskirk, Hoscar NR, to Pilkington Brothers Limited. Treatment of glass sheet. 3,776,712, Cl. 65-348.000.
Wiley, Robert L., to Si Lite, Incorporated. Spill-proof ice cube tray. 3,776,504, Cl. 249-121.000.
Wilhelmy, Charles S.: *See—*
Stalioraitis, Joseph S.; and Wilhelmy, Charles S., 3,776,959.
Wilhite, Benjamin Melvin: *See—*
Yeager, Harold Everett; Krage, Richard F.; and Wilhite, Benjamin Melvin, 3,776,223.
Wilkey, Frank, Jr., to International Business Machines Corporation. Multiple display device. 3,777,059, Cl. 178-7.880.
Wilkins, Paul E.: *See—*
Budd, Allan L.; and Wilkins, Paul E., 3,776,023.
Wilkinson, Horace Allan, to Monier Research & Development Pty. Ltd. Pipe making machine. 3,776,677, Cl. 425-262.000.
Willco-Horgerate Med. Apparatebau G.m.b.H.: *See—*
Fischer, Detlef; and Wittkowski, Johannes G. A., 3,777,079.
Williams, Cyril G. Cab for agriculture tractors and the like. 3,776,358, Cl. 180-84.000.
Williams, David L., to Monsanto Company. Urea determination and electrode therefor. 3,776,819, Cl. 204-1.00t.
Williams, Delmas D. Apparatus for opening tobacco curing sticks. 3,776,392, Cl. 214-1.00r.
Williams, Edward G.: *See—*
Baker, John R.; and Williams, Edward G., 3,776,760.
Williams, Jack L. R.; Laakso, Thomas M.; and Borden, Douglas G., to Eastman Kodak Company. Photosensitive element comprising light-sensitive polymers. 3,776,737, Cl. 96-115.00r.
Williams, Jack Leroy: *See—*
Zinkgraf, Bernhard A.; and Williams, Jack Leroy, 3,776,419.
Williams, Richard, to RCA Corporation. Apparatus for and method of reproducing an electrostatic charge pattern. 3,776,634, Cl. 355-133.000.
Williams, Richard A.: *See—*
Tatusku, Philip A.; and Williams, Richard A., 3,777,220.
Tatusku, Philip A.; and Williams, Richard A., 3,777,221.
Williford, John F.; and Pilger, James P., to Battelle Development Corporation. Method for producing continuous lengths of metal matrix fiber reinforced composites. 3,776,297, Cl. 164-86.000.
Willinger, Allan H., to Metaframe Corporation. Feed-bottle. 3,776,195, Cl. 119-72.500.
Wilson, Bernard: *See—*
Cleobury, Donald Jack; and Wilson, Bernard, 3,777,268.
Wilson, Billy F.: *See—*
Spidell, William H.; and Wilson, Billy F., 3,776,323.
Wilson, Harold R.: *See—*
Hatley, Derek J.; and Wilson, Harold R., 3,777,082.
Wilson, Margaret Winifred: *See—*
Cleobury, Donald Jack; and Wilson, Bernard, 3,777,268.
Wilson, Wallace C. Method and apparatus for eliminating smoke emissions from incinerators. 3,776,151, Cl. 110-8.00r.
Wilwerding, Dennis J., to Honeywell Inc. Adapter circuit for use with auto exposure camera. 3,776,112, Cl. 95-10.0cc.
Wimmer, Guenther: *See—*
Wiitig, Karl; Wimmer, Guenther; Court, Patrick R. J.; and Akrell, Carl, 3,777,053.
Winans, Dale D.; and Sherwin, Amos G. Water-base flaw detection method. 3,777,143, Cl. 250-302.000.
Winberg, Douglas F., to Subsurface Machine and Manufacturing Inc. Tunneling machine. 3,776,595, Cl. 299-31.000.
Winicov, Murray W.: *See—*
Cantor, Abraham; and Winicov, Murray W., 3,777,022.
Winkler, Hans J. S.; and Neumann, Friedrich E., to Shell Oil Company. Hydroformylated block copolymers. 3,776,981, Cl. 260-880.00b.
Winona Research, Inc.: *See—*
Reinert, Charles P.; and Tutt, Samuel F., 3,775,786.
Winslow, Ronald B.: *See—*
Kelley, Donald W.; White, James F., Jr.; Winslow, Ronald B.; and Coppock, Charles L., 3,776,877.
Winster Hose, Limited: *See—*
Ingham, Kenneth, 3,776,794.
Winter, Gerhard: *See—*
Schindler, Herbert; and Winter, Gerhard, 3,775,796.
Winters, Richard D., to General Semiconductor Industries, Inc. Electromagnetic pulse suppressor. 3,777,219, Cl. 317-61.500.
Wise, Layton A., to Mine Safety Appliances Company. Compressed gas breathing apparatus. 3,776,422, Cl. 222-3.000.
Witco Chemical Company: *See—*
Lindner, Paul, 3,776,857.
Witco Chemical Corporation: *See—*
Mausner, Marvin; and Rachels, Julian A., Jr., 3,776,861.
Witek, Roman J., Jr.: *See—*
Hartz, Marvin E.; and Witek, Roman J., Jr., 3,776,495.
Wittkowski, Johannes G. A.: *See—*
Fischer, Detlef; and Wittkowski, Johannes G. A., 3,777,079.
Witwer, Wallace J., to Harnischfeger Corporation. Winch and control means therefor. 3,776,518, Cl. 254-150.0fh.

Witzler, Franz; and Koepp, Hans-Martin, to Glanzstoff AG. Stability of fiber-forming polyesters. 3,776,882, Cl. 260-45.90r.
Wochnowski, Waldemar, to Hauni-Werke Kurber & Co. Method and arrangement for measuring the quantity of moisture in smoking goods. 3,777,258, Cl. 324-612.00s.
Woerner, Warren H., to Kee Lox Manufacturing Company. Transfer coating for carbon paper and the like. 3,776,864, Cl. 260-17.00r.
Wohnlich, Joseph P., to United Filtration Corporation. Water level controlled pump system. 3,776,661, Cl. 417-12.000.
Wolf, Charles B.: *See—*
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A., 3,777,112.
Wolf, Tobin. Animated bubble toy. 3,775,899, Cl. 46-7.000.
Wolfram, Jerome K.: *See—*
Davis, Richard L.; and Wolfram, Jerome K., 3,776,517.
Wolfson, Lawrence S.: *See—*
Pearl, David R.; and Wolfson, Lawrence S., 3,776,074.
Wolk, Piero, to Dresser Industries, Inc. Turning slide for open hole operation. 3,776,321, Cl. 175-4.000.
Womer, Walter D., to Phillips Fibers Corporation. Yarn process. 3,775,961, Cl. 57-157.00s.
Wood, Ernest C.; and Samuels, Peter B., 1/5 to Levaux, Rene G. Clip applicator. 3,775,825, Cl. 29-212.00d.
Wood, Herbert Leslie, to Imperial Chemical Industries Limited. Granular propellant containing KNO_3 and unsaturated ester. 3,776,787, Cl. 149-7.000.
Wood, Richard A. Apparatus for sorting products. 3,776,381, Cl. 209-111.600.
Woods, Richard E.; and Hohman, William H., to Franklin Electric Co., Inc. Motor start winding switch controlled by phase of main winding current. 3,777,232, Cl. 318-221.00e.
Woodson, Edgar F. Obstetrical instrument. 3,776,240, Cl. 128-361.000.
Worland, Donovan, to Landor, Walter, Associates, mesne. Optical display system and method for creating a theatrical illusion. 3,776,621, Cl. 352-85.000.
Wormald, Colin Norman: *See—*
Beck, Maurice Sidney; Musgrave, Gerald; and Wormald, Colin Norman, 3,777,133.
Wright, Edward S.; Angstadt, John W.; and Krolopp, Otto C., to Blaw-Knox Food and Chemical Equipment, Inc. Adjustable tensioning device for circular screens. 3,776,382, Cl. 209-403.000.
Williford, James A., to Emerson Electric Co. Ignition and control system for gas burners. 3,776,684, Cl. 431-66.000.
Wrobel, Gunter: *See—*
Papst, Georg; Wrobel, Gunter; and Schneider, Gerold, 3,777,191.
WSF Industries, Inc.: *See—*
Piegza, Henry J., 3,776,257.
Wu, Yu-Lin, to Phillips Petroleum Company. Solid state conversion of metal oxide to the corresponding metal carboxylate. 3,776,930, Cl. 260-429.900.
Wurm, Jaroslav, to Institute of Gas Technology, The. Pressure translating apparatus and process. 3,775,970, Cl. 60-6.000.
Wykes, Robert E.: *See—*
Gilvar, Martin; Wykes, Robert E.; and Mercer, Charles S., 3,776,575.
Wyomissing Corporation: *See—*
Howard, Robert C., 3,776,002.
Xepex Industries, Inc.: *See—*
Jones, Charles Wright, 3,775,943.
Xerox Corporation: *See—*
Baker, John R.; and Williams, Edward G., 3,776,760.
Gundlach, Robert W., 3,776,628.
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,776,721.
Little, William S., Jr., 3,776,995.
Mammino, Joseph, 3,776,631.
Rees, James D., 3,777,135.
Royka, Stephen F.; and Weiler, Ernest A., 3,776,723.
Xerox, Inc., mesne: *See—*
Watson, Donald W.; and Enskat, Albert G., 3,776,544.
Yager, Billy P.: *See—*
Adams, Anthony E.; Yearsley, Gerald A.; Simmons, Marion I.; and Yager, Billy P., 3,776,447.
Yagi, Hitoshi: *See—*
Terada, Osamu; Yagi, Hitoshi; and Nakamura, Shizuko, 3,776,816.
Yakubek, Louis P.; and Obenshain, George R., to Owens-Illinois, Inc. Glass making machinery. 3,776,348, Cl. 198-131.000.
Yamada, Junichi; Terashima, Etuzo; Takami, Yasuji; Fukuda, Kenji; and Nakai, Hiromitu, to Hitachi, Ltd. Color picture tube shadow mask of low carbon soft steel. 3,777,203, Cl. 313-85.00s.
Yamaguchi, Masaya; and Hironaka, Nobuyuki, to Nippon Kokan Kabushiki Kaisha. Means for preventing deformation of steel tubes. 3,776,253, Cl. 138-109.000.
Yamakawa, Yukio: *See—*
Ogawa, Yasuhiro; Nooya, Kazuo; Awata, Norio; and Yamakawa, Yukio, 3,775,960.
Yamane, Izumi; Saika, Daini; and Tomidokoro, Susumu, to Lion Fat & Oil Co., Ltd. Resinous composition. 3,776,956, Cl. 260-561.00n.
Yamanoto, Hisao: *See—*
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamanoto, Hisao, 3,776,914.
Yeager, Harold Everett; Krage, Richard F.; and Wilhite, Benjamin Melvin. Hydrotherapy bath with wave energy producing mechanism. 3,776,223, Cl. 128-66.000.
Yearsley, Gerald A.: *See—*
Adams, Anthony E.; Yearsley, Gerald A.; Simmons, Marion I.; and Yager, Billy P., 3,776,447.
Yeh, Rudolph E., to International Harvester Company. Cushion device. 3,776,100, Cl. 91-409.000.
Yeomans, Bertram: *See—*
Failey, Harry; and Yeomans, Bertram, 3,776,951.
Yeske, Louis A., to Arrow-Hart, Inc. Lever Operated switch. 3,777,087, Cl. 200-67.00a.
Yeske, Louis A., to Arrow-Hart, Inc. Trigger operated actuating mechanism for an electric switch with integrally molded fulcrum and snap-on connecting means associated with the trigger. 3,777,092, Cl. 200-172.00r.
Yohn, Melvin G.; and Simon, Joseph P., to Ecodyne Corporation, mesne. Welding gun. 3,777,110, Cl. 219-125.00r.
Yokoyama, Shoichiro: *See—*
Ikari, Yoshikatsu; and Yokoyama, Shoichiro, 3,776,897.
Yoneda, Motoaki: *See—*
Ikeda, Hiroshi; Yoneda, Motoaki; and Ishii, Minoru, 3,776,017.
York, William D.: *See—*
Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., 3,776,608.
Yoshida, Sadao: *See—*
Shimizu, Noboro; Yoshida, Sadao; Kubota, Kunihiro; Kobayashi, Daizo; and Ohara, Takashi, 3,776,947.
Yoshigai Kikai Kinzolsu Co., Ltd.: *See—*
Yoshigai, Kiyokazu, 3,776,061.
Yoshigai, Kiyokazu, to Yoshigai Kikai Kinzolsu Co., Ltd. Brake apparatus for bicycle. 3,776,061, Cl. 74-480.00r.
Yoshikazu, Suno: *See—*
Tomita, Tamaki; Kusakabe, Takesi; Kurimoto, Mikishi; Isunco, Iwami; Keniti, Iwami; Nomura, Kenzi; and Yoshikazu, Sano, 3,775,837.
Yoshioka, Yoshihide; Kobayashi, Shigekazu; and Mizobe, Akio, to Kuraray Co., Ltd. Method of manufacturing polyvinyl alcohol fiber of improved property. 3,776,994, Cl. 264-170.000.
Yoshioka, Yoshitomo. Device for recovering cooking oil separately from the heating furnace of a deep fryer. 3,776,125, Cl. 99-403.000.
Yoshizawa, Junji: *See—*
Hidaka, Hiroyoshi; Matsumoto, Ikuo; and Yoshizawa, Junji, 3,776,913.
Yoshizawa, Katuyuki, to Nisson Motor Company, Limited. Dry-disc friction clutch. 3,776,337, Cl. 192-110.00b.
Yoshizawa, Michi: *See—*
Ohnishi, Masaru; and Yoshizawa, Michi, 3,776,627.
Young, Alan M.; and Webb, Edwin Y., to Dicom Industries. Tape apparatus. 3,776,488, Cl. 242-183.000..
Young, Bill M.: *See—*
Carnes, James D.; Young, Bill M.; and Totty, Kenneth D., 3,776,311.
Young, Fred M., to Young Radiator Company. Reinforced sectional radiator. 3,776,301, Cl. 165-67.000.
Young, Frederick J.; and Elco, Richard A., to Westinghouse Electric Corporation. Position sensor utilizing a primary and secondary shielded from one another by a ferromagnetic shield and a magnet whose position relative to the shield changes the shielding. 3,777,255, Cl. 324-34.0ps.
Young, James Douglas, to Gearhart-Owen Industries, Inc. Apparatus for setting a large bore packer in a well. 3,776,307, Cl. 166-125.000.
Young, Leslie: *See—*
Boden, Donald; and Young, Leslie, 3,776,503.
Young Radiator Company: *See—*
Young, Fred M., 3,776,301.
Young, Robert S.: *See—*
Roy, Prodyot; and Young, Robert S., 3,776,831.
Youngblood, Douglas J.; and Reynolds, David L., to Texaco Inc. Catalytic cracking of napathas. 3,776,838, Cl. 208-74.000.
Youngstown Steel Door Company, The: *See—*
Ross, Irving D., Jr., 3,776,581.
Zabarilo, Oleg Semenovich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.
Zaffaroni, Alejandro, to Alza Corporation. Device for suppressing fertility. 3,777,015, Cl. 424-15.000.
Zebree, David I., to Hercules Incorporated. Non-electric blasting cap assembly. 3,776,135, Cl. 102-29.000.
Zechini, Antonio. Sewing machine, in particular for making the edge on the type of shoes commonly known as mocassins. 3,776,158, Cl. 112-216.000.
Zellmer, Neale A., to GTE Automatic Electric Laboratories Incorporated. Battery charging circuit for subscriber carrier equipment. 3,777,247, Cl. 320-2.000.
Zenhausern, Heinrich, Connecting device. 3,776,650, Cl. 403-191.000.
Zey, Edward Gustave; and Stubbeman, Robert Frank, to Celanese Corporation. Trimethylolpropane recovery. 3,776,963, Cl. 260-637.00p.

Zherdev, Anatoly Vasilievich: *See*—
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.

Zichis, Joseph, to Beckman Instruments, Inc. Method and reagents for the diagnosis of viral diseases. 3,777,014, Cl. 424-12.000.

Ziegler, George William, Jr.; and Demler, Henry William, Jr., to AMP Incorporated. Aluminum electrical connection. 3,777,051, Cl. 174-94.00r.

Zielinski, James, to Esso Research and Engineering Company. Pesticidal semicarbazide and biuret derivatives. 3,776,955, Cl. 260-552.0sc.

Zinkgraf, Bernhard A.; and Williams, Jack Leroy, to Krafto Corporation. Container and rack for presenting articles. 3,776,419, Cl. 221-197.000.

Zirkle, Charles: *See*—
Ross, Stephen T.; and Zirkle, Charles, 3,777,027.

Zuech, Ernest A.: *See*—
Kittleman, Edmund T.; and Zuech, Ernest A., 3,776,973.

Zwald, Frederick K.: *See*—
Boboltz, Charles E.; Zwald, Frederick K.; and Baldwin, Ralph B., 3,776,289.

Zweidler, Reinhard; Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, to Ciba-Geigy Corporation. Styryltriazoles, their use for the optical brightening of organic materials, and processes for their manufacture. 3,776,905, Cl. 260-240.100.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 4TH DAY OF DECEMBER, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Anderson, Albert E., Jr., and I. F. Salminen. Synthesis of chlorinated ballasted quinones. T917,001, 12–4–73. Cl. 260—396.

Bonnes, John A.: *See*—
Hair, Douglas E., and Bonnes. T917,007.

Brayton, Robert K., F. G. Gustavson, and G. D. Hachtel, to International Business Machines Corp. Method of storage reclamation in sparse matrix techniques. T917,010, 12–4–73, Cl. 444—1.

Du Pont de Nemours, E. I., and Co.: *See*—
Knight, Everett W. T917,005.
Mahr, Tibor G. T917,012.

Edwards, Robert F.: *See*—
Moif, Cecil J., and Edwards. T917,006.

Fajans, Robert G., to Hercules Inc. Hot melt adhesive containing hydrogenated aromatic hydrocarbon resin trackifier. T917,008, 12–4–73, Cl. 260—28.5.

Goffe, Charles A., R. D. Lindholm, and P. M. Stacy. Photographic process and product. T917,003, 12–4–73, Cl. 96—48.

Grannen, Edward A., and L. Robinson, to Occidental Petroleum Corp. Sequestering resin from cyanoethylated poly-(ethylene imine). T917,011, 12–4–73, Cl. 260—2.2.

Gustavson, Fred G.: *See*—
Brayton, Robert K., Gustavson, and Hachtel. T917,010.

Hachtel, Gary D.: *See*—
Brayton, Robert K., Gustavson, and Hachtel. T917,010.

Hair, Douglas E., and J. A. Bonnes. Centralized memory access module for a data processing system. T917,007, 12–4–73, Cl. 340—172.5.

Hercules Inc.: *See*—
Fajans, Robert G. T917,008.

Holloway, John T.: *See*—
Young, Warren L., Holloway, and Kenney. T917,004.

International Business Machines Corp.: *See*—
Brayton, Robert K., Gustavson, and Hachtel. T917,010.

Joyner, Frederick B.: *See*—
Meyer, Max F., Jr., Joyner, and Wooten. T917,009.

Kennedy, James S.: *See*—
Young, Warren L., Holloway, and Kenney. T917,004.

Knight, Everett W., to E. I. Du Pont de Nemours, and Co. Pipe cement. T917,005, 12–4–73, Cl. 260—30.4.

Lindholm, Robert D.: *See*—
Goffe, Charles A., Lindholm, and Stacy. T917,003.

Mahr, Tibor G., to E. I. Du Pont de Nemours, and Co. PVC-containing blends and films thereof. T917,012, 12–4–73, Cl. 260—28.5.

Moif, Cecil J., and R. F. Edwards, to Westinghouse Electric Corp. Dynamoelectric machinery utilizing superconductive windings. T917,006, 12–4–73, Cl. 310–52.

Myer, Max F., Jr., F. B. Joyner, and W. C. Willis, Jr. Thermoplastic polyolefin molding compositions glass fibers which have been treated with an anionic emulsion of a modified polyolefin. T917,009, 12–4–73, Cl. 260—41.

Occidental Petroleum Corp.: *See*—
Grannen, Edward A., and Robinson. T917,011.

Robinson, Leon: *See*—
Grannen, Edward A., and Robinson. T917,011.

Salminen, Ilmari F.: *See*—
Anderson, Albert E., Jr., and Salminen. T917,001.

Sanders, Robert R. Sewing thread having a silicone lubricant and flame retardant on the surface of thread. T917,002, 12–4–73, Cl. 117—136.

Stacy, Peter M.: *See*—
Goffe, Charles A., Lindholm, and Stacy. T917,003.

Westinghouse Electric Corp.: *See*—
Moif, Cecil J., and Edwards. T917,006.

Wooten, Willis C., Jr.: *See*—
Meyer, Max F., Jr., Joyner, and Wooten. T917,009.

Young, Warren L., J. T. Holloway, and J. S. Kennedy. Process for the chlorination of polyolefins. T917,004, 12–4–73, Cl. 260—296.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF DECEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bolger, Leonard F., to Shell Oil Co. Operating technique for sulfur slurry pipeline. Re. 27,831, 12–4–73, Cl. 302—66.

Fisher Controls Co., Inc.: *See*—
Tiffany, Floyd L. Re. 27,829.

Hunter Douglas International N.V.: *See*—
Ledoux, Pierre A. Re. 27,827.

Langley, John A., to Outboard Marine Corp. Marine propulsion device. Re. 27,826, 12–4–73, Cl. 74—385.

Ledoux, Pierre A., to Hunter Douglas International N.V. Heated or cooled ceiling or wall structures. Re. 27,827, 12–4–73, Cl. 165—54.

Moen, Lenard E.: *See*—
Roesner, Lawrence C., and Moen. Re. 27,825.

Outboard Marine Corp.: *See*—
Langley, John A. Re. 27,826.

Precision Produce Specialties Inc., and 36¼ to Calavo Growers of Calif.: *See*—
Roesner, Lawrence C., and Moen. Re. 27,825.

Roesner, Lawrence C., and L. E. Moen, to Precision Produce Specialties Inc., and 36¼ to Calavo Growers of Calif. Bottom sealing machine. Re. 27,825, 12–4–73, Cl. 93—55.

Salonen, Albert R. Applicator for dispensing a molten material. Re. 27,828, 12–4–73, Cl. 222—146.

Schoerner, Roger J., to Southwire Co. Multifilament conductor. Re. 27,830, 12–4–73, Cl. 174—128.

Schoerner, Roger J., to Southwire Co. Solid insulated conductor. Re. 27,832, 12–4–73, Cl. 174—110.

Shell Oil Co.: *See*—
Bolger, Leonard F. Re. 27,831.

Southwire Co.: *See*—
Schoerner, Roger J. Re. 27,830.
Schoerner, Roger J. Re. 27,832.

Tiffany, Floyd L., to Fisher Controls Co., Inc. Capacitance measuring techniques. Re. 27,829, 12–4–73, 307—118.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Bujan, Albert Frank. 229,518.

Aero Electronics Development Co., Inc.: *See*—
Wood, June. 229,519.

Amerock Corp.: *See*—
Tegner, Raymond U. H. 229,460.
Tegner, Raymond U. H. 229,461.
Tegner, Raymond U. H. 229,478.

Arai, Noriyuki: *See*—
Katayama, Masaharu, and Arai. 229,510.

Ashton, Alan G. R., and E. J. Cordell, to English Numbering Machines Ltd. Printing machine. 229,512, 12–4–73, Cl. D64—11.

Bata Shoe Co., Inc.: *See*—
Plampton, Stanley N., and Spooner. 229,456.

Baxter Laboratories, Inc.: *See*—
Wilson, John C. 229,517.

Benoit, Roland A., and R. H. Duprey, to Interroyal Corp. Bed. 229,459, 12–4–73, Cl. D6—79.

Bermender, Harold W., Jr., to Mite Corp. Combined keyboard and electronic data printer. 229,513, 12–4–73, Cl. D64—11.

Biondi, George, and R. Fanucchi. Ice bucket. 229,471, 12–4–73, Cl. D7—78.

Boano, Gianpaolo, to Fiat Societa per Azioni. Side light for motor cars. 229,507, 12–4–73, Cl. D48—32.

Bombardier Ltd.: *See*—
Scott, Thomas. 229,490.

Borsani, Giancarlo. Spring latch. 229,479, 12–4–73, Cl. D8—203.

Brandt, Harvey R., and N. Werner, to Gavin Electronics Division Antennacraft Co. Design for a television antenna. 229,498, 12–4–73, Cl. D26—14.

Breedlove, Craig N. Racing vehicle. 229,491, 12–4–73, Cl. D12—85.

Brown, Dwight C. Corrugated strip fastener. 229,484, 12–4–73, Cl. D9—252.
Brushaber, Donald, to Monarch Tool and Mfg. Co. Adjustable mooring bracket. 229,480, 12–4–73, Cl. D8—232.
Bujan, Albert F., to Abbott Laboratories. Dispensing pin for medical administration equipment. 229,518, 12–4–73, Cl. D83—12.
Burnes, Charles D., Co.: *See*—
Schneider, Marshall C. 229,458.
Carter, Ronald D., to Stanley Works (Great Britain) Ltd. Plane. 229,477, 12–4–73, Cl. D8—101.
Case, W. R., & Sons Cuttery Co.: *See*—
Farquharson, Robert N. 229,476.
Chadwick, Eric W., to TC Products. Lamp or the like. 229,506, 12–4–73, Cl. D48—20.
Cordell, Edward J.: *See*—
Ashton, Alan G. R., and Cordell. 229,512.
Cutler, Gary L., to Cutler Plastics Corp. Container for liquids. 229,483, 12–4–73, Cl. D9—175.
Cutler Plastics Corp.: *See*—
Cutler, Gary L. 229,483.
Dunlop Tire and Rubber Corp.: *See*—
Hoke, Gilbert J. 229,488.
Duprey, Richard H.: *See*—
Benoit, Roland A., and Duprey. 229,459.
Einhorn, Ben. Stethoscope wall mounted bracket. 229,514, 12–4–73, Cl. D83—1.
English Numbering Machines Ltd.: *See*—
Ashton, Alan G. R., and Cordell. 229,512.
Etablissements Allibert: *See*—
Firdmann, Jacques. 229,469.
Ezawa, Susumu: *See*—
Yanagisawa, Kumi, Ohta, Ezawa, and Katayama. 229,509.
Fanucchi, Renzo: *See*—
Biondi, Gearge, and Fanucchi. 229,471.
Farquharson, Robert N., to W. R. Case & Sons Cuttery Co. Sharpening rod. 229,476, 12–4–73, Cl. D8—93.
Feakins, Reginald E. Framing section. 229,493, 12–4–73. Cl. D13—6.
Fetty, Harold D., to The Goodyear Tire & Rubber Co. Tire. 229,487, 12–4–73, Cl. D12—151.
Fiat Societa per Azioni: *See*—
Boano, Gianpaolo. 229,507.
Firdmann, Jacques, to Etablissements Allibert. Mirror. 229,469, 12–4–73, Cl. D6—243.
France, George E. Hi-rise poultry building. 229,492, 12–4–73, Cl. D13—1.
Gavin Electronics Division Antennacraft Co.: *See*—
Brandt, Harvey R., and Werner. 229,498.
Ginsburg, Arnold P. Table. 229,467, 12–4–73, Cl. D6—179.
Ginsburg, Arnold P. Table. 229,468, 12–4–73, Cl. D6—179.
Goodyear Tire & Rubber Co., The: *See*—
Fetty, Harold D. 229,487.
Guhl, Jay R., to ½ to W. Dean Park. Refuse baler. 229,508, 12–4–73, Cl. D55—1.
Hand, Claude E. Trailer waste outlet coupling with reversely threaded members. 229,496, 12–4–73, Cl. D23—43.
Henry, Charles T. Newspaper collection container. 229,473, 12–4–73, Cl. D7—191.
Hero, Franz, and K. Odermatt, to Interlubke Gebr. Lubke KG. Desk. 229,465, 12–4–73, Cl. D6—168.
Hoke, Gilbert J., to Dunlop Tire and Rubber Corp. Tire. 299,488, 12–4–73, Cl. D12—151.
Hopkins, Frank, Jr. Auxiliary cab for a pickup truck. 229,489, 12–4–73, Cl. D12—156.
Interlubke Gebr. Lubke KG: *See*—
Hero, Franz, and Odermatt. 229,465.
International Playtex Corp.: *See*—
Salisky, Sallyann Z. 229,453.
Salisky, Sallyman Z. 229,454.
Wolfson, Frank C. 229,455.
Interroyal Corp: *See*—
Benoit, Roland A., and Duprey. 229,459.
Katayama, Masaharu: *See*—
Yanagisawa, Kumi, Ohta, Ezawa, and Katayama. 229,509.
Katayama, Masaharu, and N. Arai, to Matsushita Electric Industrial Co., Ltd. Television receiver. 229,510, 12–4–73, Cl. D56—4.
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Lamberti, John J. Pipe. 229,520, 12–4–73, Cl. D85—8.
Landell, Harper, to Sneakman Co. Lavatory fitting. 229,495, 12–4–73, Cl. D23—32.
Lindquist, William C: *See*—
Klemenhagen, Dale A., Snyder, and Lindquist. 229,503.
Litton Systems, Inc.: *See*—
Pierce, John O. 229,497.
Marshall, Kenneth C., P. G. Sotiropoulos, and A. M. Piros, to Orthodontic Education and Research Foundation. Cabinet and service unit for dental clinics, dental offices and the like providing a plurality of cubicles. 229,463, 12–4–73, Cl. D6—162.
Martini, Alfredo. Stackable chest of drawers. 229,464, 12–4–73, Cl. D6—165.
Mathieson, Nathanael W. Child's dressing table or similar article. 229,457, 12–4–73, Cl. D6—14.
Matsushita Electric Industrial Co., Ltd.: *See*—
Katayama, Masaharu, and Arai. 229,510.
Yanagisawa, Kumi, Ohta, Ezawa, and Katayama. 229,509.
Mite Corp.: *See*—
Bermender, Harold W., Jr. 229,513.
Modern Metal Products Co.: *See*—
Smith, Harvey J. 229,466.
Monarch Tool and Mfg. Co.: *See*—
Brushaber, Donald. 229,480.
Motorola, Inc.: *See*—
Krumin, Donald K., and Toth. 229,499.
Krumin, Donald K., and Toth. 229,500.
Odermatt, Karl: *See*—
Hero, Franz, and Odermatt. 229,465.
O'Donnell, Thomas P. Screw. 229,481, 12–4–73, Cl. D8—267.
Ohta, Fumiharu: *See*—
Yanagisawa, Kumi, Ohta, Ezawa, and Katayama. 229,509.
Orthodontic Education and Research Foundation: *See*—
Marshall, Kenneth C., Sotiropoulos, and Piros. 229,463.
Park, W. Dean: *See*—
Guhl, Jay R. 229,508.
Parker, Kenneth E. Macroscope projection unit. 229,511, 12–4–73, Cl. D61—1.
Pasin, Mario A., to Radio Steel & Mfg. Co. Wagon. 229,501, 12–4–73, Cl. D34—15.
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Pierce, John O., to Litton Systems, Inc. Programmable tester. 229,497, 12–4–73, Cl. D26—1.
Piros, Anton M.: *See*—
Marshall, Kenneth C., Sotiropoulos, and Piros. 229,463.
Plampton, Stanley N., and L. P. J. Spooner, to Bata Shoe Co., Inc. Design for a shoe sole. 229,456, 12–4–73, Cl. D2—321.
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Radio Steel & Mfg. Co.: *See*—
Pasin, Mario A. 229,501.
Roper, Ralph E., to Wallace Expanding Machines, Inc. Support tray. 229,486, 12–4–73, Cl. D12—53.
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Snyder, Merton F.: *See*—
Klemenhagen, Dale A., Snyder, and Lindquist. 229,503.
Sotiropoulos, Peter G.: *See*—
Marshall, Kenneth C., Sotiropoulos, and Piros. 229,463.
Speakman Co.: *See*—
Landell, Harper. 229,495.
Spooner, Leonard P. J.: *See*—
Plampton, Stanley N., and Spooner. 229,456.
Stanley Works (Great Britain) Ltd.: *See*—
Carter, Ronald D. 229,477.
Steketee-Van Huis: *See*—
Petersen, Steven H. 229,485.
Suhard, Paul F., to Union de Brasseries. Bottle. 229,482, 12–4–73, Cl. D9—147.
TC Products: *See*—
Chadwick, Eric W. 229,506.
Tegner, Raymond U. H., to Amerock Corp. Post for soap dish holders or the like. 229,460, 12–4–73, Cl. D6—86.
Tegner, Raymond U. H., to Amerock Corp. Tissue holder. 229,461, 12–4–73, Cl. D6—97.
Tegner, Raymond U. H., to Amerock Corp. Design for an escutcheon. 229,478, 12–4–73, Cl. D8—179.
Temet Oy: *See*—
Laakkonen, Launo. 229,521.
Thielen, James E. Driving pad riser for disc floor surfacing machine. 229,502, 12–4–73, Cl. D37—1.
Toth, Richard J.: *See*—
Krumin, Donald K., and Toth. 229,499.
Krumin, Donald K., and Toth. 229,500.
Towle Mfg. Co.: *See*—
Pollard, Rose F. 229,470.
Uboldi, Cesare, to Uboldi, Cesare & Figlie S.p.A. Screwdriver having an insulating handle. 229,475, 12–4–73, Cl. D8—82.
Uboldi, Cesare, & Figlie S.p.A.: *See*—
Uboldi, Cesare. 229,475.
Union de Brasseries: *See*—
Suhard, Paul F. 229,482.
United Technical Corp.: *See*—
Salsgiver, John P. 229,515.
Van Hoefen, Hari S. Talisman. 229,504, 12–4–73, Cl. D45—15.
Wahl Associates, Inc.: *See*—
Wahl, Michael. 229,462.

Wahl, Michael, to Wahl Associates, Inc. Display rack for shoes. 229,462, 12–4–73, Cl. D6—116.
Wallace Expanding Machines, Inc.: *See*—
Roper, Ralph E. 229,486.
Werner, Nicholas: *See*—
Brandt, Harvey R., and Werner. 229,498.
Willoughby, Paul J.: *See*—
Scheurer, Ronald J. 229,516.
Wilson, John C., to Baxter Laboratories, Inc. Bottle sling. 229,517, 12–4–73, Cl. D83—8.
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CLASSIFICATION OF PATENTS

ISSUED DECEMBER 4, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
8 3,775,774
80 3,775,775
149 3,775,776

CLASS 4
1 3,775,777
67A 3,775,778
166 3,775,779
252R 3,775,780

CLASS 5
61 3,775,781
81R 3,775,784
82 3,775,782
201 3,775,783
341 3,775,785

CLASS 6
12R 3,775,786

CLASS 8
142 3,776,693
174 3,776,690
177AB 3,776,691
181 3,776,692

CLASS 9
8R 3,775,787
344 3,775,788

CLASS 10
52 3,775,789
86CL 3,775,791
86F 3,775,790
152T 3,775,792

CLASS 12
1R 3,775,793
3,775,794
13.2 3,775,795
54.3 3,775,796
145 3,775,797

CLASS 13
6 3,777,040
17 3,777,041
18 3,777,042
32 3,777,043
33 3,777,044

CLASS 15
21E 3,775,798
3,775,799
28 3,775,800
104.93 3,775,801
147A 3,775,802
250.29 3,775,803
302 3,775,804
304 3,775,805
306A 3,775,806

CLASS 16
114R 3,775,807
124 3,775,808

CLASS 17
32 3,775,809

CLASS 18
.5A 3,776,361

CLASS 21
102R 3,776,694

CLASS 23
230PC 3,776,695
230B 3,776,698
230R 3,776,696
232R 3,776,697
259 3,776,699
3,776,700
284 3,776,702
288R 3,776,701
301SP 3,776,703

CLASS 24
30.5S 3,775,810
122.6 3,775,811
205.11R 3,775,812
230A 3,775,813

CLASS 28
1.2 3,775,814

CLASS 29
25.35 3,775,816
96 3,775,817
3,775,818
103A 3,775,819
118 3,775,820
129 3,775,821
157 3,775,822
182 3,776,705
182.5 3,775,823
3,776,704
3,776,706
203R 3,775,824
207.5ST 3,775,815
212D 3,775,825
3,775,826
275 3,775,827
401 3,775,828
426 3,775,829
434 3,775,830
447 3,775,831
450 3,775,832
470.1 3,775,833
470.3 3,775,834
477.3 3,775,835
483 3,775,836
568 3,775,837
577 3,775,838
595 3,775,839
599 3,775,840
605 3,775,841
606 3,775,842
612 3,775,843
626 3,775,844

CLASS 30
41 3,775,845
262 3,775,846
353 3,775,847

CLASS 32
14A 3,775,850
26 3,775,851
59 3,775,849

CLASS 33
23E 3,775,852
27C 3,775,853
168R 3,775,858
174F 3,775,855
174R 3,775,854
180R 3,775,856
185R 3,775,857
338 3,775,859

CLASS 34
1 3,775,860
99 3,775,861
105 3,775,862
166 3,775,863

CLASS 35
9A 3,775,864
17 3,775,865
3,775,867
22A 3,775,868
48R 3,775,869
55 3,775,870

CLASS 36
2.5AL 3,775,866
3,775,871
3,775,872
11.5 3,775,873
67D 3,775,874
72A 3,775,875

CLASS 37
2R 3,775,876
42VL 3,775,877
43L 3,775,878
118R 3,775,879

CLASS 38
66 3,775,880

CLASS 40
2C 3,775,881
10C 3,775,882
106.25 3,775,883
124.1 3,775,884
3,775,885
125G 3,775,887
130R 3,775,886

CLASS 42
58 3,775,888
90 3,775,889

CLASS 43
6.5 3,775,890
9 3,775,891
42.14 3,775,892
54.5A 3,775,893
3,775,894
54.5R 3,775,895
81 3,775,896

CLASS 46
1K 3,775,897
7 3,775,898
3,775,899
120 3,775,900
239 3,775,901
244A 3,775,902

CLASS 47
37 3,775,903
38.1 3,775,904

CLASS 49
131 3,775,912
153 3,775,905
358 3,775,906
491 3,775,907

CLASS 51
72R 3,775,908
110 3,775,909
165.77 3,775,910
170T 3,775,911
246 3,775,913
392 3,775,923

CLASS 52
1 3,775,915
125 3,775,916
155 3,775,924
169 3,775,917
3,775,918
172 3,775,914
236 3,775,919
241 3,775,920
367 3,775,922
471 3,775,921
534 3,775,925
717 3,775,926
718 3,775,927
741 3,775,928
747 3,775,929

CLASS 53
22A 3,775,932
22B 3,775,931
24 3,775,933
32 3,775,930
38 3,775,934
48 3,775,935
75 3,775,937
137 3,775,936
164 3,775,938
198R 3,775,939
212 3,775,940
246 3,775,941
264 3,775,942
282 3,775,943
334 3,775,944
385 3,775,945

CLASS 55
58 3,775,946
159 3,775,947
238 3,775,948
242 3,775,950
312 3,775,949
417 3,775,951

CLASS 56
16.4 3,775,952
126 3,775,953
329 3,775,954

CLASS 57
34AT 3,775,955
58.89 3,775,957
58.91 3,775,956
77.3 3,775,958
3,775,959
140R 3,775,960
157S 3,775,961

CLASS 58
23A 3,775,962
23D 3,775,963
50R 3,775,964
57.5 3,775,967
58 3,775,965
3,775,966
116R 3,775,968

CLASS 59
78 3,775,969

CLASS 60
6 3,775,970
13N 3,775,971
13R 3,775,972
34.34 3,775,974
39.25 3,775,973
39.32 3,775,975
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260 3,775,977
317 3,775,978
322 3,775,979
462 3,775,980
490 3,775,981

CLASS 61
1F 3,775,982
26 3,775,983
35 3,775,984
72.1 3,775,985
72.3 3,775,986
3,775,987

CLASS 62
23 3,775,988
55 3,775,989
58 3,775,990
72 3,775,991
73 3,775,992
95 3,775,993
177 3,775,994
196 3,775,995
490 3,775,996

CLASS 64
9 3,775,997
30D 3,775,998

CLASS 65
29 3,776,707
50 3,775,999
114 3,776,708
3,776,709
134 3,776,710
261 3,776,711
348 3,776,712

CLASS 66
9R 3,776,000
87 3,776,002
154A 3,776,003

CLASS 68
5E 3,776,004
3,776,005

CLASS 70
74 3,776,006
86 3,776,007
368 3,776,008
459 3,776,009

CLASS 71
33 3,776,713
98 3,776,714
111 3,776,715
117 3,776,716

CLASS 72
12 3,776,010
94 3,776,011
203 3,776,012
231 3,776,013
240 3,776,014
324 3,776,015
327 3,776,016
338 3,776,017
367 3,776,018
404 3,776,019
445 3,776,020
453 3,776,021
455 3,776,022

CLASS 73
1R 3,776,023
32 3,776,024
45.1 3,776,025
67.7 3,776,026
70 3,776,027
88R 3,776,028
3,776,029
93 3,776,030
95 3,776,031
155 3,776,032
194B 3,776,033
194M 3,776,034
199 3,776,035
210 3,776,036
228 3,776,037
335 3,776,038
341 3,776,039
362AR 3,776,040
414 3,776,041
421B 3,776,042
490 3,776,043
516LM 3,776,044

CLASS 74
20 3,776,045
50 3,776,046
70 3,776,047
110 3,776,049
142 3,776,050
208 3,776,051
230.17A 3,776,052
230.17E 3,776,053
230.5 3,776,059
233 3,776,054
242.15 3,776,055
364 3,776,056
385 Re.27,826
424.7 3,776,060
471XY 3,776,058
471 3,776,057
480R 3,776,061
492 3,776,062
520 3,776,063
557 3,776,064
573 3,776,065
763 3,776,066
801 3,776,067
866 3,776,048

CLASS 75
38 3,776,717
63 3,776,718
76 3,776,719
126M 3,776,720

CLASS 76
82 3,776,068

CLASS 81
9.5A 3,776,069
415 3,776,071

CLASS 82
52 3,776,070

CLASS 83
34 3,776,072
47 3,776,073
71 3,776,074
110 3,776,075
167 3,776,076
175 3,776,077
210 3,776,078
225 3,776,079
262 3,776,080
272 3,776,081
304 3,776,082
324 3,776,083
342 3,776,084
449 3,776,085
637 3,776,086

CLASS 84
1.24 3,776,087
317 3,776,088
376 3,776,089
380 3,776,090
403 3,776,091

CLASS 85
5R 3,776,092

CLASS 89
14D 3,776,093
36A 3,776,094
128 3,776,095
174 3,776,096

CLASS 90
16 3,776,097

CLASS 91
29 3,776,098
358A 3,776,099
409 3,776,100
420 3,776,101
483 3,776,102
487 3,776,103
500 3,776,104

CLASS 92
33 3,776,106
99 3,776,107

CLASS 93
12R 3,776,105
39R 3,776,108
49R 3,776,109
55R Re.27,825

CLASS 95
1 3,776,110
10CD 3,776,111
10CE 3,776,112
12 3,776,113
31FM 3,776,114
53EB 3,776,115
3,776,116
82 3,776,120
89A 3,776,119
89G 3,776,117
89L 3,776,118

CLASS 96
1LY 3,776,723
1R 3,776,721
3,776,722
1.8 3,776,724
2 3,776,725
3 3,776,726
27H 3,776,727
29L 3,776,728
35.1 3,776,729
50R 3,776,730
66.4 3,776,731
68 3,776,733
76C 3,776,732
86R 3,776,734
115R 3,776,735
3,776,736
3,776,737
126 3,776,738
137 3,776,739

CLASS 98
33R 3,776,121
33 3,776,122
40D 3,776,123

CLASS 99
335 3,776,124
403 3,776,125
404 3,776,126
482 3,776,127

CLASS 100
53 3,776,128
98R 3,776,129

CLASS 101
45 3,776,130
93C 3,776,131
129 3,776,132
147 3,776,133
226 3,776,134

CLASS 102
29 3,776,135
38 3,776,136
41 3,776,137
70.2R 3,776,138
3,776,140
105 3,776,139

CLASS 104
123 3,776,141

CLASS 105
253 3,776,142
343 3,776,143
406R 3,776,144

CLASS 106
1 3,776,740
15FP 3,776,741
22 3,776,742
53 3,776,743
54 3,776,745
73.4 3,776,744
75 3,776,746
84 3,776,747
280 3,776,748
288Q 3,776,749
307 3,776,750

CLASS 108
51 3,776,145
3,776,146

CLASS 110
7S 3,776,147
8A 3,776,148
8R 3,776,149
3,776,150
3,776,151
9R 3,776,152
10 3,776,153

CLASS 112
114 3,776,154
121.15 3,776,155
141 3,776,156
162 3,776,157
216 3,776,158
235 3,776,159
3,776,160
252 3,776,161
262 3,776,162
266 3,776,163

CLASS 113
119A 3,776,207

CLASS 114
.5R 3,776,164
43.5 3,776,166
3,776,167
56 3,776,168
72 3,776,169
103 3,776,170
141 3,776,171
208 3,776,172
221A 3,776,165

CLASS 115
12R 3,776,173

CLASS 116
34R 3,776,174
105 3,776,175
129L 3,776,176
133 3,776,177
137A 3,776,178

CLASS 117
4 3,776,751
10 3,776,752
11 3,776,753
33.5CM 3,776,754
36.4 3,776,755
3,776,756
37LE 3,776,757
38 3,776,758
69 3,776,759
72 3,776,760
76P 3,776,761
93.1GD 3,776,762
105.3 3,776,763
124A 3,776,764
136 3,776,765
138.8F 3,776,766
139.4 3,776,767
140A 3,776,768
212 3,776,769
3,776,770
3,776,771
227 3,776,772

CLASS 118
8 3,776,179
49.5 3,776,181
62 3,776,182
235 3,776,183
243 3,776,184
301 3,776,180
406 3,776,185
603 3,776,186
626 3,776,187

CLASS 119
1 3,776,188
14.28 3,776,189
14.36 3,776,196
18 3,776,190
3,776,191
51.11 3,776,192
51.5 3,776,193
52B 3,776,194
72.5 3,776,195
96 3,776,197
109 3,776,198

CLASS 122
33 3,776,199
504 3,776,200

CLASS 123
8.13 3,776,201
8.47 3,776,202
56C 3,776,203
102 3,776,204
117R 3,776,205
3,776,206
119R 3,776,208
3,776,209
139AM 3,776,210
146.5A 3,776,211
191SP 3,776,212

CLASS 125
11CC 3,776,213

CLASS 126
113 3,776,214
3,776,215
197 3,776,216

CLASS 128
1B 3,776,217
2B 3,776,219
2F 3,776,218
2W 3,776,220
2.05R 3,776,221
2.06R 3,776,228
6 3,776,222
66 3,776,223
75 3,776,224
77 3,776,225
172 3,776,226
203 3,776,227
214C 3,776,229
260 3,776,230
271 3,776,001
275 3,776,231
287 3,776,232
3,776,233
3,776,234
295 3,776,235
305 3,776,236
3,776,237
3,776,238
347 3,776,239
361 3,776,240
400 3,776,241

CLASS 130
27T 3,776,242

CLASS 132
33R 3,776,243
46R 3,776,244
83R 3,776,245

CLASS 134
6 3,776,773
7 3,776,774
42 3,776,775
153 3,776,246

CLASS 136
86E 3,776,776
86R 3,776,777
132 3,776,778
157 3,776,779
228 3,776,780
239 3,776,781

CLASS 137
13 3,776,247
3,776,248
14 3,776,249
71 3,776,250
3,776,251
89 3,775,848
99 3,776,252
183 3,776,254
202 3,776,255
3,776,256
206 3,776,257
269 3,776,258
318 3,776,259
321 3,776,260
337 3,776,261
355.16 3,776,262
384.8 3,776,263
469 3,776,264
487.5 3,776,265
489 3,776,266
494 3,776,267
495 3,776,268
561A 3,776,269
580 3,776,270
595 3,776,271
596 3,776,272
596.12 3,776,273
599 3,776,274
625.18 3,776,276
625.38 3,776,278
625.4 3,776,275
625.6 3,776,277
802 3,776,279

CLASS 138
109 3,776,253

CLASS 139
33 3,776,280
122N 3,776,281
122R 3,776,282

CLASS 141
45 3,776,283
65 3,776,284
386 3,776,285

CLASS 144
13 3,776,287
28.5 3,776,286
230 3,776,289
235 3,776,288
326R 3,776,290

CLASS 148
6.15Z 3,776,782
6.27 3,776,783
12 3,776,784
13 3,776,785
175 3,776,786

CLASS 149
7 3,776,787

CLASS 152
182 3,776,291
225 3,776,292
359 3,776,293

CLASS 156
17 3,776,788
3,776,789
3,776,790
91 3,776,791
124 3,776,792
132 3,776,793
143 3,776,794
157 3,776,795
181 3,776,796
220 3,776,797
269 3,776,798
305 3,776,799
345 3,776,800
350 3,776,801
420 3,776,802
499 3,776,803
515 3,776,804

CLASS 161
2 3,776,805
88 3,776,806
124 3,776,807
141 3,776,808
164 3,776,809
170 3,776,810
253 3,776,811

CLASS 162
168 3,776,812

CLASS 164
52 3,776,294
66 3,776,295
85 3,776,296
86 3,776,297
154 3,776,298
385 3,776,299
403 3,776,300

CLASS 165
54 Re.27,827
67 3,776,301
82 3,776,302
3,776,303
96 3,776,304
107 3,776,305
111 3,776,306

CLASS 166
125 3,776,307
187 3,776,308
273 3,776,309
275 3,776,310
295 3,776,311
302 3,776,312

CLASS 169
19 3,776,313

CLASS 172
1 3,776,314
2 3,776,322
4.5 3,776,315
6 3,776,316
777 3,776,317
3,776,318

CLASS 173
36 3,776,319
163 3,776,320

CLASS 174
28 3,777,045
42 3,777,046
3,777,047
73R 3,777,048
78 3,777,049
3,777,050
94R 3,777,051
110R Re.27,832
128 Re.27,830
138D 3,777,052

CLASS 175
4 3,776,321
4.51 3,776,323

CLASS 176
19R 3,776,813
87 3,776,814

CLASS 177
116 3,776,324

CLASS 178
5.1 3,777,053
5.4CD 3,777,060
5.4R 3,777,061
6.6SF 3,777,054
6.7 3,777,055
7.1 3,777,056
7.8 3,777,057
7.88 3,777,059
69.5G 3,777,063
69.5R 3,777,062
3,777,066

CLASS 179
1.5FS 3,777,064
6TA 3,777,065
27CA 3,777,058
81R 3,777,067
84R 3,777,069
84.5S 3,777,068
100.2MD 3,777,072
100.2B 3,777,075
100.2D 3,777,074
100.2K 3,777,071
100.2Z 3,777,070
3,777,073
100.4ST 3,777,076
107R 3,777,077
114A 3,777,078
121D 3,777,079
175.2R 3,777,080
175.3 3,777,081

CLASS 180
6.48 3,776,325
9.2R 3,776,326
14B 3,776,327
27 3,776,353
64R 3,776,354
77R 3,776,355
79.2R 3,776,356
82R 3,776,357
84 3,776,358
90 3,776,359
127 3,776,360

CLASS 181
24 3,776,362
33C 3,776,363
48 3,776,364
50 3,776,365
57 3,776,366

CLASS 182
2 3,776,367
19 3,776,368

CLASS 184
15R 3,776,369

CLASS 187
17 3,776,328

CLASS 188
1A 3,776,329
67 3,776,330
166 3,776,331
290 3,776,332
344 3,776,333

CLASS 190
41R 3,776,334

CLASS 192
41 3,776,335
95 3,776,336
110B 3,776,337

CLASS 194
9R 3,776,338
10 3,776,339

CLASS 195
36R 3,776,815
66R 3,776,816
103.5R 3,776,817
139 3,776,818

CLASS 197
1R 3,776,340
127R 3,776,341

CLASS 198
20C 3,776,343
20R 3,776,342
20 3,776,344
24 3,776,345
33AD 3,776,346
127R 3,776,347
131 3,776,348
195 3,776,349
204 3,776,350
219 3,776,351
220DB 3,776,352

CLASS 199
56 3,776,370

CLASS 200
5A 3,777,082
48R 3,777,083
50A 3,777,084
51LM 3,777,085
52R 3,777,086
67A 3,777,087
80 3,777,088
144B 3,777,089
159B 3,777,090
166BC 3,777,091
172R 3,777,092
181 3,777,093

CLASS 204
1T 3,776,819
15 3,776,820
43G 3,776,821
46 3,776,822
60 3,776,823
78 3,776,824
81 3,776,825
107 3,776,826
129.46 3,776,827
129.65 3,776,828
164 3,776,829
192 3,776,830
195R 3,776,832
195S 3,776,831
243R 3,776,833
290F 3,776,834

CLASS 206
1.7 3,776,371
7H 3,776,372
16R 3,776,373
45.14 3,776,374
45.34 3,776,375
65E 3,776,376

CLASS 208
48AA 3,776,835
65 3,776,836
3,776,837
74 3,776,838
110 3,776,839
139 3,776,840

CLASS 209
73 3,776,377
3,776,378
3,776,379
111.5 3,776,380
111.6 3,776,381
403 3,776,382

CLASS 210
17 3,776,841
23 3,776,842
199 3,776,383
209 3,776,384
304 3,776,385
398 3,776,386

CLASS 211
60T 3,776,387
86 3,776,388
90 3,776,389

CLASS 212
122 3,776,390

CLASS 213
8 3,776,391

CLASS 214
1BV 3,776,393
1R 3,776,392
3,776,394
6BA 3,776,395
8.5A 3,776,396
8.5C 3,776,398
8.5K 3,776,397
16.4A 3,776,399
38BA 3,776,400
55 3,776,401
75T 3,776,402
137 3,776,403
152 3,776,404
310 3,776,405

CLASS 215
9 3,776,406
3,776,407
11E 3,776,408

CLASS 219
10.49 3,777,094
10.55 3,777,095
3,777,098
3,777,099
10.57 3,777,096
10.59 3,777,097
10.75 3,777,100
60A 3,777,101
3,777,103
3,777,102
3,777,104
3,777,108
3,777,105
3,777,106
3,777,107
85 3,777,109
105 3,777,111
121P 3,777,112
125R 3,777,110
3,777,115
137 3,777,113
160 3,777,114
216 3,777,116
300 3,777,117
394 3,777,118

CLASS 220
3 3,776,409
9R 3,776,413
19 3,776,410
20 3,776,411
71 3,776,414
85P 3,776,412
90 3,776,415

CLASS 221
21 3,776,416
67 3,776,417
125 3,776,418
197 3,776,419
211 3,776,420
251 3,776,421

CLASS 222
3 3,776,422
26 3,776,423
94 3,776,424
101 3,776,425
146HE Re.27,828
3,776,426
153 3,776,428
162 3,776,429
177 3,776,430
178 3,776,431
193 3,776,432
394 3,776,427
519 3,776,433
525 3,776,434
566 3,776,435

CLASS 223
1 3,776,436

CLASS 224
42.45R 3,776,437

CLASS 225
93 3,776,438

CLASS 226
97 3,776,440
114 3,776,441
198 3,776,442

CLASS 227
10 3,776,443
130 3,776,444
3,776,445

CLASS 228
2 3,776,446
3 3,776,447
5 3,776,448
29 3,776,449

CLASS 229
7R 3,776,450
55 3,776,451

CLASS 234
1 3,776,452

CLASS 235
52 3,776,453
61.11A 3,777,119
61.11R 3,777,120
61.12R 3,776,454
92EA 3,777,121
150.1 3,777,122
150.22 3,776,455
150.27 3,777,123
151 3,777,124
151.11 3,777,125
3,777,128
151.3 3,777,126
3,777,127
3,777,129
152 3,777,130
156 3,777,131
164 3,777,132
181 3,777,133

CLASS 236
34.5 3,776,457
93 3,776,456

CLASS 239
33 3,776,458
77 3,776,459
101 3,776,460
125 3,776,461
134 3,776,462
204 3,776,463
229 3,776,464
251 3,776,465
265.15 3,776,466
265.35 3,776,467
310 3,776,468
446 3,776,469
534 3,776,470
553.5 3,776,471
591 3,776,472

CLASS 240
6.42 3,777,136
10R 3,777,134
41.35R 3,777,135
52R 3,777,137
84 3,777,138

CLASS 241
15 3,776,473
23 3,776,474
33 3,776,475
34 3,776,476
72 3,776,477

103 3,776,478

CLASS 242
35.6R 3,776,479
47.01 3,776,480
56A 3,776,481
67.1R 3,776,482
71.1 3,776,483
78.6 3,776,484
106 3,776,485
118.3 3,776,486
182 3,776,487
183 3,776,488

CLASS 244
1N 3,776,489
3.21 3,776,490
42CB 3,776,491
137R 3,776,492
147 3,776,493

CLASS 246
125 3,777,139

CLASS 248
18 3,776,494
71 3,776,495
182 3,776,496
205A 3,776,497
221 3,776,498
298 3,776,499
333 3,776,500

CLASS 249
2 3,776,501
33 3,776,502
106 3,776,503
121 3,776,504

CLASS 250
201 3,777,151
206 3,777,152
209 3,777,149
3,777,150
227 3,777,153
3,777,154
229 3,777,155
264 3,777,147
280 3,777,156
302 3,777,143
3,777,157
303 3,777,145
305 3,777,159
324 3,777,158
327 3,777,142
338 3,777,160
361 3,777,161
366 3,777,144
369 3,777,146
468 3,777,162
490 3,777,140
491 3,777,163
505 3,777,148
521 3,777,141
531 3,777,164
555 3,777,165
3,777,166
560 3,777,167
561 3,777,168
565 3,777,169
569 3,777,170
572 3,777,171
575 3,777,172
3,777,173

CLASS 251
163 3,776,505
172 3,776,506
248 3,776,507
306 3,776,509
333 3,776,510

CLASS 252
7 3,776,843
8.75 3,776,844
12 3,776,845
32.7E 3,776,846
33 3,776,847
49.5 3,776,848
62.1 3,776,849
89 3,776,850
3,776,851
143 3,776,852
171 3,776,853
190 3,776,854
251R 3,776,870
301.1R 3,776,508
3,776,855
301.1W 3,776,856
308 3,776,857
431R 3,776,858
455R 3,776,860
462 3,776,859
545 3,776,861

CLASS 254
1 3,776,511
150FH 3,776,513
3,776,518
150R 3,776,517
166 3,776,515
167 3,776,514
175.5 3,776,519
190R 3,776,516

CLASS 256
13.1 3,776,520
24 3,776,521
47 3,776,522
73 3,776,523

CLASS 259
4 3,776,524
7 3,776,525
72 3,776,526
91 3,776,527
102 3,776,512
183 3,776,528
185 3,776,529

CLASS 260
2A 3,776,862
3,776,863
17R 3,776,864
18N 3,776,865
18R 3,776,866
21 3,776,867
23EP 3,776,868
24 3,776,869
28.5D 3,776,871
29.1R 3,776,873
29.6TA 3,776,874
29.7AT 3,776,872
29.7R 3,776,876
31.2R 3,776,875
31.8M 3,776,877
32.2 3,776,878
33.4R 3,776,879
37SB 3,776,881
37R 3,776,880
45.75B 3,776,883
45.85B 3,776,884
45.9R 3,776,882
46.5G 3,776,885
47C 3,776,886
3,776,887
73R 3,776,888
77.5CR 3,776,889
78UA 3,776,976
78R 3,776,890
79.5B 3,776,891
80.73 3,776,892
83.7 3,776,893
92.8W 3,776,894
93.1 3,776,895
94.2M 3,776,896
124R 3,776,897
156 3,776,898
211.5R 3,776,899
3,776,900
239.3A 3,776,901
239.55R 3,776,902
240A 3,776,904
240.1 3,776,905
243C 3,776,906
3,776,907
247.2B 3,776,908
248AS 3,776,903
249.9 3,776,909
256.4F 3,776,911
256.4H 3,776,910
283S 3,776,912
293.54 3,776,914
293.56 3,776,915
293.69 3,776,913
294.9 3,776,916
296R 3,776,917
3,776,918
306.8D 3,776,919
309.2 3,776,920
309.5 3,776,921
326.16 3,776,923
326.5B 3,776,922
332.2R 3,776,924
333 3,776,925
343 3,776,926
397.2 3,776,927
404.8 3,776,928
429R 3,776,929
429.3 3,776,932
429.9 3,776,930
438.1 3,776,931
448.2E 3,776,933
448.2N 3,776,934
453PC 3,776,935
455A 3,776,936
465B 3,776,937
468D 3,776,938
468G 3,776,939
3,776,940
3,776,941
470 3,776,942
471C 3,776,943
473F 3,776,944
475D 3,776,945
482R 3,776,946
486R 3,776,947
491 3,776,948
515P 3,776,949
533A 3,776,951
533N 3,776,952
543P 3,776,953
543 3,776,954
551C 3,776,950
552SC 3,776,955
561N 3,776,956
3,776,957
576 3,776,958
583D 3,776,959
607A 3,776,960
613R 3,776,961
624C 3,776,962
637P 3,776,963
658R 3,776,969
665R 3,776,964
666PY 3,776,966
666A 3,776,967
666R 3,776,965
668F 3,776,968
669A 3,776,970
671P 3,776,971
677A 3,776,972
683D 3,776,973
3,776,974
3,776,975
825 3,776,977
831 3,776,978
872 3,776,980
878B 3,776,979
880B 3,776,981
884 3,776,982
901 3,776,983
943 3,776,984
980 3,776,985
985 3,776,986

CLASS 261
4 3,776,530
87 3,776,531

CLASS 264
.5 3,776,987
14 3,776,988
53 3,776,989
54 3,776,990
89 3,776,991
122 3,776,992
159 3,776,993
170 3,776,994
219 3,776,995
242 3,776,996
290 3,776,997
294 3,776,998
315 3,776,999
327 3,777,000
337 3,777,001
343 3,777,002

CLASS 266
1 3,776,532
24 3,776,533
34R 3,776,535
34V 3,776,534
38 3,776,439

CLASS 267
35 3,776,536

CLASS 269
13 3,776,537
46 3,776,538
81 3,776,539
328 3,776,540

CLASS 270
31 3,776,541
3,776,542
53 3,776,543

CLASS 271
3 3,776,544
4 3,776,545
64 3,776,546

CLASS 272
57R 3,776,547

CLASS 273
1M 3,776,548
1.5A 3,776,550
1.5R 3,776,549
95A 3,776,551
105.2 3,776,553
130R 3,776,552
131AB 3,776,554
186A 3,776,556
186R 3,776,555

CLASS 274
23R 3,776,557

CLASS 277
9 3,776,558
56 3,776,559
88 3,776,560
116.8 3,776,561

CLASS 279
2 3,776,562

CLASS 280
11.13L 3,776,563
11.35M 3,776,566
11.35N 3,776,565
11.35T 3,776,564
3,776,567
3,776,568
106T 3,776,569
150AB 3,776,570
154.5R 3,776,571
292 3,776,572
405A 3,776,573

CLASS 283
1 3,776,574

CLASS 285
18 3,776,575
27 3,776,576
31 3,776,577
94 3,776,578
233 3,776,579

CLASS 290
40 3,777,174

CLASS 292
17 3,776,580
39 3,776,581
92 3,776,582
307R 3,776,583

CLASS 294
21 3,776,584
74 3,776,585
102R 3,776,586

CLASS 296
1S 3,776,587
28R 3,776,589
95R 3,776,590
146 3,776,588
3,776,591

CLASS 299
1 3,776,592
8 3,776,593
18 3,776,594
31 3,776,595

CLASS 300
2 3,776,596

CLASS 301
6V 3,776,597

CLASS 302
3 3,776,599
59 3,776,600
64 3,776,601
66 Re.27,831

CLASS 303
6C 3,776,602
3,776,603
21CF 3,776,606
21EB 3,776,604
21A 3,776,605
22R 3,776,607

CLASS 305
38 3,776,598

CLASS 307
10SB 3,777,175
108 3,777,176
118 Re.27,829
3,777,177
136 3,777,178
3,777,179
216 3,777,180
232 3,777,181
268 3,777,182
3,777,183
3,777,184
291 3,777,185
304 3,777,186
310 3,777,187
311 3,777,188

CLASS 308
3.5 3,776,610
3.8 3,776,608
9 3,776,609
36.1 3,776,611
238 3,776,612

CLASS 310
8.1 3,777,192
8.3 3,777,189
60 3,777,190
67 3,777,191
68D 3,777,193
87 3,777,194
91 3,777,195
156 3,777,196
194 3,777,197
200 3,777,198

CLASS 313
27 3,777,199
32 3,777,200
65R 3,777,201
85S 3,777,202
3,777,204
108A 3,777,205
217 3,777,206
222 3,777,207
231 3,777,208
238 3,777,209
256 3,777,210

CLASS 315
31R 3,777,211
85S 3,777,203
241P 3,777,212
323 3,777,213

CLASS 316
20 3,776,613

CLASS 317
3 3,777,214
26 3,777,215
31 3,777,216
33C 3,777,217
59 3,777,218
61.5 3,777,219
101CP 3,777,221
101A 3,777,220
112 3,777,222
118 3,777,223
120 3,777,224
130 3,777,225
234R 3,777,238
235R 3,777,227
3,777,228
3,777,229
3,777,230
249R 3,777,226
262R 3,777,231

CLASS 318
122 3,777,236
221E 3,777,232
313 3,777,233
326 3,777,234
331 3,777,244
341 3,777,235
345 3,777,237
3,777,239
471 3,777,240
480 3,777,241
586 3,777,242
621 3,777,243
685 3,777,245
696 3,777,246

CLASS 320
2 3,777,247

CLASS 321
3,777,248
8 3,777,249
9R 3,777,250

CLASS 323
4 3,777,251
3,777,252
22T 3,777,253

CLASS 324
.5R 3,777,254
34PS 3,777,255
57R 3,777,256
61QS 3,777,258
61R 3,777,257
62 3,777,259
64 3,777,260
73R 3,777,261
103P 3,777,262
3,777,263
146 3,777,264
3,777,265
182 3,777,266

CLASS 325
18 3,777,267
38R 3,777,268
163 3,777,269
363 3,777,270

CLASS 328
16 3,777,271

CLASS 329
104 3,777,272
200 3,777,273

CLASS 330
5.5 3,777,274
10 3,777,275

CLASS 331
4 3,777,276
49 3,777,277
78 3,777,278
94.5 3,777,279
3,777,280
3,777,281
3,777,282
3,777,283

CLASS 333
10 3,777,284
70S 3,777,286
84M 3,777,287

CLASS 334
1 3,777,288
15 3,777,289
3,777,290

CLASS 335
16 3,777,291
126 3,777,292
176 3,777,293
236 3,777,294
297 3,777,295

CLASS 336
120 3,777,296

CLASS 337
161 3,777,297

CLASS 339
16R 3,777,298
17CF 3,777,285
17L 3,777,299
21R 3,777,300
217S 3,777,301
223R 3,777,302
258R 3,777,303

CLASS 340
4R 3,777,304
16R 3,777,305
64 3,777,306
147CN 3,777,308

CLASS 346
75 3,777,307

CLASS 350
35 3,776,614
160LC 3,776,615
162SF 3,776,616
245 3,776,617
288 3,776,618

CLASS 351
12 3,776,619
13 3,776,620

CLASS 352
85 3,776,621
119 3,776,622
124 3,776,623
130 3,776,624
170 3,776,625
194 3,776,626

CLASS 355
3 3,776,627
3,776,628
8 3,776,629
10 3,776,630
15 3,776,631
3,776,632
132 3,776,633
133 3,776,634

CLASS 356
43 3,776,635
106 3,776,636
3,776,637
124 3,776,638
126 3,776,639
160 3,776,640
171 3,776,641
188 3,776,642
244 3,776,643

CLASS 401
7 3,776,644
188 3,776,645
199 3,776,646

CLASS 402
17 3,776,648

CLASS 403
90 3,776,649
191 3,776,650
248 3,776,651
282 3,776,652
372 3,776,653

CLASS 404
65 3,776,654

CLASS 408
1 3,776,655
233 3,776,656
241G 3,776,647

CLASS 415
53 3,776,657
88 3,776,658
196 3,776,660
200 3,776,659

CLASS 417
12 3,776,661
37 3,776,662
64 3,776,663
243 3,776,664
252 3,776,665
411 3,776,666
454 3,776,667

CLASS 418
97 3,776,668

CLASS 423
20 3,777,003
3,777,004
27 3,777,005
118 3,777,006
268 3,777,007
316 3,777,008
508 3,777,009
573 3,777,010
592 3,777,011
610 3,777,012

	3,777,013	180	3,777,020		3,777,030		CLASS 425	262	3,776,677	62	3,777,039
	CLASS 424	195	3,777,021	272	3,777,031	8	3,776,669	310	3,776,678		CLASS 431
12	3,777,014	200	3,777,023	274	3,777,032	72	3,776,672	325	3,776,679	66	3,776,684
15	3,777,015		3,777,024	283	3,777,033	114	3,776,670	326	3,776,680	93	3,776,685
80	3,777,016	246	3,777,025	285	3,777,034	125	3,776,673	346	3,776,681		3,776,686
84	3,777,017	248	3,777,026	300	3,777,035	134	3,776,674	384	3,776,682		CLASS 432
117	3,777,018	263	3,777,027		3,777,036	139	3,776,675	440	3,776,683	6	3,776,687
150	3,777,022		3,777,028	341	3,777,037	164	3,776,671		CLASS 426	14	3,776,688
175	3,777,019	266	3,777,029			250	3,776,676	19	3,777,038	183	3,776,689

CLASSIFICATION OF DESIGNS

D02—	24	229,453		165	229,464		93	229,476		151	229,487		229,500
		229,454		168	229,465		101	229,477			229,488	D34—	AJ 229,501
		229,455		170	229,466		179	229,478		156	229,489	D37—	1 229,502
	321	229,456		179	229,467		203	229,479		173	229,490	D40—	R 229,503
	600.1	229,497			229,468		232	229,480	D13—	1R	229,492	D45—	229,505
D06—	14	229,457		243	229,469		267	229,481		6	229,493		15 229,504
	20	229,458	D07—	74	229,470	D09—	147	229,482	D22—	11	229,494	D48—	20E 229,506
	79	229,459		78	229,471		175	229,483	D23—	32	229,495		32R 229,507
	86	229,460		150	229,472		245	229,485		43	229,496	D55—	1B 229,508
	97	229,461		191	229,473		252	229,484	D26—	14F	229,498	D56—	4D 229,509
	116	229,462	D08—	44	229,474	D12—	53	229,486		15B	229,499		229,510
	162	229,463		82	229,475		85	229,491					

D61—	1N	229,511											
D64—	11B	229,512											
	R	229,513											
D83—	1F	229,514											
		229,515											
	J	229,516											
	8R	229,517											
	12A	229,518											
D85—	2B	229,519											
	8A	229,520											
D88—	3B	229,521											

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

96—	48 T917,003	260—	2.2 T917,011		T917,012		41AG T917,009		396 T917,001	340—	172.5 T917,007
117—	136 T917,002		28.5 T917,008	30.4	T917,005		296 T917,004	310—	52 T917,006	444—	1 T917,010

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,776,296		3,776,107		3,776,625		3,777,208		3,777,065		3,776,563
	3,776,466		3,776,113		3,776,643		3,777,225		3,777,073	17 :	Re.27,826
3 :	3,776,943		3,776,138		3,776,658		3,777,242		3,777,087		3,775,791
4 :	3,775,906		3,776,140		3,776,681		3,777,247		3,777,091		3,775,807
	3,775,948		3,776,145		3,776,697		3,777,262		3,777,092		3,775,812
	3,776,269		3,776,152		3,776,729		3,777,272		3,777,123		3,775,820
	3,776,274		3,776,168		3,776,744		3,777,282		3,777,169		3,775,833
	3,776,553		3,776,170		3,776,762		3,777,283		3,777,245		3,775,836
	3,776,786		3,776,173		3,776,771		3,777,284		3,777,259		3,775,864
	3,776,793		3,776,175		3,776,779		3,777,285		3,777,279		3,775,898
	3,777,001		3,776,177		3,776,783		3,777,286	10 :	3,776,081		3,775,911
	3,777,188		3,776,194		3,776,801		3,777,305		3,776,108		3,775,935
	3,777,206		3,776,196		3,776,817	8 :	3,775,984		3,776,706		3,775,941
	3,777,216		3,776,198		3,776,831		3,776,024		3,776,752		3,775,951
	3,777,219		3,776,211		3,776,835		3,776,088		3,776,826		3,775,970
	3,777,251		3,776,220		3,776,855		3,776,112		3,776,886		3,776,073
5 :	3,775,778		3,776,227		3,776,862		3,776,284		3,776,929		3,776,100
	3,776,379		3,776,229		3,776,903		3,776,310		3,776,986		3,776,106
	3,776,778		3,776,237		3,776,909		3,776,531		3,776,997		3,776,122
6 :	Re.27,825		3,776,258		3,776,935		3,776,579		3,777,025		3,776,132
	3,775,781		3,776,261		3,776,958		3,776,639	11 :	3,776,226		3,776,157
	3,775,822		3,776,266		3,776,981		3,777,003	12 :	3,775,785		3,776,178
	3,775,825		3,776,267		3,776,988		3,777,004		3,775,890		3,776,232
	3,775,829		3,776,280		3,777,010		3,777,058		3,775,891		3,776,233
	3,775,839		3,776,314		3,777,015		3,777,074		3,775,954		3,776,234
	3,775,844		3,776,319		3,777,035		3,777,185		3,776,104		3,776,236
	3,775,850		3,776,353		3,777,037	9 :	3,775,793		3,776,154		3,776,238
	3,775,851		3,776,365		3,777,043		3,775,845		3,776,302		3,776,240
	3,775,855		3,776,381		3,777,049		3,775,846		3,776,361		3,776,291
	3,775,856		3,776,406		3,777,053		3,775,883		3,776,377		3,776,315
	3,775,857		3,776,412		3,777,054		3,776,018		3,776,383		3,776,326
	3,775,868		3,776,413		3,777,064		3,776,041		3,776,429		3,776,334
	3,775,876		3,776,455		3,777,070		3,776,054		3,776,451		3,776,338
	3,775,878		3,776,464		3,777,071		3,776,072		3,776,468		3,776,344
	3,775,897		3,776,488		3,777,075		3,776,074		3,776,499		3,776,352
	3,775,912		3,776,493		3,777,090		3,776,119		3,776,714		3,776,356
	3,775,943		3,776,498		3,777,093		3,776,245		3,777,069		3,776,366
	3,775,969		3,776,508		3,777,109		3,776,303		3,777,154		3,776,387
	3,775,972		3,776,517		3,777,115		3,776,342		3,777,261		3,776,396
	3,775,974		3,776,525		3,777,124		3,776,443	13 :	Re.27,830		3,776,401
	3,775,976		3,776,535		3,777,126		3,776,459		Re.27,832		3,776,410
	3,775,977		3,776,560		3,777,132		3,776,582		3,775,870		3,776,418
	3,775,989		3,776,565		3,777,139		3,776,637		3,776,039		3,776,419
	3,776,008		3,776,572		3,777,143		3,776,649		3,776,095		3,776,420
	3,776,009		3,776,574		3,777,152		3,776,678		3,776,339		3,776,452
	3,776,019		3,776,591		3,777,156		3,776,700		3,776,926		3,776,504
	3,776,028		3,776,594		3,777,157		3,776,795		3,776,990		3,776,510
	3,776,040		3,776,609		3,777,159		3,776,874	14 :	3,776,673		3,776,512
	3,776,055		3,776,621		3,777,179		3,776,879	16 :	3,776,126		3,776,544
	3,776,079		3,776,622		3,777,181		3,776,994		3,776,190		3,776,548
	3,776,097		3,776,623		3,777,201		3,777,048		3,776,333		3,776,581

3,776,635
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3,776,694
3,776,724
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3,777,014
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3,777,052
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3,777,114
3,777,129
3,777,137
3,777,176
3,777,187
3,777,214
3,777,249
3,777,301
3,777,303
18 : 3,775,777
3,775,787
3,775,895
3,775,979
3,775,994
3,776,124
3,776,143
3,776,181
3,776,187
3,776,191
3,776,197
3,776,202
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3,776,437
3,776,465
3,776,641
3,776,661
3,776,711
3,776,784
3,776,923
3,777,020
3,777,138
3,777,194
3,777,232
3,777,290
19 : Re.27,829
3,775,875
3,776,223
3,776,241
3,776,278
3,776,518
3,777,066
20 : 3,776,316
3,776,672
3,776,979
21 : 3,776,371
3,776,538
3,777,072
22 : 3,775,814
3,775,933
3,775,985
3,776,692
3,776,850
23 : 3,776,790
3,776,888
24 : 3,775,848
3,775,916
3,775,917
3,775,997
3,776,053
3,776,089
3,776,093
3,776,137
3,776,167
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3,777,077
3,777,131
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25 : 3,775,795
3,775,797
3,775,821
3,775,873
3,775,887
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3,776,118
3,776,148
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3,776,421
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3,776,575
3,776,614
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3,776,725
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3,776,773
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3,777,009
3,777,142
3,777,164
3,777,165
3,777,192
3,777,196
3,777,215
3,777,235
3,777,263
3,777,292
3,777,294
3,777,297
26 : 3,775,830
3,775,862
3,775,882
3,775,918
3,775,927
3,775,929
3,776,011
3,776,016
3,776,037
3,776,044
3,776,064
3,776,083
3,776,096
3,776,180
3,776,206
3,776,207
3,776,242
3,776,246
3,776,256
3,776,259
3,776,286
3,776,289
3,776,363
3,776,374
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3,776,446
3,776,495
3,776,511
3,776,514
3,776,523
3,776,545
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3,776,881
3,776,915
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3,776,934
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3,777,082
3,777,226
3,777,238
27 : 3,775,774
3,775,786
3,775,963
3,776,189
3,776,273
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29 : 3,775,804
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3,776,453
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3,776,684
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3,777,306
30 : 3,776,358
31 : 3,775,798
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32 : 3,776,660
33 : 3,775,877
3,776,128
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3,776,486
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34 : 3,775,818
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3,777,174
3,777,180
3,777,182
3,777,195

3,777,224
3,777,269
3,777,275
35 : 3,775,784
3,776,192
3,777,264
36 : 3,775,775
3,775,776
3,775,808
3,775,809
3,775,813
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3,775,865
3,775,871
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3,776,068
3,776,078
3,776,114
3,776,135
3,776,166
3,776,169
3,776,186
3,776,195
3,776,209
3,776,213
3,776,257
3,776,265
3,776,279
3,776,341
3,776,362
3,776,373
3,776,405
3,776,438
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3,776,458
3,776,482
3,776,483
3,776,489
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3,777,276
3,777,307
37 : 3,775,810
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38 : 3,775,886
39 : 3,775,783
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3,776,578
3,776,750
3,776,880
3,776,893
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3,776,930
3,776,973
41 : 3,775,902
3,776,228
3,776,318
3,776,390
3,776,445
3,777,271
42 : 3,775,782
3,775,794
3,775,815
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3,775,843
3,775,861
3,775,914
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3,776,002
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44 : 3,776,183
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47 : 3,776,026
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48 : 3,775,880
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49 : 3,775,799
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DESIGN PATENTS

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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

6 : T917,011
10 : T917,005

T917,008
T917,012

22 : T917,004
27 : T917,007

36 : T917,001
T917,003

42 : T917,010
T917,006

47 : T917,002
T917,009

U. S. GOVERNMENT PRINTING OFFICE : O - 1973

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 11, 1973 Volume 917 Number 2

CONTENTS

	Page
Patent Notices	
Certificates of Correction for the Week of December 11, 1973	406
Disclaimers	406
Dedications	406
Condition of Patent Applications	408
Reissue Patents Granted (27,833)	409
Patents Granted	
General and Mechanical (3,777,309)	412
Chemical (3,778,225)	654
Electrical (3,778,525)	708
Design Patents Granted (229,522)	793
Index of Patentees	PI 1
Indices of Applicants of Reissues and Designs	PI 45
Classification of	
Patents (Including Reissues)	PI 47
Designs	PI 50
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 51
Designs	PI 53

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PATENT NOTICES

Certificates of Correction for the Week of Dec. 11, 1973

Re. 27,737	3,727,560	3,736,624	3,745,653
Re. 27,738	3,727,647	3,736,627	3,745,664
D. 227,150	3,727,652	3,736,635	3,745,710
3,494,469	3,727,715	3,736,654	3,745,827
3,515,634	3,727,879	3,737,092	3,745,932
3,517,514	3,727,900	3,737,119	3,746,055
3,572,010	3,728,334	3,737,386	3,746,401
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3,642,679	3,728,503	3,737,429	3,746,562
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3,668,251	3,729,915	3,737,748	3,747,112
3,669,128	3,730,037	3,738,485	3,747,164
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3,676,226	3,730,298	3,738,895	3,747,437
3,679,752	3,730,303	3,739,302	3,747,548
3,681,397	3,730,424	3,739,314	3,747,596
3,685,594	3,730,462	3,739,323	3,747,608
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3,687,851	3,731,297	3,740,133	3,747,884
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3,689,440	3,731,880	3,740,209	3,748,525
3,692,898	3,732,058	3,740,263	3,748,936
3,694,619	3,732,195	3,740,573	3,749,135
3,696,084	3,732,234	3,740,843	3,749,320
3,697,253	3,732,308	3,741,095	3,749,468
3,697,587	3,732,465	3,741,254	3,749,674
3,699,223	3,733,318	3,741,289	3,749,848
3,700,011	3,733,355	3,742,235	3,749,863
3,701,901	3,733,361	3,742,564	3,749,912
3,703,226	3,733,366	3,742,676	3,750,037
3,705,165	3,733,395	3,743,009	3,751,154
3,705,642	3,733,433	3,743,040	3,751,312
3,708,935	3,733,476	3,743,049	3,751,425
3,709,087	3,733,866	3,743,168	3,751,812
3,709,897	3,734,070	3,743,226	3,752,213
3,710,867	3,734,117	3,743,423	3,752,428
3,712,107	3,734,245	3,743,443	3,752,740
3,713,030	3,734,544	3,743,464	3,752,772
3,714,476	3,734,563	3,743,488	3,753,984
3,714,962	3,734,582	3,743,534	3,753,311
3,715,230	3,734,600	3,743,558	3,754,460
3,716,154	3,734,733	3,743,724	3,755,184
3,717,858	3,734,760	3,743,762	3,755,197
3,718,848	3,734,914	3,743,791	3,755,276
3,719,322	3,734,963	3,744,092	3,755,456
3,720,646	3,735,078	3,744,261	3,755,566
3,721,636	3,735,164	3,744,585	3,755,816
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3,723,108	3,735,393	3,744,682	3,755,967
3,723,604	3,735,579	3,745,173	3,756,194
3,723,827	3,735,642	3,745,275	3,756,272
3,724,185	3,736,151	3,745,307	3,757,113
3,724,422	3,736,156	3,745,335	3,757,258
3,725,221	3,736,304	3,745,337	3,757,390
3,726,248	3,736,305	3,745,426	3,757,526
3,726,924	3,736,326	3,745,500	3,758,936
3,727,399	3,736,334	3,745,536	3,760,261
3,727,411	3,736,382	3,745,629	

Disclaimers

Plant Patent 3,256.—*Walter H. Jessel, Jr.*, Doylestown, and *William E. Duffett*, Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated Aug. 15, 1972. Disclaimer filed Aug. 23, 1973, by the assignee, *Yoder Brothers, Inc.*

Hereby disclaims the single claim of said patent.

3,078,337.—*William J. Shanahan*, New York, *Vincent R. Zopf*, Floral Park, and *Albert M. Loshin*, Brooklyn, N.Y. METERING SYSTEMS. Patent dated Feb. 19, 1963. Disclaimer filed July 11, 1973, by the assignee, *Skiatron Electronics & Television Corporation.*

Hereby enters this disclaimer to claims 46, 47, 50 and 57 of said patent.

3,359,352.—*William H. Powell*, Livingston, and *Lawrence J. Friedman*, Fort Lee, N.J. PROCESS FOR PRODUCING DECORATIVE SURFACE COVERING. Patent dated Dec. 19, 1967. Disclaimer filed Aug. 24, 1973, by the assignee, *Congoleum Industries, Inc.*

Hereby enters this disclaimer to claims 1, 2, 4, 10, 13 and 19 of said patent.

3,454,210.—*Francis X. Spiegel*, Cedar Grove, N.J., and *Victor Monia*, Palo Alto, Calif. EASY OPENING AND RECLOSABLE PACKAGE, FILM THEREFOR AND PROCESS. Patent dated July 8, 1969. Disclaimer filed Sept. 4, 1973, by the assignee, *Standard Packaging Corporation.*

Hereby enters this disclaimer to claim 13 of said patent.

3,516,830.—*Thomas E. Whiteley*, Rochester, N.Y. PHOTOGRAPHIC SILVER HALIDE EMULSIONS AND ELEMENTS. Patent dated June 23, 1970. Disclaimer filed July 20, 1973, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to all claims of said patent.

3,517,376.—*John C. Sarazen*, Mansfield, *John M. Pierini*, South Attleboro, and *Reidar G. Larsen*, North Attleboro, Mass. CONNECTOR FOR USE BETWEEN AN INTEGRATED CIRCUIT AND A CIRCUIT PANEL. Patent dated June 23, 1970. Disclaimer filed June 13, 1973, by the assignee, *Texas Instruments Incorporated.*

Hereby enters this disclaimer to claims 1 and 7 of said patent.

3,638,039.—*Vallon Wei-Loong Chen*, Edison, N.J., and *Hiroshi Amemiya*, Morrisville, Pa. OPERATION OF FIELD-EFFECT TRANSISTOR CIRCUITS HAVING SUBSTANTIAL DISTRIBUTED CAPACITANCE. Patent dated Jan. 25, 1972. Disclaimer filed Aug. 27, 1973, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,666,243.—*Angelo J. Bisinella*, Niles, Ill. SAND MULLING OR CONDITIONING APPARATUS AND PLOW CONSTRUCTION THEREFOR. Patent dated May 30, 1972. Disclaimer filed Aug. 3, 1973, by the assignee, *Pettibone Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7, 8 and 9 of said patent.

3,685,899.—*John W. Reeds, Jr.*, Thousand Oaks, Calif. SEPARATION COLOR RECORDER SYSTEM. Patent dated Aug. 22, 1972. Disclaimer filed Sept. 12, 1973, by the assignee *Minnesota Mining and Manufacturing Company.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

Dedications

3,520,088.—*Alec Leibowitz*, London, England. GEM STONE POLISHING MACHINE. Patent dated July 14, 1970. Dedication filed Sept. 7, 1973, by the assignee, *Spectrum Diamonds (Proprietary) Ltd.*

Hereby dedicates the entire remaining term thereof to the Public.

3,527,946.—*Gordon Kramer*, Columbus, Ohio. SEMICONDUCTOR DOSIMETER HAVING LOW TEMPERATURE DIFFUSED JUNCTION. Patent dated Sept. 8, 1970. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,534,510.—*Alec Leibowitz*, London, England. METHOD OF FACETING GEM STONES. Patent dated Oct. 20, 1970. Dedication filed Sept. 7, 1973, by the assignee, *Spectrum Diamonds (Proprietary) Ltd.*

Hereby dedicates the entire remaining term thereof to the Public.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 24, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-03-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-11-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-08-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-28-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-17-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-18-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-08-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-07-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-18-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-17-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-10-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters, Stationery; Information Dissemination.	1-05-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes, Sewing Machines.	9-21-72

Expiration of patents: The patents within the range of numbers indicated below expire during November 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,772,415 to 2,775,761, inclusive
Plant Patents ..... Numbers 1,532 to 1,642, inclusive

REISSUES

DECEMBER 11, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

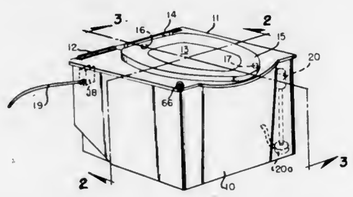
27,833
VEHICLE FLUSH TOILET

Thomas Carmichael and Durrell U. Howard, San Antonio, Tex., assignors to Sherwood Products Corporation, San Antonio, Tex.

Original No. 3,418,664, dated Dec. 31, 1968, Ser. No. 600,437, Dec. 9, 1966. Application for reissue May 5, 1971, Ser. No. 140,426

Int. Cl. E03d *5/016*

U.S. Cl. 4—115 **19 Claims**



The disclosure relates to a flush toilet for vehicles or the like. A storage receptacle receives waste from a bowl with which it communicates when an intervening shutter is open. During the flushing cycle, the shutter is closed and flushing fluid is pumped from a separate reservoir to the bowl and thence back to the reservoir, bypassing the receptacle.

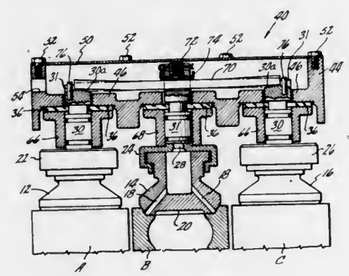
27,834
TRIPLE GOB SETTLE BLOWHEAD AND BAFFLE CONSTRUCTION

Francis A. Dahms, Tariffville, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Original No. 3,561,941, dated Feb. 9, 1971, Ser. No. 734,457, June 4, 1968. Application for reissue Sept. 2, 1971, Ser. No. 177,518

Int. Cl. C03b *9/00, 9/14*

U.S. Cl. 65—261 **5 Claims**



In the blank mold side of a triple gob Hartford I.S. Glassware Forming Machine Section, a settle blowhead and baffle carrier is provided for supporting three settle blowheads or baffles in depending relationship for movement into registration with corresponding openings in three individual blank molds. Two of the three baffles are slidably supported in the carrier for limited vertical floating movement and a single leaf spring urges these two baffles downwardly below the third so that as the baffles engage their respective blank mold openings, the spring is resiliently deformed to equalize the closing forces between all three baffles and their respective blank molds.

27,835
NONAQUEOUS ELECTROCHEMICAL CURRENT PRODUCING CELL HAVING SOLUBLE CATHODE DEPOLARIZER

Donald Leonard Maricle, Ridgefield, and Arthur Kentaro Hoffmann, New Canaan, Conn., by American Cyanamid Company, Stamford, Conn., assignee

No Drawing. Original No. 3,578,500, dated May 11, 1971, Ser. No. 743,005, July 8, 1968. Application for reissue Nov. 29, 1971, Ser. No. 203,083

Int. Cl. H01m *17/00*

U.S. Cl. 136—6 LN **8 Claims**

A primary and secondary electrochemical cell which comprises in combination an anode of a metal capable of reducing a cathode depolarizer, sulfur dioxide alone or in a co-solvent, an electrolyte salt, and soluble depolarizers.

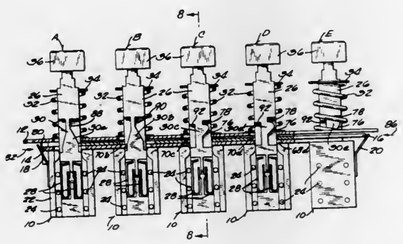
27,836
MULTISTATION PUSHBUTTON SWITCH ASSEMBLY WITH MASTER CONTROL MEANS FOR ALTERNATIVE PUSH-PUSH OR ONLY ONE SWITCH OPERABLE AT A TIME MODES OF ACTUATION

Eric George Hansen, Milwaukee, Wis., assignor to Globe-Union Inc.

Original No. 3,646,283, dated Feb. 29, 1972, Ser. No. 29,858, Apr. 20, 1970. Application for reissue Dec. 4, 1972, Ser. No. 311,861

Int. Cl. H01h *9/26*

U.S. Cl. 200—5 EB **14 Claims**



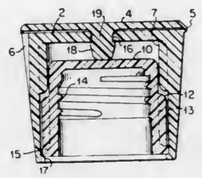
A multistation or ganged modular pushbutton switch assembly including a plurality of switch modules having a slider bar with a cam section and a push-push actuation mechanism thereon and separate latch bars cooperating with the cam sections so that some of the modules acting as operating modules can be controlled by master switch

modules to have either a push-push action, momentary action or are interlocked so that one must be actuated to deactuate the other.

27,837
PLASTIC SAFETY CLOSURE

James A. McIntosh, Upper Montclair, N.J., assignor to Mack-Wayne Plastics Co., Wayne, N.J.

Original No. 3,520,435, dated July 14, 1970, Ser. No. 787,695, Dec. 30, 1968. Application for reissue Feb. 9, 1972, Ser. No. 224,999
Int. Cl. B65d *21/00*
U.S. Cl. 215—9 4 Claims

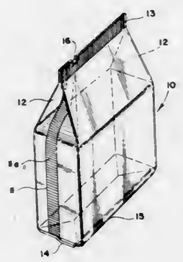


A plastic safety closure for threaded neck containers is described having an inner cap and an encompassing outer cap, each cap having engaging means, the engaging means being engaged for simultaneous rotation of the caps when the cap tops are in juxtaposition, and a plug associated with the outer cap capable of extending through the top of the outer cap to contact the top of the inner cap, thereby to maintain the cap tops separated and the engaging means in non-engaging relationship.

27,838
PACKAGE

William C. Leasure and John D. Andrews, Houston, Tex., assignors to Mira-Pak, Inc., Houston, Tex.

Original No. 3,458,111, dated July 29, 1969, Ser. No. 692,568, Dec. 21, 1967. Application for reissue July 21, 1970, Ser. No. 56,827
Int. Cl. B65d *33/38*
U.S. Cl. 229—17 R 18 Claims

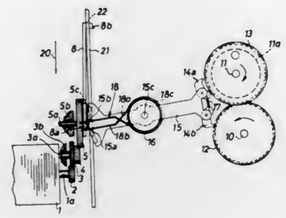


A package formed from a flat length of material, the edges of which length are connected together along a longitudinally extending seal. The package includes opposing gussets, one of which contains the longitudinally extending seal. The package is opened by separating the sides of the gusset and pulling the longitudinally extending seal, whereby the package opens and the gusset forms a pour spout. The bottom of the package may be flat.

27,839
MOTION PICTURE CAMERA

Friedrich Winkler, Unterhaching, and Kurt Thate, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Original No. 3,570,783, dated Mar. 16, 1971, Ser. No. 808,385, Mar. 17, 1969. Application for reissue Feb. 29, 1972, Ser. No. 230,530
Claims priority, application Germany, Mar. 28, 1968, P 17 72 083.1
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—205 23 Claims

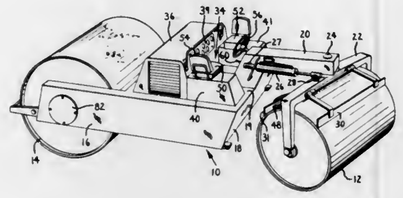


The takeup reel of a motion picture camera is rotated by way of the claw pulldown. The connection between the pulldown and the reel comprises a pair of meshing gears one of which is connected with the reel, a two-armed lever one arm of which is rocked by the pulldown by way of a torsion spring and the other arm of which carries two pawls. One pawl is disengaged from one of the gears when the other pawl rotates the other gear, and vice versa, whereby the reel rotates in a single direction.

27,840
TANDEM ROLLER

Donald D. Kronholm, Portland, Oreg., assignor to Hyster Company, Portland, Oreg.

Original No. 3,416,419, dated Dec. 17, 1968, Ser. No. 658,672, Aug. 7, 1967. Application for reissue Apr. 8, 1971, Ser. No. 132,622
Int. Cl. E01c *19/26*
U.S. Cl. 404—122 24 Claims



This application discloses a tandem roller especially suited for compacting road surfacing materials such as asphalt. The roller includes a front steerable roll and a rear driven roll which together support a frame composed of a platform between the rolls, longitudinal side frame members on opposite sides of the traction roll and a gooseneck extending forwardly from the platform over the front roll for connection to a steering yoke. A driver's compartment on the platform has a pair of operator seats facing inwardly toward one another on opposite sides of and below the upper level of the gooseneck, which is extremely narrow so that the operator has a clear view of the steering roll. A single steering wheel is positioned on one side of and between the seats, and a directional control bar is positioned on the opposite of and between the seats so that the operator can control the roller from either seat and in either direction with equal facility. The engine compartment is positioned behind the seats toward the traction roll, and a water supply tank for a sprinkler system is positioned beneath the seats. Neither of the two rolls is shrouded and the longitudinal side frame members are of a narrow, thin design which permit an unobstructed view of the traction roll from the operator's seats.

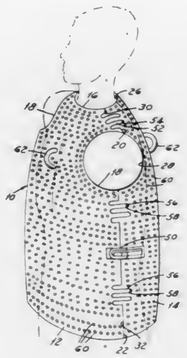
The traction roll is driven hydrostatically. An internal combustion engine drives a pressure compensated hydraulic pump on the platform which delivers pressure fluid to a hydraulic motor within one end of the traction roll. Rotary power is transmitted from the hydraulic motor through a drive shaft extending through the center of the traction roll to a planetary gear reduction final drive unit mounted within the opposite end of the roll. As a consequence, none of the drive components project outwardly of the smooth frame contour to obscure visibility from the operator's seat to the traction roll. The planetary final drive is totally sealed and runs in oil for reduced maintenance. Special mounts secure the traction roll to the side frame members and permit easy removal of the roll from the frame without disturbing the planetary drive unit and permit ready access to the hydraulic motor through an access opening in the associated side frame member.

PATENTS

GRANTED DECEMBER 11, 1973

GENERAL AND MECHANICAL

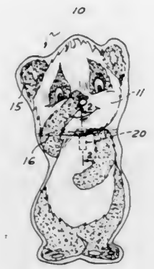
3,777,309
SAFETY GARMENT STRUCTURE
Weldon O. Yeager, 222 Hamilton Rd., Oakland, Mich.
Filed Mar. 15, 1972, Ser. No. 234,921
Int. Cl. F41h *1/02*
U.S. Cl. 2—2.5 **5 Claims**



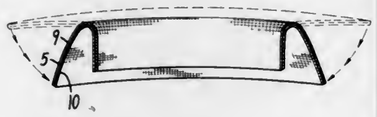
The safety garment structure is designed for use in the construction industry and is adapted to be supported by the shoulders of the body of the wearer. It includes a pair of front and back panels molded or otherwise formed from suitable light weight material, with the panels being hingedly connected at a pair of opposing side edges. The panels when closed on the body surround and protect the chest and the upper part of the body with adequate clearance between the panels and the body to permit lung and abdominal expansion. The panels are provided with opposing arcuate edges to define the neck opening and arm holes and have a configuration generally following the contour of the body. Releasable fastening means interconnect the other pair of opposing side edges of the panels to permit the panels to be fastened together on the body. At least one of the panels is provided on the outer surface with a staple-like half-loop or grasp. In the event of an accident, as an example, if a tunnel or trench should collapse, it may be possible to remove the workman by a suitable lifting device which would engage the grasp provided on the safety garment structure and lift the workman to safety.

3,777,310
DECORATIVE APPLIQUE HAVING AIR-ACTUATED NOISEMAKER
John F. Y. Yang, 802 Mason House, 74 Nathan Rd., Kowloon, Hong Kong
Filed Oct. 16, 1972, Ser. No. 297,888
Int. Cl. A41d *13/10*
U.S. Cl. 2—48 **10 Claims**

A decorative applique comprises a backing member and a flexible covering member superposed on and sealed to the backing member to define therebetween a pair of flexibly contractible air chambers. An air-activated noisemaker including a vibratory reed is mounted between the pair of air chambers and manual contraction of one chamber forces the air from that chamber through the noisemaker into the other chamber thereby vibrationally driving the reed to produce an audible noise. The covering member may be sealed to a preformed backing member to define an applique unit which may be attached to any desired article or the covering member may be sealed directly to the desired article which then serves as the backing member.



3,777,311
METHOD OF MANUFACTURING GARMENT COLLARS
Antonio C. Freixas, Sanjuanistas St., 24, Barcelona, Spain
Continuation-in-part of Ser. No. 849,201, Aug. 11, 1969, abandoned. This application Mar. 27, 1972, Ser. No. 238,575
Claims priority, application Spain, Aug. 12, 1968, 357197
Int. Cl. A41b *3/08*
U.S. Cl. 2—143 **6 Claims**

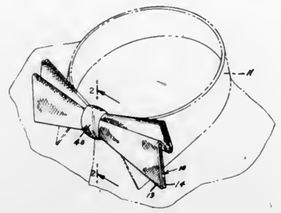


A method of manufacturing garment collars comprises molding a flexible collar stiffener having the configuration of the desired garment collar, flattening the collar stiffener into a planar configuration and sewing a fabric covering on the flattened collar stiffener while the fabric covering is maintained in a tensioned condition, and then allowing the flattened collar stiffener to return to its original configuration thereby defining a garment collar.

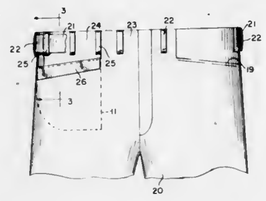
3,777,312
PRE-FORMED CLIP BOW TIES
John Najarian, Cresskill, N.J., assignor to France Neckwear Co. Inc., New York, N.Y.
Continuation-in-part of Ser. No. 320,976, Jan. 4, 1973. This application June 14, 1973, Ser. No. 370,151
Int. Cl. A41d *25/08*
U.S. Cl. 2—154 **3 Claims**

A pre-formed bow tie comprises the usual bow shaped elements which are interconnected at their constricted, reduced width, centers, by a locking band wrapped therearound. The band is covered by fabric. The band also includes a spring controlled vertically swingable lever arm by means of which the pre-formed bow ties may be releasably secured to the neckband of a shirt without being connected to the collar of

the shirt. The neckband may be that of a turtle neck shirt as well as the conventional collared shirt. The locking band is improved by insuring that when it is wrapped around the bow centers, it will bend in a predetermined fashion in order to avoid random bending and consequent often less desirable finished products. This is accomplished by providing side guards or ridges along selected portions of the locking band to insure desired bending thereof in the production of the bow ties.



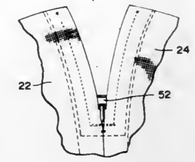
3,777,313
SPORTS POCKET FOR WEARING APPAREL
Mary E. Bergsten, and Ralph A. Bergsten, both of P.O. Box 607, Green Valley, Ariz.
Filed Sept. 1, 1972, Ser. No. 285,760
Int. Cl. A41d *27/20*
U.S. Cl. 2—247 **5 Claims**



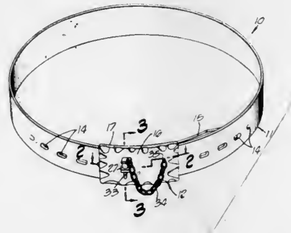
A sports pocket to fit inside an existing pocket of trousers, or skirts, adapted to be held in place at the waistband by the usual belt extending through belt loops on the sports pocket, or having an upper portion folded over the waistband and secured by a self-adhering fastener, or a zipper, or snap-fasteners and in either form having a turned over flap which overlies the outside upper edge of the trouser pocket and helps to retain the sports pocket in place. The exposed turned over flap portion and the exposed portion adjacent the entrance to the sports pocket, as well as that portion containing the belt loops, and the loops, are made of the same material and color as the trousers, or slacks, or these portions can be made from materials of contrasting color, or different fabrics such as to impart a casual or sports look to the trousers.

3,777,314
GARMENT OR LIKE ARTICLE HAVING A SLIDE FASTENER ATTACHED THERETO
Ronald J. Boser, Huntington Station, N.Y., assignor to B. & W. Manufacturing Co. Inc., New York, N.Y.
Filed Feb. 2, 1972, Ser. No. 222,863
Int. Cl. D05b *3/12*
U.S. Cl. 2—265 **7 Claims**

A slide fastener from a continuous chain is attached to a garment or other article by a pair of stitching threads each running longitudinally along a respective one of the fastener tapes, at least one of the stitching threads continuing transversely across the slide fastener to form a bottom stop and to attach the fastener tapes together and to the article for reinforcement.



3,777,315
BELT AND BUCKLE ASSEMBLY
David E. Norfolk, 6170 Canterbury Dr.; Apt. 5-118, Culver City, Calif.
Filed May 18, 1972, Ser. No. 254,397
Int. Cl. A41f *9/02*
U.S. Cl. 2—321 **15 Claims**

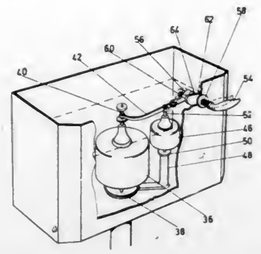


A belt adapted to be worn about the torso and equipped with clasp means detachably securable to either end thereof. The channel shaped clasp plate embraces the forward face of the overlapped belt ends and conceals separate means for securing each belt end to the clasp plate. One of the securing means comprises a pair of headed pins mounted on the rear of the clasp plate and seatable in keyholes punched in one belt end. The other securing means comprises a T-shaped lug having a friction fit in a selected opening through the other end of the belt, its T-stem being insertable through the clasp plate from its rear and being held in place by a keeper pin held captive to the plate by a chain or other flexible tie.

3,777,316
WATER CISTERNS
Rudolph Gerhardus Coetzee, 17 Marie St., Preagville, Randburg, Transvaal, Republic of South Africa
Filed July 8, 1971, Ser. No. 160,814
Claims priority, application Republic of South Africa, Aug. 12, 1970, 70/5578; Sept. 30, 1970, 70/6665
Int. Cl. E03d *1/22, 1/30*
U.S. Cl. 4—34 **14 Claims**

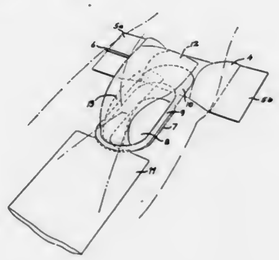
The invention relates to cisterns in which partial and full flushes may be obtained with simple operations of the cistern

handle. The handle is normally only able to pivot through a small angle to provide a partial flush but on moving the handle



in the direction of the handle shaft axis, the handle may pivot through a larger angle to initiate the full flush.

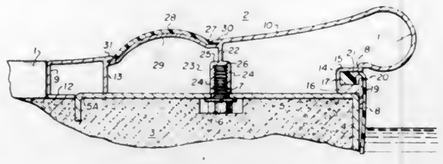
3,777,317
DEVICE FOR DEFAECATION AND URINATION IN THROW-AWAY BED-PANS
Jan Ingvar Hoborn, 77 Gamla Sarovagen, Askim, Sweden
Filed May 1, 1972, Ser. No. 249,178
Int. Cl. A61g *9/00*
U.S. Cl. 4—112 **5 Claims**



Today bed-pans used in hospitals and the like have to be cleaned and disinfected after every use and furthermore the use of the same involves lifting of the patients. This invention relates to a throw-away bed-pan made of destructable material and combined with a lifting device adapted to facilitate the handling of the patient. The bed-pan also has means preventing the soiling of the bed and means for containing the used bed-pan.

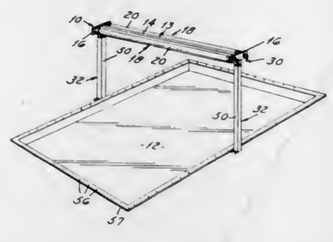
3,777,318
SWIMMING POOL COPING
Albert H. Stillman, Jr., 38 Southern Blvd., Nesconset, N.Y.
Division of Ser. No. 184,295, Sept. 27, 1971, which is a continuation of Ser. No. 793,862, Jan. 24, 1969, abandoned.
This application Dec. 6, 1972, Ser. No. 312,695
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.21 **19 Claims**

A coping for a swimming pool comprising a body member having a top wall portion including means for removably receiving an insert whereby the coping, by selective choice of color, chemical composition, texture and/or character of the insert material, may be enhanced in appearance and made highly functional. The coping further includes means for removably receiving a member of selected material, e.g., tile



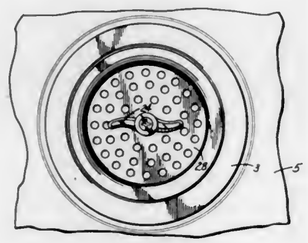
so as to conceal the bead receiving portion of the pool and so as to give the pool the appearance of having a side wall made from the selected material.

3,777,319
SWIMMING POOL COVER
J. Edgar Myles, Fraser, Mich., assignor to J. E. Myles, Inc., Detroit, Mich.
Filed Mar. 23, 1972, Ser. No. 237,481
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.14 **14 Claims**



Apparatus for covering a swimming pool when not in use comprising a bridge adapted to be positioned adjacent to the pool and movable from a lowered position of use to a raised position sufficiently elevated to allow normal use of the pool. The cover is carried in stored condition on the bridge. The cover is extendible to cover the pool in the lowered position of the bridge.

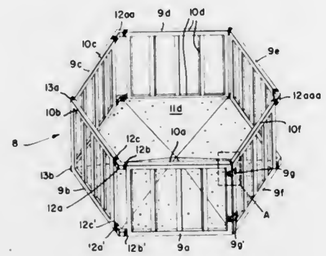
3,777,320
DRAIN CONTROL MEANS
William E. Politz, Delphi, Ind., assignor to Stephen A. Young, Monticello, Ind.
Filed June 16, 1972, Ser. No. 263,546
Int. Cl. A47k *1/14*; **E03c** *1/26*
U.S. Cl. 4—287 **3 Claims**



The disclosure hereof is of a drain control means, primarily for use in sinks or similar environment where the problems in

sinks are comparable, and consists of a drain body of relatively large diameter, having a suitable flange for support of a sink opening, a reduced drain outlet section with control unit or member having a downwardly open threaded section adapted to be guided on to a spud by reason of the configuration of the respective parts involving a wide bevel at the mouth of the downwardly open interiorly threaded part, threads being formed on the spud to engage the threads in the part and by reason of the configuration of the mouth of the part directed to engagement virtually independently of the manner in which the parts are brought into position by reason of the flared mouth heretofore mentioned, with the ability of the control member to be rotated and cause a stopper part formed therewith to engage a seat in the outlet section.

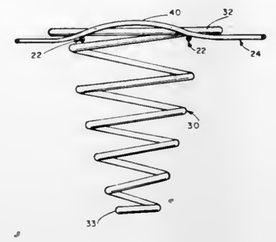
3,777,321
PORTABLE COLLAPSIBLE PLAYPEN
Lawrence W. Hargett, 17 Oak Ave., Tenafly, N.J.
Filed Feb. 22, 1972, Ser. No. 227,840
Int. Cl. A47c *29/00*
U.S. Cl. 5—99 C **9 Claims**



A playpen which in a preferred embodiment is inclusive of a bottom cushion as a part of each of upwardly foldable floor segments pivotable from adjacent fence elements attached in series to other consecutive similar sections with the last section being joinable with the first section of the series and with the upwardly foldable floor segments when downwardly mounted being joinable with adjacent other floor sections preventable of upward movement of any one or more of the floor sections when in a closed-fence state, the playpen being collapsibly foldable in an accordion-like fashion resulting from intermediate hinge elements between alternate ones of the several sections of the series.

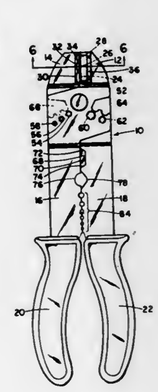
3,777,322
SPRING BASE AND METHOD OF FORMING SAME
Sam Larkin, Belle Harbor, N.Y., assignor to Spring Associates, Inc., Brooklyn, N.Y.
Filed Jan. 3, 1972, Ser. No. 214,773
Int. Cl. A47c *23/02*
U.S. Cl. 5—267 **6 Claims**

A spring base and method of forming same, the spring base comprising an intersecting grid-like array of transversely and longitudinally extending metallic rods, welded to one another at mutually intersecting portions, and a plurality of springs connected to the grid-like array. Each of the springs is provided with a closed, generally circular end portion, which is wedged and restrained against lateral displacement by a pair of longitudinally extending metallic rods biasing thereagainst



in one direction and an associated pair of transversely extending metallic rods biasing thereagainst in a generally opposite direction.

3,777,323
HAND TOOL FOR CRIMPING, CUTTING AND STRIPPING
Maxwell Ingram, 15 Hamilton Ave., Dumont, N.J.
Filed Aug. 24, 1971, Ser. No. 174,437
Int. Cl. H02g *1/12*; **B25b** *7/22*; **B21d** *9/08*
U.S. Cl. 7—5.4 **6 Claims**

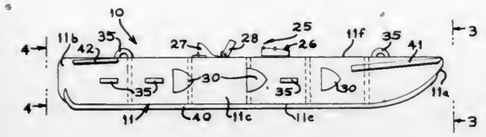


A hand tool for performing a variety of functions, such as terminal crimping, wire cutting, insulation stripping, etc., with regard to electrical connection terminal assemblies and the like. The tool comprises a pair of pivotal jaw members with circular crimping means in its nose portion and a guide means adjacent the ferrule crimping means. The tool also is provided with bolt and screw cutting means, including screw threaded work-holding apparatus and arcuate shears adapted to cut through the bolts or screws while they are held in the threaded holes. In addition, the tool is provided with a cam-like terminal lug crimping means for ignition cable and with a wire cut-off means whereby the cut-off blade has angular ends to provide space for squeezed out insulation that prevents cutting of conductor and insulation. The tool also has wire stripping apertures, and these, similarly to the bolt and screw work-holding apertures, are arranged so that the larger apertures are closer to the pivot point of the tool, whereby a greater mechanical advantage is utilized for the heavier work pieces.

3,777,324
ALL PURPOSE SHOE

Larry E. Jenkins, 481 Loumena Ln., San Jose, Calif.

Filed Sept. 1, 1971, Ser. No. 176,951
Int. Cl. A63c 15/02
U.S. Cl. 9—310 D 11 Claims

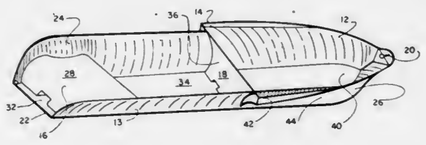


A shoe for movement over water, snow, sand, mud and the like. There is a shoe for each foot of the wearer. Each shoe comprises a hollow, elongated body made of suitable material, such as an injection molded polypropylene plastic. The forward end of each shoe is curved inwardly from side-to-side and top to bottom, and also is centrally contoured at the forward end to form a lifting surface. The rear end of the shoe is slightly curved from side-to-side and from top to bottom. Midway between the ends of each shoe, and mounted on the upper wall thereof, is a toe pocket, a heel strap and ankle straps for securing a foot to the associated shoe. Along the side walls are found horizontally spaced friction cups to provide traction for a foot remaining in position while the other foot is advanced. A plurality of closed curved members are secured to the side and top walls of each shoe to form a hand grip and also to form an anchor or tie-loop for securing a line or the like to the shoe. Along the bottom wall adjacent to the side walls of the shoe are longitudinally extending ribs for protecting the bottom wall and forward end of the shoe from damage.

3,777,325
WATER CRAFT

William J. Bristol, Rt. No. 1, Box 404, Lake Placid, Fla.

Filed Dec. 26, 1972, Ser. No. 318,458
Int. Cl. A63c 15/00
U.S. Cl. 9—310 B 2 Claims

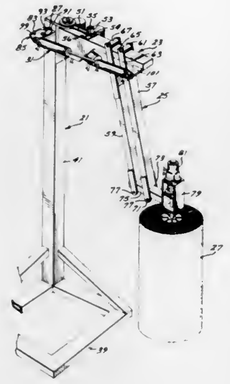


A ski-type craft having an elongated streamlined hull body with a bow and a substantially flat stern, a pair of sponsons extending from the bow where the sponsons tend to blend in with the bow, backwards to about the middle of the craft where the sponsons extend outwards like wings, a rear seat having a water exhaust port extending therethrough at the rear of the hull, a foot rest and brace of triangular cross section extending across the center of the hull also having a water exhaust port extending therethrough, and a key hole which at the bow of the craft with a rope and knot retaining slot therein.

3,777,326
VEHICLE WASHING APPARATUS

David M. Haley, Glendale, and Richard P. Bergantzel, Granada Hills, both of Calif., assignors to California Car Wash Systems, Inc., Sun Valley, Calif.

Filed Dec. 10, 1971, Ser. No. 206,804
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D 13 Claims



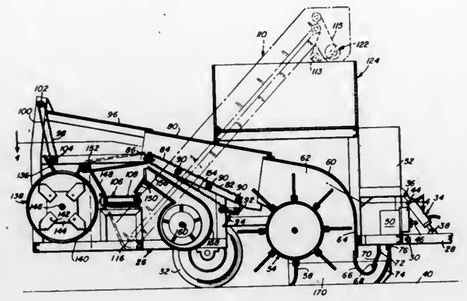
Parallelogrammatic vehicle washing apparatus for washing a vehicle moving along a predetermined path relative to the apparatus and including a pivotally supported carrier arm normally projecting transversely of the predetermined path. A vertically extending parallelogrammatic linkage is carried on its upper end from the free end of the carrier arm and has a brush supported from the lower extremity thereof for rotation about a vertical axis. Drive means is provided for rotating the brush and controlling movement of the carrier arm and parallelogrammatic linkage for normally maintaining the linkage extended with the brush disposed in the vehicle path and responsive to engagement thereof by the front of the vehicle to be washed to retract the parallelogrammatic linkage while the free end of the carrier arm moves forwardly to draw the brush across the front of the forwardly moving car and to then swing the free end of the carrier arm rearwardly, while extending the linkage, to move the brush rearwardly along the side of the vehicle and responsive to the brush clearing the rear corner of the vehicle to move the free end of the carrier arm forwardly to move the brush inwardly along the rear of the car and forwardly therewith.

3,777,327
LITTER PICK-UP MACHINE

Sloan E. Ellis, San Saba, Tex., assignor to San Saba Development Association, San Saba, Tex., a part interest

Continuation-in-part of Ser. No. 214,702, Jan. 3, 1972. This application Mar. 9, 1972, Ser. No. 233,146
Int. Cl. E01h 1/04
U.S. Cl. 15—84 11 Claims

A mobile apparatus for movement over the ground or other surface and designed to pick-up, partially sort and partially treat litter of all types. The apparatus includes windrow structure for initially windrowing litter to be picked up and a following horizontal reversely rotating pick-up drum including generally radial flexible flaps for picking the windrowed litter up from the ground or other surface over which the apparatus is moving. Thereafter the retrieved litter is conveyed upwardly by a conveyor (from which small stones and dirt are allowed to fall) and allowed to drop through a flow stream of air resulting in the lighter particles of litter, including grass and weed clippings, being separated from the larger heavier particles of litter. Structure is provided for collecting the separated lighter particles of litter and delivering them to a hammer mill and conveying structure is provided for receiving and upwardly conveying the heavier litter material to an elevated storage bin or hopper carried by the apparatus and supported therefrom

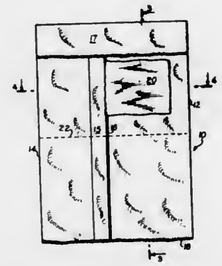


for movement between a heavier litter receiving position and a dumping position disposed so as to dump the collected heavier litter to one side of the apparatus into a suitable receptacle such as a vehicle supported hopper moving alongside the litter pick-up apparatus.

3,777,328
SHOE POLISHING MIT

Milton Kaplan, Rockville Center, N.Y., assignor to Sentinel Bag and Paper Co., Inc., Brooklyn, N.Y.

Filed Mar. 22, 1972, Ser. No. 236,945
Int. Cl. A47l 13/314
U.S. Cl. 15—104.94 7 Claims



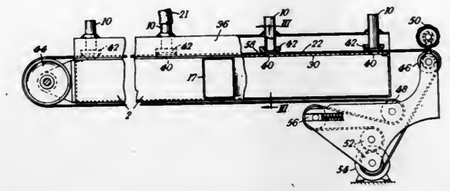
A shoe polishing mit formed of a bag member dimensioned to encompass a human hand. The bag member is formed of a relatively inexpensive non-abrasive felted material, and a portion of one side of the bag is impregnated with a polishing or protective substance such as wax subject to deposition on the surface to be polished by physical contact of the impregnated area with the surface to be polished. A wax distributing flap and seam are provided to implement distribution of the wax.

3,777,329
OPEN-END TEXTILE SPINNING MACHINES

Robert Lane, Accrington, England, assignor to Platt International Limited, Oldham, Lancashire, England

Filed Nov. 30, 1971, Ser. No. 203,163
Claims priority, application Great Britain, Dec. 1, 1970, 57,042/70
Int. Cl. A47l 5/38
U.S. Cl. 15—301 8 Claims

A textile machine for the open-end spinning of textile yarns including a plurality of spinning stations each of which is provided with a trash collection chamber for collecting trash from fibre fed to a spinning element at the station, and trash removal apparatus comprising an air exhaust chamber common to the trash collection chambers for removing trash from the chambers. Each trash collection chamber having an outlet

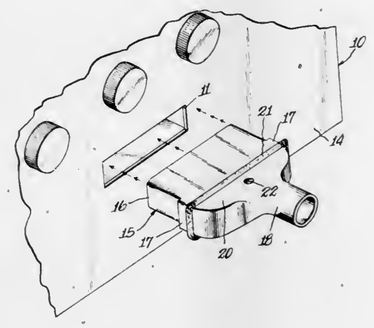


leading from the interior thereof and the air exhaust chamber having an inlet leading to its interior. Said machine including means for intermittently connecting each outlet and the inlet so as to provide an intermittent flow connection between each trash collection chamber and the air exhaust chamber whereby to purge the trash collection chambers of trash.

3,777,330
MAINTENANCE MEANS FOR TAPE PLAYER CABINETS

Isadore E. Van Huffel, 400 Overlook Dr., N.E., Warren, Ohio

Filed Sept. 8, 1972, Ser. No. 287,536
Int. Cl. A47l 9/02
U.S. Cl. 15—421 6 Claims

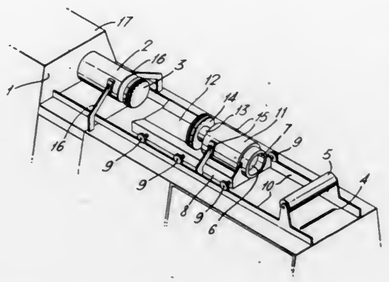


My invention relates to means for maintaining the interior of a tape player cabinet free of dust and other like deleterious material, and comprises a hollow suction nozzle having a forward end with an outside rectangular contour to closely conform to, and fit within, the rectangular opening in the tape player cabinet. The nozzle has an exterior shoulder for abutment with the exterior face of the cabinet margining the rectangular opening to limit insertion of the nozzle forward end an amount short of interference with the operating mechanism within the cabinet. A rubber ring stretched around the nozzle may be moved to seal the rectangular opening. A small transverse hole is formed in the nozzle and is used to control the amount of suction produced within the nozzle by a conventional suction cleaner.

3,777,331
APPARATUS TO BE USED IN CONNECTION WITH THE FILLING OF TUBULAR FILMS, SO CALLED SYNTHETIC CASINGS

Helge Jorgen Falborg, Aabybro, Denmark, assignor to Maskinfabriken Hefa, Aabybro A/S, Aabybro, Denmark

Filed Mar. 26, 1971, Ser. No. 128,288
Claims priority, application Denmark, Mar. 31, 1970, 1614
Int. Cl. A22c *11/04*; **B65b** *3/12*; **B65d** *55/02*
U.S. Cl. 17—32 R **10 Claims**

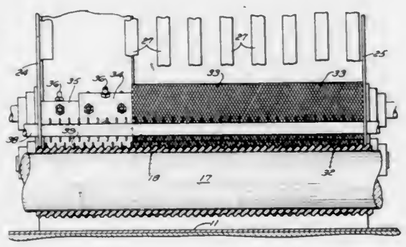


A continuous length of tubular synthetic casing is filled with successive charges of sausage meat or other food product by transporting the free end of the casing by means of a conveyor onto a filling tube from which the food charges are extruded, clamping the casing end on the filling tube, retracting the conveyor to its starting position, extruding the charge of food into the casing, and tying off and cutting the ends of the filled casing. The food charge is inserted into the casing with flat end pieces at each end thereof, and the casing is tied or clamped to the end pieces providing the finished product with ends of uniform diameter for slicing.

3,777,332
APPARATUS FOR EXTRACTING CRAB MEAT

Albert E. Boisvert, Maswansicut Lake Dr., North Scituate, R.I.

Filed Jan. 17, 1972, Ser. No. 218,182
Int. Cl. A22c *29/00*
U.S. Cl. 17—71 **9 Claims**

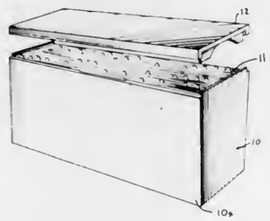


Apparatus for squeezing meat from the claws and flippers of cooked hard shell crabs and for preparing the body for further processing. A supporting frame is provided with a conveyor belt. Dividing strips on the frame, above the belt, divide the surface into a plurality of narrow longitudinal lanes and a single comparatively wide lane along one side edge. Claws and flippers are conveyed along the narrow lanes which keep them in a generally longitudinal attitude. The body of the crab, minus the shell, is conveyed in the wider lane at one side. At the end of the belt, a plurality of rotating guide fingers pass the parts from the conveyor to a pair of rollers which squeeze the meat from the claws and flippers, the meat dropping into a suitable receptacle. The rollers are provided with narrow diameter portions at one end in alignment with the wider lane for receiving the body. At this point the rollers are provided with staggered studs which crush and chew up the membrane-covered body portions, the pieces dropping into a brine solution for further processing. The upper roller is resiliently urged against the lower roller to provide for flexibility in handling different thicknesses of crab parts.

3,777,333
SHRIMP CLEANING DEVICE

Michael L. Adams, 1312 S. Washington, Park Ridge, Ill.

Filed Mar. 29, 1972, Ser. No. 239,157
Int. Cl. A22c *29/00*
U.S. Cl. 17—72 **6 Claims**

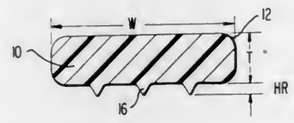


A shrimp cleaning device that deveins, separates the shell from and butterflies shrimp in a single operation including a handle portion that may be grasped by the operator, an arcuate deveining projection having an expanding width for shell separation, a slanted cutting blade fixed to the deveining projection and extending downwardly therefrom for cutting the shrimp meat longitudinally, and an arcuate guide portion below the deveining projection and having the other end of the blade fixed thereto for guiding the shrimp as it passes down the deveining projection and through the cutting blade.

3,777,334
RIBBED STRAPPING

Albert J. Countryman, Utica, N.Y., assignor to Ty-Lok Assembly Systems, Inc., Utica, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,736
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB **3 Claims**

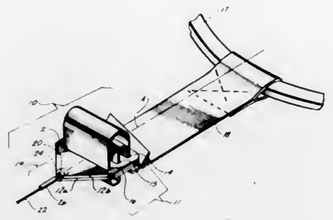


Plastic strapping generally rectangular in section of the type used to tie bundles of electrical conductors as in my patented strapping apparatus, U.S. Pat. No. 3,633,633 granted Jan. 11, 1972, is extruded with a plurality of parallel, pointed longitudinal ribs, short in height, which prevent the tape from slipping during reverse feed by the gun.

3,777,335
STRAP AND CABLE COUPLING AND INTERCONNECTING SYSTEM EMPLOYING SUCH COUPLING

Wesley C. Prout, St. Anne, Ill., assignor to Park, Davis & Company, Detroit, Mich.

Filed Aug. 24, 1972, Ser. No. 283,584
Int. Cl. A44b *21/00*; **A44c** *5/18*; **F16g** *11/02*
U.S. Cl. 24—79 **5 Claims**

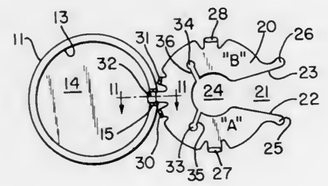


A strap and cable coupling. A buckle part is formed of a planar member with at least three substantially parallel elongated openings spaced apart and extending through the planar member for receiving such strap. The center of elongation of each of the openings is positioned along an axis. A cable connecting part includes a semi-circular receptacle integrally formed on the member at an edge thereof and at a position substantially intersecting the axis. The receptacle has an exterior extending opening. The cable connecting part also includes a ball portion rotatably mounted in the receptacle and is adapted to be connected to the cable. The receptacle forms an interference so as to retain the ball therein. Preferably, the coupling is part of an interconnecting system and includes a strap and a cable. The cable is affixed to the ball and the strap passes serially through all three openings, beginning at a first opening which is furthest removed from the member edge and then loops back through the first opening.

3,777,336
BUTTON COVER

Olof Verner Anderson, North Kingstown, R.I., assignor to Anson Incorporated, Providence, R.I.

Filed Sept. 14, 1972, Ser. No. 289,159
Int. Cl. A44b *1/14*
U.S. Cl. 24—113 MP **4 Claims**



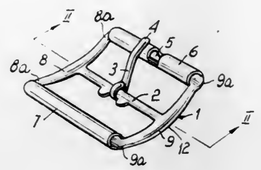
The present disclosure relates to the jewelry art and specifically to an improved interchangable ornamental cover for sewed buttons.

The present invention relates to a novel construction for an ornamental and removal cover for sewed buttons.

3,777,337
BUCKLE FOR SHOES AND THE LIKE

Adalberto Sussman Steinberg, via Mancini 5, Milan, Italy

Continuation-in-part of Ser. No. 50,663, June 29, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,085
Claims priority, application Italy, July 2, 1969, 19089A
Int. Cl. A44b *11/12*
U.S. Cl. 24—191 **1 Claim**

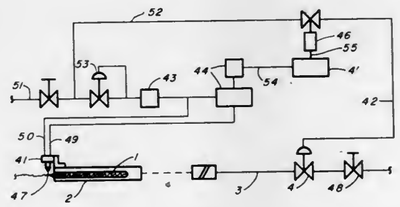


A shoe buckle comprising a quandrangular frame having two parallel side bars and two end bars connecting the ends of the side bars and extending transverse thereto and a cross-bar intermediate the end bars and fixed on the side bar, a tongue hingedly supported on the cross-bar and cooperating with one of the end bars and extending parallel to the side bars. The side-, end- and cross-bars are made of strip-like sheet metal material and the side bars have a cross section having an outer margin lying all along its extension at a level higher than that defined by the bottom of the frame of the buckle.

3,777,338
ELECTRONIC-PNEUMATIC YARN PLUG CONTROL SYSTEM FOR YARN TEXTURING DEVICE

Dick Charles Vermeer, and James MacKnight Washington, both of Chester, Va., assignors to Allied Chemical Corporation, Morristown, N.J.

Continuation-in-part of Ser. No. 239,176, March 29, 1972, abandoned. This application Sept. 18, 1972, Ser. No. 289,926
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.7 **14 Claims**

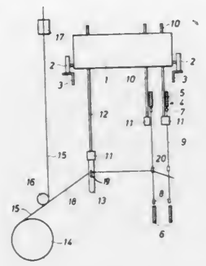


Apparatus and process are disclosed for controlling yarn plug location in a stuffer tube of a steam jet texturing device near at least one port near the discharge end of the stuffer tube. The port issues a jet of fluid, such as air. Back pressure of the jet of fluid as it impinges on the yarn indicates the presence or absence of the yarn plug beneath the port. Each port communicates with a pressure sensor controller which actuates a control valve which controls the flow of steam to the steam jet.

3,777,339
APPARATUS FOR INDIVIDUALLY SEPARATING HEDDLES AND LIKE OBJECTS FROM A ROW PREPARATORY TO A DRAWING-IN OPERATION

Svend Sigurd Christie Fleischer, Klampenborg, and Knud Helge Jeppsson, Copenhagen, both of Denmark, assignors to Titan Textile Machines A/S, Metalbuen, Ballerup, Denmark

Filed June 16, 1972, Ser. No. 263,573
Claims priority, application Denmark, June 17, 1971, 2982
Int. Cl. D03j 1/14
U.S. Cl. 28—46 10 Claims

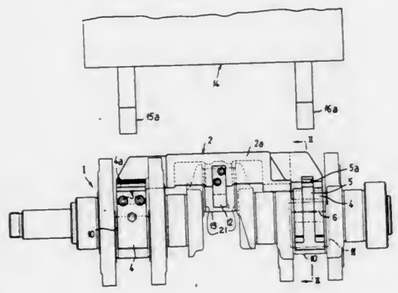


Apparatus for individually and successively separating heddles from a row of heddles by means of an electromagnet which is moved towards the first heddle in a row to remove that heddle to a position in which a thread may be pulled through the heddle eyelet. During the first part of the movement of the magnet away from the heddle row, the magnet receives a relatively weak current ensuring that only one heddle is taken along, and when the heddle has been sufficiently detached from the remaining heddles in the row, the current is increased to increase the holding force of the magnet. Two or more heddles may be separated from different rows in one operation, preferably with a short time interval so that they will be moved to spaced drawing-in positions. The apparatus may also be used for separating drop blades and similar object preparatory to a drawing-in operation.

3,777,340
DEVICE FOR PRE-BALANCING UNBALANCED MASSES ON CRANKSHAFTS

Christian Langlois, Billancourt, France, assignor to Regie Nationale Des Usines, Renault, Billancourt, France

Filed June 15, 1971, Ser. No. 153,285
Int. Cl. B23p 13/00
U.S. Cl. 29—1 D 3 Claims

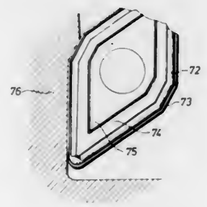


A device for quick attachment to a crankshaft for balancing it. It comtemplates pre-balancing the unbalance masses of crankshafts of piston engines in order to subsequently perform the dynamic balancing thereof with due consideration for the wants-of-balance generated by the connecting-rod masses. These wants-of-balance are simulated by positioning on the crankshaft a single pre-balancing member having two ballasts disposed in parallel planes perpendicular to the axis of rotation of the crankshaft. This simulation member also has two resilient clamping members adapted to engage two crankpins of the crankshaft to be balanced, an angular positioning fork engaging a third crankpin, and longitudinal positioning faces between the webs of one of said crankpins.

3,777,341
CUTTING INSERT AND CUTTING TOOL ASSEMBLY

Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandvik, Sweden

Filed May 30, 1972, Ser. No. 257,530
Int. Cl. B26d 1/00
U.S. Cl. 29—95 R 7 Claims

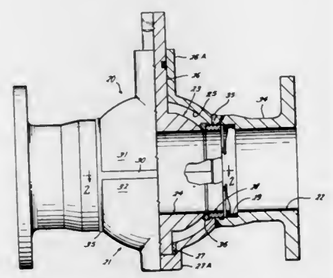


The cutting tool assembly of the present invention consists essentially in (*a*) a tool holder and (*b*) an indexible cutting insert of modified rhombic configuration in which pairs of main cutting edges (disposed at an angle of less than 60° with respect to each) are separated by intermediate facing edge portions which are parallel to each other. The intermediate facing edge portions are so configured as to constitute outfacing cutting edges each of which cooperates with the main cutting edge adjacent thereto. Both the pairs of main cutting edges and the out-facing cutting edges are provided with chip-breaking grooves. The assembly provides an arrangement wherein not only the main cutting edge but also the out-facing cutting edge of the cutting insert are laid bare with respect to the tool holder.

3,777,342
METHOD OF ASSEMBLING VALVE

Herbert Allen, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Division of Ser. No. 184,727, Sept. 29, 1971, Pat. No. 3,732,885. This application Jan. 24, 1973, Ser. No. 326,542
Int. Cl. B21d 53/00
U.S. Cl. 29—157.1 22 Claims



A valve having seats made of axially separable, inner and outer parts which may be moved to positions, during assembly of the valve, permitting adjacent parts of the valve body to be welded and the weldments to be stress relieved without damage to seal rings carried by the seats.

3,777,343
METHOD FOR FORMING A HELICALLY CORRUGATED CONCENTRIC TUBING UNIT

Mario L. D'Onofrio, Hartford, Conn., assignor to Spiral Tubing Corporation, New Britain, Conn.

Division of Ser. No. 123,150, March 11, 1971, Pat. No. 3,730,229. This application Feb. 28, 1973, Ser. No. 336,794
Int. Cl. B21d 53/02; B23p 15/26
U.S. Cl. 29—157.3 R 4 Claims

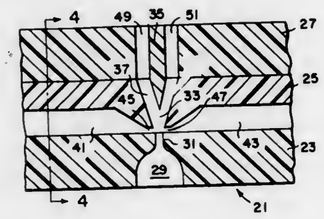


A tubing unit useful, for example, as part of a heat exchanger includes a first tube containing a second helically corrugated tube having on its outer surface helical ridges which engage the inner wall of the first tube to mechanically lock the two tubes in assembly and to form one or more helical passageways between the first and second tubes. The first tube may be of a substantially straight cylindrical shape or may include helical grooves on its inner surface for receiving and mating with the radial outer end portions of the helical ridges on the outer surface of the second tube. A third tube may surround the first tube and include helical corrugations with inwardly extending ridges engaging the outer surface of the first tube to form another set of helical passageways between the first tube and the third tube. In the making of the tubing unit, the second tube is assembled over a mandrel and within the first tube and then twisted to form the helical corrugations therein, the mandrel limiting the inward growth of the inwardly extending ridges and the first tube limiting the outward growth of the outwardly extending ridges. In cases where a third tube is used, such third tube is placed over the second tube and twisted to form helical corrugations therein, the outer surface of the first tube limiting the radial inward growth of the inwardly extending ridges thereof.

3,777,344
METHOD OF FABRICATING FLUIDIC ELEMENTS BY ASSEMBLING TOGETHER A PLURALITY OF PLASTIC STRIPS

John P. Glass, c/o Cava Industries 79 La Grange Ave., Essington, Pa.

Division of Ser. No. 828,643, May 28, 1969, Pat. No. 3,589,382, division of Ser. No. 88,582, Nov. 12, 1970. This application June 30, 1972, Ser. No. 267,965
Int. Cl. B23p 17/00
U.S. Cl. 29—157 R 9 Claims

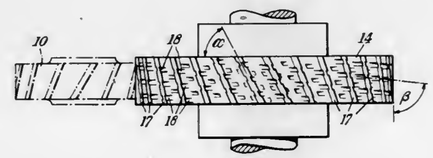


A fluidic plate assembly comprising a series of abutting plates including a power nozzle plate having an input chamber which narrows down into a power nozzle, a control passageway plate having an interaction chamber with an opening that registers with the power nozzle and having a plurality of control passageways with nozzles that open into the interaction chamber, a splitter plate having a splitter which extends into the interaction chamber to form an output ring and having a plurality of output passageways that register with the output ring, and means connecting adjacent plates together and forming a tight seal. Apparatus for making fluidic plates comprising standard mold units for making a series of plates in various combinations including power nozzle plates, splitter plates, and control passageway plates.

3,777,345
TOOL FOR GEAR FINISH FORMING

Graham Maurice Brown, Daventry, England, assignor to Machine Tool Divisional Services Limited, Coventry, England

Filed Sept. 18, 1972, Ser. No. 289,831
Claims priority, application Great Britain, Sept. 17, 1971, 43472/71
Int. Cl. B21h 5/00
U.S. Cl. 72—102 2 Claims

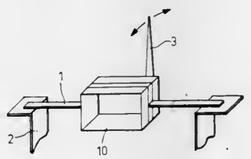


A toothed tool for finish forming, by rolling, a cylindrical or helical work gear, said tool having, in the flanks of its teeth, serrations extending perpendicular to the axis of the tool which define flutes in the tooth flanks and intervening lands, the flutes on each tooth flank extending alternately from the tip towards the root and from the root towards the tip and extending along part only of the length of the tooth flank and being so disposed that corresponding flutes on successive tooth flanks are disposed helically on the circumference of the tool.

3,777,346
TENSION BAND

Samuel G. Steinemann, Liestal, Switzerland, assignor to Institut Dr. Ing. Reinhard Straumann AG, Waldenburg, Switzerland

Filed July 7, 1971, Ser. No. 160,465
Claims priority, application Switzerland, July 17, 1970, 10878/70
Int. Cl. C22c 27/00
U.S. Cl. 29—180 11 Claims

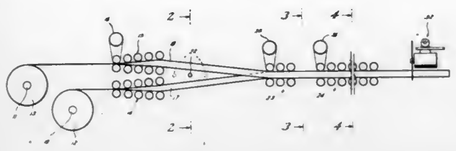


A tension band for suspending a rotatable measuring mechanism is composed of a metal alloy in which the ratio of the number of free electrons to the number of atoms is between about 4.15 to 4.5.

3,777,347
PANEL FORMING MACHINE

Raymond S. McCorvey, P. O. Box 405, Houston, Tex.

Filed Aug. 21, 1972, Ser. No. 282,562
Int. Cl. B23p 19/00
U.S. Cl. 29—200 A 5 Claims

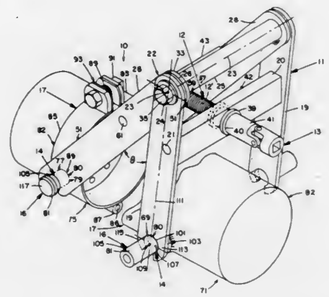


A panel forming machine in which two sheets of material such as sheet metal are fed from supporting arbors through die-forming means, spray means then sprays material into the space between the sheets of material, and dies then hold the sheets in the desired relationship while the material expands and gels.

3,777,348
HIGH CURRENT CABLE ENGAGEMENT TOOL

Kenneth F. Stone, Berkeley, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 31, 1972, Ser. No. 258,399
Int. Cl. B23p 19/00; H05k 13/00
U.S. Cl. 29—203 P 6 Claims



A tool for aiding in either engaging or disengaging large, heavy, electrical power plugs and receptacles having lug shaped ears. A special scissor shaped tool temporarily fits in rotatable engagement with the ears, and a screw mechanism on the tool rotates to force engagement or disengagement as desired. While the tool maintains azimuthal alignment of the plug and receptacle.

3,777,349
TERMINAL APPLICATOR

Ronald B. Barnes, Camp Hill, Pa., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

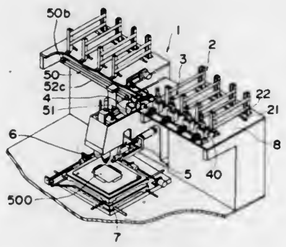
Filed May 3, 1971, Ser. No. 139,522
Int. Cl. H05k 13/04
U.S. Cl. 29—203 B 10 Claims

A terminal applicator for simultaneously mounting a plurality of terminals on a circuit board in a desired pattern includes a number of terminal gripping fingers extendable linearly from a pick-up position where each finger engages one of a number of regularly spaced terminals to a staking position where the terminals are held in a pattern different from their pattern at the pick-up position and staked to a circuit board. The axes of movement of the fingers are non parallel but lie in a common plane.

3,777,350
COMPONENT MOUNTING APPARATUS

Yoshinobu Maeda, Katano-shi, Osaka; Kazumi Takamori, Takatsuki-shi, Osaka, and Tadao Kanno, Yamatokoriyama, Nara-ken, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan

Filed July 25, 1972, Ser. No. 275,046
Claims priority, application Japan, July 26, 1971, 46/56214; July 26, 1971, 46/56221; July 26, 1971, 46/56220; July 26, 1971, 46/56223; July 26, 1971, 46/56224; July 26, 1971, 46/56219; July 26, 1971, 46/56218; July 26, 1971, 46/56217; July 26, 1971, 46/56216; July 26, 1971, 46/56214; July 26, 1971, 46/56215; July 26, 1971, 46/56225; Mar. 28, 1972, 47/31033; July 26, 1971, 46/56222
Int. Cl. H05k 13/04
U.S. Cl. 29—203 B 14 Claims

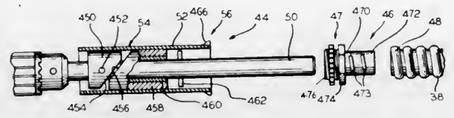


A component mounting apparatus for automatically inserting and clinching terminal projections extending in generally radial or parallel relation from their component or other bodies, which generally comprises a supply unit including a plurality of component magazines, a cutter unit for separating each one of the components from their supporting member, a feeder unit including an attitude control for adjusting the attitude of each one of the components fed thereto to a predetermined attitude, a retainer unit for delivering the component to a component inserting unit, the inserting unit including nippers for picking up and releasing the component and a clincher unit for clinching the terminal projections to secure the component on a workpiece.

3,777,351
DEVICE FOR PROCESSING FLEXIBLE METALLIC CONDUIT

William J. Fisher, Lisle, Ill., assignor to Maynard Braverman, Chicago, Ill., a part interest

Division of Ser. No. 1,735, Jan. 9, 1970, Pat. No. 3,672,015.
This application Dec. 27, 1971, Ser. No. 212,807
Int. Cl. H01r 43/04
U.S. Cl. 29—203 H 1 Claim

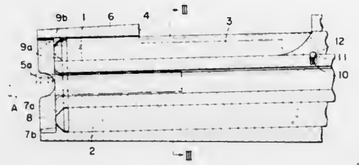


A machine and method for mechanically and simultaneously sizing and cutting multiple strands of flexible metallic conduit to desired lengths, and for facilitating the application of a fitting to either end of the respective resulting lengths, in which the conduit is simultaneously drawn by a roller drive, from a number of rolls of same in parallel strands and is fed past a cutting station the conduit length desired, after which feeding of the conduit strands ceases and the conduit lengths are simultaneously severed from the row of strands by sawing. The machine includes a device for mechanically rotating the individual end fittings for the conduit length ends, whereby the machine operator can individually manipulate the individual conduit length ends to apply same to the device to permit the end fitting for same to be mechanically rotated into its fully seated position in the conduit end, and an attachment that permits the conduit wiring to be mechanically fed into same and cut off at the right length to complete the conduit assembly.

3,777,352
APPARATUS FOR AUTOMATICALLY REMOVING THE COVERING FROM COVERED WIRE AND WINDING THE UNCOVERED WIRE ON A ROD MEMBER

Kazuo Nagayama, Kohoku-ku, Yokohama, Japan, assignor to Seiken Kogyo Kabushiki-Kaisha, Nakahara-ku, Kawasaki, Japan

Filed Aug. 31, 1972, Ser. No. 285,459
Claims priority, application Japan, May 12, 1972, 47/46479
Int. Cl. H01r 43/04
U.S. Cl. 29—203 D 7 Claims

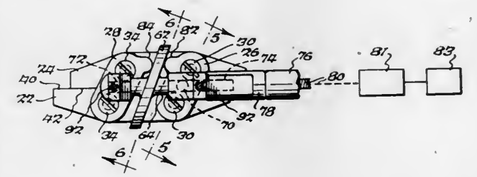


An apparatus having three coaxial tubular members. The intermediate tubular member is formed therein with an axial slot opening in the free end face of the member for receiving an end portion of a covered wire and is rotatable relative to the inner and outer tubular members which are held stationary against rotation and which have annular knife edges radially extending toward each other to define therebetween an annular gap of a radial dimension substantially equal to the diameter of uncovered wire. The knife edges are formed therein with radially aligned arcuate notches defining together a substantially circular opening with which the slot can be moved into axial alignment and through which the covered wire can be axially received at one end into the slot. The inner tubular member is adapted to axially receive a rod member. When the intermediate tubular member is rotated relative to the other tubular members with the portion of the covered wire outward of the knife edges being engaged with the rod member, the wire is wound on the rod member and drawn through the annular gap whereby the covering is removed from the covered wire located within the slot and the uncovered wire is successively wound on the rod member.

3,777,353
STRIP INSERTING APPARATUS

James F. Sharpe, Buffalo, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 40,570, May 26, 1970, Pat. No. 3,667,105. This application May 18, 1972, Ser. No. 254,611
Int. Cl. E01c 23/09
U.S. Cl. 29—235 15 Claims

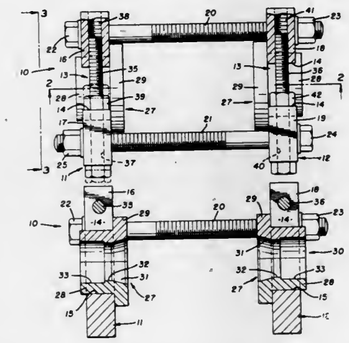


A sealing strip inserting apparatus comprising a pair of jaw members extending in a side-by-side relation and connected together by parallel links to form a parallelogram arrangement. A driven swash plate having opposite faces bearing against portions of such links effects relative axial movement between said jaw members in a step-by-step walking fashion along the strip. The apparatus is provided with a tapered groove for guiding and progressively inserting the strip into a slot. In lieu of the swash plate, a cam and follower arrangement can be utilized to actuate the jaw members.

3,777,354
PORTABLE HOSE MENDING APPARATUS

Philip C. Masters, Ashland, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed Feb. 25, 1972, Ser. No. 229,412
Int. Cl. B23p 19/04
U.S. Cl. 29—237 6 Claims



Disclosed is apparatus for mending breaks or tears in hoses, particularly high pressure hoses such as utilized in sewer

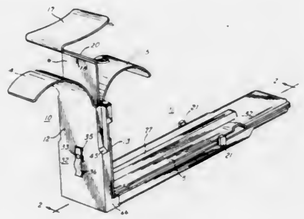
cleaning operations. Two die holding plates receive half of a split swaging die in a generally U-shaped slot therein. The two parts of the hose to be mended are put into a coupler and then placed on the dies within the slot of the plates. The other half of each die is placed on the hose and the dies can be locked in place. The die holding plates are attached to each other by opposed draw bolts which when simultaneously tightened will cause the dies to pass over the coupler and swage the same onto the hose. The apparatus can also be readily adapted to affix end fittings to hoses, if desired.

3,777,355

SURGICAL WOUND CLIP APPLIER WITH DISPOSABLE CLIP MAGAZINE

John R. Cooke, Four Mile Canyon, Boulder, Colo.

Filed July 24, 1972, Ser. No. 274,503
Int. Cl. B23p *11/00*; E05b *19/06*, *19/26*
U.S. Cl. 29—243.56 13 Claims



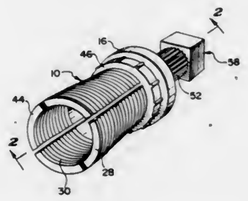
A surgical clip applier for surgical wounds is disclosed which is semi-automatic in operation, operated with one hand, easily disassembled or assembled without tools as for cleansing or sterilizing in an autoclave and includes a low cost disposable clip magazine. Individual clips are advanced to a position where they are applied selectively to the wounded area and, as soon as one has been applied and the mechanism released, the applier operates automatically to be ready for the next application. This enables the surgeon to close a wounded area in much shorter time than could be done by suturing, or by individually applying each clip.

3,777,356

PIPE NIPPLE TOOL

Joseph M. Hemingway, 14932 Avalon, Dolton, Ill.

Filed Apr. 4, 1972, Ser. No. 240,982
Int. Cl. B23p *19/04*
U.S. Cl. 29—428 14 Claims



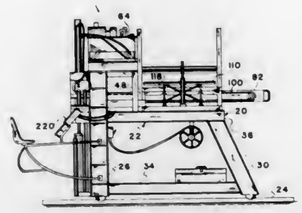
A pipe nipple tool that clamps the nipple wall at one end over its threaded area between an inside mandrel and outside contractable segmented clamping jaws that circumferentially engage the nipple at the roots of its thread with both the mandrel and clamping jaws interlocked to turn as a unit either to tighten or loosen a threaded joint involving the other end of the nipple,

3,777,357

MACHINE AND METHOD FOR SIMULTANEOUSLY FORMING A PLURALITY OF BUILDING SECTIONS

Robert J. Whitney, 11606 Amarillo Ct., Dublin, Calif.; Donald H. Gaston, 3066 McGraw, San Diego, Calif., and Joe A. Nickell, 3585 Dormer Ct., Concord, Calif.

Continuation of Ser. No. 120,894, March 4, 1971, abandoned.
This application June 29, 1972, Ser. No. 267,582
Int. Cl. B23p *19/04*, *19/00*
U.S. Cl. 29—429 22 Claims



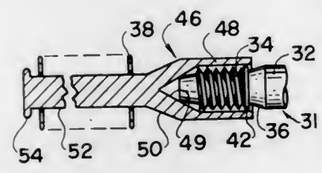
The machine includes mechanism for simultaneously extracting a layer of studs from a stack of studs, mechanism for conveying the layer of removed studs to between two pairs of stud retainer-bars, mechanism for fixing the studs to prelaid mud sills and plates and the method includes the steps carried out by the machine.

3,777,358

METHOD OF ASSEMBLYING A RETAINED FASTENER ASSEMBLY

William Matievich, Hatboro, Pa., and Harry A. Theakston, Tustin, Calif., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Division of Ser. No. 46,073, June 15, 1970, abandoned. This application Oct. 7, 1971, Ser. No. 187,538
Int. Cl. B23p *11/02*
U.S. Cl. 29—450 2 Claims



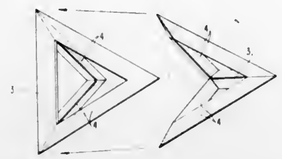
A retained fastener assembly for use in securing a plurality of workpieces together comprises a screw having a groove configuration including a conical surface and a radial shoulder with a flat face formed intermediate the ends of the shank. The screw is attached to a panel by placing the sleeve of a tool over the threaded portion of the shank and sliding a retaining ring over the tool until it snaps into the groove configuration. Thereafter, the ring cooperates with the flat face on the shoulder and the panel to prevent removal of the screw from the panel from one direction while the head prevents removal from the other direction. To assemble a joint, the panel carrying the fastener is placed adjacent another panel or workpiece having an aperture and a nut; the screw is then pushed through the ring and inserted into the aperture and engaged with the nut.

3,777,359

METHOD OF MAKING SKELETAL TETRAHEDRONS

Ernest Roger Bardot, Juziers, France

Filed Mar. 31, 1972, Ser. No. 240,053
Claims priority, application France, Apr. 2, 971, 71/11659
Int. Cl. B21d *39/02*
U.S. Cl. 29—463 3 Claims



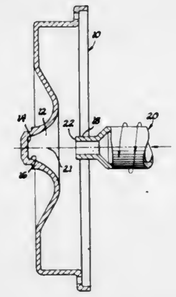
Skeletal tetrahedrons are formed by molding them in two halves and then joining the halves. Each half is comprised by a pair of triangles having a common base, the apices of the triangles being spaced apart a distance equal to the length of the base.

3,777,360

FRICTION WELDING PROCESS

Eugene E. Welch, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1972, Ser. No. 228,705
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 4 Claims



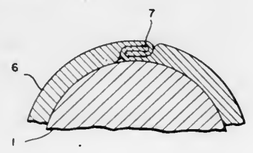
Friction welding process in which metallic workpieces are welded at end and side interface zones with substantially all flash squeezed radially inwardly into an opening in one of the workpieces at the axis of rotation.

3,777,361

METHOD OF PRODUCING CLAD WIRE

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 4, 1972, Ser. No. 277,892
Int. Cl. B23k *31/02*
U.S. Cl. 29—470.6 7 Claims



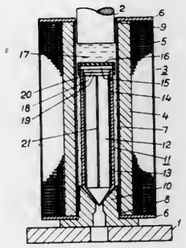
Aluminum rod of indefinite length is wrapped with a copper sheathing having a longitudinal lock seam and is then passed through hydrostatic extrusion apparatus. The heat and pressure of the extrusion process bond the copper to the aluminum and weld the lock seam as the copper-sheathed aluminum rod is extruded to produce copper clad aluminum wire of indefinite length. Materials other than copper and aluminum may be employed in the practice of the present invention.

3,777,362

METHOD OF MANUFACTURING RODS OR WIRE OF COMPOUND MATERIAL

Jan Nilsson, Robertsfors, and Bertram Brinkeborn, Vasteras, both of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 16, 1972, Ser. No. 226,759
Claims priority, application Sweden, Mar. 4, 1971, 2756/71
Int. Cl. B21d *39/04*
U.S. Cl. 29—474.3 8 Claims



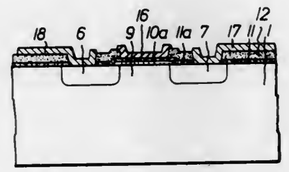
In manufacturing a rod or wirc of compound material from a core of aluminum or aluminum alloy and a casing of copper or copper alloy by hydrostatic extrusion, a billet is used in which the core has a smaller external diameter than the internal diameter of the casing, so as to provide clearance therebetween sufficient that at least most damage to the casing during soft-annealing and handling will not be of sufficient extent to prevent the insertion of the core into a casing. An internal space is provided at the rear of the billet to collect the air present in the gap between the core and the casing as it is displaced when the core and casing are pressed into contact with each other.

3,777,363

METHOD OF MANUFACTURING A FIELD EFFECT TRANSISTOR

Werner Scherber, Holderlinstrasse 8, Nordheim, Germany

Filed Nov. 30, 1971, Ser. No. 203,388
Claims priority, application Germany, Dec. 1, 1970, P 20 58 930.4
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 7 Claims



A method of manufacturing a field effect transistor includes the steps of: completely removing the masking oxide layer used during the diffusion of two spaced semiconductor regions at one surface of a semiconductor body of opposite conductivity type, applying a thin oxide layer to the surface between

the two-spaced regions, applying a thin nitride layer to the thin oxide layer and the remaining exposed parts of the same surface, applying a relatively thick oxide layer to the nitride layer, making first windows through the thick oxide and nitride layers over the two spaced regions and a second window through the thick oxide layer between the two regions and forming metal contacts in the first windows and a metal gate electrode in the second window.

3,777,364

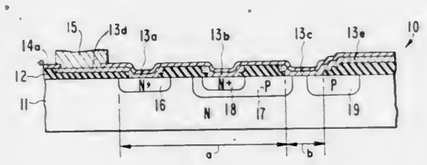
METHODS FOR FORMING METAL/METAL SILICIDE SEMICONDUCTOR DEVICE INTERCONNECT SYSTEM

Richard D. Schinella, Mountain View, and William H. Herndon, Sunnyvale, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Division of Ser. No. 135,965, April 21, 1971, abandoned. This application July 31, 1972, Ser. No. 276,333

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **7 Claims**



A silicide of a selected metal, typically platinum, is used to form an interconnect layer of conductive material on a semiconductor device. The silicide is, in one embodiment, formed by combining a layer of polycrystalline semiconductor material, formed into the desired interconnective lead pattern, with metal from a layer of metal formed over the polycrystalline semiconductor material. By oxidizing the region of the polycrystalline material not combined with the metal to form the metal silicide, the step height between the oxidized polycrystalline material and the metal silicide interconnect is significantly reduced relative to the interconnect structure of the prior art integrated circuits.

3,777,365

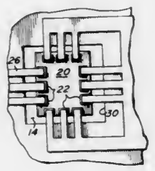
CIRCUIT CHIPS HAVING BEAM LEADS ATTACHED BY FILM STRIP PROCESS

Charles Wayne Umbaugh, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Mar. 6, 1972, Ser. No. 232,029

Int. Cl. B01j *17/00*

U.S. Cl. 29—591 **3 Claims**



Circuit chip devices having beam leads are manufactured by first attaching leads formed on a film strip carrier to the chip, and then severing the lead ends to free the beam leaded chip from the carrier.

3,777,366

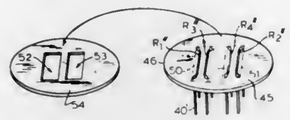
CHAMBER AND FILAMENT METHOD FOR FLOW THROUGH THERMAL CONDUCTIVITY MICRO SIZE MEASURING CHAMBERS

Michael Edward Kiefer, Raleigh, N.C., assignor to Trienco, Inc., Raleigh, N.C.

Continuation of Ser. No. 143,836, May 17, 1971, Pat. No. 3,704,984. This application June 21, 1972, Ser. No. 264,955

Int. Cl. G01n *27/18*

U.S. Cl. 29—592 **11 Claims**



A chamber and filament method of chamber formation and filament support for micro size, i.e. 10 microliters or less, thermal conductivity measuring chambers is based on supporting the detecting filaments on a suitable relatively thin electrically and thermally insulating substrate, e.g. mica, and utilizing the wall support surface of the substrate as a significant portion of the total wall surface of the detecting chamber thereby mechanically stabilizing the filaments, minimizing the chamber size and dramatically increasing the ability of the chamber to detect the presence and concentration of minute quantities of unknowns, e.g. insecticide on a lettuce leaf.

3,777,367

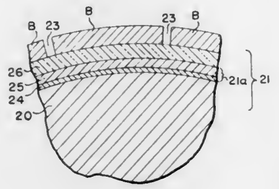
METHOD OF FABRICATING A COMMUTATOR

Memorial Kalagidis, North Canton, Ohio, assignor to Ametek, Inc., New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,267

Int. Cl. H01r *43/00*

U.S. Cl. 29—597 **9 Claims**



In fabrication of commutators by applying a thin insulation coating on a cylindrical support and thereafter applying a thin conductive layer ultimately providing the conductive segments by plasma or flame spray techniques, a bonding layer is layed before the insulating layer; and further electrical connections for armature coil leads, either in the form of tangs or direct connections are provided by applying to the insulating layer either a tang-originating preform or the lead ends before flame spraying of a copper layer for the conductive bars or segments and thereafter slotting to define the tanged or lead-connected segments. Alternatively, bar defining slots can be produced by masking the insulation coated blank before the final layer flame spray, wholely or in part eliminating slotting operations.

A dove tail interlock between the bars and core may be achieved by using a core with longitudinal trapezoidal section slots and carrying out the bar slotting centrally of each of the core slot locations.

3,777,368

METHOD OF PRODUCING A COMPOSITE TUBULAR SUPERCONDUCTOR

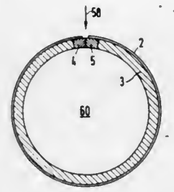
Hans Pfister, and Heinrich Diepers, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1972, Ser. No. 279,388

Claims priority, application Germany, Aug. 19, 1971, P 21 41 636.4

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 **18 Claims**



A method of producing tubular conductors includes bending a conductor band to abut the longitudinal edges thereof to form a tube. The conductor band includes a layer of niobium adjacent a layer of an electrically normal conducting metal and ribbon-like niobium chords that define the respective longitudinal edges of the band. After the tube is formed, the niobium chords are joined to each other. The method is especially suited for producing tubular conductors for superconducting cables and the like such as superconducting alternating-current cables.

3,777,369

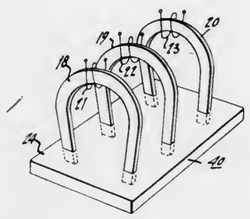
METHOD OF MAKING A MAGNETIC RECORDING HEAD

Rabah A. Shahbender, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 685,491, Nov. 24, 1967, abandoned. This application Sept. 20, 1971, Ser. No. 182,104

Int. Cl. G11b *5/42*; **H01f** *7/06*

U.S. Cl. 29—603 **3 Claims**



There is disclosed a magnetic transducer and method of manufacturing the same. The transducer comprises a body of high reluctance material through which apertures are drilled for accepting the free ends of a loop of magnetically permeable material. The loop ends and the surface of the body through which they project are machined to form a smooth planar surface in which the loop ends are separated by the desired gap dimension.

3,777,370

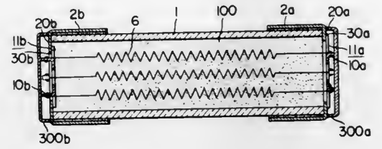
METHOD OF MAKING CYLINDRICAL FUSE

Toshio Wakui, Kawasaki-shi, Kanagawa-ken, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken, Japan

Filed Feb. 4, 1972, Ser. No. 223,495

Int. Cl. H01h *69/02*

U.S. Cl. 29—623 **4 Claims**



A method for producing electric power fuses comprising the steps of preparing two circular discs each having a central hole and a plurality of peripheral slits, and each slit having a lug at the radially inner end thereof, placing the circular discs at a predetermined distance, inserting fuse elements in the slits so that two ends of the fuse elements are fixed around the lugs, slipping an insulating tube over the fuse elements thus assembled, and filling the interior of the insulating tube with an arc extinguishing substance.

3,777,371

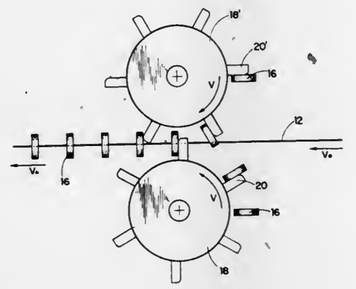
METHOD OF CONTROLLING THE CHARACTERISTICS IMPEDANCE OF COAXIAL CABLES

Rama Iyengar, Dollard Des Ormeaux, and Dan Bryan Davis, Ile Perrot, Quebec, both of Canada, assignors to Northern Electric Company, Limited, Montreal, Quebec, Canada

Filed Feb. 16, 1972, Ser. No. 226,881

Int. Cl. H01b *13/20*

U.S. Cl. 29—624 **4 Claims**



A method is disclosed for adjusting the characteristic impedance of disc insulated coaxial cables. The method consists of varying the spacing between adjacent discs mounted on the center conductor during the manufacturing operation. An increase in impedance results from an increase in the spacing of the discs and, conversely, a decrease in impedance results from a decrease in spacing. The spacing between discs may be varied by changing the rate at which the discs are applied to the conductor which is moving at a constant linear speed.

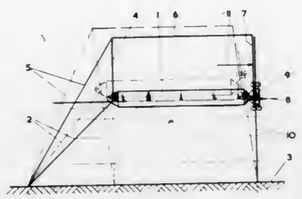
ERRATA

For Classes 30—124 thru 36—71 see:
Patents Nos. 3,777,396 thru 3,777,419

3,777,372
CUTTER SUCTION DREDGE HAVING PARALLELOGRAM LINKAGE WAVE COMPENSATOR

Johannes Bertus Laarman, Swijndrecht, Netherlands, assignor to N.V. Industrieele Handelscombinate Holland, Rotterdam, Netherlands

Filed July 22, 1971, Ser. No. 165,125
Claims priority, application Netherlands, July 22, 1970, 7010848
Int. Cl. E02f 3/88
U.S. Cl. 37—64 3 Claims

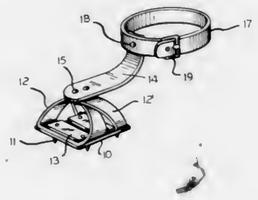


A cutter dredge comprises a pontoon pivotally mounted on a spud driven into the sea bed, by means of a guide element vertically movable on the spud. The pontoon carries a cutter ladder pivotally on its end opposite the spud; and the lower end of the ladder is maintained at a predetermined elevation despite the wave motion of the spud and pontoon, by means of a parallelogram linkage having the pontoon as the lower side and having parallel sides upstanding from opposite ends of the pontoon and pivotally connected to the pontoon. The side of the parallelogram linkage at the cutter end of the pontoon is secured to the pontoon. The opposite side of the parallelogram linkage can be either a rod upstanding from the guide element, or a portion of the spud itself. The upper ends of the two upright sides are interconnected by a horizontal cable or stay.

3,777,373
ANTI-SKID DEVICE FOR BOOTS AND SHOES

Gladys M. Johnson, 1251 S. 35th St., Milwaukee, Wis.

Filed Feb. 1, 1973, Ser. No. 328,790
Int. Cl. A43b 3/18
U.S. Cl. 36—7.7 4 Claims

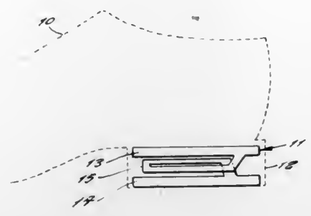


An anti-skid cleat for the toe of a shoe or boot. The cleat is attached to the shoe or boot by means of a crossed pair of straps in an X-shaped configuration which are connected to an akle band by means of a strap connected to the cross points of the X shape.

3,777,374
PLEASURE SHOE

Leslie Hendricks, P.O. Box 111, Russell Springs, Ky.

Filed July 19, 1972, Ser. No. 273,285
Int. Cl. A43b 21/30
U.S. Cl. 36—38 1 Claim

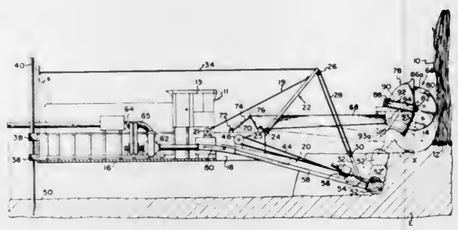


A footwear device that makes walking or standing a pleasure by aiding in prevention of foot and leg fatigue by putting a "bounce" in every step; the device consisting of a compression spring unit that is fitted into each shoe heel and which includes a bottom base member and top base member that are spaced apart and parallel to each other, the base members being interconnected by an integral, resilient, compression coil spring therebetween and which absorbs the shock of walking and which cushions the underside of a person's heel.

3,777,375
SUCTION DREDGE WITH BRUSH CUTTING ATTACHMENT

Leward N. Smith, Millbrook Rd., Rt. 1, Remus, Mich.

Filed Jan. 28, 1972, Ser. No. 221,538
Int. Cl. E02f 3/90
U.S. Cl. 37—67 20 Claims

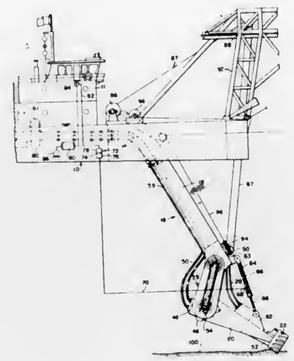


Apparatus for excavating material such as earth, trees, brush, roots and the like, and removing it as a slurry, to make a lake or enlarge existing waterways, comprising: an underwater dredge having a material-removing cutterhead for digging and collecting material to be dredged which is movable in a to-and-fro, lateral path of travel, suction apparatus for removing the material from the cutterhead in slurry form and transferring it to a remote location, and a chipping wheel assembly movable with said cutterhead for removing an upper layer of earth, reducing the trees, roots, and brush to chips or pieces, and directing the reduced or comminuted material into the path of the cutterhead to be removed thereby to the remote location.

3,777,376
ARTICULATED LADDER CONSTRUCTION FOR CUTTERHEAD DREDGE

Thomas M. Turner, Severna Park; Francis J. Keefe, and Charles D. Little, both of Baltimore, all of Md., assignors to Ellicott Machine Corporation, Baltimore, Md.

Filed Feb. 4, 1972, Ser. No. 223,482
Int. Cl. E02f 3/90
U.S. Cl. 37—67 9 Claims

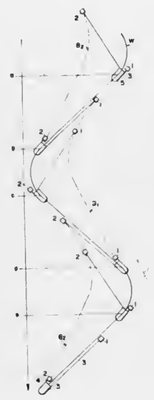


An articulated ladder for a cutterhead dredge especially adapted for use in rough water and wherein the ladder, rather than being a unitary rigid member, is constructed in two parts connected together at adjacent ends by a link whereby the thrust due to wave action on the ladder part trunnioned to the dredge cannot be transmitted to the cutterhead and, by reaction of the latter against the bottom, back to the trunnions.

3,777,377
METHOD OF COLLECTING SUBMARINE RESOURCES

Masatoshi Toritani, 4-26, Naritahigashi 5 chome, Suginami-ku, Tokyo, Japan

Filed Oct. 27, 1971, Ser. No. 193,033
Int. Cl. E02f 1/00
U.S. Cl. 37—195 4 Claims

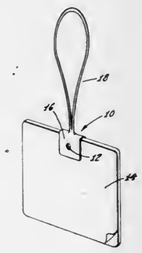


The method of collecting submarine resources is practised by a collecting vessel provided with a pair of buckets which are adapted to be raised or lowered alternately. The vessel is steered so that a meandering wake is formed, and for every passage of the vessel around the turning point of the meandering wake, one of the buckets is lowered from the vessel toward the bottom of a river or sea and concurrently the other bucket is raised from the bottom to the vessel. While one of the buckets is on the vessel for collection of gathered resources therefrom, the other bucket is dredging through the bottom of the water for accumulating resources therein. The system for carrying out the method is provided with winch means for hoisting the two buckets simultaneously in opposite directions, that is, up and down.

3,777,378
REINFORCING PATCH

Robert Sant'Anselmo, 11001 Wagner St., Culver City, Calif.

Filed June 19, 1972, Ser. No. 264,025
Int. Cl. G09f 3/02
U.S. Cl. 40—27 9 Claims

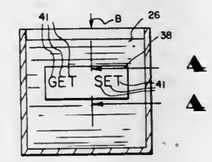


A reinforcing patch for reinforcing an opening through sheet material including a pair of spaced plate members interconnected by a hinge member to form a U-shaped reinforcing patch and with a pair of openings extending in line through both plate members and with a plurality of teeth extending inwardly from each plate member and with the teeth spaced around the periphery of the opening in each plate member. The plate members are positioned on opposite sides of the sheet material and with the teeth extending into the opening through the sheet material. The invention also includes the use of a loop member integral with and extending from the hinge member. In addition, the teeth may abut each other in the opening or the teeth may interlock within the opening through the sheet material.

3,777,379
AESTHETIC FLUID SUSPENSION AND ITS PREPARATION

William B. Lewellen, 212 W. McNeil, Phoenix, Ariz.

Continuation-in-part of Ser. No. 593,850, Nov. 16, 1966, abandoned. This application Mar. 7, 1969, Ser. No. 805,188
Int. Cl. A63j 5/00; B29d 27/04; G09f 13/24
U.S. Cl. 40—106.21 21 Claims



A method for producing an aesthetic field suspension comprising preparation of a body of gelatinous material having

high yield value, then inserting a similar gelatinous material of similar characteristics therein, said similar gelatinous material being optically contrasting with said body of gelatinous material, then allowing the high yield value of the materials to hold the similar material in said body material in substantially permanent position relative to said body; the disclosure further and specifically defining a method for inserting the similar material in said body in frozen form or by means of a hollow tubular member which may be moved around in the body during the insertion of the similar material therein to form geometric or other aesthetic patterns of the similar material in the body material; the disclosure also defining a novel product related to said method.

3,777,380

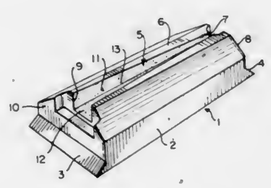
GUNSIGHT

Paris Theodore, 24 E. 73rd St., New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,390

Int. Cl. F41g *1/00*

U.S. Cl. 42—1 S **23 Claims**



A gunsight including a rear notch and a relatively smaller front notch, preferably in the form of a block of material having an open channel, formed therein and converging from a rear notch to a front notch, the sides of said channel preferably being of a light color such as yellow. Optionally, one or more lips may be mounted at predetermined distances in front of the front notch to provide elevation angle indices for firing at longer ranges, the lips preferably being provided with notches or marks to assist in determining the range of the target.

3,777,381

FIREARM CARRYING HANDLE AND SIGHT PROTECTOR

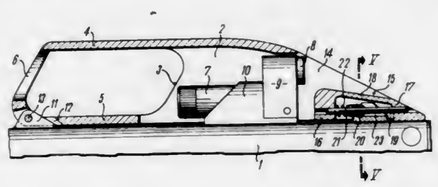
Tilo Moller, Oberndorf, ob der Sulzhalde, and Dieter Ketterer, Oberndorf/Neckar, both of Germany, assignors to Heckler & Koch GmbH, Oberndorf/Neckar, Germany

Filed May 12, 1971, Ser. No. 142,608

Claims priority, application Germany, May 13, 1970, P 20 23 270.6

Int. Cl. F41g *1/00*; **F41c** *27/00*

U.S. Cl. 42—1 S **7 Claims**



A hand firearm incorporates a carrier handle at about the centre of gravity of the firearm which carrier handle is of generally tubular shape which is adapted to protect a sight such as a telescopic sight giving a smooth outer surface not likely to become entangled with undergrowth or otherwise impede usage of the firearm. Side apertures in the tubular member provide an easy hand hold.

3,777,382

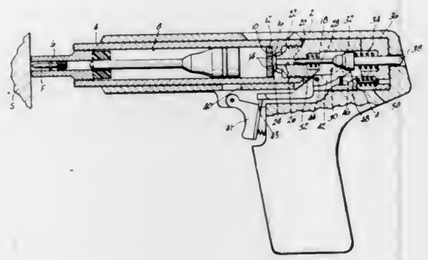
CASELESS PELLET IGNITING MECHANISM

Lawrence J. Brunelle, East Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 94,835, Dec. 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 45,651, June 12, 1970, Pat. No. 3,659,768. This application July 20, 1972, Ser. No. 273,657

Int. Cl. B25c *1/12*

U.S. Cl. 42—1 R **2 Claims**



A firing chamber is provided which peripherally surrounds a pellet of caseless propellant at spaced intervals only, with intermediate portions of the pellet being peripherally unsupported. A striking mechanism having a tapered nose for impacting the pellet is provided, with the tapered striker nose being operative to punch out a portion of the pellet and compress that punched out portion against an anvil to ignite that portion. The tapered striker nose is also operative to cause fracturing of the remainder of the pellet along lines generally extending from the punched-out area to the unsupported peripheral portions of the pellet. The fracturing thus induced aids greatly in rapid and complete combustion of the entire pellet.

3,777,383

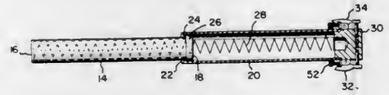
MAGAZINE CAPACITY REDUCER KIT FOR REPEATING SHOTGUNS

David E. Haines, Fort Ashby, and James D. Troutman, Keyser, both of W. Va., assignors to James D. Troutman, Keyser, W. Va.

Filed June 30, 1972, Ser. No. 267,949

Int. Cl. F41c *25/08*, *25/00*, *27/00*

U.S. Cl. 42—49 A **6 Claims**



A magazine kit for repeating shotguns which includes an extensible plug adapted to be readily inserted into and removed from the magazine of the shotgun. The kit serves to modify the magazine to facilitate loading and unloading of the magazine as well as to reduce the capacity when desired.

3,777,384

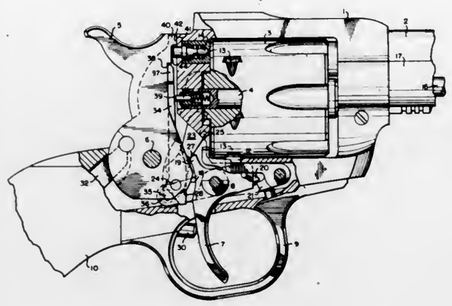
MECHANISM FOR SINGLE ACTION FIREARM

William B. Ruger, Southport, and Lawrence L. Larson, Bethany, both of Conn., assignors to Sturm, Ruger & Co. Inc., Southport, Conn.

Continuation-in-part of Ser. No. 198,752, Nov. 15, 1971, abandoned. This application May 5, 1972, Ser. No. 250,824

Int. Cl. F41c *17/08*, *1/00*, *19/00*

U.S. Cl. 42—66 **18 Claims**



An improved firing mechanism for a firearm having an external hammer that is not rotated to its cocked position by the trigger when the trigger is pulled but which rotates the trigger to its ready-to-fire position when the hammer is manually cocked. The improved mechanism comprises a vertically disposed and movable trigger bar pivotally connected to the trigger, the upper end portion of the trigger bar being disposed in front of the hammer and being movable from its lower position to its upper position when the trigger is rotated from its rest position to its ready-to-fire position. Trigger bar blocking means engage the upper end of the trigger bar and prevent upward movement of the trigger bar when the hammer is at rest, and hammer blocking means engage a forward facing surface of the hammer and prevent forward movement of the hammer and firing pin against a cartridge in the chamber when the trigger is in its lower position. The upper end portion of the trigger bar is positioned relative to the hammer so that the hammer and firing pin can strike and fire a cartridge in the chamber when the trigger bar is in its upper position.

3,777,385

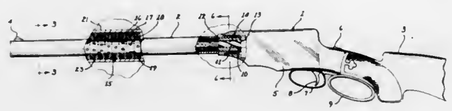
BALL RIFLED BARREL

Edward A. Hagan, 617 S. La Ville Pl., Tucson, Ark.

Filed Oct. 2, 1972, Ser. No. 294,281

Int. Cl. F41c *21/00*, *21/02*

U.S. Cl. 42—76 R **9 Claims**



A firearm, including a barrel having a plurality of spherical bearings contacting a projectile discharged therethrough, is disclosed. Each of a plurality of sets of centrally apertured discs retains a plurality of rotatable spherical bearings. A part of each bearing within a set of discs extends into the centrally disposed aperture. The sets of discs are mounted adjacent one another within a sleeve to form a barrel for a firearm. The bore of the firearm is defined by the innermost extensions of the spherical bearings within a set of discs. A key way within each of the discs with a helically formed key extending adjacent the inner surface of the sleeve to angularly position each of the discs about its longitudinal axis. The spherical bearings of the positioned discs thereby define a number of helixes within the bore of the barrel, where the number of helixes corresponds to the number of spheres retained by a set of discs.

3,777,386

TOY PISTOLS

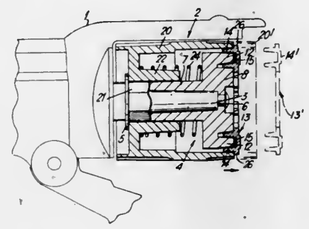
Harry John William Eagles, Newport, England, assignor to The Crescent Toy Company Limited

Filed Nov. 17, 1971, Ser. No. 199,608

Claims priority, application Great Britain, Dec. 15, 1970, 59,550/70

Int. Cl. F41c *3/06*

U.S. Cl. 42—58 **2 Claims**



A toy pistol includes spring-loaded cylinder comprising an inner part which is fixed in an axial direction and is provided with a ring of firing pins for the reception of a ring of caps. An outer shell surrounds the inner part and is capable of sliding in a longitudinal direction between a forward position in which its rear edge is overlapped by a part of a ring of caps in position on the firing pins and a rearward position, movement into which frees the ring from the firing pins. The outer shell may be spring-loadd into its forward position. Also the inner part may be formed with a ring of teeth for cooperation with an indexing finger on the hammer mechanism.

3,777,387

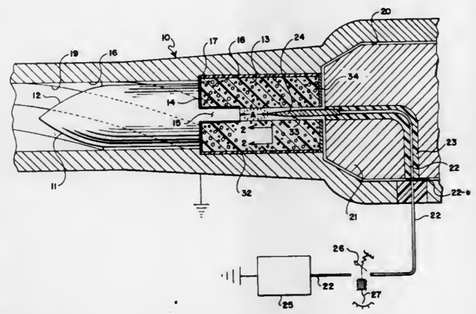
FIREARM AND CARTRIDGE THEREFOR

Harold W. Ritchey, Langhorne, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Division of Ser. No. 737,128, June 14, 1968, Pat. No. 3,563,177. This application Nov. 2, 1970, Ser. No. 86,361

Int. Cl. F41c *19/12*

U.S. Cl. 42—84 **16 Claims**



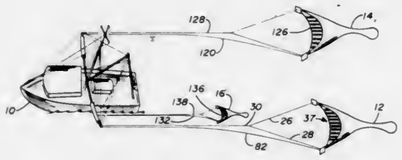
A combination of a reciprocating bolt, closed breech-type of firearm and an ammunition round comprising a caseless

charge and projectile which is adapted to be fired by means of an electrical discharge between the end of an ignition probe mounted in the firearm and the projectile attached to the charge. The charge is of the caseless type and is porous, being made from comminuted, or particulated combustible materials having the surface of each particle softened with a solvent and gently consolidated in a combustible tube or cover.

3,777,388
SHRIMP FISHING APPARATUS

James L. Newman, 1321 Glen Cove, Richardson, Tex., and Millo Marion Hawthorne, 4824 Overton, Forth Worth, Tex.

Continuation of Ser. No. 883,187, Dec. 8, 1969, abandoned. This application Oct. 3, 1972, Ser. No. 303,413
Int. Cl. A01k *73/02*
U.S. Cl. 43—9 **21 Claims**



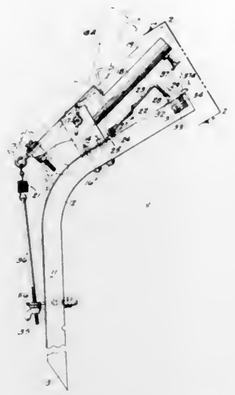
An apparatus for daylight shrimp fishing is disclosed. The apparatus includes a plurality of Otter trawls each having an electrode array and a pulse circuit. Each pulse circuit includes a capacitor which is discharged by a reversal of current to the capacitor which fires an SCR. A control unit located on the boat effects the discharging of the respective capacitors in a predetermined sequence to equalize the load on an alternating current generator. The electrode array has a plurality of electrodes which trail behind a bus extending between the trawl doors at a distance above the bottom. The electrodes are weighted to slide along the bottom and have an insulating material disposed above the conductor so that the electric current pulses are directed into the bottom rather than being dissipated upwardly into the water. The design of the bus and the electrode array is such as to insure uniform current density over the array.

3,777,389
FISHING ROD HOLDER

Angelo DeMino, 10349 Glory Ave., Tujunga, Calif.

Filed Aug. 23, 1972, Ser. No. 283,129
Int. Cl. A01k *97/12*
U.S. Cl. 43—15 **9 Claims**

A fishing rod holder is described having a tubular member in which the handle of the rod is inserted. The member is mounted on a support to pivot about a horizontal axis and is engaged by an adjustable spring to prevent the weight of the rod from pivoting it downward. Between the member and the support forward of the pivot is mounted a mouse-trap like spring, and means for cocking the trap spring under force. A spring release is provided to trigger the trap spring whenever

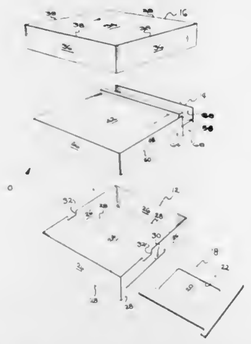


the rod is pivoted downward, due to the pull of a fish working against the action of the adjustable spring.

3,777,390
PHOTOCHROMIC MATERIAL REGENERATION PACKAGE

Robert L. Charlesworth, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 28, 1972, Ser. No. 275,948
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 L **3 Claims**

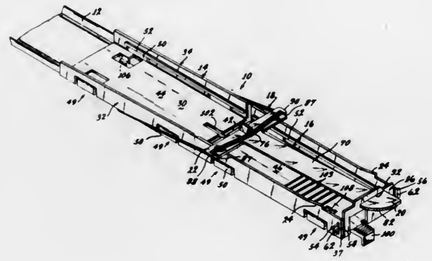


A new package is provided which features a unique dark room cavity which is adapted to accommodate a plate containing photochromic material for regenerating the photochromic material to its original color after all or a portion of the photochromic material has changed color as a result of exposure to direct sun rays. The package may be formed of cardboard, chipboard, paperboard, or corrugated paperboard. A tray-like base member is provided which includes a bottom panel and four opposed side panels which are fastened together at the corners to form four side walls perpendicular to the bottom panel. One of the side walls is slotted so that the plate of photochromic material may be inserted into the base member. An insert member is positioned within the base member and includes a top panel which is elevated to a position overlying and separated from the bottom panel so as to define a dark room cavity therebetween for receipt and regeneration of the plate of photochromic material. A telescoping lid member may be positioned over and into mating relationship with the base member to completely close the package.

3,777,391
SIMPLIFIED TOY LAUNCHER

Jack L. Barcus, Cerritos; Eugene J. Kilroy, Jr., Inglewood; Marius J. Morin, Torrance, and John C. Parker, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 4, 1972, Ser. No. 278,158
Int. Cl. A63h *17/00*
U.S. Cl. 46—1 K **5 Claims**

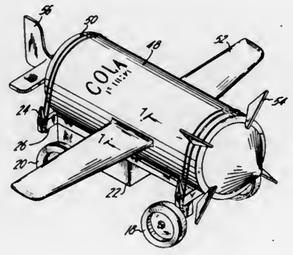


A toy vehicle launcher which includes a one-piece foldable frame, a slide, and a rubber band for propelling the slide forward to launch a toy vehicle along the frame, wherein the launcher can be easily changed from a small flat package configuration to a longer and taller use configuration. The frame has two base portions, two side walls, and an end wall, connected together by thin webs that form living hinges, and the base portions have projections that snap over portions of the side walls when the side walls are pivoted to an upright position to retain them thereat.

3,777,392
TOY

Samuel Span, 447 Ogden Ave., Teaneck, and Walter Thum, 12-42 Sunnyside Dr., Fair Lawn, both of N.J.

Division of Ser. No. 861,114, Sept. 25, 1969. This application Jan. 12, 1972, Ser. No. 217,050
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **2 Claims**

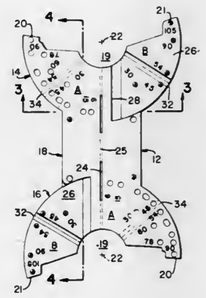


A toy in which random household articles may be assembled to a chassis for realizing a movable toy. The chassis frame retains a front axle and a rear axle upon which wheels are rotatably mounted to enable the chassis to move translationally. Spike-shaped members project upward from the chassis frame for penetrating into an article made of soft material and mounted on top of the chassis to form the body of a vehicle. Peg-shaped members projecting downward from beneath the chassis frame permit an article to be held to the chassis frame through flexible bands. Various elements are attachable to the article to render a vehicle-driven toy.

3,777,393
CONSTRUCTION TOY

Stephen C. Baer, Corrales, N. Mex., assignor to Operations Analysis Inc., Worcester, Mass.

Filed Mar. 13, 1972, Ser. No. 234,122
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 **6 Claims**



An educational toy for constructing three dimensional, geometric figures by combining together numerous unitary planar construction members each having an array of holes and array of pins. Each construction member has two wing-shaped elements joined by a hinge at the longitudinal axis of the member and two hinges in each end of the member. The hinges permit the member to be deformed into the edges and corner of various polyhedra. The arrays of holes and pins have a circular symmetry about each end of the member. The construction members mate together by attaching the portion of the member containing pins to a corresponding portion on another member containing holes. The circular symmetry of the arrays of holes and pins permits the members to mesh together in selectable angular relationships.

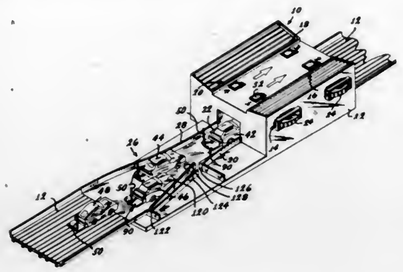
3,777,394
TOY VEHICLE WITH ADJUSTABLE LAP COUNTER ACTIVATOR REMOVABLY MOUNTED THEREON

William A. Staats, Torrance; Denis V. Bosley, Palos Verdes Peninsula; John S. Cook, Sunnyvale, and Toshio Yamasaki, Gardena, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 96,808, Dec. 10, 1970, Pat. No. 3,712,615. This application July 31, 1972, Ser. No. 276,482
Int. Cl. A63h *17/00*
U.S. Cl. 46—202 **3 Claims**

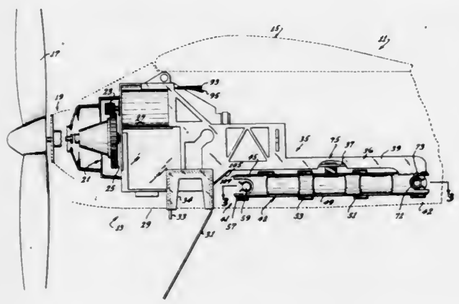
A lap counter assembly for use in a toy racing set wherein several toy vehicles race along the same wide track and can pass one another, for indicating the number of laps traversed by each of the several vehicles. The counter assembly includes a track region which narrows from a multi-lane width to a single lane width, and several counters which have trip members which can be struck by vehicles to advance the counts, wherein the trip members are located at different lateral posi-

tions across the width of the single lane track region. An attachment is provided for each vehicle, which includes an upwardly projecting member for moving one of the trip members



to register a count as the vehicle passes by it, the projections on the different vehicles located at different lateral positions thereon so that each projection engages a different trip member.

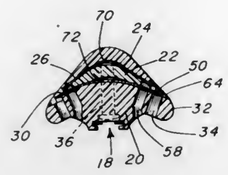
3,777,395
FLYABLE TOY AIRCRAFT WITH JETTISONABLE BATTERY PACK
Richard S. Chang, Rolling Hills Estates, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 29, 1972, Ser. No. 284,532
Int. Cl. A63h *29/22*
U.S. Cl. 46—243 AV **10 Claims**



An improvement in a flyable toy aircraft of the type having a battery-powered, electric motor-driven propeller wherein the battery pack is releasably held to the aircraft fuselage assembly and simultaneously electrically connected to the toy's electric motor, the electrical connector and release mechanism holding the battery pack in position and completing the motor current supply circuit until the incidence of a crash-induced impact force at the forward end of the toy's fuselage assembly.

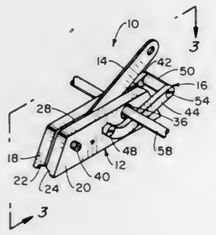
3,777,396
CARTRIDGES HAVING TANDEMLY MOUNTED CUTTING EDGES ON TWO SIDES THEREOF
Sergio Simonetti, Westport, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed June 1, 1972, Ser. No. 258,683
Int. Cl. B26b *21/00, 21/20, 21/52*
U.S. Cl. 30—32 **11 Claims**

The specific disclosure provides a bonded blade cartridge having two double edge blades separated by a spacer rigidly secured between a cap member and a blade seat member. Transverse center portions of the lower surfaces of the cap member and of the spacer are curved to a greater degree than respective corresponding transverse center portions of the upper surfaces of the spacer and of the blade seat member. The greater degree of curvature of the lower surface of the



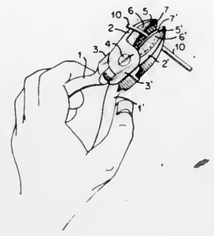
spacer ensures that the bottom blade cutting edges are in proper abutting engagement with upwardly extending blade stops on the blade seat member. The greater degree of curvature in the lower surface of the cap member ensures that the cutting edges of the top blade are in proper abutting engagement with upwardly extending blade stops formed on the spacer.

3,777,397
SHIELDED CABLE STRIPPER
William K. Johnson, 17586 Chestnut St., Fountain Valley, Calif.
Filed May 30, 1972, Ser. No. 257,911
Int. Cl. B21f *13/00*
U.S. Cl. 30—90.6 **1 Claim**



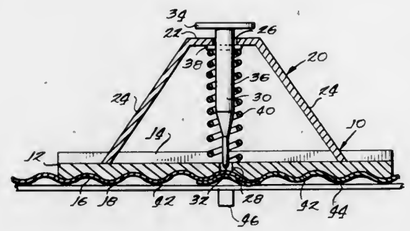
An apparatus to remove the outer insulative jacket of an electrical wire cable wherein an elongated knife blade is fixedly positioned between a pair of housing members, an opening is formed through the housing transverse to the knife blade with the edge of the blade extending within the opening, the point of the knife blade communicating with an elongated groove formed within the edge of the housing members.

3,777,398
WIRE CUTTING TOOL
Esse Edgar Routh, Jr., 6 Hemlock Rd., Bronxville, N.Y.
Filed Jan. 20, 1972, Ser. No. 219,231
Int. Cl. B26b *17/04*
U.S. Cl. 30—124 **4 Claims**



A wire cutting tool is shown and described having gripping members disposed within and resiliently connected to the jaws adjacent the cutting edges such that wire ends are held by the gripping members after being cut.

3,777,399
PUNCH UNIT
Lee A. Rockel, P. O. Box 421, Dallas City, Ill.
Filed Aug. 12, 1971, Ser. No. 171,186
Int. Cl. B26f *1/02*
U.S. Cl. 30—361 **5 Claims**



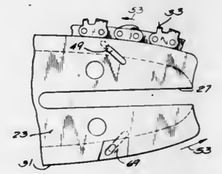
A unit for pre-piercing sheets of corrugate roofing and siding to permit both proper positioning and safe and convenient driving of the mounting nails. The unit includes a base having on its lower surface orienting corrugations which correspond in general size and configuration to the corrugations or ribs in the sheet material. The upper surface of the base is provided with a guide portion adapted to support and guide a reciprocally movable punch which is driven forwardly by a hammer blow, or the like, to pierce the sheet metal. The position of the punch relative to the orienting corrugations is such that the perforations formed in the sheet metal are located at the peak or top of the corrugations in the sheet. after this piercing operation, a nail may be driven easily and safely through the perforation and into the underlying wood support without the dangers and problems normally encountered in attempting to drive the nail through one or more layers of unperforated sheet metal.

3,777,400
CLIPPING APPARATUS AND CLIPS THEREFOR
Karl A. Klenz, Oakland, and Clyde R. Velarde, Hayward, both of Calif., assignors to Rheem Manufacturing Company, New York, N.Y.
Filed Aug. 28, 1971, Ser. No. 175,085
Int. Cl. B65d *83/00*
U.S. Cl. 206—56 AB **3 Claims**



A clipping apparatus for forming a closure around the neck of a bag of flexible material or the like. Clips are supplied to the apparatus in the form of an elongated prestamped strip of planar sheet material which is wound on a supply reel. The strip is then formed to a generally U-shape in the device and thereafter individual clips are cut from the strip by a punch which, in cooperation with a die, applies the clip in encircling relationship to the product. The disclosed prestamped strip facilitates feeding of the same to the clipping operation and the shape of the clip facilitates use of the machine with clips having legs of different lengths.

3,777,401
SAW CHAIN LUBRICATION MEANS
Uwe F. Arff, and Gordon J. Edwards, both of Peterborough, Ontario, Canada, assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Sept. 27, 1971, Ser. No. 183,998
Int. Cl. B27b *17/12*
U.S. Cl. 30—383 **17 Claims**

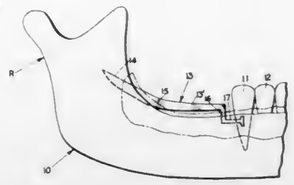


Disclosed herein is a chain saw cutter bar including two side plates having respective inside surfaces defining therebetween a groove adapted for receiving the tangs of a saw chain, together with means in one of the side plates defining a lubrication hole communicating with an oil supply conduit in a supporting chain saw powerhead and including a merging surface which extends in the general direction of intended chain travel and relative to the inside surface of the one side plate at an obtuse angle, whereby to discourage sawdust accumulation in the lubrication hole while affording lubricant flow to the saw chain.

3,777,402
DENTURE SUPPORT FRAME WITH RAMUS IMPLANT FOR MOLAR AREA OF LOWER JAW
Harold Devere Roberts, 217 N.E. Knott St., Portland, Oreg.
Filed Sept. 11, 1972, Ser. No. 287,817
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A **2 Claims**

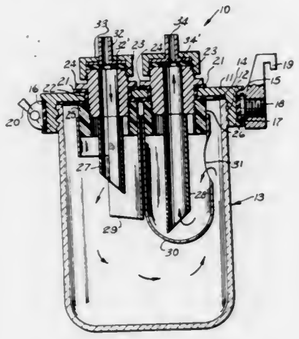
A permanent frame for removably supporting an artificial denture in a molar area of the lower jaw, when there is a sound

natural bicuspid or cuspid tooth adjoining that area, comprising a rigid bar with the rear end formed into a ramus implant, the exposed portion of the bar sized and shaped to conform to the molar area in question extending forwardly spaced a slight distance above the epithelium in that molar area, the forward end of the bar turning first downwardly near the first natural



tooth and extending down into the top of the mandible bone, and finally turning forwardly and extending into a slit in the root of the tooth and anchored therein. When the bar is in place the exposed portion of the bar enables a denture to be firmly but removably set down over the bar in the desired molar area.

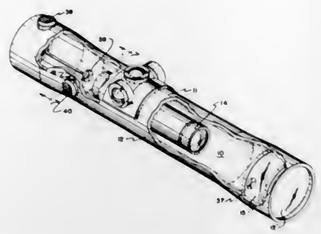
3,777,403
DENTAL SILVER RETRIEVAL APPARATUS
John K. Ritchie, 1118 Grand St., Alameda, Calif.
Filed Sept. 18, 1972, Ser. No. 290,103
Int. Cl. A61c *17/04*
U.S. Cl. 32—33 **4 Claims**



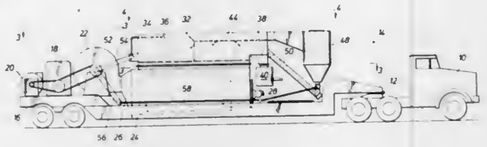
A device for collecting dental silver. This device consists primarily of a mounting member carrying a sump, a sediment director member, a sediment barrier member and sleeve and tube members which incorporate fittings for hoses.

3,777,404
GUNSIGHT ALIGNMENT APPARATUS
Richard A. Oreck, 3206 Plant Dr., Boise, Idaho
Filed Nov. 10, 1971, Ser. No. 198,030
Int. Cl. F41g *1/38, 1/42*; **F41a** *1/54*
U.S. Cl. 33—245 **3 Claims**

The collimator of the present invention is intended to be carried within a telescopic gunsight. The collimator of this invention comprises an eyepiece reticle suitably disposed from the eyepiece of the gunsight, a forward reticle disposed distally forwardly of the reticle erector of the gunsight and means for horizontally and vertically adjusting the relationship of the eyepiece reticle and the forward reticle. The horizontal and vertical adjusting means include a horizontal set-screw-type adjusting means carrying the eyepiece reticle, and a vertical adjusting means carrying the forward reticle. A further embodiment of this invention includes an eyepiece reticle etched onto the eyepiece of a gunsight and a forward reticle having both horizontal and vertical adjusting means.



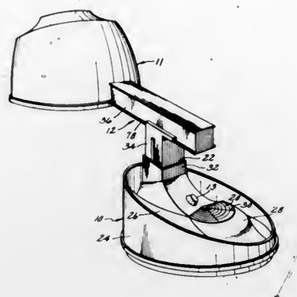
3,777,405
DRILLING MUD RECLAIMING APPARATUS
Thomas B. Crawford, Box L, Simonton, Tex.
Filed Apr. 17, 1972, Ser. No. 244,625
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 R **8 Claims**



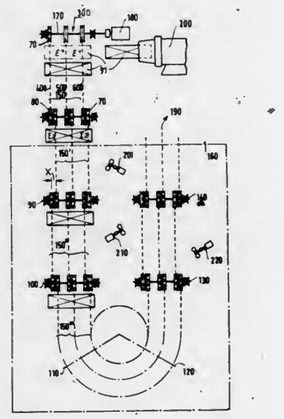
An apparatus for reclaiming drilling mud from a drilling site which incorporates a movable vehicle which carries a forced air furnace which heats a substantial amount of air to an elevated temperature. A fluidized bed dryer is arranged so that hot air passes through the fluid bed heating the bed. The drilling mud is delivered through a suitable pump to a spray system above the bed and is sprayed on the bed. This drives off the water in the drilling mud. The drilling mud is withdrawn from one end of the fluid bed through a sacking mechanism and is bagged. The air flowing from the fluid bed is withdrawn and forced through a cyclone centrifuge, dropping out the dust and the air and water vapor are vented to atmosphere.

3,777,406
HAIR DRYER
Esko J. Nopanen, Asheboro, N.C., assignor to General Electric Company, Bridgeport, Conn.
Filed Dec. 14, 1972, Ser. No. 315,159
Int. Cl. A45d *20/24*
U.S. Cl. 34—99 **9 Claims**

A hair dryer that may be closed for carrying and erected for operation, including a base assembly, a hood assembly to be positioned about the head of the user for distributing heated air to the head and a strut assembly for supporting the rigid hood assembly elevated from the base assembly. The strut assembly has one section thereof secured to the base assembly and a second section having means at one end for coupling and uncoupling the hood assembly. One of the sections has an incline cooperating with the other section whereby movement of the other section up the incline, raises the hood to an operative position elevated relative to the base assembly and down the incline to close the hood upon the base for carrying and storage.

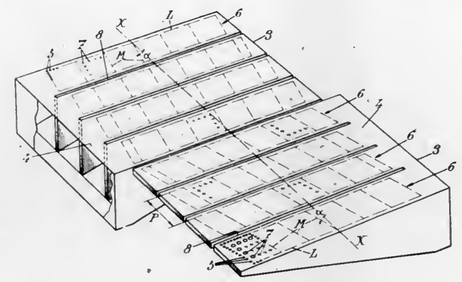


3,777,407
CONVEYING- AND DRYING-APPARATUS FOR CERAMIC MEMBERS
Manfred Leisenberg, Alterwall 3, 775 Konstanz/Bodensee, Germany
Filed Feb. 25, 1972, Ser. No. 229,292
Claims priority, application Germany, Feb. 25, 1971, P 21 09 071.1; Apr. 27, 1971, P 21 20 540.3
Int. Cl. F26b *25/00*
U.S. Cl. 34—105 **8 Claims**



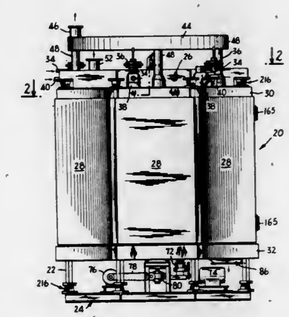
A conveying- and drying-apparatus for ceramic starting members, being transferred after pressing in a drying oven, comprises a drying oven, and a plurality of units disposed behind each other and about laterally set-off. Each of the units includes at least two parallel cable-paths endlessly guided over guide pulleys. The cable-paths serve as a conveying-device from a press to a drying oven and to a pile station. A plurality of blowers is disposed in the drying oven for blowing in different directions. The blowers comprise nozzle blowers and are disposed alternately at least at both sides of the paths at a distance in moving direction, and the distance corresponds with at least the double distance of the successive starting members.

3,777,408
INSTALLATIONS FOR THE TREATMENT, IN GASEOUS MEDIUM, OF A STRIP PRODUCT
Paul-Henri Marchal, Neuilly-sur-Seine, France, assignor to Air-Industrie, Courbevoie, France
Filed July 23, 1971, Ser. No. 165,494
Claims priority, application France, Aug. 10, 1970, 7029454
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 **9 Claims**



The band of product moves through a treatment zone facing blower caissons. The blower walls of the caissons include apertures distributed according to a succession of contours and along middle lines joining the two large sides of each contour, transverse passages being arranged between each contour. The small side of the contour is greater than half the pitch by which the groups of blower apertures are distributed. The sum of the sections of the outlet passages is greater than the sum of the sections of the blower apertures and inlet apertures.

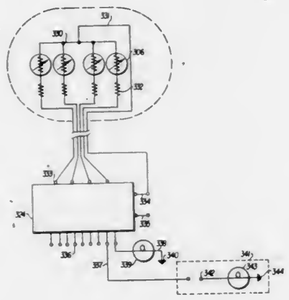
3,777,409
NONDUSTING, HIGH TEMPERATURE DRYER
Edward B. Weisselberg, Old Tappan; George M. Worden, Sr., Park Ridge; William F. Lamp, Closter, and Alexander M. Lane, Allendale, all of, assignors to Wyssmont Company, Inc., Fort Lee, N.J.
Division of Ser. No. 8,985, Feb. 5, 1970, Pat. No. 3,681,855.
This application May 5, 1972, Ser. No. 250,621
Int. Cl. F26b *17/12*
U.S. Cl. 34—173 **13 Claims**



Apparatus and method for low dust level drying of material in continuous drying apparatus of the type utilizing a plurality of vertically superimposed, rotating trays to convey the material through the dryer. Billowing of the material, and

hence dust formation, is retarded by delivering the material to the dryer, and thereafter transferring it between vertically adjacent trays, through inclined chutes. Upon each revolution of the trays, wiper arms guide the material on each tray over the edge of the tray, while other wiper leveler and leverler arms distribute the material discharged on to each tray from the next higher tray over the surface of the tray. All side and both end walls of the dryer housing are thermally insulated to maintain high drying temperatures, and the skeletal support structure, as well as the trays and end walls of the housing, are constructed to expand or contract laterally in response to temperature changes within the housing, thus allowing uninterrupted operation of the dryer over a wide range of temperatures, including highly elevated temperatures.

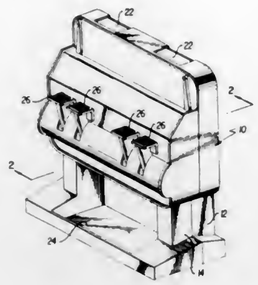
3,777,410
INTERACTIVE DISPLAY AND VIEWER RESPONSE APPARATUS AND METHOD
John Wesley Robinson, Rockville, Md., assignor to Telattach, Inc., Chevy Chase, Md.
Filed Mar. 1, 1972, Ser. No. 230,698
Int. Cl. G09b *7/02*
U.S. Cl. 35—9 B **15 Claims**



An interactive display and viewer response method utilizing several types of apparatus. A program image and a control image are displayed on a screen, the program image being addressable by the viewer who may either remain inactive or activate the particular apparatus in response to the program image. Simultaneously, the control image activates a photooptical readout assembly with which the viewer interacts by instituting in action in the apparatus.

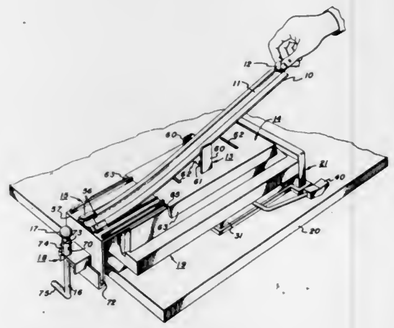
3,777,411
EDUCATIONAL DEVICE
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan
Filed Apr. 18, 1972, Ser. No. 245,114
Claims priority, application Japan, Nov. 15, 1971, 46/91236
Int. Cl. G09b *3/02*
U.S. Cl. 35—9 R **5 Claims**

An educational device featuring a housing provided with a plurality of compartments within which are stored marbles, a receptacle for receiving marbles discharged from the compartments, a slot within the housing into which a series of cards are deposited, each of the cards being provided with indicia designating a problem to be solved and multiple answers thereto; a plurality of operating members corresponding to the multiple answers and mounted to the casing for selectively moving a marble from each storage compartment to a position from which it may drop into the receptacle, each of the cards additionally being provided with a coded answer to the



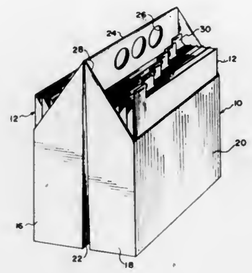
problem permitting a marble to drop into the receptacle only as the operating member corresponding to the correct answer is actuated.

3,777,412
EDUCATIONAL DEVICE
John E. Lawlor, Tappan, N.Y., and John Sgombick, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 22, 1972, Ser. No. 308,866
Int. Cl. G09b *23/10*
U.S. Cl. 35—19 R **7 Claims**



A simple, durable, inexpensive educational device for demonstrating the physical properties of falling objects and collisions especially adapted for use by educational institutions below the college level is described. The device comprises a flexible ruler including channel means for guiding movement of a spherical object and an elongated support member. A vertical support means is releasably secured to the support member and supports the ruler at one end portion thereof in an elevated position. A holding means holds the ruler at the opposite end portion thereof. The device further includes a support means for supporting a spherical object and a sleeve means for containing the support means in slidable relationship thereto.

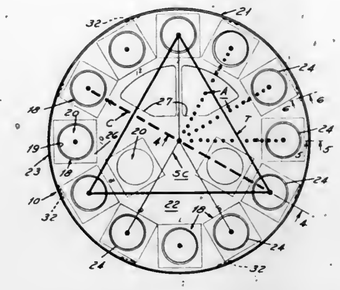
3,777,413
PERSONAL SENSITIVITY TEST METHOD AND APPARATUS THEREFOR
John T. Zaccheo, Glenview, Ill.
Filed July 10, 1972, Ser. No. 270,000
Int. Cl. G09b *19/00*
U.S. Cl. 35—22 R **24 Claims**



A method for the systematic investigation of mental phenomena and skills associated with consciousness, behavior, emotions, traits and reactions to stimuli is disclosed which includes the steps of conveying one or more word messages by oral or visual means, associating the message with an identifying indicia and comparing the matches and mismatches of indicia as an indication of the sensitivity or lack thereof to the mental stimuli. The apparatus used to conduct the testing, which can be a serious psychiatric analysis and psychological investigation or a humorous and fascinating parlor game participated in by two or more individuals, comprises, in one embodiment, a set of cards having a plurality of sets of word phrase stimuli thereon with the stimuli of any one set being divided into three or more classes of conservative, moderate and aggressive connotations or meanings. The sets of cards are divided into several categories of human expression relating the senses, time, acts, words, mood, etc. The stimuli on each set of cards are coded in accordance with their class or contrary to the class of other sets so that no preceptive pattern can be established from use in repeated tests or plays and auxillary means are provided to record the results, score the players and arrive at a final measure of the personal sensitivity, compatibility, analytic skills, psychological reactions, superficial traits and outward manifestations of behavior of one or more participants.

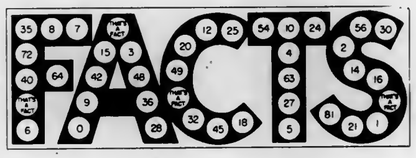
3,777,414
WATER COLOR SET AND TEACHING AID
Edgar A. Robinson, Orchard Lake, Mich., assignor to Palmer Paint Products, Inc., Troy, Mich.
Filed Mar. 1, 1972, Ser. No. 230,655
Int. Cl. G09b *11/10*
U.S. Cl. 35—28.5 **3 Claims**

A circular semi-rigid plastic base is molded to provide a horizontal, cylindrically bottom-flanged panel having an annular series of equally spaced circular, hollow well cavities or indentations, each removably receiving a shallow-walled, telescopingly mated plastic pigment-containing pot. The pots are side-flanged for ready manual grasping in their removal from and replacement in the respective indentations. A snap-on type cover of a clear, semi-rigid plastic has a top circular panel and a cylindrical depending flange nesting over the flange of the base; and the cover is thus flange-guided for manual rotation upon the base. This permits a user to effect optional angularly adjusted relationships of certain opaque reference and selector indicia, as inscribed on the transparent cover panel, to color pots viewed in juxtaposition beneath a



cover panel indicium. Radial indents on the cover and base flanges facilitate separation of the cover from the base, and the base from a bottom finishing and rigidifying disc of cardboard.

3,777,415
GAME FOR LEARNING CORRELATED FACTS
Harold L. Garlety, 4295 E. Mexico, Denver; Carol J. Maloney, and George F. Maloney, both of 1624 S. Yukon Ct., Lakewood, all of Colo.
Filed Oct. 19, 1972, Ser. No. 299,013
Int. Cl. G09b *1/04*
U.S. Cl. 35—31 F **10 Claims**



A game for learning multiplication and division comprising a set of game boards, one for a caller and one for each player, with numbers thereon, blank chips for the players for covering such numbers, chips for the caller having numbers thereon to be multiplied and also their product. The caller picks one of his chips at random and announces two numbers to be multiplied and the players cover the product on their boards with a blank chip, this continuing until a player covers a predetermined group of such numbers on his board.

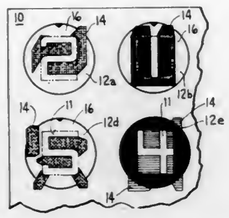
The caller may also be provided with chips having numbers thereon to be divided and their quotient, the boards remaining the same, for learning division.

By varying the insignia on the board and the insignia on the caller's chips other similar games may be played. Fractions, state capitals, time and measurement, addition and subtraction, may be learned.

3,777,416
SYMBOL RECOGNITION TEACHING DEVICE
James Paul Milligan, 7 Teresa Pl., and Judy Anne Milligan, 91 Saint John, S. Parkside, both of Buffalo, N.Y.
Continuation-in-part of Ser. No. 185,334, Sept. 30, 1971, abandoned. This application June 23, 1972, Ser. No. 283,083
Int. Cl. G09b *19/02, 1/06*
U.S. Cl. 35—31 C **7 Claims**

A device for teaching symbol recognition includes a plurality of sets of shaped configurations forming a partial outline

but camouflaging a symbol having a value equal to the number of elements in or representing objects displayed by the set of configurations. The numeral "2," for example, is inherent in and partially outlined by a set of configurations having two

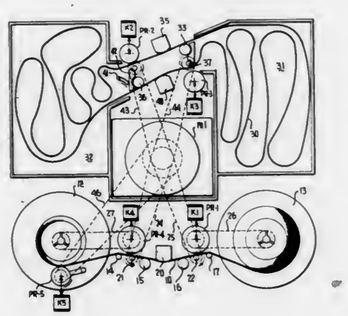


elements. A masking card when superimposed upon the set of configurations together with exposed or unmasked portions of the elements of the set instantaneously forms an outline and background to display the symbol.

3,777,417
SOUND TEACHER

John H. MacNeill, Indialantic; James E. Bellinger, Melbourne; Harrison B. Lidkea, Satellite Beach, and Kenneth L. Seib, Indian Harbor Beach, all of Fla., assignors to Educational Sound Systems, Inc., Melbourne, Fla.

Filed Apr. 28, 1971, Ser. No. 138,249
Int. Cl. G09b *5/04*; **G11b** *5/02*
U.S. Cl. 35—35 C **16 Claims**

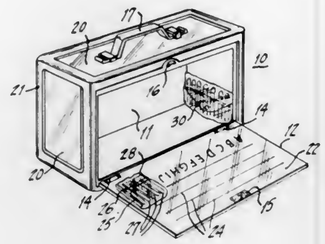


A sound teacher includes a master tape on which individual spaced segments are recorded and a student tape on which a student can record and immediately play back his recording after heating a master tape segment. In one operational mode a selectively actuable pause switch permits the master tape to stop after each master segment is played to permit the student to record or not; in another mode, the master tape stops after a segment, reverses while the student records and listens to his recording, and then replays the master segment and continues on to play the next segment; in still another mode the pause switch causes the master tape to stop after alternate segments to permit the student to record or not. Provision is made for automatically inserting the proper spacing between master tape segments recorded either locally or from some remote location, unintended gaps within a segment being automatically eliminated. In addition, provision is made to permit the student to reverse the master tape through any selected number of master tape segments.

3,777,418
LUNCH BOXES AND SIMILAR DEVICES ADAPTED TO ACCOMMODATE GRAPHIC DATA

Leah H. Cooper, 1653 Sheepshead Bay Rd., Brooklyn, N.Y.

Filed May 12, 1972, Ser. No. 252,702
Int. Cl. B43l *5/00*
U.S. Cl. 35—62 **6 Claims**

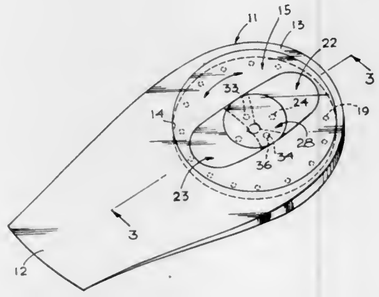


A lunch box or similar apparatus having the exposed outside surfaces thereof laminated with a smooth plastic of the type capable of having applied thereto graphic data by means of a waxy crayon writing tool, which data because of the smoothness of the plastic cover member can be easily removed and reapplied at the desire of the operator.

3,777,419
ADJUSTABLE SHOE INSERT TO REDUCE HEEL SPUR PAIN

Albert L. Nalick, 347 S. Peak Dr., Beverly Hills, Calif.

Filed Dec. 29, 1972, Ser. No. 319,901
Int. Cl. A43b *19/00*; **A61f** *5/14*
U.S. Cl. 36—71 **4 Claims**

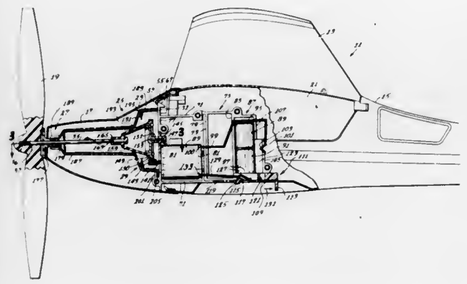


A rigid shoe insert device having means for adjusting the position and shape of a depression in the top surface of the device, to thereby locate the position of a heel spur on the wearer's heel, and hence to provide means to relieve the pressure of the spur on the flesh adjacent the spur by fixing the location of a depression in the surface of the insert to correspond to the shape and position of a spur on the underside of the heel bone.

3,777,420
DETACHABLE POWER MODULE FOR FLYING TOY AIRCRAFT

Denis V. Bosley, Palos Verdes Peninsula, and Richard S. Chang, Rolling Hills Estates, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 4, 1972, Ser. No. 278,155
Int. Cl. A63h *29/22*
U.S. Cl. 46—243 AV **10 Claims**

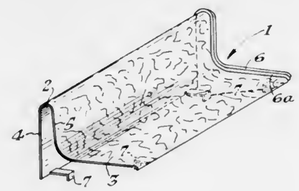


A completely self-contained detachable power module for removable attachment to a vehicle body, such as a flying toy aircraft fuselage, the module including a housing containing a rechargeable battery arrangement and a powerful miniature electric motor coupled through a drive arrangement to a driven element, such as a propeller, the housing also including attachment means for removably attaching the housing to a toy vehicle body.

3,777,421
LAWN BORDER

Joseph A. Bomba, 107 Treemont Rd., Johnstown, Pa., and Andrew J. Bomba, 742 East Dr., Circleville, Pa.

Filed Jan. 26, 1972, Ser. No. 220,858
Int. Cl. A61g *1/00*
U.S. Cl. 47—33 **10 Claims**

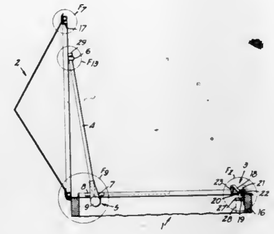


This disclosure relates to a ground dividing edging including lower ground engaging supporting members and upper snap-on capping members having an upstanding retaining wall portion and a substantially horizontal running surface portion for bordering a lawn area from an adjacent ground area.

3,777,422
SKYLIGHT AND SAFETY DEVICE

Leopold Mathieu Lambert Janssen, 28, Rue de l'Ancien Chateau, Herseaux, Belgium

Filed Nov. 22, 1971, Ser. No. 200,889
Int. Cl. E05f *15/20*
U.S. Cl. 49—7 **3 Claims**

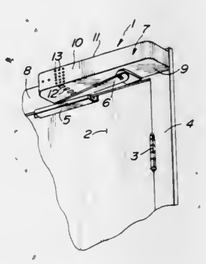


The invention pertains to a skylight having a safety device whereby said skylight is automatically opened in case of excessive heat, said device including spring urged levers and a fusible connection between the latter.

3,777,423
CONDITION RESPONSIVE DOOR HOLDER-CLOSER

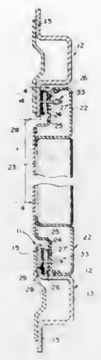
Gordon L. Coulter, Arlington Heights, Ill., and Duane D. Pearsall, Morrison, Colo., assignors to Rixson Inc., Franklin Park, Ill.

Filed Jan. 7, 1972, Ser. No. 216,202
Int. Cl. E05f *15/20*
U.S. Cl. 49—31 **29 Claims**



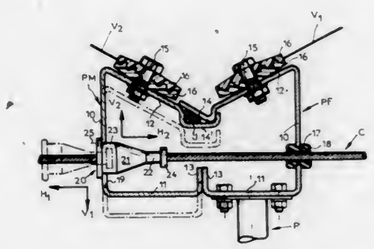
A surface-mounted door holder-closer responsive to the products of combustion passing through multiple passageways formed in a holder-closer housing cover, a holder-closer assembly frame, and a static shield which is an integral part of an ionization chamber module. The ionization chamber module is insertable into the holder-closer frame with the frame and static shield not only defining the passageways, but also isolating the ion chamber from spurious static charges generated within the housing which would render a false alarm or false emergency door release. The frame also houses the principal components of the holder-closer, namely, a closer spring, a dashpot, a latching lever assembly, and an electromagnet responsive to modulated current flow in the ionization chamber to effect alarm or emergency release of the latching lever to close an otherwise open door. The integrated detector-holder-closer is advantageously and simply mounted on the lintel or header of a door frame.

3,777,424
WEATHER SEAL FOR RAILWAY CAR DOOR
Ernest J. Nagy, Munster, and Ronald W. Marsh, Michigan City, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed Oct. 19, 1972, Ser. No. 298,891
Int. Cl. E06b 7/23
U.S. Cl. 49—485 1 Claim



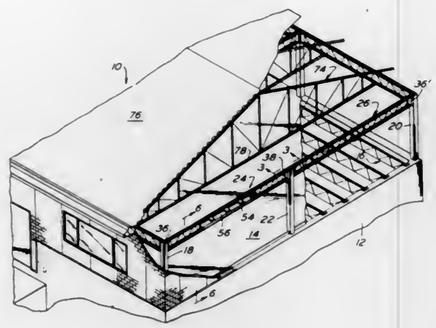
A weather seal for a railway car door is secured to outer peripheral flat edges of the door and is adapted to engage a door frame in sealing relation. The weather seal includes a tubular flexible member which is secured to the peripheral edge of the door by means of fasteners adapted to permit flexing and biasing movement of the tubular member. The fasteners are in turn connected to a peripherally extending flange of a relatively hard material such as metal, hard plastic, etc., having a flat surface which engages the peripheral flange of a door opening and against which the flat strip is compressed in sealing relation when the door is closed.

3,777,425
RELEASABLE LOCKING DEVICE FOR IMMOBILIZING A MEMBER CARRIED BY A CABLE
Andre Edouard Henri Le Bourgeois, 12, rue du Grenier St. Lazare, Paris, France
Filed Apr. 24, 1972, Ser. No. 246,724
Claims priority, application France, Apr. 30, 1971, 7115619
Int. Cl. E04b 1/345, 7/14
U.S. Cl. 52—2 16 Claims



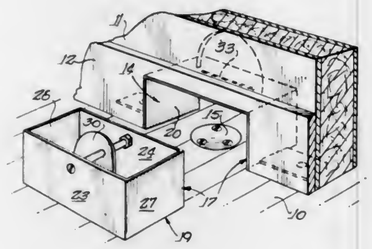
A releasable locking device for separable interconnection of the adjacent edges of two veils V_1, V_2 comprises a stationary section-bar PF carried by a post P and a movable section-bar PM carried by a horizontal driving cable C provided with a wedge-block 20 extending through an opening 19 of the web of the bar. Abutment means 13, 13' and vertically releasable locking means 14, 14' are formed by the confronting lower and upper flanges of the bars, respectively.

3,777,426
BUILDING
Gershen Weiner, 1125 N. 15th St., Allentown, Pa.
Filed June 26, 1972, Ser. No. 266,176
Int. Cl. E04b 1/24
U.S. Cl. 52—92 6 Claims



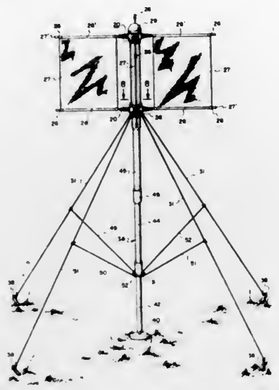
A building is disclosed wherein roof trusses are supported by lintels which in turn are supported at their ends from vertical columns. The lintels support an upper channel and the foundation or footing supports a lower channel. Prefabricated wall panels are retained within the channels.

3,777,427
WALL CONSTRUCTION DEVICE
Raymond Arnold Worley, 600 Checker Dr., Buffalo Grove, Ill.
Filed Sept. 21, 1972, Ser. No. 291,057
Int. Cl. E04f 17/08
U.S. Cl. 52—127 9 Claims



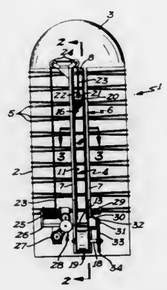
An access device is provided for plugging openings formed in walls or like structures which lead to utility connection points. The access device includes a housing mounted within the wall and defining the perimeter of the wall opening, and a plug box having two plates which can be locked in positions coplanar with the surrounding wall surfaces. The plate locking device comprises a tongue carried by the plug box which can be rotated into locking engagement with a slot formed in the housing.

3,777,428
OBSERVATION SIGNAL DEVICE AND COMPONENTS THEREOF
Edward C. Caufield, 9695 S. 2585 East, Sandy, Utah
Filed Apr. 19, 1972, Ser. No. 245,475
Int. Cl. E01f 9/01
U.S. Cl. 52—146 10 Claims



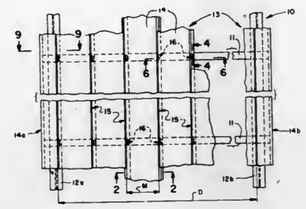
Signal apparatus for use in geodetic surveys, land surveys, emergency use, and so forth. The signal apparatus comprises a panel signal wherein panels incorporated therein are constructed to facilitate wind-spillage in a manner such as to preclude the panel signal structure from tipping or blowing over upon the presence of excessive wind pressures. The panel structure is lightweight, a self-contained unit, and includes, preferably, flexible arm mounts constructed to mount signal panels in such a manner that these panels can "spill" or pass oncoming gusts of wind without chancing the blowing over of the structure.

3,777,429
SILO DOOR CONSTRUCTION
Robert F. Koser, Almena, Wis.
Filed Aug. 28, 1972, Ser. No. 284,365
Int. Cl. E04h 7/22
U.S. Cl. 52—196 2 Claims



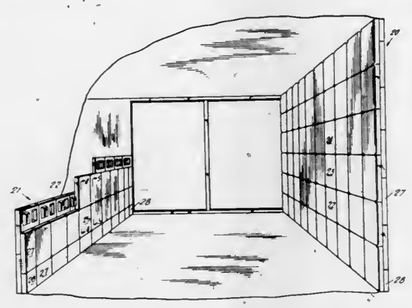
A frame adapted to be mounted in a door opening in a silo wall, the opening extending for the greater part of the height of the silo wall, the frame including side members defining opposed guide elements. An elongated flexible door is movable in the guide elements longitudinally of the silo wall opening between open and closed positions, and means is provided for imparting opening and closing movements to the door.

3,777,430
COMPLEMENTARY MATING ELEMENTS FOR DOUBLE-SKIN FOAM CORE PANEL
Walter Tischuk, Richmond, Ind., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Aug. 30, 1972, Ser. No. 285,060
Int. Cl. E04c 1/10, 2/20
U.S. Cl. 52—309 6 Claims



A double-skin building construction panel having a foam core and having an outer facing sheet laterally offset from and spaced apart from an inner facing sheet. Each panel presents an overlapping edge portion along one side and an overlapped edge portion along its opposite side. The panels are adapted to be assembled in lapped relation without externally visible fasteners. Mating elements in the outer facing sheets provide a positive mechanical connection of adjacent outer facing sheets and provide for lateral adjustment in the position each panel relative to the previously erected panel. The arrangement is such that during erection, the panels may be gathered or spread apart to conform the coverage provided by all of the panels with that required by the structural framework.

3,777,431
ERECTABLE AND DISASSEMBLABLE PARTITION AND PANEL THEREFOR
Theodore Bowman, 4734 Baynard St., Pittsburgh, Pa.
Filed Mar. 29, 1972, Ser. No. 239,224
Int. Cl. E04c 1/10
U.S. Cl. 52—562 10 Claims

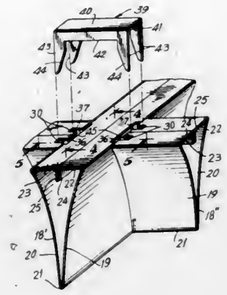


A readily assemblable and disassemblable wall or partition, consisting of a plurality of smooth faced rectangular panels, each providing interlocking elements at the rear thereof so that the smooth faces on each set of panels will together form one side of the partition and the interlocking faces of the panels will integrate both sides of the partition. The interlocking panels are so arranged that each panel interlocks four adjacent quadrants of four adjacent panels on the opposite side. The interlocking elements comprise projections and recesses.

3,777,432
COLLAPSIBLY JOINED LOUVER GRID

Walter E. Wyles, Somerset, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.

Filed Sept. 18, 1972, Ser. No. 289,851
Int. Cl. E04c 2/42; E04f 15/06
U.S. Cl. 52—668 6 Claims

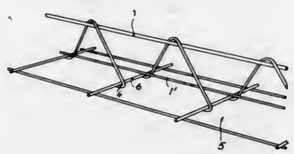


A lighting fixture having an improved louver grid is disclosed wherein the various fins or louvers are integreated into a grid in such a manner that the louvers, at the intersections, are mutually rigidifying and are interconnected by integral spring flanges or tabs. The louvers maybe readily assembled into the grid configuration without the use of tools or external fasteners of any nature, and may be readily disassembled for repair or replacement.

3,777,433
LATTICE GIRDER

Fritz Grebner, Annabergstr. 70, Mainz/Rh; Wilhelm Kolsch, Robert Kochstr. 16; Gerhard Spindler, Brunhildenstr. 14, both of Wiesbaden, and Walter Ehemann, Waldstr. 127, Nauheim, all of Germany

Division of Ser. No. 69,087, Sept. 2, 1970, abandoned. This application Mar. 8, 1972, Ser. No. 232,981
Claims priority, application Germany, Sept. 3, 1969, P 19 44 626.5; Mar. 6, 1970, P 20 10 666.5
Int. Cl. E04c 3/09
U.S. Cl. 52—693 4 Claims

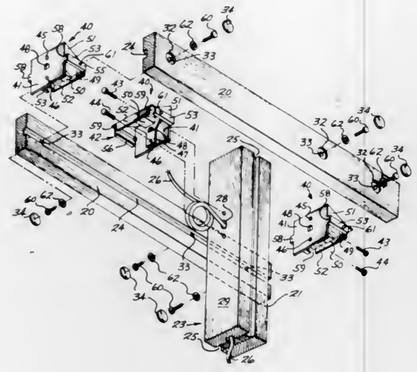


A lattice girder comprising an upper boom, a lower boom and a plurality of braces interconnecting the booms, is produced from a grid of structural steel rods so that the braces extend in parallel planes oblique to perdendicular planes passing through the booms, the rods being spot welded at their points of intersection. The longitudinally and transversely extending rods of the grid are fed to a spot welding station in adjacent parallel planes so that the transversely extending rods extend obliquely to the longitudinally extending rods. The grid is then cut into longitudinally extending sections each forming a girder blank, and each section is bent about a longitudinally extending axis to produce the lattice girder, one of the longitudinally extending girders forming the upper boom and the transversely extending rods forming the braces.

3,777,434
CONNECTOR

Robert W. Selden, and Edward W. Schein, both of Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Apr. 26, 1971, Ser. No. 137,382
Int. Cl. F16b 7/04
U.S. Cl. 52—753 C 7 Claims

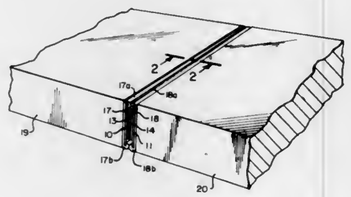


A means for attaching one member to another to prevent racking or twisting of the members. It includes a connector which attaches to one member and has a key which fits into a groove in the other member. Several modifications are shown. In one the connector clamps to the first member. In another, both members have grooves which are angularly displaced and the connector has keys which fit into both grooves. A light standard is illustrated. The groove is in the horizontal crossarm and is used to conceal the wire from the pole to the luminaire. The key may be channel-shaped to provide access into the groove for the wire.

3,777,435
ATTACHMENT ASSEMBLY

Joseph Perina, Huntington, N.Y., assignor to American Velcro Inc., New York, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,657
Int. Cl. F16b 5/07
U.S. Cl. 287—20.924 6 Claims

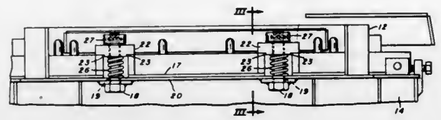


An attachment assembly for releasably joining panels or partitions along their edges is disclosed which comprises two channel members each being secured along the edge portions of the panels to be joined. Separable fastening members are secured in each channel member in a manner permitting the fastening members to slide along each channel member. The panels or partitions are secured together by engagement of the fastening members on each channel member.

3,777,436
QUICK RELEASE MECHANISM FOR CONTINUOUS CASTING MOLD SUPPORT FRAME

Charles H. Bode, Jr., Upper St. Clair Township, Allegheny, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed July 30, 1971, Ser. No. 167,723
Int. Cl. F16b 5/06
U.S. Cl. 52—758 C 8 Claims

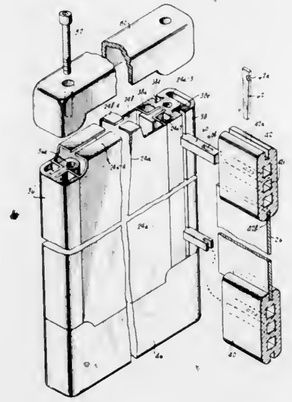


A quick release mechanism for releasably attaching a continuous casting mold oscillating frame to a support. A bolt is fixed to the support and carries a spring and rotatable anchor block between the nut and bolt head, whereby the anchor block can be seated in a recess in the frame by a minimal movement of the nut.

3,777,437
PANEL AND POST ASSEMBLY

Andreas Christen, Zurich, Switzerland, assignor to Knoll International, Inc., New York, N.Y.

Filed May 28, 1971, Ser. No. 147,829
Int. Cl. F16b 5/00
U.S. Cl. 52—758 7 Claims

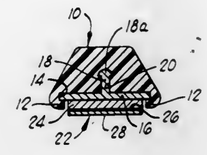


A sheet-like panel is held in place by a post. The post has a longitudinal internal channel, with a longitudinal opening through one of the outer walls of the post into the channel. A longitudinal groove in the post forms a part of the channel, and the groove is positioned in a side of the channel opposite from the longitudinal opening and laterally displaced from that opening. The sheet-like panel has a large area surface that terminates along one edge thereof in a first edge portion which is substantially at right angles to the large area surface and a second edge portion substantially parallel to that surface. The outer edge of the second edge portion constitutes one of the outer edges of the sheet-like panel and is positioned inside the longitudinal groove forming part of the longitudinal internal channel. One side of the first edge portion is positioned against an outwardly exposed part of the post. The other side of the first edge portion is positioned against an internal wall of the channel substantially opposite from the longitudinal groove. In this fashion the sheet-like panel is maintained firmly in position.

3,777,438
ORNAMENTAL PROTECTIVE RAIL

Russell L. Brown, 1620 Kingsbury Ln., Oklahoma City, Okla.

Filed Aug. 30, 1971, Ser. No. 176,113
Int. Cl. E04f 19/02; B60r 13/04
U.S. Cl. 52—173 1 Claim

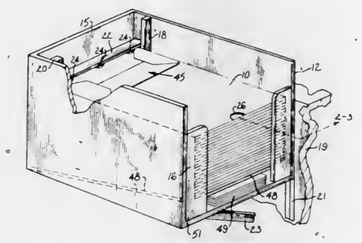


An ornamental protective rail including an elongated strip of elastomeric flexible material having a pair of inwardly turned retainer toes adjacent the side edges thereof along a bottom portion of the elongated strip, and further having, in a preferred embodiment, a slot extending from the central portion of the bottom of the strip interiorly of the strip. A rigid strengthening and reinforcing member is retained in a longitudinally extending channel formed by the toes, and preferably carries a flange projecting normal to the retaining strip into the slot formed in the elastomeric strip. A strip of compressible material is bonded to the rigid reinforcing strip along one side of the strip of compressible material and has an adhesive material on the opposite side of the strip of compressible material.

3,777,439
BAG-OPENING DISPENSER AND METHOD

Sidney Fried, Ridgefield, Conn., assignor to Speedcheck Systems, Inc., Ridgefield Park, N.J.

Filed June 21, 1971, Ser. No. 154,893
Int. Cl. B65b 43/26
U.S. Cl. 53—3 8 Claims

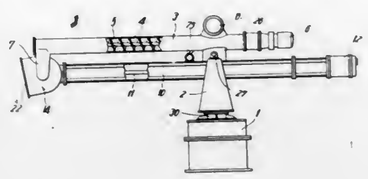


Merchandise bags such as grocery bags are stored in a container horizontally, with the folded-over bottom of the bag facing upwardly. The front edge of the upper wall of the bag is gripped and pulled longitudinally and upwardly while the bottom edge of the bag is held by a weighted bar. The bar holds the bag until it has been pulled open. Then, the continued pull on the bag slides it out from under the bar and out of the container. The bag is open and ready to be packed full of merchandise by the check-out cashier or bagging employee.

3,777,440
ABRASIVE SLINGING APPARATUS

Akira Yamanoto; Dan Yoshida; Tatsumi Onaka, and Minoru Shiraishi, all of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Company Ltd., Osaka, Japan

Filed June 27, 1972, Ser. No. 266,693
Claims priority, application Japan, June 30, 1971, 46/57168
Int. Cl. B24c 3/06, 7/00, 3/32
U.S. Cl. 51—9 9 Claims

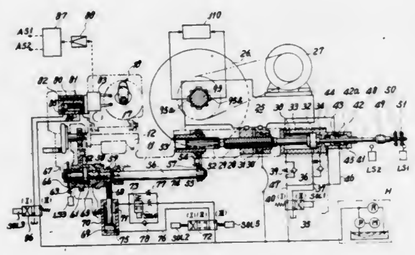


Apparatus for abrasively treating relatively large areas such as the removal of rust in shipyard operations, consists of an abrasive slinging head mounted at one end of an abrasive supply conveyor which is pivoted on a horizontal axis to a turntable moveable around a vertical axis, the conveyor serving as a boom for the head and being relatively balanced on the turntable. A driving arrangement imparts oscillating motion to the conveyor and slinging head in either horizontal or vertical directions, or both, and enables the centerline of oscillation of the motion in either direction to be positioned as desired.

3,777,441
GRINDING MACHINE

Mikishi Kurimoto, Nagoya, and Hiroaki Asano, Chiryu, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed June 2, 1972, Ser. No. 259,133
Claims priority, application Japan, June 3, 1971, 46/38926
Int. Cl. B24b 5/42
U.S. Cl. 51—105 SP 9 Claims

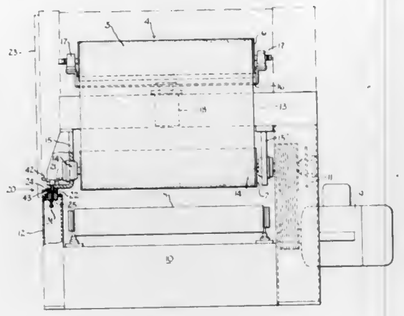


A grinding machine comprises a feed means for effecting movement of a grinding wheel towards and away from a workpiece. A sizing device generates a sizing signal in response to the diameter of the workpiece for stopping the feed movement at an appropriate time in order to effect a spark out operation. A detector detects the grinding resistance applied on the grinding wheel. A timer is energized during the movement of the grinding wheel towards the workpiece and is timed out after a predetermined time period. If the grinding resistance becomes substantially of a zero value before the timer is timed out, then the grinding wheel is caused to be retracted from the workpiece and a succeeding grinding operation is rendered operative.

3,777,442
WIDE BELT SANDING MACHINE WITH IMPROVED SUPPORT FOR OUTBOARD END OF CANTILEVERED CENTER BAR

John M. Bernu, Minneapolis, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.

Filed Apr. 3, 1972, Ser. No. 240,683
Int. Cl. B24b 21/00
U.S. Cl. 51—135 R 8 Claims

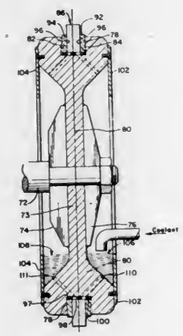


A sanding machine has a wide endless abrasive belt trained around a contact drum and a tensioning roll, both journaled in bearings mounted on a cantilevered center bar. The outboard end of the center bar is rigidly supported by a spacer block removably inserted between the underside of a foot-like bracket depending from the outboard end of the center bar and the top surface of a pad vertically adjustably mounted on the frame of the machine beneath the bracket. A clamping screw that passes freely through aligned holes in the bracket and the removable spacer block, and is threaded into the vertically adjustable pad, secures the outboard end of the center bar to the frame.

3,777,443
SEGMENTED GRIDING WHEEL

Milton C. Shaw, 132 Maple Heights Rd., Pittsburgh, Pa.

Division of Ser. No. 28,721, April 15, 1970, Pat. No. 3,636,665. This application Jan. 24, 1972, Ser. No. 220,521
Int. Cl. B24d 5/06, 5/10, 55/02
U.S. Cl. 51—206.5 4 Claims



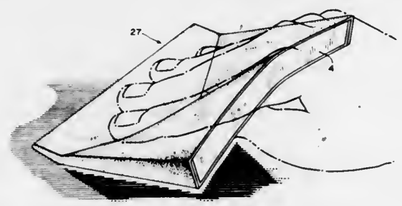
A segmented grinding wheel assembly particularly suited for high speed operation. The disclosed embodiments comprise wheel members having an outer peripheral recess in

which grinding segments are positioned to define the grinding or working portion of the assembly. The recess and segments are related so that the segments are held in the recess by compressive reaction forces produced during wheel rotation. Additionally, the specification discloses an arrangement particularly adapted for supplying cooling or lubricating fluid to the wheel periphery. The arrangement comprises an inwardly open, circumferentially extending fluid receiving trough carried by the wheel. The trough is connected to the recess by generally radially extending passages such that during wheel rotation fluid moves outwardly to the recess and between the segments under the influence of centrifugal force.

3,777,444
SANDING BLOCK AND ABRASIVE ENVELOPE THEREFOR

Kirkley J. Dunn, 1473 Merry Ln., San Jose, Calif.

Continuation-in-part of Ser. No. 59,377, July 30, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,385
Int. Cl. B24d 15/04
U.S. Cl. 51—391 6 Claims



Presented are two embodiments of a sanding block adapted to be inserted within an abrasive envelope configured to fit snugly around the block. The block and envelope assembly are configured to expose an optimum amount of abrasive surface to a surface to be smoothed. The block of one embodiment is preferably fabricated from a dense but flexible and resilient material which permits conformation of the abrasive surface of the assembly to a surface to be abraded, while the block of the second embodiment is preferably wedged, fabricated from a sponge-like material such as sponge rubber or polyurethane foam-type material, and beveled along lateral edges to provide a dual wedged configuration.

3,777,445
METHOD AND APPARATUS FOR PRICING CASE PACKED CANNED GOODS

Richard F. Anderson, Camarillo, Calif., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Aug. 9, 1972, Ser. No. 278,916
Int. Cl. B65b 43/26, 43/40, 21/06
U.S. Cl. 53—14 7 Claims

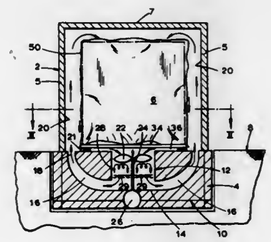


This invention relates to a method and apparatus for pricing, at a central location, canned goods packed in cartons. The method comprises the steps of slitting the cartons so that at least the bottom forms a tray, removing the unused part of the carton, placing the pricing information on the canned goods, and then wrapping the canned goods and tray in sheet material; and, the apparatus comprises means for conveying the cartons of canned goods, means for slitting or cutting the cartons away from the canned goods, means for placing the pricing information on the canned goods, and wrapping means. After wrapping, the priced goods are then ready for distribution to retail grocery stores and supermarkets.

3,777,446
METHOD AND APPARATUS FOR WRAPPING A LOAD WITH HEAT-SHRINKABLE FILM

Odd Graver, Haslum, Norway, assignor to A/S Ingeniorfirmaet Fernholt & Giersten, Sandvika, Sweden

Filed Feb. 7, 1972, Ser. No. 223,997
Claims priority, application Norway, Feb. 10, 1971, 493
Int. Cl. B65b 53/06; F26b 19/00
U.S. Cl. 53—30 4 Claims



Method and apparatus for wrapping a load with heat-shrinkable film comprising the steps of initially providing the load with an open-bottomed envelope of heat-shrinkable film, positioning the load in a shrink tunnel, withdrawing air from the lower open end of the envelope in order to create a subpressure therein and simultaneously withdrawal of air from the tunnel space passing the lower side edges of the load, heat the air withdrawn from the tunnel space and the inside of the envelope, re-circulate the air into the tunnel space towards the top side of the load where the air currents will turn around and move downwards along the outside of the film envelope to the lower side edges of the load from where the air a-new is withdrawn from the tunnel space and fulfills a closed circulation loop.

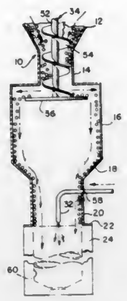
3,777,447
METHOD FOR PACKAGING VISCOUS VINYL PLASTIC SOLUTIONS

Richard H. Herbine, Ziegerville, Pa., and David J. Morrison, Plainfield, N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed June 30, 1972, Ser. No. 267,905
Int. Cl. B65b 3/08
U.S. Cl. 53—36 8 Claims

A simplified technique well suited for automated, high speed filling of packages with viscous vinyl plastic solutions, such as denture adhesives, which exhibit a (1) viscous taffy-like, sticky consistency and (2) a high degree of uniformity when utilized by the consumer. The first step of the technique requires he introduction of beads of the vinyl polymer into the open end of the package while simultaneously completely wetting each bead with a suitable solvent; a later step requires the aging of the wetted beads within the sealed package until the beads are fully dissolved and form a uniform product. In

the preferred embodiment, the solvent is introduced into the open end of the package by a conduit. In the alternative embodiment, the solvent is injected into the package by an elongated needle with radial apertures, such needle being axially inserted into the interior of the package and being axially removed when the wetting step has been completed.



3,777,448

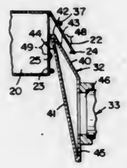
METHOD AND APPARATUS FOR HEAT-SEALING PAPERBOARD PACKAGE CLOSURE FLAPS

William J. Howe, Los Altos, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Continuation of Ser. No. 101,126, Dec. 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 696,794, Jan. 10, 1968, abandoned. This application , Ser. No. 273,945

Int. Cl. B65b *7/20*

U.S. Cl. 53—47 **19 Claims**



Method and apparatus for heat-sealing paperboard package closure flaps having a heat sealable coating. While the package moves, two flaps are brought into proximity along two planes diverging at an acute angle, and upon the facing flap surfaces, are impinged one or more high-volume, low-velocity streams of very hot air, each along a controlled narrow area to heat one or more critical strips of each flap above the heat-sealing temperature. Immediately thereafter, the flaps are forced together and held together while they are cooled, until the lowering of the temperature results in completion of the seal.

3,777,449

METHOD AND APPARATUS FOR APPLYING CLOSURES TO CONTAINERS

Siegmar Sindermann, Pelkum-Herringen, Germany, assignor to Holstein & Kappert Maschinenfabrik Phonix GmbH, Dortmund, Germany

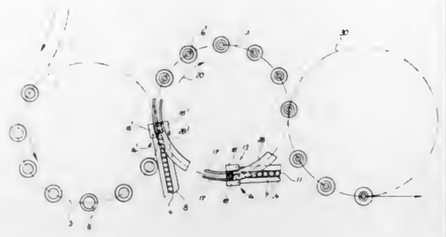
Filed June 5, 1972, Ser. No. 259,969

Claims priority, application Germany, June 3, 1971, P 21 27 425.9

Int. Cl. B65b *7/28*

U.S. Cl. 53—43 **10 Claims**

To seal containers, closure members are supplied along a pair of downwardly curving tracks to a circle of sealing elements which rotate about a vertical axis. The sealing elements travel in a plane inclined obliquely to the vertical axis and the tracks are arranged tangentially to the circle at angularly spaced positions. Closure members move down each track to an associated transfer mechanism which holds individual closure members as they are picked up by the sealing elements and moved along the circle until they are fixed to the containers.



3,777,450

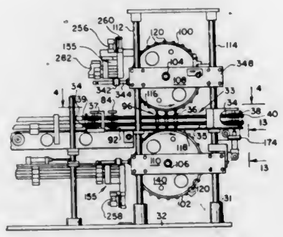
ARTICLE HANDLING AND PACKAGING MACHINE

James C. De Shazor, 3314 Coy Dr., Sherman Oaks, Calif.

Filed July 7, 1971, Ser. No. 160,436

Int. Cl. B65b *21/06*

U.S. Cl. 53—138 R **21 Claims**



The disclosure relates to an article handling and packaging machine particularly adapted for use in supplying packaging clips such as shown in U.S. Pat. No. 3,370,700 to pluralities of containers such as beer cans in order to assemble and connect pluralities of beer cans in unitary packaged groups such as four-packs, six-packs or eight-packs as desired. While the said packaging machine is particularly adapted for use in applying such packaging clips to articles such as cans of beer or the like the machine may be readily adapted for use in applying caps to open containers or for applying labels or indicia on various articles. The disclosure includes endless belt structures provided with rotor engaging surfaces and opposed surfaces having pockets therein adapted to engage articles; drive means on the belts is adapted to cooperate with an applicator rotor which rotates in unison with the linear movement of the belts; said applicator rotor having peripheral portions disposed to roll in to close proximity to articles carried in said pockets of said belt so that said applicator rotor may apply connecting clips to a plurality of articles held in said pockets and moved therein whereby said articles are packaged into a unitary assembly such as a four-pack, six-pack or eight-pack of beverage cans or the like; the disclosure also includes means for coordinating the timing of the various features of the machine so that a plurality of said belts may be adjusted relative to each other so that their pocket portions are precisely aligned in opposition to each other for engaging opposite sides of articles or containers; the disclosure further including switch operating means on the applicator rotor for timing and initiating operation of a part feeder mechanism adapted to feed packaging clips or other parts from a magazine and to place the parts precisely on peripheral portions of the applicator rotor as it rotates in relation to the magazine; additionally the disclosure includes details of a variety of feed mechanisms for feeding packaging clips as well as other parts from the magazine of the machine on to the applicator rotor of the machine; further the disclosure includes novel mechanisms for driving parts longitudally in contiguous stacked relation to each other in the magazine of the machine for maintaining the parts constantly in a feed relation to the parts feed mechanism which is intermittently operable to place parts, such as packaging clips, on the peripheral portions of the applicator rotor of the machine during its rotation relative to the parts feed mechanism and the magazine.

3,777,451

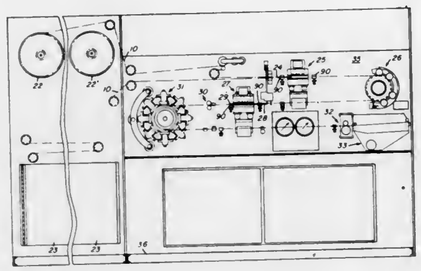
APPARATUS FOR MAKING AND FILLING LIQUID CONTAINING PODS

Lars M. Larson, Fairport; Raymond J. Feasey, Pittsford, and Robert S. Wheeler, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 87,757, Nov. 9, 1970, abandoned. This application July 31, 1972, Ser. No. 276,499

Int. Cl. B65b *9/02, 51/30*

U.S. Cl. 53—180 **19 Claims**



An apparatus for forming and filling liquid containing pods which have a rupturable seal permitting release of the liquid content when the pod is subjected to a predetermined mechanical stress. Strips of laminated material are continuously formed into a plurality of liquid containing pods by advancing the strips, having a width equal to the width of the pods, through heat sealers which seal the edges of the strips to form a tubular structure which is continuously filled with a liquid after which the filled tubular structure is passed through a cross-sealer to form the end seals of the individual pods. The individual pods are chopped from the strip by cutting between the cross seals.

3,777,452

PACKING MACHINE

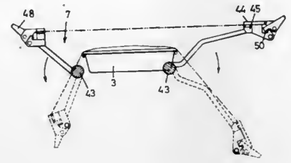
Elisabeth Koenders, Willem Arentszkade 79, Utrecht, Netherlands

Filed May 3, 1971, Ser. No. 139,413

Int. Cl. B65b *11/02, 11/12, 49/08*

U.S. Cl. 51—206 **9 Claims**

A packing machine, especially for packing articles in stretch foil, comprising a feeding device for the article to be packed, a support device on which the article can rest during packing, a foil feeding device for the supply of foil in the proximity of the product to be packed, swivable folding arms with gripping jaws for engaging foil and folding it around the article, means for folding up foil wound around the product, and a discharge device. The gripping jaws of the folding arms are provided with an elastic diaphragm which can clamp the edge of the stretch foil under the influence of a pressure medium.



3,777,453

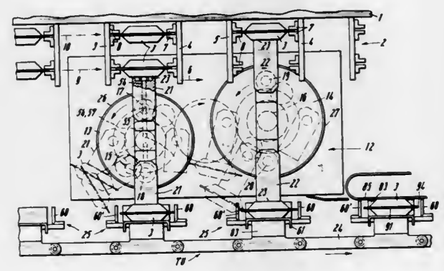
INTERMEDIATE CONVEYOR SYSTEM FOR USE WITH BAGGING AND CARTONING MACHINES

Helmuth Zimmermann, Walblingen/Wurttemberg, and Helmut Kielwein, Stuttgart, both of Germany, assignors to Fr. Hesser Maschinenfabrik AG, Stuttgart, Germany

Filed Sept. 26, 1972, Ser. No. 292,311

Int. Cl. B65b *7/08*

U.S. Cl. 53—251 **23 Claims**



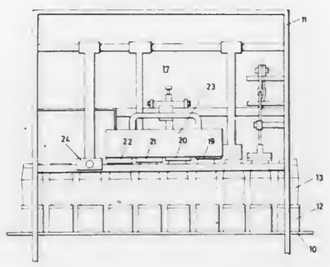
An intermediate conveyor system which transports filled and closed bags from an intermittently operated conveyor of a bagging machine to a continuously operated conveyor of a cartoning machine. The conveyor of the bagging machine delivers two rows of bags which are located in two vertical planes, and the conveyor of the cartoning machine has a single row of horizontal trough-shaped receptacles. The intermediate conveyor system has a removing unit with two turntables each carrying two pivotable arms having suction heads. The arms of one turntable remove bags from one of the rows and the arms of the other turntable remove bags from the other row. Each freshly removed bag is turned through 180° and is deposited into one of a series of continuously driven containers for transport into a receptacle of the conveyor in the cartoning machine. A rear wall of the each container is movable between an upright position in which it receives a bag and a horizontal position in which it deposits a bag into an empty receptacle. The containers carry and cooperate with tools serving to reduce the dimensions of bags not later than on transfer of bags into the receptacles.

3,777,454

APPARATUS FOR SEALING PLASTIC CONTAINERS

Jacob Teunis Teunissen Van Manen, Johannesburg, South Africa, assignor to Conical Containers Company (Proprietary) Limited

Filed May 25, 1972, Ser. No. 256,903
Int. Cl. B65b *7/06, 51/10*
U.S. Cl. 53—373 **4 Claims**



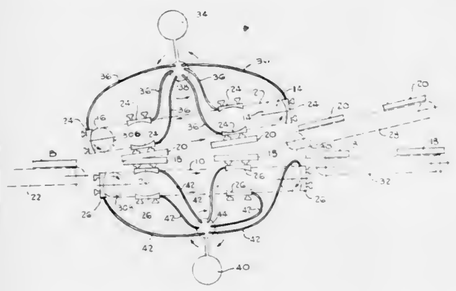
A method of and apparatus for sealing plastic containers having a pouring spout in which a heating element is moved along the longitudinal axis of the pouring spout to abut the edges of the pouring spout. The edges of all of the layers of material comprising the pouring spout are thus fused together. Ultimately the fused edges are flattened between suitable jaws and trimmed to provide a neat appearance.

3,777,455

BOX LID REMOVING APPARATUS

Philip Allen, Radnor, Pa., assignor to Charles Beck Machine Corporation, King of Prussia, Pa.

Filed Jan. 27, 1972, Ser. No. 221,177
Int. Cl. B65b *43/26*
U.S. Cl. 53—381 A **4 Claims**



A box lid removing apparatus is herein described including upper and lower chain link, endless conveyors. A plurality of box lid grabbing suction members are mounted on the upper conveyor and a plurality of box base grabbing suction elements are mounted on the lower conveyor. The conveyors are arranged to convey a lidded box along a generally horizontal path. The upper conveyor may be arranged in the VERTICAL plane to diverge from the lower conveyor so that a box lid, held by a suction element on the upper conveyor, is removed from the box base as the box and lid are conveyed along the horizontal path defined between the two conveyors.

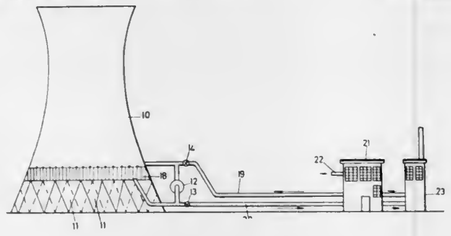
In one feature of the invention, flexible conduits connect the suction elements with a source of vacuum through a rotary sequencing valve. One such valve may be associated with the upper conveyor and may be positioned above and generally midway between the opposite ends of the horizontal extension of the upper conveyor. The rotary sequencing valve associated with the lower conveyor may be disposed below and generally midway between the opposite ends of the horizontal extension of the lower conveyor. The conveyors may be supported, from a front portion of the overall assembly, in a cantilevered fashion.

3,777,456

EXTRACTING WATER FROM THE ATMOSPHERE

Basil Gilbert Alfred Lund, 6th Floor, Lestar House, 56 Marshall St., Johannesburg, South Africa

Continuation-in-part of Ser. No. 805,047, March 6, 1969, abandoned, which is a continuation of Ser. No. 653,858, July 17, 1967, abandoned. This application Oct. 1, 1971, Ser. No. 185,780
Claims priority, application South Africa, July 22, 1966, 4,346
Int. Cl. B01d *53/14*
U.S. Cl. 55—32 **2 Claims**



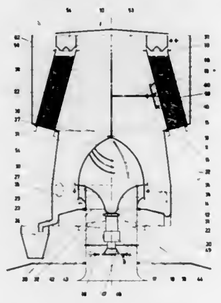
Water is extracted from the atmosphere by circulating a large volume of a solution of lithium chloride in water continuously over a Munters packing in a tower of conventional cooling tower design. Excess solution formed as a result of the absorbtion of water is bled off and passed through a desalination plant where product water is produced. Concentrated brine is returned to the circulating volume.

3,777,457

APPARATUS FOR CLEANING THE EXHAUST AIR FROM WORKSHOPS

Max Laube, Zurich, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 17, 1972, Ser. No. 218,067
Claims priority, application Switzerland, Jan. 29, 1971, 1375/71
Int. Cl. B01d *50/00*
U.S. Cl. 55—223 **13 Claims**



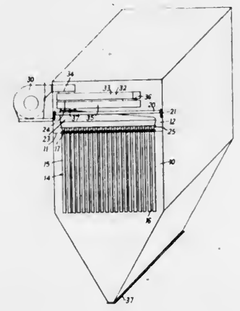
An apparatus for cleaning the exhaust air from workshops, said apparatus comprising a cyclone and a filter attached to the delivery end of the cyclone, whereby within the cyclone and before a rotary movement of the exhaust air, dusty and/or gaseous constituents of the air are combined with droplets of liquid to increase the action of rotary movement for removal of these constituent from the air and further delivering the air cleaned by rotary action through a wet operated filter removing all remaining constituents from the air.

3,777,458

AIR FILTERS

Geoffrey Roy Dence, Flat 10, 13 Chesham St., London, England

Filed June 18, 1971, Ser. No. 154,439
Claims priority, application Great Britain, Mar. 30, 1971, 8,144/71
Int. Cl. B01d *46/04*
U.S. Cl. 55—287 **2 Claims**



This invention relates to self cleaning air filters of the type in which the operative filter elements are periodically cleaned during the operation of the filter by reversing the flow of air through these elements; and is particularly, though not exclusively concerned with such filters of comparatively large air flow capacity. The invention provides a self cleaning air filter unit comprising an inlet chamber and an outlet chamber, a filter wall arranged to separate the inlet chamber from the outlet chamber, a plurality of filter elements arranged on the filter wall in an array of cross-wise rows over a length of the filter wall to allow air to pass from the inlet chamber to the outlet chamber through the filter elements, a gantry arranged in the outlet chamber across said array for traverse along the length of the array, a plurality of reverse air flow nozzles arranged on the gantry to register successively with the filter elements on each row of the filter elements, and means for supplying air to the nozzles to exit therefrom at such speed that in use of the filter unit the flow of air from the inlet chamber to the outlet chamber is reversed through a filter element when it is in alignment with a nozzle.

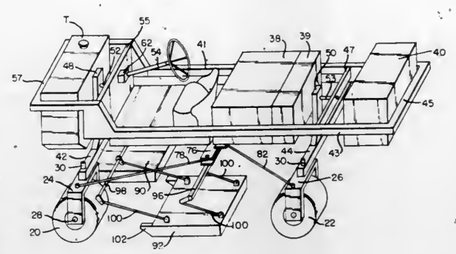
3,777,459

MOWING DEVICE

Brantford G. Elliott, Nashville, Tenn., assignor to Harrington Manufacturing Co., Inc., Lewiston, N.C.

Filed July 8, 1971, Ser. No. 160,708
Int. Cl. A01d *35/28*
U.S. Cl. 56—15.3 **19 Claims**

My invention pertains to a mowing device that can easily and continuously operate on slopes as great as 40 degrees without danger of overturning. My mowing device comprises a wheel supported framework and a cradle section supported by said framework so that the cradle section can swing through at least a limited arc with respect to its supporting framework as the mower unit moves from level to sloping ground, to thus maintain the cradle section in an essentially level attitude at all times. The invention also includes other novel features useful on a mowing device, including steering mechanism, etc.

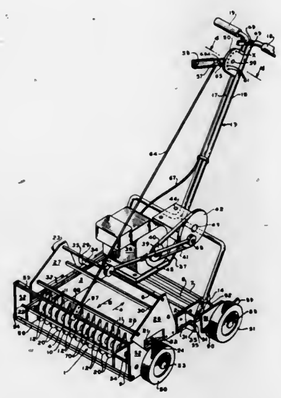


3,777,460

LAWN CONDITIONING MACHINE

Frank Mokros, 223 New York Ave., North Bay Shore, N.Y.

Division of Ser. No. 642,884, June 1, 1967, abandoned. This application Dec. 17, 1969, Ser. No. 886,050
Int. Cl. A01d *51/00*
U.S. Cl. 56—16.7 **12 Claims**



A lawn conditioning machine comprising grass raking tines. The raking action is a natural reciprocal movement during which foreign material is made free and gathered. The rake is angularly and height adjustable to vary the depth of raking action. The tines are removably supported so as to allow individual replacement in case of damage. A detachable lawn conditioning device is provided for performing other lawn conditioning functions.

3,777,461

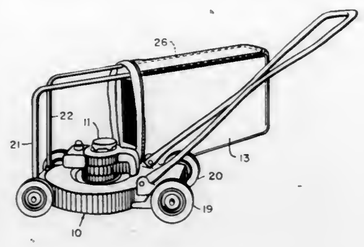
PARTICLE-COLLECTING DEVICE

David Giraud, 408 W. Exchange St., Spring Lake, Mich.

Filed Apr. 13, 1972, Ser. No. 243,611
Int. Cl. A01d *35/22*
U.S. Cl. 56—202 **3 Claims**

A structure is attached to a conventional mower or other machine that normally discharges a stream of high-velocity air

with entrained particles such as grass clippings or chopped leaves. This structure supports a standard refuse bag on a frame receivable into the mouth of the bag, which is secured



to the frame by a constricting tie surrounding the bag and the frame periphery. The bag is additionally supported on the inside by a normally horizontal member secured to the frame.

3,777,462

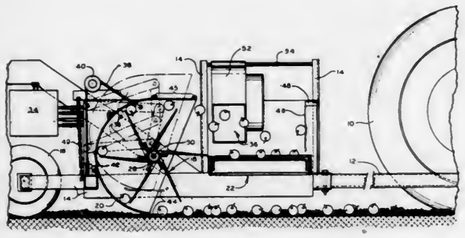
FRUIT HARVESTER

James G. Sharp, and David E. Sharp, both of JI-Meva Farm, North Rose, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,524

Int. Cl. A01g *19/00*

U.S. Cl. 56—328 **8 Claims**



A harvesting machine for picking up fruit, such as apples, which has fallen to the ground and placing it in a box or other suitable container. A drive shaft is concentrically disposed within an elongated shield of uniform, substantially semi-circular cross section. The shaft carries and imparts rotation to a plurality of blade assemblies arranged in closely spaced relation axially along the shaft, each assembly having a plurality of radially extending blades substantially tangential to the drive shaft. The fruit is picked up by the blades, carried around the shield, and propelled against a resilient curtain to drop onto conveying means without bounce or bruise and be transported to the container. Blower means are provided for separating grass, and the like, from the fruit as it is traveling between the blades and the curtain. Means are also provided for selectively tilting the container to avoid bruising the fruit as it is placed therein.

3,777,463

FRUIT-HARVESTING MACHINE AND CONVEYOR THEREFOR

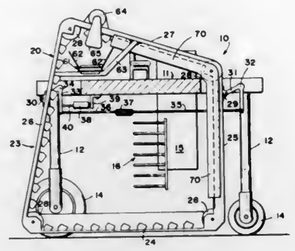
Gerald L. Claxton, Lafayette, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Sept. 25, 1972, Ser. No. 292,083

Int. Cl. A01g *19/00*

U.S. Cl. 56—330 **13 Claims**

A harvesting machine having an endless belt conveyor for conveying the fruit harvested from plants wherein the fruit falling from the plants is directed to the upper side of the lower flight of the belt which extends lengthwise of the machine, parallel and very close to the ground. The belt carries the fruit and juice to one end of the machine. Spaced



buckets mounted on the belt carry the fruit and juice upwardly to the top of the machine, wherein the belt tilts the buckets to dump the contents therefrom through a blast of air, for leaf removal, and onto a discharge conveyor. The belt returns then downwardly to the other end of the machine.

3,777,464

APPARATUS FOR THE PRODUCTION OF CHENILLE

Alexander Gross, 2590 W. Maple Ave., Feasterville, Pa.

Filed Dec. 16, 1971, Ser. No. 208,748

Int. Cl. D02g *3/42*; **D04d** *3/00*

U.S. Cl. 57—24 **8 Claims**

An apparatus for the production of chenille which includes a bearing mounted flyer arranged for rotation in a horizontal plane and which uprightly carries a plurality of spool mounting spindles thereon. Horizontal rotation of the flyer wraps weft thread from the spindle mounted spools about the warp threads and a pair of endless steel belts. The wrapped weft thread is carried by the belts to a reciprocating knife which severs the wrapped threads which then adhere to the warp threads to form the finished chenille yarn. The finished product is directed to lower positioned spindles which are mounted on a vertically reciprocal platform to aid in uniformly winding the finished product upon a spool carried by the spindle. The lower spindle is provided with a balloon control ring which serves the dual purpose of controlling ballooning on the spindle as the finished product winds upon the spindle and also serves to clean excess material from the finished chenille yarn to thereby provide an improved final product.

3,777,465

PROCESS AND APPARATUS FOR MANUFACTURE OF A THERMOPLASTIC YARN WITH RESIDUAL TWIST

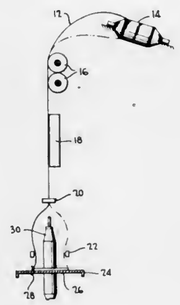
Michel Buzano, Villeurbanne, France, assignor to Societe Rhodiaceta, Paris, France

Continuation-in-part of Ser. No. 95,013, Dec. 4, 1970. This application Oct. 11, 1971, Ser. No. 191,603

Claims priority, application France, Oct. 22, 1970, 7038481; Dec. 12, 1969, 6943178

Int. Cl. D01h *7/52, 13/06*

U.S. Cl. 57—34 HS **9 Claims**



Process and apparatus for texturizing a thermoplastic yarn to provide a residual twist couple by generating a twist in the yarn as the yarn is unwound and contacting the twisted yarn with a twist barrier ring downstream from a heating element and upstream from a ring and traveller spindle windup system.

3,777,466

METHOD OF REMOVING IMPURITIES AND SIMILAR MATTER FROM STAPLE FIBRES IN RINGLESS SPINNING AND DEVICE FOR PERFORMING SAID METHOD

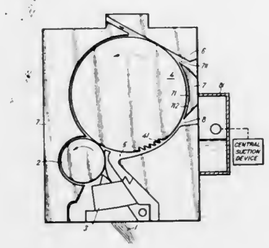
Stanislav Kabele; Ctibor Doudlebsky; Frantisek Jaros; Zdenek Svec, and Bohumir Brozek, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed May 13, 1970, Ser. No. 36,883

Claims priority, application Czechoslovakia, May 16, 1969, 346/69

Int. Cl. D01h *7/02*; **D01g** *15/00, 23/00*

U.S. Cl. 57—58.89 **9 Claims**



A method of removing impurities from staple fibres in ringless spinning and a device for performing said method. The impurities are ejected immediately after being contacted by the combing roller into a withdrawing space by the effect of the acceleration imparted thereto by said contact. Spinning units including a fibre separating mechanism and a rotary underpressure spinning chamber are employed. The inlet or the guiding walls for said impurities are directed in view of the separating roller tangentially. The withdrawing space can be connected to the central sucking device of the machine.

3,777,467

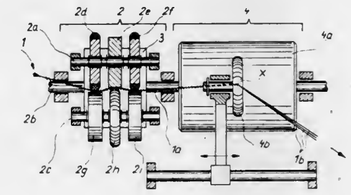
APPARATUS FOR FALSE-TWISTING MULTIFILAMENT THREADS AND THE LIKE

Heinrich Enneking, Karlsruhe, Germany, assignor to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Karlsruhe, Germany

Filed July 17, 1972, Ser. No. 272,629

Claims priority, application Germany, Mar. 22, 1972, P 22 13 851.8

U.S. Cl. 57—77.4 **7 Claims**



A first false-twisting unit includes three axially parallel shafts of which two carry pairs of cooperating rotary friction members defining respective nips through which the travelling yarn passes for false-twisting and on a third of which a driven friction-drive roller is provided to drive the friction members. A second false-twisting unit includes a first roller coaxial with the friction-drive roller having an axial length substantially greater than the rotary friction members, and a second roller rotatably mounted in axial parallelism with the first roller and engaging the latter with its periphery to form with the first roller a second nip through which the travelling yarn passes to have a final false twist imparted to it and have its filaments moved into mutual parallelism. An arrangement is provided for traversing the second roller axially along the second roller.

3,777,468

RING AND TRAVELER

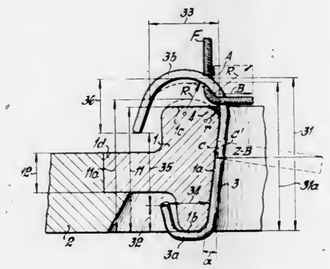
Stefan Furst, deceased, late of Monchengladbach, Germany; by Stefanie Dormanns, 43 Industriestrasse, Wegberg, and by Hans Furst, 28 Ludwig-Weber-Strasse, Monchengladbach, both of Germany (heirs and legal representatives)

Filed Oct. 19, 1970, Ser. No. 81,773

Claims priority, application Germany, Oct. 18, 1969, P 19 52 570.3; Nov. 15, 1969, P 19 57 552.1

Int. Cl. D01h *7/62*

U.S. Cl. 57—120 **13 Claims**



Thread guiding device for ring spinning and ring twisting frames includes a ring having a radially inner engagement sur-

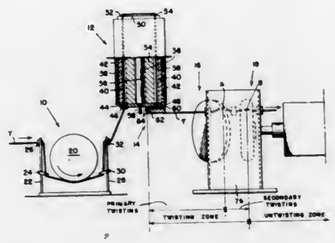
face and a bottom engagement surface, and an ear-shaped traveller mounted on the ring for traveling around the same, the traveller being in engagement only with the inner and bottom engagement surfaces of the ring in the course of travel thereof about the ring.

3,777,469

TEXTURING YARNS BY FALSE TWISTING

Richard C. Spurgeon, R. D. No. 2, Lansdale, Pa.

Filed Aug. 3, 1971, Ser. No. 168,709
Int. Cl. D02g *1/02*
U.S. Cl. 57—140 R **10 Claims**



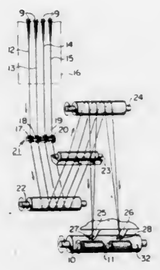
Untextured yarn is drawn from a producer's package, threaded through apparatus comprising a tension leveling device, an electric heater and a false twist device and, having been textured thereby, is wound on yarn take-up means. Close to the yarn exit from the heater is a twist stop device which effectively restricts twisting of the yarn to the downstream side thereof, and close to the downstream side of the false twist device is a check device which effectively restricts to the downstream side thereof the tendency of the yarn to relax due to untwisting thereof.

3,777,470

METHOD OF FORMING A YARN PACKAGE

Isamu Suzuki; Jukichi Ohmura, and Yuukoo Satoo, all of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 877,727, Nov. 18, 1969, abandoned. This application Feb. 9, 1972, Ser. No. 224,820
Claims priority, application Japan, Nov. 19, 1968, 43/84150
Int. Cl. D01h *1/00, 7/92*
U.S. Cl. 57—157 R **3 Claims**



This invention concerns with a process for the preparation of a yarn package which comprises a plurality of polyurethane elastic yarns wound up on a single bobbin. The yarns are arranged substantially in a plane when seen laterally of the yarn group and provisionally bonded together for providing the possibility of re-separation into the constituent yarns at a later rewinding stage of the package.

According to the invention, a plurality of groups of multifilaments comprising essentially polyurethane as extruded are passed through a corresponding number of false twisters, so as to group the respective filaments together to such a degree that the related filaments are partially fused together to set a mutual core-to-core material communication, yet having a solidified surface skin except the thus realized material communication areas on the filaments.

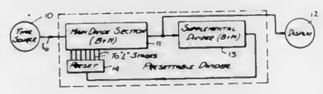
Then, at least two of the yarns of multifilaments are jointly passed through a skew-grooved traverse for provisionally bonding these yarns together so as to realise a skin-to-skin cobonding, for ready for winding into a yarn package on a single bobbin tube.

3,777,471

PRESETTABLE FREQUENCY DIVIDER FOR ELECTRONIC TIMEPIECE

Dale R. Koehler, Westwood; Jerrald A. Zupfer, River Vale, and Jan Willem L. Prak, Hackensack, all of N.J., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,662
Int. Cl. G04c *3/00*; **G04b** *19/00, 27/00*
U.S. Cl. 58—23 R **12 Claims**



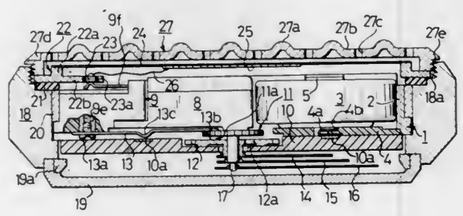
An electronic timepiece in which the output of a stable, high-frequency standard such as a crystal oscillator, is fed to a presettable frequency-divider to produce periodic low-frequency output pulses for actuating a time display. The frequency of the oscillator lies in a range somewhat below an assigned value producing, upon division, the desired number of output pulses for accurate timing, the resultant deficiency being made up by adding pulses to input stages of the divider sufficient to compensate therefor. In this way, one may manufacture crystals under far less restrictive tolerances than those imposed when the crystal is required to operate at the assigned frequency.

3,777,472

WATCH WITH ELECTRONIC BUZZER

Yoshio Iinuma, Tokyo, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Mar. 22, 1972, Ser. No. 237,137
Claims priority, application Japan, Mar. 30, 1971, 46/18984
Int. Cl. G04c *21/34*
U.S. Cl. 58—57.5 **18 Claims**



An improved electronic alarm watch is disclosed having improvements in the structure and arrangement of the accoustically alarming vibrator employed in the alarm mechanism

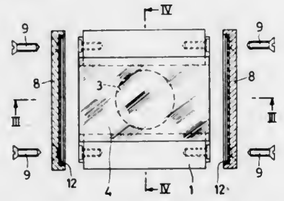
thereof. The improved watch of the above type comprises a watch casing, wherein is located a watch movement, alarm switch controlled thereby, alarm oscillator circuit and a battery source adapted for energization thereof. An oscillatory membrane is fixedly attached with a piezo-electric or electrostrictive element which is electrically connected through the switch with the oscillator circuit and the battery for being energized therefrom, the membrane being arranged in a space defined by and between a perforated back cover and the watch movement.

3,777,473

WATCHCASE, IN PARTICULAR FOR A WATERPROOF AND SUBAQUEOUS WATCH

Ennio Bussi Roma, Italy, assignor to Fernando Fontana & C. S.a.s., Sesto Calende (Varese), Italy

Filed Sept. 11, 1972, Ser. No. 287,649
Claims priority, application Italy, Apr. 29, 1972, 23759 A/72
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 R **2 Claims**



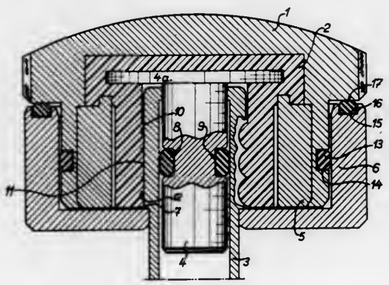
Watchcase comprising an enclosure for containing the dial and working mechanism of the watch, an upper transparent seal element and a lower seal element, characterised in that at least one of the seal elements is slidingly coupled to the enclosure and is clamped in position by two side elements which enable suitable gaskets to be interposed and clamped tightly so ensuring an exceptional seal against water and at the same time easy disassembly and reassembly of the seal element.

3,777,474

FLUID-TIGHT CONTROL MECHANISM, FOR EXAMPLE FOR WATCHES

Pierre-Michel Piquerez, Bassecourt, Switzerland, assignor to Ervin Piquerez S.A., Bassecourt, Switzerland

Filed Oct. 4, 1972, Ser. No. 295,009
Claims priority, application Switzerland, Oct. 8, 1971, 14684/71
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 B **1 Claim**



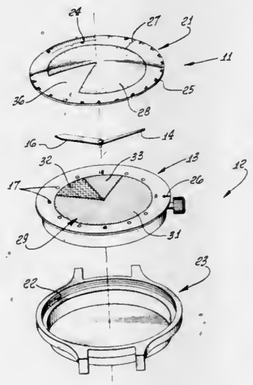
A control mechanism, for example for winding a watch, includes a manually operable button mounted for rotation and axial sliding in a socket, with an inner portion of the button in deformable synthetic material fluid-tightly gripping over a central fixed tube through which passes a control shank whose head is moulded in said inner portion. An annular surface of a cylindrical wall of the socket has a groove housing an O-ring which is axially compressed by a facing annular surface of the button when the button is in an axially depressed rest position.

3,777,475

WATCH MOUNTED COUNTER

Murray Grossan, 8930 Sepulveda Blvd., Los Angeles, Calif.

Filed Jan. 29, 1973, Ser. No. 327,451
Int. Cl. G04b *19/00*
U.S. Cl. 58—126 B **4 Claims**



A manually operated counter is mounted on the face of a wristwatch for accumulating and totalizing quantities, such as the daily intake of calories, number of cigarettes consumed, the quantity of pills or other medication taken, etc. The counter is provided by a rotatable member overlying the watch dial face and having an auxiliary scale marked on the periphery thereof. By rotating this member the auxiliary scale may be selectively set relative to an index point on the periphery of the watch casing. A central portion of the rotatable member is generally opaque to form a mask overlying coded warning indicator colors provided near the center of the dial face of the watch. One sector of this opaque mask is transparent to form a window which selectively exposes the indicator colors as quantities, such as daily calories, are accumulated by rotating the member scale. The appearance of certain indicator colors warns the user that his daily intake of calories, cigarettes, etc. is approaching, has been reached, or has been exceeded.

3,777,476

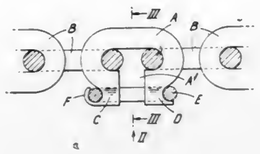
CONNECTING LINKS FOR CHAINS

Alexander Tupalski, 22 Ardlethan St., Fisher A.C.T., Australia (2611)

Filed Aug. 2, 1971, Ser. No. 167,907
Claims priority, application Great Britain, Aug. 17, 1970, 39,532/70
Int. Cl. F16g *15/00*
U.S. Cl. 59—85 **2 Claims**

A connecting link, for connecting a length of chain to another such length or to an anchorage loop. A body portion

is provided similar to those of the links of the chain but having a gap on one side, through which such links can be passed,



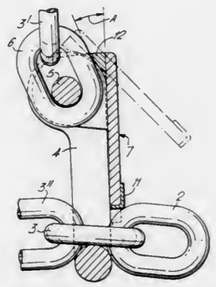
with outward projections flanking such gap for securely receiving a closing member to close the gap.

3,777,477

SELF-LOCKING FOR LOOP CHAINS

Nunzio Biondo, Livorno, Italy, assignor to Italsider, Societa per Azioni, Genova, Italy

Filed Nov. 26, 1971, Ser. No. 202,131
Claims priority, application Italy, Aug. 7, 1971, 12856 A/71
Int. Cl. F16g *15/04*
U.S. Cl. 59—93 **6 Claims**



A simple but effective device for holding a chain looped around a bundle of elements in a tightened condition. A catch element is associated with an eyelet which is disposed at one end of the chain and through which the other end is passed. The catch is automatically shifted as the chain passes through the eyelet to reduce the size of the loop but moves back to a latching position to prevent the chain moving through the eyelet to enlarge the loop.

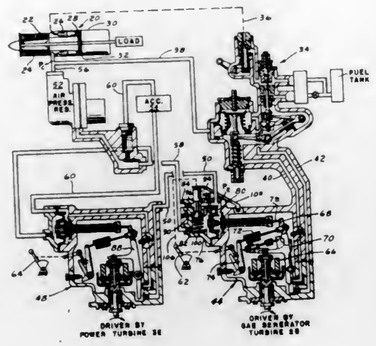
3,777,478

METHOD OF AND APPARATUS FOR CONTROL OF HELICOPTER GAS TURBINE ENGINE DURING AUTO-ROTATION

Robert G. Moore, Jr., South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Oct. 28, 1971, Ser. No. 193,385
Int. Cl. F02c *3/10*
U.S. Cl. 60—39.16 R **5 Claims**

Engine governor control apparatus for controlling the power output of a helicopter gas turbine engine having independently rotating gas generator and power turbines. During normal operation gas generator turbine speed is sensed and controlled by a first governor and power turbine speed is sensed and controlled by a second governor operatively connected to the first governor for resetting the speed setting of the first governor. During helicopter practice auto-rotation, the second governor is rendered inoperative to reset the first governor at a predetermined position of a manually actuated engine power request lever to thereby eliminate transient undershoot of gas generator turbine speed during a power turbine load reduction prior to auto-rotation as well as eliminate a tendency for gas generator speed instability while operating in the practice auto-rotation mode.

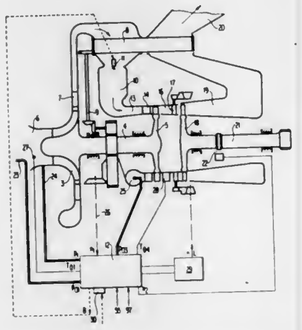


3,777,479

CONTROL SYSTEM FOR GAS TURBINE ENGINES

Hermann Hagen, Dachau, Germany, assignor to Motoren-Und Turbinen-Union Munchen GmbH, Munich, Postfach, Germany

Filed Dec. 18, 1970, Ser. No. 99,358
Claims priority, application Germany, Dec. 18, 1969, P 19 63 432.3
Int. Cl. F02c *9/04*
U.S. Cl. 60—39.25 **35 Claims**



A control system for gas turbines comprising a gas generator associated with a variable geometry unit such as variable guide vanes upstream of the free-power turbine of a two-shaft engine having a heat exchanger or a variable geometry thrust nozzle for a turbojet engine. The control system adjusts the working line of the gas generator to each related speed by variation of the geometry by utilizing the function

$$q_1 \cdot p_{o1} = f(T_{o1}) \cdot p_{o3}^{a} \cdot k$$

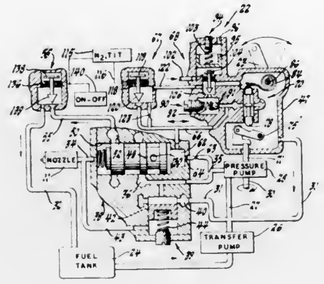
for positioning the gas generator working line and for limiting acceleration or fuel supply.

3,777,480

GAS TURBINE FUEL CONTROL

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1972, Ser. No. 236,373
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.28 R **5 Claims**



A fuel control disclosed in connection with a gas-coupled gas tubine engine for shaft power output purposes. The fuel control is supplied by a transfer pump and a pressure pump in series and delivers fuel to a nozzle in the engine combustion apparatus. The control receives an input of gas generator speed and an input of compressor discharge pressure. It receives electrical inputs serving to limit turbine inlet temperature and power turbine speed, and may include an electrical On-Off input. Flow of fuel to the engine is directly controlled by a slave valve which responds to pressure of fuel delivered to the nozzle and to a control pressure derived from the pressure pump outlet. The control pressure is developed between an upstream orifice and parallel downstream valves which include a solenoid valve operated to limit turbine inlet temperature and power turbine speed, a valve responsive to compressor discharge pressure, and a governor valve responsive to gas generator turbine speed. The On-Off control bleeds the nozzle to the fuel tank when the engine is turned off. During engine deceleration, the slave valve stops fuel flow without emptying the nozzle and the fuel line to it. The metering head across the slave valve is controlled by a differential pressure responsive by-pass valve which discharges excess fuel to the pressure pump inlet. The by-pass valve may define a passage for fuel to maintain a pilot flame during deceleration.

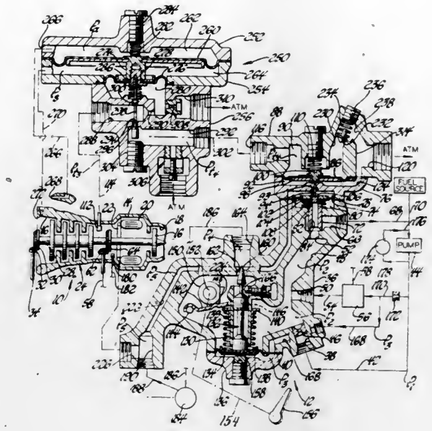
3,777,481

AMBIENTLY COMPENSATED TURBINE ENGINE FUEL CONTROL

Raymond P. Canale, and Leon L. Brantman, both of St. Clair Shores, Mich., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,063
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.28 **5 Claims**

A turbine engine fuel control is provided with a fuel inlet, metering-type governor valve assembly responsive to signals generated in response to engine speed and indicia of operator power request, fuel bypass valving means for returning unmetered fuel from the fuel control to an associated fuel supply system, compressor discharge pressure sensing means for tending to further close the bypass valving means as compressor discharge pressure increases, pressure responsive means responsive to the differential in pressures which meter the fuel for opening said bypass valving means in order to achieve a rate of metered fuel flow corresponding to compressor discharge pressure, and additional pressure responsive valving means responsive to ambient conditions and generally interposed between a source of the compressor discharge pressure and the compressor discharge pressure sensing means for at times modifying the value of the compressor discharge pressure as sensed by the compressor discharge pressure sensing means.

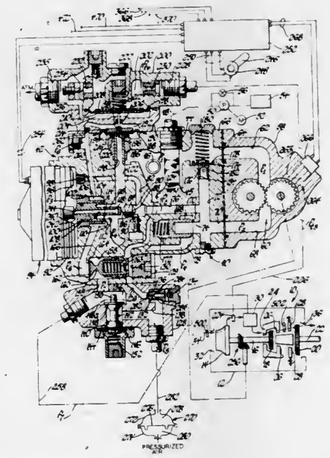


3,777,482

TURBINE ENGINE CONTROL SYSTEM

Raymond P. Canale, Warren, and Wesley J. Ross, Sterling Heights, both of Mich., assignors to Colt Industries, Operating Corp., New York, N.Y.

Filed Nov. 30, 1971, Ser. No. 203,313
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.28 R **10 Claims**



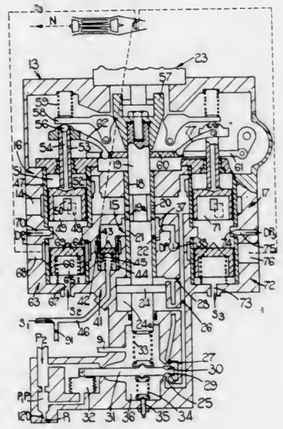
A turbine engine control system, including a fuel control is provided with a fuel inlet, a fuel metering valve assembly responsive to electrical signals generated in response to engine speed and temperature and indicia of operator power request, a fuel bypass valving means for returning unmetered fuel from the area of the fuel metering valve assembly to an

area of low pressure fuel, a compressor discharge pressure sensing means tending to further close the bypass valving means as compressor discharge pressure increases, and a pressure responsive means responsive to the differential in pressures which meters the fuel for opening said bypass valving means in order to achieve a rate of metered fuel flow corresponding to compressor discharge pressure; a variable nozzle assembly within an associated turbine engine is variably opened and closed by related control sections responsive at least in part to engine operating parameters.

3,777,483
FUEL CONTROL APPARATUS FOR GAS TURBINE ENGINE

Geoffrey Lewis, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 30, 1972, Ser. No. 239,584
Claims priority, application Great Britain, Apr. 13, 1971, 9,270/71
Int. Cl. F02c 9/08
U.S. Cl. 60—39.28 R **32 Claims**



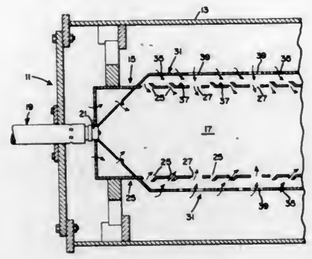
A fuel control apparatus for a gas turbine engine reheat system having first, second and third burners has first, second and third variable metering devices for controlling fuel flow to the respective burners. A control member for the first device is responsive to a first engine operating parameter and the control members for the second and third devices are responsive to the position of the first device control member and also to second and third engine operating parameters. First, second and third throttle valves are situated downstream of the first, second and third metering devices respectively. The second and third throttle valves are responsive to the pressure downstream of their associated metering devices, and the first valve is responsive to both the aforesaid downstream pressures, whereby the fuel pressures delivered to the burners are substantially equal.

3,777,484
SHROUDED COMBUSTION LINER

Norman R. Dibelius, Ballston Spa, and Richard B. Schiefer, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 8, 1971, Ser. No. 206,021
Int. Cl. F02c 1/00
U.S. Cl. 60—39.65 **3 Claims**

A gas turbine combustion chamber having an outer casing and a concentrically mounted inner liner. The inner liner is formed with annular rows of spaced louvers for admitting cooling air and annular rows of spaced primary air holes. A shroud is circumscribed about the inner liner and spaced there from. Annular rows of spaced cooling air holes are formed in the shroud and direct jets of cooling air to hot spots or hot highly stressed areas between the louvers. The presence of the

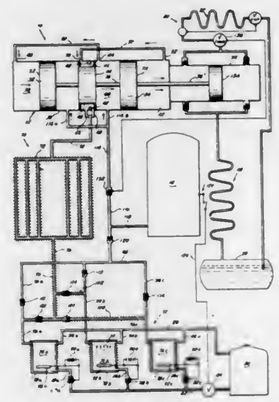


shroud makes it possible to increase the opening of the louvers for increasing the thickness of a cooling air film. The shroud also is formed with primary air holes which are slightly larger than and in approximate register with the primary air holes in the inner liner.

3,777,485
VAPORIZED FLUID POWERED ENGINE

Christopher Plummer Emerson, Lamoni, Iowa, assignor to The Deskin Corporation, Lamoni, Iowa

Filed Mar. 8, 1972, Ser. No. 232,780
Int. Cl. F01k 25/10; F25b 27/00
U.S. Cl. 60—95 **12 Claims**



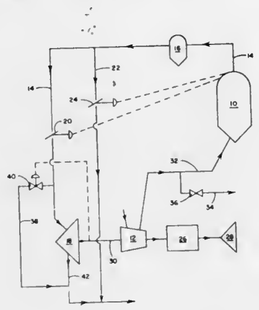
An apparatus and method for converting heat energy to mechanical energy in a closed circuit power unit by alternately expanding and vaporizing and then condensing a working fluid to product a pressure differential utilized to operate a reciprocal engine component such as a piston or diaphragm. The apparatus includes an improved and simplified engine component efficiently operated by the pressure differential resulting from the heating and cooling of the working fluid and also includes a series of non-simultaneously operating combination fluid heat generators and condensors to maintain a continuously available source of heat and cooling for acting on the working fluid. This invention is illustrated in associa-

tion with a motor vehicle air conditioning system where the heated fluid in the normal engine cooling system is utilized to provide heat to the working fluid heat generators in a controlled sequence whereby the heat energy created is utilized to operate the engine component which in turn is coupled to the compressor unit of the air conditioning system or which may otherwise be connected to any other appropriate work load This new engine is also operable by any other suitable source of heat.

3,777,486
APPARATUS FOR AND A METHOD OF OPERATING POWER RECOVERY EQUIPMENT

Leonard P. Damratowski, Monroeville, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 29, 1971, Ser. No. 110,987
Int. Cl. F02c 9/00
U.S. Cl. 60—105 **4 Claims**

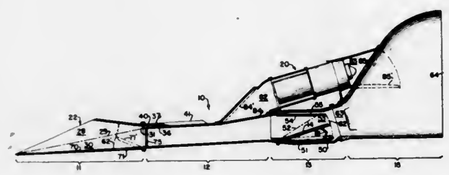


Power recovery apparatus utilizing energy present in the flue gas of a catalyst regenerator of the kind employed in fractional distillation plants wherein the conduit connecting the regenerator and a power recovery turbine is provided with means for rapidly venting the section of a main supply conduit immediately upstream of the turbine to rapidly decrease power recovery turbine output.

3,777,487
METHOD AND APPARATUS FOR REACTION PROPULSION

Leslie W. Norman, Scottsdale, and Skillman C. Hunter, Phoenix, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Feb. 9, 1961, Ser. No. 88,149
Int. Cl. F02k 7/10, 3/02
U.S. Cl. 60—204 **7 Claims**

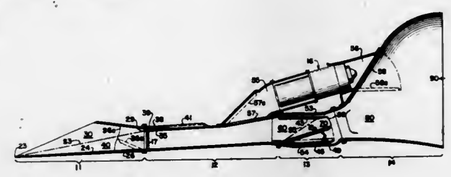


6. A method for developing propulsive reaction at air speeds in excess of sonic velocity comprising: directing an air flow into a confined channel; mixing fuel with said air flow; exciting successive oblique shock waves in said channel to decrease the Mach number and increase the static pressure and static temperature of the flow therein; removing boundary layer air from the channel walls adjacent the terminal ends of certain of the oblique shock waves; and exciting a shock wave substantially normal to the axis of said flow at a fixed position in said channel to induce detonation of said fuel-air mixture.

3,777,488
METHOD AND APPARATUS FOR REACTION PROPULSION

Robert A. Gross, New Rochelle, N.Y.; Skillman C. Hunter, Phoenix, and Leslie W. Norman, Scottsdale, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed June 23, 1961, Ser. No. 119,154
Int. Cl. F02k 7/10
U.S. Cl. 60—204 **11 Claims**

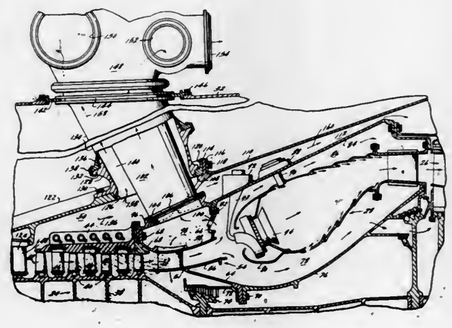


9. A method of operating an aerothermodynamic duct which comprises the steps of: moving the duct through the air at a Mach number high enough to create a normal shock wave at the inlet end of the duct; bleeding air from the duct at a point spaced longitudinally from the inlet to cause the shock wave to enter the duct; interrupting the air bleeding step to cause the shock wave to move downstream of the duct beyond the point where the air was bled therefrom to a predetermined location; supplying fuel to the duct for mixture with the air and subsequent detonation upon passage through said normal shock wave; and expanding the heated products of the detonation in the downstream end of said duct to impart forward movement to the duct.

3,777,489
COMBUSTOR CASING AND CONCENTRIC AIR BLEED STRUCTURE

Kenneth O. Johnson, Indian Hill; Peter F. Kepf, New Richmond, and Alfred St. George, West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

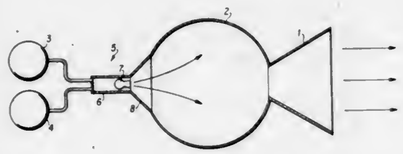
Filed June 1, 1972, Ser. No. 258,884
Int. Cl. F02c 3/12; F02k 3/06
U.S. Cl. 60—226 R **10 Claims**



Combustor casing and bleed structure provides a concentric flow path for compressor discharge and intermediate stage air

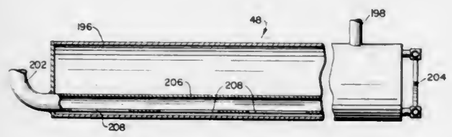
from a turbofan engine compressor to an outer cowling defining the fan flow path. Concentric tubes are respectively mounted to a support cone, which includes a plurality of outlet guide vanes, and to an outer casing, which partially defines the fan flow path. External piping is thus limited to the concentric tubes and potential losses due to interference with the fan flow are avoided.

3,777,490
SUPERSONIC-COMBUSTION ROCKET
Richard J. Weber, Cleveland, and Leo C. Franciscus, Lakewood, both of Ohio, assignors to The United States of America as represented by the Secretary of the National Aeronautics and Space Administration, Washington, D.C.
Filed Mar. 10, 1972, Ser. No. 233,519
Int. Cl. F02k *9/02*
U.S. Cl. 60—258 **5 Claims**



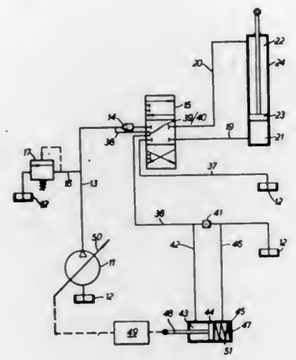
A supersonic combustion rocket is provided in which a small rocket motor is substituted for heavy turbo pumps in a conventional rocket engine. The substitution results in a substantial reduction in rocket engine weight. The flame emanating from the small rocket motor can act to ignite non-hypergolic fuels.

3,777,491
PUMPING AND SERVICING RIG
Emil A. Bender, 6625 Kane Way, Bakersfield, Calif.
Filed July 24, 1972, Ser. No. 274,248
Int. Cl. F15b *1/02*
U.S. Cl. 60—372 **10 Claims**



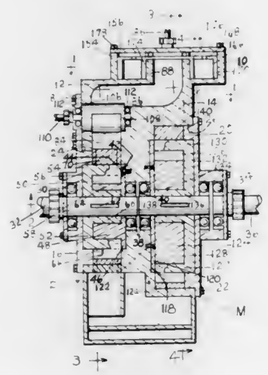
An improved pumping rig for an oil well or the like having a 2 to 1 hydraulic powered lift assembly counterbalanced by a separate circuited hydropneumatic cushioning system and a reciprocatory movement control system using a third separate hydraulic circuit. The crown assembly includes a sheave and strap arrangement in place of unsatisfactory chains and sprockets. An internal safety bleed system is provided in the drive cylinder to create an hydraulic lock in the event of piston overtravel due to rod string failure or other malfunction. The hydropneumatic cushioning system includes vertical cylinders in fluid communication with air-hydraulic fluid surge tanks having slotted, anti-slosh tubes therein.

3,777,492
HYDRAULIC APPARATUS INCLUDING VARIABLE DELIVERY PUMPS
Kenneth Raymond Boydell, Bredons, Hardwick, near Tewkesbury, and John Christopher Eglington Flint, Stroud, both of England, assignors to Dowty Technical Developments Limited, Brockhampton, Cheltenham, England
Filed Feb. 17, 1971, Ser. No. 116,211
Int. Cl. F15b *15/18*; **F04b** *49/00*
U.S. Cl. 60—462 **6 Claims**



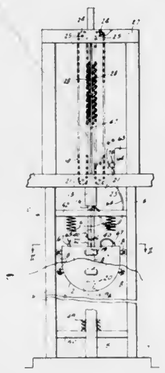
An hydraulic apparatus includes a variable-delivery pump, the delivery from which is controlled by a flow-sensing device. The flow through the device is determined by the position of a service-controlling selector valve. Upon adjustment of the selector valve from one position to another, the pump delivery is changed so as substantially to be in correspondence with the flow permitted by the new position of the selector valve.

3,777,493
DRIVE TRANSMITTING MECHANISM
Charles E. Graham, 8021 S.W. Mapleleaf St., Portland, Greg.
Filed Dec. 20, 1971, Ser. No. 209,677
Int. Cl. F16h *39/04*
U.S. Cl. 60—493 **3 Claims**



A drive transmitting mechanism having an input shaft and an output shaft. The input shaft rotates a pump having slidable vanes operative between inner and outer eccentrics for pumping fluid from an inlet to a rotary motor through valve control means. The rotary motor, similar to the pump, includes a driver having a plurality of slidable vanes operative between inner and outer eccentrics. Control means includes a first valve portion which regulates the output of the pump and a second valve portion which regulates flow to the rotary motor. The first valve portion includes a rotatably adjustable cylinder-like member having a segmental wall portion cooperating with a passageway in the housing from the pump for controlling output of the pump. The second valve means also includes a rotatably adjustable member capable of receiving fluid from the pump and selectively directing it through openings and passageways to the rotary motor for accomplishing forward drive, reverse drive and neutral.

3,777,494
WAVE ENERGY MOTORS
Alfred Soderlund, 1014 Forest Ave., Evanston, Ill.
Filed Jan. 10, 1972, Ser. No. 216,607
Int. Cl. F03c *5/00*
U.S. Cl. 60—507 **16 Claims**

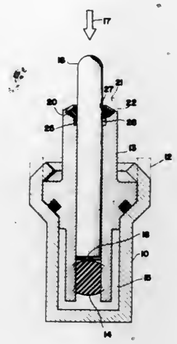


Wave energy is harnessed through pontoons riding on an ocean surface and guided for vertical movement to drive a vertical transmission bar reciprocably relative to a pair of parallel endless driving chains which are alternately driven by the reciprocating transmission bar to drive respective shafts rotatably, such shafts being coupled drivingly to a machine driving shaft carrying a flywheel for assuring uniform rotary motor power derived from the reciprocating power source motion. Fixed offshore platform and floating platform arrangements are provided.

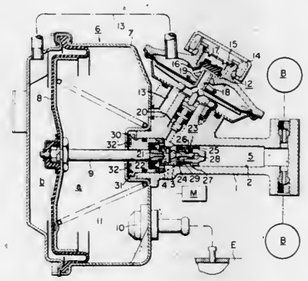
3,777,495
THERMAL RESPONSIVE POWER ELEMENT
Yoshikazu Kuze, No. 31-3, 1-chome, Magome, Higashi, Otaku, Tokyo, Japan
Filed Feb. 7, 1972, Ser. No. 223,878
Claims priority, application Japan, May 28, 1971, 46/26330; Feb. 10, 1971, 46/6472
Int. Cl. F03g *7/06*
U.S. Cl. 60—530 **2 Claims**

A thermal responsive power element has a heat sensitive chamber with a guide spool fixedly mounted therein to define an annular space therebetween. The guide spool has an axial bore passing therethrough provided with a self-equipped miniature seal packing at the outer open end portion for an actuating rod slidably guided therein.

A rubber or rubber-like sealing plug is mounted in said bore with one end in contact with one end of said actuating rod. The sealing plug is diverging toward both ends thereby forming a fluid tight seal in the bore. A thermal responsive expansive substance fills the annular space and, upon application of heat, expands, exerting a force on the plug and the actuating rod. The guide spool is provided with a self-equipped miniature seal packing with lips at the outer open end portion of the guide spool.



3,777,496
VACUUM TYPE SERVO DEVICE
Mitutoyo Mizusawa, Chiisagata-gun, and Hiroo Takeuchi, Kitasaku-gun, both of Japan, assignors to Nisshin Kogyo Kabushiki Kaisha, Ueda-shi, Nagano-ken, Japan
Filed July 5, 1972, Ser. No. 269,254
Claims priority, application Japan, Sept. 7, 1971, 46/69079
Int. Cl. F15b *7/08*
U.S. Cl. 60—593 **2 Claims**

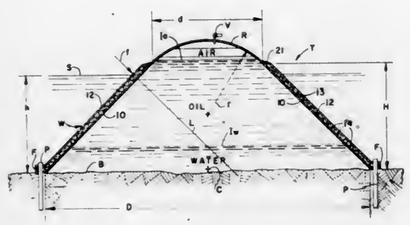


A vacuum type servo device exhibiting an improved output pressure characteristic and free from any substantial echoing in the vacuum servo actuator. It includes a lost motion connection between the actuator rod and the hydraulic piston and a control valve arranged between the input and output fluid chambers of the hydraulic cylinder and which is normally open and closable upon initiation of the actuator operation. It also includes cushioning means arranged between the hydraulic piston and the actuator casing.

3,777,497
STORAGE TANK FOR OFFSHORE STORAGE OF LIQUID AND METHOD OF CONSTRUCTING AND INSTALLING SAME

Norman W. Edwards, Sewickley, Pa., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed May 5, 1972, Ser. No. 250,732
Int. Cl. B65g 5/00
U.S. Cl. 61—46.5 17 Claims

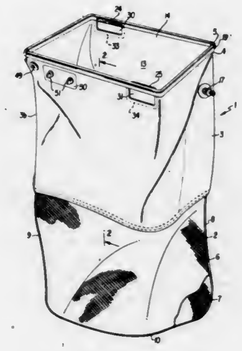


A storage tank for offshore storage of liquid such as oil and the like and the method of constructing and installing same, wherein the storage tank has a side wall with the shape of a frustum of a hollow right circular cone and an enlarged diameter base or lower end and a reduced diameter top or upper end having a roof thereon, the frusto-conical configuration of the side wall of the tank substantially reducing the forces acting on the tank from a surrounding body of water or from wind or the like, and further resulting in a low center of gravity of the tank and a large water plane area so that the tank is inherently stable for towing in a body of water.

3,777,498
METHOD AND APPARATUS FOR FACILITATING DIVER OPERATIONS

Del Andrews, 630 Porter Ln., Hermosa Beach, Calif., and Ora Florentine Kuhlman, 4258 Exultant Dr., Palos Verdes Peninsula, Calif.

Filed July 29, 1971, Ser. No. 167,288
Int. Cl. B63c 11/00
U.S. Cl. 61—69 R 8 Claims



A flexible diver's bag which may be inflated by a diver at a submerged location. The bag includes a perforate section within which an article such as a game specimen may be disposed. A bag closure mechanism operably independent of a bag buoyancy chamber means, is also provided.

3,777,499
OFFSHORE PIPELINE RECOVERY

Jamie F. Matthews, Jr., Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed June 14, 1972, Ser. No. 262,815
Int. Cl. B63c 7/12; F16l 1/00
U.S. Cl. 61—72.3 20 Claims

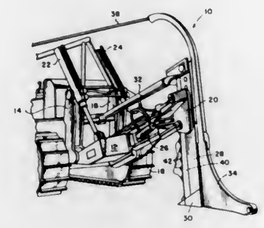


An offshore pipeline is recovered from the bottom of a body of water by introducing gas into one end of the line and pumping liquids from the other end of the pipeline until a section of the line at least sufficiently long to reach to the surface of the body of water has been substantially voided of liquids, and thereafter lifting the end of the pipeline to the water's surface. This procedure substantially reduces the cost of pipeline recovery operations and has other advantages over methods used in the past.

3,777,500
PLOW HAVING A RECIPROCATING BLADE ATTACHMENT

Leon O. Kelley, P. O. Box 488, Stamford, Tex.

Filed Oct. 12, 1971, Ser. No. 188,030
Int. Cl. E02f 5/02; A01b 3/64; F16l 1/00
U.S. Cl. 61—72.6 11 Claims

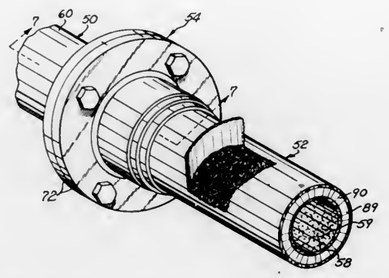


The specification discloses a cable laying plow including a plow shank for connection to a prime mover. A plow point is mounted on the forward edge of the bottom of the plow shank, with guide structure connected to the rear of the plow shank for directing cable downwardly along the rear edge of the plow shank. An elongated frame slidably receives the forward edge of the plow shank and extends downwardly into the plow point. Sharpened teeth are formed along the forward edge of the frame for assisting in plowing operations and for cutting vegetation and the like. Pins on the plow shank extend through slots in the frame to limit the movement of the frame vertically with respect to the plow shank. A motor is mounted on top of the plow shank and linkage extends from the motor to the frame for reciprocating the frame along the forward edge of the plow shank during plowing operations.

3,777,501
CAPILLARY INSULATION

Richard A. Sharp, Lakewood; John P. Gille, and Jay L. McGrew, both of Littleton, all of Colo., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Mar. 12, 1971, Ser. No. 123,794
Int. Cl. F17c 1/12
U.S. Cl. 62—45 13 Claims

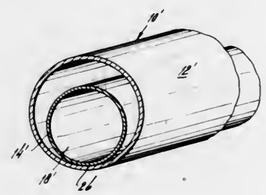


Capillary insulation for transferring low temperature liquids is provided in which a cellular structure is in the form of a cylinder, and defines a plurality of radially extending discrete cells enclosed by a capillary cover with capillary openings communicating with each cell. The cylindrical capillary insulation may be used as a hose or conduit for the transfer of low temperature liquids or as either external or internal insulation for tubes or pipes. A method of manufacturing the cylindrical capillary insulation is disclosed, together with a specific insulated joint construction for interconnecting sections of the insulation.

3,777,502
METHOD OF TRANSPORTING LIQUID AND GAS

James C. Michie, III, and Richard C. M. Calvert, III, both of Newport News, Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Mar. 12, 1971, Ser. No. 123,569
Int. Cl. F17d 1/04
U.S. Cl. 62—55 1 Claim

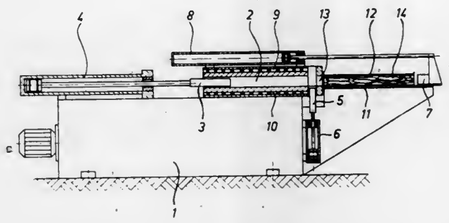


Method of simultaneously transporting liquid and gas within a pipeline, such that the gas serves as an insulator for the liquid and as a sealant for the liquid in case of pipeline failure. A liquid passage is supported substantially axially with respect to an outer gas passage, such that the gas flows annularly of the flowing liquid.

3,777,503
METHOD OF PRODUCING DEEP-FROZEN FILLET BLOCKS

Hermann Walter Gehlen, Kaiserslautern, Pfalz; Karl Hartmann, Bremerhaven, and Gerhard Thieme, Kaiserslautern, Pfalz, all of Germany, assignors to Eisenwerke Kaiserslautern GmbH, Kaiserslautern/Pfalz, Germany

Division of Ser. No. 798,915, Feb. 13, 1969, Pat. No. 3,706,209. This application July 16, 1970, Ser. No. 62,786
Int. Cl. F25d 25/00
U.S. Cl. 62—62 1 Claim

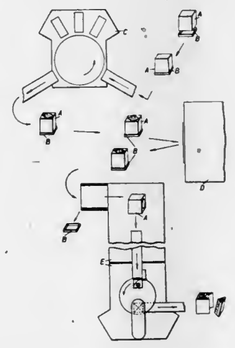


Fillet blocks of fish and other meat are produced by deep-freezing the fresh fillets to be treated and compressing the same while in deep-frozen condition into blocks of predetermined weight and dimension. Apparatus for the carrying into effect the process comprises a deep-cooled compression chamber, a pressure and ejection piston mounted for displacement therein, and a closure piston acting as a closure valve for said chamber, to enable compression of a fillet portion placed in said chamber into a block in the closed position of said closure piston, as well as ejection of the block formed by said pressure piston in the open position of said closure piston, respectively. A third feeding piston serves to introduce the pre-frozen fillets into the chamber in the open position of the closure piston.

3,777,504
PROCESS AND APPARATUS FOR THE MANUFACTURE OF FROZEN DESSERTS

Antonio Marchi, Parma, Italy, assignor to Foodice Engineering Italiana S.p.A., Parma, Italy

Filed July 26, 1972, Ser. No. 275,266
Claims priority, application Italy, Apr. 1, 1972, 46846 A/72
Int. Cl. F25c 7/04
U.S. Cl. 62—73 12 Claims



Italian Cassatas are manufactured by positioning topless polygonal containers having separable bottoms in holes in a

rotating turret which positions them successively beneath a plurality of stations, each of which introduces a different type of ice cream. The filled containers are then frozen, the separable bottoms removed, and the containers filled with ice cream cut into triangular segments by pushing them downwardly through a set of cutting blades.

3,777,505

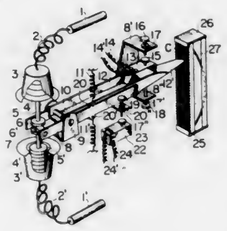
DEFROSTING METHOD AND APPARATUS

Takashi Otaki, Okazaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 21, 1971, Ser. No. 164,540

Int. Cl. F25d *21/06*

U.S. Cl. 62—81 **10 Claims**



In a method of defrosting a first heat exchanger, on the heat source side of refrigerating apparatus having a second heat exchanger on the utilization side and a fluid flow circuit interconnecting the two heat exchangers, the maximum temperature difference between the inlet fluid temperature and the outlet fluid temperature of the second heat exchanger is determined. During operation of the refrigeration apparatus, the difference between the inlet and outlet fluid temperatures of the second heat exchanger is detected and, when the ratio of the detected temperature difference to the maximum temperature difference decreases below a preset value, due to icing or frosting of the first heat exchanger, defrosting of the first heat exchanger is initiated. The apparatus includes temperature sensing means detecting the inlet fluid temperature and the outlet fluid temperature of the second heat exchanger and conjointly controlling swinging of a first lever about a pivot. In moving toward the maximum temperature difference, the first lever carries with it a second lever which is pivoted coaxially with the first lever. When the temperature difference decreases, the first lever moves in the reverse direction with the second lever being retained in its position and, after a preselected movement of the first lever relative to the second lever, a switch means is operated to initiate the defrosting operation, with the defrosting operation being terminated upon return of the first lever to the position of the second lever.

3,777,506

PORTABLE AIR CONDITIONER APPARATUS

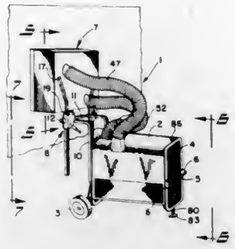
Robert N. Hergatt, Pavonia; Alvy M. Hazen, Mansfield, and Joseph Priess, both of Mansfield, all of Ohio, assignors to Camper Comfort Corporation, Pavonia, Ohio

Filed May 8, 1972, Ser. No. 251,185

Int. Cl. F25d *15/00*

U.S. Cl. 62—237 **16 Claims**

Portable air conditioner apparatus designed primarily for use with recreational vehicles includes an air conditioner unit having wheels for portability and a head adaptor assembly which is vertically adjustable with respect to the unit for alignment with a window in the vehicle. The head adaptor unit consists of an insulated pan communicating with the air conditioner unit through flexible hoses. The pan is sufficiently deep to receive jalousie windows or the like when open, and has a peripheral gasket about its open end for sealing contact with the vehicle. Leveling mechanisms may be provided on both



the front and back of the air conditioning unit properly to position such unit and assembly with respect to the vehicle for effectuation of a tight seal.

3,777,507

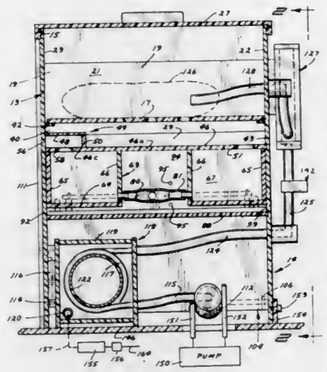
RENAL PRESERVATION SYSTEM

Thomas A. Burton, Rochester, and Allen W. Moberg, Minneapolis, both of Minn., assignors to Waters Instruments, Inc., Rochester, Minn.

Filed Nov. 24, 1971, Ser. No. 201,739

Int. Cl. C12k *9/00*; **A61m** *1/03*; **A61b** *19/00*

U.S. Cl. 62—306 **27 Claims**



A cassette for use with a transport or an in-hospital support module to retain organs in viable condition that is generally boxed shaped and has side by side organ receiving chambers in fluid communication with venous reservoirs therebeneath, a flowmeter tank for each venous reservoir that is at a lower elevation than the venous reservoirs, a static membrane oxygenator fluidly connected to said tanks and mounted in an oxygenator chamber below the venous reservoirs, an arterial reservoir in gravity liquid flow communication with the oxygenator, a pulsatile pump head connected to the arterial reservoir, a heat exchanger fluidly connected between said pump head and a bubble trap, and conduits from the bubble trap to the organ chambers. The cassette is preferrably made of a disposable material such as plexiglass. The modules have a pulsatile pump chamber, a gas source, a refrigeration source to furnish a cooling fluid to the heat exchanger, and pressure temperature and pump rate controls.

3,777,508

HEAT PUMP TYPE AIR CONDITIONING SYSTEMS

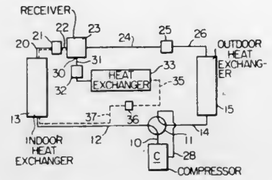
Satoshi Imabayashi; Koichiro Yamaguchi, and Shiego Murase, all of c/o Matsushita Electric Industrial Company Limited , No. 1006, Oaza Kadoma, Kadoma City, Osaka, Japan

Filed Sept. 6, 1972, Ser. No. 286,545

Claims priority, application Japan, Sept. 6, 1971, 46/69105 (utility model); Sept. 20, 1971, 46/73684 (utility model); Sept. 8, 1971, 46/82036 (utility model)

Int. Cl. F25b *13/00*

U.S. Cl. 62—324 **16 Claims**



A heat pump has a compressor, a discharge gas tube, a condenser, a receiver, an expansion valve, an evaporator, and a suction gas tube connected in series in the order named. The receiver is also connected to the discharge gas tube by a bypass line including a liquid pump, a heat exchanger having an electric heater, and a control valve. At times, such as at low outdoor temperatures or at starting-up, with the control valve opened and simultaneously with the liquid pump actuated, a portion of the refrigerant liquid stored in the receiver is supplied into the heat exchanger where it is evaporated by heat from the electric heater. Hot evaporated refrigerant flows from the heat exchanger through the control valve into the discharge gas tube, and through the latter into the condenser. When condensed, the refrigerant gas releases the heat received from the heat exchanger, greatly increasing the heating effect.

3,777,509

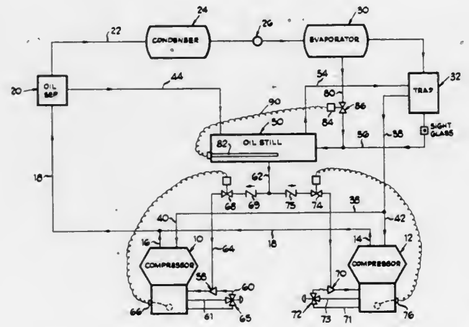
OIL RETURN SYSTEM FOR REFRIGERATION APPARATUS

Paul W. Muench, Medford Lakes, N.J., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 13, 1972, Ser. No. 233,895

Int. Cl. F25b *43/02*

U.S. Cl. 62—470 **2 Claims**



Apparatus for assuring return of oil separated from refrigerant in a vapor cycle refrigeration system. Means are provided for positively effecting flow of oil from a lower pressure reservoir into a crankcase of a compressor which is normally maintained at a higher pressure. Such means may take the form of an eductor powered by flow of lubricating oil in a closed circuit with respect to the compressor.

3,777,510

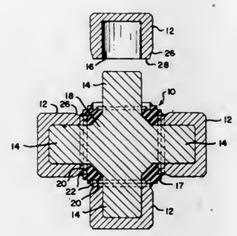
POWER TRANSMITTING JOINT ARRANGEMENT

John C. McElwain, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 12, 1971, Ser. No. 171,239

Int. Cl. F16d *3/26*

U.S. Cl. 64—17 A **1 Claim**



A spider used in a power transmitting joint has a plurality of projecting trunnions that each receive a cup-shaped bearing capable of rotational movement relative thereto. An integral resilient means has end surface sealing means surrounding each trunnion and in sealing contact with the surface of the end of each bearing proximate the spider while allowing relative rotational movement between each bearing and trunnion.

3,777,511

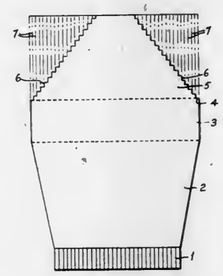
KNITTED GARMENT PANEL

Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed July 29, 1971, Ser. No. 167,173

Int. Cl. D04b *7/10*

U.S. Cl. 66—76 **3 Claims**

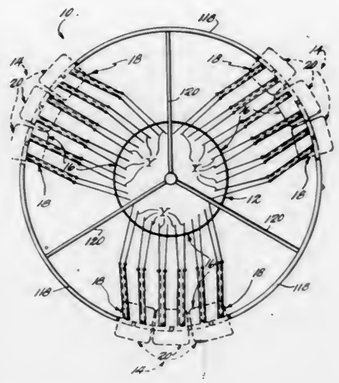


A method of knitting a shaped panel for making up together with other panels into a garment; needles are taken out of action at the edges of the panel to reduce the number of wales in the panel to shape it, and knitted loops are held on the inactive needles whilst knitting continues, at a later stage, said inactive needles are brought back into knitting action again or the loops are cast off.

3,777,512
CREEL ASSEMBLY INCLUDING STOP MOTION DEVICES FOR CIRCULAR KNITTING MACHINES

Arthur L. Burnet, and Joe F. London, Jr., both of Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 31, 1972, Ser. No. 240,141
Int. Cl. D04b *15/40*
U.S. Cl. 66—125 R **11 Claims**



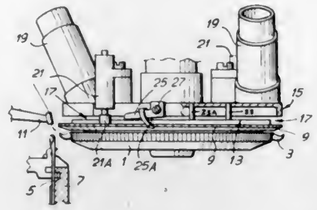
A creel assembly including a plurality of frame sections, each being made up of a plurality of modular units, the frame sections being supportable in braced relation on a common horizontal support surface with a circular knitting machine in radially outwardly spaced relation to the periphery of the machine and in annularly spaced relation thereabout so as the define a circumferential aisle on the horizontal support surface extending about the periphery of the machine and a plurality of access aisles of a number equal to the number of frame sections communicating with the exterior of the circumferential aisle at annularly spaced positions, the frame sections carrying transfer tail yarn packages in generally vertically extending aligned relation to a target eye at convenient vertical levels permitting storage of yarn packages on the horizontal support surface therebelow, the frame sections providing yarn guide elements including weighted self-cleaning friction disc assemblies for guiding each yarn from the target eye to an outlet eye, a pull-out stop-motion device associated with each outlet eye and a plurality of spring biased over-center parallel linkage mechanisms mounting the stop-motion devices for movement between an upper operative position wherein the stop-motion devices are disposed above the circumferential aisle a distance substantially above the head of the operator stationed therein for guiding the yarns from the outlet eyes to the associated in-feed positions on the machine along angular paths which extend upwardly and then downwardly and a lower feed position wherein the stop-motion devices are disposed above the circumferential aisle within easy reach of an operator stationed therein.

3,777,513
YARN CLAMPING AND CUTTING ATTACHMENT FOR CIRCULAR KNITTING MACHINES

Paolo Conti, Florence, Italy, assignor to G. Billi & C. S.p.A., Firenze, Italy

Filed Dec. 7, 1970, Ser. No. 95,585
Claims priority, application Italy, Dec. 12, 1969, 4885 A/69
Int. Cl. D04b *15/61*
U.S. Cl. 66—140 R **4 Claims**

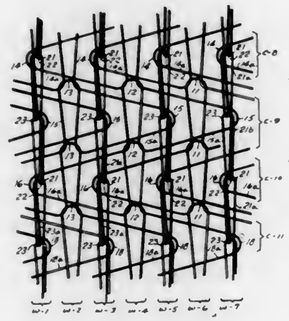
An auxiliary clamp to hold an elastic yarn in combination with a conventional yarn cutting and holding mechanism of the type used on a circular hosiery knitting machine and in which pneumatic means is used to hold the yarns. While the pneumatic means is capable of holding the ends of non-elastic yarns it is not capable of holding the ends of elastic yarns. The clamp is self-acting and provides a wedge shaped opening to hold the elastic yarn, the opening being defined by a flat surface of the conventional mechanism and by a straight edge of a plate member disposed at an angle to the flat surface. The elastic yarn is forced into the wedge shaped opening of the clamp by the movement of the inactivated elastic yarn itself as the last needle taking the same moves around the machine.



3,777,514
KNITTED FABRIC

Martin Traumuller, Dumont, and Fred Hunneke, Tenafly, both of N.J., assignors to Domestic Fabrics Corporation, Englewood, N.J.

Filed May 27, 1971, Ser. No. 147,353
Int. Cl. D04b *7/64*
U.S. Cl. 66—196 **6 Claims**



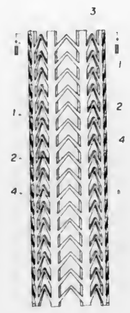
Chain stitches in alternate wales are interconnected with open stitch loops in intervening wales in a warp knit multiply fabric. Portions of the chain stitches are disposed frontwardly and rearwardly of the interconnecting means. The intervening wales are superimposed upon said interconnecting means. The interconnections extend rectilinearly between the chain stitches and the intervening wales.

3,777,515
SYNTHETIC RESIN BOBBIN

Soichiro Hattori, 444-4 Shimoshibutani, Ikeda, Japan

Filed Mar. 3, 1972, Ser. No. 231,624
Claims priority, application Japan, Mar. 9, 1971, 46/12629; June 5, 1971, 46/39544
Int. Cl. B65h *75/22*
U.S. Cl. 68—198 **6 Claims**

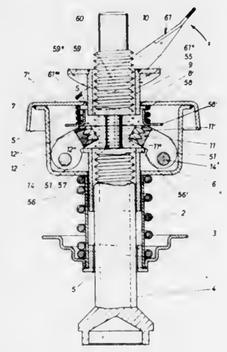
A synthetic resin bobbin comprising at least one contractable wall constituting a desired portion of peripheral side wall of a tubular synthetic resin bobbin main body. The contractable wall is composed of a plurality of connecting members bent in a V-shaped or inverted V-shaped form and arranged vertically along the vertical wall of the main body. When the bobbin is subjected to pressure due to the shrinkage of yarn wound thereon, the connecting members are elastically contracted at their bent portions to contract the contractable wall.



3,777,516
CLOSING DEVICE IN PARTICULAR FOR DYEING SPINDLES

Gerhard Tigges, Wuppertal-Cronenberg, Germany, assignor to Firma Lebrecht Tigger K.G., Wuppertal-Cronenberg, Germany

Filed Apr. 10, 1972, Ser. No. 242,713
Claims priority, application Germany, Apr. 10, 1971, P 21 17 526.8
Int. Cl. B65h *49/20*
U.S. Cl. 68—198 **8 Claims**

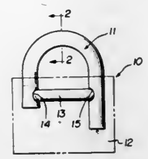


A closing sleeve, in particular for dyeing spindles, which comprises a dyeing spindle having a plurality of threads. A resiliently supported pressure plate is provided and additional threads engage the threads of the spindle. The additional threads include a first spring-biased thread jaw which engages resiliently the spindle and a second spring-biased thread jaw is disposed opposite the first thread jaw in thread engaging position. A single release handle controlls both thread jaws into the disengaging position.

3,777,517
SAW AND IMPACT RESISTANT LOCK SHACKLE

Warren M. Shwayder, and Baruch Sear, both of Birmingham, Mich., assignors to Warren M. Shwayder, Bloomfield Hills, Mich.

Filed June 7, 1972, Ser. No. 260,397
Int. Cl. E05b *67/06, 63/00*
U.S. Cl. 70—53 **4 Claims**

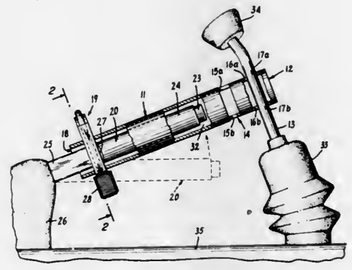


A lock shackle formed of an elongated metal core having longitudinally extending shallow grooves formed in its surface, and a thin wall tube closely fitted around the core, with the grooves filled with a matrix formed of hard carbide particles and a soft material binder.

3,777,518
APPARATUS FOR LOCKING GEAR SHIFT STICK AND HANDBRAKE LEVER OF A MOTOR VEHICLE

Calvin E. Meyers, Freeport, N.Y., assignor to Bug-Lok Corporation, Freeport, N.Y.

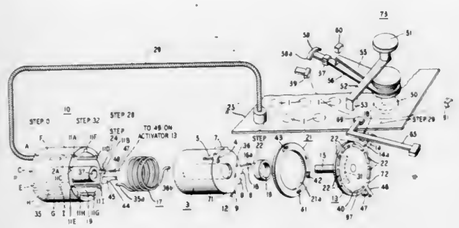
Filed Mar. 23, 1972, Ser. No. 237,320
Int. Cl. E05b *65/12*; **G05g** *5/10*
U.S. Cl. 70—200 **6 Claims**



The apparatus for locking the handbrake lever and gear shift stick of a motor vehicle is a two-ended body having means adjacent a first end adapted to securely hold a portion of the gear shift stick in a desired position and means adjacent its second end adapted to be locked to a portion of the handbrake lever when the second end of the body is fitted over the handbrake. The means adjacent the first end of the body comprises a slot cut through the surface of the body extending around about one-half of the periphery of the body and merging at right angles at each of its ends with a straight slot which extends towards but terminates some distance from the first end of the body. The means adjacent the second end of the body comprises two slots cut through the surface of the body which each extend around slightly less than one-half the periphery of the body and which are adapted to receive a shackle of a padlock assembly. The shackle has a thickened portion which forms a restriction in an open bore in the body

adjacent the second end and thereby prevents removal of the body from the handbrake lever when the padlock assembly is locked.

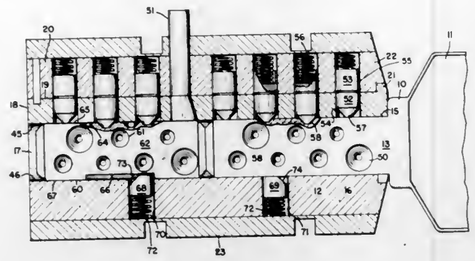
3,777,519
CYLINDRICAL GEOMETRY PUSHBUTTON COMBINATION LOCK
Charles E. Germanton, 38 Mountain Ave., Summit, N.J.
Filed Dec. 27, 1971, Ser. No. 212,563
Int. Cl. E05b *13/00, 37/16*
U.S. Cl. 70—220 **19 Claims**



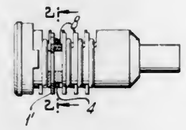
In a high security pushbutton combination lock the depression of a particular subset of pushbuttons in accordance with a first or opening combination and in a "walking" manner causes the step-wise rotation of a control projection to a prescribed location and permits the outer door knob assembly to engage the inner door knob assembly thereby unlatching the door. Mounted along a common axis are a cylindrical stator, a cylindrical rotor resiliently coupled to and rotatably disposed within the stator and including the control projection extending radially therefrom, an annular logic collar affixed to the rotor, a circular apertured activator resiliently coupled to and rotatably disposed and axially slidable within the stator, and a ratchet in the activator responsive to a pawl on the rotor. The activator has an activated state, when the lock is normal, and a deactivated state, when the lock is disabled. Proper operation of each pushbutton in the opening combination causes a wedge-shaped stepper slidably disposed in the stator to urge against a wedge-shaped cam on the rotor, thereby causing the rotor to rotate in a step-wise fashion until the control projection reaches the prescribed location. Improper operation of a push-button, however, disables the lock in one of two ways: by causing a stepper to strike a nonapertured portion of the logic collar or by causing reverse rotation of the pawl against the ratchet. Both of the latter force the activator axially away from the logic collar and into its deactivated state. Means are provided for reactivating the lock via the input of a second or reactivating combination which returns the activator to its activated state.

3,777,520
LOCK ASSEMBLY OF THE ROTARY CYLINDER TYPE
Alois Crepinsek, San Jose, Calif., assignor to Security Technology Corporation, San Jose, Calif.
Filed June 20, 1972, Ser. No. 264,515
Int. Cl. E05b *9/10, 17/04, 27/06*
U.S. Cl. 70—358 **9 Claims**

A rotary cylinder lock assembly is disclosed which includes a plug having radially extending passages, which plug is rotatably mounted within a cylindrical housing having like passages which are adapted to be aligned with the passages in the plug upon rotation thereof. Spring-biased driver tumbler pins are disposed in the passages in the housing and engage follower tumbler pins disposed in the passages in the plug upon alignment therewith. The follower tumbler pins are conically shaped at their outer ends and are staggered along the plug and extend into a key-receiving slot extending longitudinally of the plug. The conically shaped ends of some of the pins engage the opposite wall of the slot when the key is not in the slot.



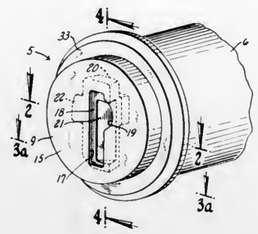
3,777,521
TUMBLER PLATE LOCK
Paul Lipschutz, Croissy-sur-Siene, France, assignor to Societe d'Exploitation des Brevets NEIMAN, Neuilly-sur-Seine, France
Filed June 14, 1972, Ser. No. 262,878
Claims priority, application France, June 17, 1971, 7122041
Int. Cl. E05b *15/14, 29/00*
U.S. Cl. 70—364 R **4 Claims**



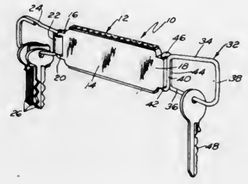
A lock wherein a flat key acts on tumbler plates, slidable in a core, to slide these several plates in one direction while an elastic biasing element or return spring, surrounding the structure, urges them in the opposite direction. The elastic element can directly contact a small boss on each tumbler plate. It urges each tumbler plate to return in the direction of the plate's axis, thereby minimizing looseness of the core and tumbler structure.

3,777,522
CLOSURE FOR CYLINDER LOCK MECHANISM
Hugo G. Rubner, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed June 12, 1972, Ser. No. 262,014
Int. Cl. E05b *17/18*
U.S. Cl. 70—455 **7 Claims**

A lock cylinder rotatable in a lock body has a cavity in its front, closed by a cap having a key aperture aligned with a keyway in the cylinder. A shutter in the cavity slides to and from a closed position blocking the key aperture, guided by a tongue on its rear received in a groove in the bottom of the cavity. A coiled expansion spring reacting between the cavity wall and the tongue is inclined to the cylinder axis to bias the shutter forward into sealing engagement with the rear surface of the cap as well as laterally towards its closed position.



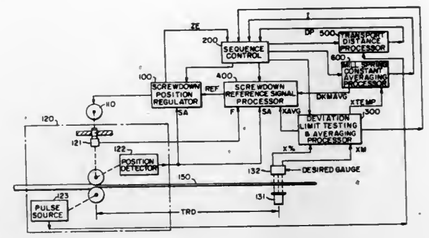
3,777,523
KEY TAG
Harold Holland, 780 Wellington Ave., Cranston, R.I.
Filed Sept. 11, 1972, Ser. No. 288,088
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R **5 Claims**



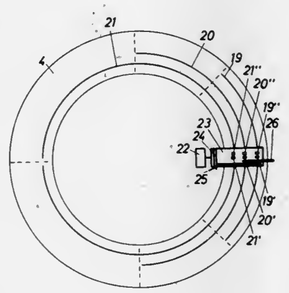
A key tag including a holder molded in a one-piece construction of a plastic material and having a first key ring mounted for permanent attachment on one end thereof and a second key ring removably mounted on the other end thereof, the second key ring including legs of flexing characteristics having end portions joined thereto that detachably engage the holder, the legs being flexed as required to disengage the end portions from the holder for selectively removing the second key ring from engagement with the holder.

3,777,524
METHOD AND APPARATUS FOR COLD ROLLING MILL GAUGE DEVIATION CORRECTION
Robert P. Danehy; Bruce N. Kitchell, both of Williamsville, N.Y., and Antonio V. Silva, San Paulo, Brazil, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 21, 1972, Ser. No. 273,896
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 **18 Claims**

Mill spring constant change signals are produced after each of a series of screwdown regulation cycles where each change signal is produced as a function of the ratio of the gauge deviation remaining after the regulation cycle, to the change in rolling force which occurred during the regulation cycle. The series of ratio change signals are then averaged to produce a mill spring constant correction signal which is used to correct the previously established mill spring constant. The corrected mill spring constant is then used to generate a new screwdown reference signal for the next series of regulation cycles. Provision is made to limit check and average gauge deviation so that the mill spring corrections are only made when certain predetermined gauge deviation limits are exceeded.



3,777,525
MACHINE FOR BENDING CONCRETE-REINFORCING BARS
Carl Ullrich Peddinghaus, Obere Lichtenplatzer Str. 276, Wupperial-Barmen, Germany
Continuation-in-part of Ser. No. 879,428, Nov. 24, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,078
Claims priority, application Germany, Nov. 23, 1968, P 18 10 533.4
Int. Cl. B21j *7/26*
U.S. Cl. 72—22 **16 Claims**

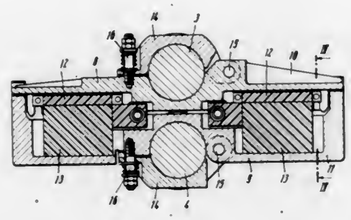


A machine for bending concrete-reinforcing bars and the like is provided with automatic electric sequence control means for performing a desired sequence of bending operations of selected predetermined bending angles. The machine has slip rings of angular extents corresponding to the selectable angles and a contact drum cooperating with these. On the drum are a series of sets of pairs of selectable contacts; each set corresponds to one bending operation and the selected contact pair in the set cooperates with a corresponding slip ring to determine the bending angle for that operation. The drum is stepwise rotated to effect the sequence of operations. To compensate for elastic relaxation of the bar after bending, the bending may be continued beyond the predetermined angle by a further angle determined by measurement of energy absorption, or current consumption, or a time interval, for bending in the elastic range of the bar material. Means for effecting such compensation automatically are described.

3,777,526
ROLLER GAP CONTROL

Peter Fink, and Ludwig Niemeyer, both of Essen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 16, 1972, Ser. No. 235,250
Claims priority, application Germany, Mar. 17, 1971, P 21 12 987.7
Int. Cl. B21b *31/34, 37/00*
U.S. Cl. 72—35 4 Claims

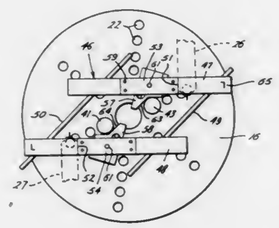


An arrangement for controlling the roller gap, especialy of multi-roller systems, in which the transmitter housing is two sectional and the housing sections are arranged on both sides of the plane through the centers of the working rollers. The primary elements are designed for the direct, e.g., inductive contact-free stroke measurement to ascertain the roller gap and are so connected to the rest of the central device, i.e., the rated-actual-comparitive stage, that the mean value of the two primary elements of one frame side represents the actual value of this frame side.

3,777,527
JIG FOR SETTING RESISTANCE STOPS IN A ROTARY BENDING MACHINE

John H. Lohman, San Antonio, Tex., assignor to Alamo Iron Works, San Antonio, Tex.

Filed Apr. 14, 1972, Ser. No. 243,971
Int. Cl. B21d *11/22*
U.S. Cl. 72—36 5 Claims

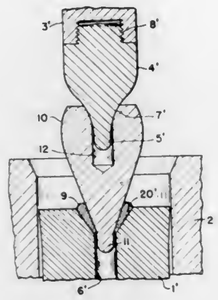


A jig for aiding in the setting of resistance stops in a rotary bending machine set up, in particular, for forming reinforcing bars with offsets as used in reinforced concrete beams.

3,777,528
METHOD OF HOT PIERCING METAL BILLETS

Albert Sirantoine, Beaumont s/Oise, France, assignor to CEFILAC, Paris, France

Filed Nov. 19, 1970, Ser. No. 91,120
Claims priority, application France, Nov. 27, 1969, 6940970
Int. Cl. B21c *23/32*
U.S. Cl. 72—41 3 Claims

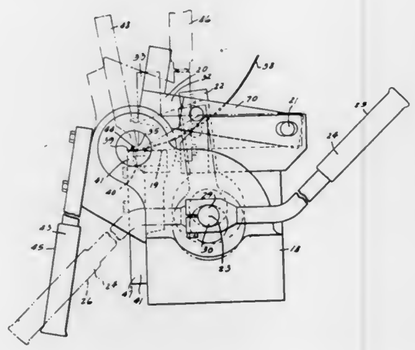


A billet containing an axially cold drilled cylindrical pilot hole and previously heated to deformation temperature is inserted into a hot piercing press. The pilot hole is flared at its forward end by a hot punching operation in the press itself prior to the application of the lubricant and the expansion operation. The hot punching can be done by a punching tool or by an expansion tool and the force of the press can be transmitted to the expansion tool in the expansion operation directly through a spindle or through the punching tool.

3,777,529
DUAL BEND FORMING DEVICE AND METHOD

Harold Kaufmann, Rochester, and Edward S. Lavoy, Lake City, both of Minn., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,025
Int. Cl. B21d *5/01*
U.S. Cl. 72—57 4 Claims



A sheet forming device and method capable of providing a hooked end on a sheet with one operation, the hook having a dual bend. The device incorporates a movable forming bar which enclamps the end portion of a sheet between the forming bar and a base. The forming bar has a radius bend lip projecting from it and a secondary angle die section spaced from the radius bend. The secondary angle die section overlies a urethane insert in the base. The urethane is displaced by the pressure of the forming bar against the plate sufficient to force the plate to conform with the die surface of the forming bar. A folding bar is actuatable to bend the end of the plate around the radius bend.

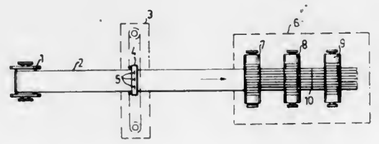
ERRATUM

For Class 72—102 see:
Patent No. 3,777,345

3,777,530
METHOD OF WEAKENING STRIP MATERIAL IN SECTION ROLLING PROCESSES

Sixten Vincent Jansson, Sleipnergatan 6, Lulea, Sweden

Filed Mar. 25, 1971, Ser. No. 127,965
Claims priority, application Sweden, Mar. 11, 1968, 3179/68
Int. Cl. B21d *13/04*; B26d *1/18, 1/24*
U.S. Cl. 72—129 2 Claims

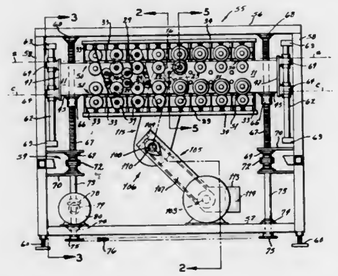


A method for section rolling metal strip in the longitudinal direction thereof, said strip being weakened prior to rolling, along lines which determine the division of the finished product into required lengths. The weakening of the strip is effected in such a way that it determines the moment during the actual rolling operation when the division shall take place.

3,777,531
DOUBLE-SPINDLED ELEVATING MULTI-STATION ROLL FORMER MACHINE AND POWER DRIVE THEREFOR

Lamont R. McClain, Mehlville, Mo., assignor to Engel Industries, Inc., Ballwin, Mo.

Filed May 25, 1972, Ser. No. 256,940
Int. Cl. B21d *5/08*
U.S. Cl. 72—181 7 Claims

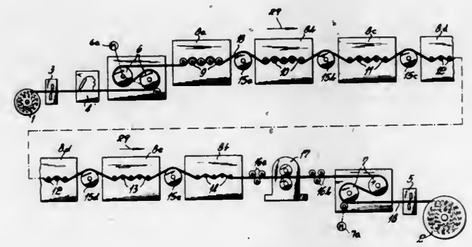


A double-spindled roll former machine, particularly useful for production line edge-forming of sheet metal duct sections, has two upper and lower forming paths, both in the same direction. An elevating mechanism brings the selected forming path into coincidence with the production line flow path. An inverted machine portion, the mirror image of the upright portion, is intergeared with it, to provide the doubled spindling and also to minimize wear and deviations in driving torque among the forming stations. The driving motor need not be elevated; if used in a fixed lower position, its power is supplied through a counterweighted hinged linkage with gear reduction in the upper link.

3,777,532
METHOD OF AND APPARATUS FOR EXTENDING AND REDUCING THICKNESS OF A METALLIC BAND

Oskar Noe, Mulheim/Rhur, Germany, assignor to Firma BWG Bergwerk-und Walzwerk-Maschinenbau GmbH, Duisburg, Germany

Filed July 7, 1972, Ser. No. 269,775
Claims priority, application Germany, July 7, 1971, P 21 34 405.8
Int. Cl. B21b *39/08*
U.S. Cl. 72—205 11 Claims



A metallic band is subjected to a longitudinal tension equal to at most 80 percent of its mean tensile strength as it is passed through a plurality of bending units. In the units the band is bent back and forth through increasingly smaller radii of curvature causing lowering of the band's elastic limit at the bend and plastic flow and elongation thereat. The band engages each roll over an arc preferably greater than 5° and the diameter D of each roll or of each set of roll is calculated according to the formula:

$$D = (h \cdot E)/(K \cdot k_f),$$

wherein h is the thickness of the band in cm, E is the modulus of elasticity of the band in kg/cm², K is a constant between 25 and 50, and k_f is the mean tensile strength of the band in kg/cm². The strip engages each roller over an arc which is greater than 5°, while the imaginary contact with this roller is greater than 25°.

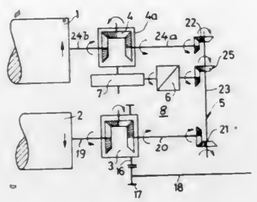
3,777,533
APPARATUS FOR STRAIGHTENING METAL BY STRETCHING

Curt Munchbach, Pforzheim-Sonnenberg, Germany, assignor to Irma Ungerer, Pforzheim-Brotzingen, Germany

Filed Oct. 20, 1972, Ser. No. 299,457
Claims priority, application Germany, Oct. 21, 1971, P 21 52 496.9
Int. Cl. B21b *39/08*; B21d *1/05*
U.S. Cl. 72—205 6 Claims

There is described a drive means in an apparatus for straightening a running metal band by exposing it simultaneously to alternating bending and to stretching by a hold-back roll assembly and a drawing roll assembly, in each roll assembly every two successive rolls form a roll pair; each roll pair is driven by a gearing group. Each gearing group is formed of a first differential gearing, a second differential

gearing and a regulator gearing. The first differential gearing has two output shafts and a compensating gear housing driven by an input shaft. One output shaft of the first differential gearing is connected directly to one roll of the roll pair, while the other output shaft is connected to the other roll of the roll pair through the second differential gearing. The compensat-

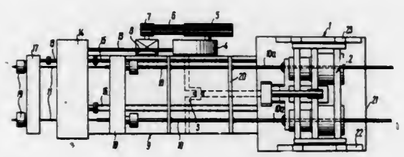


ing gear housing of the latter is connected to the regulator gearing which is also coupled to the second output shaft of the first differential gearing. By adjusting the regulator gearing, the transmission ratio of the second differential gearing is changed for thus altering the rpm relationship between the two rolls of the roll pair.

3,777,534
WORKING STAND OF MULTISTRAND ROLLER COLD-TUBE AND -PIPE ROLLING MILL

Vladimir Efimovich Sherman, ulitsa Vainera, 13a, kv. 14; Georgy Viktorovich Dubonosov, prospekt Ilicha, 29, kv. 6; Sergei Fedorovich Portnov, ulitsa Vainera, 13a, kv. 85; Jury Alexeevich Fedotov, ulitsa Vainera, 5a, kv. 8; Yakov Zelmanovich Grinberg, ulitsa Volodarskogo, 14, kv. 7; Nikodim Nikiforovich Soloviev, ulitsa Metallurgov, 12, kv. 4; Viktor Grigorievich Pavlov, ulitsa Lenina, 108, kv. 7, and Efim Fedorovich Dmitriev, prospekt Ilicha, 17, kv. 34, all of Pervouralsk Sverdlovskoi oblasti, U.S.S.R.

Filed June 15, 1972, Ser. No. 263,287
Int. Cl. B21b *17/06, 21/00*
U.S. Cl. 72—208 **3 Claims**



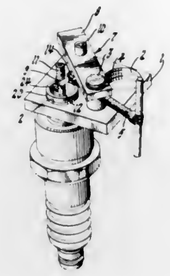
A working stand comprising a casing in which is mounted sets of working tools connected by means of a rigid joint with a slide. The casing and the slide being coupled with a drive through a leverage system effecting a reciprocating motion during which the casing moves with a higher speed and passes a larger path than the slide which results in that forming rollers of the working tool, on rolling over deform (roll down) the tubes or pipes mounted on mandrels.

The stand is designed with a view to enhancing the mill production.

3,777,535
SPARK PLUG PIN GAPPING TOOL

Wayne E. Paxton, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1972, Ser. No. 238,132
Int. Cl. B21d *26/02*
U.S. Cl. 72—293 **4 Claims**



A spark plug gapping tool is disclosed for adjusting the spark gap width of a pin type plug. A plate is threaded to position the spark plug shell with the end of the shell extending beyond the surface of the plate. A pusher pin member is provided to move against the firing end of the ground electrode pin to widen the spark gap, or the working end of an adjusting screw can be used to narrow the gap.

3,777,536
STEEL SHEET AND STRIP FOR USE IN THE MANUFACTURE OF EASY-TO-OPEN CANS

Nobuyuki Takahasi; Shuji Nagata; Toshiro Nishihara, and Kazuhiko Yoshinari, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 5, 1971, Ser. No. 195,923
Claims priority, application Japan, Nov. 10, 1970, 45/98335
Int. Cl. B21b *3/02*
U.S. Cl. 72—365 **2 Claims**

A steel sheet and strip for use in the manufacture of easy-to-open cans having excellent can opening and scoring properties, the compostiion of which is characterized by less than 0.02 percent of carbon, less than 0.1 percent of silicon, 0.1 – 0.5 percent of manganese and less than 0.03 percent of oxygen, with the remainder being iron and unavoidable impurities.

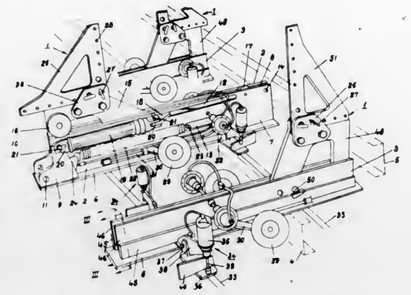
3,777,537
VEHICLE FRAME AND BODY STRAIGHTENING DEVICES

Mokjas Erik Samuel Samuelsson, Rattvik; Mokjas Jonas Samuelsson, Orebro, and Karl Johan Olov Degerman, Jarna, all of Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Jan. 25, 1972, Ser. No. 220,602
Claims priority, application Sweden, Feb. 5, 1971, 1443/71
Int. Cl. B21d *11/20*
U.S. Cl. 72—404 **5 Claims**

The invention relates to a device for straightening vehicle frames, comprising at least one wheeled, transportable unit including at least one horizontal base bar arranged to be anchored to a support surface such as a floor and provided with a longitudinally extending guide structure for at least one straightening means mounted for longitudinal movement thereon or therein. Said straightening means comprises a substantially flat base bracket structure which is mounted for

movement on one edge thereof between two vertical wall elements in the base bar. The base bracket structure is provided

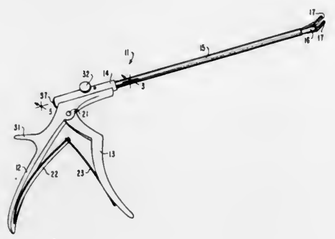


on its edge surfaces with abutment surfaces and/or bearing points for cooperation with auxiliary devices connected to the base bracket structure during a straightening operation.

3,777,538
SURGICAL CLIP APPLICATOR

Gilbert L. Weatherly, Port Jefferson, N.Y., and Paul Back, St. Louis, Mo., assignors to Edward Weck & Company, Inc., Long Island City, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,936
Int. Cl. B21d *9/08*
U.S. Cl. 72—410 **5 Claims**



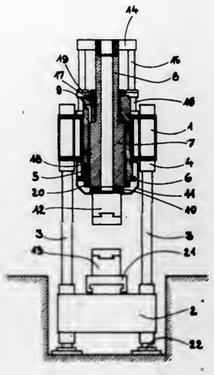
A surgical instrument specifically constructed for the application of fluid duct strangulation clips in human body locations which were heretofore substantially inaccessible for this type of surgical procedure. The applicator comprises an elongated barrel mounted to a pistol grip actuating handle with the applicator jaws acting cooperatively at the distal end of the barrel.

3,777,539
FORGING PRESS

Fritz Priebe, Duisburg, Germany, assignor to Schloemann Aktiengesellshaft, Dusseldorf, Germany

Filed Nov. 22, 1971, Ser. No. 200,957
Claims priority, application Germany, Nov. 20, 1970, P 20 56 994.2
Int. Cl. B21j *9/12*
U.S. Cl. 72—453 **3 Claims**

In order to shorten the height of a hydraulic press and to provide a reliable two-point guide, there is a fixed cross-head and the cylinder of a press ram is fixed to the cross-head; the press piston carries the forging tool and retraction means such

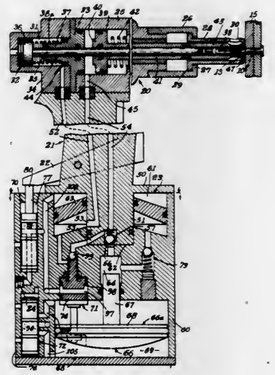


as a cross-piece and retraction rams act on the press piston rod to retract the press piston.

3,777,540
HYDRAULIC-OPERATED LOCKBOLT FASTENER SETTING TOOL

George Siebol, and Dorian E. Rippy, both of 11445 S. Dolan St., Downey, Calif.

Division of Ser. No. 876,647, Nov. 14, 1969, Pat. No. 3,680,202. This application July 26, 1972, Ser. No. 275,199
Int. Cl. B21j *15/34*
U.S. Cl. 72—391 **11 Claims**

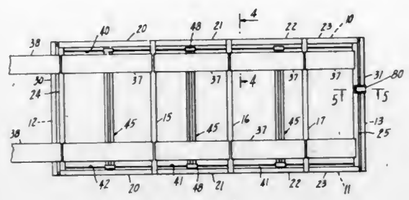


A hydro-pneumatic hand tool that is trigger-controlled to fasten a collar over the end of a headed lockbolt provided with locking grooves and a severable pintail, and then to create a predetermined clamping and swaging force on said lockbolt and collar by the use of a two-piston system, with each piston having an independent power source.

3,777,541
STRAIGHTENING APPARATUS FOR VEHICLE BODIES

Walter D. Whitney, 1420 Industrial Way, San Carlos, Calif.

Filed Oct. 4, 1971, Ser. No. 185,970
Int. Cl. B21d 1/14
U.S. Cl. 72—457 1 Claim

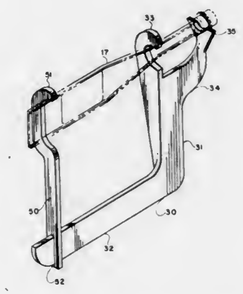


A horizontally disposed frame adapted to support a damaged vehicle and which frame is formed so as to facilitate pulling and pushing operations on the vehicle body and frame. The main portions of the frame are prestressed to provide a compressive stress in the lower fibers thereof and a tensile stress in the upper fibers so that greater upwardly directed forces on the ends of the frame may be resisted than can be resisted by a non-prestressed frame. The vehicle support is formed so as to facilitate applying pulling and pushing forces on the body and frame of the vehicle. The formation of the vehicle support also adapts it to use with various types of attachments employed to anchor the load bearing members which exert the forces on the vehicle.

3,777,542
TOOL FOR ADJUSTING TRUCK AXLE CASTER

William H. Foshee, 122 W. Pioneer, Irving, Tex., and Lester C. Jones, P.O. Box 310, Corsicana, Tex.

Filed Oct. 26, 1971, Ser. No. 192,075
Int. Cl. B21j 13/08
U.S. Cl. 72—457 4 Claims

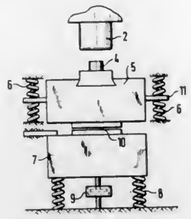


Disclosed is a tool for correcting caster in Ford twin I-beam axle assembles. The tool is primarily an L-shaped beam adapted to be detachably secured to the rear end of the radius arm and provide a base positioning an expansion device to bond the forward end of the radius arm. A strut is also disclosed to provide means for bending the forward end of the radius arm in the opposite direction.

3,777,543
FORGING MACHINE

Seppo J. Kokkola, Uudentuvantic 29B, and Veikko A. Lassila, Pohjoiskaari 43B12, both of Helsinki, Finland

Filed July 21, 1971, Ser. No. 164,605
Claims priority, application Finland, July 21, 1970, 2038/70
Int. Cl. B21j 13/06
U.S. Cl. 72—465 5 Claims

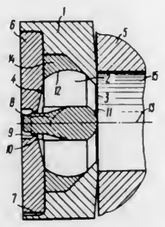


A forging machine including an anvil for supporting an object to be forged for impact by means of a dropping head. The anvil is supported by springs and an absorption means is situated below the anvil to absorb shocks thereof and prevent transmittal of vibrations to the surroundings of the machine. The absorption means is separated from the anvil by a predetermined separation and is resiliently mounted.

3,777,544
TOOL OUTFIT FOR EXTRUDING HOLLOW SHAPES

Alexandr Sergeevich Alexandrov, Vyazemskaya, 6, kv. 51, Moscow; Vadim Dmitrievich Schegolevatykh, Sadovaya ulitsa, 172, kv. 3, Kuibyshev; Vyacheslav Ivanovich Saveliev, Spartakovskaya ulitsa, 16, kv. 7, and Mikahil Fedorovich Zakharov, ulitsa Tolbukhina, 12, kv. 84, both of Moscow, all of U.S.S.R.

Filed Oct. 15, 1971, Ser. No. 189,591
Int. Cl. B21c 3/06
U.S. Cl. 72—468 2 Claims



A tool outfit with a holder enclosing a die and a splitter fastened in the holder inner cavity.

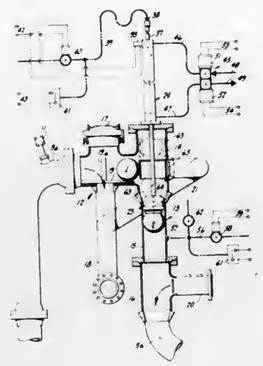
The holder inner cavity has the shape formed by rotating a curve of the second order about a geometric axis of extrusion and tapering in the direction of the holder inlet and outlet.

3,777,545
METER PROVER APPARATUS AND METHOD

Marvin H. Grove, and Tommy K. Griffin, both of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.

Continuation-in-part of Ser. No. 166,727, July 28, 1971, abandoned. This application Sept. 27, 1971, Ser. No. 183,758
Int. Cl. G01f 25/00
U.S. Cl. 73—3 8 Claims

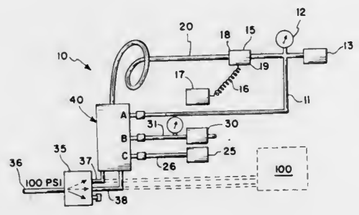
A meter prover apparatus and method making use of a metering pipe and an interchange connecting the ends of the pipe. The interchange is characterized by use of a piston-like plunger which fits into a sleeve or barrel interposed in the interchange. Spheres are successively moved through the sleeve and launched into the metering pipe by reciprocation of the plunger. During a meter proving run the plunger is within the barrel and forms an interchange seal. Means can be provided to detect any leakage of liquid past the plunger seal, and also past a sphere which is adjacent to the plunger. In one embodiment the apparatus is arranged with an electrical system for automatic cycling.



3,777,546
SYSTEM FOR CALIBRATING PRESSURE TRANSDUCER

Garland N. Rollins, Hampton, Va., assignor to The United States of America as represented by the Administration of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1972, Ser. No. 239,577
Int. Cl. G01l 27/00
U.S. Cl. 73—4 R 16 Claims

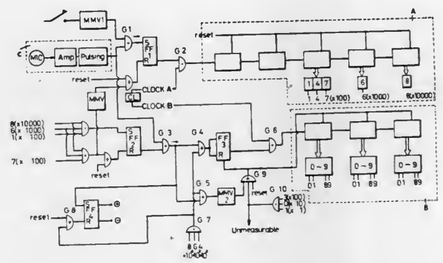


A system for calibrating a pressure transducer which has a reference portion and an active portion. A miniature selector valve is positioned immediately adjacent the pressure transducer. A reference pressure, known pressure and unknown pressure can be selectively admitted to the active side of the pressure transducer by the selector valve to enable calibration of the transducer. A valve admits pressure to the selector valve which has a piston and floating piston arrangement which allows proper selection with very small linear movement.

3,777,547
TIME RATE MEASURING SYSTEM FOR CLOCKS AND WATCHES

Takashi Izumi, No. 1-1-405 Takatsuka Jyutaku, 123-3, Takatsuka Shinden, Matsudo-shi, and Ryoji Arai, c/o Fuji Denshi Kohgyo Company Ltd., Dokushinryo No. 15-3 3-chome, Ohsu, Ichikawa-shi, both of Japan

Filed July 20, 1971, Ser. No. 165,422
Claims priority, application Japan, July 20, 1970, 45/64205; June 5, 1971, 46/39642
Int. Cl. G04d 7/12
U.S. Cl. 73—6 10 Claims

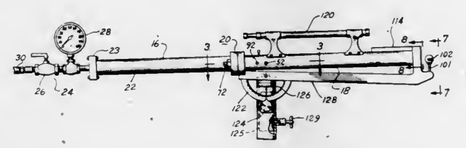


A digital time rate measuring system for clocks and watches, in which a time interval beginning from a start clock sound emanating from the time piece being measured and extending until the Nth clock sound thereafter, is compared with an accurate reference time interval. The reference time interval is in the form of a series of standard clock pulses including a reference clock pulse representing the end of said reference time interval. The direction of the time rate is determined based on whether said stop clock sound is leading or lagging said reference clock pulse, and the absolute value of the time rate is determined by counting the number of said clock pulses between said stop clock sound and said reference clock pulse. The oscillating frequency of a clock may be divided in the measuring system so as to suit the measurement.

3,777,548
GOLF BALL TESTING AND DEMONSTRATING APPARATUS

John D. Nicolaides, 3020 Buckingham Dr., South Bend, Ind.

Filed May 22, 1972, Ser. No. 255,435
Int. Cl. G01n 3/30
U.S. Cl. 73—12 17 Claims



A golf ball testing and demonstrating apparatus in which a projectile having a ball striking forward face thereon is propelled through the barrel by pressurized gas released from a chamber at the breech end of the barrel. The gas is preferably retained in the chamber at the breech end of the barrel by a diaphragm, and a means is provided at the breech

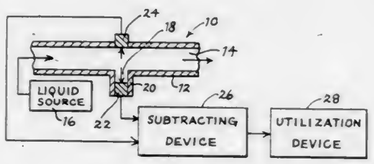
end of the barrel for piercing the diaphragm when the apparatus is to be operated, thereby instantaneously releasing the gas and propelling the projectile forwardly to strike a golf ball positioned at the muzzle end of the barrel. The barrel may be rotated and adjusted at vertical and horizontal angles to obtain variations in the flight pattern of the golf ball propelled by the apparatus. Further, the projectile face angle may also be rotated at various vertical and side angles in order to obtain variations in the flight pattern of the golf ball for producing hook, slice, fade, drop and push and other conditions normally encountered in playing golf.

3,777,549

MEASUREMENT OF HOLE PRESSURE DIFFERENTIALS AND PROTUBERANCE PRESSURE DIFFERENTIALS IN NON-NEWTONIAN LIQUIDS OR THE LIKE

Arthur Scott Lodge, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed July 29, 1971, Ser. No. 167,254
Int. Cl. G01n *11/00*
U.S. Cl. 73—53 **35 Claims**



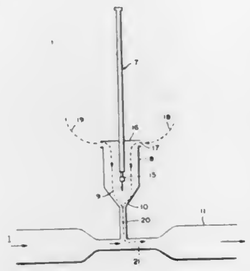
The hole pressure differential is measured by providing at least one hole in a wall along which the liquid is caused to flow. The wall may constitute a portion of a passage, reaction vessel or the like. A pressure transducer or sensor is recessed into the hole to measure the hole pressure therein. At least one non-hole pressure transducer is also provided to measure the non-hole pressure along the wall. The hole pressure and the non-hole pressure, as measured, are combined subtractively, or otherwise, so as to derive the difference between the non-hole pressure and the hole pressure at a particular location along the wall. The non-hole pressure sensor may be located opposite the hole at a point where the non-hole pressure is the same as it would be at the location of the hole. In another arrangement, two non-hole pressure sensors are provided upstream and downstream at intervals from the hole, in which case the hole pressure may be combined subtractively with the average of the non-hole pressures. Similarly, two holes and hole pressure sensors may be spaced upstream and downstream at intervals from the non-hole pressure sensor so that the non-hole pressure may be combined subtractively with the average of the hole pressures. Other arrangements may utilize a sequence of two non-hole pressure sensors and one hole pressure sensor with subtractive combining means to derive the differential hole pressure. Alternatively, two hole pressure sensors and one non-hole pressure sensor may be arranged in sequence. Similar arrangements may be employed to measure the protuberance or negative-hole pressure differentials, by replacing the holes and hole pressure transducers with protuberances and protuberance pressure transducers.

3,777,550

CONTINUOUS MEASUREMENT OF VISCOSITY

Ernst Kleinschmidt, Schildgen, Germany, assignor to Herbol-Werke Herbig-Haarhaus Aktiengesellschaft, Land Nordrhein-Westfalen, Germany

Filed Oct. 8, 1971, Ser. No. 187,698
Claims priority, application Germany, Oct. 8, 1970, P 20 49 381.6
Int. Cl. G01n *11/10*
U.S. Cl. 73—59 **3 Claims**



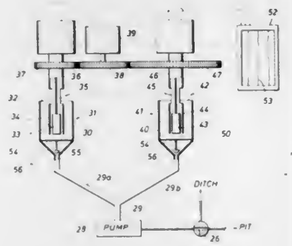
A viscometer is provided which operates on the principle of an oscillating or vibrating tongue or reed and includes means for bringing the surrounding liquid to be measured into laminar flow in the vicinity of the tongue.

3,777,551

CONTINUOUS RECORDING VISCOMETER

Walter J. Weiss, Sugarland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,874
Int. Cl. G01n *11/10*
U.S. Cl. 73—59 **6 Claims**



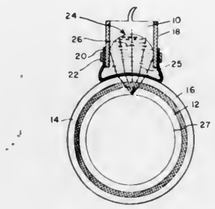
Disclosed is a system for automatically and continuously measuring and producing a continuous record of apparent viscosity, plastic viscosity and yield point for mud systems during a well drilling operation. Also, a continuous record of the ratio of plastic viscosity to yield point values is obtained by the system. Two viscosity determining units are synchronized relative to one another so that their outputs may be used and combined to obtain the above mentioned parameters. Each unit is comprised of a type of Fann viscometer having a sampling cup with a bottom inlet and an open top where overflow may occur. The speed of rotating cylinders in the respective sampling cups, synchronized relative to one another so that when one viscometer operates at 300 rpm the other viscometer operates at 600 rpm, and the outputs of the viscometers can be electronically combined to yield apparent viscosity, plastic viscosity and yield point, as well as the plastic viscosity-yield point ratio.

3,777,552

ULTRASONIC SCANNING SYSTEM FOR IN-PLACE INSPECTION OF BRAZED TUBE JOINTS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Johnny L. Haynes; Charles G. Wages, and Hamilton S. Haralson, all of Huntsville, Ala.

Filed Nov. 9, 1971, Ser. No. 196,898
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **5 Claims**



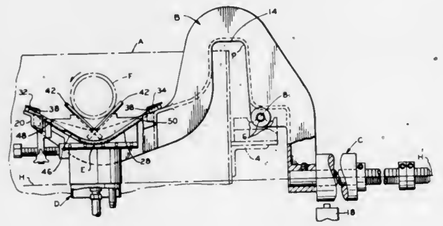
A miniaturized ultrasonic scanning system for non-destructive in-place, non-immersion testing of brazed joints in stainless-steel tubing. The system is capable of scanning brazed tube joints, with limited clearance access, in 1/4 through 5/8 inch union, tee, elbow and cross configurations. The system has the capability to detect defective conditions now associated with material density changes in addition to those which are dependent upon density variations. The system includes a miniaturized scanning head assembly that fits around a tube joint and rotates the transducer around and down the joint in a continuous spiral motion. The transducer is 0.300 inch diameter focused beam type with a liquid filled rubber tip or boot attached, which provides a simulated immersion test. The scanning head incorporates suitable mechanical drive features, limit switches to control scan travel, and a transmitter to synchronize a facsimile C-scan recorder with the scanning movement. The C-scan recorder is similar in principle to conventional models except that it was specially designed to track the continuous spiral scan of the tube joint. The scanner and recorder can be operated with most commercially available ultrasonic flaw detectors.

3,777,553

SUPPORT FOR TEST HEAD

Joseph T. Wloszek, Seven Hills, Ohio, assignor to Custom Machine, Inc., Cleveland, Ohio

Filed Jan. 22, 1971, Ser. No. 108,853
Int. Cl. G01n *29/00*
U.S. Cl. 73—71.5 U **13 Claims**



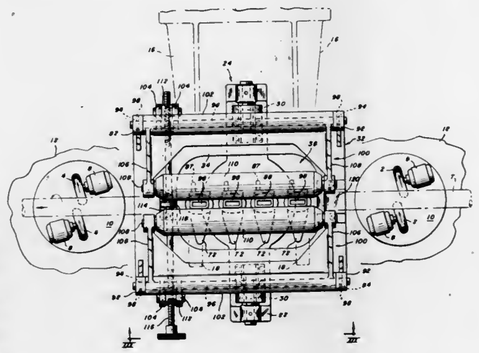
A mounting for the sensing head of a precision testing machine which enables the head to freely move and orient itself relative to the surface of a workpiece. Spaced parallel lengths of an elongated elastic member are fastened at the ends to a supporting frame. The head in engagement with the workpiece is cradled between the middle portions of the elastic members and can move freely up, down, or laterally in both horizontal directions.

3,777,554

ULTRASONIC TESTING APPARATUS

Charles J. Papay, Calumet City, Ill., and Ralph A. Settle, Gary, Ind., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 27, 1969, Ser. No. 828,313
Int. Cl. G01n *29/04*
U.S. Cl. 73—71.5 U **9 Claims**



Apparatus for ultrasonically testing a tube includes means for rotating the tube and feeding it axially, a carriage located below the path of travel of the workpiece, and a plurality of vertical bubbler heads arranged side by side on the carriage so that different circumferential portions of the tube are tested as the tube passes the successive bubbler heads. The carriage also carries a pair of rolls which rest on top of the tube being tested to support the bubbler heads in the correct position. Each bubbler head includes a hollow aluminum body member, a sound wave transmitting plate attached to the bottom of the body member, and a rubber member attached to the top of the body member with a liquid outlet at its top. A crystal is attached to the bottom of the sound wave transmitting plate and water is fed to the side of the bubbler head so that the crystal is kept out of contact with the water.

3,777,555

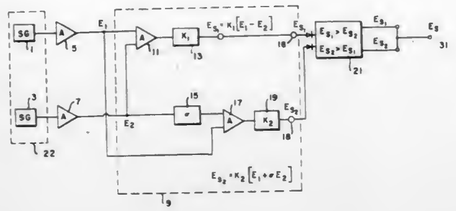
CUMULATIVE FATIGUE LIFE INDICATOR

Edwin M. Petrisko, Annapolis, Md.; Karl H. Keller, deceased, late of Arnold, Md., and by Penny C. Keller, administratrix, Oceanside, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1972, Ser. No. 249,835
Int. Cl. G01n *3/32*
U.S. Cl. 73—91 **5 Claims**

The purpose of this invention is accumulation and display of information indicative of expended and remaining fatigue life of a test specimen or pressure vessel. Strain-gauge output signals are amplified by a dual channel conditioning circuit. The dual channel bipolar strain signals are then used to compute the alternating stress range absolute value on a continuous basis. Voltage signals proportional to the alternating stress

are then presented to a counter which registers the individual accumulated stress cycles with reference to the total allowable



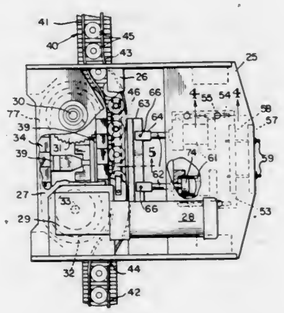
cycles in thousandths of counts and provides a usage factor indicating cumulative fatigue damage and remaining fatigue life.

3,777,556

AIR SQUEEZE WARE TESTER

Anthony T. Zappia, 7576 Ivywood Dr., Apt. A, Indianapolis, Ind.

Filed Mar. 22, 1971, Ser. No. 126,543
Int. Cl. G01n *3/00*
U.S. Cl. 73—94 **21 Claims**



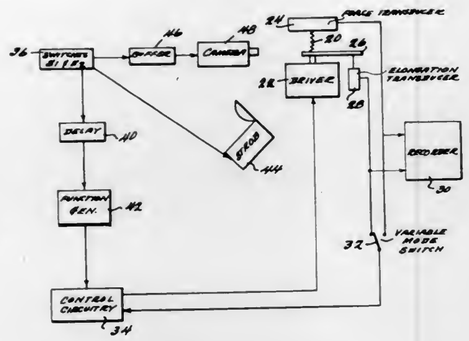
Apparatus for impressing a transaxial crushing force of predetermined value successively upon a series of substantially identical pieces of frangible ware for the purpose of discarding pieces of defective strength, including a pneumatically loaded presser head in opposed registration with a vertically disposed face of a conveyor or impeller, the same being so disposed that pieces of ware, while being subjected to transaxial pressure, are supported in unstable condition upon a moving platform so that, upon fracture of a piece of ware, substantially all fragments of such piece will fall from the platform, means being provided for cooperation with the upper regions of undamaged ware to support such ware against toppling from the platform. The active face of the presser head is formed of synthetic material, that portion thereof below a level at least equal to the transaxial dimension of a piece of ware above the platform having a coefficient of friction significantly less than that of the portion of the face above that level to facilitate the free movement of a prostrate ware piece past the presser head.

3,777,557

STRAND TESTER

Frederick A. Dunlap, Greensboro, N.C., and Lyle C. Wilcox, Clemson, S.C., assignors to Greenwood Mills Corporation, Greenwood, S.C.

Filed Nov. 5, 1971, Ser. No. 196,069
Int. Cl. G01n *3/08*
U.S. Cl. 73—95 **25 Claims**



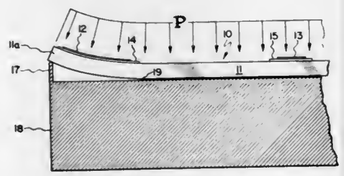
An apparatus for testing strands of yarn or the like whereby the yarn is attached to a unique driver which exerts a force on and elongates the yarn in accordance with an input force signal. The elongation and force applied are each respectively detected and a signal indicating each generated. A manually operated switch has a first position connecting the force signal to an operational amplifier which also receives a programming signal from a function generator so as to produce a force signal which varies the force applied in accordance with a preset force program, for example, to keep the rate of force increase constant, and a second position connecting the elongation signal to the operational amplifier together with the programming signal so as to produce an elongation signal which varies the elongation applied in accordance with a preset elongation program. A camera having a drive motor for driving film through the camera is also preferably mounted for photographing the strand during the test. A manual switch is operated to apply a voltage to the drive motor through a circuit which increases the voltage at a rate so as to accelerate the film gradually and avoid tearing and also to apply a signal through a delay circuit which enables the function generator after the camera is functioning.

3,777,558

STRAIN-LEAF BURR HEIGHT DETECTOR

James A. Bain, Erie, Pa., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1972, Ser. No. 306,599
Int. Cl. G01b *5/28*
U.S. Cl. 73—105 **10 Claims**



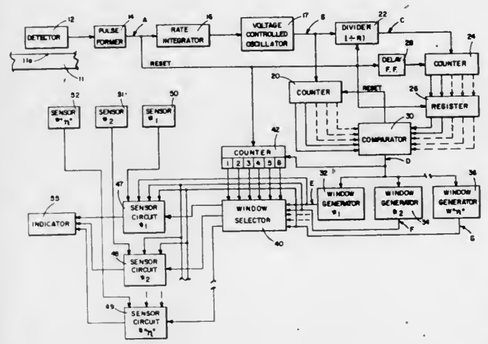
A burr height detector includes a thin flexible strain leaf with an active strain gage located close to an end of the strain leaf. The strain leaf is pressed into engagement with a burr and adjacent workpiece surface and flexes to apply variable strain to the active strain gage depending on burr height. The change in strain gage resistance is measured by a resistance bridge. An array of burr height detectors on a pressure head can be provided.

3,777,559

SYSTEM FOR ANALYZING ENGINE PERFORMANCE

Lyle V. Rennick, Mission Viejo, Calif.; John D. Shore, Oconto, Wis.; William L. Mitchael, Fullerton, Calif.; Ronald B. Weiss, and Clarence L. Almich, both of Anaheim, Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 21, 1972, Ser. No. 246,142
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.3 **10 Claims**



A first counter is driven by pulses from a signal generator. A second counter is driven by the output of the signal generator divider by a factor in accordance with the number of cylinders in the engine under test. The output of the second counter is shifted to a register in response to a pulse which is phase synchronized with a predetermined point in the rotation cycle of the engine. The output of the register and the output of the first counter are compared for coincidence, a coincidence signal being generated which corresponds to a predetermined point in the cycle of each of the engine cylinders. These coincidence signals are used to generate window signals which provide gating signals to sensor circuits. The sensor circuits receive the outputs of sensors which provide electrical signals in accordance with various engine parameters. The outputs of the sensor circuits are gated to an indicator by the window signals so that the sensed parameters can be observed at predetermined identifiable portions of each engine rotation cycle.

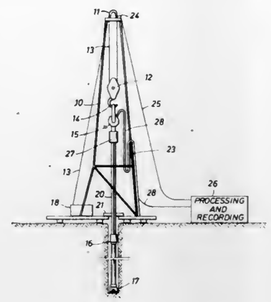
3,777,560

METHODS AND APPARATUS FOR MEASURING THE RATE OF PENETRATION IN WELL DRILLING

Jean-Hubert Guignard, Sainte Mesne, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,326
Claims priority, application France, Dec. 30, 1970, 7047214
Int. Cl. E21b *45/00*
U.S. Cl. 73—151.5 **22 Claims**

New and improved methods and apparatus exemplifying the present invention are disclosed herein for measuring at the surface the changes in total elongation of a drill string due to variations in the tensional forces acting thereon during a typical well drilling operation, measuring the changes in the total length of the drill string as it is moved into and out of the borehole at the surface, and uniquely combining these measurements for producing an output signal which is representative of the changes in the borehole depth as well as converting



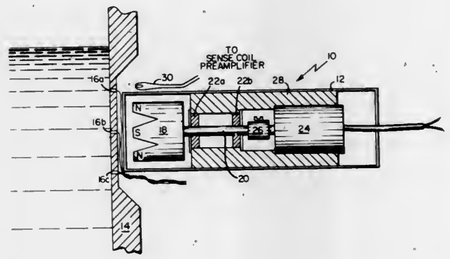
the combined measurements for producing another output signal which is representative of the actual rate of penetration of a drill bit coupled to the drill string.

3,777,561

FARADAY EFFECT SPEEDOMETER

John R. Lewis, Framingham, Mass., assignor to Harnessed Energies, Inc., West Newton, Mass.

Filed Feb. 3, 1972, Ser. No. 223,119
Int. Cl. G01p *5/08*
U.S. Cl. 73—181 **19 Claims**

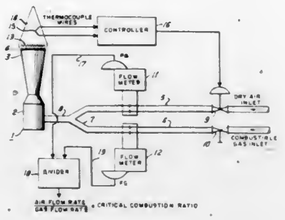


A speedometer employing the Faraday Effect principle which includes a magnet having two sets of alternating north and south poles disposed in a housing and adapted for rotation therein to provide an alternating magnetic field. The housing is disposed adjacent the wall of a vessel such that the magnetic field extends through the vessel wall and into the fluid on the other side of the vessel wall. Electrodes are disposed in the wall of the vessel and in the magnetic field. A sense coil is disposed external to the housing and sealed from the fluid such that the sense coil is responsive to the alternating magnetic field and provides a switching waveform. The flow of fluid across the outer wall of the vessel on its movement changes the potential across the electrodes and a corresponding signal is provided. The signals from the sense coil and the electrodes are combined to yield a signal corresponding to the speed of the vessel.

3,777,562
METHODS OF AND MEANS FOR DETERMINING THE CALORIFIC VALUE OF COMBUSTIBLE GASES

William H. Clingman, Jr., Dallas, Tex., assignor to Precision Machine Products, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 21,410, March 20, 1970, abandoned. This application Apr. 13, 1972, Ser. No. 243,595
Int. Cl. G01n 25/30
U.S. Cl. 73—190 R 42 Claims

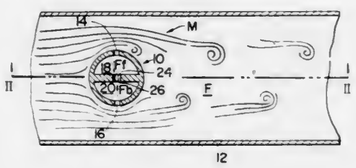


Methods of and means for measuring the calorific value of combustible gases wherein a mixture of a combustible gas and a combustion-supporting gas is burned in one or more flames, the temperature or temperatures of the burned gases being monitored and the volume ratio of the combustion-supporting gas to the combustible gas being adjusted so as to maintain said temperature or the average of said temperatures at substantially maximum; the volume ratio of said gases which produces said maximum temperature varying substantially directly with the calorific value of said combustible gas.

3,777,563
FLOW-VELOCITY DETECTING DEVICE

Hiroo Yamasaki; Yoshio Kurita, and Ichizo Ito, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Dec. 17, 1971, Ser. No. 209,114
Claims priority, application Japan, Dec. 26, 1970, 45/128849; Apr. 30, 1971, 46/28671
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B 19 Claims

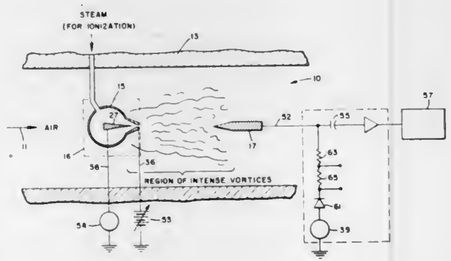


Flow metering apparatus of the type wherein a vortex generating element having a generally elongate cylindrical shape is placed transversely in a stream of fluid to produce on opposite sides of the element vortices which are shed in alternating fashion, and wherein the element is formed with openings at said opposite sides which are connected together through the interior of said element to produce therein an alternating fluid flow corresponding to the alternating shedding of vortices. To improve the sensitivity of detection of the alternating flow, especially at low velocities accompanied by substantial noise, the apparatus is provided with directionally sensitive flow detection means in the alternating flow, arranged to be responsive predominantly in a direction aligned with the direction of the alternating flow. The directionally sensitive flow detection means is formed: by a heated resistance wire having a nonuniform coating therearound to vary heat transfer according to the direction of flow thereagainst; by a flow detector within an interior passageway arranged to have different flow resistances according to the direction of flow; or by flow diversion means positioned upstream of a flow detector to guide flow therearound for one direction of alternating flow, the opposite direction of flow being free to impinge upon the detector.

3,777,564
ELECTROGASDYNAMIC SPECTRAL ANEMOMETER

Oscar Biblarz, Monterey, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1971, Ser. No. 212,243
Int. Cl. G01f 1/00; G10n 27/62
U.S. Cl. 73—194 F 8 Claims



An electrogasdynamic spectral anemometer including a particle injector and a particle collector that are inserted into a turbulent fluid stream that is under investigation. The injector includes a hollow cylinder into which near saturated steam from an outside source is introduced. The injector also includes a nozzle, a corona needle and an attractor ring which are oppositely charged and located within the nozzle. As the steam passes through the nozzle it supersaturates and condenses into droplets having a size that is primarily determined by the condition of the incoming steam. The droplets are then charged through the corona developed between the corona needle and the attractor ring. Then the charged droplets are ejected from the nozzle and into the stream to be measured where they follow its rapid fluctuations. These charged particles move towards the collector which may be placed downstream of the injector. When a charged particle passes the collector it becomes neutralized and transmits an electrical signal into collector circuitry where it is analyzed to provide information about the intensity of the turbulence at various frequencies. Different droplet sizes are used for different turbulent frequencies of interest depending on the maximum value of the frequency present in the flow.

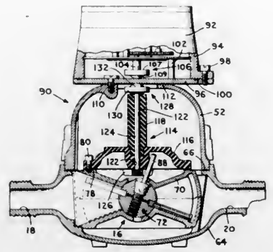
3,777,565
MAGNETIC CONVERTER FOR WATER METERS

Ronald A. Munier, New Providence, and Charles Che Ling, Newark, both of N.J., assignors to Gamon-Calmet Industries, Inc., Newark, N.J.

Filed Aug. 3, 1972, Ser. No. 277,863
Int. Cl. G01f 3/08
U.S. Cl. 73—258 1 Claim

Conversion means are provided to enable the ready conversion of mechanically coupled water meters to magnetically coupled operation, and include magnetic drive means, and

bearing and support means therefor, which are substituted for the mechanical coupling of the meter, and substantially fluid

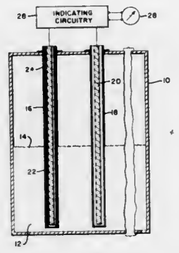


tight, magnetically drivable register means which are sustituted for the mechanically drivable register means of the meter.

3,777,566
TEMPERATURE COMPENSATED LIQUID METAL LEVEL INDICATOR

Lawrence Francisco Marinaccio, Wampum, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Oct. 16, 1972, Ser. No. 297,875
Int. Cl. G01f 23/26
U.S. Cl. 73—290 R 6 Claims



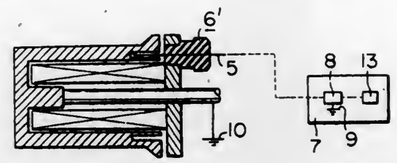
A liquid metal level indicator of the type in which the inductance of a reference coil is compared in a bridge circuit with that of an active coil whose lines of flux intersect a metal bath, and incorporating a shield of conductive material around the reference coil to compensate for variations in inductance of the reference coil due to temperature variations. Additionally, the invention resides in the provision of an indicator of the type described wherein the reference and active coils extend downwardly into a metal bath in side-by-side relationship whereby the level of the bath can be determined over a range extending from the extreme bottom of a container for the bath to the extreme top of the container.

3,777,567
TEMPERATURE MEASURING APPARATUS FOR ROTATING ROLLERS

Kunio Ohto, Matsuyama, Japan, assignor to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 135,223, April 19, 1971, abandoned. This application Nov. 21, 1972, Ser. No. 308,305
Claims priority, application Japan, Apr. 22, 1970, 45/39271
Int. Cl. G01k 1/08
U.S. Cl. 73—351 8 Claims

Apparatus for measuring the temperature of a rotating roller mounted on a frame including a temperature sensor mounted on and electrically insulated from the frame and having a tip extending within a groove in the roller without contacting the roller to provide electrical signals corresponding to the temperature of the roller, and a grounded detecting device receiving the electrical signals from the temperature sensor and having an alarm circuit therein providing alarm signals

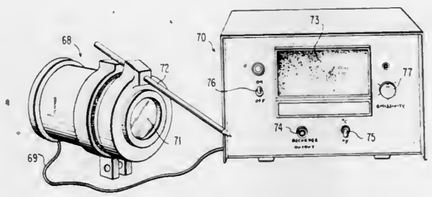


when the temperature of the roller is below or above low and high limits, respectively. If the temperature sensor contacts the roller, a current will be produced between the frame and the detecting device ground to develop a signal overlapping the electrical signals and representing a sufficient increase or decrease in temperature of the roller received by the alarm circuit to provide an alarm signal.

3,777,568
D. C. ELECTRONIC APPARATUS FOR IR RADIATION TEMPERATURE MEASUREMENT

Ojars Risgin, Grass Lake, and Donald M. Szeles, Ann Arbor, both of Mich., assignors to Sensors, Inc., Ann Arbor, Mich.

Filed Dec. 21, 1971, Ser. No. 210,463
Int. Cl. G01j 5/10; G06g 7/20
U.S. Cl. 73—355 EM 15 Claims



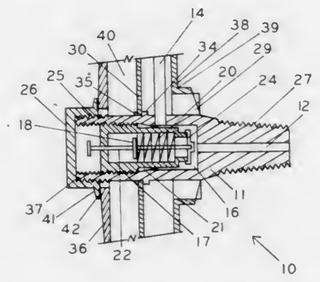
Rapid response, high accuracy, D.C. electronic device for non-contact temperature measurement relying on infrared radiation viewed without use of cyclic interruption of radiation, any type of sequential operation or moving parts and without relying on any type of reference temperature main-

tenance. A temperature responsive radiation intensity signal ($T^4_{(abs)} - T_R{}^4_{(abs)}$) is produced and algebraically combined electronically with an independently sensed reference temperature (T_R) raised to the fourth power ($T_R{}^4_{(abs)}$) to produce an output signal ($T_{abs}{}^4$) functionally related to object temperature. Extracting the fourth root electronically a signal (T_{abs}) is produced which is in linear relation to the absolute temperature of the body. Circuit means provide for conversion to Fahrenheit or Centigrade temperature indications for direct reading, recording, or process control.

3,777,569
COMBINED CHARGING AND PRESSURE INDICATING DEVICE

Alfred W. Krulee, Chatham, N.J., assignor to Norris Industries, Inc., Los Angeles, Calif.

Filed June 21, 1972, Ser. No. 264,776
Int. Cl. G01l 19/00
U.S. Cl. 73—389 **2 Claims**

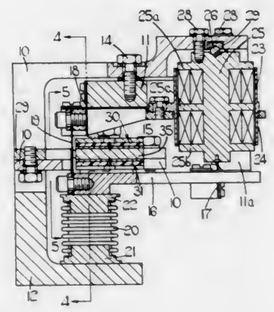


A pressure gage has a charging inlet positioned in the center of the dial of the gage, in addition, the closure for the charging inlet is used for releasably making the pressure gage watertight.

3,777,570
FLUID PRESSURE TRANSDUCERS

Alan Thomas, Stratford-on-Avon, and Ronald Alfred Heath, Harborne, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 22, 1972, Ser. No. 237,022
Claims priority, application Great Britain, Mar. 26, 1971, 8217/71
Int. Cl. G01l 9/12
U.S. Cl. 73—398 C **8 Claims**

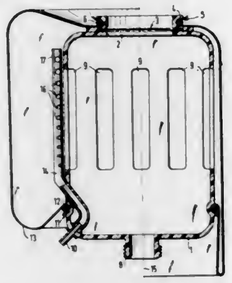


A fluid pressure transducer is disclosed, said transducer includes a differential capacitor with one plate movable by a pressure sensing device. This capacitor is part of a resonant radio frequency a.c. bridge circuit, which produces an a.c. signal, and dependent on the displacement of the movable plate. A phase discriminator circuit is coupled to the bridge circuit to produce a d.c. signal the polarity and magnitude of which depend on the position of the movable plate. The output of the phase discriminator circuit is used to drive an electromagnetic force applying device which is mechanically coupled to the movable plate and to provide an output signal dependent on the position of the movable plate.

3,777,571
EXHALED AIR COLLECTING VESSEL

Erich Jaeger, 5 Rontgenring, Wurzburg, Germany

Filed Apr. 7, 1972, Ser. No. 241,989
Claims priority, application Germany, Apr. 7, 1971, G 71 13 512.1
Int. Cl. G01n 1/22
U.S. Cl. 73—421.5 **6 Claims**

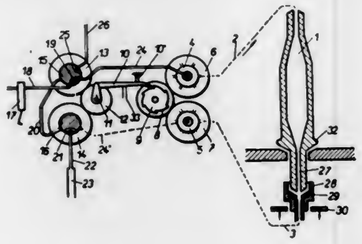


Improved sampling of air in a device for collecting exhaled air, for example in the analysis of gases exhaled by a person under examination. The gas is collected in a chamber defined by an inner container with perforated walls surrounded by an outer inflatable bag, and this invention provides improved sampling by extracting air from the chamber through an extension having a number of spaced apart air entry apertures leading into said chamber.

3,777,572
METHOD AND APPARATUS FOR AUTOMATIC SAMPLE LOADING FOR CHROMATOGRAPHY COLUMNS

Jiri Hrdina, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation of Ser. No. 458,081, May 24, 1965, abandoned. This application July 11, 1968, Ser. No. 747,006
Claims priority, application Italy, Aug. 3, 1971, 69610 A/71 3161/64
Int. Cl. G01n 1/28
U.S. Cl. 73—422 GC **15 Claims**



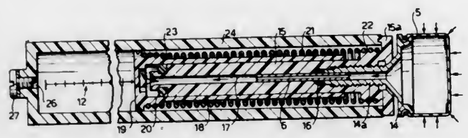
A device for metering successive samples in to the input of a chromatography column. A device including plurality of sam-

ple receptacles, each of which can be loaded in advance, is connected by means of hydraulic switching means to a pump and the column. The hydraulic switching means can either connect the pump directly to the column or direct eluent from the pump through receptacles and then to the column.

3,777,573
INSTRUMENT FOR INDICATING THE LENGTH AND NUMBER OF DECOMPRESSION PAUSES IN UNDERSEA DIVING

Carlo Alinari, Corso Vittorio Emanuele II, no. 200, Turin, Italy

Filed June 28, 1972, Ser. No. 266,917
Claims priority, application Italy, Aug. 3, 1971, 69610 A/71
Int. Cl. G01l 23/14
U.S. Cl. 73—432 R **1 Claim**

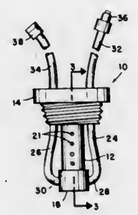


An instrument for indicating the decompression pauses to be observed by an ascending diver, and the duration of these pauses, is according to this invention provided with a deformable chamber subjected to the ambient pressure and filled with liquid, this chamber communicating via a calibrated tube with a spring-loaded hydraulic accumulator, so that the liquid displaced through the tube is dependent upon the ambient pressure acting on the deformable chamber and the spring loading of the accumulator. An indicator is connected to the hydraulic accumulator to indicate on a graduated scale the pressure in said accumulator and therefore the volume of liquid displaced through the tube.

3,777,574
SPECIFIC GRAVITY SENSOR AND A SYSTEM EMPLOYING THE SENSOR

Daniel M. Brown, San Diego, and John D. Isaacs, Rancho Santa Fe, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 4, 1971, Ser. No. 103,623
Int. Cl. G01n 9/10
U.S. Cl. 73—453 **15 Claims**



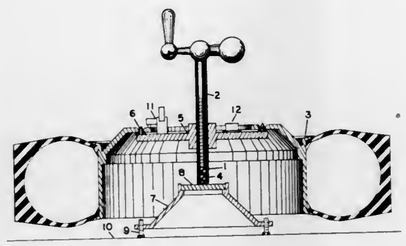
A specific gravity sensor that is disposed in a liquid, the sensor including at least one pair of vertically extending, light-transmitting elements, one of the elements of the pair having a light-emitting portion submerged in the liquid, which portion is spaced from a confronting light-receiving portion of the other element. Each element has a portion that extends above the liquid and one of those latter portions is subjected to light. A light-flow inhibitor is guided vertically to move upwardly and downwardly between those submerged portions of those elements depending upon the variations in the specific gravity of the liquid and the inhibitor thereby functions to permit and prevent, respectively, the transmission of light therebetween.

The sensor can be employed in a system for controlling mechanism by picking up light rays that emanate from the light-receiving light-transmitting element.

3,777,575
STATIC BALANCER FOR AUTOMOTIVE AND OTHER SIMILAR WHEELS

Louis P. C. Smithmeyer, 12009 30th Ave. S.W., Seattle, Wash.

Filed Apr. 3, 1972, Ser. No. 240,627
Int. Cl. G01m 1/12
U.S. Cl. 73—483 **5 Claims**

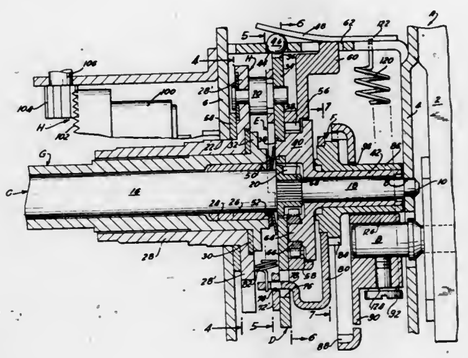


Centering points on a plate are inserted into the stud holes of a wheel from the inside of the wheel and the plate is locked onto the wheel. The wheel is rolled into a position adjacent a pedestal and is laid down on its side over the pedestal. A balancing rod carried by the plate is then lowered down onto the pedestal to raise the wheel into a position of support on the balancing rod.

3,777,576
COMPACT TV TUNER

Carroll R. Miner, Wilbraham, Mass., assignor to General Instrument Corporation, Newark, N.J.

Filed Jan. 23, 1973, Ser. No. 326,147
Int. Cl. H03j 1/08, 1/14
U.S. Cl. 74—10.29 **19 Claims**



In a tuner for tuning a TV receiver or the like to a selected one of a plurality of predetermined frequencies or channels, a detent element is interposed between the main tuning shaft

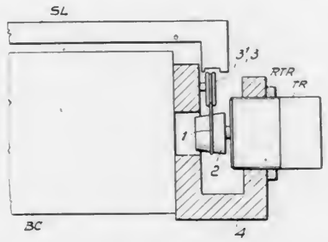
and the tuning element per se, planetary gearing drives the detent element from the main tuning shaft, gearing drives the control shaft of the tuning element from the detent element, the detent element carries fine tuning parts, and all of these cooperating members are securely and reliably assembled and mounted for long life and easy operation. The detent element and the gear connecting it to the control shaft of the tuning element are provided with elongated extensions which rotatably mount the respective parts, those extensions in turn being supported by a portion of the main tuning shaft. The detent element is itself recessed in order to receive certain of the driving gears, including at least part of the planetary gearing. Actuation of the fine tuning member carried by the detent element is accomplished by means of an axially extending cam mounted on a rotatable fine tuning element. Compactness of design is therefore achieved without sacrifice of sturdiness or reliability.

3,777,577

SYSTEM OF MECHANICAL COUPLING FOR PILOTING ROTATIVE TRANSDUCERS

Giacomo Giacomello, via Domenichino 50; Andrea Pedrazzini, via Crimea 11, and Luciano Franzolini, via Trezzo d'Adda 8, all of Milano, Italy

Filed Apr. 6, 1972, Ser. No. 241,595
Claims priority, application Italy, Apr. 15, 1971, 932264/71
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.22 **6 Claims**



A system of mechanical coupling comprising as essential members: a smooth tape, slipping, and a rotary pinion having a smooth surface, on which the tape is wrapped through an arc of less than 360°, the tape having a rectangular cross section with a surface area smaller than 1 square millimeter and a breadth which is within the range of 10 to 20 times the thickness, and the pinion having a diameter as great as hundred times the thickness of the tape, the ends of the tape being connected either to the ends of the movable member of a machine or the like, the position or the displacements thereof being desired to be noted through a transducer, or with two stationary points of the machine, while the block comprising the pinion and the transducer coupled thereto, is fastened respectively, either to a stationary portion of the machine or the like, or on a movable portion of the machine, so as to embody, without continuity breakage, a coupling system for the transduction of linear and polar displacements and magnitudes, into angular displacements and magnitudes, through a high degree of linearity in the relationship between the two displacements or magnitudes.

3,777,578

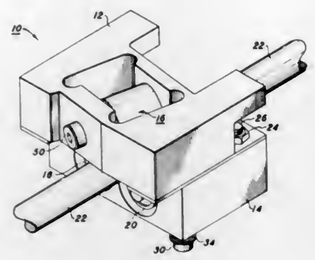
LINEAR ACTUATOR

Melvin E. Swanberg, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 22, 1972, Ser. No. 255,364
Int. Cl. F16h *25/12*
U.S. Cl. 74—89 **2 Claims**

A linear actuator for converting rotary motion into rectilinear motion which includes a plurality of rollers mounted in a two section carriage and supported thereby for engagement with a drive shaft, the axes of the plurality of rollers being disposed at an angle relative to the drive shaft axis whereby the frictional contact therewith causes rectilinear motion of the carriage upon the rotation of the drive shaft.

The upper section of the carriage includes a precision mounted roller maintained at an inclined angle to the shaft by



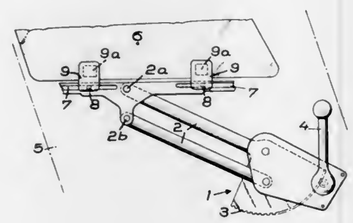
preloaded bearings. The other rollers, or pressure rollers, are mounted in the lower section of the carriage and have sufficient moment freedom to self-align to the angle dictated by the precision roller. The pressure rollers, in a preferred embodiment, are crowned to their own diameter.

3,777,579

DEVICES FOR RAISING AND LOWERING A CAR DOOR WINDOW

Jean G. Cadiou, Saint-Cloud, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Jan. 19, 1972, Ser. No. 219,089
Claims priority, application France, Jan. 26, 1971, 7102551
Int. Cl. F16h *21/44*
U.S. Cl. 74—99 **8 Claims**



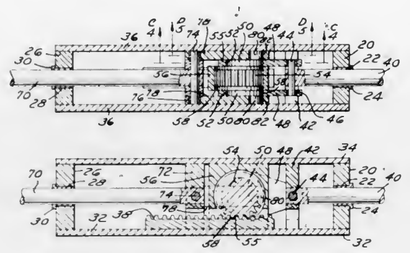
This invention relates to a device for moving a panel in translation with respect to a structure, particularly a car door window, constituted of at least two rollers engaged in at least one slideway, these rollers being integral in translation with the panel, whilst the slideway or slideways are coupled to the structure by a transmission of movement, wherein said rollers are disposed on intermediate supports, each of these rollers on an intermediate support peculiar thereto, said supports being separate from one another, and each of said supports being secured to the panel in a zone which extends only partially over the panel.

3,777,580

MOTION AND FORCE TRANSFORMING MECHANISM

John Henry Brems, 32867 White Oaks Trail, Birmingham, Mich.

Filed Sept. 30, 1971, Ser. No. 185,273
Int. Cl. F16h *21/44*
U.S. Cl. 74—110 **13 Claims**



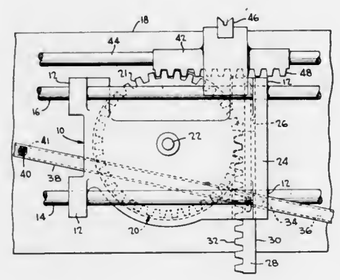
A self-contained motion and force transmitting mechanism which includes a housing having a straight line input member and a straight line output member with included mechanism to translate a constant velocity input to a desired acceleration and deceleration output with a desired constant velocity interposed between the ends of the stroke.

3,777,581

YARN GUIDE RECIPROCATING APPARATUS

Rolland Sartori, Riorges, France, assignor to Ateliers De Constructions Bourgeas-Fougeirol, Valence, France

Filed Oct. 16, 1972, Ser. No. 297,711
Claims priority, application France, Oct. 18, 1971, 7137411
Int. Cl. F16h *21/44*
U.S. Cl. 74—110 **10 Claims**



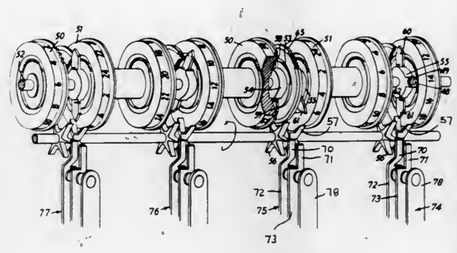
Apparatus for reciprocating a yarn guide including a carriage mounted for reciprocating movement on a frame, a pinion wheel rotatably mounted on the carriage, a rack slidably mounted on the carriage meshing with the pinion wheel and having a follower sliding in an elongate track to control movement of the rack to rotate the pinion wheel, and a rack carrying a yarn guide and meshing with the pinion wheel such that rotation of the pinion wheel moves the yarn guide with adjustment of the angular orientation of the elongate track relative to the reciprocating path of the carriage controlling the distance of reciprocating travel of the yarn guide.

3,777,582

TIME SWITCHES

Peter Robert Durdin, New Malden, England, assignor to AMF Incorporated, White Plains, N.Y.

Filed May 3, 1972, Ser. No. 249,852
Claims priority, application Great Britain, May 4, 1971, 13,064/71
Int. Cl. F16h *27/00*
U.S. Cl. 74—112 **12 Claims**



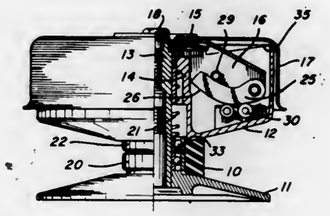
A time switch having at least one electrical switch, on and off actuators for each switch, a driven differential mechanism moving the actuators along a circular path for timed switch operation, manual means for setting the differential mechanism to an instantaneous time of day and having continuously changing time indicating means, and a plurality of manual means each for positioning a different actuator for switch operation at a predetermined time of day and having means to indicate the time of day such actuator will operate the switch.

3,777,583

CLUTCH

Jean-Guy Talbot, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

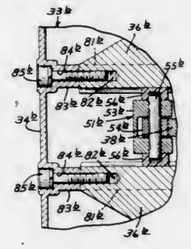
Filed Mar. 31, 1972, Ser. No. 240,105
Claims priority, application Canada, Nov. 24, 1971, 128477
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 E **7 Claims**



The invention relates to power transmission mechanisms for vehicles, and is particularly directed to an improved centrifugal clutch designed for use in tracked vehicles, such as snowmobiles. According to the invention a clutch is provided having a drive shaft, a first flange mounted on the shaft for rotation therewith, a second flange displaceable on the shaft, the first and second flanges having opposed tapering surfaces coacting to form a V-belt groove, and spring means are provided for urging the flanges apart. The improvement comprises a flyweight support mounted on the shaft at an end remote from the first flange for rotation therewith. Flyweights are pivotally mounted to the support, for engagement with the first and second spaced apart bearing surface respectively on the second flange, the center of gravity of the flyweights being located such that at a predetermined r.p.m. of the shaft, the flyweights will co-act with the first bearing surface to cause

the axial displacement of the second flange, and the initial engagement of the clutch. Upon subsequent increase of shaft r.p.m., the flyweights co-act with the second bearing surface, causing a second, substantially lesser and controllable increase in axial displacement of the second flange. The purpose of the invention is to enable the vehicle to give initial power delivery to the gear train at the optimum torque or horsepower as may be desired.

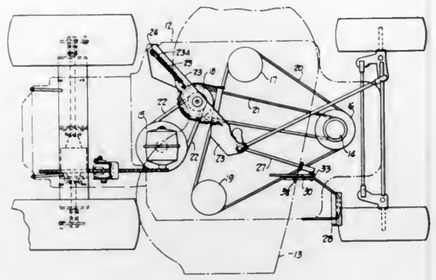
3,777,584
CENTRIFUGAL CLUTCH
Perry M. Domaas, Minneapolis, Minn., assignor to Textron, Inc., Providence, R.I.
Continuation-in-part of Ser. No. 82,633, Oct. 21, 1970, and a continuation-in-part of Ser. No. 233,223, March 9, 1971. This application Sept. 20, 1972, Ser. No. 290,630
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 E **7 Claims**



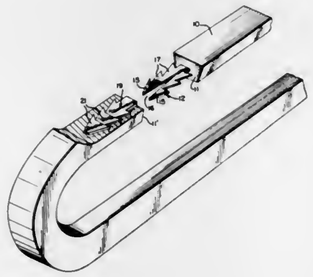
A variable ratio centrifugal clutch having driving and driven assemblies connected by an endless belt. The driving assembly consists of a pair of sheaves affixed to a drive shaft, one being axially stationary and the other being axially movable with respect thereto. The movable sheave forms part of an enclosed housing in which a plurality of flyweights are pivotally mounted. The flyweights operate in conjunction with a stationary member which is also disposed inside the enclosure. Guide members formed on one side of the rotatable enclosure and projecting axially toward the stationary member operate in conjunction with guiding portions on the stationary member to insure proper relative axial movement therebetween. The extreme ends of the projecting guide members are secured to the opposite side of the rotatable enclosure to resist centrifugal forces and prevent wear and fatigue on the guide members due to strain. In response to increased drive shaft speed, the flyweights swing outward and engage the stationary member to move the housing in its entirety along the shaft to bring the sheaves together.

3,777,585
VARIABLE SPEED DRIVE HAVING SPEED LIMITING MEANS
Gunter F. Plamper, Lakewood, Ohio, assignor to MTD Products Inc., Cleveland, Ohio
Division of Ser. No. 116,443, Feb. 18, 1971, Pat. No. 3,583,535. This application Jan. 10, 1973, Ser. No. 322,500
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 D **3 Claims**

A variable speed drive for a tractor or the like having a pulley-and-belt driving arrangement between engine and driving wheel providing adjustable variation in the speed and adjustable means for limiting the degree of variation in the speed. This is an abstract only of the specific illustration of the invention given by way of example, and is not to be used in the interpretation of the claims nor as a limitation on the scope of the invention.



3,777,586
LOCKING BELT
Alfred L. Stirton, P.O. Box 1181, Susanville, Calif.
Filed May 13, 1971, Ser. No. 143,101
Int. Cl. F16g *1/00*
U.S. Cl. 74—231 J **5 Claims**

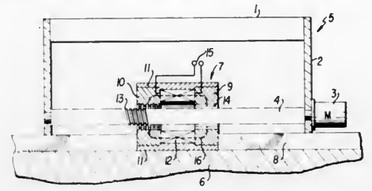


A belt for automobiles, machinery, belt-driven tools, implements and items that have use for pulley driven belts, and the like.

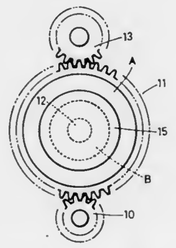
This belt includes a toothed and pronged male member which will be inserted into a hollow toothed female so as to effectively secure the ends together in order to form a continuous belt. More than one lenght of belt can be inserted into each other to form any desired length needed.

3,777,587
SCREW DRIVING APPARATUS HAVING MAGNET NUT
Naomi Hoshina, Yokohama, and Etsuji Suzuki, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Company Limited, Kawasaki-shi, Japan
Filed Feb. 10, 1972, Ser. No. 225,196
Claims priority, application Japan, Feb. 18, 1971, 46/5376
Int. Cl. H02k *7/06*
U.S. Cl. 74—424.8 R **12 Claims**

A continuously threading drive screw made of a paramagnetic material is magnetically surrounded in a nut being radially spaced to operate a determinate reciprocable non-engaging movement of one with respect to the other by rotation of the drive screw, said nut being threaded the same as the drive screw and having at least to magnetic pole pieces, and being provided with means for energizing the pole pieces.

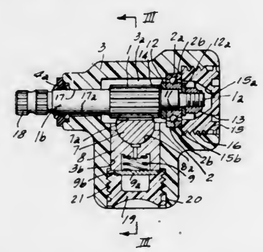


3,777,588
INTERMEDIATE GEAR
Takashi Takahashi, 1-458 Soshigaya, Setagayaku, Tokyo, and Teru Hayashi, 413-4 Minamitsunashimacho, Kohokuku, Yokohama, both of Japan
Filed June 23, 1972, Ser. No. 265,572
Int. Cl. F16h *55/18, 57/04*
U.S. Cl. 74—440 **1 Claim**



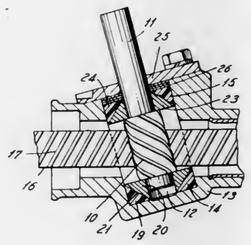
This invention relates to an intermediate gear which is divided into two concentric portions, the inner portion of which being provided with a flange gear which is in mesh with either the driving or driven gear.

3,777,589
MECHANICAL DRIVE TRANSMISSION SYSTEMS
Frederick John Adams, Campton, near Shefford, England, assignor to Cam Gears Limited, Hitchin, Hertfordshire, England
Filed Sept. 1, 1971, Ser. No. 177,048
Claims priority, application Great Britain, Sept. 18, 1970, 44,570/70
Int. Cl. B62d *3/12*
U.S. Cl. 74—498 **12 Claims**



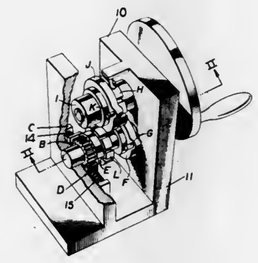
A mechanical drive transmission, especially for rack and pinion vehicle steering gear, having the drive transmitting components supported in a non-metallic molded housing which is rigid enough to maintain good bearing support of the components, resilient enough to provide good shock absorbing characteristics, and strong enough to withstand the same magnitude of shocks and loads as heretofore used metallic housings. The non-metallic housings of this invention are preferably formed by injection molding to accurate dimensions and need not be machined or threaded to properly support the drive transmitting components. Preferred materials for the housing are nylons, acrylonitrile-butadiene-styrenes, polyacetals, and polypropylenes which may be reinforced with glass fibers.

3,777,590
RACK AND PINION STEERING GEAR
Jeffrey George Ernest Parkes, Sawbridgeworth, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed May 15, 1972, Ser. No. 253,223
Int. Cl. B62d *1/20*; **F16c** *25/00*
U.S. Cl. 74—498 **6 Claims**



A bearing assembly for a rack and pinion steering gear having a pair of conical plastic bearing rings that engages a pair of metallic bearing rings. The bearing assembly supports the pinion of the steering gear against both radial and axial loads.

3,777,591
ROTATION LIMITING DEVICE
Harvey A. Thomasian, Northboro, Mass., assignor to Lowell Corporation, Worcester, Mass.
Filed Mar. 15, 1971, Ser. No. 124,272
Int. Cl. G05g *1/00*; **F16h** *55/04, 27/06*
U.S. Cl. 74—576 **4 Claims**

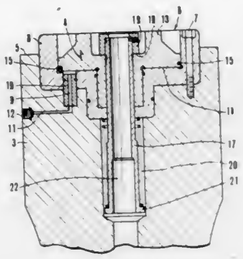


This invention relates to a rotation limiting device and, more particularly, to apparatus for stopping the rotation of a shaft at each end of a predetermined angular rotation.

3,777,592
CONNECTING RODS OF INTERNAL COMBUSTION ENGINES

Takashi Ito, Tokyo, Japan, assignor to Mitsui Shipbuilding & Engineering Co. Ltd. and Japan Ship's Machinery Development Association, Tokyo, Japan

Filed Sept. 29, 1972, Ser. No. 293,575
Claims priority, application Japan, Sept. 30, 1971, 46/85972
Int. Cl. F16c *7/00*
U.S. Cl. 74—579 E **4 Claims**

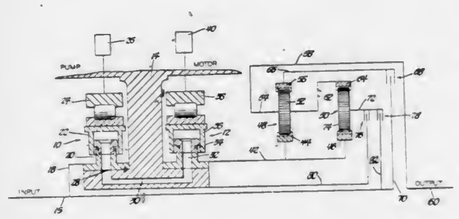


A connecting rod is divided into a plurality of sections along a transverse plane which are secured together by means of a plurality of bolts. A single liquid pressure jack is contained in one section to separate the sections.

3,777,593
MULTI-RANGE COAXIAL HYDROMECHANICAL TRANSMISSION

James J. Mooney, Jr., and James C. Polak, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1971, Ser. No. 200,919
Int. Cl. F16h *47/04*
U.S. Cl. 74—687 **7 Claims**



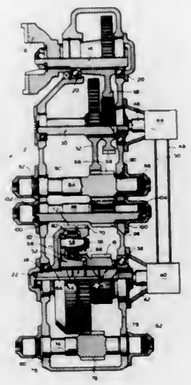
A multi-range hydromechanical transmission in which the hydraulic pump and motor, the planetary gear set and the clutches are coaxially aligned with the input and output shafts. The transmission provides a fully hydrostatic low, forward and reverse range and two hydromechanical higher speed forward ranges. The range changes are made with substantial synchronization of the hydraulic motor during the change.

3,777,594
MULTI-SPEED TRANSMISSION

Barry Lewis Frost, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 9, 1971, Ser. No. 206,250
Int. Cl. F16h *47/04*
U.S. Cl. 74—687 **17 Claims**

A multi-speed transmission is disclosed having a planetary gear set wherein the sun gear is connected for rotation with an output shaft, a variable speed control shaft is connected for rotation with the planetary ring gear, and a planet gear which is in mesh with both the ring gear and the sun gear is carried by a planet carrier. A first gear is connected for rotation with the planet carrier and another gear having the same operating pitch diameter as the first is connected to rotate with the ring gear. A relatively wide coupling gear is in constant mesh with the first gear but may be moved axially into additional mesh with the other gear when these two gears are rotating at the same operating pitch diameter velocities to thereby connect

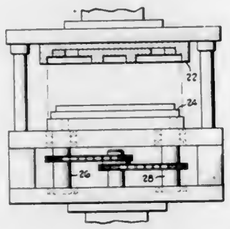


the planet carrier for rotation with the control shaft. A second gear in constant mesh with a third gear that is rotated by a suitable power source is axially movable into mesh with the first gear while this first gear and the planet carrier are still connected for rotation with the control shaft via the coupling gear, this meshing movement of the second gear occurring at a time when the first gear and the second gear are rotating at substantially the same operating pitch line velocities. The second gear may also be moved axially out of mesh with the first gear while these two gears are under load.

3,777,595
METHOD OF MAKING A MASTER DIE FOR USE IN AN ABRASION PROCESS

Elmer P. Hausermann, 4 N. 224 Hawthorne, Bensenville, and Marten C. Hausermann, 131 S. Grant, Addison, both of Ill.

Filed July 19, 1971, Ser. No. 163,941
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 R **6 Claims**

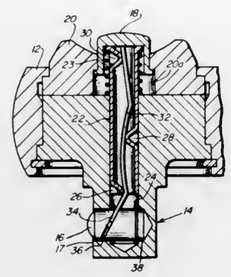


A method of making an oversize negative master die or working tool with a roughened surface thereon from a positive model. The oversize negative master die is used in conjunction with automated apparatus to prepare identical duplicate electrical discharge machining electrodes of the same dimensions as the model.

3,777,596
RESILIENT QUICK RELEASE FOR SOCKET WRENCH

William H. Smyers, Jr., and Ronald D. Russo, both of Wethersfield, Conn., assignors to The New Britain Machine Company, New Britain, Conn.

Filed Sept. 20, 1972, Ser. No. 290,441
Int. Cl. B25b *13/00*
U.S. Cl. 81—177 G **10 Claims**



A socket wrench has a driving member with a detent member projecting therefrom which may be retracted to quickly release the socket. Longitudinally disposed in the driving member for sliding movement, is an elongated pin having a resilient member carried thereon and engaging the detent member. The resilient member limits the outward movement of the detent member. Longitudinal displacement of the elongated pin forces the resilient member against an inclined surface of the detent member and urges the detent member into a withdrawn position. The resilient member allows manual removal of the socket from the driving member without damage to the detent member.

3,777,597
METHOD OF SHAVING EMPLOYING AN AQUEOUS SOLUTION OF DEXTRAN

John R. Herb, Easton, Pa., assignor to Pharmachem Corporation, Bethlehem, Pa.

Filed Apr. 29, 1970, Ser. No. 33,071
Int. Cl. B26d *7/08*; **A61k** *7/14*
U.S. Cl. 83—22 **2 Claims**

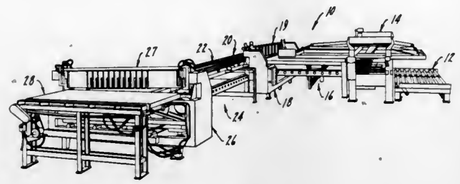
Compositions are provided for assisting in shaving which contain dextran. The dextran substantially reduces the razor friction and also acts as a toner for the skin. In the method of this invention, the dextran containing composition which may be in the form of a clear liquid, gel, cream, lather or foam is applied to the skin to be shaved. The unwanted hair is then shaved off with a razor in a conventional manner.

3,777,598
METHOD AND APPARATUS FOR CUTTING PANELS

James W. Campbell, Forth Worth, Tex., assignor to Haltom City State Banks, Fort Worth, Tex.

Division of Ser. No. 805,943, Feb. 17, 1969, Pat. No. 3,662,798. This application Sept. 10, 1970, Ser. No. 71,102
Int. Cl. B26d *7/06*
U.S. Cl. 83—29 R **8 Claims**

The method and apparatus for efficiently cutting accurately sized panels in an unlimited combination of sizes and shapes from larger sheets. The sheets are automatically counted and stacked on a gauge table, the stack is clamped by jaws which establish in reference line relative to a cutting station, and the stack is advanced along the table for accurately dimensioned rip cuts. One or more of these cut stacks are then moved on a rip run-out unit to a cut-off infeed and gauge table where they are automatically aligned, clamped to establish a second reference line, and accurately advanced to a cut-off station where cross-cut sawing produces finished panels. The stacks are moved and gauged by either digital or analog hydraulic servo motors which accurately position the reference lines relative to the saw stations by controlled deceleration of the load to stop the stacks. At each saw station holddowns prevent



sheet displacement as the saw traverses. Each saw automatically senses cutting load and returns to its initial position immediately upon finishing a cut. Linear saw speed is controlled as a function of saw load. Means are provided to automatically remove trim and scrap.

3,777,599
PROCESS FOR PRODUCING SPLIT-THICKNESS ANIMAL SKIN FOR PROTECTING FLAYED HUMAN TISSUE

Frank W. Reichenbacher, Scottsdale; Theodore C. Kraver, and Edward F. Hope, both of Phoenix, Ariz., assignors to Burn Treatment Skin Bank, Inc., Phoenix, Ariz.

Filed Aug. 23, 1971, Ser. No. 173,805
Int. Cl. C14b *1/14*
U.S. Cl. 83—39 **4 Claims**



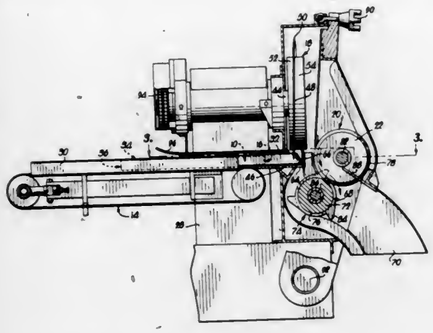
A process for making full thickness hides of freshly slaughtered animals into split-thickness skin coverings for use in covering flayed sites of the human body where full thicknesses or partial thicknesses of portions of the skin have been destroyed by burns, trauma or ulcerative conditions. A full thickness animal hide is cut into convenient strips, the hair and excess fat are removed from the strips to provide smoother, more regular surfaces thereon to facilitate the removal of a uniform dimension split-thickness external portion of the strip of animal skin. The exfoliation step is performed while supporting the inner side of the strip of animal skin against a block of resilient material, the surface of which deforms to adjust itself to the somewhat irregular inner surface of the animal skin so as to exert substantially even pressures on the inner surface, thus presenting a functionally level outer surface of animal skin to the cutting tool used to exfoliate a thin uniform-thickness strip of outer skin. This process avoids making large unnatural holes which would lessen the effectiveness of the finished product and is more efficient and more reliable than prior art methods.

3,777,600

MACHINE FOR AND METHOD OF SEVERING MEAT SLABS

Marshall Long, Leawood, Kans.; Lewis F. Alley, Kansas City, and William A. Reynolds, Galena, both of Mo., assignors to Marlen Research Corporation, Overland Park, Kans.

Filed Oct. 13, 1971, Ser. No. 188,907
Int. Cl. B26d *3/00, 4/22*
U.S. Cl. 83—39 **18 Claims**



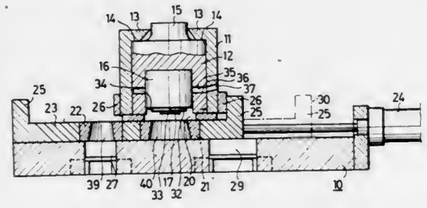
Frozen meat slabs or the like are subjected to the constantly rotating action of a blade provided with a single convolution having a helical cutting edge for severing the slab into elongated strips whose widths are essentially the same as the distance which the slab is advanced during each revolution of the blade, and to the action of a gang of constantly rotating, peripherally sharpened discs which slice the strips into polygonal pieces, e.g., cubical, for further processing, as in stew. Each transverse kerf produced by the blade is initially concave and is progressively increased in depth and in length toward both side edges of the slab while the latter is firmly supported therebeneath by an anvil along which the blade helix causes the slab to slide continuously. The final cutting action for producing each strip is in the form of a shear during which the cutting edge of the blade acts in point contact with a concave, terminal shear edge of the anvil, causing the severed strip to fall away from the slab. The descending strips are intercepted and successively forced forwardly into the bank of discs, without interruption, along an arcuate course, in the same general direction as the path of travel of the slab, by a lobed feeder interleaved with the discs and rotating continuously about an axis parallel with the axis of rotation of the discs but in a direction opposite to the direction of disc rotation.

3,777,601

PUNCHING APPARATUS

Per-Olof Strandell, Bockstigen 3, Taby, Sweden

Filed Mar. 29, 1971, Ser. No. 128,659
Int. Cl. B26d *7/06*
U.S. Cl. 83—160 **4 Claims**



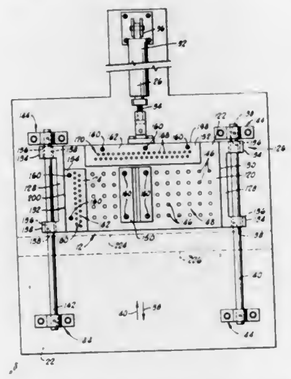
A punching apparatus having a punch holder rigidly supporting two punches which at least partially overlap each other, and dies co-acting with their respective punch, at least one of the dies being movable away from its position in which it cooperates with its respective punch, while said punch objects into a perforation made in a workpiece by the same.

3,777,602

DIE FIXTURE AND CONTROL APPARATUS

Charles J. Youra, Van Nuys, Calif., assignor to Doric Corporation, Oklahoma City, Okla.

Filed Mar. 28, 1972, Ser. No. 238,803
Int. Cl. B26d *5/20*
U.S. Cl. 83—204 **21 Claims**



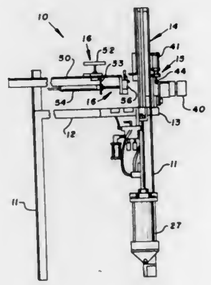
An improved die fixture and control apparatus for positioning a workpiece blank to be formed in a punch press wherein the die fixture is automatically and controllably movable between a stamping station and a loading station at an adjustable, controlled rate of speed and the die fixture delay time at the stamping station and at the loading station are each independently controllable. The die fixture includes a plurality of spaced, identifiable index openings for positioning the lower die element and one or more locators in predetermined, fixed positions, the locators having blank engaging surfaces for engaging a workpiece blank and positioning the workpiece blank in a predetermined position in the die fixture.

3,777,603

HOLLOW VANE SHEAR

John William Franklin Tracy, 1820 Fremont Ave. North, Minneapolis, Minn.

Filed Apr. 5, 1972, Ser. No. 241,343
Int. Cl. B26d *5/28, 5/38, 7/16*
U.S. Cl. 83—212 **7 Claims**



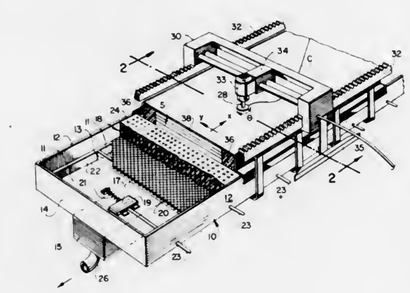
A device for cutting to length, by shearing, material known in the sheet metal and air conditioning trades as "hollow turning vanes" and which device employs a wedge shaped, sharply pointed blade to enter and pierce the top side of the vane without undue distortion and a bottom blade unit having a pair of spaced blades conforming to the bottom contour of the vane with means for forcing the upper blade into and through the bottom blade unit thereby shearing the vane with guides for the blade and clamp means for holding the vane in position during cutting also being provided. The device includes length adjustment means to control the length of the vane being cut and an automatic switching device to initiate the action of the various elements which switching device is automatically shiftable after initiating the operation such that the cut vane will not be held after cutting and will be free to drop from the device.

3,777,604

APPARATUS FOR SUPPORTING A STACK OF SHEET MATERIAL BEING CUT OR OTHERWISE WORKED ON

Heinz Joseph Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Continuation of Ser. No. 91,965, Nov. 23, 1970, abandoned.
This application Apr. 25, 1972, Ser. No. 247,468
Int. Cl. B26d *1/10;* **A41h** *43/00*
U.S. Cl. 83—374 **28 Claims**



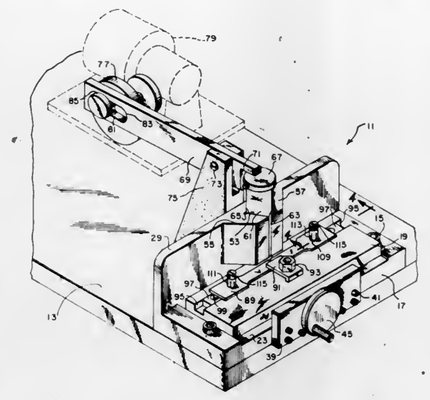
Apparatus for supporting a stack or layup of air-impervious sheet material to be cut or otherwise worked upon includes a horizontal base on which the stack is positioned. The stack is covered by an air-impervious cover sheet, and by as associated vacuum means, air is withdrawn from between the top of the stack and the cover sheet to create a sub-atmospheric pressure under the cover sheet whereby atmospheric pressure on the top of the cover sheet will hold the stack in a firm condition while it is worked upon by a cutting tool or the like. The means for withdrawing air from between the cover sheet and the top of the stack includes a porous or air conducting layer of material, such as corrugated cardboard, which may be part of the cover sheet or a separate sheet in itself. If the material of this stack includes layers of porous material alternating with layers of air-impervious material, the latter porous layers themselves serve as air-conducting layers for withdrawing air from below the cover sheet and from between the layers of air-impervious material of the stack. Preferably, to provide the vacuum means, the horizontal base for supporting the stack is air-pervious and located over a vacuum chamber with the vacuum from the chamber passing through the horizontal base and past the longitudinal edges of the stack, through a block or layer of air conducting material, to the space between the cover sheet and the top of the stack.

3,777,605

VEE-NOTCHING DEVICE

Raymond A. Spier, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 23, 1971, Ser. No. 182,977
Int. Cl. B26d *7/02*
U.S. Cl. 83—452 **6 Claims**



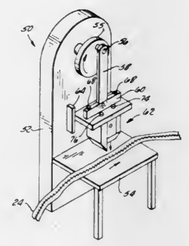
A device for forming Vee-notches in tensile test specimens comprising a vertically reciprocating, triangular, triple-edged cutting tool guided in a corresponding triangular slot. The specimen to be vee-notched is mounted on a carriage that is movable toward and away from the cutting tool. The specimen is precisely positioned on the carriage by tapered studs that extend into holes in the specimen and are used to expand spring collets against the wall of the holes.

3,777,606

ZIPPER CUTTING APPARATUS

Barry Goldstein, 17 Allen Rd., Rockville Centre, N.Y.

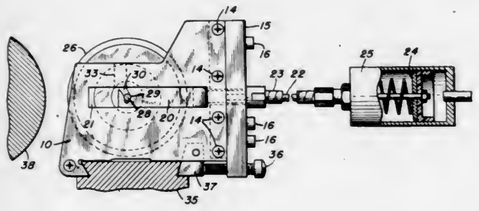
Filed Jan. 13, 1972, Ser. No. 217,533
Int. Cl. B26d *7/02*
U.S. Cl. 83—460 **13 Claims**



A cutting assembly is disclosed for use in a device adapted to remove a predetermined length of zipper teeth from a zipper chain, wherein all portions of the teeth in the length of chain are removed. The device includes a press having a base across which completed zipper chain passes in a predetermined path of travel and a cutting assembly support head which is positioned above the base and mounted for reciprocation in a vertical direction with respect to the base above the path of travel of the zipper chain. The cutting assembly is mounted on the support head for reciprocal movement therewith and includes a plurality of cutting blades having in-

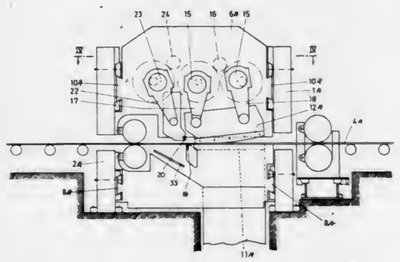
dependent cutting edges. These blades are operatively interconnected with their cutting edges cooperating to define a generally rectangular cutting member having a width larger than the width of the zipper teeth in the zipper chain so that as the support head is reciprocated towards the base, the cutting edges of the cutting assembly engage the zipper chain and cut through the chain and the zipper teeth thereon to sever and remove a rectangular section from the zipper chain.

3,777,607
CUTTING WHEEL FOR SLITTING MACHINES
Edward F. Schofield, Upper Montclair, N.J., assignor to John Dusenberg Company, Inc., Clifton, N.J.
Filed Aug. 28, 1972, Ser. No. 284,559
Int. Cl. B26d *1/22*
U.S. Cl. 83—482 **5 Claims**



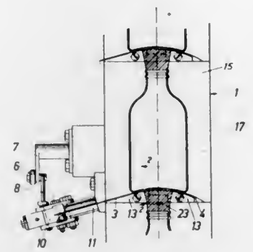
A cutting knife for slitting machines, which knife has a housing adapted for attachment to the machine and a rotary cutting wheel movable toward a backing roll in response to fluid pressure.

3,777,608
SHEAR FOR METAL PLATE
Gerhard Kopf, Dillingen, and Adolf Muller, Hilchenbach-Dahlbruch, both of Germany, assignors to Siemag Siegener Maschinenbau GmbH, Hilchenbach-Dahlbruch, BRD, Germany
Filed July 22, 1971, Ser. No. 165,027
Claims priority, application Germany, July 25, 1970, P 20 36 963.5; Dec. 30, 1970, P 20 64 448.8
Int. Cl. B23d *31/00*
U.S. Cl. 83—517 **10 Claims**



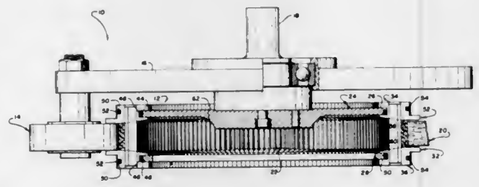
A shear for cutting metal plate in which the knives are mounted on C-shaped yokes which are adjustably mounted between spaced, parallel stands.

3,777,609
DEVICE FOR TRIMMING THE BOTTOM OF HOLLOW PLASTIC BODIES PRODUCED BY BLOW MOLDING
Edmond Michel, Brussels, and Maurice Minsart, Namur, both of Belgium, assignors to Solway & Cie, Brussels, Belgium
Filed Mar. 2, 1972, Ser. No. 231,113
Claims priority, application Belgium, Mar. 3, 1971, 100414
Int. Cl. B26d *5/16, 1/06*
U.S. Cl. 83—635 **9 Claims**



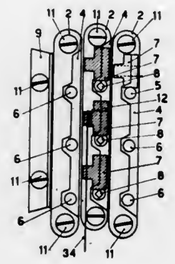
In a blow molding machine, a trimming device for trimming the bottom of hollow plastic bodies after they have been fabricated by extrusion blow molding, including a movable flexible blade, a mechanism for effecting a periodic displacement of the blade and a slide guide which guides the blade during its displacements.

3,777,610
APPARATUS FOR SUPPORTING AND CLAMPING KNIVES ON A ROTARY CUTTER HEAD
Albert E. Spaller, Jr., Johnson City, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 10, 1972, Ser. No. 296,382
Int. Cl. D01g *1/04*
U.S. Cl. 83—678 **12 Claims**



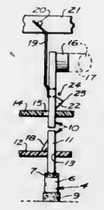
A plurality of knives are supported on and clamped to a rotary cutter head by a plurality of similarly formed wedges aligned in contiguous face-to-face relationship to define two endless, spaced apart arrays for clamping opposite end portions of the knives. Each wedge defines within one of its faces a recess for receiving an end portion of a knife, and further defines on its opposite face a keyed surface that interengages within the recess of an adjacent wedge to abut against the received end portion of an adjacent knife. A band member encircles each array for clamping together the wedges of each array. The clamped knives are thereby made more rigid and more resistant to buckling and twisting due to compressive stresses exerted against the cutting edges by yarn or tow being wrapped around the cutter head in contact with the knives prior to cutting; and in one embodiment are the sole support between the upper and lower array of wedges on the cutter head, and in another embodiment may be tensioned to resist buckling due to still greater compressive stresses or significantly large yarns or tows.

3,777,611
APPARATUS FOR THE MICROMETRIC TUNING OF THE KEYBOARDS AND SIMILAR INSTRUMENTS WITH ELIMINATION OF THE WOODEN SUPPORT OF THE PEGS AND THE PEGS SAME
Oronzo Madonna, Via del Mare No. 16, Lecce, Italy
Filed Nov. 26, 1971, Ser. No. 202,519
Claims priority, application Italy, Dec. 11, 1970, 17109 A/70
Int. Cl. G10c *3/10*
U.S. Cl. 84—204 **4 Claims**



A tuning device formed in its entirety of metal for micrometric tuning of pianos or similar instruments which permits elimination of the wooden peg supports and the pegs in pianos and improves the stability of the tuning.

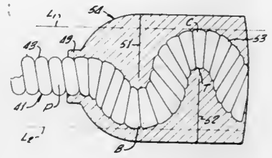
3,777,612
PLECTRUM OPERATING MEANS
Ellis Barron, 7924 Armour St., San Diego, Calif.
Continuation-in-part of Ser. Nos. 40,273, May 25, 1970, abandoned, and Ser. No. 80,671, Oct. 14, 1970, and Ser. No. 96,547, Dec. 9, 1970, abandoned, and Ser. No. 169,753, Aug. 6, 1971, and Ser. No. 225,713, Feb. 14, 1972, and Ser. No. 274,663, July 24, 1972, said Ser. No. 80,671, is a continuation-in-part of Ser. No. 40,273, May 25, 1970, abandoned, said Ser. No. 169,753, is a continuation-in-part of Ser. No. 96,547, Dec. 9, 1970, abandoned, said Ser. No. 274,663, is a continuation of Ser. No. 169,753, Aug. 6, 1971. This application Nov. 3, 1972, Ser. No. 303,540
Int. Cl. G10c *1/06*
U.S. Cl. 84—258 **14 Claims**



A plectrum operating means intended primarily for a harpsichord type of musical instrument in which the plectrum is caused to pluck a musical string with a force proportional to the force applied to its corresponding key, and on its return movement clear its string, the plucking movement being partly influenced by arranging the plectrum supporting assembly so as to have an eccentric mass, the inertia of which tends to move the plectrum into engagement with its string, the return movement being partially affected by gravity thereby minimizing inertial effect, and a spring force urging the plectrum clear of the string.

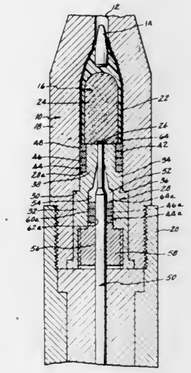
Several embodiments are disclosed which permit different arrangements of the strings and permit tone sustention.

3,777,613
GUITAR STRINGS WITH ENLARGED END
William H. Chaffee; Alfred M. Rubio, and Richard L. Lorenz, all of Chicago, Ill., assignors to Columbia Broadcasting System, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 160,734, July 8, 1971, abandoned. This application July 24, 1972, Ser. No. 274,810
Int. Cl. G10d *3/00*
U.S. Cl. 84—297 S **28 Claims**



The article is an S-shaped string end which is embedded in a tightly-folded mass of metal, the metal having axially spaced lateral fold planes on opposite sides of the bent regions of the string.

3,777,614
OBTURATOR FOR FIREARM ADAPTED TO FIRE CASELESS OR EXPENDABLE AMMUNITION
John J. Scanlon, Monroe, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Continuation of Ser. No. 789,233, Jan. 6, 1969, abandoned. This application June 3, 1971, Ser. No. 149,865
Int. Cl. F41c *11/00*
U.S. Cl. 89—26 **8 Claims**



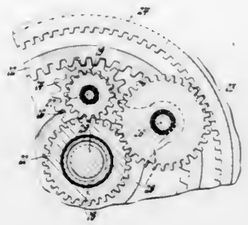
An obturator for a firearm of the type designed to fire caseless or expendable case ammunition. The obturator can consist of at least two slit metal rings mounted on the bolt head of the firearm and arranged so that the pressure of the expanding propellant gases, generated during firing, compresses the rings so that about zero clearance is maintained around both the inner and outer periphery of the rings. The same type of ring may be used to seal around the firing pin.

3,777,615

METHOD OF MAKING COMPOUND PINION GEAR

Oliver K. Kelley, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 82,599, Oct. 21, 1970, Pat. No. 3,721,135.
This application July 28, 1972, Ser. No. 276,065
Int. Cl. B23f 1/04
U.S. Cl. 90—10 2 Claims



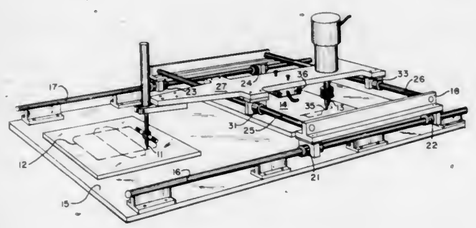
A compound planetary gearset in which the input ring gear drives the large pinion of a compound planetary pinion and the low brake holds the large sun gear meshing with the small pinion, the second brake holds the small sun gear meshing with the large pinion and the direct drive clutch locks the small sun gear to the output shaft and the reverse brake holds a second ring gear which meshes with a reverse pinion, also meshing with the large sun gear. The small pinion and the large pinion of the compound pinion have the same number of teeth. The small pinion has a small pitch and the gears meshing with it the same small pitch, and the large pinion has a large pitch and the gears meshing with it have the same large pitch. The compound pinions are finish cut by a one piece cutter which simultaneously cuts a pair of teeth, one tooth on the large pinion and one tooth on the small pinion, so the teeth on both pinions of each compound pinion have an identical radial alignment relation to each other and all the compound pinions of the gearset are identical in this relation for equal load sharing.

3,777,616

CONTROLLED CUTTING

Joseph F. Mueller, 763 South St., Dedham, Mass.

Filed Dec. 22, 1971, Ser. No. 210,930
Int. Cl. B23c 1/16
U.S. Cl. 90—13.2 4 Claims



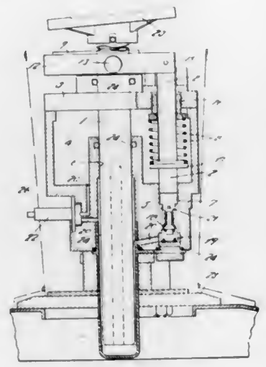
A platform is mounted for movement in *x* and *y* directions and carries a stylus, vibrator and a cutting tool. An operator moves the stylus along a master pattern causing the cutter to cut the master pattern in a sheet of suitable material, such as, 1/16 inch magnesium, plastic or alluminumate.

3,777,617

AUTOMATIC BRAKING DEVICE FOR HYDRAULIC PRESSURE CHAIR

Masaharu Okiyama, 3131-1 Oaza Anamushi Kashiba-cho, Kitakatsuragi-gun, Nara, Japan

Filed Nov. 16, 1971, Ser. No. 199,276
Claims priority, application Japan, Dec. 14, 1970, 45/112209
Int. Cl. F15b 15/26
U.S. Cl. 91—44 5 Claims



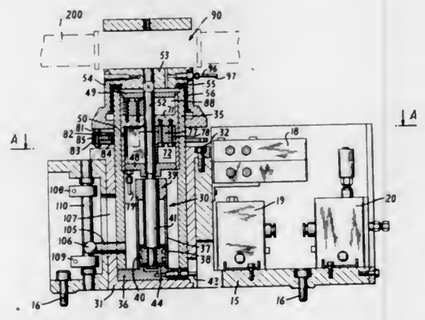
This invention provides an automatic braking device for vertically adjustable hydraulic chairs. The invention is incorporated within the hydraulics and instantly stops and locks the chair seat at any height, without the requirement of external locking means.

3,777,618

ACTUATOR ASSEMBLY FOR USE WITH INDUSTRIAL ROBOTS

Shigeru Iwai, Chiba-shi, and Yoshiaki Kitamura, Higashi-Katsushika-gun, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha

Filed Dec. 27, 1971, Ser. No. 212,344
Claims priority, application Japan, Dec. 26, 1970, 45/118893
Int. Cl. F01b 21/00; F15b 11/16, 15/24
U.S. Cl. 91—61 7 Claims



An actuator assembly for actuating an arm of an industrial robot comprises a reciprocatory motor for effecting vertical reciprocal movement of the robot arm, an oscillatory motor for effecting angular oscillatory movement of the robot arm, and another reciprocatory motor for effecting horizontal reciprocal movement of the robot arm. The reciprocal motors and the oscillatory motor are fluid-actuated and a fluid circuit

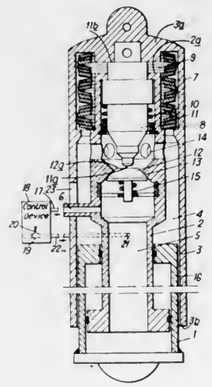
is provided for effecting actuation of each of the fluid motors independently of the operation of the others to effect three-dimensional movement of the robot arm with a high degree of precision and accuracy.

3,777,619

HYDRAULIC PIT PROP

Hans Bull, Wuppertal-Elberfeld, Germany, assignor to Hermann Hemscheidt Maschinenfabrik, Wuppertal-Elberfeld, Germany

Filed Sept. 26, 1972, Ser. No. 292,339
Claims priority, application Germany, Oct. 4, 1971, P 21 49 451.9
Int. Cl. F01b 15/00
U.S. Cl. 91—216 R 6 Claims



An hydraulic prop having a relatively movable piston and cylinder which are surrounded by an outer guide tube provided with a closed end which is normally spaced away from an opposing end of the piston by spring means but which moves telescopically in relation to the piston if excess loads are applied to the prop, such relative movement between the piston and the outer guide tube causing the latter to actuate and move a plunger which, in turn, acts on a valve member in the piston so that liquid under pressure in a pressure chamber of the piston can flow out rapidly past the valve member and thus quickly relieve the prop of transitory excess loads such as those caused by rock falls or a partial collapse of the seam being worked.

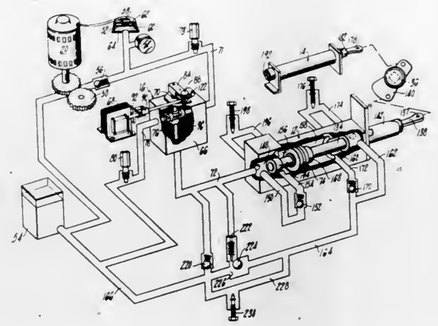
3,777,620

IN-HEADER HYDRAULIC OPERATOR

Paul C. Schultheiss, Bristol, Conn., assignor to The Stanley Works, New Britain, Conn.

Division of Ser. No. 94,475, Dec. 2, 1970. This application July 31, 1972, Ser. No. 276,705
Int. Cl. F15b 15/22; F01b 31/00
U.S. Cl. 91—394 5 Claims

Disclosed is an integrated self-contained hydraulic door operator suited for easy in-header mounting in new construction or on a retrofit basis with the availability of a standard A.C. outlet the only architectural requirement. In-line modular subassemblies of the operator are removably mounted on a base plate with leakproof hydraulic connections made automatically during assembly. A double acting spring assembly holds the door in its closed position without backlash, returns the door to its closed position after swinging movement in either direction, and includes an accessible adjustable spring plunger stop for fixing the door open position. A solenoid operated control valve has laterally adjustable valve seats for automatic alignment with the valve and a spring-biased self-lubricating nonlocking cam to serve as a safety relief valve and to control flow from the hydraulic accumulator. The hydraulic power unit includes a special arrangement for supporting the



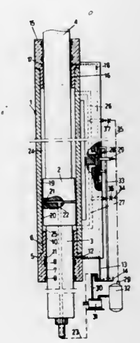
piston rod against lateral forces throughout its stroke and an overcenter crank which cooperates with the power cylinder for providing hydraulic control during manual emergency operation in the reverse door opening direction.

3,777,621

DOUBLE-ACTING SERVOMOTOR

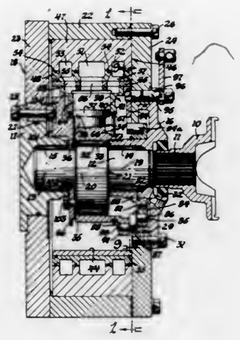
Petrus Blok, Coymanstraat 7, Moerkapelle, and Taco Jan Viersma, Julianalaan 26, Pijnacker, both of Netherlands

Filed Feb. 4, 1971, Ser. No. 112,679
Claims priority, application Netherlands, Feb. 5, 1970, 7001609
Int. Cl. F16b 11/08, 13/04; F01b 31/00
U.S. Cl. 91—431 11 Claims



Double-acting servomotor comprising a cylinder and a piston system with piston rods, wherein the clearance extending along the surfaces of the piston system and said cylinder movable relatively to each other and connecting two working chambers is divided into two divisional clearances lying in line and being separated by a circular groove, said divisional clearances being at its one end wider than at its other end and the circular groove being connected with a space in which in operation the pressure has such a value that the pressure at the smaller ends of the divisional clearances is always lower than the pressure at the wider ends of said divisional clearances.

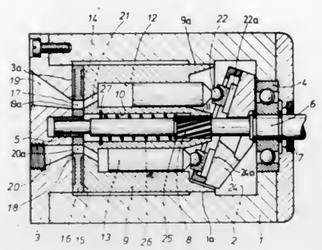
3,777,622
PUMPS AND MOTORS
Gilbert K. Hause, Bloomfield Hills, and William L. Kohler, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 24, 1972, Ser. No. 237,782
Int. Cl. F01b *13/06*
U.S. Cl. 91—479 14 Claims



A fluid pressure orbiting piston oscillating cylinder machine for use as a fluid pump or motor having a drive or driven power shaft rotatably mounted in a housing and having an eccentric and crank mechanism supporting a spider for orbiting movement. The spider has a plurality of radial arms each having fixed on the radial outer end a spherical piston fitting in a cylindrical cylinder. Each piston is coaxially aligned with the radius of its spider arm. The cylinder has a transverse cylindrical base in bearing engagement with a fixed internal cylindrical bearing surface coaxial with the shaft. A manifold in the housing is connected by ports in the internal cylindrical bearing which cooperate with ports in the cylinder base so that during rotation of the power shaft the pistons orbit in a circular path and the cylinders rotatably oscillate relative to the fixed internal cylindrical bearing to control porting for pump and motor operation. Capacity is controlled by a control ring adjustably rotated about the power shaft axis and connected by cranks to the spider to control the angular position of cylinder oscillating movement relative to the position of the ports in the cylindrical bearing to control the porting to vary capacity between zero and full capacity. In a fluid pump or motor, inlet and outlet manifolds and ports provide feed to and discharge from the cylinders. In a compressor there is a feed manifold and discharge through a check valve through the interior of the housing to the outlet.

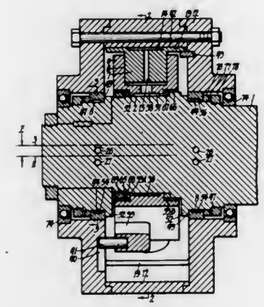
3,777,623
LEAKAGE REDUCING ARRANGEMENT FOR AN AXIAL PISTON MACHINE
Paul Bosch, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Mar. 7, 1972, Ser. No. 232,478
Claims priority, application Germany, Mar. 17, 1971, P 21 12 814.3
Int. Cl. F01b *13/04*
U.S. Cl. 91—487 10 Claims

An arrangement for reducing in a hydraulic axial piston machine, leakage from the area between the rotary cylinder block end face, and the control face of a valve plate having inlet and outlet ports. The cylinder block is mounted on the drive shaft for small axial movement, but is connected for rotation with the drive shaft by a pair of meshing gears having slanted teeth so that the end face of the cylinder block is pressed against the control face with an axial force which depends on the torque transmitted between the drive shaft and



the cylinder block so that leakage from the area between the end face and the control face is prevented, irrespective of the fluid pressure and load.

3,777,624
RADIAL HYDRAULIC MOTORS AND PUMPS
Kenneth Raymond Dixon, 1 Ambleside, Lindisfarne, Tasmania, Australia
Filed July 27, 1970, Ser. No. 58,302
Claims priority, application Australia, July 28, 1969, 58,627/69
Int. Cl. F01b *13/06*
U.S. Cl. 91—488 6 Claims

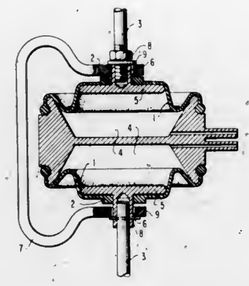


The invention provides an improvement of a radial hydraulic motor or pump of the type having a cylinder block rotatable about a first axis, pistons in the cylinders which have radially inward working faces, and a rotor rotatable about a second axis spaced from and parallel to the first axis; the radially outward ends of the pistons slidably bearing on chordal flats on the rotor. The improvement comprises replacing the pistons by reciprocating members which may be in or on the cylinders and which have a port passing through them so that radial outward forces occasioned by hydraulic fluid in the cylinders are borne hydraulically substantially entirely and substantially directly by the flats on the rotor rather than by the working faces of the pistons and, in turn, mechanically by the flats on the rotor.

ERRATUM

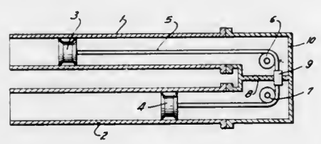
For Class 91—411 see:
Patent No. 3,777,629

3,777,625
PNEUMATIC SERVOMOTOR
Rudolf Andres, Sindelfingen, Germany, assignor to Daimler Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed May 14, 1971, Ser. No. 143,414
Claims priority, application Germany, May 15, 1970, P 20 23 858.8
Int. Cl. F01b *19/00*
U.S. Cl. 92—48 1 Claim



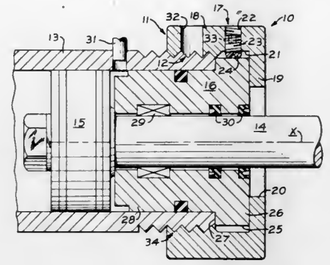
A pneumatic servo-motor, especially an adjusting motor for flaps or other reciprocable structural parts in motor vehicles, which is equipped with at least one diaphragm closing off a working space for the pneumatic medium and mechanically connected with a shifting rod abutting in the working space against the diaphragm; the diaphragm is provided centrally thereof with a disk-like thickened portion which abuts either directly at the shifting rod extending through the same or abuts at a cylindrical extension provided at the abutment disk for the fastening of the shifting rod and thereby assures an effective seal without any additional means.

3,777,626
PUMP CONSTRUCTION
Rudi Schurenberg, Essen, and Heinz-Eckard Wenzel, Wanne-Eickel, both of Germany, assignors to Torkret GmbH, Essen, Germany
Filed July 15, 1971, Ser. No. 162,966
Claims priority, application Germany, Feb. 12, 1971, P 21 06 713.0
Int. Cl. F01b *9/00*
U.S. Cl. 92—137 7 Claims



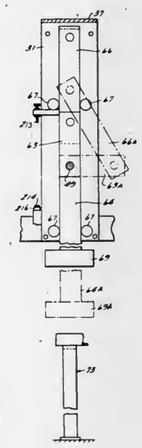
A pump for viscous materials has a pair of cylinders each of which is provided with a working end which receives viscous material, and with a remote end. Pistons are reciprocable in each of the cylinders and a casing bridges the remote ends and is provided with one or two interior chambers. One or two rollers are turnably mounted in these chambers and ropes or the like are trained about the single or several rollers and connected at one end with one of the pistons and, if there is a single rope, connected at the other end with the other piston or, if there are two ropes, connected at the other end with a control piston which is slidable in a separate channel of the respective cylinder, or with a single control piston which is slidable in a separate channel of one of the cylinders.

3,777,627
END CAP LOCKING MEANS FOR HYDRAULIC CYLINDERS AND METHOD
James C. Goade, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 7, 1972, Ser. No. 242,101
Int. Cl. F16j *15/18*, *11/04*
U.S. Cl. 92—168 8 Claims



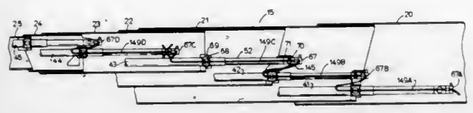
A hydraulic cylinder comprises a housing having an end cap threadably mounted on an end thereof. A cylindrical gland is closely fitted within the housing and end cap to transmit a locking force from a set screw, threadably mounted on the end cap, to diametrically opposed portions of the interengaging threads attaching the housing and end cap together.

3,777,628
QUAD STAYING MACHINE
Robert H. Nickum, c/o Norwood Tool & Die Co., 5123 Montgomery Rd., Cincinnati, Ohio
Filed Feb. 14, 1972, Ser. No. 226,156
Int. Cl. B31b *1/46*
U.S. Cl. 93—41.1 9 Claims



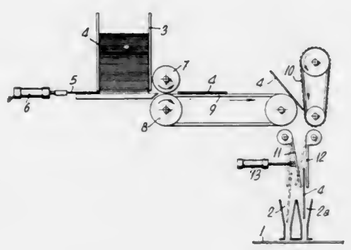
A machine for forming stays on four edges of a carton. The machine includes a mandrel which drives a carton blank provided with stays between upright stay forming members and upright side panel forming members to fold side panels against the mandrel and to partially form stay members. Further advance of the mandrel causes the front and rear panels to engage forming members to be folded to a position substantially perpendicular to the central panel with outwardly extending portions of the stay members opposite edge portions of the end panels. Stay forming and crimping members are advanced into engagement with the outwardly extending portions of the stay members to drive prongs thereof into edge portions of the end panels and to crimp the prongs therein.

3,777,629
HYDRAULIC CYLINDER FOR TELESCOPIC BOOM
Roger L. Johnston, and Daniel Charles Wiencek, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, Milwaukee, Wis.
Filed Sept. 18, 1972, Ser. No. 289,987
Int. Cl. F15b *11/20*; E02f *3/00*
U.S. Cl. 91—411 R 9 Claims



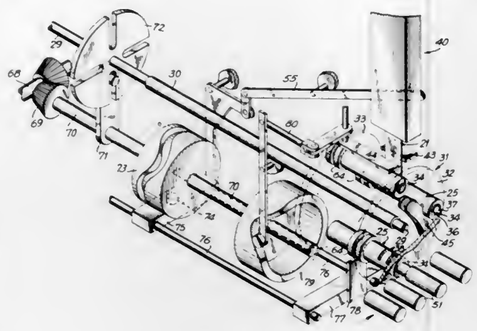
A mobile crane has a boom comprising a plurality of telescopic hollow boom sections. Hydraulic operating cylinders for the boom sections are housed within the boom and each is provided with its own remotely operable electrically controlled main valve. Each cylinder comprises a housing and a rod therein which cooperate to define an extend chamber and a separate retract chamber. Passages in the rod connect these chambers to ports on the main control valve which is mounted on the rod. Hydraulic fluid is supplied to the valves by flexible hydraulic fluid hoses disposed between the side plates of adjacent boom sections and the hoses uncoil or coil in a frictionless manner as the sections are extended or retracted.

3,777,630
PANEL INSERTING APPARATUS FOR BEEHIVE PARTITION ASSEMBLY
Emilio Roda, Noranco, Switzerland, assignor to Fratelli Roda S.A., Noranco-Lugano, Switzerland
Filed Dec. 9, 1971, Ser. No. 206,314
Claims priority, application Switzerland, July 14, 1971, 10398/71
Int. Cl. B31b *1/02*
U.S. Cl. 93—37 R 1 Claim



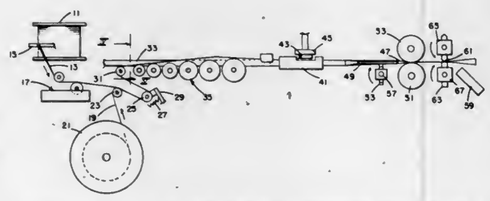
An automatic apparatus which may be adapted to a machine for manufacturing "beehive" baffle bodies for inserting the longitudinal elements of said bodies, having a magazine containing said elements, means to push one of said elements towards an inserting device which conveys said element into deflecting guide means which is actuated intermittently with said pusher by means of actuated members, a plurality of vertical parallel channels below said deflecting guide means to receive said elements and to allow said elements to drop onto said conveying means, said actuating members for the deflecting guide means adapted to provide for the introduction of one of said elements at a time, successively, into each channel.

3,777,631
APPARATUS FOR FORMING A CYLINDER
Donald R. Trask, Bat Village, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
Filed July 21, 1971, Ser. No. 164,557
Int. Cl. B31c *3/02*
U.S. Cl. 93—81 R 11 Claims



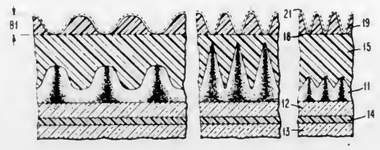
An apparatus for forming a cylinder is disclosed. It is useful, for example, for forming cylindrical battery can separator liners from a continuous strip of paper liner stock. The apparatus includes a forming tube having a receiving chamber that is defined by the inner surface of an outer tubular member and the outer surface of a central cylindrical member. The apparatus also includes means for sequentially positioning said forming tube at receiving and eject stations, and means for feeding the leading edge of a predetermined length of liner into said receiving chamber through a longitudinal slot in said outer tubular member. The outer tubular member has at least one transverse opening that is constructed to permit the extension therethrough of a friction element to engage the liner in the receiving chamber as said forming tube is moved from said receiving station toward the eject station to thereby wind the liner up into cylindrical configuration by catching the liner between the friction element and the central cylindrical member. After the liner has been wound up into a cylinder, ejection means ejects the liner from the forming tube, for instance, into a battery can.

3,777,632
SLEEVE MAKING APPARATUS AND METHOD
Carl R. Pepmeier, Fredericksburg, Va., assignor to FMC Corporation, Philadelphia, Pa.
Filed Aug. 22, 1972, Ser. No. 282,675
Int. Cl. B31c *13/00*; R31b *1/38*
U.S. Cl. 93—94 12 Claims



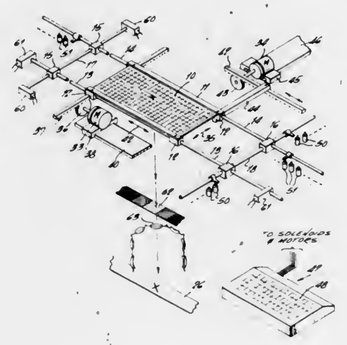
Apparatus and method in which a continuous web, having a continuous tear strip extending longitudinally thereof, is formed into a continuous tube, slit simultaneously along opposite sides of the tear strip at intervals spaced longitudinally of the continuous tube, and then severed transversely at locations extending across and inbetween the ends of the slits therein to provide individual sleeves each having a longitudinally extending tear strip for use in effecting sleeve rupture.

3,777,633
STRUCTURE FOR MAKING PHASE FILTERS
Joseph Pennell Kirk, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 25, 1972, Ser. No. 229,496
Int. Cl. G03c *5/00*, *11/00*
U.S. Cl. 95—1 R 8 Claims



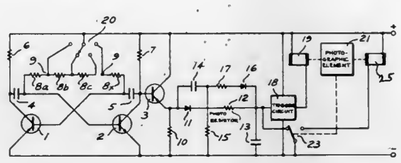
A high fidelity phase filter is made from a composite structure composed of a negative photopolymer, preferably a photoresist, layer which is affixed to a photoemulsion substrate in an optically flat and non-opaque coupling relationship. The photopolymer layer has a developed relief image which is derived by exposure of the photopolymer layer through a previously recorded and developed optical density image in the photoemulsion. The density image, and consequently the resultant relief image derived therefrom, is related to the phase modulation desired for the filter. The structure may be used as a master from which filters of the transmissive and/or reflective types are made by conventional mechanical reproduction techniques. Alternatively, it may be used as an integral part of the filter per se by affixing a reflective coating to the surface of the photopolymer layer, in which case the filter is of the reflective type.

3,777,634
PHOTOGRAPHIC COMPOSING DEVICE
Murray Friedel, North Miami, Fla., assignor to Visual Graphics Corporation, New York, N.Y.
Filed Sept. 18, 1972, Ser. No. 290,126
Int. Cl. B41b *17/06*
U.S. Cl. 95—4.5 4 Claims



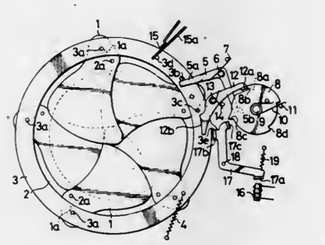
A photographic device for aligning, spacing and printing a series of symbols upon a photosensitive member. The symbols are arranged on a grid-type transparency frame which is mounted on a rectangular coordinate system of sliding guides so that any one of a large number of symbols can be selected and moved to a printing position. An optical system focuses the light from the symbol onto a photosensitive member and the member is then developed and fixed to produce the desired indicia.

3,777,635
DEVICE FOR FEEDING EXPOSURE VALUES TO APPARATUS INCLUDING PHOTOELECTRIC EXPOSURE METERS AND CONTROL DEVICES
Fritz Belitz, Giessen-Kl. Linden, and Karl-Richard Bender, Weilburg (Lahn), both of Germany, assignors to Minox GmbH, Giessen, Germany
Filed Jan. 31, 1972, Ser. No. 222,240.
Claims priority, application Germany, Feb. 6, 1971, P 21 05 573.2
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT 10 Claims



In a photographic system, a pulse generator generates a multicycle pulsating D.C. voltage whose medium or average value can be varied. The voltage is fed, via a photoconductive means, to an integrating capacitor which is connected to a threshold circuit. The threshold circuit operates when the voltage across the capacitor reaches a predetermined value to control a photographic element such as a shutter. The value of the pulsating D.C. voltage is controllably varied in accordance with desired exposure values such as film speed or lens opening to be set into the system.

3,777,636
ELECTRONIC SHUTTER IN CAMERA
Toshinori Imura, Sakai, and Yoshifusa Fujii, Mori, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Minamiku, Osaka, Japan
Filed June 24, 1971, Ser. No. 156,251
Claims priority, application Japan, June 30, 1970, 45/57651; June 30, 1970, 45/57652
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT 6 Claims



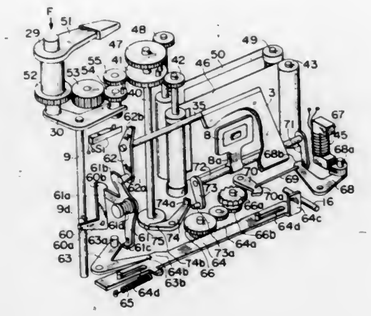
The device includes an electromagnet and an arresting member for a sector driving member and a closing effecting member. The electromagnet is energized by closing the switch of an exposure time control circuit to release the shutter and deenergized under the control of the exposure time control circuit. When attracted upon energization of the electromagnet, the arresting member permits the sector driving member to move in the shutter opening direction, and when the electromagnet is deenergized, the arresting member returns under the action of a restoring spring and initiates the closing effecting member into movement in the shutter closing direction. Thus the initiation of opening and closing of the shutter is controlled by the above-mentioned only one electromagnet.

3,777,637

AUTOMATIC EXPOSURE CONTROL DEVICE FOR A PHOTOGRAPHIC CAMERA

Yoshio Kuramoto; Kayoshi Tjujimoto, both of Osaka, and Hiroshi Ueda, Nara, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaki-shi, Osaku-fu, Japan

Filed May 18, 1972, Ser. No. 254,506
Claims priority, application Japan, May 31, 1971, 46/37049
Int. Cl. G03b 7/08, 9/06
U.S. Cl. 95—10 CD 9 Claims



An automatic exposure control device for a photographic camera provided with an exposure control circuit including a light receiving element receiving the scene light passing through an objective lens and a diaphragm, and operating in accordance with photographic conditions such as the generated current of said light receiving element, the set shutter speed and the set film sensitivity in the camera, an electromagnetic coil whose magnetic field varies according to the output of said exposure controlling circuit, and a retaining member retaining the diaphragm in a fully open state so biased that the aperture will be reduced from its fully open condition. While closing the switch of the exposure controlling circuit prior to the shutter is initiated for actuating the exposure controlling circuit, releasing the retaining member thereby causes the diaphragm to start reducing the aperture size and when the brightness of the scene light passing through said objective lens and the diaphragm becomes the correct value with respect to the set shutter speed and the set film sensitivity, the diaphragm aperture is prevented from being reduced according to the variation of the magnetic field of said electromagnetic coil for controlling the diaphragm aperture.

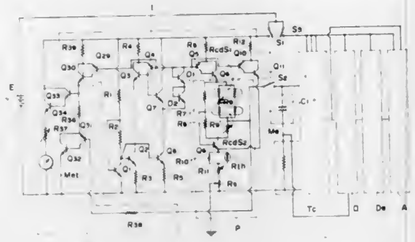
3,777,638

EXPOSURE CONTROL CIRCUITRY COMPENSATED FOR TEMPERATURE AND VOLTAGE FLUCTUATIONS

Kotaro Yata, Ikeda; Yasuhiro Nanba, and Masayoshi Sahara, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Oct. 30, 1972, Ser. No. 301,842
Claims priority, application Japan, Nov. 2, 1971, 46/86739
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CT 7 Claims

In an electrical exposure control device for a single lens reflex camera in which the scene light of objects to be photographed which passes through the objective lens of the single lens reflex camera is received by light receiving elements the output thereof is detected by the compression circuit as a voltage proportional to the value of logarithm of the brightness of said light, said potential is stored in the storage means, the timing circuit is actuated, at the time of exposure, by the current anti-logarithmically converted from the stored voltage, and the activation circuit for terminating the exposure is included; there is disclosed that said device comprises a constant current generating circuit for preventing variation of current resulting from fluctuation of voltage in the power source, said voltage being impressed to the compression circuit; a circuit to which the current generated at the constant current generating circuit is fed, said circuit including photoconductive elements and resistors, and generating a voltage proportional to a value of logarithm of illumination of light receiving surfaces; a compression circuit connected in series to the secondly-mentioned circuit and including a bias voltage generating circuit depending upon a set value of film speed and a set value of diaphragm aperture, said compression circuit photographically calculating voltage of both circuits which is developed by output current of said constant current



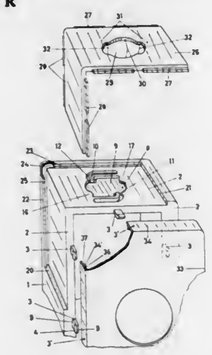
generating circuit and producing output voltage proportional to a value of logarithm of duration of exposure; a storage means for storing output voltage of said compression circuit through a switch prior to exposure; a timing circuit for producing an anti-logarithmically converted current from the stored voltage of said storage means simultaneously with the exposure, the thus produced current being impressed thereto; and an activation circuit being actuated by said timing circuit and terminating the exposure, said device being free from error which may be introduced due to a variation of characteristics of P-N functions in these circuits depending upon a variation of temperature, and part of these circuits being of an integrated circuit.

3,777,639

CAMERA CASING ASSEMBLY

Karl Heinz Lange, Ennigloh, Germany, assignor to Bolda Werka Photographische Gerate and Kunstsloff R. Gruter Kommanditgesellschaft, Westphalia, Germany

Filed Mar. 9, 1970, Ser. No. 17,708
Claims priority, application Germany, Mar. 20, 1969, P 19 14 116.3
Int. Cl. G03b 17/02
U.S. Cl. 95—11 R 11 Claims



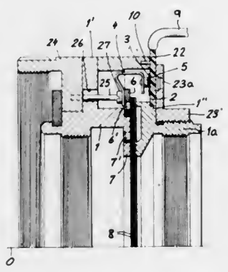
A camera in which the parts of the casing are held together through interlocking connections by engagement of catch elements formed on the individual casing parts, eliminating the use of other types of connecting means, such as, screws, rivets, etc. The camera is a so-called "one-way camera" in which the parts after being assembled cannot be taken apart. In case the camera becomes defective, it is discarded. Release of the casing parts is made possible by the use of a special tool.

3,777,640

REMOTE INDICATOR FOR DIAPHRAGM SETTING OR THE LIKE

Karl-Heinz Holderbaum, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co., Optische Werke (Rhld), Germany

Filed June 2, 1972, Ser. No. 259,225
Claims priority, application Germany, Feb. 9, 1972, P 22 05 976.3; June 24, 1971, P 21 31 374.6
Int. Cl. G03b 19/02
U.S. Cl. 95—11 R 10 Claims



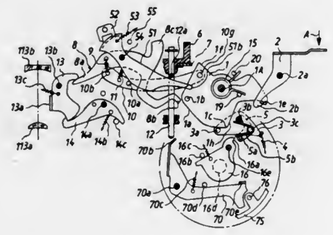
A photographic objective, used for reproduction purposes in a darkroom, has an iris diaphragm whose control ring is mechanically coupled with a movable arm sweeping a contact arc inside the camera; the setting of the diaphragm can be read on an external indicator, connected to the contact arc and the arm through a cable, which includes a light box emitting filtered light to which the copying paper is insensitive. The contact arc, which may be a set of bank contacts or a continuous resistance, is carried on an insulating plate which may be removably seated in a slot of the camera housing with a plug-in connection.

3,777,641

PHOTOGRAPHIC APPARATUS FOR USE WITH PERCUSSIVELY IGNITABLE FLASH LAMPS

Alfred Winkler, Munich; Peter Lermann, Narring, and Guenter Fauth, Unterhaching, all of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

Filed Apr. 19, 1973, Ser. No. 352,536
Claims priority, application Germany, Apr. 28, 1972, P 22 20 874.8
Int. Cl. G03b 15/04
U.S. Cl. 95—11 L 10 Claims



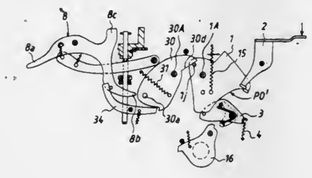
A still camera wherein a single multiple-purpose programming device is cocked in response to transport of photographic film and is held in the cocked position by the camera release which can be operated to allow the programming device to move to an uncocked position under the action of a strong spring whereby the programming device opens the shutter and causes an impeller to fire a percussively ignitable flash lamp during movement to its uncocked position. When a flash lamp or a holder for several flash lamps is detached from a socket in the camera body, the impeller is withdrawn from the path of movement of the programming device and is replaced by a braking lever which brakes the programming device during movement to uncocked position so that the force with which the programming device strikes against a stop which determines its uncocked position is controlled to avoid excessive camera shake. When the exposures are made with artificial illumination of the subject, the programming device is braked by the impeller.

3,777,642

CAMERA FOR USE WITH PERCUSSIVELY IGNITABLE FLASH LAMPS

Alfred Winkler, Munich; Peter Lermann, Narring, and Guenter Fauth, Unterhaching, all of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

Filed Apr. 19, 1973, Ser. No. 352,537
Claims priority, application Germany, Apr. 28, 1972, P 22 21 041.9
Int. Cl. G03b 15/04
U.S. Cl. 95—11 L 10 Claims



A still camera with an indexible socket for percussively ignitable flash lamps has a composite programming device with two sections which can rotate with and relative to each other between cocked and uncocked positions. One of the sections serves to open the shutter during movement to its uncocked position and the other section serves to actuate an impeller which then fires a lamp. The absence of lamps is detected by a sensing device which moves the impeller to a retracted position and simultaneously causes the impeller to move a blocking lever into engagement with the other section of the programming device so that the other section remains idle during the making of exposures in daylight. This reduces the likelihood of camera shake because the force with which the two sections strike against one or more stops when they reach their uncocked positions is not much greater than when the one section moves alone. The impeller acts not unlike a brake to oppose the movement of the other section to its uncocked position and thus reduces the impact when the two sections move simultaneously. The sections can rotate about a common axis or about separate axes.

3,777,643

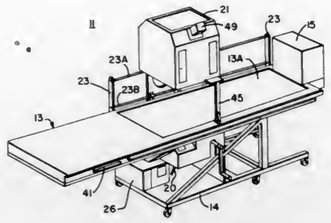
AREA SOURCE OF COLLIMATED LIGHT AND SCANNING MECHANISM

Charles C. Asbelle, and Gerald K. Porter, both of Oakland, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

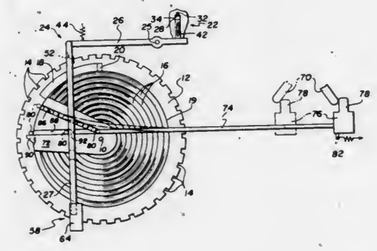
Filed Apr. 24, 1972, Ser. No. 246,979
Int. Cl. G01d 9/42
U.S. Cl. 95—12 10 Claims

A method using a light source scanning and tilting table combination device for producing a silhouette pattern of a pa-

tient's extremities under weight bearing conditions. The collimated light source scanning mechanism for designing an orthopedic appliance comprises a tilting table with a transparent grid matrix and a movable area source of parallel collimated light. A silhouette of the area of interest is made by exposing the light sensitive paper located in the grid matrix with a beam of collimated light. The light source is arranged above the tilting table so that the subject may be positioned at a selected location from horizontal to vertical position.



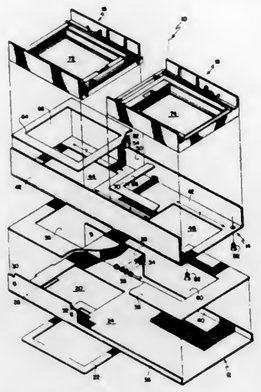
3,777,644
CAMERA COCKING MECHANISM
Marcus J. Millet, New York, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 10, 1972, Ser. No. 252,041
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 AC **5 Claims**



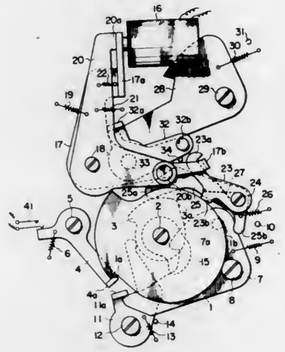
A camera mechanism for cocking a shutter includes a rotating disc having a spiral groove on one face and spaced notches about its periphery. A movable arm has a follower at one end adapted to follow in the spiral groove, and the other end is coupled to the camera shutter assembly to cock the shutter as film is advanced. The follower moves in a slot provided on a guide member.

3,777,645
PHOTOGRAPHIC APPARATUS
Norman W. Cutler, Braintree; John F. Pasieka, Acton, and Myron A. Seider, Needham, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 12, 1972, Ser. No. 314,417
Int. Cl. G03b *17/14*
U.S. Cl. 95—49 **20 Claims**

A photographic apparatus including a movable sliding carrier for selectively registering either a viewing screen or a film holder with the exposure aperture of a photographic camera. The viewing screen and film holder are so arranged within the carrier as to prevent any registration of the film holder with the exposure aperture while the viewing screen is in at least partial registration with the camera exposure aperture. Moreover, the photographic apparatus is so configured as to obviate the need for a movable dark slide proximate the film holder for preventing exposure of the film while the carrier is in a position in which the viewing screen is in registration with the camera exposure aperture.

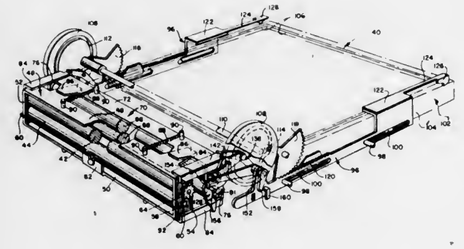


3,777,646
ELECTRONIC SHUTTER FOR PHOTOGRAPHIC CAMERA
Munetaka Shimizu, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Itabashi-ku, Japan
Filed May 19, 1972, Ser. No. 255,085
Claims priority, application Japan, May 25, 1971, 46/42005 (utility model)
Int. Cl. G03b *9/58*
U.S. Cl. 95—53 EB **2 Claims**



In order that a designed specific exposure time, for example, one-one hundred twenty-fifths of a second, may be obtained automatically in case the electronic exposure time control means has become disabled due to causes such as dissipated battery, there is provided an electronic shutter for photographic camera comprising a hook lever adapted to anchor the armature lever for a while only when the electronic exposure time control means fails to work at the time the shutter is released, and a cam member for releasing said anchored state. This electronic shutter contains a flash light means which is rendered ready to being operative when the electronic exposure time control means is switched over to the inoperative state.

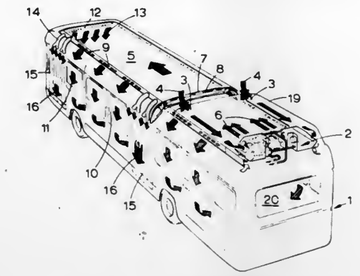
3,777,647
PHOTOGRAPHIC APPARATUS AND METHOD FOR TREATING PHOTOGRAPHIC MATERIALS WITH A LIQUID
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed May 23, 1972, Ser. No. 255,976
Int. Cl. G03d *5/02*
U.S. Cl. 95—89 L **42 Claims**



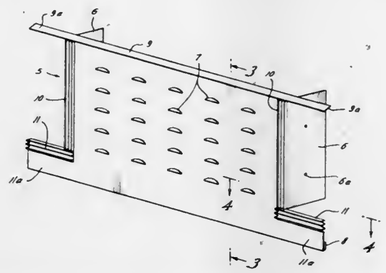
Photographic apparatus for and method of processing an exposed area of a layer of photosensitive image-recording material by confining the layer between a pair of superposed sheets and distributing a processing liquid, e.g., having a viscosity approximating that of water, between the sheets in contact with the exposed area. The liquid is introduced into a region between the sheets defined by two parallel, spaced linear regions at least equal in length to the width of the exposed area at which compressive pressure is applied to the sheets by two pairs of pressure-applying members. The sheets are held together at the lateral edges of the exposed area to prevent escape of the processing liquid from between the sheets and the two pairs of pressure-applying members are moved relative to the sheets from one end of the exposed area to the other end to permit the liquid to be absorbed into the exposed area of the photosensitive material. During relative motion of the pressure-applying members and sheets, at least one pressure-applying member of each pair is biased toward the other pair to reduce the spacing between the linear regions and maintain the liquid under pressure as it is absorbed by the photosensitive material. The processing liquid is supplied from a rupturable container attached to the sheets at one end of the exposed area and excess processing liquid overrun is collected in an absorbant trap at the opposite end of the exposed area by relieving the pressure exerted on the sheets.

3,777,648
MOTOR VEHICLE VENTILATING SYSTEM
Joseph McGowan, Preston, and Gerald Fowler, Eccleston near Chorley, both of England, assignors to British Leyland Truck and Bus Division Limited, Lancashire, England
Filed July 12, 1971, Ser. No. 161,849
Claims priority, application Great Britain, Nov. 7, 1970, 33,765/70
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.04 **4 Claims**

A heating/ventilating system of a public service vehicle includes a plenum chamber formed in the vehicle's roof to which air is supplied by a heating/ventilating unit, the windows of the vehicle being demisted or defrosted by air escaping from the plenum chamber through outlets adjacent the tops of the windows.

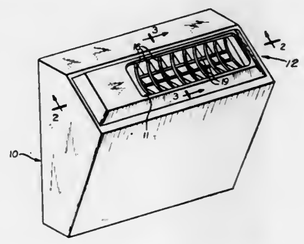


3,777,649
FRIEZE VENT
William A. Luckey, 3043 Jefferson Ave., El Paso, Tex.
Filed Mar. 31, 1972, Ser. No. 240,214
Int. Cl. E24f *7/00*
U.S. Cl. 98—37 **12 Claims**



A prefabricated apparatus used for occupying the space between the roofing material and the outer walls of a building, the size of such space being dependent upon the vertical dimension of the rafters supporting the roofing material and the horizontal distance between rafters. The apparatus is provided with corrugations so that it may be adjusted for variations in the normal sizes of the space and the rafters.

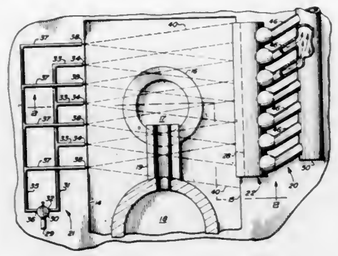
3,777,650
AIR DISTRIBUTOR
Norman B. Wenig, 39 Herkimer Rd., Scarsdale, N.Y.
Filed Jan. 3, 1972, Ser. No. 214,862
Int. Cl. F24f *13/06, 13/08*
U.S. Cl. 98—40 V **4 Claims**



An air distributor for controlling the direction of air flow out of a passageway whereby the air exiting the passageway is

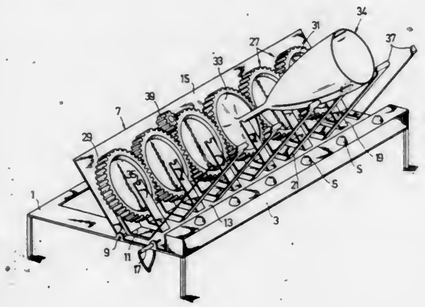
controllably deflected by a combination of axially spaced transverse vanes and angularly spaced radial vanes mounted on a rotor extending across the outlet of the passageway.

3,777,651
METAL POURING APPARATUS INCLUDING PARTICLE COLLECTING MECHANISM
Paul J. Hansen, 334 Interstate Pky., Bradford, Pa.
Filed Sept. 28, 1972, Ser. No. 292,864
Int. Cl. F23j 11/04
U.S. Cl. 98—115 R 10 Claims



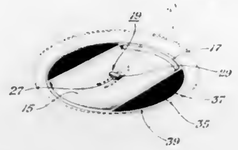
This specification discloses metal pouring apparatus which includes mechanism for collecting particles generated by explosion as molten metal is poured into a ladle. The collecting mechanism comprises a horizontal collection hood, any vertical cross-section of which is a segment of an ellipse. It is located at one side of a pit in which the ladle is located. A horizontal series of air jet nozzles are positioned at the opposite side of the pit, and, like the collection hood, are disposed at a level above the top of the ladle. The inner surface of the hood determines a focal line of the ellipse and the nozzles are located at the other focal line of the same ellipse. Thus, all of the air emanating from the nozzles, and particles entrained thereby, are reflected onto the focal line of the hood. Withdrawal hoods are mounted on the back of the collection hood. They communicate with a manifold in which a partial vacuum is generated and are effective at the focal line of the hood.

3,777,652
DEVICE FOR PROVIDING IRISH COFFEE
Emil Engel, Egerer Strasse 34, 8595 Waldsassen, Germany
Filed Aug. 9, 1972, Ser. No. 278,942
Int. Cl. A23f 1/00; B01f 9/04
U.S. Cl. 99—275 9 Claims



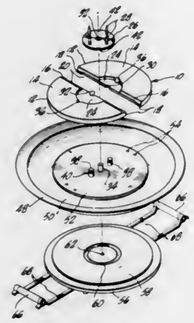
The specification describes a device for the preparation of Irish-Coffee which comprises a number of rotary plates arranged to receive glasses in which the Irish-Coffee is made.

3,777,653
COOKING ACCESSORY
Jack I. Carruth, 1416 Yale St., Fort Worth, Tex.
Filed Mar. 1, 1972, Ser. No. 230,889
Int. Cl. A47j 37/10
U.S. Cl. 99—339 4 Claims



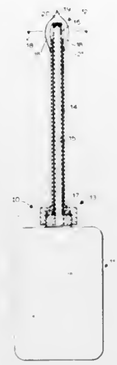
A cooking accessory that is adapted to be employed in conjunction with another cooking utensil or to be employed as a cooking utensil and to be handled with a cooking fork characterized by a metallic centerpiece having both top and bottom surfaces adapted for cooking contact with the food without sticking; a raised outer edge extending peripherally about the metallic centerpiece for retaining juices about food cooked on the top thereof; and a handle having a base portion that will fit within the tines of a cooking fork and having an enlarged head to prevent the fork from slipping off the handle. The cooking accessory can be emplaced atop meat, such as bacon, frying in a skillet to eliminate problems with curling and wasteful shrinkage, and to obtain substantially uniform cooking. On the other hand, the cooking accessory can be employed on a grill and meat, eggs, hotcakes or the like cooked on its upper surface as on the surface of a griddle. In specific embodiments, the cooking accessory has foraminous, screen-like portions at one or more of its edges exteriorly of the raised edge to allow turning the cooking accessory to inspect the food to see if it has been cooked completely, draining grease or the cooking juices from around the food for more healthful food.

3,777,654
ROASTING PAN
John Strathaus, 11835 Highwater Rd., Granada Hills, Calif.
Filed July 20, 1971, Ser. No. 164,287
Int. Cl. A47j 37/04; A22c 17/02
U.S. Cl. 99—419 6 Claims



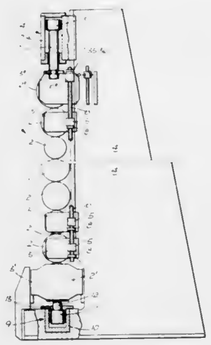
A roasting pan having a center carving section made from hardwood. This hardwood center has provision for a set of metal prongs to secure large pieces of meat to the pan. The center may also be repositioned to provide a substantially flat surface for roasting flat pieces of meat such as steak.

3,777,655
MEAT FLAVORING SYRINGE
Sheldon E. Ainsworth, 1704 Shadyside Dr. S.W., Albuquerque, N. Mex.
Filed Sept. 11, 1972, Ser. No. 288,090
Int. Cl. A23b 1/16
U.S. Cl. 99—532 10 Claims



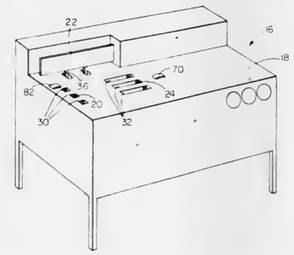
A syringe for injecting flavor substances in meat constructed of an elongated tubular stem, one or more radial apertures located in the stem proximate a first end, a lance blade of generally open elliptical shape affixed to the stem on the said first end in protective relationship to the one or more apertures and means for detachably attaching the stem at the second end to a compressible flavor substance container.

3,777,656
CALENDER AND METHOD OF OPERATING THE SAME
Gernot Muller, Reutlingen, Germany, assignor to Bruderhaus Maschinen G.m.b.H., Reutlingen, Germany
Filed Feb. 17, 1972, Ser. No. 227,222
Int. Cl. B30b 3/04
U.S. Cl. 100—47 12 Claims



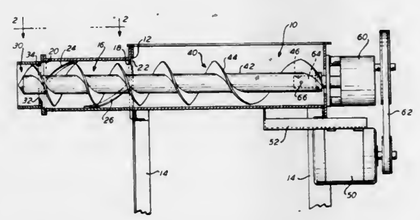
A calender and a method of operating the same by means of a pair of upper hydraulic units the pistons of which are hydraulically movable in both directions in their cylinders. During the normal operation of the calender, these pistons exert a loading pressure in the downward direction upon the vertically slidable bearings of the highest calender roll, while the bearings of the lowest roll rest in a fixed position on the piston rods of a pair of lower hydraulic units which are hydraulically movable only in the upward direction up to fixed stops by a hydraulic pressure in their cylinders which is at least equal to a total of the weight of all of the rolls and of the loading pressure upon the highest roll. If it becomes necessary to separate the rolls quickly from each other, the pressure in the cylinders of the lower hydraulic units is released so that each of the rolls with the exception of the highest roll can then drop by gravity for a certain distance which is limited by stops, while preferably the direction of movement of the pistons of the upper hydraulic units is reversed so that, while the lower rolls will drop by gravity, the piston rods of the upper pistons which are secured to the bearings of the highest roll will draw this roll and at least some of the following rolls in the upward direction.

3,777,657
STACK PACKER
Roger C. Crandlemire, 159 Washington St., Duxbury, Mass.
Filed May 25, 1972, Ser. No. 256,775
Int. Cl. B30b 15/14
U.S. Cl. 100—49 3 Claims



Apparatus for aligning and holding a compressible stack of flat articles while the stack is being surrounded with an endless band or sleeve or is being enclosed within a container, includes movable gates which move upwardly successively one in front and the other behind a stack of flat articles moved along a tabletop and then move relatively toward each other to compress the stack between the gates while a sleeve or container is placed around the stack. The gates are then retracted. The motions follow one another in timed sequence.

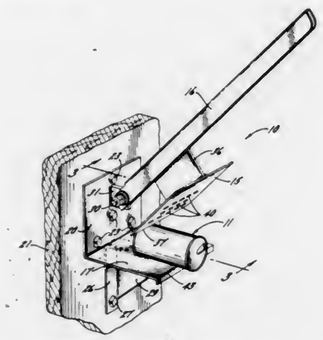
3,777,658
APPARATUS FOR COMPRESSING MATERIAL
Heinz Vosskuhler, Auburn, N.Y., assignor to Jeffrey Heinz Manufacturing Co., Inc., Auburn, N.Y.
Filed Jan. 6, 1972, Ser. No. 215,784
Int. Cl. B30b 9/14
U.S. Cl. 100—98 7 Claims



Material compression apparatus including a rotable auger provided with a variable pitch screw extending through a hopper for receiving material to be compressed, a material compression and shredding chamber and a material discharge chamber. The material compression and shredding chamber is provided with raised counter spirals for cooperating with the

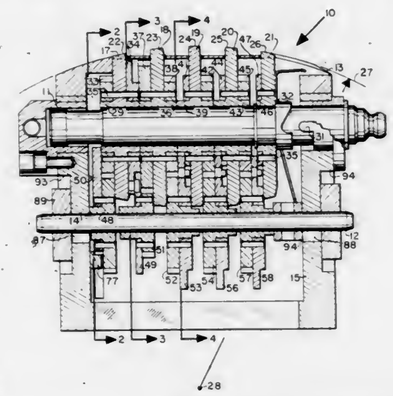
screw to shred and compress the material. A portion of the entrance shoulder to the material compression, and shredding chamber and the entrance shoulder to the material discharge chamber, are provided with predetermined angles for retarding the advancement of the material sufficiently to achieve material compression, and yet not retarding the material sufficiently to preclude advancement of the material.

3,777,659
CAN CRUSHER
Hugh V. McCarten, 2141 Crittenden, Beloit, Wis.
Filed Aug. 10, 1972, Ser. No. 279,708
Int. Cl. B30b *7/00*
U.S. Cl. 100—233 **7 Claims**



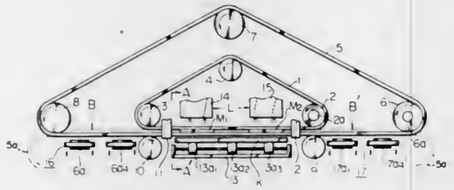
The crusher includes a swingable lever carrying a press plate which folds the closed end portion of the can outwardly over the main body of the can and smashes the main body downwardly as the lever is swung downwardly. By swinging the lever downwardly through an additional stroke, the press plate may be used to flatten the folded portion downwardly against the main body of the can.

3,777,660
ROTARY PRINTER FOR NUMBERING INCLUDING GENERAL WHEEL DRIVE MEANS
Joachim F. Otto, Point Pleasant, N.J., assignor to The Anaconda Company, New York, N.Y.
Filed Nov. 18, 1971, Ser. No. 200,102
Int. Cl. B41l *45/06*
U.S. Cl. 101—77 **6 Claims**



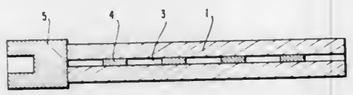
A printing head on a rotary numbering machine for printing footages on cables and the like comprises one axis for printing disks and another, parallel, axis for auxiliary geneva mechanisms. For the first two disks geneva wheels are mounted on the auxiliary axis and geneva cams on the disk axis while for later disks the geneva cams are on the auxiliary axis and the geneva wheels on the disk axis. Two sets of alignment holes are provided, one through the elements on each axis.

3,777,661
METHOD AND DEVICE FOR MARKING SHEETS THROUGH STENCILS
Hideo Aiko, Kobe; Takao Okamoto, Kakogawa; Eiji Abe, Tamaki; Kazunobu Tsukihashi, Yokohama, and Koichi Yamashita, Ise, all of Japan, assignors to Shinko Electric Co., Ltd., Tokyo and Kobe Steel Ltd., Kobe-shi, Hyogo-ken, both of Japan
Filed June 28, 1971, Ser. No. 157,107
Claims priority, application Japan, June 29, 1970, 45/56775; July 29, 1970, 45/66755; Oct. 21, 1970, 45/92511
Int. Cl. B41f *15/08*; **B41n** *1/24*
U.S. Cl. 101—114 **6 Claims**



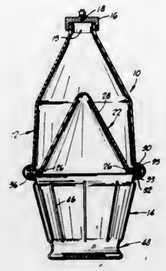
A sheet to be marked is delivered to a marking station in succession by a second conveyor. Stencils for desired marks are prepared at a punching station and forwarded by a first conveyor to the marking station and registered on the sheet to be marked. Pigment sprayer means in the marking station directs pigment jets onto the stencils for urging the stencils to the sheet, so as to print the marks carried by the stencils onto the sheet by the pigment jets.

3,777,662
EFFECT OF THE SHOCK PRESSURE OF EXPLOSIVE CHARGES
Paul Lingens, Leverkusen, and Gerhard Martin, Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed July 26, 1971, Ser. No. 166,013
Claims priority, application Germany, July 24, 1970, P 20 36 726.4
Int. Cl. F42d *1/00*
U.S. Cl. 102—23 **14 Claims**



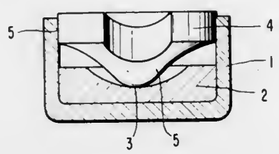
An explosive charge and method for increasing detonative percussion in which the explosive is provided with cavities, gas, or fissures which permit the "advance ignition" of the explosive. Preferably, the explosive is cylindrically shaped with a through-axial core. The bore may include explosive or inert baffles. Also the bore may be provided with a fuze train of explosives.

3,777,663
SHAPED CHARGE ENCLOSURE APPARATUS
Claude H. Brown, Arlington, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.
Filed June 22, 1972, Ser. No. 265,372
Int. Cl. F42b *3/08*
U.S. Cl. 102—24 HC **6 Claims**



The present invention relates to an improved enclosure apparatus for containing a shaped explosive charge which includes a top enclosure member, a bottom standoff member and a shaped liner positioned therebetween. The liner, enclosure member and standoff member each include annular flange portions and means for clamping the flange portions together are attached thereto so that a fluid tight seal between the liner, enclosure member and standoff member is provided.

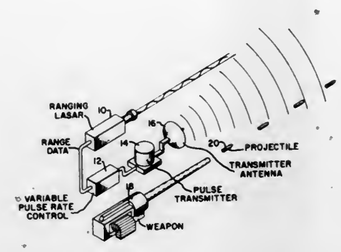
3,777,664
ANVIL FOR PERCUSSION PRIMER
Heinz Gawlick, Furth/Bay; Hellmut Bendler, Erlangen-Spardorf, and Ernst Jensen, Furth/Bay, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany
Filed Feb. 1, 1971, Ser. No. 111,275
Claims priority, application Germany, Jan. 31, 1970, P 20 04 506.1
Int. Cl. F42c *19/08*
U.S. Cl. 102—45 **10 Claims**



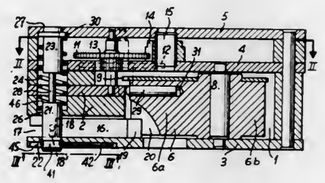
An anvil for percussion primers comprising an annular disk having at least two recesses or cut-outs at the periphery thereof. As seen in cross-section, the anvil tapers approximately conically and has a cylindrical outer surface in the zone of one of its end faces and passes over into an annular surface at right angles to the axis thereof in the zone of the other of its end faces.

3,777,665
FUZE ACTUATING SYSTEM
Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.
Division of Ser. No. 843,478, July 22, 1969, Pat. No. 3,714,898. This application Aug. 3, 1972, Ser. No. 277,562
Int. Cl. F42c *13/04, 15/04, 11/00*
U.S. Cl. 102—70.2 P **1 Claim**

An electronic, digital, time fuze, has a time base which is introduced over a radar command link at a rate which is inversely proportional to the desired projectile flight time. A target following ranging device, such as a ranging laser, provides target range information to a pulsed radar transmitter. The range signal from the ranging device controls a variable pulse rate control unit which in turn adjusts the transmitter pulse rate to a value inversely proportional to the target range. The transmitter is fixed to the weapon system and radiates in the direction of the projectile flight path. Each projectile includes a fuze actuating circuit consisting of an antenna, an r.f. detector, a fixed-set counter and a firing circuit. At launch, the fuze actuating circuit within each projectile becomes actuated a short distance after departure from the gun muzzle. As the projectile travels towards its target it receives a series of r.f. pulses at a rate which will just fill the counter when the projectile is at the proper range. The counter within the fuze counts the pulses received during its flight to target. When the fixed-set number has been accumulated, the firing circuit detonates the payload.



3,777,666
SAFETY DEVICE FOR A GYRATORY ROCKET MISSILE
Rene Morel, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Oct. 28, 1971, Ser. No. 193,256
Claims priority, application Switzerland, Nov. 3, 1970, 16257/70
Int. Cl. F42c *15/26*
U.S. Cl. 102—80 **1 Claim**



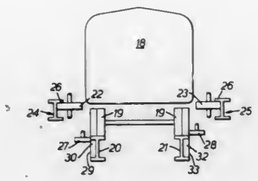
A safety device for a gyratory rocket missile of the type with a primer support centrifugally pivotable from a safe to an armed position and centrifugally releasable means for securing the support in the safe position, comprises an axially slidable pin urged by a spring to a position locking the securing means in support-securing positon. The two ends of a resilient open loop releasably engage a groove in the pin to hold it in the locking position and, when the pin moves due to an axial acceleration upon firing the missile so as to free the securing means, the ends of the loop come to bear against a shoudler of the pin to prevent return thereof. Once the support regulated by a delay mechanism reaches the armed position, a finger slidably mounted in an outwardly opening radial housing in the primer support moves out of its housing to lock the support in position.

3,777,667

TRANSPORTATION MEANS

Francis Cyril Perrott, The Manor House, South Cerney, Cirencester, England

Continuation of Ser. No. 779,977, Nov. 29, 1968, abandoned.
This application Oct. 19, 1971, Ser. No. 190,627
Claims priority, application Great Britain, Aug. 21, 1968, 39,883/68
Int. Cl. B61b *13/08, 1/00*
U.S. Cl. 104—88 10 Claims



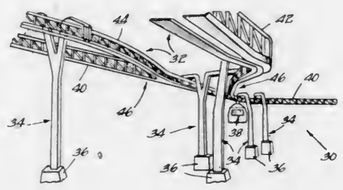
Means of transportation comprise a vehicle and guidance means for the vehicle. The guidance means include a plurality of stationary guide members which respectively extend parallel to alternative routes for the vehicle, which routes either branch, or join, or both. A plurality of follower members are separately mounted on the vehicle and individually engageable with the guide members, and means carried by the vehicle enable any one of the follower members to be engaged with the corresponding guide member whereby to select and cause the vehicle to follow the route corresponding to the guide member engaged.

3,777,668

MONORAIL SWITCHING DEVICE

Robert W. Corey, c/o Monarch Inc., 2700 Oakland Ave., Garland, Tex.

Division of Ser. No. 84,274, Oct. 27, 1970, Pat. No. 3,702,590.
This application July 24, 1972, Ser. No. 274,338
Int. Cl. E01b *25/26*
U.S. Cl. 104—105 3 Claims



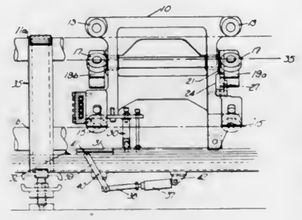
A vehicle switching arrangement comprises an overhead monorail guideway that includes a mainline section and a diverging section merging with the mainline section to define a switching station. In addition, a bogie unit is arranged for rollable transport along the guideway and includes port and starboard main wheels rollably engaging the guideway. The bodie unit also includes a guide arrangement for selectively acting against the guideway to load either the port or the starboard main wheels in excess of the normal vehicle load thereof for establishing a vehicle heading through the switching station. Furthermore, stationary fail-safe cams are provided on the guideway to cooperate with cam followers carried by the bogie unit for ensuring safe transit through the switching station in the event of malfunction.

3,777,669

PARTS CONVEYOR PALLET AND MEANS FOR SUPPORTING SAME ON AN INITIAL PAIR OF RAILS AND SWITCHING SAME TO A SECOND PAIR OF RAILS

George T. Lott, Wyoming, and Francis H. Little, Cincinnati, both of Ohio, assignors to Lott Tool Company, Cincinnati, Ohio

Division of Ser. No. 139,672, May 3, 1971, Pat. No. 3,717,103.
This application Aug. 16, 1972, Ser. No. 281,126
Int. Cl. E01b *25/26*
U.S. Cl. 104—130 5 Claims



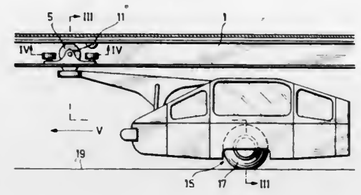
A pallet for conveying parts through a succession of work stations. The primary support for the pallet comprises a pair of vertically aligned tubular rails. The pallet is support on these rails by a pair of upper rollers mounted on said pallet and riding on the upper rail and a pair of lower rollers mounted on said pallet and riding on the lower rail along with a third pair of intermediate or clamping rollers, shiftably mounted on said pallet, which cooperates with the upper rollers to clamp the pallet to the upper rail. In this manner the pallet is cantilevered from the top rail. The pallet is driven by means of a downwardly extending arm having a spring loaded friction plate which frictionally engages the top of a flat segmented (crescent) chain disposed beneath the pallet and continuously driven by conventional means. The first mentioned rails are disposed in a continuous path. Each work station is mounted to one side of said path. For each work station there is a side pair of vertically aligned rails extending closely adjacent to and parallel to said first mentioned rails a relatively short distance, then leaving said first mentioned rails to lead to a said work station, and then extending back to said first mentioned rails wherein said side pair of rails is again closely adjacent to and parallel to said first mentioned rails a relatively short distance. A second chain, like the chain first described and running at the same speed thereof, is positioned beneath said side pair of rails at the same level as said first chain. The said plate extends beyond said first chain a distance sufficient to engage said second chain when said pallet is brought into proximity with said side pair of rails. Said pallet has mounted thereon a second pair of upper rollers, and a second pair of lower rollers, disposed to engage said side pair of rails when the pallet is brought to that position wherein the side pair of rails is parallel to said first mentioned rails. At this last mentioned point means are actuated to disengage said third pair of rollers from clamping engagement with said first mentioned upper rail while immediately causing a similar pair of clamping rollers to engage the upper of said side pair of rails whereby said pallet is then cantilevered from said side pair of rails by virtue of said second pair of upper rollers, said similar pair of clamping rollers and said second pair of lower rollers. Continued movement of the chains will cause the pallet to move along on the side rails to the work station. Similarly the pallet may be placed back on the first mentioned rails when the side rails are parallel thereto and means are actuated to again reverse the positions of said first mentioned, and said similar, clamping rollers.

3,777,670

SINGLE-DIRECTIONAL TRACK-GUIDED VEHICLE

Ernst Blochlinger, Neuhausen au Rheinfall, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen a. R., Switzerland

Filed Sept. 17, 1971, Ser. No. 181,506
Claims priority, application Austria, Sept. 24, 1970, 8631/70
Int. Cl. B61b *13/00*
U.S. Cl. 104—246 10 Claims



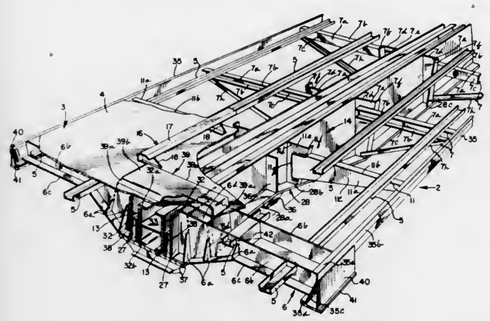
A road supported, track guided vehicle: The vehicle has a body with a center of gravity and has a road wheel assembly near the center of gravity, which carries the load of the vehicle body. A rail guided rail wheel assembly is connected through a rigid arm by an articulated connection to the vehicle body. The arm extends forwardly of the body and serves to vertically position and to guide the vehicle. Electric power may be drawn through the wheel assembly.

3,777,671

RAILROAD FLAT CAR

Roy M. Miller, Highland; Marvin Stark, Michigan City, and William R. Shaver, Munster, all of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Division of Ser. No. 39,683, May 20, 1970, Pat. No. 3,659,724.
This application July 22, 1971, Ser. No. 165,298
Int. Cl. B61f *1/02*
U.S. Cl. 105—420 1 Claim



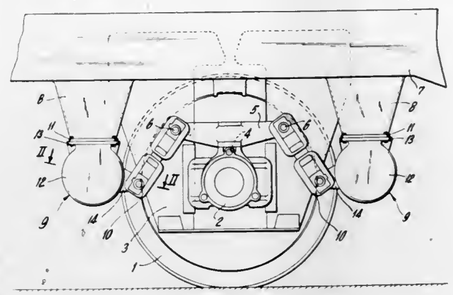
In a cushioned underframe railroad flat deck car, a bolster and crossbearer construction of cross elements extending between each side sill and the fixed center sill and having vertical truss means on the sides of the fixed sill tying the cross elements to the fixed sill, a center plate under the fixed sill tying the bolster cross elements together and a transverse transfer channel member forming a shear box with the deck and tying the bolster cross elements together, sub-cross means under the fixed sill tying the outboard bolster cross elements together, reinforcement about the fixed sill at the fish belly transition section of the fixed sill, and fixed longitudinally vertical cushion key stops on the top and bottom inside portions of the fixed sill and sliding key stop means in the form of horizontal crosshead means on the sliding insert sill acting as cushion stop means at the cushion pocket.

3,777,672

RAILWAY CAR SUSPENSION

Felix Schneider, Netphen Eckmannshausen, Germany, assignor to Rheinstahl AG, Kassel, Germany

Filed Dec. 20, 1971, Ser. No. 210,058
Claims priority, application Germany, Dec. 19, 1970, P 20 62 797.8
Int. Cl. B61f *3/00, 5/30*; F16f *1/48*
U.S. Cl. 105—453 11 Claims



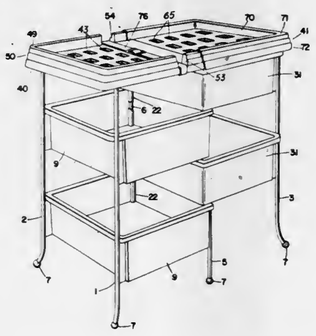
A torsional spring suspension for vehicles particularly an axle and cradle suspension for rail vehicles, comprises a linkage system extending between a supporting bracket on the undercarriage of the vehicle to the axle bearing housing which includes a spring element made up of a plurality of concentrically and alternately arranged metal and rubber or elastic material sleeves. The spring element includes at least one outer and one inner metal sleeve and the sleeves which are concentrically arranged are jointed together through the intermediate elastic sleeves. One of the sleeves is fixed to a housing by a non-rotatable connection and the other carries a swivel arm which provides the articulation for the support of the axle bearing.

3,777,673

SECURITY TOP OR GUARD FOR INFANT'S DRESSING TABLE OR THE LIKE

Lawrence Blazey, Bay Village; David Silverstrom, Lyndhurst, and Elmer Rocker, Shaker Heights, all of Ohio, assignors to Century Products, Inc., Cleveland, Ohio

Filed Mar. 22, 1972, Ser. No. 236,836
Int. Cl. A47b *17/00, 57/00*
U.S. Cl. 108—27 8 Claims



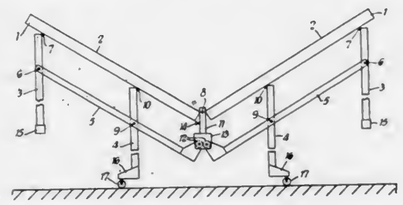
A top or guard for an infant's dressing table or dresserette is provided which is so designed and constructed as to reduce or minimize the possibility of the infant rolling or falling off the table. The top is of such construction that it can be shortened

to conform in dimensions or area with the table or dresserette when folded or closed. It comprises sections, one of which is telescopically movable in relation to the other, with the sections provided with means for limiting movement of one section relatively to the other. Other features include track means for maintaining the sections in alignment during movement relatively to each other, and safety belt means secured to one of the sections.

3,777,674
FOLDABLE ARTICLES

Rodney Parsons, Kingswood, England, assignor to Entryown Patents Ltd., London, England

Filed Apr. 26, 1972, Ser. No. 247,768
Claims priority, application Great Britain, May 17, 1971, 15,357/71
Int. Cl. A47b *3/083*
U.S. Cl. 108—113 **15 Claims**

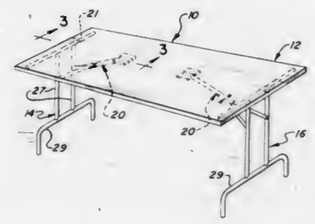


A foldable article having a generally planar surface, for example a table-tennis or other table, comprises two halves which are pivotable with respect to one another so as to fold up into a position in which the halves lie against one another. A respective beam is provided below each half, and the beams are pivotally connected to one another such that pivotal movement of one half constrains the other half to move to an equal extent in an opposite sense. The pivot point of the halves and that of the beams are rigidly connected. Each half is supported by a respective leg which is pivotally connected to its half and to a beam. The pivot points of the halves, the beams, the legs with the beams and the legs with the halves define a respective parallelogram below each half. On folding up the article, the legs of each half move towards one another over a supporting surface.

3,777,675
FOLDING TABLE LEG BRACE CONSTRUCTION

Tadeusz J. Hanusiak, Chicago, Ill., assignor to Amtab Manufacturing Co., Chicago, Ill.

Filed July 21, 1972, Ser. No. 274,096
Int. Cl. A47b *3/00*
U.S. Cl. 108—132 **9 Claims**

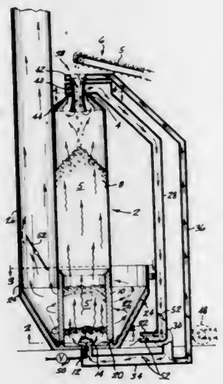


A folding leg for a table top has a bracing structure which is comprised of a cylindrical tubular member and a pair of juxtaposed arcuate cross section arms resiliently clamped on a swivel to the opposite sides of the tubular member adjacent one end of said tubular member with the tubular member nesting in the concave surfaces of the arms, these latter surfaces facing one another. The arms have extensions which diverge so that the arms and their extensions together form a generally wishbone structure, the ends of the extensions opposite the arms being hingedly connected to said folding leg which is pivoted adjacent one end of the table top. The second end of the tubular member is pivoted to the bottom of the table top spaced inwardly from said one end. The wishbone structure and tubular member are swingable relative to one another and will detent in two positions 180° apart in one of which the folding leg is normal to the table top and in the other of which the folding leg is parallel with the table top. Either detent position can be overcome by manual force.

3,777,676
APPARATUS AND TECHNIQUE FOR INCINERATING SOLID FUELS CONTAINING CARBONIZABLE MATERIAL

William S. Lagen, 9931 Lake Washington Blvd. N.E., Bellevue, Wash.

Filed July 31, 1972, Ser. No. 276,820
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 R **35 Claims**



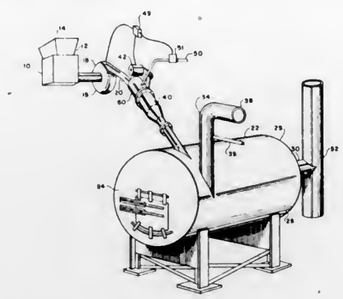
A furnace is provided having preliminary and post incineration chambers in which the atmosphere is adapted for combustion of the fuel therein. The fuel is introduced into the post incineration chamber through the preliminary incineration chamber, while the atmosphere within the chambers is pressurized. In addition, a portion of the atmosphere is purged from the post incineration chamber, and discharged relatively outside of the furnace, while the whole of the atmosphere is purged from the preliminary incineration chamber, and discharged into the post incineration chamber.

3,777,677
INCINERATOR

Syed Aejaz Ali, and Orval Austin Doherty, both of Shelbyville, Ind., assignors to General Electric Company, Indianapolis, Ind.

Filed Sept. 13, 1972, Ser. No. 288,523
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 R **10 Claims**

An incinerator for burning waste material having a combustion chamber comprising spaced end walls and a side wall through which a mixture of waste material and air is vortically moved and burned. The incinerator combustion chamber includes a tangentially directed inlet conduit means for feeding a mixture of waste material and air under pressure from a blower into the chamber, and an exhaust flue to vent combustion gases from the chamber. The inlet conduit means is

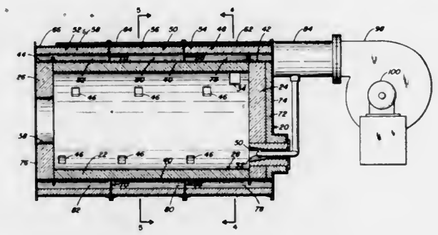


provided with a valve means intermediate the combustion chamber and blower for closing off the conduit when the blower is not operational, and means are provided for introducing cooling air to said valve means in the inlet conduit.

3,777,678
CYCLONIC TYPE FUEL BURNER

Kenneth V. Lutes, Escondido; James E. Lander, San Clemente; Vincent J. Shanahan, Escondido, and Richard G. Mills, Solana Beach, all of Calif., assignors to Macmillan Bloedel Ltd.

Filed June 14, 1971, Ser. No. 152,541
Int. Cl. F23g *5/06*
U.S. Cl. 110—8 R **10 Claims**



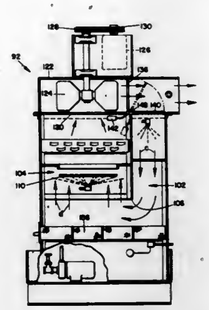
The invention is directed to a fuel burner for combustible material, the burner having a horizontally disposed, circular combustion chamber into which all types of dry or semi-dry combustible material, including waste material, which has been reduced to small particulate size, or various types of combustible luquid wastes, together with air for supporting combustion, are injected tangentially into the combustion chamber. The invention is also directed to the method of burning combustible material and to the method of providing heat energy.

3,777,679
INCINERATING PROCESS

Zygmunt J. Przewalski, 22 Brewster Rd., Windsor, Conn.

Filed Apr. 17, 1972, Ser. No. 244,527
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 A **2 Claims**

An incinerating system for recovering copper wire following the burning of the insulation therefor as combustible waste while simultaneously insuring against wire overheating including the steps of: first burning the insulated wire in an ignition chamber, second preheating the secondary chamber, and third exploiting the fuel generated in the ignition chamber for maintaining the temperature of the secondary chamber while

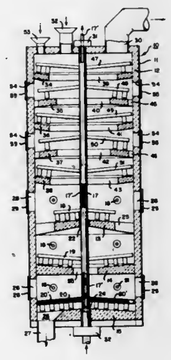


passing the smoke generated in the ignition chamber through the secondary chamber preliminary to passage to atmosphere.

3,777,680
FURNACE FOR COMBINED INCINERATION OF RUBBISH, GARBAGE, AND SEWAGE SLUDGE

John C. Eck, Convent, N.J., assignor to Wilputte Corporation, Murray Hill, N.J.

Filed June 27, 1972, Ser. No. 266,688
Int. Cl. F23g *3/02*
U.S. Cl. 110—12 **7 Claims**

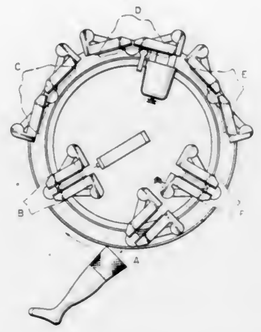


The specification discloses a furnace of the multihearth type, comprising a lower combustion zone having a plurality of vertically spaced annular hearths and an upper drying zone having a plurality of vertically spaced annular hearths. The central area of the drying zone hearths is open and provides a passage for rubbish and garbage to fall directly from a hopper at the top of the furnace upon the uppermost hearth in the combustion zone. Rabbling apparatus moves the rubbish and garbage progressively from hearth to hearth and thence in ash form to a removal chute. The sewage sludge is deposited on the uppermost of the drying zone hearths and moved progressively downward by rabbling apparatus in a zig-zag path from hearth to hearth and then falls in a dry state to the uppermost hearth of the combustion zone, where it is incinerated along with the garbage and rubbish, and then removed in ash form via the removal chute. A forced air system for cooling the rabbling apparatus is also provided.

3,777,681
SEAMING METHOD AND APPARATUS FOR GORELESS PANTY-HOSES

Teruyuki Horita, Osaka, Japan, assignor to Takatori Machinery Works Ltd., Nara-ken, Japan

Filed Nov. 12, 1971, Ser. No. 198,374
Claims priority, application Japan, Nov. 19, 1970, 45/102365
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **17 Claims**

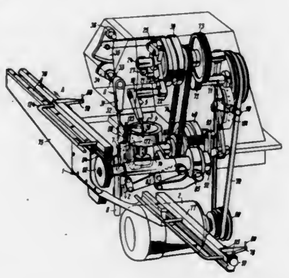


A pair of stocking materials are sewn and combined into a goreless panty-hose on a circulating or reciprocating template unit which has a pair of template assemblies for upholding and spreading the stocking materials mounted thereon and is accompanied with a cutter assembly for partly slicing the stocking materials upheld by the template assemblies, a sewing machine for seaming together the stocking materials in spread disposition and a mechanism for automatically removing the finished goreless panty-hose from the template unit.

3,777,682
MACHINE FOR SEWING UP NETTING WEBS

Khugo Gustavovich Tooming, ulitsa Yakhu, 8, kv. 24; Leopold Yakobovich Kjulvya, bulvar Vabaduse, 179/9, kv. 1; Eduard Andreevich Gorshenin, bulvar Karla Marxa, 64, kv. 26, and Arnold Yanovich Nevalins, ulitsa Eduard Vilde, 91, kv. 67, all of Tallin, U.S.S.R.

Filed Nov. 30, 1971, Ser. No. 203,325
Claims priority, application U.S.S.R., Nov. 30, 1970, 1494268
Int. Cl. D05b *35/00, 39/00, 61/00*
U.S. Cl. 112—121.15 **6 Claims**

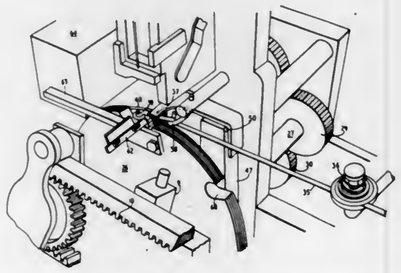


In the machine the device for forming a sewing knot includes a shuttle with a spool supporting thereon a supply of the sewing thread; a mechanism for withdrawing the thread from the spool and forming a thread loop; a mechanism with a needle for drawing the thread through the netting webs being sewn up. The loop passes around shuttle and forms a sewing knot that is subsequently tightened about the edges of the netting webs. The machine incorporates means for intermittent feeding of the netting webs toward the sewing knot forming device, ensuring unidirectional motion of the webs. Mounted intermediate of the needle and the shuttle is a seam guiding pin on which the sewing knot is formed, whereby the possibility of the knot being displaced from the seam forming area is prevented.

3,777,683
APPARATUS FOR MANUFACTURING LOOPS OF ELASTICISED MATERIAL

Harold Barry Lee, Heidelberg, Victoria, Australia, assignor to Bond's Wear Pty. Limited, New South Wales, Australia

Filed Mar. 28, 1972, Ser. No. 238,909
Claims priority, application Australia, Mar. 30, 1971, PA 4452
Int. Cl. D05b *23/00*
U.S. Cl. 112—121.27 **5 Claims**

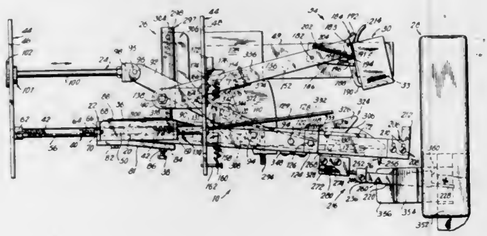


Apparatus to manufacture loops from elasticised material. The apparatus comprising material feed means whereby an end of strip material is transferred to a rotating work head which forms a loop of material and securing and severing means to fasten overlying parts of the material to form a loop and sever the loop from the strip material.

3,777,684
FOLDING MECHANISM

Raymond Friedman, Queens Village; Sheldon Friedman, Lake Success, both of N.Y., and Anthony Kalamaridis, Bergenfield, N.J., assignors to Frank Friedman & Sons, New York, N.Y.

Continuation-in-part of Ser. No. 157,963, June 29, 1971. This application June 23, 1972, Ser. No. 265,785
Int. Cl. D05b *35/10*
U.S. Cl. 112—152 **13 Claims**

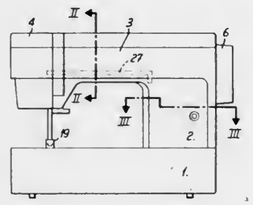


Apparatus primarily powered by a single linear motor for grasping the ends of a length of ribbon or other flexible material, folding the material to a generally U-shaped configuration with the ends tucked generally inwardly to form, for example, a garment seam cover and simultaneously moving the material along a generally L-shaped path to a sewing location with the apparatus being controlled and synchronized primarily from movement of the motor and linkages driven thereby.

3,777,685
SEWING MACHINE

Olindo Baruffa, Aire-Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Feb. 29, 1972, Ser. No. 230,263
Claims priority, application Switzerland, Mar. 11, 1971, 3568/71
Int. Cl. D05b *69/02*
U.S. Cl. 112—220 **2 Claims**

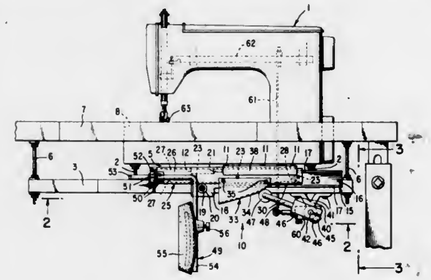


The frame of the machine comprises a base, a column, an upper arm ending in a needle-bearing head, and a lower part containing a cloth transport actuating mechanism. The frame houses a main drive shaft for the machine mechanism and an electric motor. The needle-bearing head includes a presser foot control device movable between an upper and a lower position above the cloth transport element. There is a coupling device between the motor and the main drive shaft and a member which can be actuated by the presser foot control device to prevent the drive of the main shaft by the motor when the presser foot is in upper position. The member is constituted by a mechanical linkage between the presser foot control device and the coupling device to bring the latter into inactive position when the presser foot is brought into upper position. The machine eliminates the risk of being suddenly started by accident.

3,777,686
LINEAR ACTION KNEE LIFTERS

Joseph C. Hage, New Shrewsbury, N.J., assignor to The Singer Company, New York, N.Y.

Filed June 30, 1972, Ser. No. 267,847
Int. Cl. D05b *29/02*
U.S. Cl. 112—237 **6 Claims**

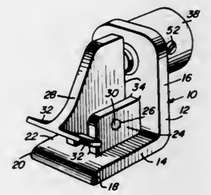


A knee shift for a sewing machine is disclosed which converts linear motion of a carriage having a kneepad adjustably attached thereto to rotary motion of a rockshaft; which can be used, through suitable linkage and leverage, to actuate an intermittently operating mechanism as for example a presser foot lifter. Two modifications are shown including a ramp and cam follower arrangement wherein the ramp cam surface may be shaped to provide a uniform actuating force with, for example, any given presser lifting device.

3,777,687
SHEET METAL CRIMPING ATTACHMENT FOR IMPACT GUN

William H. Colman, Jr., Jackson, Mo., assignor to Lenco, Inc., Jackson, Mo.

Filed Oct. 26, 1971, Ser. No. 192,158
Int. Cl. B21d *19/02*
U.S. Cl. 113—54 **7 Claims**

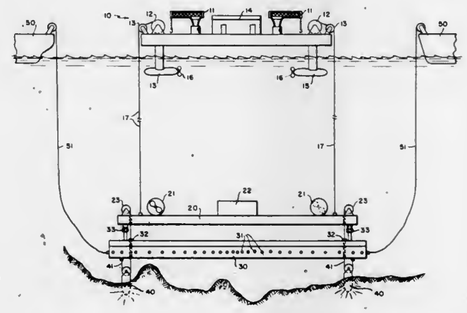


A support base defining a generally planar abutment surface and having an abutment member pivotally supported therefrom for oscillation relative to the base. The abutment member includes an arcuate surface extending about the axis of oscillation of the abuement member and including adjacent longitudinally spaced portions spaced progressively further from the axis of oscillation of the abutment member and progressively moveable into closer proximity with the abutment surface of the base in response to pivotal movement of the abutment member in one direction so that a clamping or crimping force may be directed upon a workpiece disposed between the abutment member's arcuate surface and the abutment surface of the base when the base is supported from the housing of an impact gun having its reciprocal impact member disposed for engagement with the abutment member.

3,777,688
METHOD AND APPARATUS FOR EMPLACEMENT OF LONG BEAMS IN RUGGED SEA BOTTOM AREAS

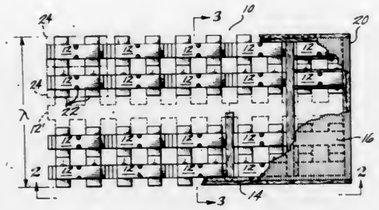
Alfred E. Melhose, Blairstown, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 25, 1970, Ser. No. 48,783
Int. Cl. B63b *35/00*; **E02b** *17/00*
U.S. Cl. 114—0.5 **5 Claims**



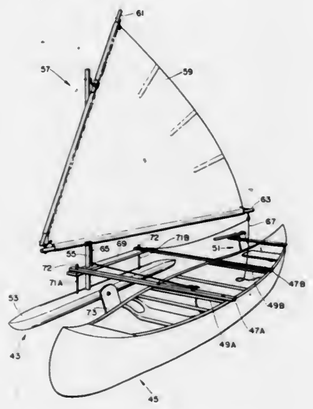
A method and apparatus for accurate emplacement of mechanical long beams, such as those incorporating acoustic transducers, in rugged sea bottom areas.

3,777,689
FLOATING BREAKWATER PONTOON
John O. Olsen, Lynnwood, and Gerrit A. Visser, Edmonds, both of Wash., assignors to Reid, Middleton & Associates, Inc., Edmonds and Poly Sintering, Inc., Seattle, both of Wash.
Filed Aug. 28, 1972, Ser. No. 284,454
Int. Cl. B63b 35/34
U.S. Cl. 114—.5 F 6 Claims



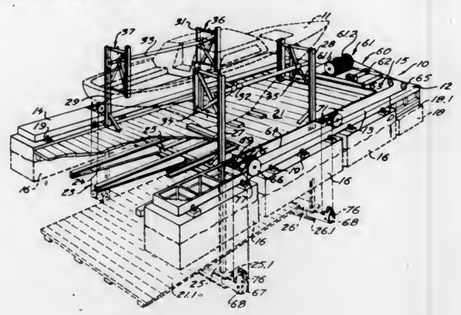
A low cost floating breakwater pontoon module adapted to nest with a large number of other similar pontoon modules; the modules preferably secured by structural members in an elongated rectangular array. The modules are hollow thin-walled sinter molded plastic pontoons which have unique indented peripheries such that when nested together in the breakwater array they will create a grid pattern of walls and openings extending into the upper portion of the wave to dissipate wave action by interference with the movement of fluid in the orbital flow under the wave crest.

3,777,690
SAILING OUTRIGGER FOR SMALL WATERCRAFT
William Wilson Garber, 6501 Hagueman Dr., Richmond, Va.
Filed Dec. 23, 1971, Ser. No. 211,187
Int. Cl. B63h 9/00
U.S. Cl. 114—39 6 Claims



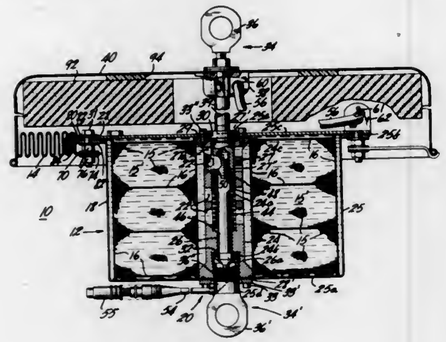
A small watercraft such as a canoe or the like is provided with a stabilizing outrigger which supports a sail-carrying mast. The sailing outrigger may include a lateral plane, and/or a rudder.

3,777,691
MARINE ELEVATOR
William George Beale, 640 Barnham Rd., West Vancouver, B. C., Canada
Filed Apr. 10, 1972, Ser. No. 242,441
Claims priority, application Great Britain, June 25, 1971, 29,822/71
Int. Cl. B63c 1/02
U.S. Cl. 114—48 6 Claims



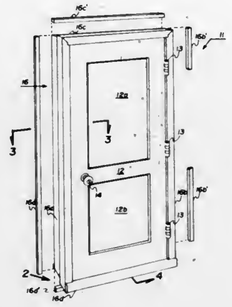
A marine elevator having a U-shaped, pontoon supported, frame into which a vessel to be lifted is moved and a winch operated cable supported platform mounted for vertical movement within the frame for lifting the vessel clear of the water. Vertical supports carried by the platform support the vessel, when lifted, in an upright position.

3,777,692
LATENT BUOYANCY SYSTEM
Russell C. Baccaglini, Oakland, and Kenneth J. Rogers, Boonton, both of N.J., assignors to Ocean Recovery Systems, Inc., Morristown, N.J.
Filed Nov. 5, 1971, Ser. No. 195,981
Int. Cl. B63c 7/02, 7/26
U.S. Cl. 114—54 1 Claim



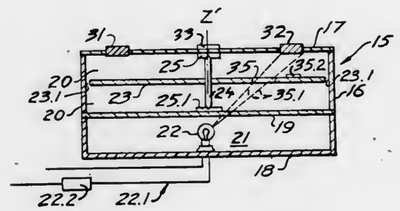
Submerged objects are recovered by a latent buoyancy system including LiH or another chemical reactive with water to evolve a gas and form an inert reaction product, an annular aluminum screen containing the chemical, and a closed, watertight, annular housing containing the screen and chemical. The chemical reaction is initiated by admitting water through one or more openings formed at a desired time on the inside of the annular housing. The gas inflates a cylindrical flotation bag and the reaction product is permitted to escape to provide maximum lift. The lower end of the bag hangs free and is not stressed by the payload; and it is well above the chemical, so that the gas collected by the bag first passes through water and is cleaned, scrubbed and cooled.

3,777,693
INTERIOR MARINE DOOR AND FRAME
Jack E. Leevers, San Diego, Calif., assignor to National Building Industries, National City, Calif.
Filed Aug. 18, 1971, Ser. No. 172,621
Int. Cl. B63b 19/00
U.S. Cl. 114—117 1 Claim



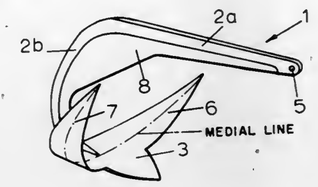
An interior marine door and frame in which the door is prehung in the frame by means of hinges on one side thereof and a lock on the other side, frame assembly comprising vertical jam members and an upper horizontal header member and a lower horizontal sill member. External stops cooperate with the frame assembly after it has been inserted into the opening in the ship's cabin walls to make the frame assembly captive within the wall.

3,777,694
AUTOMATIC DEVICE FOR TRIMMING VESSELS
Donald Edward Best, Delta, British Columbia, Canada, assignor to A. M. and I. Levellers Ltd., Vancouver, British Columbia, Canada
Continuation-in-part of Ser. No. 067,479, Aug. 27, 1970, abandoned. This application July 13, 1972, Ser. No. 271,232
Int. Cl. B63b 39/00
U.S. Cl. 114—126 13 Claims



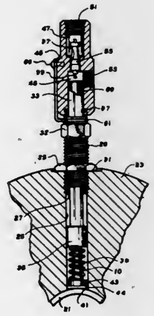
An automatic device for trimming vessels is disclosed having a sensing device responsive to continued departure from a desired attitude (e.g. list), trim tabs adapted to correct such departure, and electro-mechanical apparatus interconnecting the sensing device and trim tabs. The sensing device has an unbalanced pivoted disc with an opening. When the vessel lists the disc rotates with the opening becoming aligned between a photocell and a light source. The photocell output is then amplified and utilized to close a relay energizing an electric motor to opeate the trim tabs. The sensing device includes fore, aft, port and starboard photocells each associated with an amplifier and a relay circuit in the electro-mechanical interconnection apparatus.

3,777,695
ANCHORS
Peter Bruce, 10 Torphichen Pl., Edinburgh, Scotland
Filed Aug. 25, 1971, Ser. No. 174,633
Claims priority, application Great Britain, Aug. 26, 1970, 40,976/70
Int. Cl. B63b 21/32
U.S. Cl. 114—207 26 Claims



An anchor includes at least one elongate member attached to the shank and fluke of the anchor and having at least two elongate surfaces substantially curved lengthwise and disposed at least one at each side of the said plane of symmetry of the anchor, said elongate surfaces together being symmetrical about the said plane of symmetry and lying substantially in a plane transverse to said plane of symmetry relative to the shank member. In the anchor arrangement, said transverse plane is orientated such that when a portion of the elongate surfaces is in engagement with the mooring bed, the anchor is dragged over and relative thereto by a pull on the cable, the centre of pressure on the engaged portion of the elongate surfaces is constrained by the elongate surfaces to travel along the elongate member thereby increasing in separation from the cable attachment point on the foremost extremity of the shank member and decreasing in separation from the centre of area of those portions of the fluke member burial surfaces which furnish a maximum projected area on a plane at right angles to the plane of symmetry of the anchor whereby forces are generated between the elongate member and the mooring bed which roll the anchor to a final working burial attitude wherein the fluke member engages the mooring bed.

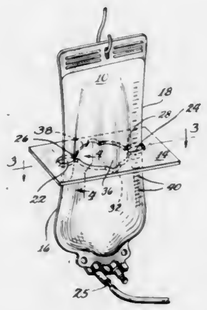
3,777,696
TEMPERATURE SENSING DEVICE
Robert A. Bilbrey, Orinda, Calif., assignor to Benjamin W. West, Berkeley, Calif.
Filed Mar. 29, 1972, Ser. No. 239,030
Int. Cl. G01k 1/02
U.S. Cl. 116—114.5 11 Claims



A temperature sensing device is described having a body defining a cylinder with a closed end and an open end. A rod extends through the open end and carries a piston which is movable with the rod in the cylinder. The piston is resiliently

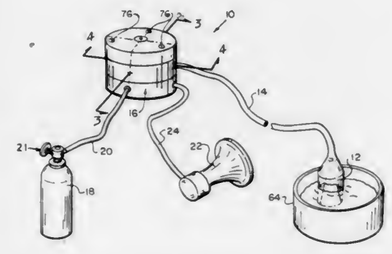
biased away from the closed end of the cylinder and is held near the closed end of the cylinder by a meltable metal or alloy solidified on the side of the piston toward the open end of the cylinder. When the metal or alloy melts in response to a rise in temperature, the piston moves toward the open end of the cylinder and the molten metal or alloy flows to the opposite side of the piston.

3,777,697
INDICATOR DEVICE FOR COLLAPSIBLE FLUID CONTAINER
Roger J. Woessner, Lindenhurst, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Apr. 7, 1972, Ser. No. 241,940
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 R **14 Claims**



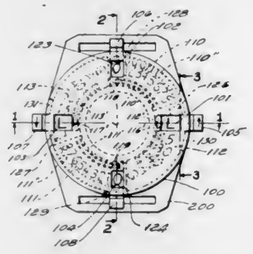
An indicator device is disclosed for measuring the volume of fluid present in a flexible container which collapses flat. The indicator device is a flat, generally stiff plate defining an aperture having an oval central portion, as well as a pair of auxiliary oval portions at opposite ends of the long axis of the oval central portion and communicating therewith. The indicator device slides downwardly along the collapsible container as the container empties, giving a uniformly reproducible indication of the amount of fluid remaining in the container.

3,777,698
CONDITION SENSING APPARATUS AND VALVE THEREFOR
Bryan J. Hunter, Boulder, Colo., assignor to E. F. Industries, Inc., Louisville, Colo.
Filed Jan. 14, 1972, Ser. No. 217,777
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 R **21 Claims**



An apparatus for sensing and indicating the presence of a particular condition such as, for example, the level of a liquid within a container. Said apparatus includes a sensor means or a probe suitably positioned such as within the container. When the particular condition is sensed, such as a predetermined change of liquid level within the container, the sensor means or probe produces and/or transmits a suitable input signal such as a fluid input signal to a non-bleed amplification valve separated into a plurality of passages and chambers by a force responsive means arrangement such as a diaphragm arrangement. The force responsive means arrangement, passages and chambers in cooperation with one another and with a supply of fluid under pressure provide an amplified fluid output signal (relative to the magnitude of the fluid input signal) in response to the presence of the fluid input signal. The fluid input signal is cyclically generated upon continued application of the input signal and, thus, the apparatus functions as a pneumatic oscillator. The apparatus includes means for controlling the cycling period of said output signal. The fluid output signal may be applied, for example, to an audio alarm for indicating that the liquid in the container has reached the aforestated predetermined level. The valve assembly does not expend any fluid energy or require the input of any power when same is in a quiescent state.

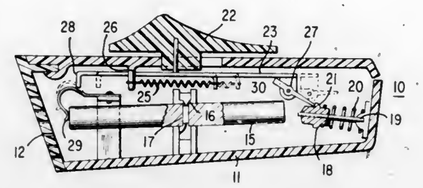
3,777,699
TENNIS SCORING DEVICE
Frederick W. Pfleger, 1152 Barbara Dr., Cherry Hill, N.J.
Filed Dec. 13, 1971, Ser. No. 207,513
Int. Cl. A63b *71/06*
U.S. Cl. 116—120 **5 Claims**



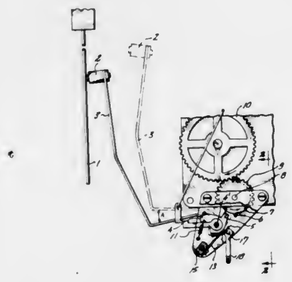
A scoring device for the game of tennis which accumulates and indicates the scoring for the game which is divided into and known as point score and game score. Scoring in tennis requires both an additive mode of operation for accumulating point score and accumulating game score, and a subtractive mode of operation for point scoring under certain tie score conditions. The scoring device therefore comprises an input member and a totalize register for sequentially adding the point score until sufficient points have been accumulated to win the game. In advancing the point score register into the game winning indication, the game totalizing register automatically advances to the next indication. The point score register is capable of the additive and the subtractive movements by selective movement of the input member.

3,777,700
DAMPING MEANS FOR ULTRASONIC TRANSMITTERS
Angelo Gino Lazzery, Oaklyn, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Oct. 4, 1971, Ser. No. 186,167
Int. Cl. B06b *3/00*
U.S. Cl. 116—137 A **6 Claims**

There is disclosed an ultrasonic transmitter employing a rod adapted to be mechanically vibrated in a longitudinal mode. The rod is struck at one end by a hammer assembly and is restrained at the opposite end to damp vibrations of the rod by a spring damper means mounted on the transmitter housing.



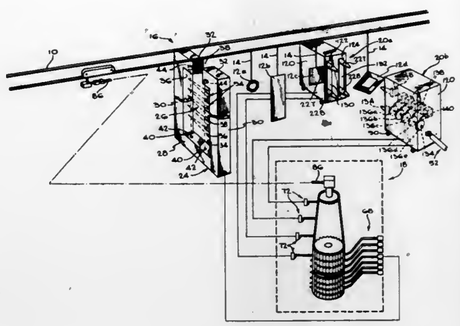
3,777,701
CLOCK CHIME INTENSITY CONTROL
Dale Nofziger, Lynnwood, Wash., assignor to Ansonia Clock Company, Inc., Lynnwood, Wash.
Filed May 5, 1972, Ser. No. 250,651
Int. Cl. G10k *1/36*
U.S. Cl. 116—149 **2 Claims**



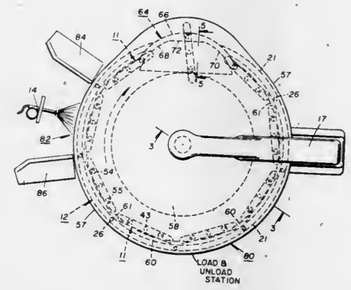
The hammers for striking chime rods are supported for swinging by pivoted hammer stem supporting blocks. Pawls of rotary wheels engage heels projecting from such pivoted blocks to swing the hammers upward, and then release the hammers for falling to strike the chime rods. Falling of the hammers is arrested by toes of the supporting blocks engaging stop fingers. Rotary cams swing such stop fingers for engagement by the rotary block toes sooner to restrict the falling movement of the hammers for striking the chime rods lightly to sound softly, or to permit the hammers to fall farther for striking the chime rods firmly to sound loudly.

3,777,702
ELECTROSTATIC PAINTING SYSTEM
Carl E. Fitzgerald, Morton Grove, Ill., assignor to Indesco Corporation, Morton Grove, Ill.
Filed Oct. 12, 1970, Ser. No. 79,985
Int. Cl. B05c *11/00*
U.S. Cl. 118—2 **24 Claims**

An apparatus is provided for spray coating individual articles. The apparatus shown includes a conveyor for advancing the articles, a scanner for producing signals corresponding to the size and shape of the articles, a memory device for receiving signals from the scanner, and spray coating devices controlled by the memory device to provide a spray pattern for each article in accordance with its size and shape.

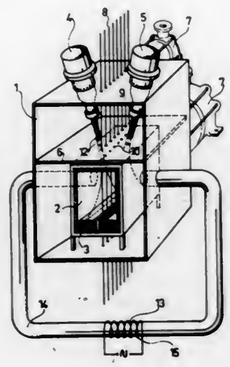


3,777,703
APPARATUS FOR SUPPORTING AND ROTATING A WORKPIECE
Robert E. Gillie, Chicago, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed June 2, 1972, Ser. No. 260,025
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **9 Claims**



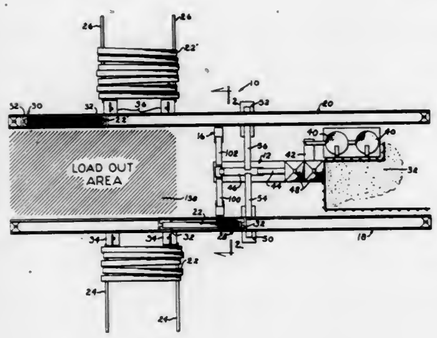
A workpiece or substrate holder is rotatably supported on a revolving frame within a film deposition or coating chamber. A pair of pins are secured to the holder, symmetrically with respect to the axis of rotation of the holder, and are received within a channel formed on one side by an arcuate guide ring, having a sector thereof formed in an arcuate trackway, the radius of the trackway being less than the radius of the guide ring. Rotation of the frame advances the pins along the guide ring, and the trackway is so configured that only the leading pin enters it. As the leading pin progresses through the trackway, the lagging pin is swung out of the channel, around the leading pin in the trackway, and back into the channel as the leading pin, to rotate the workpiece holder to allow for the deposition of a film on both sides of the workpiece.

3,777,704
APPARATUS FOR VAPORIZING METAL ON A SUBSTRATUM
L. Van Poucke, Kortrijk, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium
Filed Feb. 3, 1972, Ser. No. 223,215
Claims priority, application Belgium, Feb. 9, 1971, 762681
Int. Cl. C23c 13/12
U.S. Cl. 118—49.1 3 Claims



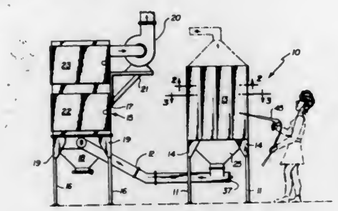
A device and method for vaporizing metal onto a substratum in which the metal to be deposited on the substratum is maintained in a crucible under vacuum, an elongated substratum is passed through the vaporized zone, and the metal is vaporized by a strongly focussed moving electron beam from an electron gun and deposited on the moving substratum.

3,777,705
APPARATUS FOR COATING PIPE
Robert J. Harris, Marrero, and Irvin J. Lee, Gretna, both of La., assignors to H.C. Price Co., Bartlesville, Okla.
Division of Ser. No. 104,428, Jan. 6, 1971, Pat. No. 3,674,546.
This application Apr. 21, 1972, Ser. No. 246,223
Int. Cl. B44d 1/02, 1/08
U.S. Cl. 118—313 6 Claims



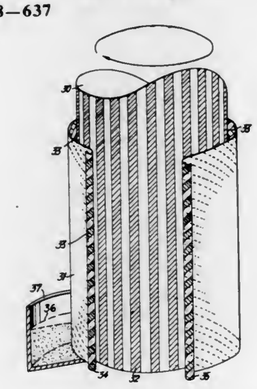
A method and apparatus for coating a pair of pipe sections utilizes spaced, parallel, track vehicles for moving the sections on opposite sides of a central coating station. Coating material is alternately supplied from the station to two applicators, which are located adjacent and perpendicular to the respective racks, by a reversible feeder belt. Movement of the sections is forward to the coating station and then backward away from the station. The pipe sections are spaced apart in their directions of travel so that their paths are 180° out of phase and one of the sections is at the forward end of its path of travel while the other is at the backward end of its path of travel. Thus, one section can be subjected to the coating step while the other section is being removed from the track vehicle.

3,777,706
SPRAY BOOTH AND SYSTEM
William F. Kaufman, 6126 Third Ave., Kenosha, Wis.
Filed Dec. 20, 1971, Ser. No. 209,951
Int. Cl. B05b 5/02
U.S. Cl. 118—603 8 Claims



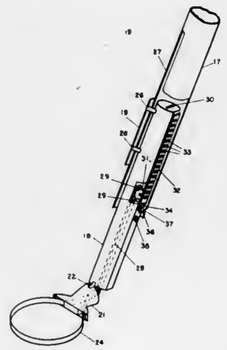
A spray booth having a double bottomed inverted pyramidal portion with the vertex thereof truncated to provide for the flow of air and collection of dust particles in which an air flow is provided interiorly of the double wall to thereby provide a curtain of air in front of the open portions of the spray booth and co-act with the opening in the bottom to remove fine particles sprayed within the booth. Four sidewalls extend above the four sided pyramidal hopper, one-fourth of which is open either as a complete missing sidewall of missing panels from usually opposed sidewalls to accommodate the passage of product targets to be coated. A T-shaped bottom connection appears on the pyramidal inverted hopper for quick cleaning when changing colors, and the passage of the air and particles to a filter bag chamber and thence to the suction blower which may include a return system for closed circuit operation.

3,777,707
MAGNETIC POWER HANDLING ARRANGEMENT
Robert James Hodges, Chestnut, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed May 26, 1971, Ser. No. 146,947
Claims priority, application Great Britain, June 23, 1970, 30,325/70
Int. Cl. G03g 13/00
U.S. Cl. 118—637 8 Claims



A powder transport and applicator arrangement comprising a vertically arranged roller surrounded by a three-fourth cylindrical shield having a vertically running gap, with the lower ends of both the roller and the shield dipping into a powder bed containing magnetic powder. The roller possesses axially arranged magnetic strips, and the shield on its inner surface helical ones. Rotation of the roller causes magnetic powder from the powder bed to be drawn up the roller. The resultant even coating of powder on the roller is presented via the gap in the shield to a recording surface to develop a magnetic image recorded thereon.

3,777,708
CANINE FECES DISPOSAL MECHANISM
Kuno J. Vogt, 5854 Kantor Ct., San Diego, Calif.
Filed Jan. 31, 1972, Ser. No. 221,996
Int. Cl. A47f 13/06
U.S. Cl. 119—1 4 Claims



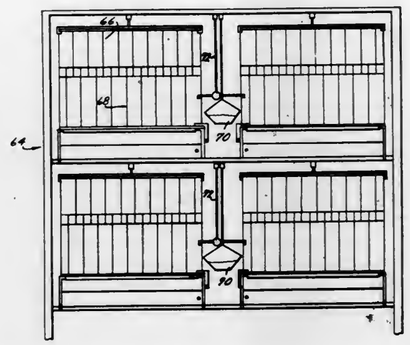
A canine feces disposal mechanism having a retractable flexible steel band which fits within a disposal bag having a folded pocket in the top portion thereof for receiving canine feces. The retractable steel band can be retracted closing the plastic bag over the canine feces for easy disposal.

3,777,709
REARING OF FISH
James Iain Walker Anderson, Milltimber; Donald Henry Albert Marr, by Fort William, and Graham Chesterton Phillips, Stonehaven, all of Scotland, assignors to Lever Brothers Company, New York, N.Y.
Filed Jan. 19, 1972, Ser. No. 219,158
Claims priority, application Great Britain, Jan. 28, 1971, 3363/71
Int. Cl. A01k 61/00
U.S. Cl. 119—3 9 Claims

A method of rearing fish, particularly anadromous fish of the family Salmonidae in a captive environment. More particularly, rearing the young fish in fresh water and feeding them to appetite until they reach, and maintain for about two weeks, a Condition Factor, K, of at least 0.8; transferring the young fish directly from fresh water to natural tidal sea water, without acclimatisation in water of intermediate salinity; and, rearing the fish on an artificially administered diet for at least three months.

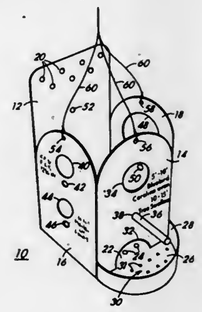
3,777,710
AUTOMATED SYSTEMS FOR RAISING AND TRANSPORTING BROILERS
Vance Rhinehart, Apison, Tenn., assignor to Cumberland Corporation, Chattanooga, Tenn.
Filed Feb. 2, 1972, Ser. No. 222,805
Int. Cl. A01k 31/18
U.S. Cl. 119—17 21 Claims

A coop and method for raising and transporting fowl wherein the fowl are raised in a coop with a first portion having an open top and a second portion closing that top while adding height to the coop and volume to the coop interior. For transportation, the second portions are removed to reduce the height of the coop to that suitable for transportation, but unsuitable for growing, and the first portions stacked so that the bottom of each first portion closes the top of the first portion below it with the top first portion in each stack being otherwise covered if necessary. Food and water can be provided within the cage or by access to conventional feeding and watering systems through the vertical bars of the first portion.



For exterior feeding systems the first portion preferably includes two telescoping members movable vertically with respect to each other and both having vertical bars with bars of one member disposed alternately with bars of the other member so that the members can be moved with respect to each other from a first position in which the adjacent bars have a first separation large enough for chicks to extend their heads between them for feeding and an inner volume sufficient for such young chicks to a second position in which adjacent bars in at least a portion of the coop have a greater separation large enough for fowl grown larger to extend their heads between them for feeding and an inner volume sufficient for such larger fowl.

3,777,711
WILDLIFE STATION HOLDER
Robert J. Gampp, 120 Hutchinson Rd., Arlington, Mass.
Filed Aug. 11, 1972, Ser. No. 279,950
Int. Cl. A01k 31/00, 05/00
U.S. Cl. 119—23 9 Claims

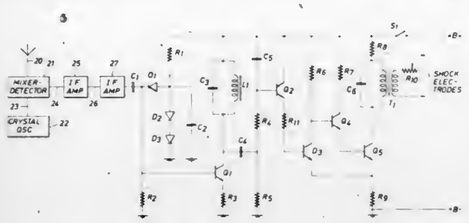


A wildlife station holder adapted for receiving a container insert including a rear wall, front wall, and two side walls joined together to form a four sided enclosure to receive a container, at least one of the walls having a feed hole in it or an access hole in it sized to accommodate the particular occupant and a bottom plate extending between the four walls to support a container insert.

3,777,712
ELECTRIC ANIMAL TRAINER

Hugh R. Gardner; Calvin I. Ricketts, both of Las Cruces, N. Mex., and Wesley L. Joosten, El Paso, Tex., assignors to Jetco Electronic Industries, Inc., El Paso, Tex.

Filed Feb. 1, 1972, Ser. No. 222,499
Int. Cl. A01k *15/00*
U.S. Cl. 119—29 **6 Claims**

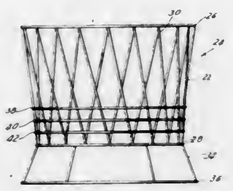


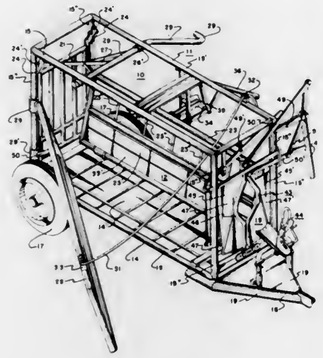
A radio frequency signal modulated at a predetermined audio frequency is transmitted to a receiver carried by the animal to be trained. The modulated signal is detected, amplified and demodulated, and the resulting audio signal is then amplified by a tuned audio amplifier. A trigger circuit is arranged to accept audio signals resulting from an original modulation percentage greater than a predetermined level and to create a voltage pulse at electrodes arranged to bear against the animal's fur. Means are provided for attenuating audio signals which differ from the predetermined audio frequency.

3,777,713
MOBILE HAY FEEDER

Richard A. Deats, Cobleskill, N.Y.

Filed Nov. 5, 1971, Ser. No. 196,144
Int. Cl. A01k *5/00*
U.S. Cl. 119—60 **5 Claims**





A portable animal feeder includes top and bottom vertically spaced annular rings. A series of angularly disposed posts connect the top and bottom rings and are spaced sufficiently apart to permit the passage of animal heads therethrough. Means are provided to prevent spillage of animal feed placed in the feeder. To facilitate loading of the feed into the device, an optional gate is provided in the side of the feeder. A supporting ring is spaced below the bottom ring by supporting struts, and floor means are mounted in the feeder adjacent the bottom ring.

3,777,714
ANIMAL WATERING DEVICE

Nils Harry Danielsson, Nykvarn, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Jan. 19, 1972, Ser. No. 218,935
Int. Cl. A01k *07/00*
U.S. Cl. 119—75 **3 Claims**

A bowl with an overflow outlet is positioned to receive and collect water from a valve connected to a water supply line. The valve is adjusted by stop means to drip the water into the bowl at a desired rate; but when an animal sucks the valve, a rotatable element thereof is actuated to initiate a continuous flow of water through the valve.



3,777,715
HEADHOLDING ASSEMBLY

Harold A. Hill, and Fred A. Hill, both of Rt. 1, Marsing, Idaho

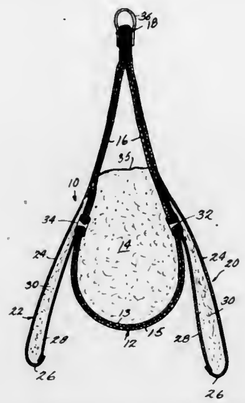
Filed Apr. 27, 1972, Ser. No. 248,263
Int. Cl. A61d *3/00*
U.S. Cl. 119—99 **5 Claims**

The headholding assembly of this invention includes a collar and a halter carried by a framework. The collar includes a pair of pivotally mounted panels vertically disposed within a substantially rectangular frame. Each of the panels includes a curved recede portion on the interior, or adjacent abutting, terminal edges of each of the panels. The abutting edges of the respective panels are operable to closely conform to the configuration of an animal's neck. Each of the panels is pivotally mounted, at respective corners adjacent the recede abuttings at respective points located at the respective lowermost terminal side edges, to the frame. The panels are provided with lever-like means operable to force the panels apart at their respective upper portions opposite the pivot mounting. The halter includes a upstanding stanchion having a substantially inverted U-shaped configuration. The stanchion may be disposed distally on the framework forwardly from the collar. The halter includes a chin plate having a substantially convex configuration with respect to the stanchion. The chin plate may be suitably fastened to the uppermost terminal portion of the U-shaped stanchion. The halter includes a halter strap operable to engage the animal over its nose and head portions. The strap is connected through holes provided in the chin plate and to a windlass which is carried by one of the upstanding legs or posts of the U-shaped stanchion. The headholding assembly may be disposed between the forwardmost transverse posts of a cattle chute. The headholding assembly may also be disposed within a chute comprising a chassis, an end gate disposed at the rearwardmost terminal end, an exit gate disposed at one of the terminal sides, and a body-restraining wall fastened to the frame and being operable to pivot at its lowermost terminal side to restrain an animal carried therein. In this form, the apparatus may include a cattle-restraining apparatus, the panels of the headholding assembly, above described, being disposed between upstanding posts at the forwardmost terminal end of the chassis frame. The halter is disposed distally forwardly from the panels with the legs of the upstanding stanchion suitably mounted on the chassis frame.

3,777,716
LIVESTOCK DUSTING BAG

William C. Cortner, Jr., Lawrence, Kans., assignor to Alley-Johnson Company, Kansas City, Mo.

Filed Jan. 28, 1971, Ser. No. 110,575
Int. Cl. A01k *29/00*
U.S. Cl. 119—159 **43 Claims**



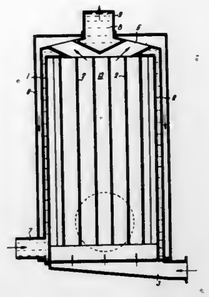
A self-dusting cartridge loading protected livestock applicator comprising an inner porous bag having filling means and flexible protective material substantially surrounding and secured to the bag. The flexible protective material extends below the inner porous bag forming folds which curl upward toward the bottom of the inner porous bag and preferably extend upward with a porous material that contacts and transfers dust from the inner bag to itself and to an animal. The applicator is constructed so that when it is agitated by an animal the guard or protective flaps cause dust to be dispensed on the agitating animal and at the same time provide some protection to the more vulnerable inner bag.

3,777,717
METHOD OF AND APPARATUS FOR HEATING OF LIQUIDS

Jan Mach, and Vaclav Rybar, both of Praha, Czechoslovakia, assignors to Hutni druhovyroba, generalni reditelstvi, Praha, Czechoslovakia

Filed Mar. 30, 1972, Ser. No. 239,433
Claims priority, application Czechoslovakia, Apr. 12, 1971, 2377/71; Nov. 9, 1971, 7835/71
Int. Cl. F22b *13/02*
U.S. Cl. 122—156 **9 Claims**

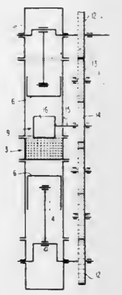
A gaseaous combustible mixture, having a temperature lower than its ignition temperature, is passed with a speed exceeding its rate of flame propagation through a gas permeable layer of an radiation substance adapted to produce a thermal condition for radiating substantially the entire thermal energy, released at its surface, in the wave-length range of 0.5 – 6 micrometers within the active substance layer on. The apparatus comprises a reaction space filled with said substance and a supply system for the combustible mixture.



3,777,718
THERMAL ENGINE, ESPECIALLY PISTON ENGINE

Konstantin Pattas, Stuttgart-Untertuerkheim, Germany, assignor to Daimler-Benz AG, Stuttgart-Unterturkheim, Germany

Continuation-in-part of Ser. No. 76,789, Sept. 30, 1970, abandoned. This application July 24, 1972, Ser. No. 274,513
Claims priority, application Germany, Sept. 30, 1969, P 19 49 191.9
Int. Cl. F02b *1/00, 23/00, 77/00;* **F03g** *7/06*
U.S. Cl. 123—8.01 **22 Claims**



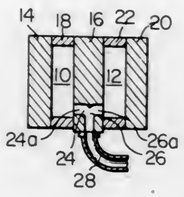
A thermal engine operating according to the Stirling process, particularly a piston engine which includes at least one hot gas section and one cold gas section between which a gaseous working medium is interchangeable by way of a regenerator. The working medium is heated directly in the hot gas section by the feed and combustion of fuel while the combusted working medium is at least partially replaced at the cold gas section by fresh working medium. An exhaust gas turbo-charger may be utilized for supercharging the fresh working medium. The engine is constructed so that fresh working medium is introduced during the transition from the expansion to compression of the cold gas section with a delay in the introduction of the fresh medium until late in the expansion phase. Either a rotary piston arrangement or an engine with axially reciprocating pistons may be used with both arrangements using piston controlled slot openings for admission of the fresh medium and exhaust of part of the medium. In the axially reciprocating piston arrangement, the piston of the hot gas section is axially aligned in a common housing with the piston of the cold gas section and with the regenerator arranged in the housing between said pistons.

3,777,719

EXHAUST SYSTEM FOR MULTI-ROTOR TYPE ROTARY INTERNAL COMBUSTION ENGINE

Kizuki Otsubo, and Yoshikazu Ishikawa, both of Tokyo, Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Aug. 31, 1972, Ser. No. 285,349
Claims priority, application Japan, Sept. 1, 1971, 46/78926
Int. Cl. F02b 53/04
U.S. Cl. 123—8.07 3 Claims



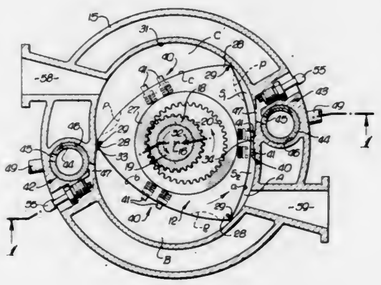
A rotary internal combustion engine of the multi-rotor type having a plurality of rotor chambers including exhaust chambers provided with exhaust ports respectively. The rotary internal combustion engine has an exhaust system constituted by exhaust passageways formed to be congregated in one portion of a rotor housing and communicating with the exhaust ports leading from the respective rotor exhaust chambers, and at least one exhaust manifold connected at one portion of the rotor housing to the exhaust passageways.

3,777,720

ROTARY INTERNAL COMBUSTION ENGINE

Robert H. Williams, Rt. 2, Bandera, Tex.

Filed Jan. 7, 1972, Ser. No. 216,153
Int. Cl. F02b 53/12
U.S. Cl. 123—8.09 3 Claims



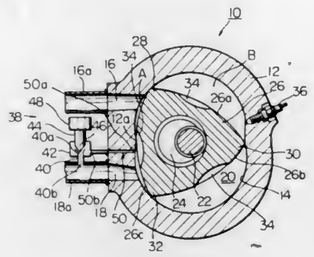
An outer hollow body provides a two lobed epitrochoidal cavity within which a three-lobed piston revolves to form a series of separate sealed working chambers, each of which progressively expands and contacts during each rotor revolution, the present engine dividing each chamber, as it approaches a condition of maximum contraction, into leading and trailing portions and delivering a pre-compressed fuel charge into said leading portion and igniting the same while said working chamber is still so divided, the power impulse thus produced being directed principally along lines lying in advance of the center of rotation of said rotor, and thus applying torque to said rotor.

3,777,721

ROTARY INTERNAL COMBUSTION ENGINE OF THE TROCHOIDAL TYPE

Hiraki Sawada, Nerima-ku, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Aug. 3, 1972, Ser. No. 277,533
Claims priority, application Japan, Aug. 19, 1971, 46/63261
Int. Cl. F02b 53/04
U.S. Cl. 123—8.45 5 Claims



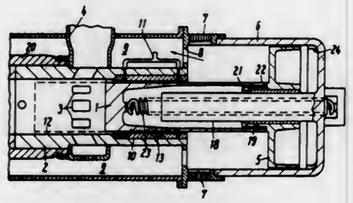
A rotary internal combustion engine of the trochoidal type having a trigonal rotor rotatable relative to the housing on an eccentric of a main shaft, the main shaft being supported by the lateral housing parts and the housing being provided with an inlet port and an outlet port connected to an exhaust pipe opened and closed by the apex portions of the trigonal rotor, and which includes an auxiliary exhaust gas passageway provided at the end portion of a trochoidal quarter of the housing adjacent the exhaust port and communicating with the exhaust pipe to cause the engine exhaust gases remaining in the trailing portion of the combustion chamber to be delivered to the exhaust pipe, and an air ejecting means cooperating with the auxiliary exhaust gas passageway for satisfactorily directing the exhaust gases otherwise leaking into the suction chamber into the exhaust port, the air ejecting means introducing secondary air into the exhaust pipe downstream of the exhaust port to effect satisfactory combustion of the still not unburned components contained in the engine exhaust gases.

3,777,722

FREE PISTON ENGINE

Karl Werner Lenger, Uhlandstrasse 66, Hamburg, Germany

Filed Sept. 1, 1970, Ser. No. 68,698
Claims priority, application Germany, Sept. 11, 1969, P 19 45 924.6
Int. Cl. F02b 71/00; F02d 39/10; F02f 1/20
U.S. Cl. 123—46 R 23 Claims



A piston engine comprises a cylinder defining a combustion chamber, a ringless piston reciprocally mounted within the cylinder, the cylinder having means spaced from the combustion chamber and defining a zone of reduced clearance around the piston. This zone-defining means includes means for lubricating the zone to reduce friction. The lubricating means may comprise a gas-flow arrangement, or a bushing formed of self-lubricating material, or both of these features.

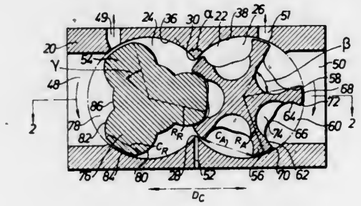
The cylinder and piston are fabricated from materials having a maximum coefficient of thermal expansion of 30×10^{-7}/° C. The engine may include a compressor piston reiprocal in a compressor cylinder which are designed for minimal heat expansion.

3,777,723

ROTARY INTERNAL COMBUSTION ENGINE

Jan-Borje Lundstrom, Lannersta; Ake Nyberg, Nacka; Roland Pamlin, Handen, and Ake Astberg, Nacka, all of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Mar. 14, 1972, Ser. No. 234,544
Claims priority, application Great Britain, Mar. 17, 1971, 7,079/71
Int. Cl. F02b 55/14
U.S. Cl. 123—8.47 16 Claims



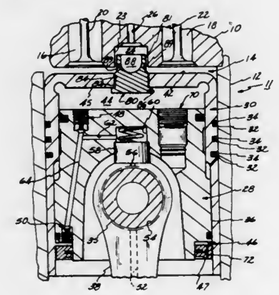
A rotary internal combustion engine comprising a casing providing a working space composed of intersecting cylindrical chambers, a power rotor disposed chamber, and a rotary abutment member disposed in the other chamber and intermeshing with the power rotor. The abutment member has five axial grooves inside its pitch circle. The grooves are at the bottoms thereof formed with part spherical cavities spaced from the axial ends of the member. The rotor has two or three lobes projecting outside its pitch circle and matching the grooves of the abutment. member. The tip chord of each lobe has a length corresponding to 35 percent to 40 percent of the distance between the centers of the cylindrical chambers. The axial length of the working space is about 90 percent of the opening chord of each groove. The angle between the cylindrical chambers in the point of intersection is about 74°.

3,777,724

INTERNAL COMBUSTION ENGINE HAVING A VARIABLE VOLUME PRECOMBUSTION CHAMBER

Leo R. Kiley, Grosse Pointe Woods, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Nov. 3, 1971, Ser. No. 195,111
Int. Cl. F02b 75/04, 23/00
U.S. Cl. 123—78 B 7 Claims



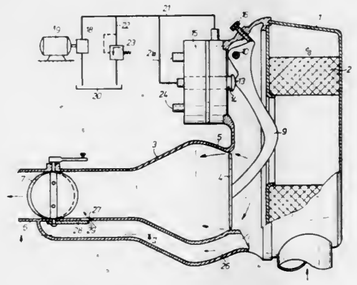
An internal combustion engine having a cylinder with a piston reciprocably movable to alternately compress and expand a main combustion chamber disposed above the piston, and a precombustion chamber communicating with the main combustion chamber. A volume control member carried by the piston projects into and varies the volume of the precombustion chamber to maintain a constant predetermined ratio between the volumes of the main and precombustion chambers during a portion of the reciprocal movement of the piston.

3,777,725

MEANS FOR VARYING THE AIR-FUEL RATIO IN A FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Gerhard Stumpp, Stuttgart-Vaihingen, and Gregor Schuster, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 23, 1971, Ser. No. 136,975
Claims priority, application Germany, Apr. 24, 1970, P 20 19 886.1
Int. Cl. F02m 69/00
U.S. Cl. 123—119 R 14 Claims



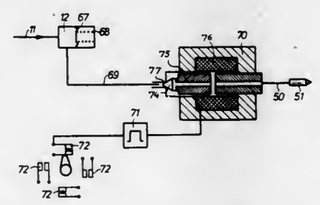
In a fuel injection system the air-fuel ratio is controlled by a sensor which is disposed in the suction tube of the engine and which is responsive to the quantity of intake air flowing therethrough and controlled by an arbitrarily operable butterfly valve. The air-fuel ratio is alterable as a function of an engine variable by causing the latter to change the flow passage section of a bypass taking out one part of the intake air from the suction tube upstream of the sensor and reintroducing it into the suction tube downstream of the sensor.

3,777,726

FUEL INJECTION APPARATUS

Heinrich Knapp, Leonberg-Silberberg, and Gunther Jaggle, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

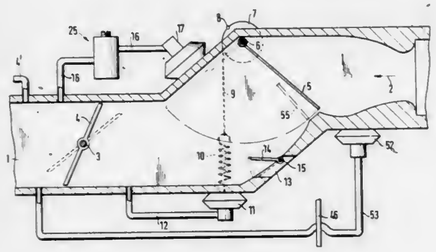
Filed Oct. 28, 1971, Ser. No. 193,356
Claims priority, application Germany, Oct. 28, 1970, P 20 53 000.1
Int. Cl. F02m 39/00; F02b 33/00
U.S. Cl. 123—119 R 9 Claims



In a fuel injection apparatus which delivers metered fuel to fuel injection valves, there is provided, downstream of each

differential pressure valve which ensures a constant pressure drop across each fuel metering valve and upstream of the associated fuel injection valve, a chopper valve which, in the low rpm range effects an intermittent fuel injection into the intake tube of the internal combustion engine to prevent uncombusted gas mixture from entering the exhaust system in said rpm range.

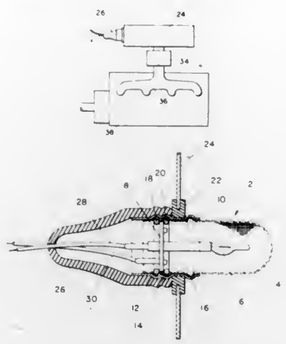
3,777,727
FUEL FEED REGULATING DEVICE
Willi Kirchner, Schwebheim, and Gerhard Braune, Euerbach, both of Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany
Filed July 25, 1972, Ser. No. 275,050
Claims priority, application Germany, Aug. 2, 1971, P 21 38 623.2
Int. Cl. F02m *9/06, 59/20, 63/02*
U.S. Cl. 123—119 R **11 Claims**



An apparatus for regulating the feed of fuel to a mixture-compressing internal combustion engine having a throttle valve and a normally closed sensor flap located within the air intake line. A channel connects the air intake line between the throttle valve and sensor flap to the atmosphere, this channel being opened and closed by a closure flap which is coupled to the sensor flap and a vacuum capsule responsive to the vacuum in the air intake line between the engine and the throttle valve. Regardless of the adjustment of the throttle valve upon the starting of the engine, the apparatus feeds only the necessary amount of fuel to the engine so that errors on the part of the driver during starting do not have an effect on the regulating device permitting the engine to start reliably.

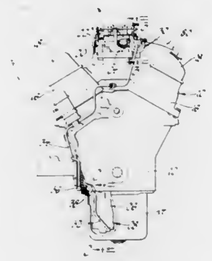
3,777,728
PROCESS AND APPARATUS FOR ASSISTING IN STARTING INTERNAL COMBUSTION ENGINES
Alfons Reiche, Cologne, Germany, assignor to Peter Gessner, Bensberg, Germany
Filed Apr. 28, 1972, Ser. No. 248,757
Claims priority, application Germany, May 21, 1971, P 21 25 204.0
Int. Cl. F02m *31/04*
U.S. Cl. 123—122 D **6 Claims**

A process and equipment for facilitating the starting of internal combustion engines by heating the intake air of a fuel-air mixture before the air reaches the carburetor of the engine.



The preferred preheating device is a halogen bulb enclosed by a metal grid over and through which the intake air flows.

3,777,729
HYDRAULIC ENGINE GOVERNOR
James D. Cote, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 22, 1971, Ser. No. 210,790
Int. Cl. F02d *1/04, 1/06*
U.S. Cl. 123—140 FG **2 Claims**

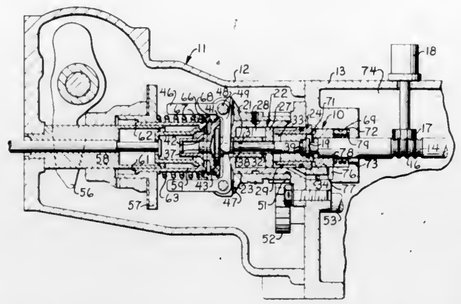


In a preferred embodiment, an engine governor having a speed responsive spinner valve coupled with the engine oil pump in the engine crankcase and hydraulically connected with a slave actuator arranged to control the maximum opening of the engine throttle. An adjustable spring incorporated in the spinner valve provides a primary adjustment of the controlled maximum engine speed. Limited modification of the set speed is provided by an adjustable bleed valve located in the external portion of the hydraulic circuit to the slave unit at a point convenient for adjustment by the engine operator. Limited travel of the adjusting screw may be provided to limit the range of engine speed adjustment possible by the operator. Drain means are provided to return bleed oil to the engine sump.

3,777,730
FUEL LIMITING DEVICE
Marvin A. Gates, Chillicothe, and Mark F. Sommars, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 20, 1972, Ser. No. 236,382
Int. Cl. F02d *1/04*
U.S. Cl. 123—140 R **5 Claims**

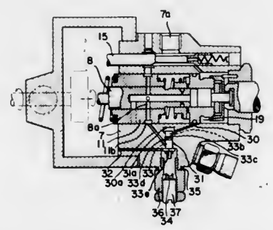
A fuel limiting device for an internal combustion engine having a governor which governor is adapted to move a fuel-

adjusting member to an overfueling position during starting of the engine and to a normal fuel supply operating range after the engine has started. The limiting device is disposed in a non-interfering relation to the fuel-adjusting member during



engine starting and is movable in response to engine operation to a position which provides a positive stop for the fuel-adjusting member to preclude movement of the adjusting member to the overfueling position during lugging of the engine or other high-load conditions to minimize smoke emissions.

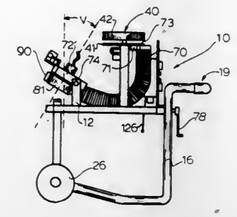
3,777,731
FUEL INJECTION SYSTEM IN A DISTRIBUTOR-TYPE INJECTION PUMP FOR INTERNAL COMBUSTION ENGINE
Masayoshi Kobayashi, and Mitsuo Uchino, both of Higashi, Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 122,621, March 1, 1971. This application Feb. 14, 1973, Ser. No. 332,521
Int. Cl. F04b *49/00*; **F02d** *1/04, 1/06*
U.S. Cl. 123—140 FG **4 Claims**



Fuel injection system in a distributor-type fuel injection pump for internal combustion engine in which fuel in the distributing section of the injection pump is associated with engine rotation speed by throttling the flow of fuel to improve the fuel injection characteristic for the low-speed region to satisfy more effectively the injection requirements imposed by the engine.

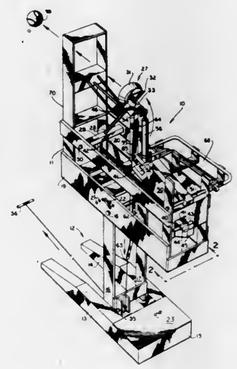
3,777,732
DEVICE HAVING COACTING WHEELS FOR PROJECTING TENNIS BALLS
Donald P. Holloway; William H. Payne, and Donald H. Peeler, all of Raleigh, N.C., assignors to Metaltek, Inc., Raleigh, N.C.
Filed Mar. 20, 1972, Ser. No. 236,039
Int. Cl. F41b *3/04*
U.S. Cl. 124—1 **4 Claims**

A ball throwing machine ejects tennis balls in regular sequence and at a controlled velocity to simulate tennis service from an opponent during practice sessions. The machine is adapted to intermittently vary the vertical and horizontal angles of ball ejection thereby providing game-like situations. An anti ball jamming device is located in the base of a ball



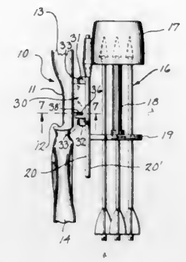
hopper. The machine has structure for permitting rotation of the subframe about a vertical axis to vary the horizontal angle of discharge of a projectile. As an alternate method for varying the horizontal angle of discharge of a projectile the subframe may be oscillated about a vertical axis.

3,777,733
SPRING TYPE BALL PROJECTING DEVICE WITH BALL THROWING TIME DELAY MECHANISM
Joseph H. Mitchell, 216 Kingsway Dr., Warner Robins, Ga.
Filed Mar. 30, 1972, Ser. No. 239,637
Int. Cl. F41b *3/02*
U.S. Cl. 124—7 **14 Claims**



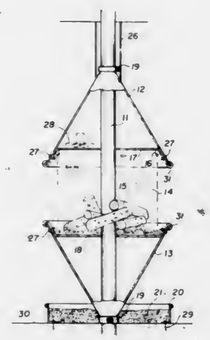
The apparatus has a ball throwing arm that is moved to a cocked position by means of a line that is pulled by a user. When the ball throwing arm reaches the cocked position it engages a retaining member that is connected to a dampening device. After release of the pull on the ball throwing arm by the user a spring immediately acts on the ball throwing arm to project a ball. The retaining member holds the ball throwing member for a certain period of time before complete release, due to the action of the delaying device. Also, when the line is released by the user a retracting member acts on the line to force it inwardly toward the ball throwing apparatus. The ball throwing arm may be oriented in different positions so that the ball impacting member on the end thereof may cause the projected ball to have preselected degree of spin. The cocking of the ball throwing member causes a ball feeding device to position a ball to be projected to be positioned in the path of the ball throwing member. The ball throwing device is selectively and pivotally adjustable to a support base.

3,777,734
ARCHERY BOW AND QUIVER
Harry J. Rose, 12247 W. Fairview Ave., Milwaukee, Wis.
Filed Jan. 10, 1972, Ser. No. 216,713
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 A 8 Claims



A bow is provided with a novel quiver-mounting element permanently secured on the side face of the rigid handle portion of the bow designed to removably receive an interfitting mounting element on an arrow-holding quiver, thereby providing a simple but effective assembly for securing the quiver on said bow handle in a manner whereby it will not interfere with the flexing or accuracy of the bow during shooting, and whereby said quiver can be quickly and easily manually removed from said bow when desired. The mounting elements telescope one within the other along an axis parallel to the longitudinal axis of the archery bow. The elements are releasably held together by a spring-loaded pivotal lever. The quiver has a mounting element for use in attaching the quiver to the belt of a user when the quiver is detached from the archery bow.

3,777,735
DECORATIVE FIREPLACE
Clifford J. Miller, North Massapequa, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Apr. 18, 1972, Ser. No. 245,125
Int. Cl. F24b *1/18*
U.S. Cl. 126—120 2 Claims

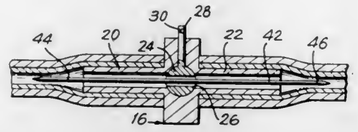


A pre-fabricated fireplace adaptable for assembly about an existing vertical column, the device consisting of an inverted conical base, and a conical hood, both of which clamp about a vertical column, together with grate supporting structure and an internal shield for the hood. A circular curtain screen is hung from the hood over the base and the exhaust pipe may be mounted concentrically about the support post.

3,777,736
TRANSPORTER FOR SUBSTANTIALLY GERMFREE TRANSPORT OF BIG LIVING ORGANISMS
Dirk Van Der Waaij, Voorburg; Hendrik J. Erkelens, Delft; Pieter A. Bossers, Rotterdam, and Franciscus J. Kruiswijk, Delft, all of Netherlands, assignors to Nederlands Oranisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve Vande Volksgezondheid, The Hague, Netherlands
Filed Mar. 16, 1971, Ser. No. 124,767
Claims priority, application Netherlands, Mar. 16, 1970, 7003728
Int. Cl. B01d *46/12*
U.S. Cl. 128—1 R 8 Claims

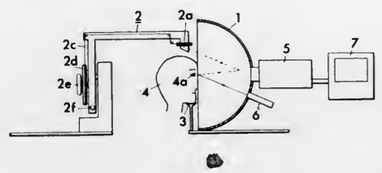
A transporter for substantially germfree transport of big living organisms from an operating-theatre to a clean room, which transporter contains a space wherein a laminar downflow of clean air is maintained by mounting an adjustable air-conditioning equipment provided with a power source of its own and with a connection to an other source of energy, the air-conveying channels surrounding the space on four of the five walls and an entrance to the space being provided with a mechanism for opening and closing that is coupled to the air-conditioning equipment.

3,777,737
METHOD AND DEVICE FOR REVERSIBLY INTERRUPTING FLUID FLOW IN A LIVING BEING
Louis Bucalo, Holbrook, N.Y., assignor to Investors In Venture, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 103,606, Jan. 4, 1971, Pat. No. 3,707,957. This application Mar. 13, 1972, Ser. No. 233,930
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R 17 Claims



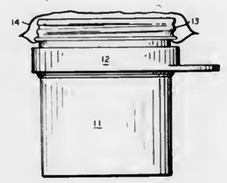
A method and device for reversibly interrupting flow of fluid along a passage in the body of a living being. The method and device are particularly adapted for use with the vas deferens of a human being. A member such as a vas deferens is at least partly cut transversely so as to have a pair of separated portions. Opposed ends of a valve are inserted into the interiors of these separated portions while a barrier is maintained between the separated portions to prevent them from communicating with each other. The valve is provided between elongated tubular portions of its housing which form the inlet and outlet of the valve with a barrier structure in the form of a ring to be situated between the separated portions of a member such as a vas, this ring having a diameter great enough to prevent communication between the interiors of the separated portions. When the valve is implanted it is provided with an elongated needle extending completely through and beyond the valve so that the ends of the needle can extend along the interiors of the separated portions of the vas, to prevent the separated portions from becoming closed during introduction of the valve. After the valve has been mounted in the vas the needle is removed. The valve is implanted in an open position and is closed only after the vas heals. This closing of the valve is brought about magnetically from the exterior of the body.

3,777,738
OPHTHALMIC DIAGNOSTIC INSTRUMENT
Kenichiro Sugita; Tetsuji Shimizu; Sinichi Ueno, all of Nagoya, and Tateki Muraoka, Kasugai, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Oaza-Shimoodai, Japan
Continuation-in-part of Ser. No. 834,041, June 17, 1969. This application Nov. 23, 1971, Ser. No. 201,467
Claims priority, application Japan, June 22, 1968, 43/52595; June 3, 1969, 44/51173
Int. Cl. A61b *3/10, 5/10*
U.S. Cl. 128—2 T 8 Claims



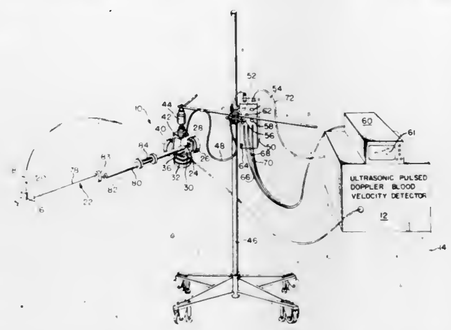
A device for examining pupillary reflex so constructed that a spotlight is applied directly or indirectly to an eye of a patient to cause pupillary reflex, an infrared lamp is provided to apply infrared rays to the eye for convenience of camera work, and an infrared camera and television set or screen are provided to catch and reproduce a motion of the pupil into an image. From the image of pupillary motion reproduced on the screen, an ophthalmologist can readily and exactly know the condition of retina, or optic nervous system, without any help of oral answer or sign of the patient.

3,777,739
METHOD AND APPARATUS FOR COLLECTING URINE
Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.
Filed Dec. 3, 1971, Ser. No. 204,496
Int. Cl. A61b *19/00*
U.S. Cl. 128—2 F 20 Claims



A device and method for collecting a liquid, such as urine, with little or no contamination thereof. The device when delivered for use includes a container member, an intermediate member secured to the container and a cap member encased in a closed bag and in turn secured to the intermediate member through the bag. During use the cap member is removed from the intermediate member and placed on a convenient surface, still in the closed bag. The intermediate member has a handle which then permits the user easily to hold the container in position for voiding urine into the container. The intermediate member is then removed from the container and discarded. The uncontaminated cap member is then removed from the closed bag and is threadably secured to the container so that the urine contained therein can be delivered for analysis in a substantially uncontaminated state.

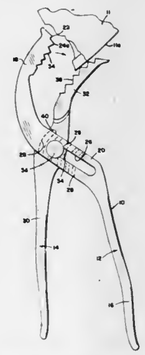
3,777,740
METHOD AND APPARATUS FOR NON-INVASIVELY VISUALIZING BLOOD VESSELS
David Eugene Hokanson, Mercer Island, Wash., assignor to The United States of America as represented by the Administrator for Veterans Affairs, Washington, D.C.
Filed Oct. 21, 1971, Ser. No. 191,399
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V 16 Claims



Apparatus for transcutaneously producing visual images of the internal dimensions of blood vessels in the human body is disclosed including an ultrasonic pulsed Doppler blood velocity detector having a transducer adapted to transmit a beam of ultrasound toward a blood vessel and detect ultrasound reflected from moving blood particles. The transducer is held by a mechanical arm capable of sensing the position and orientation of the transducer. The position and orientation of the transducer are combined with the distance of the blood vessel therefrom to locate the beam of an oscillographic storage display unit. A frequency detector is employed to intensify the beam of the storage display unit to write a spot on the display whenever the output of the pulsed Doppler is above a pre-set amplitude and frequency indicating blood flow within the blood vessel.

Method of use of the disclosed apparatus to produce visualizations of blood vessels in the human body are also disclosed.

3,777,741
DEVICE FOR LOCATING SORE SPOTS ON HORSE HOOVES
Bud A. Beaston, Rt. 1, Box 13, Sperry, Okla.
Filed Apr. 25, 1972, Ser. No. 247,378
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 R 4 Claims



An adjustable pincer-like tool for engaging horse hooves for locating sore spots thereon. The tool comprises a first pincer

member provided with a handle portion and a gripping portion interconnected by an angularly disposed elongated slotted portion, and a second pincer member having a handle portion and a gripping portion interconnected by a relatively short angled portion, with the relatively short angled portion being pivotally secured to the elongated slotted portion in a manner permitting adjustment of the relative positions of the pincer members for providing an adjustable cooperating gripping position for the gripping portions of the pincers. In one extreme adjustment position between the pincers, the gripping portions may be moved into close proximity with each other upon closing of the handle portions, whereas in the opposite extreme adjustment position between the pincers, the gripping portions are spaced apart in the closed position of the handle portions.

3,777,742

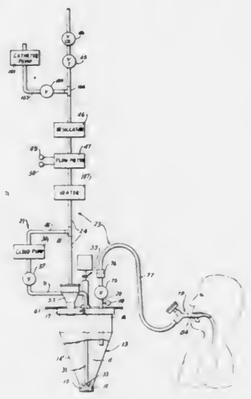
TANTALUM INSUFFLATOR

Clyde F. Aumiller, Rockford, Ill.; Lowell D. Morrison, Fort Atkinson, and Dale G. Holinbeck, Madison, both of Wis., assignors to Barber-Colman Company, Rockford, Ill.

Filed Sept. 18, 1972, Ser. No. 289,836

Int. Cl. A61b *6/00*; **G61m** *13/00*

U.S. Cl. 128—2 A **14 Claims**



Apparatus for insufflating the airways of a patient with tantalum dust, either by the inhalation method or the catheter method.

3,777,743

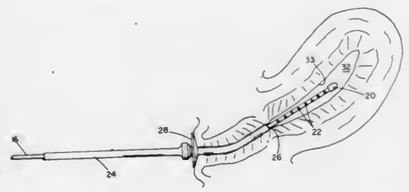
ENDOMETRIAL SAMPLER

William J. Binard, and John F. Dye, both of Barrington, Ill., assignors to The Kendall Company, Boston, Mass.

Filed Sept. 29, 1972, Ser. No. 293,676

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 B **8 Claims**



An endometrial sampler comprises a rigid hollow tube having a sampling end providing a plurality of sampling ports communicating with the interior of the tube, and sleeve means surrounding the tube and slidable with respect to it. The tube provides forward stop means and rearward stop means, and the sleeve means and tube are reciprocable with respect to one another between a sampling position in which the sleeve means exposes at least one sampling port, and a second position in which the sleeve means engages the forward stop means and covers the sampling ports. Cervical stop means engages the cervix and cooperates with the rearward stop means to limit travel of the sampling end to a predetermined distance beyond the cervix. A source of suction may be connected to the tube to draw sample material through the sampling ports.

3,777,744

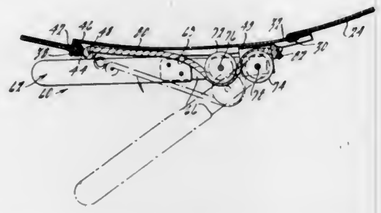
HAND ASSIST BREATHER

James D. Fryfogle, 24500 Inkster, Southfield, Mich., and Carl C. Garland, 15700 Kentfield, Detroit, Mich.

Filed Mar. 18, 1971, Ser. No. 125,579

Int. Cl. A61h *31/00*

U.S. Cl. 128—28 **20 Claims**



A medical appliance of a belt-like structure which is hand operable to improve and sustain respiration, and more specifically can be used by a patient for assisting exhalation of breath from the patient afflicted with obstructive lung disease which is operative by compressing the upper abdomen forcing the diaphragm against the distended lungs.

3,777,745

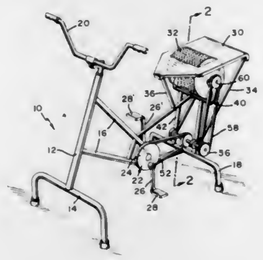
EXERCISE AND MASSAGING APPARATUS

Luther G. Simjian, 7 Laurel Ln., Greenwich, Conn.

Filed Feb. 14, 1972, Ser. No. 226,056

Int. Cl. A61h *15/00*

U.S. Cl. 128—57 **11 Claims**



An exercise and massaging apparatus comprises a movable massaging element which is driven responsive to the expenditure of muscle power. The massaging element may form a part of the seat of the apparatus.

3,777,746

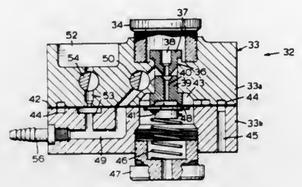
PULSATING DENTAL SYRINGE

Clyde Chi Kai Kwok, Montreal, Quebec, Canada, assignor to Edward V. Rippingille, Jr., Key Largo, Fla.

Division of Ser. No. 124,905, March 16, 1971, Pat. No. 3,698,416. This application July 10, 1972, Ser. No. 270,430

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **6 Claims**



A pulsating dental syringe employing a fluid oscillator having a housing with a fluid inlet channel connected to a source of fluid under pressure, and first and second fluid outlet channels which communicate with the fluid inlet channel. A diaphragm is positioned so as to control the flow of fluid from the fluid inlet channel to the first fluid outlet channel. The second fluid outlet channel is connected to the fluid inlet channel upstream of the diaphragm, but the arrangement is such that the fluid flows through the first outlet channel when the diaphragm is in its open position. When the diaphragm is in its closed position, the fluid is diverted to the second outlet channel. The first outlet channel terminates in an end which is open to the atmosphere, and is dimensioned to produce an inertial effect in the fluid flowing through it. When the diaphragm moves to its closed position there is a momentary partial vacuum in the first outlet channel, which helps to hold the diaphragm firmly in its closed position. After the inertial effect has substantially dissipated, the force of the fluid against the diaphragm is sufficient to cause the diaphragm to return to its open position, whereupon the fluid resumes its flow through the first outlet channel.

3,777,747

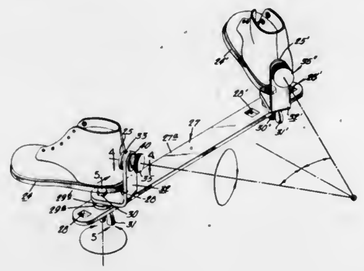
UNIVERSAL SHOE SPLINT ASSEMBLY

Donald J. Friedman, 20 N. High St., West Chester, Pa.

Filed Feb. 2, 1972, Ser. No. 222,732

Int. Cl. A61f *3/00*

U.S. Cl. 128—80 A **9 Claims**



The present invention is an improvement in orthopedic devices of the type suitable for treating malformation of the lower extremities of infants and children. A multi-purpose splint or brace is provided which permits the orthopedic surgeon to make the widest possible range of corrective adjustments with or without controlled movement in pre-selected directions.

3,777,748

INTRAUTERINE CONTRACEPTIVE DEVICES AND INSERTERS THEREFOR

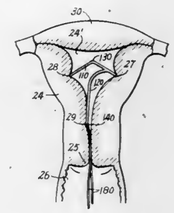
Harvey J. Abramson, New York, N.Y., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 836,371, June 25, 1969, abandoned. This application June 11, 1971, Ser. No. 152,231

Claims priority, application Philippines, June 15, 1970, 11535

Int. Cl. A61f *5/46*

U.S. Cl. 128—130 **23 Claims**



The present invention relates to intrauterine contraceptive devices in the general shape of a "7" having a transverse arm and a longitudinal arm dependent substantially from an end thereof; method of contraception by insertion of such a device into the uterus; instruments and methods for the insertion of intrauterine contraceptive devices into the uterus without employment of forces propelling said devices from the instruments in the direction of the uterine fundus.

3,777,749

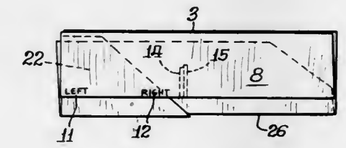
FOLDED SURGICAL DRAPE

Robert F. Collins, Barrington, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Oct. 1, 1969, Ser. No. 862,830

Int. Cl. A61f *13/00*

U.S. Cl. 128—132 D **9 Claims**



A disposable surgical drape folded in a fashion to facilitate aseptic transfer of the drape from a folded position to a position covering the body area of the patient to be draped. A cuff is provided around an open end of the drape which receives both hands of the person applying the drape, and facilitates unfolding and applying the drape by allowing either hand to grasp the drape's toe portion while it is positioned under the cuff.

3,777,750

PROTECTIVE CLOTHING UNIT FOR CONDUCTING WORK IN A DELETERIOUS ATMOSPHERE

Jacques Savornin, Gif-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed July 21, 1971, Ser. No. 164,778

Int. Cl. A62b *7/00*

U.S. Cl. 128—142.5 **2 Claims**

A protective clothing unit for work conducted in a tritiated atmosphere comprising a frogsuit made at least partly of sub-

stantially leak-tight flexible fabric, an ejector for removing vitiated air to the exterior of the frogsuit and a single air-supply pipe through which the flow is directed parly into the



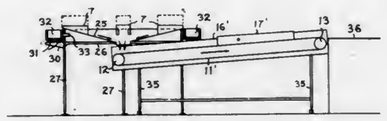
frogsuit for supplying fresh air and partly to the ejector from which the flow is discharged to the exterior and carries with it the vitiated air.

3,777,751
ANKLE SUPPORTS
Elmo E. Wise, 138 Hicks Rd., Castle Rock, Wash.
Filed Nov. 29, 1971, Ser. No. 202,898
Int. Cl. A61f *13/06*
U.S. Cl. 128—166 **10 Claims**



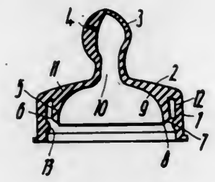
An inelastic, flexible strap secured under tension to an annular band surrounding the lower portion of an ankle of an athlete and bearing against the upper portions of the foot and heel bears snugly against the cuboid portion of the foot and limits inward roll of the foot to prevent outside sprain.

3,777,752
CHICK PROCESSING AND HANDLING DEVICE
Ray Goodwin, 124 N. King Charles Rd., Raleigh, N.C.
Filed Apr. 3, 1972, Ser. No. 240,593
Int. Cl. A61m *1/00*
U.S. Cl. 128—173 **6 Claims**



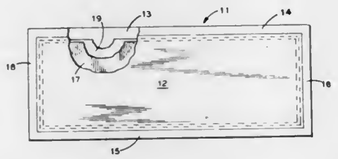
An improved apparatus for processing baby chicks so that they may receive necessary preliminary treatment before packaging in such manner as to reduce the amount of handling to improve the efficiency of operation and to minimize injury to the chicks. The apparatus comprises an annular conveyor and a belt conveyor connected by a chute means. As the chicks pass along conveyors, they are debeaked and vaccinated.

3,777,753
FEEDING BOTTLE TEATS
Lutz Kesselring, and Hans-Joachim Nagel, both of Zeven, Germany, assignors to MAPA GmbH, Gummi-u. Plastikwerke, Hannover, Germany
Filed July 19, 1972, Ser. No. 273,281
Claims priority, application Germany, July 20, 1971, G 71 27 808.5
Int. Cl. A61j *11/00*
U.S. Cl. 128—252 **10 Claims**



The disclosure relates to a teat, particularly for feeding bottles for babies, which teat has a nipple portion made particularly with a conically orthopaedic shape upon a base portion with an opening away from the nipple portion, which base portion can be fitted upon a bottle neck so as to grip around the latter with a cylindrical wall portion and also has inwardly directed projections.

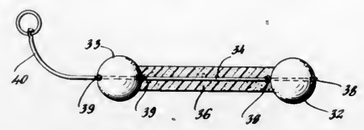
3,777,754
MEDICATED DISPOSABLE PAD
William Plachy, 84-20 51st Ave., Elmhurst, N.Y.
Filed Nov. 13, 1972, Ser. No. 305,735
Int. Cl. A61f *7/02*
U.S. Cl. 128—268 **5 Claims**



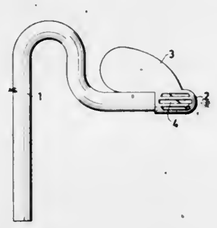
A medicated pad for the external application to selected joint portions of the human body subject to arthritic pain, for materially diminishing such pains; the pad being constituted of a thin pliable sheet of wax material with volatile medication distributed through the sheet. The sheet is adapted to be suitably warmed and wrapped or otherwise applied in its warmed condition to the afflicted joint portions of the body.

3,777,755
SUPPOSITORY
Harvey H. Groves, 6 Cherry Ln., Westport, Conn.
Filed Mar. 27, 1972, Ser. No. 238,305
Int. Cl. A61m *31/00*
U.S. Cl. 128—271 **20 Claims**

Disclosed is a suppository which includes two smooth-surfaced, body indissolvable bulbs approximately spherical or ellipsoidal in shape secured together by a body-indissolvable connecting member. The cross sectional area of the connecting member combined with any medication which may surround it is less than the combined cross sectional area of the bulbs and any medication which may surround them, so that when the suppository is inserted into the anal canal, the bulbs at each end straddle the anal sphincter muscles.

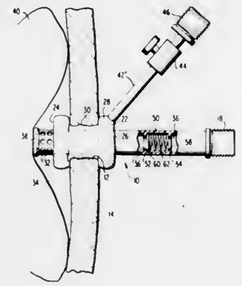


3,777,756
SALIVA EJECTOR
Torbjorn Lohr, Saltsjo-Bo, Sweden, assignor to Scania Dental AB, Hagersten, Sweden
Filed Feb. 17, 1972, Ser. No. 227,213
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **1 Claim**



The present invention relates to a saliva ejector, preferably for non-recurring use having a suction pipe, one end of which co-operates with a source of power, the other end of which has a wing like member detachably arranged, said winglike member consists of a perforated body which is slipped onto said end of said suction pipe and rotatably arranged, and supporting the wing or forming an integrated part therewith.

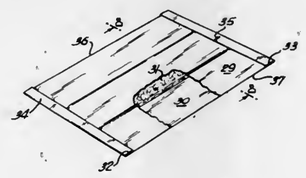
3,777,757
SUCKING WOUND PLUG AND CHEST ASPIRATOR
R. Flanagan Gray, R.D. 1, Washington Crossing, Pa.; John Caswell, 125 S. Chancellor St., Newtown, Pa., and William G. Muller, 131 N. Delaware Ave., Yardley, Pa.
Filed Jan. 8, 1971, Ser. No. 104,960
Int. Cl. A61m *1/00*
U.S. Cl. 128—278 **13 Claims**



A unique inflatable bag catheter is provided having a pliable elongated bag disposed generally at the distal end thereof. A cylindrical end portion of the distal end may be formed with a plurality of apertures for the passage of fluids into the catheter from a space immediately adjacent the distal end. A terminal-most portion of the distal end of the catheter may be formed with a cushioning device to prevent damage to delicate internal portions of the body such as the lungs. A hand pump portion of the catheter may be threadedly and removably engaged with an inflatable balloon portion of the catheter. One-way valves may be provided in both the inflatable balloon portion of the catheter and the hand pump portion of the catheter to insure that fluids sucked in from the distal end of the catheter will travel only away from the distal end toward the proximal end of the catheter. One one-way valve may be disposed on either side of the hand pump which may comprise an elastomeric bulb. A conduit may be connected with the inflatable balloon for directing inflating fluids thereto. The free terminal end of the conduit may be fitted with threading corresponding with threading on the inflatable balloon portion of the catheter. Because of this arrangement, the hand pump may be attached initially to the conduit for inflating the balloon and then may be removed to be reconnected with the inflatable balloon portion of the catheter for evacuating fluids from within a body cavity. When the hand pump is threadedly engaged with the conduit for inflating the balloon, another one-way valve may be threadedly engaged within a free end portion of the elastomeric bulb portion of the catheter to convert the pump from a suction device to one for pressurizing of the inflatable balloon.

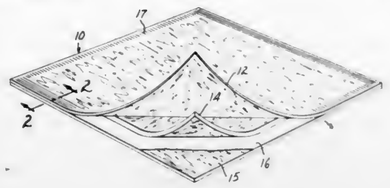
In one alternative embodiment, a valved face mask may be provided to require a user to forceably exhale so as to increase the compression force on internal drainage fluids which force, in turn, permits the expulsion of undesirable internal fluids through the catheter by the pumping action of the chest wall.

3,777,758
DISPOSABLE DIAPER
Frederick K. Mesek, 929 Clyde Dr., Downers Grove, Ill.; Robert C. Shepherd, 5084 Wick Dr., Oak Lawn, Ill.; William R. Strickel, 3647 W. 108th Pl., Chicago, Ill.; Gerald J. Liloia, 369 Alden Way, North Brunswick, N.J.; Louis F. May, Jr., 18 Garfield Ave., Old Bridge, N.J., and Norman Schiff, 24 Raleigh Rd., Kendall Park, N.J.
Continuation-in-part of Ser. No. 729,784, May 16, 1968, Pat. No. 3,663,348, which is a continuation-in-part of Ser. No. 515,874, Dec. 23, 1965, abandoned. This application Nov. 12, 1971, Ser. No. 198,381
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **16 Claims**



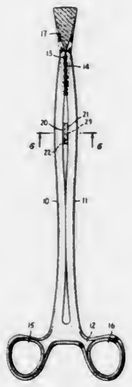
A disposable multi-layer diaper is disclosed in which a first layer to be brought into contact with an infant's skin, is a through bonded non-woven fabric of predominantly short length fibers mixed with long, i.e., textile length, fibers. The fabric is treated with a rewetting agent so as to have the desired degree of wettability and absorbency. A second layer, in juxtaposition to the facing layer, is a highly absorbent pad of short length fibers. The final layer, positioned on the side of said pad opposite said facing layer, is also through bonded non-woven fabric of predominantly short length fibers in admixture with long or textile length fibers. In each of the layers of the diaper the short length fibers are naturally occurring cellulosic fibers, e.g., wood pulp fibers and cotton linters having a length not exceeding about one-quarter inch.

3,777,759
ENZYME-DISPERSIBLE BANDAGE
Richard W. Oehmke, Hudson, Wis., and Ronald F. Ofstead, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 25, 1972, Ser. No. 291,659
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 6 Claims



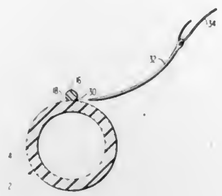
A readily disposable, multi-ply pad for contacting the body and absorbing body wastes consists of multiple plys of non-woven, fibrous material of good dry- and wet-strength, wet-strength being conferred on the materials by a binder which is essentially unaffected over periods of several hours or more by aqueous body wastes, but which is rapidly degraded by exposure to aqueous media containing enzymes; one or moreof the interior plys can be plain, untreated, non-woven fibrous material in the form of an absorbent pad; the whole pad being readily dispersed and disposable in domestic waste disposal systems by the addition of enzyme to the disposal receptacle together with the used pad, and such disposal having the advantage that even long-continued disposal of numerous pads has little or no deleterious effect upon domestic disposal systems.

3,777,760
SURGICAL STICK
Howard Essner, 5 Pine Brook Dr., White Plains, N.Y.
Filed Sept. 9, 1971, Ser. No. 179,021
Int. Cl. A61m *35/00*; A61b *17/28, 17/08*
U.S. Cl. 128—269 6 Claims



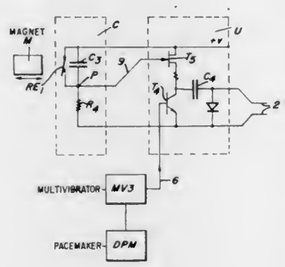
A surgical stick formed in one piece of a resilient material and having a pair of elongated clip members extending from the gripping portion and capable of being separated for the insertion of absorbent material therebetween and of being locked together for retaining securely the absorbent material.

3,777,761
POST OPERATIVE DRAINAGE TUBES WITH SUTURE STRIP AND METHOD OF USE
David S. Sheridan, Hook Rd., Argyle, N.Y.
Filed July 18, 1972, Ser. No. 272,871
Int. Cl. A61m *25/02*
U.S. Cl. 128—350 R 6 Claims



Post-operative drainage tubes, e.g., thoracic catheters, intercostal catheters and sump drain tubes, have a suture strip secured in piggy-back relation thereto. The drainage tube may then be fixed to the body of a patient by a suture which engages the suture strip, e.g., by being threaded through the joint between the suture strip and the drainage tube.

3,777,762
PACEMAKER WITH CONTINUOUSLY ADJUSTABLE OUTPUT AMPLITUDE
Lars Stig Nielsen, Copenhagen, Denmark, assignor to Christian Rovsing A/S, Copenhagen, Denmark
Continuation-in-part of Ser. No. 53,557, July 9, 1970, Pat. No. 3,669,120. This application Jan. 8, 1971, Ser. No. 104,952
Claims priority, application Denmark, Dec. 22, 1970, 6512
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P 10 Claims



A pacemaker having an output control circuit which is adapted when activated to control the produced pace impulses in such a manner that the amplitude of each impulse is slightly less than that of the preceding impulse. The control circuit can be activated and deactivated from outside, either by suitable hospital equipment or manually by a surgeon. It permits the threshold value of the heart to be determined without surgical operation by ascertaining the smallest pace impulse that causes heart contraction.

3,777,763
ANGLED BREAST SUPPORTING FRAMES
Herbert L. Schwartz, Kew Garden Hills, N.Y., assignor to S. & S. Industries, Inc., Bronx, N.Y.
Filed May 15, 1972, Ser. No. 253,506
Int. Cl. A41c *1/14, 1/20*
U.S. Cl. 128—476 3 Claims



A breast supporting frame including an end portion twisted out of the normal plane thereof to an angular extent which progressively decreases from the terminal end of the frame to the inner end of said twisted portion which is located at a point spaced inwardly from the medial portion of the frame.

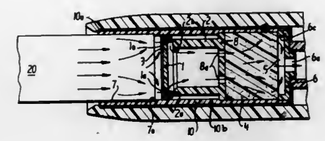
3,777,764
UNDERGARMENTS
Henry M. Herbener, 803 N. Dawson St., Box 977, Thomasville, Ga.
Continuation of Ser. No. 19,204, March 13, 1970, Pat. No. 3,712,308. This application Aug. 30, 1972, Ser. No. 284,719
Int. Cl. A41c *1/00*
U.S. Cl. 128—519 3 Claims



A garment formed at least in part of elastic material has an opening provided in the crotch thereof. A cover element in the form of a panty also formed at least in part of elastic material is worn over the main garment to cover the crotch opening and to restore body controlling compression lost in the main garment due to the provision of the crotch opening. The cover element may be attached to the main garment. The invention is applicable to a wide variety of body garments.

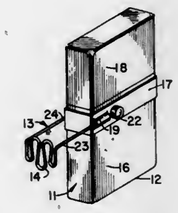
3,777,765
FILTER APPARATUS FOR REMOVING TAR AND OTHER DELETERIOUS SUBSTANCES FROM TOBACCO SMOKE
Sadao Yoshinaga, Tokyo, Japan, assignor to Yoshinaga Prince Co. Ltd., Tokyo, Japan
Filed Aug. 1, 1972, Ser. No. 276,917
Claims priority, application Japan, Aug. 5, 1971, 46/70007; Feb. 8, 1972, 47/16244
Int. Cl. A24f *13/06*
U.S. Cl. 131—187 7 Claims

Apparatus is disclosed for removing tars and other deleterious material from tobacco smoke including a cylindrical housing including an entrance chamber for receiving the tobacco product, such as a cigarette, and terminated at the inner end by a disk having a selected number of apertures therethrough for the passage of tobacco smoke. Further, channels are disposed within the disk to direct the flow of smoke from the end of the tobacco product into the apertures. An annular smoke guide is disposed on the rearward side of the aforementioned disk to present an edge onto which the smoke is directed by the disk apertures, whereby the tars and various deleterious products may be deposited. Further, the smoke is further drawn through a porous filter, whereby any remaining deleterious products may be absorbed. Such filter apparatus may be mounted within a holder including a mouthpiece hav-



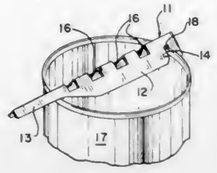
ing a passage therethrough in communication with the aforedescribed filter apparatus. In one illustrative embodiment, the mouthpiece is connected to a resilient bushing and is resiliently biased against an end of the filter apparatus to assure that air does not leak about the outer surface of the tobacco product and filter apparatus. In addition, the holder includes a cavity for mounting therein the filter apparatus and for facilitating the rectilinear movement of the mouthpiece to thereby enable the aforedescribed filter apparatus to be ejected therefrom. In one illustrative embodiment, the cigarette receiving opening of the cavity has therein a resilient holding projection for securing the filter apparatus within the cartridge, but permitting upon actuation of the mouthpiece member, the rejection therethrough of the filter apparatus.

3,777,766
PIPE TAMPING MEANS
Garland H. Kanady, 33 Hillcrest, Ponca City, Okla.
Filed Nov. 17, 1971, Ser. No. 199,536
Int. Cl. A24f *09/02*
U.S. Cl. 131—243 4 Claims



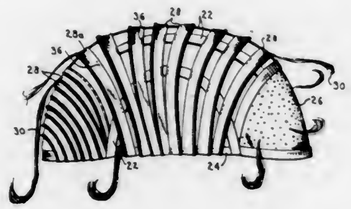
A tamper in combination with a lighter mechanism is provided wherein the tamper is attached to said lighter mechanism so that said tamper is adapted to slidably move through elongated hollow guide members between a first position wherein the tamping surface portion of the tamper is contiguous to the exterior portion of said lighter mechanism and a second position wherein said tamping surface is spaced away from said lighter mechanism. Further, the tamping surface of said tamper is an enlarged area formed so as to allow a major portion of the tobacco being tamped to constantly breathe during the tamping operation.

3,777,767
CIGARETTE HOLDER FOR ASH RECEPTACLES
William K. Wunsch, 2627 Clarkson St., Denver, Colo.
Filed Sept. 28, 1972, Ser. No. 293,130
Int. Cl. A24f 13/22
U.S. Cl. 131—257 4 Claims



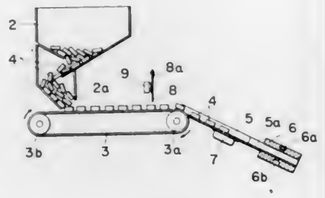
An attachment for cylindrical containers, such as coffee cans, comprises an elongated member having a main body portion and an extension of reduced cross section. The body portion has walls flaring downwardly from its top or ridge and attaching means near its end opposite the handle for frictional engagement with the top of the container; the handle is of reduced section extending from the ridge and arranged to rest on the top edges of containers of differing diameters within a predetermined range of diameters so that the body portion may be supported for use in a range of sizes of containers. Recesses for holding cigarettes horizontally across the container are arranged at spaced intervals along the ridge of the main body.

3,777,768
WEFTED HAIR STRUCTURE AND METHOD OF CONSTRUCTION
Josef Scigliano, Shawnee, Kans., assignor to Eva Gabor International, Ltd., North Kansas City, Mo.
Filed Aug. 21, 1972, Ser. No. 282,269
Int. Cl. A41g 3/00
U.S. Cl. 132—53 19 Claims



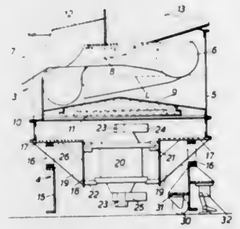
In a wig or other hair structure of wefted construction, each weft of hair is secured to one longitudinal edge of a flexible ribbon. The opposite longitudinal edge portion of the ribbon is attached to the base of the structure, the ribbon having sufficient width between the weft and the points of attachment to provide a flexible hinge support for the weft of hair to thereby permit free movement of the hair with the ribbon in directions transversely of the length of the ribbon. With ribbons disposed on the base in generally parallel relationship to one another, reversibility in the lay of the hair is provided. Besides the basic weft-ribbon configuration, double weft, stacked weft, loop and star configurations are disclosed, and special double ribbon embodiments for providing a line of hair concentration at a part.

3,777,769
COUNTING DEVICE HAVING MEMORY-READOUT AND LOGIC CIRCUITS
Shinichi Ueno, Inazawa, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi Pref., Japan
Filed Feb. 7, 1973, Ser. No. 330,417
Claims priority, application Japan, Feb. 12, 1972, 47/15066; Mar. 14, 1972, 47/25201; Mar. 14, 1972, 47/29912
Int. Cl. G07d 9/04
U.S. Cl. 133—8 R 5 Claims



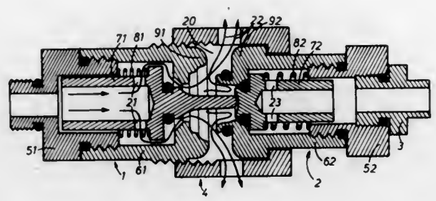
A device for counting articles capable of by far speeding up the counting time, which comprises a plurality of gates through which the articles are fed, a plurality of detecting means provided on the respective gates for generating a signal upon detection of the article, a plurality of memory-readout circuits connected to the respective detecting means and adapted to memorize the signals therefrom, a sweep signal generator for periodically reading out the signals memorized by said memory-readout circuit, a logical circuit and a digital counter or an analogic indicator for integratingly indicating signals obtained through said logical circuit.

3,777,770
APPARATUS FOR THE TREATMENT OF PARTS
David Cunningham-Smith, Harpenden, England, assignor to William Boulton Limited, Stoke-on-Trent, Staffordshire, England
Filed July 1, 1971, Ser. No. 158,747
Claims priority, application Great Britain, July 2, 1970, 32,121/70
Int. Cl. B08b 3/02, 3/08
U.S. Cl. 134—118 13 Claims



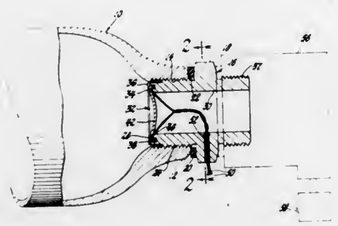
Apparatus for drying, cleaning or degreasing parts in which the parts are introduced into a body of drying, cleaning or degreasing medium in a chamber, the chamber being resiliently mounted and arranged to be subjected to a vibratory movement causing the charge of parts and a proportion of the medium to move outwards to the periphery of the chamber and from thence to climb up and around a spiral channel to a level above the body of medium, the parts and any medium carried up the spiral then being separated above the centre of the spiral so that the medium falls back into the chamber and the parts are discharged from the machine.

3,777,771
JOINING OF CONTAINERS
Patrick M. De Visscher, rue du Bois Imperial 16, Maransart, Belgium
Filed May 22, 1972, Ser. No. 255,465
Claims priority, application Belgium, May 27, 1971, 103,926; Apr. 28, 1972, 116,984
Int. Cl. F17d 1/00; F16l 35/00
U.S. Cl. 137—1 1 Claim



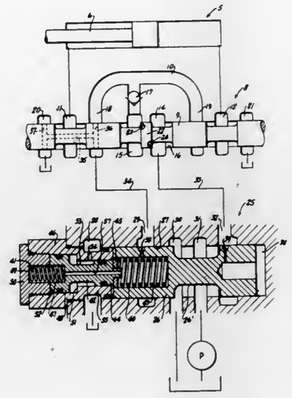
A process for joining together connecting parts of at least two containers which contain fluids at identical or different pressures, in an ambient fluid with a pressure that is lower than that of at least one of the containers, while preventing the ambient fluid to be introduced into one container, comprising the steps of first liberating the fluid of the container with a pressure higher than that of the ambient fluid, while effecting coupling of the connecting parts, and subsequently driving out the ambient fluid from the empty spaces between the connecting parts.

3,777,772
FLAP OPENING INFLATOR SEAL ARRANGEMENT
Thomas E. Arnold, Goleta, and Roy D. Plumer, Santa Barbara, both of Calif., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 11, 1972, Ser. No. 287,812
Int. Cl. F16k 17/40
U.S. Cl. 137—68 2 Claims



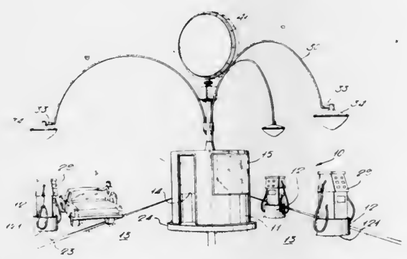
An inflator for a vehicle inflatable occupant restraint cushion includes an outlet having a generally cylindrical bore and a radial end wall, with the edge of the bore adjacent the end wall being chamfered to provide a radially angular juncture wall. A domed seal includes a flange seating on the end wall and secured thereto. The dome of the seal projects within the bore and closes the opening of the bore. The flange overlies the angular juncture wall and defines therewith a continuous circumferential recess of angular cross section. A discontinuous groove in the flange opens to the recess. A flexible shaped charge coterminous in extent with the groove fits within the recess. When the charge is fired, the dome separates from the flange along the groove and is swung relative to the flange by the flow of pressure fluid through the bore of the inflator.

3,777,773
PRESSURE COMPENSATING VALVE MECHANISM
William N. Tolbert, Pewaukee, Wis., assignor to Koehring Company, Milwaukee, Wis.
Filed Feb. 22, 1972, Ser. No. 228,020
Int. Cl. F15b 11/02
U.S. Cl. 137—117 13 Claims



A mechanism which, in one form, is useful as an unloading valve, and in another form as a pressure compensating valve. It comprises a valve plunger having a bypass position allowing all source fluid entering an inlet port to flow to an outlet port, and having a feed position compelling flow of source fluid to a feeder port in an amount depending upon the extent the plunger is displaced from its bypass position. The plunger is held in a feed position under substantially strong force exerted thereon by a primary spring and by pressure fluid from the feedback port. When the feedback port is vented, the plunger moves to its bypass position under force exerted thereon by pressure fluid from the inlet port, against the force of the primary spring diminished by the force of a secondary plunger spring.

3,777,774
NOVEL GAS BAR STRUCTURE
Alfred Leonard Martin, 545 The West Mall, Etobicoke, Ontario, Canada
Filed Nov. 13, 1972, Ser. No. 305,678
Int. Cl. B67d 5/00
U.S. Cl. 137—234.6 15 Claims



A novel gas bar structure is provided. It includes a prefabricated kiosk, secured to a foundation securely anchored within the ground and extending slightly above the level of the ground. A post is provided which is anchored in the foundation centrally within the kiosk, and which extends upwardly through the roof of the kiosk. A sign is surmounted

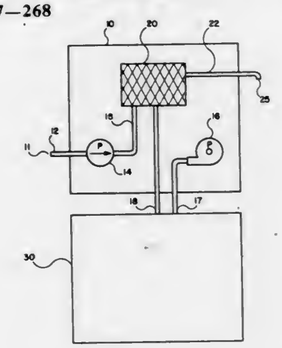
on the post and is preferably rotatable by a motor which is also mounted on the post. At least two planetary service islands are disposed equiradially from the center of the kiosk, the service island including a foundation securely anchored within the ground and extending a substantial distance above the ground, such service island including at least one gasoline dispensing pump thereon. An arched, cantilevered light fixture arm is provided for each such service island, each light fixture arm having one end secured to the post, with the other end having a light fixture thereon, superposed above such service island.

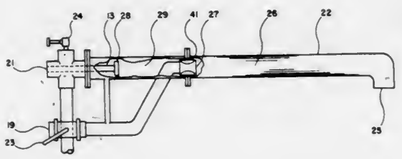
3,777,775

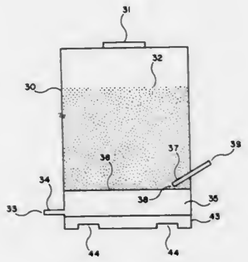
PORTABLE SYSTEM FOR THE PREPARATION OF SLURRIES AND SOLUTIONS

Avrom R. Handleman, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 10, 1972, Ser. No. 295,929
Int. Cl. A72c *37/06*
U.S. Cl. 137—268 **13 Claims**







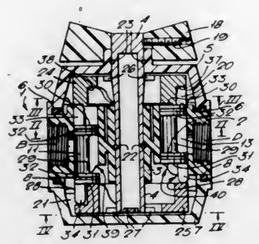
A portable system is described for preparing slurries and solutions which comprises an out-of-door storable bulk supply of particulate solid material in a container having a porous floor in combination with a mixing assembly which combination permits pneumatic fluidization and discharge of the particulate solid.

3,777,776

FLUID DISTRIBUTOR

Monique Boisserand, "Le Belvedere", 38–Voiron, France

Filed Mar. 31, 1972, Ser. No. 239,933
Claims priority, application France, Apr. 2, 1971, 7111740
Int. Cl. F16k *31/524*
U.S. Cl. 137—270 **5 Claims**



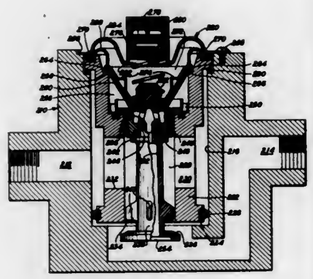
A fluid distributor valve including a solid disc-like body having a central hole surrounded by a plurality of cylindrical holes, and end covers on the body defining two chambers, one on each end; there is a sliding gate valve in each cylindrical hole, and a part or pipe from each hole to one chamber. The positions of the valves are determined by two cam plates, one in each chamber, rotation of which by means of a shaft passing through the central hole, causes the valves to move endwise in their holes and cover or uncover the parts.

3,777,777

FLOW CONTROL DEVICE

Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 21,868, March 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 643,170, June 2, 1967, Pat. No. 3,550,623. This application July 31, 1972, Ser. No. 276,481
Int. Cl. F16k *31/365*
U.S. Cl. 137—454.6 **6 Claims**



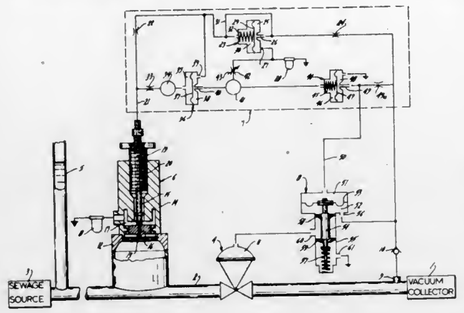
A fluid control device including a manual plug valve movable between a plurality of controlling positions and a pressure regulator assembly operatively disposed in the plug valve for independent movement to regulate the pressure of the fluid flow permitted by the plug valve. An outlet pressure sensing cavity in the regulator assembly is defined by a regulating diaphragm and a balancing diaphragm with loading of the regulating diaphragm being accomplished by resilient means or by pressure means.

3,777,778

TWO-POSITION LIQUID LEVEL CONTROLLER

George J. Janu, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Aug. 30, 1972, Ser. No. 284,775
Int. Cl. F16k *31/36*
U.S. Cl. 137—487.5 **17 Claims**



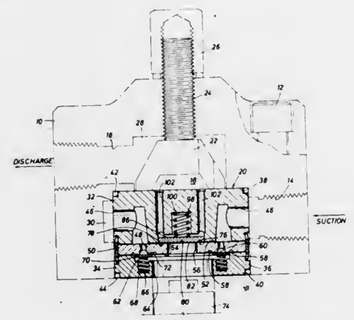
A two-position liquid level controller includes a static pressure sensor establishing a control signal at selected first level in a temporary storage means such as the standpipe of a vacuum operated sewage system. The sensor is connected upstream of a discharge control means and actuates a timer at the selected sensed pressure. The timer is connected to actuate the discharge control means and establish flow for a predetermined period in accordance with the setting of the timer to thereby establish a second pressure level. The timer may include an input delay to prevent actuation by momentary pressure conditions.

3,777,779

COMPRESSOR VALVE ASSEMBLY

Bernard L. Schwaller, 28 Hedwig Cir., Houston, Tex.

Filed July 28, 1971, Ser. No. 166,711
Int. Cl. F16k *15/02*
U.S. Cl. 137—512.3 **9 Claims**



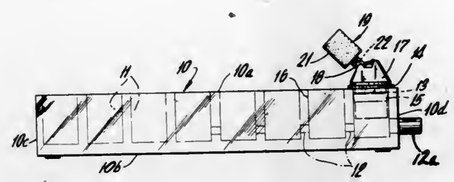
A compressor valve assembly according to the present invention may comprise a pair of body sections cooperating to define a suction valve recess and a discharge valve recess having suction and discharge valve elements disposed respectively therein and being operative to control the flow of fluid through suction and discharge passages also formed within the valve structure. The body sections are held in assembly by an assembly ring that closely encircles the body to maintain the same in proper alignment. Detent tabs formed on the assembly ring engage tapered friction support surfaces formed on each of the bodies to frictionally retain the bodies in properly centered assembly.

3,777,780

APPARATUS FOR EVACUATING FLUID FROM A CHAMBER

Thomas V. Czaplinski, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 24, 1971, Ser. No. 201,735
Int. Cl. G01n *33/00*
U.S. Cl. 137—576 **9 Claims**



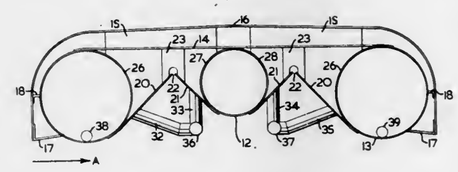
Apparatus for evacuating liquid from a chamber by means of a pressure differential comprising a chassis having a plurality of recesses adapted to receive a liquid containing chamber, at least one conduit communicating from within the chassis to an exterior surface thereof, the conduit passing through at least some of the recesses, the recesses being provided with receiving means adapted to receive a valve means, the valve means being provided with holding means for receiving a liquid holding chamber. Application of vacuum means to the external terminus of the conduit or of pressure to the liquid containing chamber causes liquid in the liquid containing chamber to pass through the valve into the recess and through the conduit. The apparatus may be used for diagnostic kits wherein a resin within the liquid containing chamber must be washed with water or wherein radioactive solutions in the liquid containing camber are loaded into generator columns.

3,777,781

STEAM SUPPLY APPARATUS

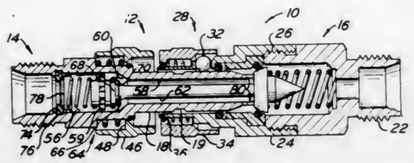
Norman F. Dove, 34-21st Ave., South, Cranbrook, British Columbia, Canada

Filed Oct. 25, 1972, Ser. No. 300,490
Claims priority, application Canada, Apr. 21, 1972, 140239
Int. Cl. F26b *21/12*; **D21f** *5/18*
U.S. Cl. 137—608 **9 Claims**



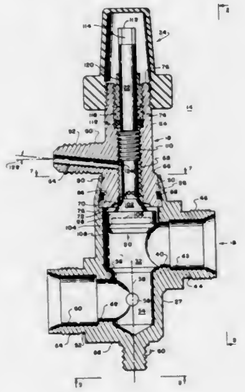
A steam supply apparatus includes at least two pipes located in spaced apart, side by side relationship, and a cover member extending across the pipes and secured thereto. End members are secured to the respective opposite ends of the pipes, and a pair of baffles between each pair of pipes are secured thereto in a substantially V-shaped configuration with a slot between adjacent ends of the baffles at the base of the V-shape, the base of the V-shape being directed towards the cover member. Steam is supplied to the pipes, and each pipe has a series of apertures communicating the interior of the pipe with the space between the pipes, the cover member and the baffles.

3,777,782
DOUBLE ENDED SHUT OFF COUPLING
Ashok S. Shendure, Warrensville Heights, Ohio, assignor to Crawford Fitting Company, Solon, Ohio
Filed June 15, 1972, Ser. No. 263,007
Int. Cl. F16l 37/28
U.S. Cl. 137—614.02 7 Claims



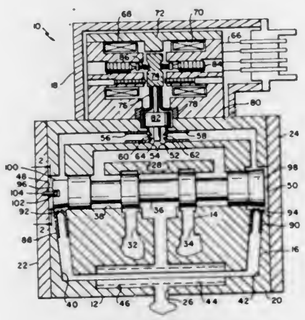
The specification and drawings disclose a double ended quick connect shut off coupling which includes a hollow-valved male stem which releasably connects to a hollow-valved female body by a ball-type detent arrangement. The male stem is provided with a valve having a portion which extends out of the stem. The hollow female body includes a plug-type valve member spring biased toward the end of the coupling and having a flat end face with a peripheral lip or flange. The end of the male stem is arranged so as to be received within the lip when the bodies are interconnected. The configuration of the plug is such that a substantially longer biasing spring can be used and valve flutter or chatter eliminated.

3,777,783
VALVE AND METHOD OF MAKING THE SAME
Maurice E. Beck, Fort Wayne, Ind., assignor to Kunkle Valve Co., Inc., Fort Wayne, Ind.
Filed Oct. 6, 1971, Ser. No. 187,031
Int. Cl. F16k 1/00
U.S. Cl. 137—625.5 12 Claims



A double seat valve having a valve body formed of conductive metal with a relatively thin-wall top portion forming the side wall of an open ended cavity, and a bottom portion having a chamber therein communicating with the cavity. The bottom portion has first and second axially displaced ports communicating with the chamber, and a first valve seat in the chamber between the first and second ports. A valve top member has a portion extending into the cavity, that portion having a bottom enc closing the chamber, and an upwardly and inwardly tapered surface facing the wall. The wall is deformed into tight engagement with the tapered surface by forces created by a transient magnetic field of high intensity. The top member has an axial passage therethrough communicating with the chamber through the bottom end which has a second valve seat formed therein, and a third port communicating with the passage. A valve member is positioned between the first and second seats and is secured to a valve stem which extends through the passage, and which actuates the valve member between a first position in which it engages the first seat thereby blocking flow between the first and second ports and permitting flow between the second and third ports, and a second position in which it engages the second seat thereby blocking flow between the second and third ports and permitting flow between the first and second ports.

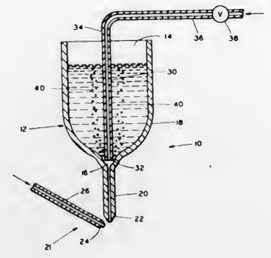
3,777,784
FLUIDIC FEEDBACK SERVO VALVE
Robert D. Nicholson, Birmingham, Mich., assignor to Koehring Company, Milwaukee, Wis.
Filed Dec. 6, 1971, Ser. No. 205,014
Int. Cl. F16k 11/07; F15b 5/00
U.S. Cl. 137—625.62 7 Claims



A fluidic feedback servo valve including a metering stage having a metering spool therein, a pilot stage including downstream opposed control nozzles therein for controlling the pressure at the opposite ends of the metering spool and an electromechanical transducer for varying the position of a target between the control nozzles, a pair of feedback nozzles positioned upstream of the ends of the metering spool in the pilot stage and conical feedback targets having different diameters on the opposite ends of the metering spool operably associated with the feedback nozzles for differentially varying orifices provided by the feedback nozzles in accordance with the axial position of the metering spool, the smaller diameter conical feedback target having a flat side and a transverse slot thereacross for receiving a locating pin, which pin is off-center with respect to the metering spool to prevent undesired rotation of the metering spool, and which pin when removed permits rotation of the metering spool to expose the flat side of the smaller diameter feedback target to the corresponding metering nozzle to permit withdrawal of the spool from the valve without disturbing the feedback nozzles.

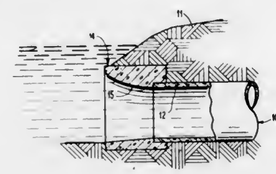
3,777,785
FLUID SWITCH
Alan Richardson Jones, Miami, Fla., assignor to Coulter Chemistry, Inc., Maunabo, P.R.
Filed Oct. 21, 1971, Ser. No. 191,215
Int. Cl. F15c 1/04
U.S. Cl. 137—806 5 Claims

The fluid switch controls the flow of a liquid from a funnel shaped receptacle and causes mixing of the liquid when the switch is in a "closed" position. The switch includes an air nozzle which extends into the receptacle and opens at a point adjacent a bottom outlet opening of the receptacle. The nozzle is adapted to direct an air stream toward and through the outlet opening to pre-empt liquid flow therethrough. A greater



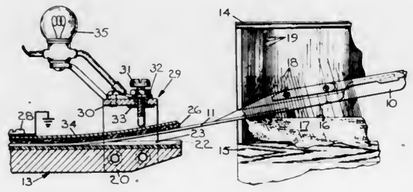
amount of air than is necessary to pre-empt flow of liquid through the outlet opening may be directed at the outlet opening so that the excess air bubbles through the liquid causing turbulence and mixing of the liquid prior to the "opening" of the switch.

3,777,786
ENTRANCE STRUCTURE FOR A LIQUID CONDUIT
Ira M. Gray, Route 2, Stamping Ground, Ky.
Filed July 24, 1972, Ser. No. 274,575
Int. Cl. F16l 9/00
U.S. Cl. 138—109 10 Claims



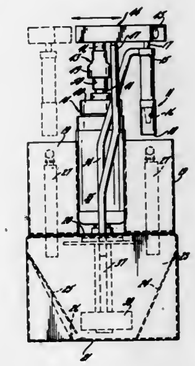
An entrance structure for a storm sewer pipe is designed so that the storm sewer pipe has full flow therethrough when the height of the water at the inlet of the entrance structure is equal to or greater than the height of the inlet of the storm sewer pipe.

3,777,787
WEFT CARRIER TAPE GUIDE
Douglas W. Anderson, Westboro, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed June 14, 1972, Ser. No. 262,797
Int. Cl. D03d 47/18
U.S. Cl. 139—127 R 5 Claims



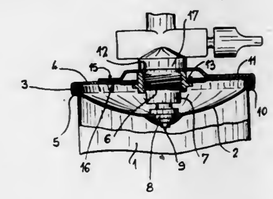
An improved guide for the flexible tapes of weft carriers in shuttleless looms which includes flexible guide members for decreasing the angle of upward deflection of the tapes as the carriers carried thereon are withdrawn from the warp shed and means operatively associated with the improved guide for indicating deflection of the tapes beyond a predetermined amount.

3,777,788
CYCLONE SEPARATOR
Mark R. Estabrook, Rockford, Ill., assignor to Barnes Drill Co., Rockford, Ill.
Filed July 21, 1971, Ser. No. 164,535
Int. Cl. B67d 5/02, 5/36; B65b 3/26
U.S. Cl. 141—279 1 Claim



A cyclone separator is carried on the free end of a horizontal manifold which overhangs a pair of underflow collecting buckets and which is mounted to swivel about a vertical axis so that the cyclone can be positioned over either of the buckets to enable one bucket to be removed and emptied while the cyclone discharges into the other bucket.

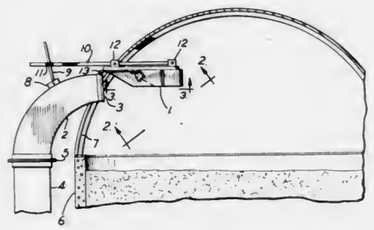
3,777,789
DEVICE FOR CONNECTING A DISPENSING COUPLER TO A CONTAINER FOR FLUID UNDER PRESSURE
Gabriel Corlet, Pierre-Benite, France, assignor to Application Des Gaz, Paris, France
Filed Jan. 11, 1972, Ser. No. 217,028
Claims priority, application France, Jan. 18, 1971, 7102413
Int. Cl. B65b 3/04; B67c 3/24
U.S. Cl. 141—329 10 Claims



A device to connect a coupling for a dispensing device to a container of fluid under pressure, of the type comprising a plate which is formed at the edge with clips capable of being engaged from one side of the container around a rim surrounding the end wall, the plate having a tapped hole into which the coupling can be screwed, causing it to bear against the wall of the container to drive in a needle or rod capable of puncturing the wall or of opening the member of a holding valve which is provided thereon, so as to establish free communication between the coupling and the interior of the con-

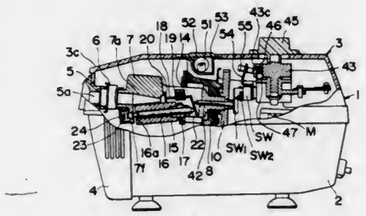
tainer, wherein a movable element having at least one coacting clip capable of being engaged around the rolled rim is provided, the coupling when it is screwed into the plate, being arranged to cause the clip of the movable element to be locked in its engaged position around the rolled rim.

3,777,790
SILAGE GUIDE
Donald E. Rutten, Plainfield, and Richard A. Davis, Joliet, both of Ill., assignors to P & D Mfg. Co., Inc., Plainfield, Ill.
Filed Mar. 3, 1972, Ser. No. 231,575
Int. Cl. B65b *1/04*
U.S. Cl. 141—392 **13 Claims**



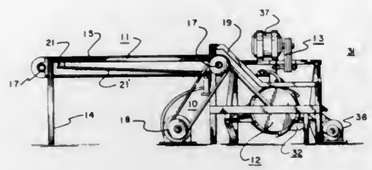
Silage guide for distributing silage in a storage container comprising a base plate, a pair of downwardly turned outer arcuate deflector members positioned on the bottom of the base plate preferably near the side edges, and a pair of outwardly turned inner arcuate deflector members positioned on the bottom of the base plate interior of the outer deflector members. Preferably a second pair of outwardly turned arcuate deflectors are positioned interior of the inner deflector members. The outer downwardly turned deflectors direct silage near the perimeter of the storage container and the inner outwardly turned deflectors direct silage across its cross section.

3,777,791
ELECTRIC PENCIL SHARPENER
Hajime Uchida, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 22, 1972, Ser. No. 255,274
Claims priority, application Japan, May 26, 1971, 46/36525; Oct. 15, 1971, 46/81991; Nov. 8, 1971, 46/89345; Dec. 2, 1971, 46/97673; Feb. 28, 1972, 47/20890
Int. Cl. B43l *23/02*
U.S. Cl. 144—28.72 **18 Claims**



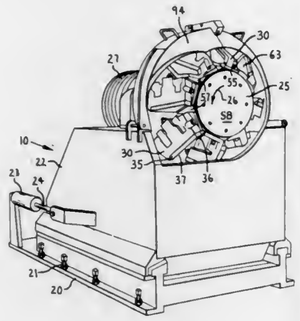
An electric pencil sharpener comprising a rotatable cutter holding block and a cutter element capable of undergoing a relative rotation with respect to the cutter holding block for shaving an end portion of a pencil inserted in the sharpener, the cutter element being adapted to separate away from its engagement with the end portion of the pencil, when the pencil end portion has been shaved to a predetermined degree of sharpness, so as to ensure the prevention of an excessive, unnecessary shaving of the pencil end portion beyond the predetermined degree of sharpness.

3,777,792
AUTOMATIC BED FRAME MACHINE
Paul Jameson, P.O. Box 465, Notus, Idaho
Filed Aug. 14, 1972, Ser. No. 280,687
Int. Cl. B27f *5/12*
U.S. Cl. 144—82 **4 Claims**



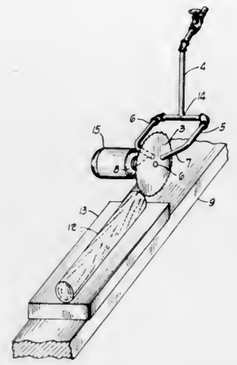
The bedframe machine includes a feed table, a rotary work fence, and a saw assembly. The rotary work fence and saw assembly are provided with a suitable drive subassembly to actuate the saw assembly and to actuate and position the rotary feed means.

3,777,793
KNIFE HOLDER IN LOG SLABBING CHIPPER
Frederick L. B. Miller, Lake Oswego, Oreg., assignor to Chipper Machines and Engineering Corporation, Lake Oswego, Oreg.
Filed May 11, 1972, Ser. No. 252,230
Int. Cl. B27g *13/04*
U.S. Cl. 144—220 **9 Claims**



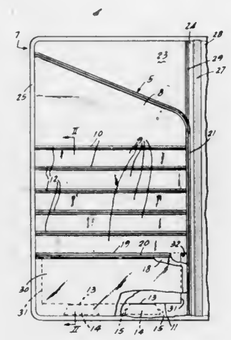
The chipper comprises a rotor with a plurality of knives adapted to slab off the side of a log so that the first saw cut following the chipper removes a usable board. In order to make usable pulp chips, the chipper knives are of bent configuration, each having a grain cutting portion which cuts across the grain and a planing portion which cuts parallel with the grain to leave a smooth board surface on the log as it is moved lengthwise past the chipper on a saw carriage. Each knife is clamped rigidly in working position by a clamp plate which is tightened on a pair of wedges adjacent the side edges of the knife. The clamp plate is crowned, causing it to flatten against substantially the whole area of the knife when the clamp plate is tightened on the wedges.

3,777,794
LIQUID COOLED SAW
Gordon D. McDonald, Surrey, B.C., Canada, assignor to SCM (Canada) Ltd., Scarborough, Ontario, Canada
Filed Nov. 4, 1971, Ser. No. 195,623
Int. Cl. B27b *1/00*; **B27k** *5/00*
U.S. Cl. 144—324 **7 Claims**



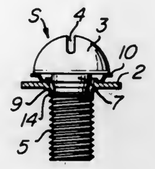
This invention relates to an improvement in a process for cutting a piece of wood with a cutting member directly cooled by liquid coolant. The improvement comprises using as a coolant, an aqueous dispersion of a wood treating agent selected from the group consisting of a wood preservative or colorant.

3,777,795
MULTI-POCKET CARD HOLDER AND WALLET STRUCTURE
Herbert Graetz, 440 Prospect, Elmhurst, Ill.
Filed Jan. 24, 1972, Ser. No. 220,116
Int. Cl. A45c *11/18*
U.S. Cl. 150—35 **16 Claims**



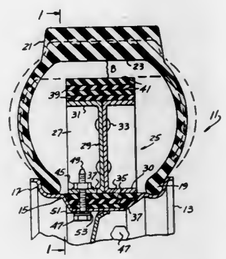
A multi-pocket card holder especially suitable for wallets comprises a backing panel having a plurality of card pocket panel sections thereon each of which has a top edge exposed in staggered relation to the other sections. At least one of the sections has a lower edge concealed and contiguous to the backing panel with one or more anchoring tabs each extending from the lower edge into a respective opening in the backing panel. One or more of the pocketed card holders may be incorporated in a wallet.

3,777,796
SCREW ROD WITH WASHER
Tetsuo Takano, Toyama, Japan, assignor to Takano Seimitsu Kogyo Co., Ltd., Nei-gun, Toyama-ken, Japan
Filed Nov. 18, 1971, Ser. No. 199,923
Claims priority, application Japan, Nov. 19, 1970, 45/102323; Nov. 19, 1970, 45/114967; Mar. 16, 1971, 46/17563; Sept. 27, 1971, 46/75315
Int. Cl. F16b *39/24*
U.S. Cl. 151—38 **2 Claims**



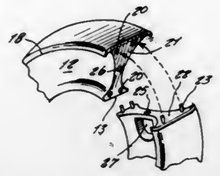
In a screw rod-washer assembly comprising a screw rod and a plain wahser fitted around the neck of said screw rod, the plain washer is secured to the neck of the screw rod by means of a plurality of projections formed at the inner peripheral edge of said plain washer and projecting close to the outer peripheral surface of said screw rod and, when said assembly further comprises a spring washer, said spring washer and said plain washer are integrally secured to each other by means of an upward annular projection projecting from the inner peripheral edge of the latter and received in the central hole of the former with the upper edge portion thereof bent radially outwardly in a manner to embrace the edge of the central hole of said spring washer, so that the screw rod-washer assemblies of the invention are adapted for mass production.

3,777,797
SAFETY SUPPORT FOR PNEUMATIC TIRES
Hartley G. Anderson, 24130 Chipmunk Tr., Detroit, Mich.
Filed May 26, 1972, Ser. No. 257,393
Int. Cl. B60c *17/04*
U.S. Cl. 152—158 **5 Claims**



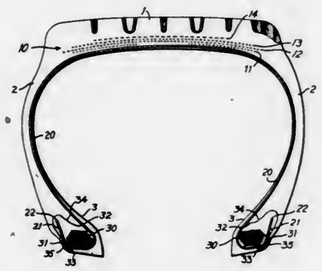
The safety support is adapted for positioning on the drop center type of wheel rim mounting a tubeless tire and consists of a resilient elastomer ring nested and secured within the rim drop center and yieldably mounting and securing a series of arcuate channel sections arranged end to end extending around said ring. An arcuate elastomer strip or a plurality of such strips is mounted upon the outer surface of each section and secured to each other with said strips normally spaced radially inward of the tire inner annular wall when it is inflated but adapted to supportably and yieldably engage said tire inner annular wall on deflation of the tire.

3,777,798
SAFETY WHEEL
Olan E. Marquis, South Star Rt., Box 63-A, Portales, N. Mex.
Filed Feb. 14, 1972, Ser. No. 225,711
Int. Cl. B60c *17/04*
U.S. Cl. 152—158 4 Claims



An improved wheel for any automotive vehicle such as a passenger car, a truck or the like, the wheel including a radially outwardly projecting flange all around and which extends into the compressed air space surrounded by the tire, the outer end of the flange being approximately 2½ inches away from the inner peripherial edge of the tire so that in case of a blow-out of the tire, the drop of the vehicle body is limited to this dimension instead of dropping to the wheel rim, thus preventing a serious accident or possibly turning over of the vehicle.

3,777,799
PNEUMATIC TIRES
Jean Bernard Montagne, Cebazat, France, assignor to Compagnie Generale des Establissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France
Filed June 1, 1972, Ser. No. 258,877
Claims priority, application France, June 8, 1971, 7120821
Int. Cl. B60c *15/06*
U.S. Cl. 152—362 R 3 Claims



The damage resistance at the junction of the sidewall and the bead of a radial carcass tire having a carcass ply turned upwardly in each bead around a bead wire is improved by folding a stiffener around the end of the upturned portion of the carcass ply and bringing the ends of the stiffener into the vicinity of the bead wire.

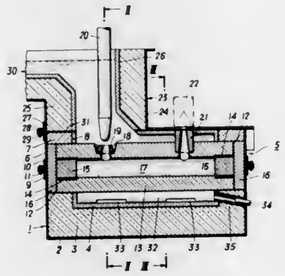
3,777,800
ROMAN SHADE AND METHOD OF FABRICATION
Yasha A. Susoev, 151 Union St., San Anselmo, Calif.
Filed Dec. 30, 1971, Ser. No. 214,015
Int. Cl. A47b *5/00*
U.S. Cl. 160—84 R 13 Claims

A Roman-type shade and method of fabrication. The fabric of the shade is formed into a series of horizontally extending, vertically spaced parallel folds which carry flexible battens adapted to rigidly hold the folds when the shade is hung and which permit cleaning of the shade without removal of the battens. In one embodiment the battens are secured within the folds by a line of stitching which extends through both the fabric and battens and with rearwardly extending marginal portions of the battens formed with openings and eyelets adapted to receive pull-cords arranged in a manner to raise and lower the shade. In another embodiment a line of stitching in the folds forms pockets for receiving the battens and with openings formed in certain battens for seating grommets which both receive the pull-cords and anchor the battens



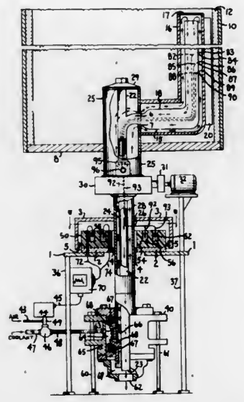
within the pockets. In the method, batten locations are marked on the fabric with portions of the fabric along the length of each mark secured to one flat side of individual battens by adhesive means. In adjacent portion of the fabric is then folded over and secured in overlying relationship with the opposite side of the batten by adhesive means. Lines of stitching are then formed to extend through the fabric and into the battens. Openings are formed in the battens and adjacent fold portions with eyelets seated in the openings to receive the pull-cords.

3,777,801
CASTING APPARATUS
Oskar Tenner, Rossatz, Austria, assignor to Gravicast & Patentverwertungsgesellschaft m.b.H., Vienna, Austria
Filed Aug. 26, 1971, Ser. No. 175,098
Claims priority, application Austria, Aug. 28, 1970, A 7826/70; Sept. 4, 1970, A 8046/70
Int. Cl. B22d *37/00*
U.S. Cl. 164—337 11 Claims



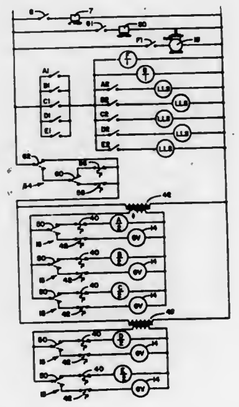
A casting apparatus is provided with a supply container for the melt which has a discharge opening leading the fluid melt into an equalization container arranged within said supply container in such a manner that the melt in the supply container surrounds the equalization container. The latter has a plug-controlled inlet which controls the flow of the melt into the equalization container. The equalization container has also an outlet having a casting nozzle therein which leads to a mold arranged outside of the supply container. The supply container is connected with a furnace in which the metal is produced.

3,777,802
METHOD AND APPARATUS FOR TEMPERATURE CONTROL OF A ROTATING METAL OXIDE SCRAPER ELEMENT
Elgin E. Young, Norton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 856,744, Sept. 10, 1969, abandoned. This application May 27, 1971, Ser. No. 147,386
Int. Cl. F28f *17/10*
U.S. Cl. 165—1 11 Claims



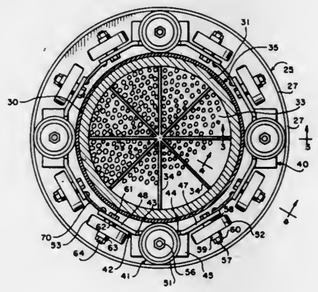
Wall temperatures within a movable, internally cooled scraper element that is used to dislodge metal oxide accumulation from the internal wall of a reactor are monitored by a thermocouple electrically connected to mercury baths which are in turn electrically connected to a temperature recorder. The thermocouple output can be used to control a regulator of coolant fed to the scraper element.

3,777,803
CONTROL FOR AIR CONDITIONING APPARATUS
Russell E. Wood, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Division of Ser. No. 139,090, April 30, 1971, Pat. No. 3,709,769. This application June 5, 1972, Ser. No. 259,888
Int. Cl. F25b *13/00*
U.S. Cl. 165—2 2 Claims



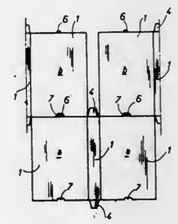
A control arrangement for an air conditioning system adapted to serve a plurality of zones, a master control being provided in the control arrangement to energize and deenergize the zone thermostats, the master control energizing the individual zone thermostats in response to a preselected temperature variation from the zone thermostat set point in a respresentative zone, deenergization of the zone thermostats by the master control allowing the temperature in each of the zones to increase or decrease from the zone thermostat set point and reduce the load on the air conditioning system for weekend and nighttime operation.

3,777,804
ROTARY FLUID TREATMENT APPARATUS
Lyle E. McCoy, 533 N. Whitehall Rd., Norristown, Pa.
Filed Mar. 23, 1972, Ser. No. 237,318
Int. Cl. F28f *19/04*
U.S. Cl. 165—8 3 Claims



A generally horizontal open carrier within generally upright fluid passage means, complementary outer and inner tracks respectively carried by the fluid passage means and carrier, and trolley means interposed between the tracks to mount the carrier for rotation in the passage means.

3,777,805
REFRACTORY MEMBERS FOR USE IN TERMINAL REGENERATORS OR RECUPERATORS
Joseph Racasens, Sorgues; Pierre Blanchet, Juvisy-sur-Orge, and Jacques Duchenoy, Vedene, all of France, assignors to L'Electro-Refractaire, Paris, France
Filed June 21, 1972, Ser. No. 264,954
Claims priority, application France, June 22, 1971, 7122638
Int. Cl. F23l *15/02*
U.S. Cl. 165—9.1 5 Claims



The invention relates to refractory members for use in the construction, by stacking of a number of such members, thermal regenerators or recuperators, such as those used in conjunction with glass or metallurgical furnaces, for recovering the heat contained in flue gases. The invention provides that the refractory member is formed of a monolithic structure cast

from fused refractory oxides. The member is in plan aspect shape composed predominantly of elongated portions, each having over the greater part of its length a maximum width which does not exceed 50 mm. The overall dimensions of the refractory member are sufficient to afford stability in stacking. The member may be star-shaped in plan aspect and it is advantageously formed by a number of parallelepipedal members joined together by casting into a monolith.

3,777,806

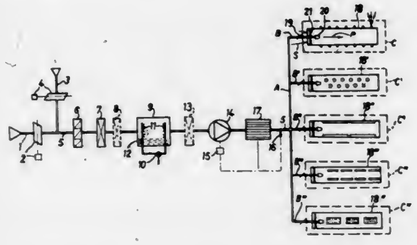
CLIMATIZATION PLANT

Pramodkumar Chhaganlal Tailor, Gandevi, India, assignor to Spolair Engineering Systems AG, Zug, Switzerland

Continuation of Ser. No. 23,769, March 30, 1970, abandoned. This application Feb. 4, 1972, Ser. No. 223,493

Int. Cl. F24f *3/14*

U.S. Cl. 165—19 **8 Claims**



A climatization plant, particularly for use in the textile and printing industry, for climating or air-conditioning working zones. The plant comprises a central device or station for preparing or conditioning a primary air stream, this station being connected to a plurality of distribution channels for prepared or conditioned air. Each distribution channel being provided at the inlet side with a device for conditioning the mixture of air composed of so-called primary air and secondary air, and having further means for controlling the volume or mass flow of secondary and/or primary air to thereby vary the heating or cooling power and the relative moisture content of the conditioned mixture of air.

3,777,807

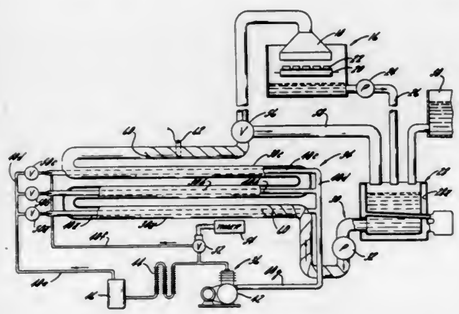
APPARATUS FOR TEMPERING CHOCOLATE

Lee Carroll, Philadelphia, Pa., assignor to W. C. Smith & Sons, Inc., Philadelphia, Pa.

Filed Sept. 10, 1971, Ser. No. 179,479

Int. Cl. F25b *29/00*

U.S. Cl. 165—26 **10 Claims**



An apparatus is provided for tempering liquid chocolate to be used in the manufacture of confections or the like. Such tempered chocolate may, for example, be fed to a machine for applying chocolate coatings to candy pieces, bars and other articles, or it may be fed to a molding machine or to a hand worked production station. The chocolate becomes tempered to precisely the proper temperature, consistency and type and degree of crystallization by carefully and selectively treating it in a tube within a tube heat exchanger using alternate and controlled heating and cooling cycles.

3,777,808

COOLING ARRANGEMENT MOUNTED ON A MOTOR VEHICLE

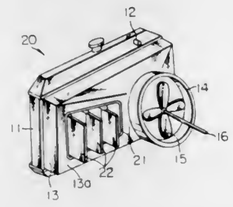
Masao Izumi, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Mar. 29, 1972, Ser. No. 239,138

Claims priority, application Japan, Oct. 23, 1971, 46/98347

Int. Cl. B60h *1/10*

U.S. Cl. 165—39 **1 Claim**



A cooling arrangement for a motor vehicle which comprises a radiator connected to an engine of the motor vehicle, a shroud with a fan arrangement provided behind the radiator for drawing cooling air through the radiator. The shroud has provided at its back wall an aperture with a plurality of doors which shut or open the aperture to control the air flow in dependence on the engine temperature, atmospheric temperature, vehicle speed etc.

3,777,809

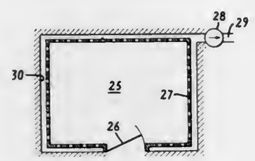
HEATING AND COOLING DEVICE AND METHOD

Karl F. Milde, Jr., 29 Kings Ct., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 794,645, Jan. 28, 1969, abandoned. This application June 9, 1971, Ser. No. 151,298

Int. Cl. F24h *3/02*

U.S. Cl. 165—54 **7 Claims**



A method and apparatus for dividing a gas into two parts: a first part which is cooler and a second part which is warmer than the original gas. The apparatus includes a molecular filter for selectively passing molecules of the original gas that have a statistical distribution of velocities which is different than the statistical distribution of molecular velocities of the original gas, and a gas pump for establishing a pressure differential across the filter. The molecules which are passed through the filter will therefore exhibit a different temperature than the molecules which are not passed through.

3,777,810

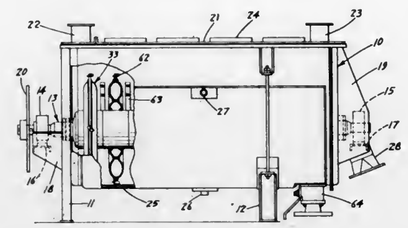
DRYER

David L. Phillips, Fridley, Minn., assignor to The Strong-Scott Mfg. Co., Minneapolis, Minn.

Filed Aug. 24, 1972, Ser. No. 283,387

Int. Cl. F28f

U.S. Cl. 165—92 **11 Claims**



Apparatus for drying moist solid material, of the type utilizing disc heat exchange elements into which a heating fluid is introduced and cooled fluid is withdrawn, the material being dried through contact with a plurality of discs in its passage through the apparatus. The present apparatus is characterized by torus discs formed from relatively thin-walled circular metal plates for good heat transfer to the material and having a plurality of concentric rings of convex arcuate cross section for strength. The disc encloses a plurality of interconnected concentric generally toroidal chambers through which heating fluid, such as steam, is circulated successively and from the outermost of which cooled fluid, such as condensate, is withdrawn.

3,777,811

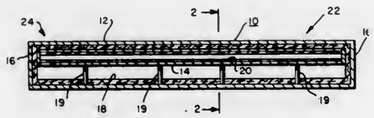
HEAT PIPE WITH DUAL WORKING FLUIDS

Arnold P. Shcosinger, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed June 1, 1970, Ser. No. 42,088

Int. Cl. F28d *15/00*

U.S. Cl. 165—105 **10 Claims**



In a heat pipe containing a main working fluid that normally freezes under low heat loads, an auxiliary working fluid is provided that, although being less efficient than the main working fluid, nevertheless remains liquid at low heat loads when the main working fluid freezes, so as to sustain heat pipe action.

3,777,812

SUBSEA PRODUCTION SYSTEM

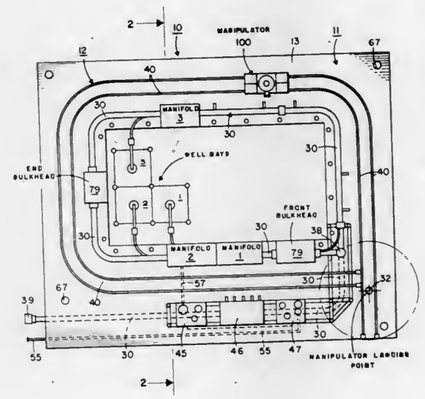
Joseph A. Burkhardt, Chatsworth; Thomas W. Childers, Woodland Hills; Roger J. Koerner, Santa Monica, all of Calif.; John P. Mason, Midland, and Danny R. Tidwell, Houston, both of Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Nov. 26, 1971, Ser. No. 202,230

Int. Cl. E21b *43/01*

U.S. Cl. 166—.6 **11 Claims**

A submergible template structure is completely equipped with manifolding for handling well production fluids, gas injection and well maintenance with through-the-flowline (TFL) pumpdown tools. The template is designed to contain a number of clustered wells and is provided with a pollution control system, electro-hydraulic power source and an unmanned manipulator unit capable of traveling on a track arranged on the template for specific maintenance work on valves, control pods, pipe sections, etc. The template is furnished power and control through an electrical cable laid to a remote surface power source. Pipelines connect the template manifolding to remote gathering terminals. The template structure and the manifolding are disconnectable and reconnectable in sections for removal, repair and replacement of damaged sections. The template structure is completely



equipped at the surface and then lowered to the sea floor using lines and controlled buoyancy. Once on bottom, the template is leveled and piles driven to anchor it. Wells are drilled from floating rigs and the wellheads are grouped together on the template. Christmas trees are lowered and connected to the wellheads and to the manifolding. Basic well maintenance is performed with TFL equipment although the wells may be reentered vertically from a floating rig when necessary. All valves are hydraulic fail-safe and manual valves in the manifold are operable by the manipulator unit. The manipulator is lowered to the track and positioned where desired when performing operation of the valves or basic maintenance on the valves and manifold.

3,777,813

CHECK VALVE FOR HYDRAULIC CONTROL SYSTEM

Jackie D. Dendy; Robert D. Johnson, both of Lafayette, and Robert M. Peevey, New Orleans, all of La., assignors to Amoco Production Company, Tulsa, Okla.

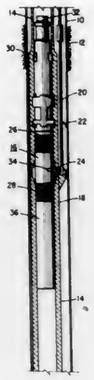
Filed Apr. 24, 1972, Ser. No. 247,054

Int. Cl. E21b *33/03, 43/12*

U.S. Cl. 166—72 **4 Claims**

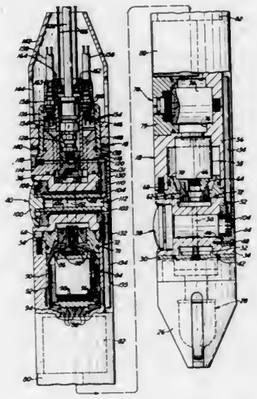
This invention concerns a system using a hydraulic control line to control a downhole safety valve located in a string of tubing suspended in a well bore drilled in the earth. The hydraulic control line is in the space between the tubing string and the casing of the well bore. A special lever actuated valve means is used in the wall of the tubing string at the point where

the hydraulic line connects into the tubing string downhole. The insertion of a wireline retrievable safety valve holds the



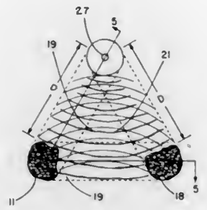
lever actuated valve open. When the safety valve is removed the force of the tubing pressure causes the lever actuated valve to close.

3,777,814
CLAMPED DETECTOR
Carl A. Gustavson, Verona; Emmett B. Shutes, Turtle Creek, and Paul C. Wuenschel, Glenshaw, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed May 19, 1972, Ser. No. 255,229
Int. Cl. E21b *23/00*
U.S. Cl. 166—212 **27 Claims**



A composite detector particularly useful in seismic exploration is disclosed, with means to clamp the detector in a borehole so that a vertical traverse can be made. The tool includes the features of a moveable clamping system, a dual hydraulic system to protect delicate components from the pressure of the borehole fluid, a fail-safe interposed between the final hydraulic system and the clamping pistons, and a jettisonable weight to facilitate downward motion of the tool into the borehole.

3,777,815
EXPLOSIVE FRACTURING METHOD
Charles R. Boardman, and Carroll F. Knutson, both of Las Vegas, Nev., assignors to CER Geonuclear Corp., Las Vegas, Nev.
Filed June 17, 1970, Ser. No. 46,950
Int. Cl. E21c *41/06*; **E21d** *43/26*
U.S. Cl. 166—247 **10 Claims**



A first explosive, preferably nuclear, is buried at a sufficient depth so that its subsequent detonation is fully contained within the earth. Thereafter a second explosive, also preferably nuclear, is buried a predetermined distance from the situs of the first explosive. After detonation of the first explosive, time is allowed to elapse during which the cavity formed by the first explosive collapses to form a rubblized chimney. Thereafter the second explosive is detonated to create a second chimney parallel to that of the first explosive together with a zone of enhanced permeability between the first and second.

3,777,816
METHOD FOR THE IGNITION OF IN-SITU COMBUSTION FOR THE RECOVERY OF PETROLEUM
Albert Meier, Reinbek, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Mittelweg, Germany
Filed Apr. 15, 1971, Ser. No. 134,463
Claims priority, application Germany, Apr. 17, 1970, P 20 18 372.6
Int. Cl. E21b *43/24*
U.S. Cl. 166—260 **22 Claims**

A method of initiating in situ combustion in a subterranean hydrocarbon-bearing formation wherein a substance capable of reacting with hydrogen peroxide is introduced into the formation via a well bore and thereafter a mixture of hydrogen peroxide containing from 10 to 20 percent by weight of water is injected to effect an exothermic reaction thereby to increase the temperature of the formation adjacent the well bore to the ignition temperature of the hydrocarbons contained therein and resulting in ignition of those hydrocarbons and the initiation of an in situ combustion.

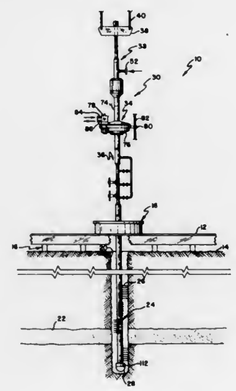
3,777,817
OIL RECOVERY PROCESS
David George Feuerbacher, Bellaire, and Mary Kay Hrncir Smith, Austin, both of Tex., assignors to Texaco, Inc., New York, N.Y.
Filed Dec. 30, 1971, Ser. No. 214,443
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **15 Claims**

A process for recovering petroleum from a subterranean hydrocarbon containing reservoir by flooding with a surfactant wherein the adsorption of surfactant by the reservoir rock is inhibited by treating the reservoir with a water soluble, strongly basic material having an oxygenated anion prior to injecting the surfactant. Preferably, treatment is accomplished by injecting an aqueous solution of sodium hydroxide or sodium meta silicate into the reservoir in an amount sufficient to satisfy substantially all of the adsorption capacity of the reservoir matrix followed by injection of an aqueous solution of the surfactant. The aqueous solution of sodium hydroxide or sodium meta silicate and the surfactant solution can be subsequently displaced through the formation by any convenient aqueous drive fluid including water.

3,777,818
OIL RECOVERY PROCESS
David George Feuerbacher, Bellaire, and Mary Kay Hrncir Smith, Austin, both of Tex., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 30, 1971, Ser. No. 214,469
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **14 Claims**

A process for recovering petroleum from a subterranean reservoir by flooding with a surfactant wherein the adsorption of surfactant by the reservoir rock is inhibited by treating the reservoir with a water-soluble fluorine containing compound such as hydrofluoric acid or sodium fluoride prior to injecting the surfactant. Preferably, treatment is accomplished by injecting an aqueous solution of hydrofluoric acid or sodium fluoride into the reservoir in an amount sufficient to satisfy substantially all of the adsorption capacity of the reservoir matrix followed by injection of an aqueous solution of the surfactant. The hydrofluoric acid or sodium fluoride and the surfactant solution can be subsequently displaced through the formation by any convenient aqueous drive fluid including water.

3,777,819
CEMENTING WELL BORE CASING
Charles G. Delano, Corpus Christi, Tex., assignor to Mustang Oil Tools, Inc., Corpus Christi, Tex.
Filed May 8, 1972, Ser. No. 251,191
Int. Cl. E21b *33/14, 19/00*
U.S. Cl. 166—285 **8 Claims**

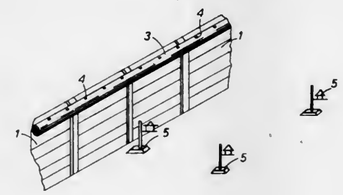


There is disclosed a method and apparatus for cementing a tubular string in a well bore wherein the tubular string is simultaneously rotated and reciprocated while passing a cementing slurry into the well bore.

3,777,820
LPG INJECTION WITH SURFACTANT FOR RELIEVING PERMEABILITY BLOCKING
Clarence W. Weaver, Houston, and Robert R. Scroggins, Midland, both of Tex., assignors to Allied Chemical Corporation, New York, N.Y.
Continuation of Ser. No. 87,323, Nov. 5, 1970, abandoned. This application Aug. 17, 1972, Ser. No. 281,599
Int. Cl. E21b *43/16*
U.S. Cl. 166—305 R **3 Claims**

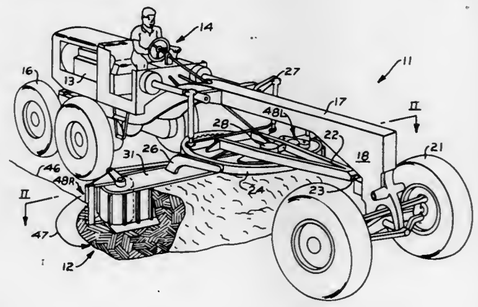
Introduction of mixture of LPG and surfactant for relieving blocking of well.

3,777,821
DISPERSAL OF FLAMMABLE MATERIALS
Arthur Leslie Cude, and Henry George Simpson, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, Millbank, London, England
Filed May 21, 1971, Ser. No. 145,714
Claims priority, application Great Britain, May 27, 1970, 25,528/70
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R **2 Claims**



A method and apparatus for dispersal of flammable vapour, for example naphtha, consists of a firewall to restrain the horizontal advance of the vapour and a turbulent steam jet system positioned adjacent to the firewall to entrain the vapour together with air.

3,777,822
CONVEYORIZED MOTOR GRADER BLADE WITH RETRACTABLE END BITS
Robert N. Stedman, Chillicothe, Ill.; Bobby D. Griffith, Phoenix, Ariz., and Robert J. Sullivan, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 31, 1972, Ser. No. 240,167
Int. Cl. A01b *3/00*
U.S. Cl. 172—33 **5 Claims**



A blade assembly for a motor grader having a power driven endless belt conveyor for forcibly moving material to one side

of the blade assembly is provided with end bits for facilitating operations such as bank cutting, ditching and the like in which stress may be concentrated at one end of the blade assembly. The end bits greatly reduce the wear and risk of damage which can otherwise occur at the cutting end of the conveyor. While the movement of the conveyor tends to prevent jamming of materials between the conveyor and end bit at the cutting end of the assembly, an opposite situation prevails at the discharge end. To avoid jamming at the discharge end, the end bits are retractable whereby only the bit at the cutting end need be maintained in the operative position.

3,777,823

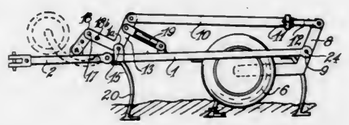
AGRICULTURAL IMPELEMENT TRAILERS

Armin E. Holfeld, Box 187, Watson, Saskatchewan, Canada

Filed Apr. 12, 1971, Ser. No. 133,306

Int. Cl. A01b *59/00*

U.S. Cl. 172—328 **5 Claims**



A trailer designed to be drawn by a tractor, the trailer having a hitch which connects with the draw-bar of the tractor. The hitch is pivoted to the front end of the trailer frame. The latter carries agricultural implements in soil engagement, and has a wheel in the rear. A radial arm centered on the wheel rises to make a pivotal connection with the rear of the frame, and has an extension above the pivot. A frontal arm pivoted to the frame is connected with its free end to that of the extension, so that a swing of the frontal arm in forward direction by a power unit will swing the radial arm and raise the frame, lifting the implements out of soil engagement. A connection from the frontal arm to the hitch lowers the latter when the frame is raised. When the hitch is disconnected from the tractor a castor wheel carried by the hitch can be swung down to support the hitch and frame in front. Supporting rear of frame on the trailer wheel leaves the greater weight of the frame and implements bearing on the draw-bar to impart more traction to the tractor wheels.

3,777,824

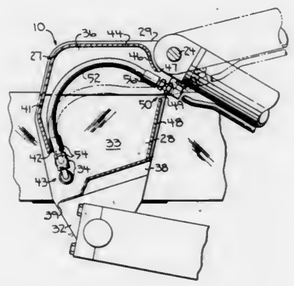
MOUNTING BRACKET FOR HYDRAULIC CYLINDERS

Rodney H. Anderson, Naperville, and John R. Muntjanoff, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 20, 1972, Ser. No. 219,486

Int. Cl. E02f *3/76*

U.S. Cl. 172—801 **12 Claims**



A mounting bracket for attaching a hydraulic cylinder to a supporting frame including a housing rigidly secured to the frame and having a cylinder connecting pivot pin bore formed therein and a substantially closed chamber for receiving a flexible fluid hose which extends from a passage in the frame outwardly through an opening in the housing to the hydraulic cylinder with the housing shielding the fluid hose to prevent damage thereto.

3,777,825

HAMMER DRILLING MACHINE

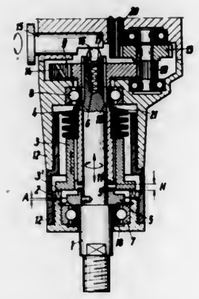
Reinhold Gullich, Struth Nr. 26, Ansbach, Germany, assignor to Firma Impex-Essen Vertrieb von Werkzaugen GmbH, Ansbach, Germany

Filed July 7, 1972, Ser. No. 269,774

Claims priority, application Germany, Sept. 4, 1971, P 21 44 449.5

Int. Cl. E21c *1/12*

U.S. Cl. 173—13 **10 Claims**



A hammer drilling machine selectively switchable between pure drilling and hammer drilling modes operates with reduced frictional heat due to the construction of the percussion mechanism. During hammer drilling there is no relative rotation between the plunger and the drilling spindle. The percussion mechanism includes two co-operable cam members, both of which are stationary when the machine is idling, and one of which is connected to the plunger and is set into rotation with the machine in the hammer drilling mode by axial displacement of the drilling spindle.

3,777,826

FLUID RESPONSIVE CORE BARREL SYSTEM

Tiete Okke Wolda, Orillia, Ontario, Canada, assignor to Boyles Industries Limited

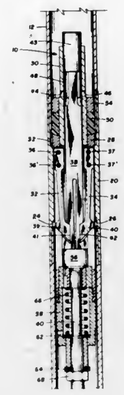
Filed Sept. 15, 1971, Ser. No. 180,596

Int. Cl. E21b *21/00*

U.S. Cl. 175—46 **16 Claims**

An improved core barrel system including a single core sampling unit that may be used in up holes or down holes. The unit is pumped through a hollow drill string until a core container in the unit reaches the core receiving position proximate the coring bit, whereupon the unit produces a signal indicating that the unit is in the proper position. A pair of flexible and resilient latch fingers automatically move into latch seats in the drill string and drilling fluid is allowed to bypass the core sampling unit to the bit for the drilling of a core. The core container in the core sampling unit receives the core. When the core container is filled, a signal is produced that indicates the desired length of core sample has been obtained.

The core sampling unit with the length of core sample in the core container automatically unlatches and the length of core is broken from the formation by pulling the drill string a short



distance out of the hole. The core sampling unit is returned through the drill string by gravity in up holes or by reversing the fluid circulation in down holes and pumping the unit through the drill string.

3,777,827

DRILLING APPARATUS

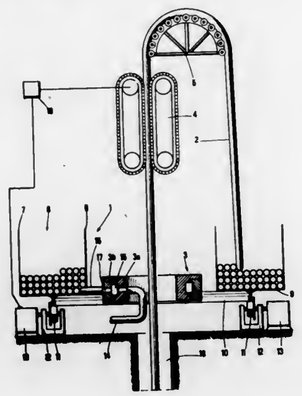
Jean Thiery, Le Peco, and Pierre Grolet, Orgerus, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed July 21, 1972, Ser. No. 273,708

Claims priority, application France, July 22, 1971, 7126960

Int. Cl. E21b *7/00, 19/00*

U.S. Cl. 175—103 **3 Claims**



An apparatus for drilling a borehole with a drill tool driven in rotation by a motor suspended from the end of a drill column constituted by a flexible drill pipe, this apparatus including a basket for storing the flexible pipe, this basket having an annular shape with a vertical axis, motor means driving said annular basket in rotation about its vertical axis, means for supplying the flexible pipe with drilling fluid during the rotation of said basket, at least one means for driving the flexible pipe between said storage basket and said driving means, wherein said fluid supplying means are constituted by a hydraulic rotary coupling having an annular shape, centered on said vertical axis of the annular storage basket, said hydraulic coupling having an inner diameter at least equal to the maximum outer diameter of said flexible pipe, said vertical axis of the annular basket being substantially in line with the axis of the drilled borehole, said driving means being placed substantially along the borehole axis for displacing said flexible pipe along said axis, said guiding means being adapted to place siad flexible pipe substantially along the borehole axis.

3,777,828

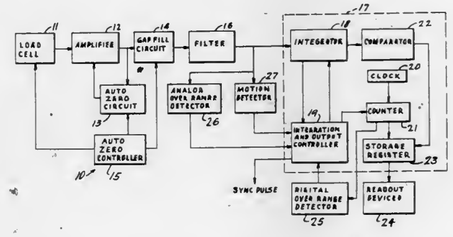
ELECTRONIC WEIGHING SYSTEM WITH DIGITAL READOUT

Stanley A. Dietemeyer, Sylvania, Ohio, assignor to Reliance Electric Company, Toledo, Ohio

Filed Sept. 30, 1971, Ser. No. 185,231

Int. Cl. G01g *23/14, 3/14*

U.S. Cl. 177—165 **9 Claims**



An improved electronic weighing system with a digital readout. A transducer establishes an analog signal corresponding to an unknown weight. The analog signal is amplified, digitized with an analog-to-digital converter and applied to the digital readout. Circuitry is provided for automatically zeroing the analog portion of the system while the transducer output is momentarily interrupted and for filling gaps in the analog signal resulting from the interruption of the transducer output. The digital portion of the system also includes tare weight provisions for modifying the indicated weight, and circuitry for changing the range and the resolution or increment of the weighing system.

3,777,829

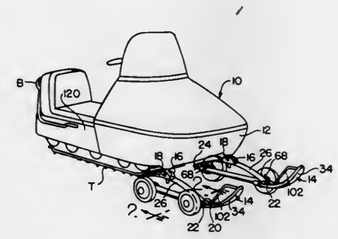
SNOWMOBILE WHEEL SUPPORT COMBINATION

Arthur L. Rogers, Livonia, Mich., assignor to Johnson Stamping and Fine-Blanking Company, Farmington, Mich.

Filed Nov. 22, 1971, Ser. No. 201,031

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **12 Claims**



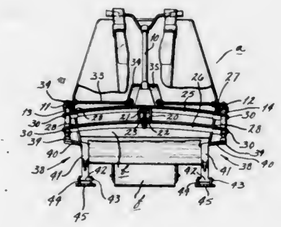
A wheel support combination for a snowmobile is disclosed, wherein front end wheel and bracket units are manually attachable to and removable from the skis with minimum effort.

A preferred method of attachment of the wheel and bracket units is also disclosed.

3,777,830
STABILITY-PRESERVING STEERING SUSPENSION FOR SNOWMOBILES

Frank G. Christensen, Don Mills, Ontario, and Rafael T. Wulff, Dorset, Ontario, both of Canada, assignors to Zeverly L. Lapin, Los Angeles, Calif.

Filed Mar. 20, 1972, Ser. No. 236,353
Int. Cl. B62m *27/00*
U.S. Cl. 180—5 R **2 Claims**

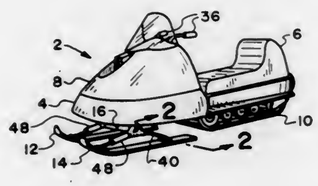


A stability-preserving, self-banking steering suspension for snowmobiles. In the preferred embodiment, the steering bushings are held by parallel leaf springs deflectable in an upward and aft sloping lateral plane. Steerable ski legs extend inboard to trunnion brackets which are mounted directly to the skis. Spring deflection under impacts does not lessen the steering stability, as may occur when the skis alone are sprung.

3,777,831
DIRIGIBLE SYSTEM FOR SNOWMOBILES

Dean H. Hale, 2500 N. Main, Logan, Utah

Filed Apr. 3, 1972, Ser. No. 240,596
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **3 Claims**

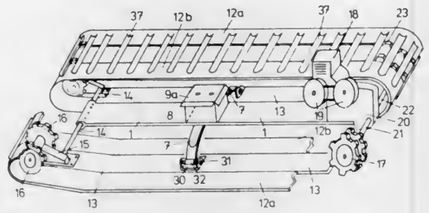


A snowmobile comprising a body for supporting a driver, a pair of skis mounted in parallel relation to support at least a portion of said body, steering mechanism connected to said skis and operable to displace said skis in a manner to provide directional control for said snowmobile, and means actuated by said steering mechanism for displacing said body to shift the weight of the driver toward the direction of a desired turn. Method and several forms of apparatus are disclosed.

3,777,832
CHASSIS STRUCTURE FOR A MOTOR SLEIGH OR EQUIVALENT VEHICLE

Markku Merenheimo, Oulu; Manuno Ruuska, Muhos, and Risto Saivisalmi, Oulu, all of Finland, assignors to Valmet Oy, Helsinki, Finland

Filed Apr. 7, 1972, Ser. No. 242,183
Claims priority, application Finland, Feb. 21, 1972, 462/72
Int. Cl. B62m *27/02*; **B62d** *55/08*
U.S. Cl. 180—5 R **9 Claims**

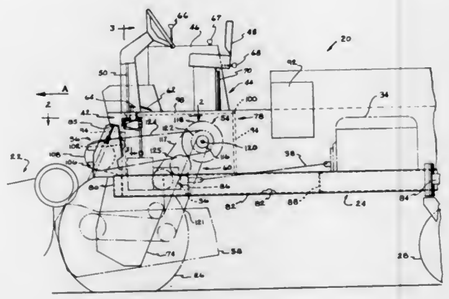


A motor sleigh or the like having a chassis provided with an elongated spring in the direction of travel of the sleigh in the middle thereof. The ends of the spring carry supports for the wheels of the track mat. An auxiliary body has one end supported in the center of the spring and a forwardly extending part carrying the steering column.

3,777,833
STEERING MECHANISM FOR HYDROSTATICALLY DRIVEN AGRICULTURE MACHINES

Karl E. Koch, Mohnton, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed July 15, 1971, Ser. No. 162,886
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **8 Claims**

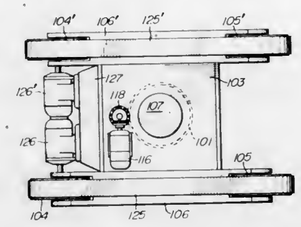


A self-propelled windrower is driven through two hydrostatic units coupled respectively to the front drive wheels and is controlled in direction by a steering wheel connected to the hydrostatic units by a steering mechanism provide a substantial movement of the steering wheel for a change in the hydrostatic units.

3,777,834
MAGNET VEHICLE

Michito Hiraoka, Ageo, and Yoshihiko Hikita, Fukaya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Division of Ser. No. 36,753, May 13, 1970, Pat. No. 3,682,265.
This application Feb. 10, 1972, Ser. No. 225,195
Claims priority, application Japan, May 16, 1969, 44/37383; Aug. 1, 1969, 44/60410
Int. Cl. B62d *11/00, 55/00*
U.S. Cl. 180—9.44 **2 Claims**

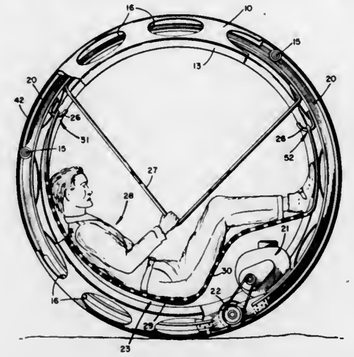


A magnet vehicle supportedly adhered to and adapted to run over an inclined wall surface of a structural member made of a strong magnetic material such as iron and steel, characterized in that said vehicle can be altered of its direction of travel as desired on said surface.

3,777,835
ONE-WHEEL VEHICLE

Richard Curtis Bourne, 4401 S. 27th St., Apt. F13, Lincoln, Nebr.

Filed Jan. 14, 1972, Ser. No. 217,796
Int. Cl. B62k *1/00*
U.S. Cl. 180—10 **8 Claims**

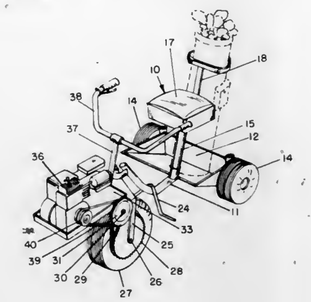


A one-wheel vehicle having an outer hoop, an inner carriage movably mounted inside said outer hoop, engine means for driving said inner carriage in a counterclockwise direction upon said outer hoop to impart forward movement of the vehicle, steering means comprising a seat supporting the occupant in a semi-reclining position movably suspended from said inner carriage and being pivotal in a direction transverse to the movement of said vehicle and means for swinging said seat in a pendulum-like movement. In a further aspect hereof, said outer hoop comprises a cylinder having a truncated cone attached to each end thereof thereby defining three stable rest positions for said vehicle. In a still further aspect hereof, said outer hoop comprises two separate hoops spaced apart having an outer band extending threrearound wider than the space between said two hoops and being fastened to each, said spacing providing a track guiding said inner carriage upon said band.

3,777,836
MOTOR DRIVEN GOLF CART

Warren D. Riza, P.O. Box 78, Cleburne, Tex.

Filed Sept. 22, 1971, Ser. No. 182,756
Int. Cl. B62d *21/12*
U.S. Cl. 180—26 **2 Claims**

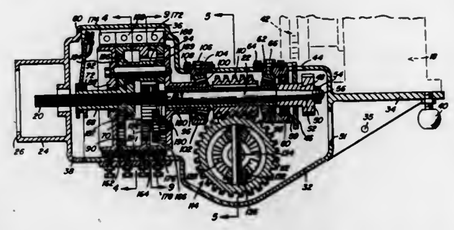


This invention consists of seven basic structures that when assembled provide a one man golf cart that can be dissassembled for transportation in the trunk of an automobile to a golf course. The seven basic structures comprise an L-shaped frame; a receptacle on the back and lower end of the L-shaped frame; in which is placed a golf bag; two removable rear wheels; a removable seat; means of supporting the upper end of the aforesaid golf bag; and a front wheel supported by structure adapted to secure the front end of the aforesaid L-shaped frame are all part of this novel invention. The above mentioned structure of the aforesaid front wheel also supports removable structure on which is located the internal combustion engine that propels the golf cart by means of both belt and chain drive mechanism. A handle bar is supported by the same structure that supports the aforesaid internal cumbustion engine.

3,777,837
TRACTOR

Murry D. Harper, 218 22nd St., Dunbar, W. Va.

Filed Mar. 2, 1971, Ser. No. 120,172
Int. Cl. B60k *17/06, 23/06*
U.S. Cl. 180—70 R **13 Claims**



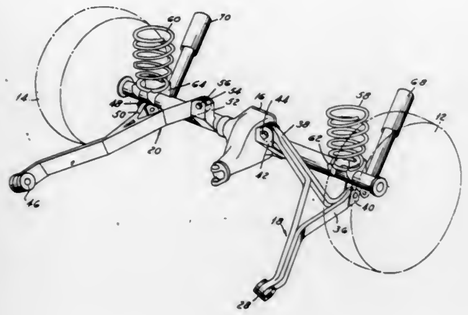
A garden type tractor of the hand manipulated and controlled type having two drive wheels thereon and a forwardly directed power take off onto which various attachments may be connected. The tractor includes a transmission of the planetary type enabling a change in drive speed and direction by the use of a manual shifting lever which may move into a position for locking the differential for the drive wheels. An attachment is provided for converting the tractor to a four wheel type and including an occupants seat for convenience and ease of control of the tractor. The drive train of the tractor includes an automatic clutch, chain drive, transmission and worm drive to the differential which provides a versatile drive arrangement.

3,777,838

REAR SUSPENSION SYSTEM FOR A MOTOR VEHICLE

John V. Barnes, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 24, 1972, Ser. No. 237,821
Int. Cl. B60g 9/00
U.S. Cl. 180—71 1 Claim



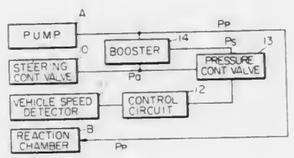
A suspension system for the driving wheels of a motor vehicle that are interconnected by a rigid axle housing. In the preferred embodiment, the axle housing is positioned with respect to the vehicle's chassis frame solely by a pair of arms. Each arm is connected to the vehicle frame by a single pivot. A pair of pivots that are both vertically and horizontally spaced apart connect each arm to the axle housing.

3,777,839

HYDRAULIC-POWER CONTROL DEVICE FOR POWER-ASSISTED STEERING SYSTEM

Hiromichi Uchiyama, Tokyo, and Naohiko Inque, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Dec. 22, 1971, Ser. No. 210,809
Claims priority, application Japan, Dec. 29, 1970, 45/120692; Dec. 29, 1970, 45/120693; Mar. 16, 1971, 46/14288; Mar. 16, 1971, 46/14504; Mar. 17, 1971, 46/14589
Int. Cl. B62d 5/08
U.S. Cl. 180—79.2 R 29 Claims



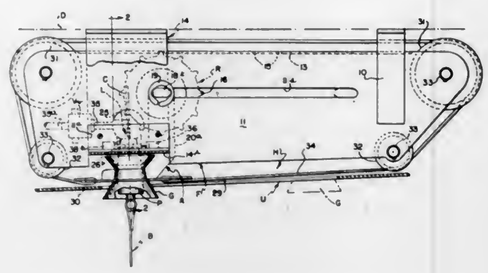
Herein disclosed is a hydraulic-power control device of a servo mechanism for automotive power-assisted steering systems. The control device includes a booster unit by which the working fluid pressure to be directed to the reaction chamber of the servo mechanism is multiplied depending upon several ranges of the vehicle driving speed so as to provide effortless steering performance during relatively low-speed driving and stabilized steering performance during relatively high-speed driving especially under the straight-ahead condition of the steering system.

3,777,840

DOOR MOUNTED SEAT BELT LOCKING RETRACTOR

Irlin H. Botnick, 3155 Kersdale Rd., Pepper Pike, Ohio, and Lewis H. Polster, Shaker Heights, Ohio, assignors to said Botnick, by said Polster

Filed Apr. 23, 1971, Ser. No. 136,955
Int. Cl. B60r 21/10
U.S. Cl. 180—82 C 28 Claims



In a door mounted seat belt retracting and locking unit, one belt end is secured to an anchor plug lockable in a translatable, cable-guiding anchor bracket by a vacuum bellows actuated latch; a flexible cable from the inner plug end being wound on a spring return-biased reel, having sprocketed flanges engaged in a rack in a unit base or frame attached to the vehicle door. Upon a permitted door opening, with plug withdrawal and cable unreeling, the reel with connected anchor bracket walks forwardly along the door carrying the belt away from the seat and winding the spring of the reel, which upon door closure automatically retracts the cable, the reel and anchor bracket walking back into position for locking by the latch control system upon the motor starting. The bracket slot at all times is covered by a roller-guided flexible band running from one side of the bracket around the unit frame back to the other bracket side. Variants are disclosed.

As the installation of seat belts in automotive vehicles, particularly passenger autos, is now quite widespread, the personal safety advantages of seat belt equipment, the environment of use, and the ordinary use thereof require here no particular discussion. However, safety studies evaluating the now considerable experience with belts have shown that there is extensive non-use of installed belts in consequence of carelessness, laziness, inadvertance or forgetfulness of drivers or passengers in attending to the simple operation of picking up and buckling the seat belt ends immediately upon entering the vehicle.

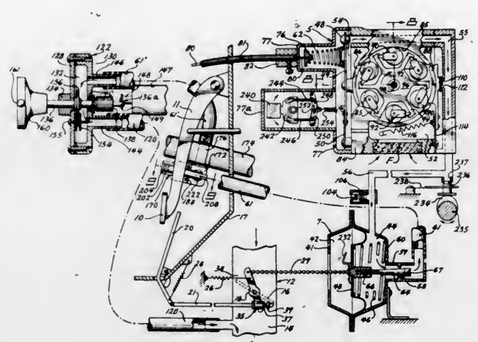
3,777,841

AUTOMOTIVE SPEED CONTROL SYSTEM

Robert H. Thorner, 8750-F W. Chicago Blvd., Detroit, Mich.

Continuation-in-part of Ser. No. 668,121, Sept. 15, 1967, Pat. No. 3,528,523, which is a division of Ser. No. 430,910, Feb. 8, 1965, Pat. No. 3,343,423. This application June 3, 1970, Ser. No. 43,122
Int. Cl. B60k 31/00
U.S. Cl. 180—108 38 Claims

An important disclosure herein comprises an automatic speed control system for an automotive vehicle including mechanism providing a selective mode of operation which enables the driver when he chooses to resume a previously set regulated speed subsequent to slowing or stopping the vehicle. This selective control mechanism enables "automatic" reactivation of the speed control device in response to a change in accelerator movement and is accomplished by selective advancement of the accelerator slightly beyond its normal driving position to initiate automatic acceleration to the regulated speed. Several forms of restraining means are provided to make this mode of operation completely safe by automatically rendering the device inoperative, for example when the driver opens a vehicle-door. In another form of restraining means, the device is rendered completely inoperative whenever the vehicle speed falls below a set value, such as 20 mph for example. Also, specific forms of curve-compensation may be added to this or any speed control system to provide additional safety, in which the regulated vehicle speed is automatically caused to reduce temporarily on road curves, and to return to the regulated speed when the road is again straight.

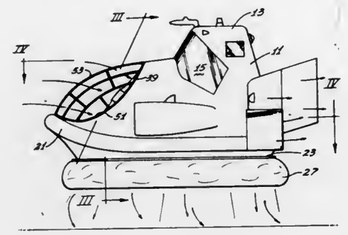


3,777,842

AIRCAR

Harry A. Laufman, 1510 E. Colorado Blvd., Glendale, Calif.

Continuation of Ser. No. 24,057, March 26, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,518
Int. Cl. B60v 1/02
U.S. Cl. 180—117 9 Claims



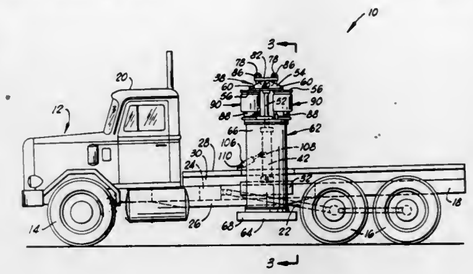
A vehicle having an air intake system at the forward end thereof, which directs a portion of the ingested air downwardly to fill a pliable doughnut-shaped skirt extending around the vehicle; the air pressure then allows air to move under the skirt so as to lift the entire vehicle. The remaining portion of the air is directed through the vehicle and out the after end thereof for propulsion and the direction of movement of this air is controlled by a plurality of rudders so that the vehicle may be turned or moved in reverse. The relative volumes of air directed through the vehicle and out from under the vehicle may be adjusted by an angularly movable plate positioned relative to an engine and a propeller.

3,777,843

SEISMIC VIBRATOR SYSTEM

Delbert W. Fair; Graydon L. Brown, and J. H. Miller, Jr., all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 18, 1971, Ser. No. 190,161
Int. Cl. G01v 1/14
U.S. Cl. 181—.5 VM 2 Claims



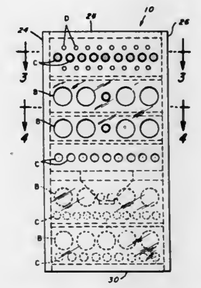
A seismic vibrator system for installation on the frame of a ground vehicle including a pair of two-way power cylinders each pivotally secured at one end thereof to the frame and fixedly secured at the opposite end thereof to a cross member. A vibrator is connected to each end of the cross member by means of a vibration-isolating air spring. The lower ends of the vibrators are secured to an earth-engaging base. Lifting members, interconnecting the vibrator and the cross member, are disclosed for lifting the vibrators and base in response to extension of the power cylinders. Extension and retraction of the two-way power cylinders alternately raises the vibrators and base from the ground for travel and lowers them to the ground for transmission of seismic shock waves into the ground. The cross member and power cylinders are adapted to be vibrationally isolated from the vibrators and base when the base is in contact with the ground. In operation the vehicle is partially supported by the base and the vibrators acting through the vibration isolating air springs.

3,777,844

ADJUSTABLE SPEAKER CABINET

Rubein V. Johnson, 2432 Court St., Muskogee, Okla.

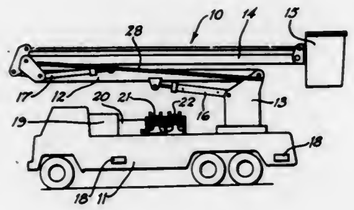
Filed Oct. 24, 1972, Ser. No. 300,177
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B 4 Claims



An acoustical cabinet for housing one or more loud speakers is described. The cabinet is broken up into a plurality of separate chambers and resonance volumes by means of horizontal partitions across the rectangular chamber. Each of the horizontal dividing walls has a plurality of circular openings therein. The speaker or speakers is mounted to a horizontal baffle across the entire cross section of the chamber. The resonance volumes above the speaker are par-

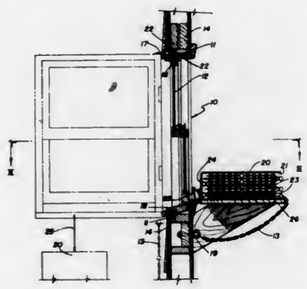
tially vented, through pluralities of circular openings in the front panels of those chambers. The chambers below the speaker are likewise vented to the back through pluralities of circular openings.

3,777,845
HYDRAULICALLY OPERATED ACCESS EQUIPMENT
Denis Henry Ashworth, Dudley, England, assignor to Simon Engineering Limited, Dudley, England
Filed Apr. 10, 1972, Ser. No. 242,706
Claims priority, application Great Britain, Apr. 28, 1971, 11,789/71
Int. Cl. B66f 11/04; B06c 5/06
U.S. Cl. 182—17 6 Claims



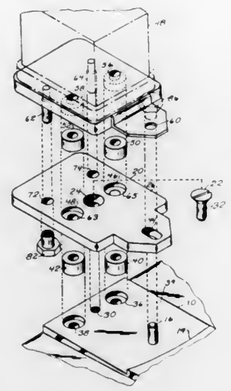
Hydraulically operable access equipment, usually but not necessarily vehicle mounted, and of the kind comprising a boom structure consisting of a plurality of booms pivotally connected together in end to end relationship, hydraulic actuators with an associated hydraulic control system for moving the boom structure between a stowed position wherein at least some of the booms lie parallel with one another in a substantially horizontal direction and an extended position wherein the free end of the boom structure is raised to an elevated position, characterised by the provision of secondary, normally closed, inlet and outlet ports to the oil chambers of at least some of the hydraulic actuators, and an auxiliary system comprising a pump and flexible hoses capable of being extended from such pump for connection to the secondary inlet and outlet ports of each said actuator, whereby such actuators may be operated to permit movement of the boom structure to its stowed position by use of said auxiliary hydraulic system.

3,777,846
FIRE ESCAPE
Carl A. Josephson, 1534 Graham St., Simi Valley, Calif., and Albert R. Josephson, 310 Oak St., Shrewsbury, Mass.
Filed Aug. 4, 1972, Ser. No. 278,118
Int. Cl. E06c 1/56, 9/10, 9/14
U.S. Cl. 182—78 7 Claims



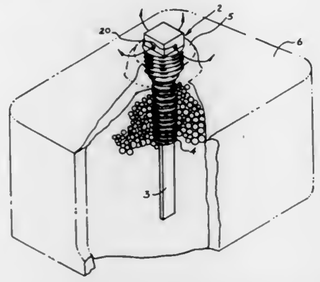
This invention is a fire escape system in which a window can be swung open; simultaneous with the swinging a descending device is lowered to the ground from the window ledge.

3,777,847
COUPLING PLATE
Thomas R. Lawless, 2218 Fairport Ave., Dayton, Ohio
Filed July 6, 1971, Ser. No. 159,619
Int. Cl. F01m 11/00
U.S. Cl. 184—1 R 2 Claims



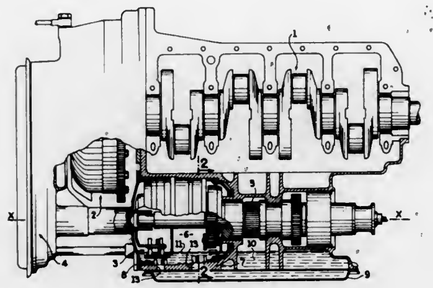
A coupling plate for coupling an oil cooler to an engine block which has lost its oil cooler mounting ears is disclosed. The coupling plate has oil ports therein for transferring oil between the engine block and oil cooler. In the area between the oil ports within the coupling plate is placed a countersunk coupling hole for connecting the coupling plate to the engine block. Oil cooler stud holes for connecting oil cooler studs of the oil cooler to the coupling plate are provided in the coupling plate. The coupling plate has an elliptical engine block stud hole therein for holding the coupling plate between the oil cooler and the damaged engine block. The coupling plate is used to connect an oil cooler to an engine block which has losted its oil cooler ears.

3,777,848
AIR BREATHER FITTING FOR RESERVOIRS
Langdon C. Schaeffer, Webster Groves, Mo., and Roland C. Thomas, Dover, Ky., assignors to Emerson Electric Company, St. Louis County, Mo.
Filed Apr. 14, 1972, Ser. No. 244,117
Int. Cl. F01m 11/10
U.S. Cl. 184—1 C 9 Claims



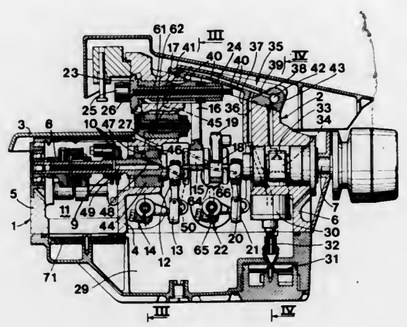
A device for equalizing pressure in agitated oil in a closed container without permitting oil escape is provided and includes a cap having a pervious shielding element depending from it. The shielding element prevents bubble formation in a breather passage extending through the cap by dissipating any bubbles formed, before their entrance into the breather passage, thereby permitting air release while preventing oil loss through the breather passage.

3,777,849
AUTOMATIC TRANSMISSION CASING UNIT FOR AN AUTOMOBILE VEHICLE
Jean Piret, Bougival, France, assignor to Automobiles Peugot, Paris and Regie Nationale Des Usines Renault, Billancourt, France
Filed July 6, 1971, Ser. No. 160,027
Claims priority, application France, July 7, 1970, 7025104
Int. Cl. F01m 1/02
U.S. Cl. 184—6.12 6 Claims



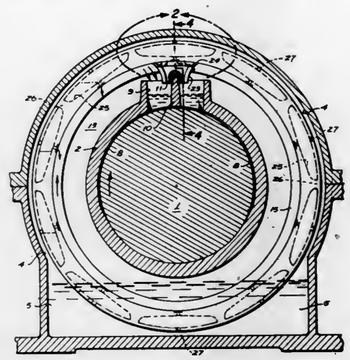
A casing defines a chamber which contains a gear change mechanism for a vehicle and communicates by way of at least one opening with a sump under the chamber. The opening has a wall portion which tapers in a direction opposed to the direction in which oil is driven by the change mechanism whereby the change mechanism drives the oil into the sump in the manner of a centrifugal pump.

3,777,850
SEWING MACHINE LUBRICATING SYSTEM
Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C.
Filed Dec. 30, 1971, Ser. No. 214,163
Claims priority, application Italy, Feb. 17, 1971, 20656 A/71
Int. Cl. D05b 71/00
U.S. Cl. 184—6.15 2 Claims



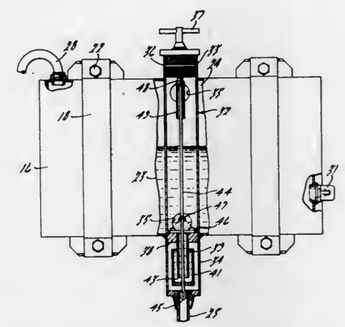
An improved lubricating system for a high speed sewing machine in which all of the moving parts and a portion of the stationary parts of the machine frame contain a series of interconnecting passages to form a high pressure internal lubricating system. Also included is a supply distributor which directs the lubricant into the interconnecting passages and which also provides a low pressure or spray type of lubricating system that affects external lubrication of the various machine operating parts.

3,777,851
SHAFT LUBRICATOR OPERABLE AT LOW SPEED
Paul T. Mitchell, and Peter A. Pagan, both of 2277 E. 16th St., Los Angeles, Calif.
Filed Mar. 16, 1972, Ser. No. 235,164
Int. Cl. F16n 25/04
U.S. Cl. 184—63 8 Claims



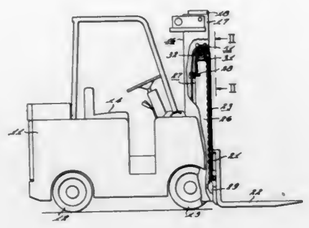
A lubricator for shafts, such as ship propeller shafts, during a rotation of such shafts at low speeds, the lubricator including a ring of lubricant containers which rotate with the shaft and are caused to dip in an oil sump, then carry the oil above the upper side of the shaft, and discharge the oil by gravity into a collector for distribution into the region between the bearing and the shaft; the lubricator being incorporated in a centrifugally operating lubricating means which takes over the lubricating function when the shaft speed increases.

3,777,852
AUTOMATIC OIL LEVEL REGULATOR
Eugene J. Samalon, Racine; Gilbert C. Lamb, Jr., Milwaukee, and Ervin C. Lentz, Racine, all of Wis., assignors to Tenneco Inc., Racine, Wis.
Filed Feb. 25, 1972, Ser. No. 229,389
Int. Cl. F01m 11/12
U.S. Cl. 184—103 R 5 Claims



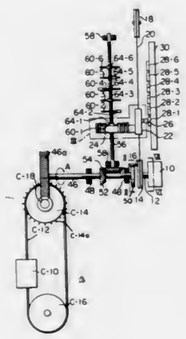
A device which senses the level of oil in an engine crankcase and automatically replenishes the oil supply when needed. The device comprises an oil reservoir having an oil level sensing tube and an oil feed tube leading to the crankcase. A valve automatically shuts off oil flow from the reservoir when its filler plug is removed. This valve comprises a cup surrounding a downspout from the reservoir and normally biased to closed position. A rod extends upwardly from the cup and is engageable by the filler plug to open the valve, the cup acting as an air trap.

3,777,853
HOSE GUIDE FOR LIFT TRUCK
Bernard G. Miller, Tinley Park, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Apr. 5, 1972, Ser. No. 241,337
Int. Cl. B60b 9/20
U.S. Cl. 187—9 5 Claims



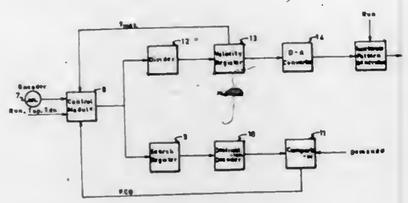
A pair of hoses for conveying fluid from the lift truck to a jack on the carriage are trained over the lift chains connected to the carriage and are held in the place on the lift chains as the chains and hose pass over a pair of pulleys by rollers disposed above the hoses.

3,777,854
ELEVATOR FLOOR SELECTOR
Yasuhiko Ozawa, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 29, 1971, Ser. No. 202,845
Int. Cl. B66b 1/52
U.S. Cl. 187—29 R 3 Claims



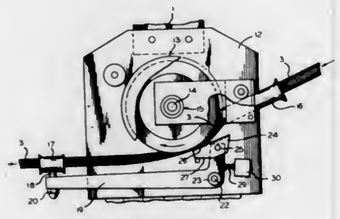
A plurality of control discs are mounted on a vertical shaft at those positions corresponding to those floors of a building. The shaft is rotated in response to the travel of an elevator car. An advance element carrying a plurality of deceleration switches is moved ahead of the travelling car at a predetermined advance range. When the advance element reaches and stops at the particular calling floor, an actuator disposed on that disc for the calling floor continues to be rotated to successively operate the switches to decelerate the car until it lands at the calling floor.

3,777,855
PATTERN GENERATOR FOR THE CONTROL OF MOTION OF A BODY MOVABLE OVER A PREDETERMINED PATH
Graham Edward Boyldew, Randwick, New South Wales, and John Lindsay Shumack, Grays Point, New South Wales, both of Australia, assignors to Elevators Pty. Limited, Waterloo, New South Wales, Australia
Filed July 12, 1972, Ser. No. 271,083
Claims priority, application Australia, July 19, 1971, PA 5590
Int. Cl. B66b 1/16
U.S. Cl. 187—29 R 9 Claims



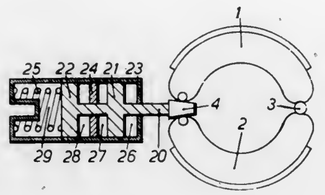
A system of deriving a speed pattern for an elevator car power circuit which comprises utilizing electrical impulses whose number is a measure of distance along the shaft. Firstly determining how far the car has to travel to a destination which may be either its next stop or where it will first reach maximum speed. Secondly, producing a high frequency train of impulses indicative of the necessary travel, and producing a second train of impulses indicative of progressive movement of the car towards the destination. Thirdly, totalling in a counter the first series of impulses and subtracting therefrom the second series of impulses, and fourthly, deriving a control signal from a digital to analogue converter responding to the total in the counter and applying it to the power circuit for the car to determine the speed of the car.

3,777,856
ROVING COUNTER AND BRAKE
Charles R. Gardner, Glendale, and David W. Goelz, Burbank, both of Calif., assignors to Republic Corporation, Los Angeles, Calif.
Filed Oct. 6, 1971, Ser. No. 186,920
Int. Cl. B65h 59/16
U.S. Cl. 188—65.1 5 Claims



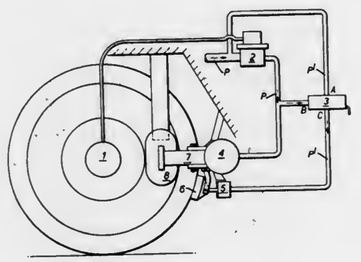
A braking and counting arrangement for roving which includes a pawl responsive to the amount of tension in the roving; a wheel coupled to a counter mechanism; and guide members arranged to position the roving between the pawl and the wheel. When tension is applied to the roving, the roving moves freely and engages the wheel which rotate and allows the counter to register the amount of roving used. When tension is released from the roving, the pawl is urged against the roving and the wheel, thus restraining further movement of the roving and the wheel.

3,777,857
HYDRAULIC BRAKING SYSTEM FOR VEHICLES
Michael James Hughes, Lichfield, England, assignor to Girling Limited, Birmingham, England
Filed July 29, 1971, Ser. No. 167,094
Claims priority, application Great Britain, Aug. 8, 1970, 38,310/70
Int. Cl. F16d 65/24
U.S. Cl. 188—170 4 Claims



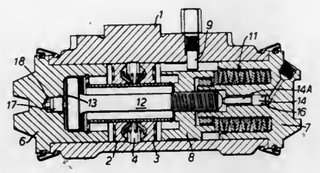
In a fluid-pressure operated braking system for vehicles incorporating internal shoe-drum brakes the brake shoes are separated to apply the brake by a wedge actuated by pistons arranged in tandem in a cylinder and individually acted upon by pressure fluid derived from separate sources under manual control.

3,777,858
RAILWAY VEHICLE BRAKING SYSTEMS
Peter Murphy, Tyselex, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Mar. 28, 1972, Ser. No. 238,789
Claims priority, application Great Britain, Mar. 30, 1971, 8,166/71
Int. Cl. B60t 8/12
U.S. Cl. 188—181 R 8 Claims



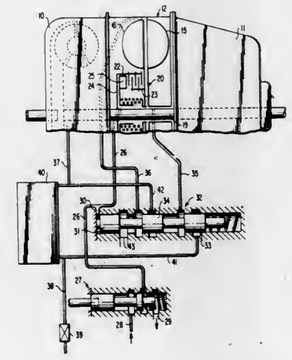
A railway vehicle braking system comprises a friction brake and a wiper device arranged to wipe the tire of a vehicle wheel or the rail on which the wheel runs to increase the coefficient of friction between the tire and rail. A skid sensing device is operable in response to excessive deceleration of the wheel, when the brake is applied, to reduce the braking effort, and an actuator applies the wiper device in response to operation of the skid sensing device. The wiper may simply clean the tire of grease and moisture, or apply a coating of friction material, or both.

3,777,859
LOCKING MEANS FOR VEHICLE WHEEL BRAKES
Michael James Hughes, Tyseley, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed June 16, 1971, Ser. No. 153,671
Claims priority, application Great Britain, June 24, 1970, 30,651/70
Int. Cl. F16d 51/00
U.S. Cl. 188—265 8 Claims



A lock actuator, preferably incorporated in a wheel cylinder, for a vehicle wheel brake includes an extensible strut and a friction clutch selectively operable for locking the strut in extended position, and is mainly characterized by the provision of a fluid pressure actuated motor for effecting engagement of the clutch whereby to obtain rapid and positive response to selection of the locked condition. The said motor may be opposed and normally overpowered by a second motor acting in the opposite direction, clutch engagement being effected by disabling the second motor which the first remains operative.

3,777,860
HYDRODYNAMIC BRAKE FOR VEHICLES ESPECIALLY FOR MOTOR VEHICLES
Hans-Joachim M. Forster, Stuttgart, and Werner Hensel, Berkheim, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany
Filed May 24, 1971, Ser. No. 146,053
Claims priority, application Germany, May 23, 1970, P 20 25 306.9
Int. Cl. F16d 57/02
U.S. Cl. 188—291 17 Claims

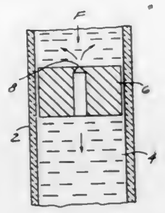


A hydrodynamic brake for vehicles, especially for motor vehicles, with at least one stationary and one rotating blade wheel, whereby the latter is adapted to be connected with the drive shaft by way of an engageable clutch which is controllable automatically in dependence on the actuation of the vehicle brake.

3,777,861
SHARP EDGE ORIFICE DASHPOT TIMER

David S. Breed, Box 270, R.D. 2 Hillcrest Rd., Boonton Twp., N.J.

Filed Feb. 16, 1971, Ser. No. 115,490. The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.
Int. Cl. F16g 9/02
U.S. Cl. 188—317 9 Claims

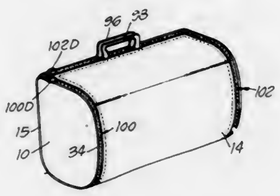


The dashpot timer of this invention includes a substantially cylindrical glass tube in which travels a piston having a diameter slightly less than that of the interior of the tube. A gas defines the medium in the cylinder in which the piston containing a sharp edge orifice is adapted to travel. The flow ingenerated in the cylinder is predominately an inertial flow through the sharp edge orifice with the shear flow and pressure flow between the piston and cylinder being relatively insignificant. The device of the present invention operates in the inertial flow region whereby the viscosity effects are relatively small compared with the inertial effects of the fluid.

3,777,862
TRAVELERS BAG

Walter J. Zipper, 463 Mesa Rd., Santa Monica, Calif.

Filed May 22, 1972, Ser. No. 255,337
Int. Cl. A45c 7/00
U.S. Cl. 190—43 2 Claims



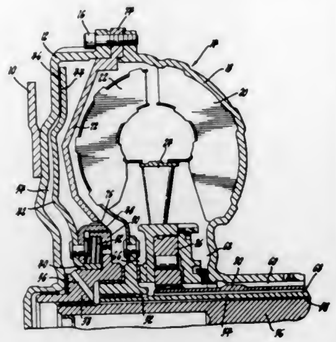
A traveling bag has two stiffened end flaps each stitched along one of its edges to a large rectangular sheet of fabric. Cooperating halves of zippers are stitched to such sheet and to such flaps; and in the process of closing such zippers, a closed bag results with stiff end flaps that prevent sharp creasing of, for example, a man's suit which may have been previously hung on a hook sewed onto the inner surface of such sheet. A second sheet may overlay the first sheet to provide a pocket for such suit, and also pockets may be stitched on said second sheet to provide storage for other clothing and toilet articles.

3,777,863
HYDRODYNAMIC UNIT WITH FRICTION CLUTCH

Howard E. Chana, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 19, 1971, Ser. No. 200,399
Int. Cl. F16d 39/00
U.S. Cl. 192—3.33 4 Claims

Hydrodynamic torque-transmitting unit having a engageable friction clutch for establishing a selective mechanical drive in parallel with the hydraulic drive through the unit which is located directly between and the front cover of the housing a

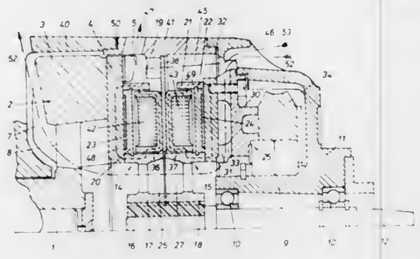


disk-like shroud fixed to the housing so that fluid forces generated by rotating unit rotor members do not adversely affect clutch operation.

3,777,864
AIR COOLED MAGNETIC CLUTCH AND BRAKE

Willi Hermann Marti, Basel, Switzerland, assignor to Delmoran AG, Basel, Switzerland

Filed Dec. 3, 1971, Ser. No. 204,635
Claims priority, application Switzerland, Dec. 15, 1970, 18575/70
Int. Cl. F16d 67/06
U.S. Cl. 192—18 B 22 Claims

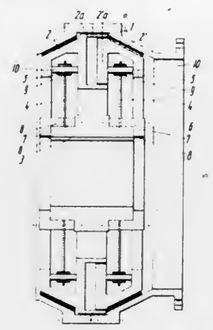


A magnetic friction clutch wherein two disk-shaped armatures are movable axially of and rotate with the driven shaft. One of the armatures is adjacent to a flywheel which is rotated by the output shaft of an electric motor and the other armature is adjacent to a stationary or rotary braking member. Each armature has a ring-shaped nave which is mounted on the driven shaft and a ring-shaped rim which surrounds and is magnetically separated from the respective rim. Annular facings of magnetically non-conductive material are provided on each of the armatures between the respective nave and rim and their exposed surfaces are flush with pole faces provided on the corresponding rim and nave. Two windings are mounted in the space between the two armatures and one thereof is energizable to cause the facing and the pole faces of one armature to bear against the flywheel, the other winding being energizable to cause the facing and the pole faces of the armature to bear against the braking member. Channels in the braking member, naves of the armatures and the flywheel serve to convey streams of cooling air which are induced by annuli of blades on the flywheel. The material of those portions of each rim and nave which are adjacent to the respective pole faces exhibits the same resistance to wear as the material of the facings.

3,777,865
COMBINED CLUTCH AND FLEXIBLE COUPLING

Jurgen Walter, Markische strasse 24, and Bernhard Hackforth, Heerstrasse 52d, both of Wanne-Eickel, Germany

Filed Mar. 20, 1972, Ser. No. 235,935
Int. Cl. F16d 13/34
U.S. Cl. 192—70 14 Claims

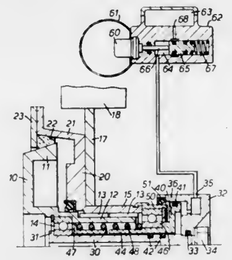


Combined clutch and flexible shaft coupling, wherein each of two ring-shaped coupling parts movable axially with respect to each other are connected with a hub part, that is adapted to be fastened on a first shaft, by at least one metal spring disc which is yieldable in an axial direction. The movable coupling parts are pressable in opposite directions from a middle resting position in which the clutch is disengaged, with outer friction surfaces on the coupling parts spaced from inner friction surfaces that are situated opposite them, on the coupling case; such case is adapted to be connected to a second shaft. The movable coupling parts are flexibly affixed in all directions, the outer edges of the spring discs being secured to the respective axially movable parts of the coupling by elastic intermediate members.

3,777,866
FLUID PRESSURE RELEASED CLUTCH FOR FANS

Arthur Ernest Henry Elmer, Painswick, England, assignor to Dynair Limited, Gloucestershire, England

Filed Mar. 6, 1972, Ser. No. 232,089
Claims priority, application Great Britain, Mar. 11, 1971, 6,633/71
Int. Cl. F16d 25/08
U.S. Cl. 192—91 A 6 Claims



A rotary cooling fan for a vehicle motor including a friction clutch engaged by relative axial movement between two clutch members, means for driving the input clutch member at one end of the fan hub, a fluid operated ram including a ram piston and ram cylinder mounted within the hub, means for admitting fluid to the ram from the other end of the hub, spring means acting directly between the ram piston and cylinder to engage the clutch, and two thrust bearings connected respectively between the two parts of the ram and the two clutch members.

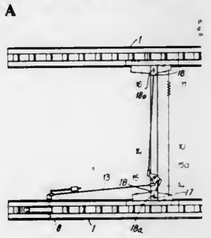
ERRATUM

For Class 192—88 see:
Patent No. 3,777,868

3,777,867
ROLLER TRACKWAY CONSTRUCTION

Dierk Durwald, Weststr. 11, 5802 Wetter/Ruhr, Germany

Continuation of Ser. No. 11,543, Feb. 16, 1970, abandoned.
This application Jan. 10, 1972, Ser. No. 216,482
Claims priority, application Germany, Mar. 25, 1969, P 19 15 028.8
Int. Cl. B65g 13/00
U.S. Cl. 193—35 A 8 Claims

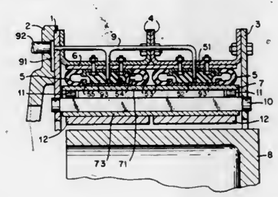


A roller conveyor or roller track includes a delivery end having a stop against which materials which are carried on a pallet are delivered. The delivery area includes control means in the form of a lever which is located adjacent the end stop in a position such that it is depressed by the material or its pallet when it arrives at the delivery point. The lever is connected to control means which is engageable with the next quantity of material or its pallet which is delivered toward the delivery point. The control means is effective to hold the next pallet at a spaced location from the pallet which has already arrived at the delivery point so that it will not interfere with this pallet when the latter is removed such as by a fork truck which is engageable therewith. As soon as the pallet is removed from the delivery point, the next pallet may move forwardly to the end position of the delivery area adjacent the stop in a position at which it may be engaged for removal without interference from the pallet which is next to the delivery area.

3,777,868
FLUID OPERATED COUPLING DEVICE

Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Kabushiki Kaisha, Tokyo, Japan

Filed July 3, 1972, Ser. No. 268,518
Claims priority, application Japan, July 10, 1971, 46/60782
Int. Cl. F16d 25/04
U.S. Cl. 192—88 B 6 Claims



An inner cylindrical face of a coupling member carries two axially juxtaposed circumferential rows of expansion cham-

bers, and a friction shoe is attached to each pair of respective expansion chambers of the two rows. When the expansion chambers are inflated by compressed air, the friction shoes are engaged with an outer cylindrical face of a second coupling member. The device may operate as a clutch or as a brake.

3,777,869
TYPE ACTION DRIVE

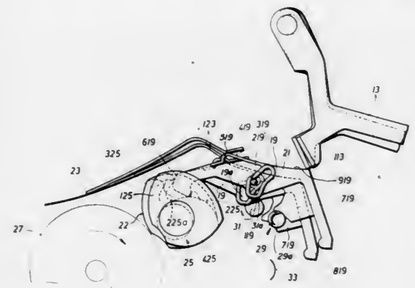
Albert Rix, Wilhelmshaven; Georg Werner, Heidmuhle, and Hans Fuchs, Wilhelmshaven, all of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed July 22, 1970, Ser. No. 62,781

Claims priority, application Germany, July 23, 1969, P 19 37 284.0. The portion of the term of this patent subsequent to Feb. 6, 1990, has been disclaimed.

Int. Cl. B41j *23/08*

U.S. Cl. 197—17 **10 Claims**



A type action has a driven lever carrying a rotary cam cooperating with the power roll. When a key lever is operated, it displaces a control lever so that the same is shifted from a rest position resiliently arrested by a tension spring, to an operative position in which the spring moves the control lever to turn the cam to a driven position engaged and rotated by the power roll so that the driven lever is operated. The turning cam also moves the control lever back toward the rest position so that the spring is again tensioned. When the cam separates from the power roll to permit inertia movement of the driven lever to obtain an impact by the type bar, the control lever, operated by the tension spring, turns the cam back to its initial position. Ball locking means cooperate with the control levers so that only one control lever at a time can be moved to the operative position while a control lever, later actuated by a key lever, abuts the locking balls and moves to the operative position when the first actuated control lever releases the locking means.

3,777,870
ESCAPEMENT CONTROLLING TABULATING APPARATUS

Dieter Drogi, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

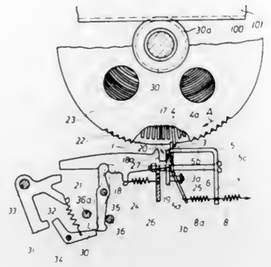
Filed Sept. 9, 1971, Ser. No. 179,064

Claims priority, application Germany, Sept. 16, 1970, P 20 45 638.6

Int. Cl. B41j *19/66*

U.S. Cl. 197—94 **10 Claims**

A tabulating apparatus has tabulator stop means and escapement stop means, operated by tabulator control means which place the tabulator stop means in the path of a set tab, whereupon the moving tab moves the tabulator stop means to release the escapement stop means so that it blocks carriage



movement before the tabulator stop means is released by the tabulator control means for biassed movement to an inoperative position releasing the set tab.

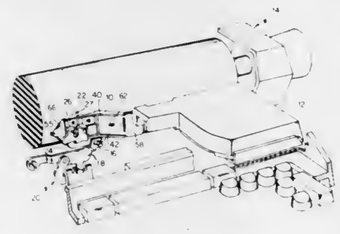
3,777,871
RIBBON GUIDE FOR TYPEWRITER RIBBON CARTRIDGE

Aaron C. Zeamer, Groton, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed May 3, 1972, Ser. No. 249,954

Int. Cl. B41j *33/14*

U.S. Cl. 197—151 **13 Claims**



A ribbon guide or carrier arm for a typewriter ribbon cartridge is disclosed. The carrier arm which is pivotally connectable to the cartridge housing to laterally extend therefrom, has a pair of channels formed therein for guiding a ribbon from the housing to a print point and back to the housing. An aperture is provided adjacent the end of the arm for exposing a portion of the ribbon to the print point. The end of the arm is V-shaped to effect a reversal in the direction of movement of the ribbon. A step having channel means therein for the ribbon is provided at the opening to the V-shaped section. A transparent plastic sheet is secured over the channels in the carrier arm guiding the ribbon and a hollow V-shaped cap is secured over the end of the carrier arm thus shielding most of the ribbon along the carrier arm outside the housing.

3,777,872
DEVICE FOR THE TRANSPORTATION OF LOADS BETWEEN OPERATIONS

Mikhail Abramovich Rikman, ulitsa Molodogvardeiskaya, 24, korpus 1, kv. 51, and Felix Semenovich Ioffe, ulitsa Izumrudnaya, 6, kv. 72, both of Moscow, U.S.S.R.

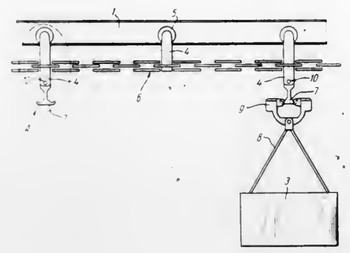
Continuation of Ser. No. 163,711, July 19, 1971. This application Dec. 11, 1972, Ser. No. 313,751

Int. Cl. B65g *17/20, 47/61*

U.S. Cl. 198—20 R **1 Claim**

The device of the present invention comprises overhead guide tracks along each of which carriages travel having hooks

secured to them through hinged joints for attaching a hanger with a load. Between said tracks there is arranged an overhead transfer conveyor whose trolleys are provided with forks that engage with the carriage when the hanger is being removed from or (attached to) the hook. The teeth of the fork are ar-



ranged at the level of the joint and have a height equal to the height of the upper part of the hook, which makes it possible to return the hook to its initial position to ensure reliable engagement should the hook deviate from its vertical position in the zone of engagement.

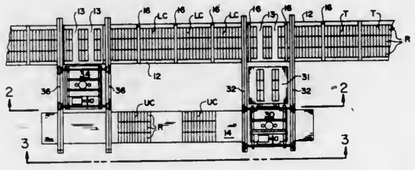
3,777,873
BRICK CONVEYOR

Gerald L. Stuart, Siler City, N.C., assignor to Forrest Paschal Machinery Company, Siler City, N.C.

Filed May 4, 1972, Ser. No. 250,151

Int. Cl. B65g *57/00, 59/00*

U.S. Cl. 198—35 **9 Claims**



Trays of brick, stacked two courses to a tray, one atop the other, are marshalled along a main index conveyor to a first transfer point, where a first transfer carriage removes the upper course from each tray, and transfers it to an auxiliary index conveyor synchronized with and driven in the same direction as the main conveyor. The bricks then proceed down parallel paths on the main and auxiliary conveyors in single layers facilitating grading and inspection, yet maintaining the economy realized from a multi-layered path. After inspection and grading a separator sheet is placed atop the lower course on the main conveyor, and, upon reaching a second transfer point, the upper course is returned to its original position atop one of the lower courses by means of a second transfer carriage. During the transfer, other operations may be performed, such as everting of the upper course and the forming of tyne courses in selected lower courses.

3,777,874
POWDER DEPOSITION SYSTEM

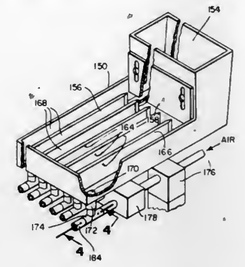
Lennox Birckhead, Trumbull, Conn., assignor to Air Products and Chemicals, Inc., Wayne, and Scott Paper Company, Delaware County, both of Pa.; part interest to each

Filed Dec. 22, 1971, Ser. No. 210,723

Int. Cl. B65g *47/18*

U.S. Cl. 198—56 **9 Claims**

A feeder for feeding particulate, thermoplastic material in a gaseous suspension to spray means. The feeder includes a hopper section at an upstream end thereof, and an elongate trough section extending downstream from the hopper section and separated from the hopper section by a gate. The trough section is subdivided into a plurality of channels by transversely spaced, elongate partitions. A delivery conduit is in separate communication with each of the channels, and a vacuum



creating means is associated with each delivery conduit for creating a region of partial vacuum in commmunication with each channel when a gaseous medium is passed therethrough for aiding in drawing the particulate material into each of the delivery conduits from the channels to form separate gaseous suspensions of the particulate maerial.

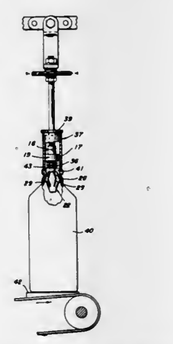
3,777,875
SUPPORT MEANS FOR RELEASABLY SUSPENDING CONTAINER

Michael J. Sobran, Old Greenwich, Conn., assignor to Glass Containers Corporation, Fullerton, Calif.

Filed Jan. 25, 1971, Ser. No. 109,170

Int. Cl. B65g *15/00*

U.S. Cl. 198—131 **8 Claims**



A hanger or support apparatus is disclosed for suspending a container by engagement with the interior wall of the opening portion of the container. Means are provided for quickly engaging and disengaging the hanger. The hanger is particularly adapted for suspending heated glass bottles for conveyance through an electrostatic coating apparatus.

3,777,876
SCRAPER FLIGHT CONVEYOR

Josef Schreier, Bochum, and Hugo Klimeck, Tonisheide, both of Germany, assignors to Gebr. Eickhoff, Maschinenfabrik Und Eisengiesserei m.b.H., Bochum, Germany

Filed Oct. 13, 1971, Ser. No. 188,795

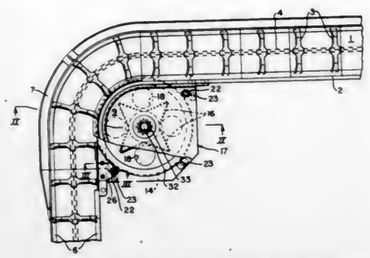
Claims priority, application Germany, Oct. 20, 1970, P 20 51 384.2

Int. Cl. B65g *19/08, 19/22*

U.S. Cl. 198—171 **6 Claims**

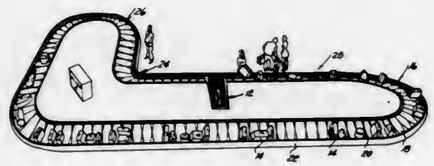
Improvements in scraper flight conveyors and more particularly an improvement in means for guiding a scraper flight

conveyor around a bend with the use of upper and lower guide wheels mounted for rotation about a vertical axis extending



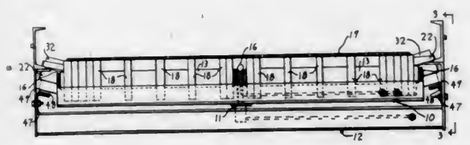
substantially through the center of curvature of a circularly-curved section of the conveyor.

3,777,877
CONVEYOR ASSEMBLY
Robert J. Piper, Detroit, Mich., assignor to Stearns Manufacturing Co. Inc., Flat Rock, Mich.
Filed Oct. 12, 1972, Ser. No. 296,748
Int. Cl. B65g *17/06*
U.S. Cl. 198—189 **10 Claims**



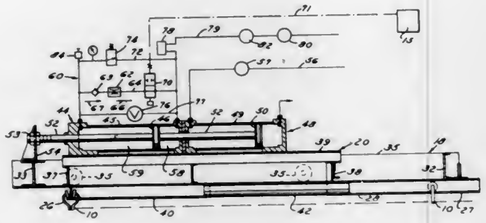
A conveyor assembly for moving baggage through a claim area. The pallets of the conveyor are hexagon-shaped and are pivotally mounted to hinged support members in a manner which permits the conveyor to be banked to provide access to the baggage carried thereby and to be formed to provide both inside and outside curves to make maximum use of the available claim area.

3,777,878
SELF-ALIGNING APPARATUS FOR IDLER ROLL ASSEMBLY
Thomas E. Morrison, Guin, Ala., assignor to Continental Conveyor and Equipment Company
Filed Dec. 11, 1972, Ser. No. 313,841
Int. Cl. B65g *15/62*
U.S. Cl. 198—202 **7 Claims**



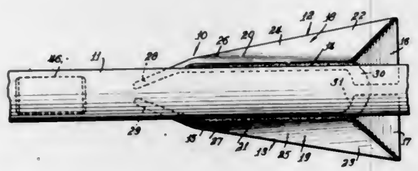
An actuating roll is carried by and mounted for rotation adjacent an end of a swivel mounted idler roll assembly with the upper surface thereof extending outwardly and upwardly to engage and support the adjacent edge of a belt upon lateral off center movement of the belt toward the roll. A brake subjacent the roll engages the under surface of the roll upon downward movement of the roll. The actuating roll is retained out of engagement with the brake until a predetermined force is exerted thereon by the belt.

3,777,879
CONTROL FOR A CONVEYOR TAKE-UP
Clarence A. Dehne, Farmington Township, Mich., assignor to Jervis B. Webb Company, Detroit, Mich.
Filed Nov. 30, 1971, Ser. No. 203,210
Int. Cl. B65g *15/30*
U.S. Cl. 198—208 **6 Claims**



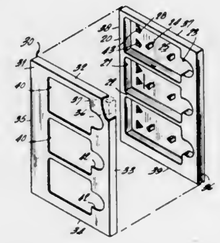
Relative movement between the fixed and movable frames of a conveyor take-up is controlled by a hydraulic cylinder and piston unit, the cylinder of which is connected to one of the frames and the piston to the other, the movable take-up frame being normally urged in an extending direction to apply tension to the conveyor chain. The hydraulic cylinder is connected to a fluid passage containing an orifice which permits fluid flow at a controlled rate in response to extending movement of the take-up, and containing a check valve which obstructs fluid flow in the opposite direction and prevents collapsing movement of the take-up. A normally open solenoid valve in this passage is operable to obstruct flow in both directions in the event the conveyor drive shuts down. A pressure relief valve mounted in an alternate passage permits collapsing take-up movement in the event of abnormal tension in the conveyor chain. In one embodiment, the hydraulic cylinder is combined with an air cylinder, and the pistons of both cylinders are mounted on a common rod, the air cylinder being supplied with regulated air pressure to apply a normal extending force to the movable take-up frame.

3,777,880
PLOW HARPOON-TYPE CONVEYOR
Roger T. Becker, Kalamazoo; Stephen L. Hatter, Portage, and Donald McMullin, Jr., Kalamazoo, all of Mich., assignors to Kalamazoo Conveyor Company, Kalamazoo, Mich.
Filed Apr. 13, 1972, Ser. No. 243,732
Int. Cl. B65g *25/08*
U.S. Cl. 198—221 **15 Claims**



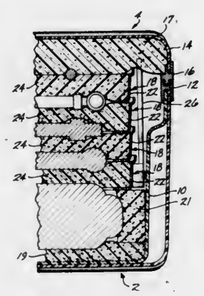
An improved plow is provided for use in a harpoon-type or chip conveyor, the plow having a wide forward end and lateral walls. The lateral walls converge upwardly at the forward or leading portion of the plow and additionally converge rearwardly toward the trailing end. The plow is mounted below a supporting member in the form of a shaft or tube. In an improved embodiment the plow is made of two separate plow members mounted on the support in spaced-apart arrangement. Additionally, a longitudinal slot is provided in the lower wall of the tubular supporting member permitting the vertical flange of a T-shaped rail to be disposed in the slot and to permit the supporting member to slide on and to be guided by bearings mounted on the rail.

3,777,881
TAPE CASSETTE HOLDER
Louis E. Schwartz, 57 Worth St., New York, N.Y.
Filed Sept. 1, 1971, Ser. No. 177,001
Int. Cl. B65d *1/34, 85/67*
U.S. Cl. 206—1 R **7 Claims**



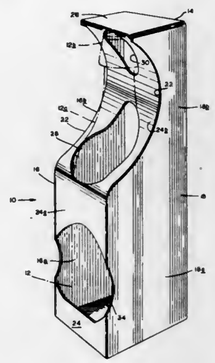
A container for a plurality of audio tape cassettes is disclosed in which a plurality of tape cassette receiving recesses together with resilient cassette retaining members are formed of one or two sheets of plastic material.

3,777,882
MULTI-TRAY INSTRUMENT CASE
David J. McIntyre, 3260 Lakewood Ave., South, Seattle, Wash.
Filed May 20, 1971, Ser. No. 145,417
Int. Cl. B65d *25/12, 85/54*
U.S. Cl. 206—16 S **18 Claims**



A multi-tray, protective storage and carrying case for delicate articles such as surgical instruments and the like. The case consists of a plurality of stackable instrument trays removably enclosed within a rigid, box-like case body. Each of the trays consists of a pad of elastically deformable plastic foam secured to and suspended within a peripheral frame. When stacked one on top of another within the case body, the top of one tray is situated in close proximity to the bottom of the overlying tray such that instruments resting on the first tray are cushioned from above and held in place by the foam pad in the overlying tray. Instruments in the uppermost tray of the stack are cushioned and held in place by a layer of elastically deformable plastic foam secured to the underside of the lid of the case. The trays can be removed from the case as a unit by means of handles secured to the rim of the lowermost tray.

3,777,883
DISPLAY CARTON AND BLANK FORMING SAME
Robert A. Hackenberg, E. Lyme, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.
Filed Aug. 28, 1972, Ser. No. 284,256
Int. Cl. B65d *5/50, 25/02*
U.S. Cl. 206—45.31 **14 Claims**

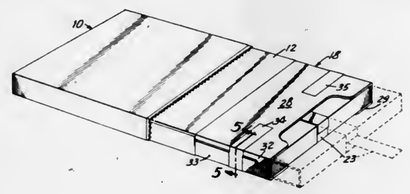


A carton for displaying an article contained therein is formed from a single blank of material. It has integral panels forming the front, back and sides of the carton, at least one of which has a portion which is bowed inward toward the center of the carton. Openings near the top and bottom of the bowed panel portion allow an article within the carton to project out of the carton through one of the openings and reenter the carton through the other opening.

ERRATUM

For Class 206—56 see:
Patent No. 3,777,400

3,777,884
X-RAY FILM
Milton W. Hedin, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Continuation of Ser. No. 97,731, Dec. 14, 1970, abandoned.
This application Mar. 10, 1972, Ser. No. 233,502
Int. Cl. B65d *85/46, 85/48, 85/62*
U.S. Cl. 206—62 R **5 Claims**

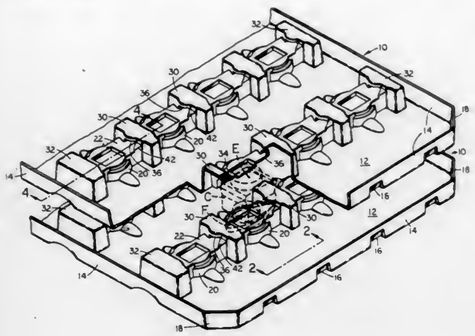


A package for X-ray film wherein the sheets of film are in faceTo-face contact and held in a compressed condition within the package to avoid shifting of the sheets during shipment and handling.

3,777,885
LOCKING MATERIAL-HANDLING TRAY

Werner W. Barteck, Lasalle, Mich., assignor to Rehkopf Industries, Inc., Toledo, Ohio

Filed Aug. 23, 1971, Ser. No. 173,990
Int. Cl. B65d *1/36, 71/00*
U.S. Cl. 206—72 9 Claims

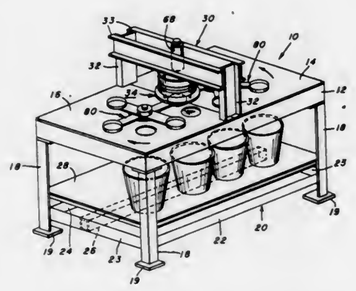


A molded plastic tray having adjacent seats and posts for locating articles thereon, in which the posts have complementary opposing indentalations or recesses for locking engagement with opposite projections on the articles. One of each pair of opposing detents has a wedging and stepped groove through which one of the article projections slides for mounting and removing the article from the tray. The trays are nestable when empty, and stackable when loaded with articles.

3,777,886
APPARATUS FOR INSPECTING BODIES FOR THE PRESENCE OF HARD PARTICLES

Richard A. Smith, Gibsonia, and Elmer E. Harris, Glenshaw, both of Pa., assignors to H. J. Heinz Company, Pittsburgh, Pa.

Filed Aug. 7, 1972, Ser. No. 278,543
Int. Cl. B07c
U.S. Cl. 209—109 17 Claims

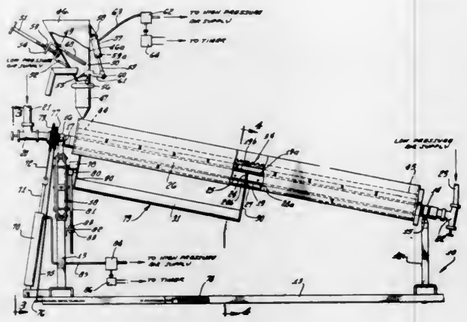


Apparatus for presenting soft bodies for inspection and detection of the presence of hard particles such as bones or cartilage, within a softer meat body. The apparatus includes automatic handling systems and control means for the handling systems whereby individual soft bodies are sequentially presented at a detection station and thereafter rejected for manual reinspection or advanced to the next food processing station. The control means provide sequence control for the various movable apparatus.

3,777,887
APPARATUS FOR SEPARATING DRY GRANULAR MATERIAL

Norris Johnston, and Mark Latker, both of Ojai, Calif., assignors to Albert M. Clark; John C. Manning, Bakersfield and John G. Troster, Atherton, Calif., part interest to each

Continuation-in-part of Ser. No. 863,989, Oct. 6, 1969, Pat. No. 3,667,601. This application May 27, 1971, Ser. No. 147,545
Int. Cl. B03b *3/04*
U.S. Cl. 209—474 4 Claims

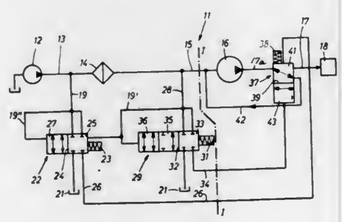


Separator apparatus embodying an inclined porous deck having parallel transverse upper grooves at right angles to its direction of inclination. Granular material deposited onto the upper end of the inclined deck is assisted by low pressure air forced upwardly through the deck in moving toward the lower end of the deck, the air effecting separation between granules or particles of greater specific gravity and granules or particles of lighter specific gravity, the former dropping to the bottom of the grooves while the latter float upwardly and flow progressively from groove to groove toward the lower end of the porous deck. The downstream sides of the grooves make an acute angle with the upper face of the inclined porous deck to entrain greater specific gravity particles in the grooves.

3,777,888
ARRANGEMENT FOR PUMPING A FILTERED FLUID

Gustav Zellbeck, Esslingen-Hegensberg; Paul Bosch, Ludwigsburg; Karl Veil, Uhingen, and Gerhard Lutz, Faurndau, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 20, 1971, Ser. No. 145,301
Claims priority, application Germany, May 21, 1970, P 20 24 675.7
Int. Cl. B01d *29/36, 35/14*
U.S. Cl. 210—130 18 Claims



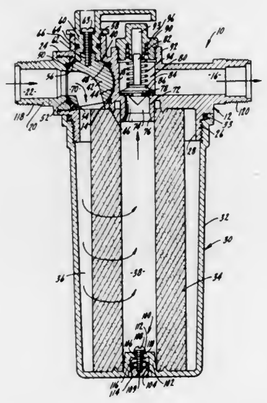
A feed pump supplies a fluid through a filter to a main pump which pumps the fluid in filtered condition to a consumer.

When the filter becomes clogged, a valve responsive to the increased pressure differential upstream and downstream of the clogged filter, supplies fluid for operating either a control valve connecting the outlet and inlet of the main pump and causing idle circulation of the fluid, or a hydraulic regulating means for setting the main pump to a minimum discharge.

3,777,889
CARTRIDGE FILTER UNIT

Robert A. Henderson, Rosemount, Minn., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Apr. 5, 1972, Ser. No. 241,179
Int. Cl. B01d *35/14, 27/10*
U.S. Cl. 210—135 10 Claims

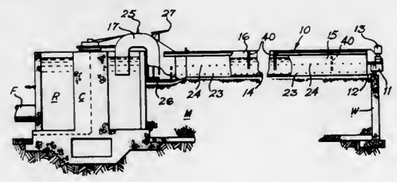


A self contained filter unit comprising a head having diametrically opposed horizontal inlet and outlet passages separated by a partition wall, a filter cartridge removably attached to the head for communicating the inlet passage with the outlet passage, a ball valve member having an elbow-shape flow passage formed therein mounted within the inlet passage effective to selectively direct fluid passing therethrough into the filter cartridge, and a check valve member mounted within the outlet passage effective to permit fluid flow from the filter cartridge to the outlet passage and prevent fluid flow from the outlet passage to the filter cartridge. The ball valve member is provided with an O-ring sealing assembly which prevents the upstream O-ring from blowing out at high pressures.

3,777,890
ROTARY DISTRIBUTORS

Michael Augustine Hartley, Newcastle, and Robert Rowley, Congleton, both of England, assignors to Simon-Hartley Limited, Stoke-on-Trent, Staffordshire, England

Filed Apr. 12, 1971, Ser. No. 132,963
Claims priority, application Great Britain, Apr. 24, 1970, 19,944/70
Int. Cl. B01d *23/20*
U.S. Cl. 210—150 21 Claims

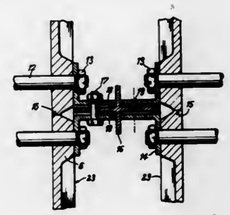


A rotary distributor of the kind comprising a rotatable structure having at least one radially extending distributor arm which serves to distribute an effluent liquid onto the bed of a percolating or biological filter, characterised in that the or each distributor arm is in the form of a channel having orifices in one or both side walls thereof, said orifices being disposed at different heights whereby the number of orifices able to discharge effluent at any time is dependent upon the level of effluent in the channel and hence the rate of flow of effluent being distributed.

3,777,891
TRICKLING FILTER PLANT

Johann Conrad Stengelin, Ohere Vorstadt 21, Tuttlingen, Germany

Filed May 18, 1971, Ser. No. 144,615
Int. Cl. B01d *33/28*
U.S. Cl. 210—150 21 Claims

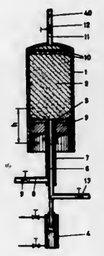


A trickling filter plant consisting of several circular plates immersed into a tank to about half their diametric height and mounted on a drive shaft; the individual plate is thereby composed of several sectors fastened to radial struts secured to the drive shaft and combined into stacks by bolts extending through reinforced spacer cams provided on the sectors.

3,777,892
APPARATUS FOR THE SEPARATION AND TREATMENT OF SOLID PARTICLES FROM A LIQUID SUSPENSION

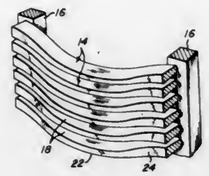
Henricus A. C. Thijssen et al., 2 Rontgenlaan, Son, Netherlands

Filed June 25, 1971, Ser. No. 156,717
Claims priority, application Great Britain, Jan. 27, 1971, 3,331/71
Int. Cl. B01d *29/00*
U.S. Cl. 210—178 18 Claims



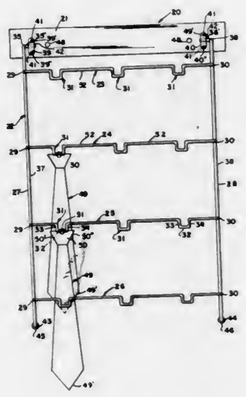
An apparatus for separation and purification of solids from a suspension and for leaching solid particles including a column having a piston at one end through which a liquid suspension of solid particles is suppled and through which the suspension liquid is removed. The piston is reciprocated to form a bed of solid particles; at the other end of the column the particles are progressively removed after being treated by melting or by mechanical scrapers with wash liquid being passed through the bed for cleaning or leaching purposes.

3,777,893
CLASSIFYING AND SCREENING APPARATUS
Marvin E. Ginaven, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio
Filed June 28, 1971, Ser. No. 157,254
Int. Cl. B01d 39/10
U.S. Cl. 210—499 10 Claims



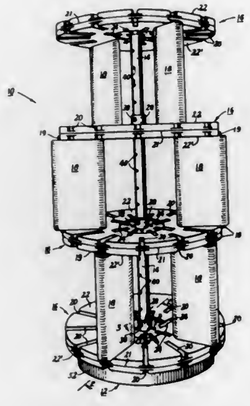
A screen unit including means defining a flow surface characterized by a series of laterally and longitudinally spaced openings, at least a substantial portion of which are laterally extended across the line of flow and of non-uniform dimension, the lateral extent thereof, in the sense of flow. In preferred embodiments the openings have the form of tapered slots defined by wave-line bars or curved wires of non-uniform thickness.

3,777,894
TIE RACK DEVICE
Robert W. Swenson, 515 Detroit Lake, Detroit Lakes, Minn.
Continuation-in-part of Ser. No. 49,765, June 25, 1970, abandoned. This application Nov. 10, 1971, Ser. No. 197,544
Int. Cl. A47f 7/12
U.S. Cl. 211—13 2 Claims



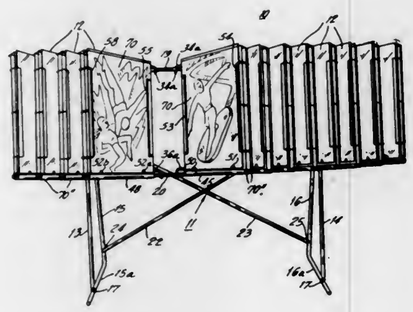
The invention comprises a clip on tie rack having a panel adapted to be attached to a wall and a wire rod ladder like framework attached to the panel. The framework is formed of a pair of vertical rod members and a plurality of horizontal rod members extending across from one vertical rod member to the other and attached thereto. Each horizontal rod member has a plurality of rectangular notches for attachment of the hook of a clip on tie.

3,777,895
DISPLAY STAND FOR YARD GOODS
Frank Weinstein, New York; George Mileos, Jackson Heights, both of N.Y., and Alan W. Anderson, Rowayton, Conn., assignors to Concord Fabrics, Inc., New York, N.Y.
Filed Apr. 23, 1971, Ser. No. 136,729
Int. Cl. A47f 7/18
U.S. Cl. 211—44 15 Claims



A yard goods display stand has a vertically extending central support member to which at least two vertically spaced racks are secured; each rack has a series of radial slots therein which extend to the outer edge of the rack and which are vertically aligned with the slots of the other rack to permit insertion of the ends of fabric bolts in opposed slots for support on the stand.

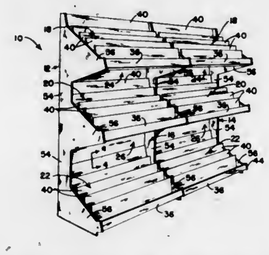
3,777,896
COMBINED DISPLAY AND STORAGE RACK
Mary Roberta Ehrlich, 425 E. 52nd St., New York, N.Y.
Filed Aug. 12, 1971, Ser. No. 171,279
Int. Cl. A47f 1/00
U.S. Cl. 211—49 D 9 Claims



A swingable storage rack, preferably for posters, paintings, and the like. The rack is provided with support means for pivoting about a supporting structure. Marginal holding means are provided along opposite faces thereof for displaying a work of art along each of the opposing faces. Gravity-feed storage means are provided between the display surfaces for holding and storing a plurality of copies of the works of art being displayed, which are maintained within the storage portion in tubular form. Dispensing means are provided at the bottom end thereof whereby the lowermost copy may be removed, causing the remaining copies to feed downwardly by gravity. The copy to be dispensed is lifted outwardly in a direction transverse to the plane of the work of art being displayed. Alternatively, the bottom most copy of the work of art being displayed may be drawn outwardly therefrom along a line substantially parallel to the plane of the work of art being displayed.

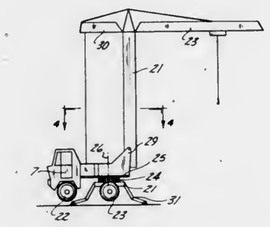
A plurality of such combined display-storage racks may be pivotally mounted upon a suitable support, whereby all such racks are swingable so as to facilitate observation of each of the works of art being displayed.

3,777,897
CONTINUOUS CASCADE SHELVING ASSEMBLY OF KNOCKDOWN CHARACTER
John F. Gray, Rt. 1, Box 233 N. Old Barrington Rd., Barrington, Ill.
Filed Oct. 18, 1971, Ser. No. 190,060
Int. Cl. A47f 7/00
U.S. Cl. 211—55 2 Claims



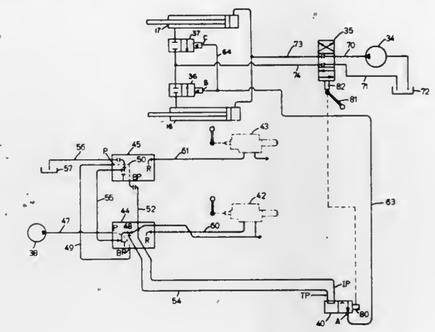
Continuous knockdown cascade shelving including preassembled cascade units arranged in tiers and supported by medial and end supports.

3,777,898
TRACTION AND STEERING DEVICE
Maurice Gallay, 151 Blvd. de Chinon, Joue Les Tours, France
Filed Oct. 8, 1971, Ser. No. 186,386
Claims priority, application Great Britain, Oct. 5, 1970, 35,916/70
Int. Cl. B66c 23/36
U.S. Cl. 212—38 5 Claims



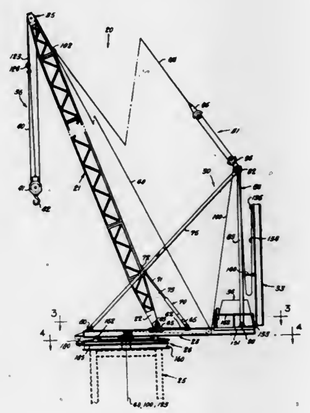
A traction and steering device comprising of a chassis, a rotatable platform pivotably mounted on the chassis, a front axle and a drive and steering unit connected to the rotatable platform, a rear axle connected to the chassis and lowerable stabilizing arms which are connected to the chassis and operate to lift the device above the ground. The front axle is used to drive and steer the vehicle whereas the rear axle is used merely as a load bearing axle.

3,777,899
BOUNCE-PREVENTING CONTROL FOR HYDRAULIC CYLINDER
Wallace J. Witwer, Cedar Rapids, Iowa, assignor to Harrischfeger Corporation, Milwaukee, Wis.
Filed Aug. 14, 1972, Ser. No. 280,482
Int. Cl. F15b 11/08; B65c 23/06
U.S. Cl. 212—55 4 Claims



A crane boom is raised and lowered by the extendable and retractable cylinder rod of a hydraulic boom hoist cylinder. A main pump supplies pressurized operating fluid to the cylinder through a lever controlled manually operable three-position (raise, lower, neutral) main control valve. A pilot valve operating holding valve on the cylinder maintains the rod in extended position. To prevent bounce and fluctuation as the cylinder rod is retracted and the boom is lowered, the pilot valve is supplied with pilot fluid from a fluid source other than the cylinder or main pump and is operated by the same lever that operates the main control valve.

3,777,900
BUILDING CRANE
Jack J. Brewer, Graham, Tex., assignor to Sam Po Wallace Co., Inc., Dallas, Tex.
Filed Dec. 20, 1971, Ser. No. 209,583
Int. Cl. B66c 23/08
U.S. Cl. 212—58 R 14 Claims



A crane for construction of buildings and the like including a climbing support structure adapted to be raised as the build-

ing is constructed, a carrier ring on the climbing support structure for rotatably mounting the crane, a boom base platform rotatably mounted on the ring for supporting the base end of a boom, a boom mounted at a base end for movement across a diameter of the ring and rotation with the boom platform, a gantry assembly, a boom topping bridle between the free end of the boom and the gantry assembly for boom support and manipulation, an extension platform for supporting a counterweight, and a drive apparatus for rotating the boom on the base ring. The boom together with the climbing support structure are lifted and secured at desired heights as a building is erected with the crane. The movement of the lower end of the boom permits adjustments in the working area of the crane.

3,777,901

DERRICK CRANES

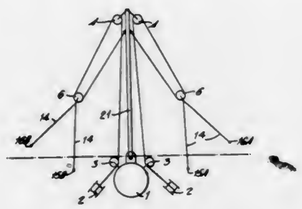
Robert Morrison, Greenock, Scotland, assignor to Speedcranes Limited, Gourock, Scotland

Filed Jan. 10, 1972, Ser. No. 216,625

Claims priority, application Great Britain, Jan. 8, 1971, 1,040/71

Int. Cl. B66c *23/06*

U.S. Cl. 212—58 **5 Claims**



A derrick crane in which the rigging is secured by at least two pendant members to the deck or base member at determined positions transversely of the central position of the jib and is connected to pulley members interposed in the rigging of the crane and thereby to the head of the jib and to the head of the mast, operation of the winches in the same direction effecting a topping or lowering of the jib and operation of the winches in opposite directions effecting a slewing of the jib.

3,777,902

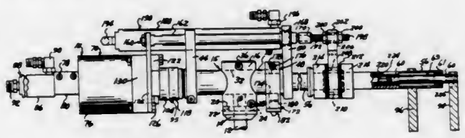
WORKPIECE-GRIPPING REACH AND TURNOVER ATTACHMENT

Ronald D. Potter, Waterford, Mich., assignor to Auto-Place, Inc., Troy, Mich.

Filed June 5, 1972, Ser. No. 259,757

Int. Cl. B66c *1/44*

U.S. Cl. 214—1 BB **10 Claims**



Adapted to be mounted upon a vertically-movable and horizontally-rotatable support shaft is a head structure containing parallel horizontal lower and upper guide bores. Slidably mounted in the upper guide bores is an elongated guide rod from the rearward end of which depends a mounting plate carrying a fluid-operated rotary actuator with a hollow output shaft having a circumferentially-adjustable drive connection with an elongated hollow arm shaft slidably mounted in the lower guide bore and having a fixed workpiece-gripping jaw secured to its outer end.

Mounted on the rearward end of the rotary actuator is a lower fluid-operated reciprocatory jaw-actuating motor, the lower piston rod of which is drivingly connected to a jaw-operating rod extending forward through the hollow output and hollow arm shaft to a movable workpiece-gripping jaw mounted thereon adacent the fixed workpiece-gripping jaw. Also mounted on the head structure is an upper fluid-operated reciprocatory reach motor, the upper piston rod of which is disposed parallel to the lower piston rod. Depending from the forward end of the upper piston rod is the upper end of a drag link, the lower end of which is operatively connected to the shaft arm to reciprocate the shaft arm while permitting relative rotation therebetween.

In operation the reach motor moves the hollow shaft arm back and forth by means of the drag link, the rotary actuator rotates the shaft arm and workpiece-gripping jaws through a predetermined angle, and the jaw-operating motor moves the movable jaw toward and away from the fixed jaw to grip or release the workpiece respectively.

3,777,903

APPARATUS FOR FORMING AND CONVEYING STACKS OF FLAT ARTICLES, ESPECIALLY SHEET ARTICLES

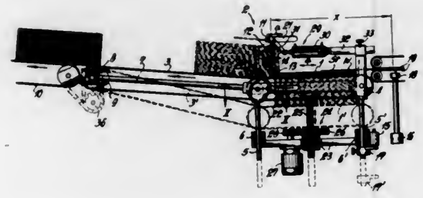
Gustav Kuckhermann, Lengerich, Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed May 12, 1971, Ser. No. 142,730

Claims priority, application Germany, May 19, 1970, P 20 24 398.5

Int. Cl. B65h *31/30*

U.S. Cl. 214—6 H **5 Claims**



In apparatus for forming and conveying stacks of sheet articles arriving on a supply conveyor, the apparatus comprising a stack conveyor on which the articles are successively deposited in superposed relationship aligned against a displaceable abutment whilst the stack conveyor is not feeding and by which each completed stack is fed to a discharge conveyor, the time interval between completion of one stack and commencement of formation of the next stack is minimised and the possible height of efficient stacking is increased by providing for lowering of the stack conveyor in dependence on the growth rate of a stack being formed so that the uppermost article in the stack being formed is substantially at a constant level slightly below the discharge end of the supply conveyor, the stack conveyor being raised again as a completed stack is being transported away and before a new stack is formed.

3,777,904

DAMPENING SYSTEM FOR THE TRANSFER TABLE OF A BALE WAGON

Gene R. Butler; Lee D. Butler, and Robert A. Gibson, all of Kingsburg, Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

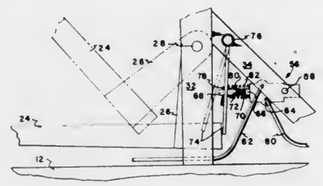
Filed Sept. 14, 1971, Ser. No. 180,370

Int. Cl. B65g *57/28*

U.S. Cl. 214—6 B **1 Claim**

A dampening system for the transfer table of a bale wagon having a receiving table, transfer table and load bed arranged in tandem. The transfer table is pivotally mounted intermediately between the receiving table and load bed and is powered up from a normal horizontal tier forming position to a vertical position, where the tier is deposited on the load bed, by a remotely controlled single acting hydraulic cylinder, the hydraulic cylinder being actuated by a control valve. From the vertical position, the transfer table is allowed to free fall to the normal horizontal position. Although several embodiments for dampening the impact of the transfer table are shown, common to all is the provision of a flow restricting device and a control responsive to the movement of said transfer table for directing fluid from said cylinder through a flow restricting device during a selected interval of the transfer table's free fall.

To dampen the impact of the free falling transfer table, one embodiment of the present invention, comprises a selector valve and associated flow restrictor interposed between said single acting cylinder and the control valve. The selector valve is mechanically controlled by a lever arm operatively connected thereto and pivotally mounted behind the transfer table for selective engagement therewith such that during the latter stages of free fall, fluid is directed through the restrictor, thereby reducing the velocity of the free falling table and dampening its impact.



A second type of embodiment utilizes a flow restricting device in a line extending from the anchor end of said single acting cylinder and further provides an unrestricted exit line leading from a side port in said cylinder, said side port being particularly spaced from the anchor end to allow fluid to exit therethrough as the transfer table free falls from its vertical position to a point just above the normal horizontal position, at which point the piston of said cylinder has moved past said side port towards the anchor end of said cylinder and the remaining fluid in said cylinder must necessarily exit through the line having the flow restricting device therein. Thus, decreasing the velocity of the piston and transfer table which results in a chusioned impact when the transfer table reaches its normal horizontal position.

A final type of embodiment for a dampening system for the transfer table comprises a single acting cylinder having an elongated bore formed in the anchor end thereof, the bore extending to and joining a single port formed at the anchor end of the cylinder. A dowel pin of slightly less diameter than said bore is mounted to the working face of the cylinder's piston and extends therefrom toward the anchor end of the cylinder in alignment with said bore. A dampening effect is realized once the dowel pin begins to move into the bore, as the flow of exiting fluid is restricted by the decrease in effective cross sectional area of the bore.

3,777,905

PILE OF COILS COMBINED TO A HANDLEABLE UNIT

Edward O. Morris, Rome, Ga., assignor to N.V. Bekaert S.A., Zwevegem, Belgium

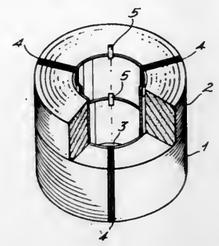
Filed Aug. 27, 1971, Ser. No. 175,541

Claims priority, application Netherlands, Sept. 1, 1970, 7012906

Int. Cl. B65g *1/14*

U.S. Cl. 214—10.5 R **1 Claim**

A pile of coils combined into a handleable unit includes a plurality of coils each having a rigid core or a rigid casing which are linked together by a plurality of connecting elements. The connecting elements may be U-shaped or H-



shaped in design. The pile may include one or more stacks and/or layers of wire coils.

3,777,906

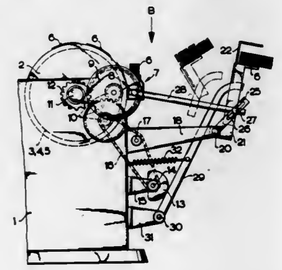
DEVICE FOR REMOVING PACKAGING BAGS IN STACKS FROM A COLLECTOR LOCATED DOWNSTREAM OF THE DELIVERY DRUM OF A PACKAGING BAG MACHINE

Hans Stolzmann, 176, Pfaffenberger Weg, and Hans-Joachim Stolzmann, 14, Kempen, both of 565 Solingen, Germany

Filed May 25, 1972, Ser. No. 256,858

Int. Cl. B31b *1/98*

U.S. Cl. 214—1 BD **1 Claim**



A device for removing packaging bags in stacks from a collector located downstream of the delivery drum of a packaging bag machine, wherein a U-shaped gripper, the free ends of the legs of which are bent in the direction towards the collector, co-operates with a collector arranged downstream of the delivery drum of the packaging bag machine. The gripper is displaceably guided by its legs owing to tension from helical springs acting on its web within one of the end walls of a substantially frame-shaped arm capable of being rotatably displaced in a vertical plane by means of a driven eccentric disc. The gripper is displaceable by a lever arm controlled by a driven cam with a view to clamping the stack of packaging bags on the gripper between the bent legs of the latter and the frame-shaped arm which is capable of being rotatably displaced or with a view to releasing the stack of packaging bags, respectively.

3,777,907

METHOD AND APPARATUS FOR FEEDING NEWSPAPERS

Warren W. Hannon, and Charles N. Hannon, both of Olathe, Kans., assignors to Warren W. Hannon, Olathe, Kans.

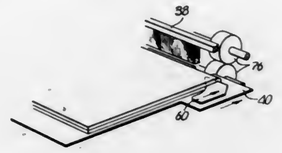
Continuation of Ser. No. 136,090, April 21, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 338,382

Int. Cl. B65h *3/22, 3/26*

U.S. Cl. 214—8.5 F **6 Claims**

Feeder apparatus for folded newspaper sections which has particular utility in the case of a relatively thin outer section

which receives a number of stacked inserts causing the total supplemented section to be of substantial thickness. The apparatus includes a hopper which supports an upright stack of the sections with their hinge-like fold lines facing the direction of delivery. A shuffle plate forming the floor of the hopper along with retractable newspaper engaging pins reciprocates laterally of the stack and, during its forward stroke, carries the lowermost newspaper section in the stack therewith to partially withdraw the section from the stack. A pair of blades reciprocating on opposite sides of the plate in timed relationship therewith, slip between the folds of the section and engage the fold line of the section after slight initial movement of the lower half of the newspaper jacket section by the plate and pin structure. Continued movement of the blades at a faster rate than the plate causes the section to be moved relative to the plate and effect introduction thereof by the blades between feed rollers which complete the withdrawal of the section from the stack. The retractable pin structure on the plate engages the lowermost supplemented newspaper section only during the forward stroke of the plate to assure movement of the section therewith and retracts during the return stroke to prevent engagement with the next section in the stack.



3,777,908

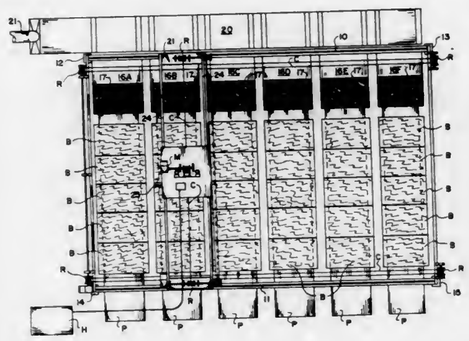
MECHANICAL HOPPER FEEDER

Alex J. Keller, 2224 Scottwood Dr., Gastonia, N.C.

Filed July 28, 1972, Ser. No. 275,942

Int. Cl. D01g *13/00*

U.S. Cl. 214—16 R **4 Claims**



The invention relates to an apparatus for mechanically loading fibers into the hoppers of fiber feeders.

3,777,909

APPARATUS FOR LOADING HOTMIX IN A SURGE BIN

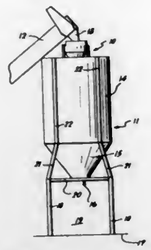
Lamson Rheinfrank, Jr., Kansas City, Mo., assignor to Standard Havens Systems Inc., Glasgow, Mo.

Filed Mar. 11, 1970, Ser. No. 18,651

Int. Cl. B65g *65/32*

U.S. Cl. 214—17 C **1 Claim**

Hotmix is continuously delivered by conveyor to the top of a surge bin, and is intermittently held back from dropping into the bin by a pulse feeder which continuously receives the hotmix and pulsingly discharges the hotmix to the surge bin. The feeder includes an open topped container with a central discharge opening which is intermittently opened and closed by pneumatically activated clam gates.



3,777,910

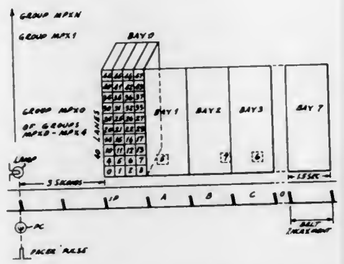
TAPE CONTROLLED ORDER PICKING SYSTEM

Dale A. Baker, and John M. McCarthy, both of Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Nov. 5, 1971, Ser. No. 195,930

Int. Cl. B65g *47/10*

U.S. Cl. 214—16 B **15 Claims**



A punched paper tape controlled electrical control system for operating solenoids to release articles from gravity storage lanes in a warehouse onto a conveyor by which they are conveyed to an output station. The tape controls release of the articles so that they will exit the storage racks, one article per conveyor increment, in a predetermined order. The tape contains drop data for controlling dropping of articles from storage lanes, and shortage data for controlling a printer to print the bay, lane and serial number of an article if a photocell detector fails to detect exit thereof. The tape also contains control data for controlling purge of an order, that is, completion of an order without starting the partially overlapping next order punched on the tape. The tape further contains other control data for operation of the system. The system operation is synchronized by means of a rotary cam switch preferably driven by the conveyor to control the time of dropping of articles and checking for shortage at the photocell detector.

3,777,911

APPARATUS FOR MANIPULATING CONTAINERS FOR CIGARETTES OR THE LIKE

Ulrich Bornfleth, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg-Bergedorf, Germany

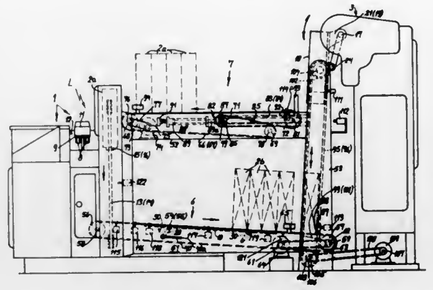
Continuation of Ser. No. 878,674, Nov. 29, 1969, abandoned. This application Mar. 6, 1972, Ser. No. 232,223

Claims priority, application Great Britain, Nov. 25, 1968, 55,852/68

Int. Cl. B65g *47/69*

U.S. Cl. 214—16.4 C **11 Claims**

Apparatus for transporting trays between the tray filling unit of a cigarette making machine and an evacuating unit which dumps the contents of filled trays into the magazine of a cigarette packing machine comprises a pair of superimposed storing units and an intermediate conveyor which transports filled trays from the lower storing unit to the evacuating unit.



The upper storing unit receives empty trays directly from the evacuating unit and delivers them directly to the filling unit. The filling unit delivers filled trays directly to the lower storing unit.

3,777,912

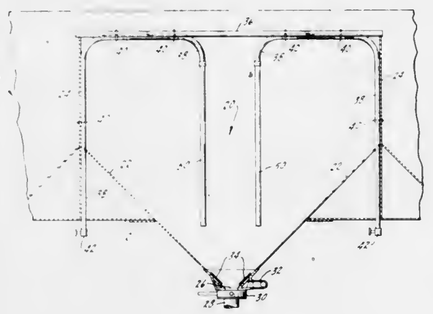
PRESSURE FLOW DISCHARGE MECHANISM

Ronald G. Deeks, 1521 Warland Rd., Oakville, Ontario, Canada

Continuation of Ser. No. 21,573, March 23, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,387

Int. Cl. B65g *67/24*

U.S. Cl. 214—152 **1 Claim**



An improved method of and means for effecting the discharge of commodities from hopper-type railroad tank cars. The hopper includes a discharge port, for removing the material, having a gas inlet positioned adjacent thereto. Rubber hoses are suspended over each hopper symmetrically about the transverse centerline and on the longitudinal centerline. The top ends of these hoses are fixed to air supply pipes and a structural support also holds the top rigid while the bottom ends of the hoses are free to whip. Air is passed through the rubber hose to effect a mechanical whipping action which knocks compacted material down into the hopper bottom.

3,777,913

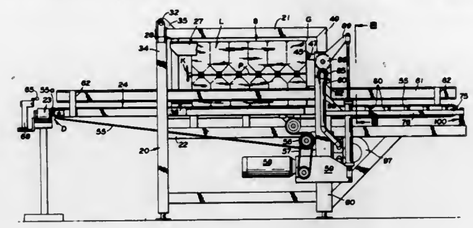
MACHINE FOR REMOVAL OF BOTTLES FROM SHIPPER BAGS AND PLACEMENT THEREOF ON A CONVEYOR

Warren J. Schieser, Columbus, and Stanley E. Vickers, Hideaway Hills, both of Ohio, assignors to Corco, Inc., Worthington, Ohio

Filed July 28, 1972, Ser. No. 276,098

Int. Cl. B65g *59/04*

U.S. Cl. 214—8.5 D **16 Claims**



A machine which receives a bag of double-stacked bottles and automatically unloads the bottles from the bag, after one end is opened, and places them on an unloader conveyor in a single layer. The bottles, for example, may be large single-service plastic bottles and the bag may be of flexible plastic film. The machine includes a transfer hopper in which the bag of double-stacked bottles is placed where the open-ended bag is stripped therefrom, and which is moved to an unstacking station to position the lower layer of bottles on the unloader conveyor. It also includes, at the unstacking station, a vacuum-lift rack which automatically rotates over the top layer of bottles, grips them by vacuum and moves over the conveyor to deposit the upper layer of bottles upright thereon behind the previously positioned lower layer. The bottles thus positioned on the unloader conveyor in the single layer may then be positioned, by movement of that conveyer, in single file on a feed conveyor which may be the loader conveyer of a bottle filler.

3,777,914

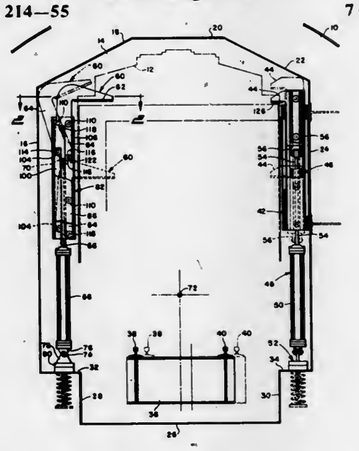
RETRACTABLE RAILROAD CAR CLAMP

Edward E. Cheek, Cleveland, and Raymond H. Sabin, Willoughby Hills, both of Ohio, assignors to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed Apr. 6, 1972, Ser. No. 241,652

Int. Cl. B65g *67/54*

U.S. Cl. 214—55 **7 Claims**



There is provided a clamping apparatus for clamping railroad cars into a rotary dumper capable of inverting cars to

discharge the contents. The clamp is characterized in having a jaw member pivotally mounted on one end of an extensible arm. Stationary guide means are provided for coaction with the jaw to guide it along a predetermined path. Means are also provided coacting between the support and the jaw member for tilting the jaw member so that it clears the maximum composite envelope of locomotive profiles within the opening provided in the adjacent end ring of the rotary railroad car dumper.

3,777,915

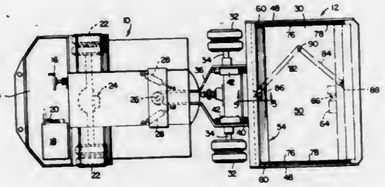
OPEN BUCKET EJECTOR

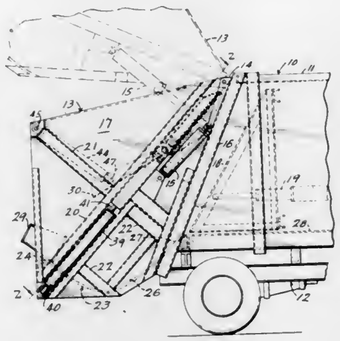
D. M. Reed, P.O. Box 652, Martin, Ky.

Filed June 28, 1972, Ser. No. 266,967

Int. Cl. E02f *3/00*; **B65f** *3/00*

U.S. Cl. 214—82 **3 Claims**





An open bucket ejector mechanism operated by a rack and pinion utilizing an accordion type arm structure which serves to protect hoses for a hydraulic actuating mechanism, the accordion protector serving additionally as a hose retractor.

3,777,916

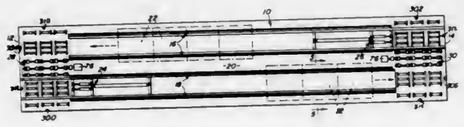
ARTICLE HANDLING SYSTEM

David E. Lutz, 330 Washington Ln., Carlisle, Pa.

Filed Nov. 24, 1971, Ser. No. 201,807

Int. Cl. B60p *1/52*, *1/00*

U.S. Cl. 214—519 **11 Claims**



An article handling system for vehicles for moving articles through an endless, generally rectangular path comprising a pair of spaced, parallel walking beam conveyors which intersect with a pair of tranversely extending conveyors at the respective ends of the walking beam conveyors.

3,777,917

TAILGATE FOR A REAR LOADER REFUSE VEHICLE

William A. Herpich; Donal W. Chaney, both of Galion, Ohio, and George W. Palmer, Durant, Okla., assignors to Peabody Galion Corporation, Galion, Ohio

Continuation-in-part of Ser. No. 165,517, July 23, 1971. This application Apr. 5, 1972, Ser. No. 241,183The portion of the term of this patent subsequent to July 17, 1990, has been disclaimed.

Int. Cl. B65f *3/00*

U.S. Cl. 214—83.3 **5 Claims**

A rear loading refuse vehicle having a tailgate that is pivotally mounted at its upper forward end to the rear of the vehicle body. The tailgate has a hopper-like bottom into which refuse is dumped. Straight, upwardly inclined, parallel guide tracks are provided, one in each of the sidewalls of the tailgate and a slide member is reciprocable in each guide track. Each of a first pair of lineally extensible power cylinders is mounted at its lower end on the outer side of the sidewall and extends upwardly and forwardly in alignment with the respective guide track, the upper end of the rod of the cylinder being connected directly to the respective one of the slide members. A rectangular packer blade extends across the tailgate. Pivots carried by the slide members mount the upper end of the packer blade. Second extensible power cylinders are located interiorly of the tailgate at the inner sides of the side walls, the upper ends thereof being pivotally mounted at the upper rear corners of the tailgate and the lower ends thereof being pivotally connected to the sides of the packer blade intermediate its ends. A sliding fall-back shield is attached to the slide members and extends across between the side walls of the tailgate above the upper end of the packer blade where it overlaps a stationary fall-back shield which closes off the upper forward portion of the tailgate.

3,777,918

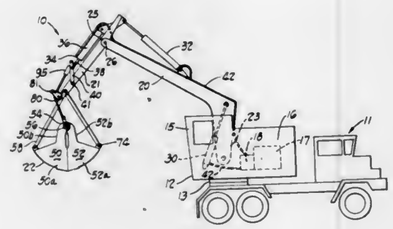
MATERIAL HANDLING IMPLEMENT

Claude L. Barber, Baker, La., assignor to Yaun Manufacturing Company, Inc., Baton Rouge, La.

Filed Feb. 2, 1970, Ser. No. 7,706The portion of the term of this patent subsequent to Sept. 11, 1974, has been disclaimed.

Int. Cl. E02f *3/75*

U.S. Cl. 214—138 R **4 Claims**



A clam shell material handling implement which is connectable to a back hoe type material handling apparatus is disclosed. The clam shell implement includes hinged jaws each connected to the back hoe dipstick by articulating linkages. The back hoe bucket ram is connected to the jaw hinge by a cable so that the jaws are opened and closed by operation of the bucket ram. The linkages carry a cable guiding sheave construction. The implement is connectable as a unit to the dipstick without modification of the back hoe machine.

3,777,919

MOBILE EXCAVATOR

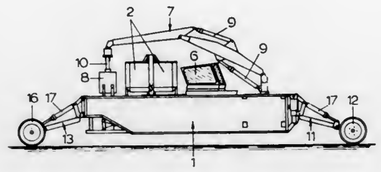
Nicolaas Gerardus Konijn, Berkhout, Netherlands, assignor to Konijn Machinebouw, Hoorn, Netherlands

Filed Apr. 13, 1972, Ser. No. 243,699

Claims priority, application Netherlands, Apr. 15, 1971, 7105085

Int. Cl. B60f *3/00*

U.S. Cl. 214—147 G **15 Claims**



An excavator vehicle with a crane mounted near one end rotatably about a vertical axis. The vehicle has at or near the said end two support legs with adjustable length, adapted to be pivoted at their end connected to the vehicle about a horizontal and a vertical axis and to be fixed in both directions at different angular positions relative to the vehicle. The two support legs have at their free end an at least substantially horizontal support or a wheel adapted to be rotated about a horizontal axis. The vehicle has, at its other end, a third support leg which is also pivotable at its end mounted on the vehicle about a vertical and a horizontal axis and may be fixed in both directions in different angular positions relative to the vehicle. The third support leg has at its free end a vertical plate or at least one wheel rotatable about a horizontal axis.

3,777,920

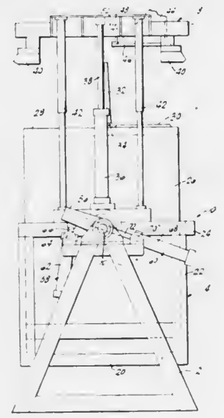
APPARATUS FOR DISCHARGING TOP DISCHARGE BINS

Delmar R. Wiese, Blue Springs, Nebr., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed May 5, 1971, Ser. No. 140,471

Int. Cl. B65g *65/34*

U.S. Cl. 214—314 **5 Claims**



Apparatus for discharging the contents of bins having top walls provided with discharge openings and hinged doors movable between closed positions overlying the discharge openings and upwardly projecting open positions. The apparatus comprises a main frame, a bin support frame rotatably mounted on the main frame for rotation about a substantially horizontal axis between a bin receiving position and a bin discharge position, and a retention frame which is movable toward and away from the support frame for clamping a bin on the support frame and releasing the bin for removal from the frame. A discharge funnel is mounted on the retention frame for movement to a position overlying the bin discharge opening and a bumper member on the retention frame is engageable with the open bin door for holding the door open during rotation of the support frame to discharge the bin contents by gravity through the discharge funnel. A plurality of fluid actuated cylinder assemblies on the main frame cooperate to facilitate rotation of the support frame to a position in which the bin contents will flow through the discharge funnel.

3,777,921

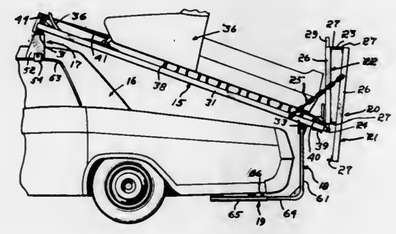
CARRIERS ATTACHABLE TO AUTOMOBILES AND FOR USE IN CARRYING VEHICLES

Bernard J. Nelson, R.F.D. 1, Rockland, Maine

Filed Feb. 24, 1971, Ser. No. 118,276

Int. Cl. B60r *9/00*

U.S. Cl. 214—450 **5 Claims**



A carrier is disclosed that is attachable to automobiles of various types and includes a support having a ramp hingedly connected to its rear end and consisting of transversely hinged sections. The ramp may be unfolded for use in loading and unloading vehicles and folded into a substantially vertical position and then connected to the support to provide a barrier at the rear end thereof. The attachment of the carrier depends on the type of automobiles but the invention includes front and rear mounts. Desirably, both mounts are laterally adjustable and desirably the connection between the support and either or both mount is pivotable.

3,777,922

LOADER FOR ELEVATING A LOAD ONTO AN AUTOMOTIVE VEHICLE TOP

Paul A. Kirchmeyer, Redmond, Wash., assignor to Reinell Boats, Inc., Marysville, Wash.

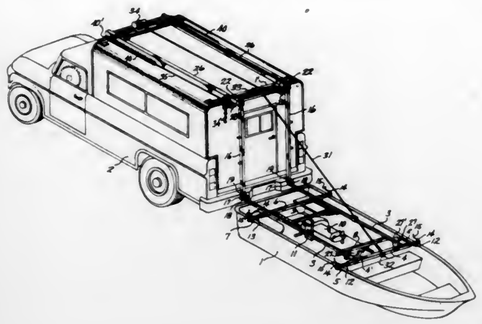
Filed Feb. 10, 1971, Ser. No. 114,203

Int. Cl. B60r *9/00*

U.S. Cl. 214—450 **12 Claims**

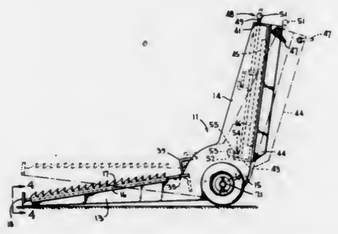
A load-supporting frame is elevated to the top of an automotive vehicle, such as a camper, and shifted forward to a stowed position. In loading a boat a frame attached to the boat in horizontal attitude is first tilted into upright position alongside upright supporting links, followed by conjoint tilting of the frame and such links into horizontal position at the top of the vehicle for conjoint shifting forward into stowed position. Other types of boat are hoisted along upright members which are tilted into horizontal position when the load is raised, and

shifted forward with the load into stowed position. Elevation of the boat or other load and shifting of the load forward along



the top of the vehicle into stowed position is accomplished by a power drum pulling a single line which is connected to the load support.

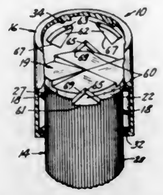
3,777,923
PALLET REMOVING TRUCK
Freeman Padgett, Jacksonville, Fla., assignor to Ronnie Freeman Padgett, Jacksonville, Fla., a part interest
Continuation-in-part of Ser. No. 789,287, Jan. 6, 1969, abandoned. This application Dec. 23, 1970, Ser. No. 101,047
Int. Cl. B60p *1/04*
U.S. Cl. 214—506 14 Claims



A truck for unloading freight on pallets or skids from a tractor trailer, or the like, includes a pair of horizontally extending forks, having upwardly extending teeth for gripping the skid or pallet wooden bottom. The forks are pivotable about a common axis, on which are mounted two sets of dual wheels. Extending from the axis, in a generally upward direction, are arms joined by a transverse strut carrying a shackle. The upwardly extending teeth on the horizontally extending forks are selectively removable so that they can be replaced as they wear.

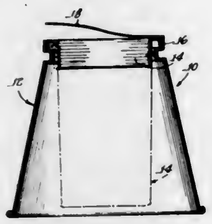
3,777,924
SAFETY CLOSURE
James H. Kayser, Maplewood, and Gregory A. Younker, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 10, 1970, Ser. No. 88,317
Int. Cl. B65d *55/02*; A61j *1/00*
U.S. Cl. 215—9 22 Claims

A safety closure to restrict the opening of containers by children. The closure has an inner cap which is operable to open the container upon manual manipulation of a grasping surface on the inner cap. The closure also includes an inseparable outer cap which will not operate directly to open the closure, but which must be moved against the bias of a spring from a position at which it encloses the grasping surface to a position at which the grasping surface may be manually



manipulated. The outer cap may be engageable with the inner cap to move the inner cap to a sealing position on the container by manipulation of the outer cap, or the inner cap may be spring biased to its closed position.

3,777,925
DISPOSABLE NURSING DEVICE
Robert J. Eckholm, 238 Madison Ave., New York, N.Y.
Filed Dec. 23, 1971, Ser. No. 211,425
Int. Cl. A61j *9/00*
U.S. Cl. 215—11 E 9 Claims

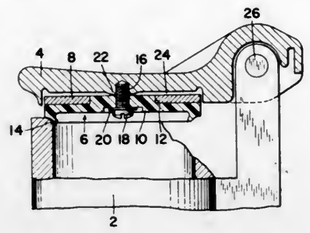


A disposable, nesting nursing device has an upwardly tapering outer housing of relatively rigid or stiff material open at the top and bottom. A collapsible thin walled bag open at the top is secured in the housing to contain liquid and the top of the housing is adapted to receive a nipple. In one embodiment, the open top of the bag is integrally formed with and supported by the upper, smaller end of the housing. In other embodiments, the bag is separately formed and the open top of the bag is fixed to the top of the housing or fixed in the upper half of the housing. When the nursing devices are nested, the top of each lower device pushes the bag of the device above it upward. When filled with liquid, the bag of each device extends downward within the housing.

3,777,926
CLOSURE FOR A CONNECTOR BOX
Alfred Otto Hugo Stieler, Heilbronn/Neckar, and Gerhard Leonhard Emil Billmann, Rappenau, both of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Oct. 6, 1971, Ser. No. 186,900
Int. Cl. B65d *51/18*
U.S. Cl. 220—29 5 Claims

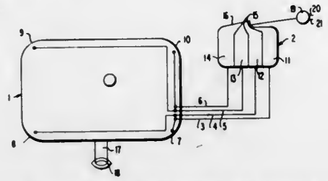
This invention provides a closure for a connector box. The closure includes a lid located adjacent an opening in the box which is coupled to the box by means of a hinge. A sealing member of resilient material is wobbingly coupled to the lid through a convex surface on at least one of the mutually facing surfaces of the lid and the sealing member. A spring urges the lid toward a closed position facing the opening so that the sealing member is held by the lid between the box and the lid by

the force of the spring. Since the sealing member is wobblingly coupled to the lid, its position self-adjusts to compensate for



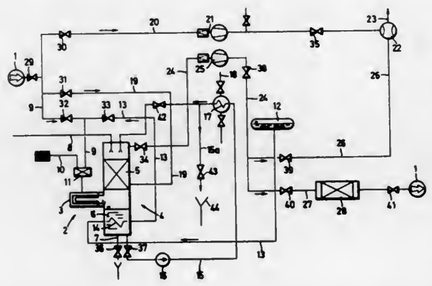
dimensional discrepancies in the assembly when the sealing member contacts the box during closing of the lid to seal the opening.

3,777,927
FUEL TANK ESPECIALLY FOR VEHICLES
Ludwig Fricker, Stuttgart, Germany, assignor to Daimler-Benz AG, Stuttgart, Germany
Claims priority, application Germany, June 6, 1970, P 20 29 546.9
Filed June 16, 1971, Ser. No. 153,619
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 R 9 Claims



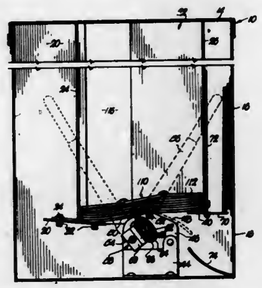
A fuel tank, especially for motor vehicles, which is equipped with a vent system that consists of vent lines, each leading from an upper corner of the fuel tank to the expansion tank.

3,777,928
PROCESS AND APPARATUS FOR PURGING GAS-CONTAINING STORAGE TANKS IN VESSELS
Drago Kober, Rondorf/Cologne, Germany, assignor to Liquid Gas Anlagen Union GmbH, Remagen-Rolandseck, Germany
Filed Sept. 21, 1971, Ser. No. 182,394
Claims priority, application Germany, Sept. 21, 1970, P 20 46 452.2
Int. Cl. A62c *3/12*; B01j *7/00*; B65d *25/38*
U.S. Cl. 220—88 B 17 Claims



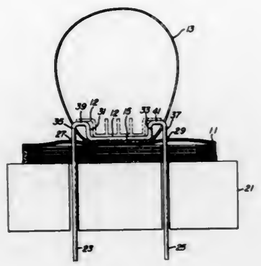
A process and apparatus for purging gas storage tanks comprises generating a gas inert with respect to the stored gas, displacing the stored gas in the tank with part of the inert gas and admixing another part of the inert gas with the stored gas displaced from the tanks, whereby in the case of combustible stored gas explosive mixtures are avoided. The inert gas may be generated by burning a portion of the stored gas or another fuel.

3,777,929
NEWSPAPER VENDOR
Warren W. Hannon, P.O. Box 103, Olathe, Kans., and Charles N. Hannon, Olathe, Kans., assignors to said Warren W. Hannon, by said Charles N. Hannon, Olathe, Kans.
Continuation-in-part of Ser. No. 751,011, Aug. 7, 1968, Pat. No. 3,608,891, which is a continuation-in-part of Ser. No. 665,540, Sept. 5, 1967, abandoned. This application Apr. 16, 1971, Ser. No. 134,675The portion of the term of this patent subsequent to Dec. 15, 1981, has been disclaimed.
Int. Cl. G07f *11/12*
U.S. Cl. 221—17 14 Claims



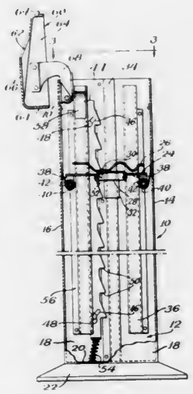
A manually operated, coin-controlled vendor permits removal of only one newspaper from a stack thereof within the cabinet of the vendor per each deposit of a preselected combination of coins. Within the cabinet the lowermost newspaper in the stack is supported along its leading and trailing edges, respectively, by separate, spaced-apart structures and in its middle portion by a series of laterally spaced, upstanding plates. A number of oscillatory grippers interspersed between the plates and controlled by an external lever arm are swung toward the rear structure into engagement with the lowermost newspaper when the arm is released by the deposit of the coins and moved in one direction. This action buckles the rear portion of the lowermost newspaper as the leading edge thereof is pulled free, and when the arm is returned to its original position, the grippers are swung toward the front structure still gripping the newspapers to unbuckle the newspaper and displace the free leading edge thereof toward the outlet of the cabinet. By reaching into the outlet, the leading edge of the newspaper may then be gripped for subsequent manual removal of the newspaper from the cabinet by pulling the trailing edge thereof free from the stack. A weight placed on top of the stack assures dispensing of the last few papers thereof by holding the same flat as the grippers oscillate therebeneath and also actuates special apparatus when the stack is depleted which, in turn, allows a display newspaper to drop through the outlet to sell out the vendor.

3,777,930
SHOULDERED WICKETS
Alvin E. Ericson, Chicago; George C. Haettinger, and Ernest T. Pedersen, both of La Grange, all of Ill., assignors to Union Carbide Corporation, New York, N.Y.
Filed Apr. 24, 1972, Ser. No. 246,613
Int. Cl. B65h *3/58*
U.S. Cl. 221—26 11 Claims



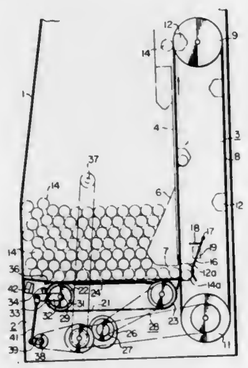
A shouldered wicket for holding a stack of flat flexible articles such as plastic packaging bags or sheets which are to be removed one at a time from the top of the stack, the shoulder portions of the wicket extending upwardly above the rest of the wicket to facilitate article removal from the wicketed stack.

3,777,931
DISPENSER WITH SPRING-URGED, AUTOMATIC-STOP PRESSURE PLATE
Larry J. Fleming, West De Pere, Wis., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Mar. 18, 1971, Ser. No. 125,517
Int. Cl. B65h *1/24*
U.S. Cl. 221—57 9 Claims



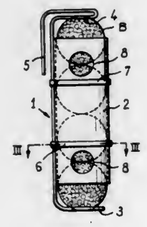
A device for dispensing napkins or the like. The napkins are received in an elongated chamber, preferably upright, and are mounted on a movable pressure plate in the chamber. Means are provided for guiding movement of this plate in the chamber in forward and reverse directions, as up and down. Springs are provided to normally bias the plate in an upward direction. Elongated catch bars are provided in the chamber and have a plurality of catches thereon. The elongated catch bars are movable between a first position at which the catches are operative and a second position at which the catches are inoperative. Members are provided on the plate to engage at least one of the catches when the elongated bars are in the operative position to thereby prevent forward or upward movement of the plate. Means are provided on a dispenser cover for moving the elongated bar to the operative position when the cover is open and to the inoperative position when the cover is closed.

3,777,932
AUTOMATIC COP FEEDER
Isamu Matsui; Shozi Sakai, and Masanobu Nishiyama, all of Kyoto, Japan, assignors to Murate Machinery, Ltd., Kyoto, Japan
Filed June 29, 1971, Ser. No. 157,878
Int. Cl. B65h *5/02*
U.S. Cl. 221—204 13 Claims



Automatic cop feeder for feeding cops mounted in a container one by one in succession through a delivery path formed in the container to the next operational station while breaking possible cop bridges near inlet of the delivery path by giving shaking effect to cops in the container through alternate forward and return i.e. to and fro movements of an endless belt mounted at the bottom of the container.

3,777,933
GOLF BALL HOLDER
Adolphe Joliot, 43 Rue de Lisborne, Paris, France
Filed May 2, 1972, Ser. No. 249,558
Claims priority, application France, May 6, 1971, 7116343
Int. Cl. A63b *57/00*
U.S. Cl. 221—309 7 Claims

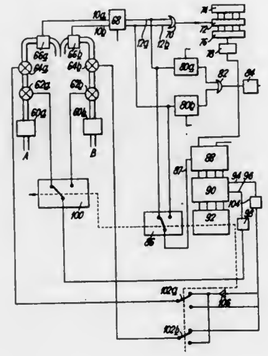


Golf ball holder comprising an anchoring support, a tubular element adapted to receive the balls, a bottom end and an upper end stop formed integrally with said support, said tubular element being adapted to be fitted between said end stops, and elastic means for keeping said tubular element on said support in an intermediate ball-retaining position spaced in relation to said end stops, whereby the balls can be introduced from the top and removed from the bottom of said element by reason of its elastic mobility in relation to said support. The ball holder is thus constituting both a convenient container and a dispenser of balls while being constructionally very simple.

3,777,934
SUSPENSION POLYMERIZED POLYVINYL CHLORIDE BEADS AS VAPOR PRESSURE DEPRESSANTS
Merritt R. Meeks; Roger F. Monroe, and Richard M. Weber, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 794,413, Jan. 27, 1969, abandoned. This application Feb. 24, 1972, Ser. No. 229,179
Int. Cl. B65d *83/14*; C08f *3/30*, *15/28*
U.S. Cl. 222—3 5 Claims

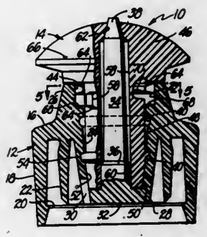
Porous vinyl chloride polymer beads which are substantially devoid of an exterior pericellular layer, disposed under retention in a container of gas under pressure, regulate the useful pressure discharge of the gas.

3,777,935
PULSE CAPTURE UNIT AND APPARATUS FOR CONTROLLING THE BLENDING OF TWO FLOWABLE SUBSTANCES
William Arthur Storey, "Little Beeches," Ashley Park Ave., Walton-on-Thames, England
Filed Jan. 10, 1972, Ser. No. 216,492
Claims priority, application Great Britain, Oct. 19, 1971, 48,595/71
Int. Cl. B67d *5/30*
U.S. Cl. 222—16 15 Claims



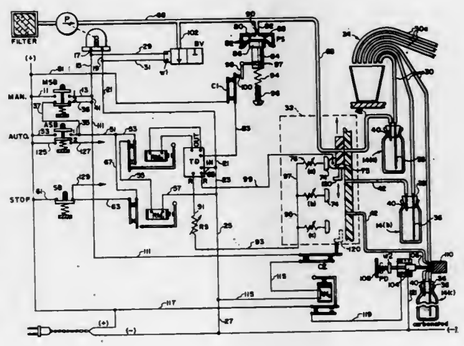
A device is described which will accept trains of pulse signals on inputs thereof and will provide corresponding trains of pulse signals on corresponding outputs such that the number of pulse signals in the train at any of these outputs is equal to the number of pulse signals on the train at the corresponding input and such that there is never coincidence of pulse signals on these outputs regardless of whether or not there is coincidence of pulse signals on the inputs. In application of the device to a blending system two pipe lines for fluids to be blended have respective pulse transducers connected to respective inputs of such a device. The transducer for the minor component of the blend provides its pulses via said device to a counter which on reaching a predetermined count corresponding to the volume of the minor component in a standard quantity of the desired blend produces a signal to close a valve in the minor component flow line. The pulses at both outputs of said device are counted together by a further counter which on reaching a count corresponding to said standard quantity re-sets the first mentioned counter causing said valve in the minor component flow line to open again.

3,777,936
SAFETY DISPENSING CLOSURE
Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.
Filed July 24, 1972, Ser. No. 274,399
Int. Cl. B65d *47/28*
U.S. Cl. 222—48 7 Claims



A dispensing closure having a linearly movable closure member mounted on a closure body so as to be capable of being moved between open and closed positions can be constructed as a safety closure by forming the closure member and the closure body so that in the closed position the closure member can be rotated in order to place interengaging means or parts on the closure member and the closure body into engagement with one another so that the closure member is held in a secured position in which it cannot be linearly moved with respect to the closure body. The closure member is preferably mounted within a cavity in the closure body and the interengaging means are preferably located generally within the area of this cavity so as not to be visible or accessible from the exterior of the closure when the closure is in a closed position.

3,777,937
PROPORTIONAL BEVERAGE DISPENSING APPARATUS
Richard S. Buck, 146 S. Cherry Valley Rd., Wheeling, Ill.
Filed Nov. 20, 1972, Ser. No. 307,928
Int. Cl. B67d *5/30*, *5/56*
U.S. Cl. 222—70 12 Claims



A fully automatic, push-button controlled, electrically powered beverage dispensing apparatus for selectively

withdrawing predetermined quantities of alcoholic and non-alcoholic beverages from respective sealed containers and conducting them through riser tubes to an elevated dispensing spout for simultaneous discharge into a beverage glass or other receptacle.

3,777,938

DEVICE FOR TRANSPORTING POURABLE GOODS

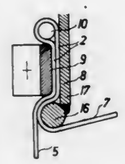
Johann Nikowitz, and Michael Schwarz, both of Vienna, Austria, assignors to Waagner-Biro Aktiengesellschaft, Vienna, Austria

Filed Mar. 7, 1972, Ser. No. 232,555

Claims priority, application Austria, Mar. 8, 1971, A 1944/71

Int. Cl. B67d *5/06*

U.S. Cl. 222—185 **16 Claims**



Device for transporting pourable goods such as liquids or solids in bulk. Liquids are situated within a container made of a foldable sheet material and having upper and lower end regions. At its upper end region the container is carried by and suspended from a frame structure while at its lower end region the container is operatively connected with a guiding structure which guides the lower end of the container for movement in a predetermined direction which preferably extends in the direction of the travel of the device.

3,777,939

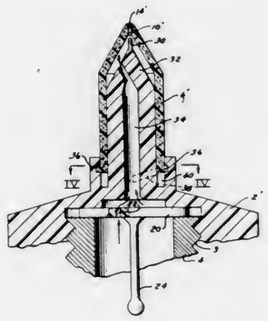
PAINT TUBE DISPENSING CAP

Hugh K. Moore, 2611 Havenhurst, Dallas, Tex.

Filed Sept. 15, 1971, Ser. No. 180,695

Int. Cl. B65d *35/14*

U.S. Cl. 222—189 **7 Claims**



A drawing instrument comprising a flexible tube of paint having a cap detachably secured thereto which is adapted to dispense a stream of paint to form a thin thread-like bead of paint on paper. The cap is constructed of material which is not wetted by the paint to permit flow through a very small passage while minimizing pressure required to initiate and maintain flow therethrough.

3,777,940

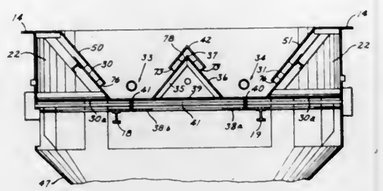
BOTTOM FLUID DISTRIBUTOR FOR SHAFT VESSELS

John B. Jones, Jr., Denver, Colo., assignor to Paraho Corporation, Denver, Colo.

Filed Nov. 10, 1971, Ser. No. 197,359

Int. Cl. B67d *5/54*

U.S. Cl. 222—193 **8 Claims**



A vertical shaft vessel, having a solids discharge mechanism, which includes laterally directed deflection plates arranged to deflect solids to the discharge openings of the discharge mechanism, is provided with a lower annular chamber in conjunction with the discharge mechanism, which is further provided with superimposed cover plates mounted above the deflection plates defining therewith predetermined sized slots for introducing predetermined quantities of fluid through the slots into predetermined areas across the lateral extent of the vessel to provide a uniform flow of treating fluid across the lateral extent of the shaft vessel from the discharge mechanism to a first treatment zone thereabove.

3,777,941

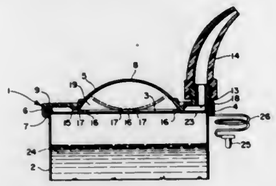
FLUID DISPENSING COVER

Hugh W. Riddle, P.O. Box 287, Ravenna, Ohio

Filed Aug. 17, 1972, Ser. No. 281,520

Int. Cl. B65d *37/00*

U.S. Cl. 222—207 **11 Claims**



A dispenser having an outer flanged edge for gripping the edge of a container and a wall for covering the top of the container. The space between the wall and the top of the container is divided into two chambers. One of the chambers is covered by a resilient, depressible protruberance and the other chamber is covered by a portion of the wall containing a spout. Openings between the chamers permit flow of fluid to the spout for dispensing the fluid.

3,777,942

POTABLE WATER DISPENSER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Herbert R. Cunningham, 13442 Epping Way, Tustin, Calif.

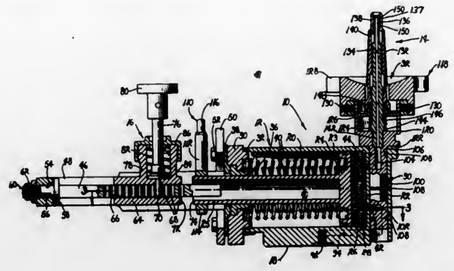
Filed June 28, 1972, Ser. No. 266,930

Int. Cl. G01f *11/06*

U.S. Cl. 222—309 **5 Claims**

A potable water dispenser particularly suited for use in dispensing potable water into food and beverage reconstitu-

tion bags. The dispenser is characterized by an expansible chamber, selectively adjustable stop means for varying the



maximum dimensions achievable by the chamber, a rotary valve and a linear valve coupled in a cooperating relation for delivering potable water to and from the chamber.

3,777,943

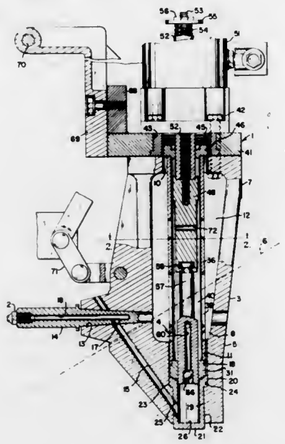
GOOSENECK VALVE ARRANGEMENT FOR DIECASTING MACHINE

Robert H. Spalding, and James A. Spalding, both of Monroe City, Mo., assignors to Dlemakers, Inc., Monroe City, Mo.

Filed Apr. 24, 1972, Ser. No. 246,675

Int. Cl. B22d *37/00*

U.S. Cl. 222—385 **10 Claims**



High speed, automatic diecasting machines include a gooseneck injector structure, partially immersed in a pot of molten metal, which contains a pump and valve arrangement for injecting molten metal into the die. Because of the severe service conditions, elements of the pump and valve require frequent service, however, the described arrangement permits these elements to be selectively and quickly removed and replaced without the need for emptying the melting pot or disassembling the entire gooseneck structure.

3,777,944

FLUID DISPENSING APPARATUS

Melvis Brooks, 440 Crestwood Ter., Hurst, Tex.

Filed Dec. 1, 1971, Ser. No. 203,552

Int. Cl. B65d *83/14*

U.S. Cl. 222—394 **5 Claims**

Apparatus, or system, for dispensing a fluid characterized by a container holding the fluid; conduit and means for effecting flow of the fluid from the container to a location where it will be used, the conduit being connected with the container and an interiorly protruding conduit portion; and a gun for dispensing the fluid. The gun is connected with the conduit and has a valve for controlling the flow of the fluid. The valve



in the gun is normally biased into a closed position and manually operable into an open position, and is discrete and removable such that once it starts to be unreliable as by leaking, it can be replaced without having to replace the entire gun. Also disclosed are specific fluids and preferred structural embodiments.

3,777,945

SPRAYING DEVICE

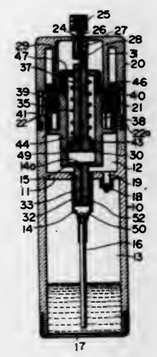
Takamitsu Nozawa, and Takao Kishi, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed June 8, 1972, Ser. No. 260,960

Claims priority, application Japan, June 10, 1971, 46/41277; June 24, 1971, 46/45896

Int. Cl. B65d *83/14*

U.S. Cl. 222—394 **6 Claims**



This invention relates to a spraying device.

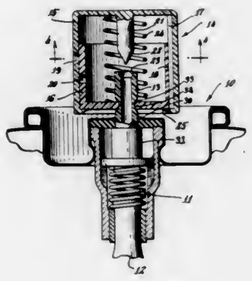
said spraying device comprises a container containing a liquid therein, a rotary head fitted over the top of said container, a cylindrical chamber formed in an upper portion of said container, slide means mounted in said cylindrical chamber and adapted to be moved upwardly and downwardly by the force with which said spray head is turned, and a piston mounted in the interior of said slide means and adapted to be moved upwardly as the slide means moves upwardly and moved downwardly by the biasing force of a spring mounted about said piston and serving as a restoring spring.

Said piston is formed therein with a central axial bore serving as a passage for the liquid.

Said spraying device is characterized by a transverse partition wall formed substantially in the central portion of said container to divide the container into an upper portion formed therein with a pressurizing chamber and a lower portion serving as a liquid tank, a liquid drawing line depending from the lower end of said pressurizing chamber into said liquid tank,

means provided in the side wall of said slide means and the side wall of the upper portion of said container for converting the rotary movement of the rotary head into a reciprocating movement of the slide means, a valve assembly comprising a nozzle and mounted in the upper central portion of the rotary head, and a passage formed in said transverse partition wall and having an air valve mounted in its lower portion for preventing the pressure in the liquid tank from becoming lower than atmospheric pressure.

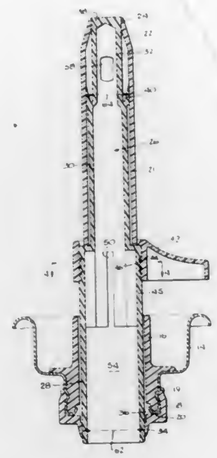
3,777,946
AEROSOL METERING BUTTON
Alexander Livingstone, Washington, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 3, 1972, Ser. No. 249,894
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.2 **8 Claims**



The specific disclosure provides an aerosol metering button comprising interfitting upwardly opened and downwardly opened members. The upwardly opened member is adapted to receive an aerosol valve stem through its closed lower end. The downwardly opened member has means spaced a predetermined distance from the valve stem for sealing the opened end of the valve stem. An orifice is formed in each of the upwardly opened and downwardly opened members, and the orifices are spaced apart by the predetermined distance. Means are provided for biasing the upwardly opened and downwardly opened members to maintain the predetermined distance between the sealing means and the opened end of the valve stem, and between the orifices when the button is in an unactuated state. The button is actuated by applying an external pressure to the top of the downwardly opened member to overcome the bias of the biasing means and move the downwardly opened member relative to the upwardly opened member. The external pressure also initiates flow of aerosol contents through the opened end of the valve stem, and the flow continues until the downwardly opened member is moved the predetermined distance such that the sealing means abuts the opened end of the valve stem. At this time, the two orifices are aligned and a metered flow of aerosol contents is exhausted from the button.

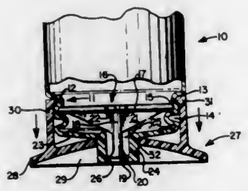
3,777,947
RECIPROCATING VALVE ASSEMBLY FOR PRESSURIZED CONTAINERS
Kenneth G. Klema, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed June 5, 1972, Ser. No. 259,879
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.23 **10 Claims**

A valve assembly for a pressurized container including an elongated valve body having one end mounted on a container and the other end having an exit orifice, said valve body forming a chamber adjacent the exit orifice, a piston mounted for sliding movement in the valve body and having a longitudinally extending bore therein with one end in fluid flow communication with the interior of the container and the other end having radially extending ports in fluid flow communica-



tion with the chamber. The piston has a nose portion for sealing the exit orifice, and it is of stepped configuration in order to utilize internal pressure from the container for urging it towards its closed position.

3,777,948
PLASTIC CONTAINER WITH LOCKABLE DISPENSING CLOSURE
Robert X. Hafele, Overland Park, Kans., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed May 24, 1972, Ser. No. 256,458
Int. Cl. B65d *25/44*
U.S. Cl. 222—497 **8 Claims**



A plastic container having flexible sidewalls adapted for dispensing fluid materials. The container neck portion is provided with two annular recessed grooves which are adapted to receive an annular locking ring provided on the interior wall of the skirt of the closure cap. A dispenser plug has its cylindrical base received between the annular grooves on the interior of the neck of the container. The neck of the container has a top flexible wall portion with an integral, upwardly extending, reduced neck section which receives the outer end of an integral boss extending from the base of the plug to close the neck opening. The cap is provided with a central opening surrounding the reduced neck portion, and, when the locking ring is in the lower annular groove, it exerts external pressure on the flexible top wall to prevent expulsion of the product from the container. When the cap is moved into the dispensing position, i.e., with the locking ring in the second or upper

groove, application of pressure to the sidewalls of the container exerts internal pressure on the flexible top wall of the container moving it out of sealing engagement with the upper end of the dispenser plug, thus forcing the contents out of the small diameter neck opening in an annular stream around the upper end of the dispenser plug.

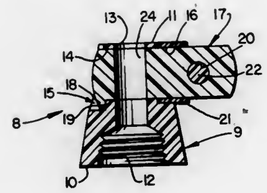
3,777,949
IMPROVED SINGLE DOSE DISPOSABLE CONTAINER AND ACCESSORIES
Marcel Chiquiari-Arias, Insurgentes sur 403, 1st Floor, Mexico City, Mexico
Continuation-in-part of Ser. No. 861,841, Sept. 29, 1969, Pat. No. 3,667,657, and a continuation-in-part of Ser. No. 109,806, Jan. 26, 1971, abandoned. This application Dec. 23, 1971, Ser. No. 211,598
Claims priority, application Mexico, Jan. 2, 1969, 108027
Int. Cl. B65d *17/24*
U.S. Cl. 222—541 **9 Claims**



A disposable container for medicaments and the like providing a high degree of prophylaxis and accurate dosification. The container includes a generally flexible plastic body, heat-sealed at its lower end and containing a precise dose of the medicament to be dispensed. The opposite end of the body is tapered to define an elongated hollow nozzle terminating in an enlarged tab portion which may be manipulated by a consumer to sever the tab portion from the remainder of the nozzle to thereby provide an opening for dispensing the container contents.

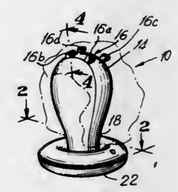
The nozzle portion includes a length extending rearward from the tip, which is of thickened wall construction, whereby said portion is relatively rigid and therefore incompressible during the tearing off of the tab. The nozzle and tab are of sufficient length that a user may grasp the rearward portion of the rigid nozzle and effectively conduct the tearing process without the fingers contaminating the resulting nozzle opening. Auxiliary elements include a cap like member for fitting over the nozzle and having an orifice filled with a swab for the application of the contained liquid to an external surface, and a separate cap like member for fitting over the nozzle and having a recess in the tip end thereof for nesting the tab portion to enable the tab portion to be twisted off without contamination by contact with the hands.

3,777,950
MULTI-PURPOSE CLOSURE
Daniel Kiddon, 6008 Sonoma Rd., Bethesda, Md.
Filed Sept. 7, 1972, Ser. No. 287,050
Int. Cl. B67d *3/00*
U.S. Cl. 222—554 **4 Claims**



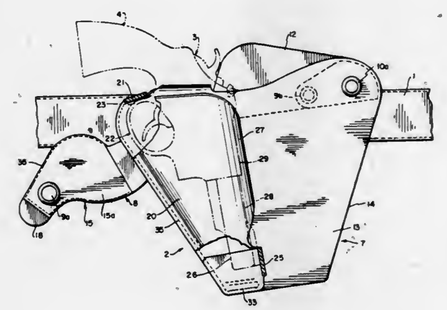
A multi-purpose closure for attachment to the dispensing necks of closures, such as paste tubes and bottles, and which is provided with a manually actuated valve for opening or closing a bore of the closure which communicates with a bore of the dispensing neck, so that the closure need not be removed from the container neck until all of the contents of the container has been dispensed therefrom. A stop means formed in part by the valve body and in part by the closure body limits turning of the valve body through an arc of 90° between a completely closed and a completely open position. Cooperation between a bushing and a valve operating lever maintains the valve body correctly positioned in the closure body for complete registration of the valve body with the closure bore in the open position of the valve.

3,777,951
INFLATABLE WIG STAND
Robert Newsteder, South Orange, N.J., assignor to Just Design, Inc., Orange, N.J.
Filed May 31, 1972, Ser. No. 258,460
Int. Cl. A45d *44/14*
U.S. Cl. 223—67 **2 Claims**



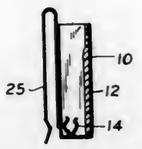
An inflatable wig stand including a simulated head portion upon which a wig may be placed. The inflatable wig stand includes a base which supports the simulated head portion and means is provided for tightly securing the base to a flat horizontal surface.

3,777,952
SECURE HOLSTER FOR REVOLVERS
Paris Theodore, New York, N.Y., assignor to Seventrees, Ltd., New York, N.Y.
Filed Jan. 3, 1972, Ser. No. 214,755
Int. Cl. F41b *13/04*
U.S. Cl. 224—2 B **14 Claims**



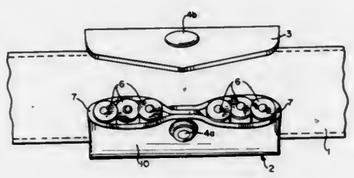
A holster to be carried high on the hip and having a trigger guard pocket, a muzzle pocket, and a breakfront flap which cooperate to prevent removal of the revolver from the holster. The breakfront flap is secured in the closed position by a fastening device which is released by the forefinger of the user to initiate the drawing of the revolver from the holster.

3,777,953
CASE FOR REMOVABLY CARRYING A WRIST WATCH
Jules Lewis, 3000 Ocean Pky., Brooklyn, N.Y.
Filed Apr. 20, 1972, Ser. No. 245,868
Int. Cl. A45c 11/10
U.S. Cl. 224—4 C 8 Claims



This invention relates to a protective case adapted to receive a wrist watch having a case with a pair of drilled ears or lugs in which is maintained a retaining pin assembly whereby wrist straps or bands are customarily connected to the watch. This protective case is open at the top to slidably receive a watch from which the strap is removed. A clip carried within and at the closed other end of the case removably retains the pin carried by the entering lug end of the wrist watch. A protective pad is provided on the inside of a side panel of the case, said protective pad adapted to prevent scratching of the plastic or glass face of the watch. A belt clip attached to the outer back surface of the case provides a dual purpose wherein the case may be attached or hooked over a belt or pocket of the wearer and when not used for this purpose may provide a support which engages the strap retaining pin of the watch and the watch case to support the watch at an angled relationship while the retaining case is placed on a support surface enabling the watch to be supported in a viewing condition.

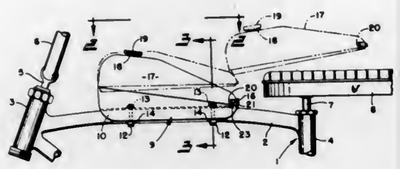
3,777,954
CARTRIDGE POUCH
Paris Theodore, New York, N.Y., assignor to Seventrees, Ltd., New York, N.Y.
Filed Jan. 3, 1972, Ser. No. 214,754
Int. Cl. F42b 39/00
U.S. Cl. 224—19 1 Claim



A cartridge pouch made of a single piece of leather and a single snap fastener for holding two groups of about three cartridges each.

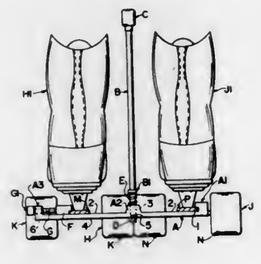
3,777,955
LIQUID CONTAINER-TOOL OR ACCESSORY BOX FOR BICYCLES
Brian W. Davies, 6200 Barton Rd., North Olmsted, Ohio
Filed Sept. 28, 1972, Ser. No. 293,015
Int. Cl. B62j 39/00
U.S. Cl. 224—35 4 Claims

A bicycle having a simulated gas tank on the top bar thereof between the steering and seat post supports which comprises a bottom tray-like member secured to said top bar for carrying miscellaneous articles such as a bicycle lock, tools, spare bicycle parts, food articles, etc., and a detachable cover for said bottom member which is in the form of a container having a filling opening at the top and a dispensing spout at the lower rear side thereof adapted to contain water, milk, coffee, fruit juice or the like. The combination liquid container-tool or accessory box herein is further characterized in that the bottom tray-like member and the upper liquid container member have nested rim portions and are provided with resilient hook



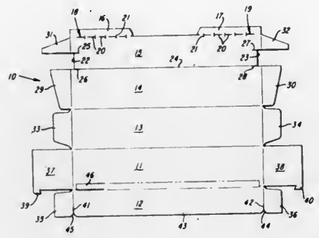
means to facilitate attachment and detachment of the liquid container member to and from the bottom tray-like member which is secured to the top bar of the bicycle. Yet another characterizing feature of this invention is that the dispensing spout is disposed at the left rear side of the liquid container so that, when the bicycle is supported on its kick stand, said dispensing spout will be located at the lowermost portion of the container for dispensing substantially the entire contents thereof without need for removing the same from the bottom tray-like member.

3,777,956
ROLLER SKATE CARRIER
David H. Jung, 1262 B St., Hayward, Calif.
Filed May 24, 1971, Ser. No. 146,357
Int. Cl. B65d 71/00
U.S. Cl. 224—45 S 1 Claim



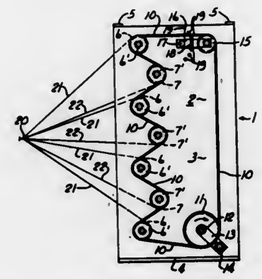
A roller skate carrier comprising a base bar adapted to engage with the interconnecting straps of a pair of roller skates, the interconnecting strap of each skate extending between the front and rear pairs of rollers. Novel roller skate clamping means is carried by the base bar and will engage with the interconnecting strap of each skate for forcing the pair of skates, which are arranged side by side, into contact with each other, the clamping means removably securing the interconnecting strap of each skate to the base bar. A center post extends upwardly from the center of the base bar and it is provided with a handle at its upper end.

3,777,957
DISPENSING CARTON
Kenneth T. Buttery, Kalamazoo, Mich., assignor to Brown Company, Kalamazoo, Mich.
Filed Aug. 2, 1972, Ser. No. 277,374
Int. Cl. B26f 3/02
U.S. Cl. 225—50 10 Claims



A paperboard carton for packaging and dispensing from a roll stock a sheet-form material such as film, foil, or the like, comprises a hinged cover member provided with notches in the cover front panel thereof and with projecting lock tabs on the carton body which lock tabs project through and engage said notches.

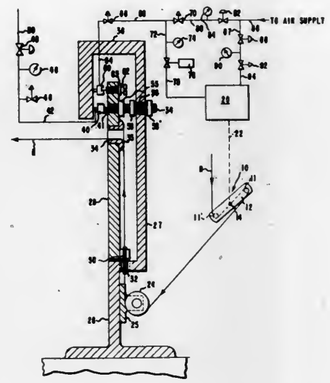
3,777,958
METHOD OF SEPARATING CONTINUOUS FORM STATIONERY
Joseph P. Graham, Farm Ln., Rochester, Pa.
Filed June 28, 1972, Ser. No. 266,982
Int. Cl. B26f 3/02; B65h 41/00
U.S. Cl. 225—4 3 Claims



The method of separating continuous strip form stationery having multiple plies secured together at their longitudinal edges and having periodic transverse tear perforations defining separate stationery forms wherein the plies are initially separated at one leading end of the continuous form and attached to spaced parallel and coextending rollers rotatably supported on a frame in sequence respectively. The rollers are rotatably driven in unison at the same rate to deleave the multiple ply continuous form stationery into individual continuous form plies. The individual plies are then unrolled and each separated at the transverse perforations to provide separate stationery forms.

The unrolling and separating of individual plies into separate stationery forms is preferably accomplished by sequentially feeding the trailing end of each individual ply rolled on its respective roll into an automatic bursting machine.

3,777,959
APPARATUS FOR MONITORING AND CONTROLLING TENSION IN AN ADVANCING FLEXIBLE ELONGATE MATERIAL
John Seymour Seney, Seaford, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 25, 1972, Ser. No. 229,456
Int. Cl. B65h 25/00
U.S. Cl. 226—25 4 Claims

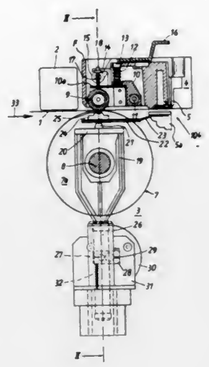


An apparatus for detecting and regulating tension in a textile rope being pulled in a path from a source through a tension adjusting means by an advancing means includes a beam pivotally mounted for angular movement about an axis transverse to the beam and a guide arrangement to direct the rope through the beam pivot axis. One guide of the arrangement is carried by the beam at a location downstream of the pivot axis, the other being located upstream of the pivot axis. Passing the rope through the axis nullifies the effect of changes in frictional properties of the rope on tension induced deflection of the beam. Means are provided for detecting the amount of said angular movement of the beam and transducing it into a signal to actuate a control means for operating the tension adjusting means.

3,777,960
APPARATUS FOR TRANSPORTING AND INTERMITTENTLY BRAKING WEBS OF PAPER OR THE LIKE
Volker Weinert, Munich; Gerhard Franklewicz, Sauerlach, and Gunter Engelage, Unterhaching, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 28, 1971, Ser. No. 184,498
Claims priority, application Germany, Oct. 2, 1970, P 20 48 413.3
Int. Cl. B65h 23/06
U.S. Cl. 226—33 23 Claims

Apparatus for intermittently moving a web of photographic film lengthwise has a driven roller which engages the underside of the web, a small idler roller which is normally biased against the upper side of the web opposite the driven roller, and a braking device having a cylindrical braking element movable by an electromagnet against the underside of the web to disengage the web from the driven roller, to move the idler roller away from the driven roller by way of the web, and to

press the web against the idler roller to thus effect rapid stoppage of the web. The electromagnet is energized at predetermined intervals in response to detection of marks which are applied to a processed web at the same intervals as the frame lines between successive frames so that the frame lines can be



cut in half during each stoppage of the web, or in response to signals from a metering device which measures the length of the web and causes the braking device to arrest the web whenever an unexposed frame of the web registers with the exposing station of a photographic copying machine.

3,777,961

INTERMITTENT MOVEMENT FOR FEEDING FILM

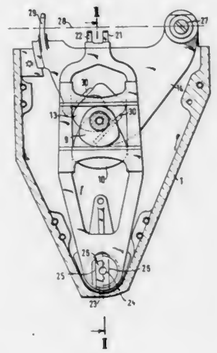
Otto Blaschek, Anwanderweg 6, Munich, Germany

Filed May 9, 1972, Ser. No. 251,794

Claims priority, application Germany, June 30, 1971, P 21 32 580.4

Int. Cl. G03b *1/28*

U.S. Cl. 226—57 **12 Claims**



The intermittent movement comprises pull-down claw means and registration pin means. The registration pin means comprise a rocker lever having a curved tip portion which is concentric with the bearing.

3,777,962

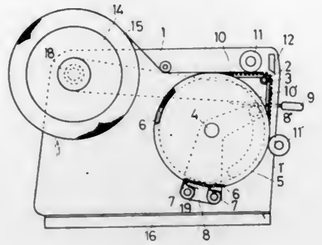
APPARATUS DRAWING-OUT FOR WINDING TAPE

Fumiko Tange, 6-35 Oaza Sakae Aza Kamiubako, Toyoakecho, and Kiichi Tsuda, 5-7, 2-chome, Tomigaoka, Nara, both of Japan

Filed Apr. 7, 1972, Ser. No. 241,899

Int. Cl. B65h *17/26*

U.S. Cl. 226—129 **3 Claims**



A device for drawing out tape material which has a hand lever actuated ratchet wheel actuating a swinging arm which in turn engages a chain for drawing the tape from a tape supply each time the arm is moved.

3,777,963

CARRY-OUT CARRIAGE DEVICE OF PEELING MACHINE

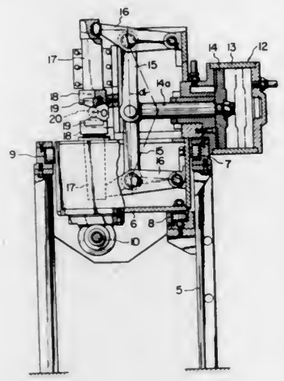
Akira Yamamoto, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 27, 1972, Ser. No. 301,299

Claims priority, application Japan, Oct. 29, 1971, 46/100111

Int. Cl. B23q *3/08*

U.S. Cl. 226—145 **4 Claims**



A carry-out carriage device of a peeling machine which has a pair of clamper pads, a pair of clamper rods slidably supported in opposite directions against the feeding center of a blank and fixing the clamper pads at the respective opposite ends, a movable base, a pair of levers pivotally secured symmetrically with respect to the feeding center of the blank at the movable base side to the bases of the clamper rods at the opposite ends, a pair of rods rotatably connected to the intermediates of the levers at the opposite ends, a cylinder device having a piston and a piston rod coaxially rotatably connected to the other ends of the rods to operate in the direction perpendicular to the operational direction of the clamper rods.

3,777,964

ROD ENTRY GUIDE

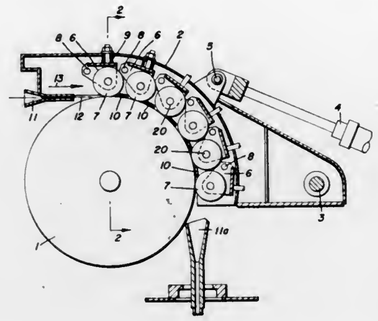
Rolf Kruner, Muelheimerstrasse 199; Hans Thelen, Nikolaistrasse 93, and Gerhard Grunwald, Duesseldorferstrasse 501, all of 4100 Duisburg, Germany

Filed Apr. 24, 1972, Ser. No. 247,167

Claims priority, application Germany, Apr. 29, 1971, P 21 21 126.7

Int. Cl. B65h *17/22*

U.S. Cl. 226—183 **14 Claims**



Mechanism consisting of a large driven pulley and a plurality of small rollers aligned along about 90° of the periphery of the driven pulley for changing the direction of rolled rod coming from a rod mill from horizontal to vertical for delivery to a laying reel or other rod collecting mechanism.

The small rollers in one form are carried by pivoted arms mounted on a support and are individually spring-pressed toward the driven pulley permitting acceptance therebetween of the oncoming rod and the application of correct pressure against the rod as it changes direction from horizontal to vertical. In another form, the small rollers are carried by the links of a chain extending along the driven pulley perimeter. The chain is spring-loaded to permit entry of the rod and between the pulley and rollers.

3,777,965

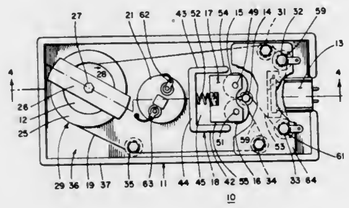
TAPE DRIVE MECHANISM

Helmut C. Maiershofer, Scottsdale, and Walter J. Noble, Mesa, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 24, 1972, Ser. No. 283,483

Int. Cl. B65h *17/22*

U.S. Cl. 226—183 **8 Claims**



There is disclosed a tape drive mechanism for a continuous tape wherein two pressure rollers, one on each side of the driving capstan, are formed of non compliant material and engage the non compliant surface of the capstan through the intervening tape. The use of all non compliant surfaces prevents deformation thereof and avoids the development of wows in the recording.

The bearing of the roller on the input side of the capstan is a friction bearing, and the bearing on the output side of the capstan is an antifriction bearing such as a ball bearing. This creates a differential friction drive which causes a slight drag on the tape input side and thus eliminates tape overrun when the recorder is turned off.

The use of a relatively few injection molded parts results in a low cost and simple device.

3,777,966

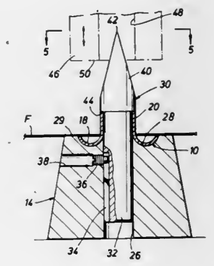
MEANS FOR SETTING GROMMETS IN WOVEN FABRICS

Victor J. Green, 8121 Barkley Dr., Houston, Tex.

Filed Feb. 12, 1970, Ser. No. 10,712

Int. Cl. B21j *15/14*

U.S. Cl. 227—61 **5 Claims**



A method of and apparatus for setting grommets in woven fabrics without cutting strands of the fabric, or with the cutting only of strands of the fabric which extend in directions other than the direction of the pull which will be exerted on the fabric when the article is in use. The apparatus includes a fabric penetrating device designed to be used in conjunction with grommet setting tools to form an opening in the fabric by penetrating the fabric between the strands or moving strands or threads of the fabric apart without severing the same to permit the insertion in the opening of one part of a grommet to be set in the fabric. The penetrating device may have a cutting edge positioned to cut a limited number of strands or threads of the fabric extending in a direction normal to the direction of the pull which will be exerted on the fabric during use of the article formed therefrom, in order to facilitate the penetration of the fabric to form the grommet opening therein without severing strands upon which the pull will be exerted.

The method of the invention comprises forming a grommet receiving opening in a woven fabric by inserting a penetrating device therethrough between strands of the fabric to separate the strands without cutting the same, and inserting and setting a grommet in the opening so formed. The method may include the cutting of a limited number of strands of the fabric which extend in directions other than the direction in which strands of the fabric would be subjected to a pulling force in the use of the article of which the fabric is formed.

3,777,967

FRICTION WELDING APPARATUS

John Gilbert Searle, Hednesford, and David John Hunt, Rugeley, both of England, assignors to Allwood, Searle & Timney Limited, Digbeth, Walsall, England

Filed Feb. 10, 1972, Ser. No. 225,254

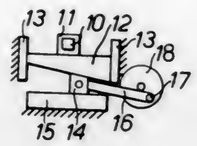
Claims priority, application Great Britain, Feb. 10, 1971, 4,397/71; Apr. 29, 1971, 12,271/71

Int. Cl. B23k *27/00*

U.S. Cl. 228—2 **8 Claims**

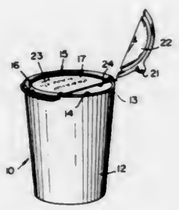
In or for friction welding apparatus of the kind in which frictional heat is generated by causing one of the components to

be welded to follow repeatedly a given path without rotation while in frictional engagement with the other component, the support for that component has a track, and there is a path inclined at less than 45° to that track, and there is a drive member caused by drive means to reciprocate along the track and path. This causes the component-support to reciprocate in a direction transverse to the track with an amplitude less



than that of the drive member. There may be two or three such assemlies of track, path and drive member so arranged that the drive members operate at the same frequency and the path is circular or elliptical. The amplitude of the reciprocation of the drive members and/or the inclination of the paths may be capable of being reduced to zero to enable the components to be centred for welding to be effected.

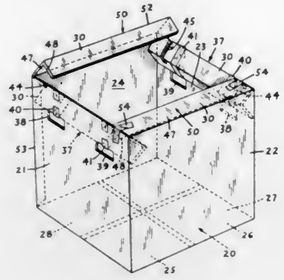
3,777,968
BEVERAGE CONTAINER HAVING A FRANGIBLE CLOSURE
William J. H. Law, 271 Madison Ave., Port Chester, N.Y.
Filed Dec. 27, 1971, Ser. No. 212,448
Int. Cl. B65d *1/08, 3/00, 5/00*
U.S. Cl. 229—7 R **3 Claims**



A beverage container is disclosed having a cup and a lid in which the lid is scored or otherwise provided with a line of weakness such that the rim of the lid can be pulled loose to break off a minor portion of the lid and provide a drinking aperture.

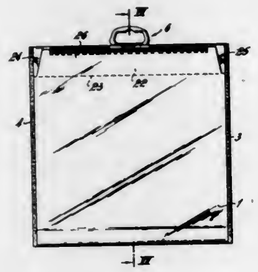
3,777,969
BULK CONTAINER REINFORCEMENTS
Thomas C. Nurre, Downers Grove, Ill., assignor to International Paper Company, New York, N.Y.
Filed Feb. 24, 1972, Ser. No. 229,067
Int. Cl. B65d *5/06*
U.S. Cl. 229—37 E **9 Claims**

A fiberboard container made from a rectangular blank and having inwardly directed reinforcements of triangular cross-section along two of its opposed upper edges and inwardly directed reinforcements of inverted L-shaped cross-section along the other two upper edges. The triangular reinforcements are each formed from two and sometimes three integral panels which are arranged such that the upper surfaces of the reinforcements are downwardly inclined at an acute angle



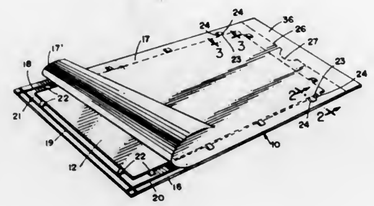
with respect to the bottom of the container. These surfaces are provided with slots for receiving the depending portions of the L-shaped reinforcements. In some embodiments the triangular reinforcements are held in place by tapes, tabs or other fasteners on the adjacent side wall.

3,777,970
HANDLE-TYPE CARRYING BAG MADE OF PLASTICS MATERIAL SHEETING
August Schwarzkopf, Lengerich/Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich, Westphalia, Germany
Division of Ser. No. 49,084, June 23, 1970. This application June 27, 1972, Ser. No. 266,563
Claims priority, application Germany, June 24, 1969, P 19 32 047.9; Oct. 31, 1969, P 19 54 944.1; Apr. 27, 1970, P 20 20 549.6; Apr. 27, 1970, P 20 20 548.5; May 22, 1970, P 20 25 107.4
Int. Cl. B65d *33/00*
U.S. Cl. 229—54 R **4 Claims**



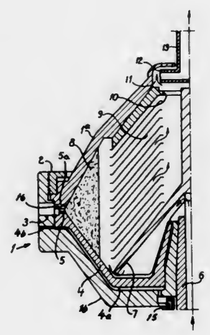
Only one wall of the bag is provided with a heat-sealed carrying handle made of still synthetic thermoplastics. The other wall of the bag is provided with a lead-out slot on the level of the lower end of the handle and has a reversely foldable portion extending beyond said lead-out slot.

3,777,971
STUFFED SEALED ENVELOPE ASSEMBLY AND METHOD
Donald J. Steidinger, Barrington, Ill., assignor to Wallace Business Farms, Inc., Hillside, Ill.
Filed Sept. 16, 1971, Ser. No. 180,992
Int. Cl. B65d *27/00*
U.S. Cl. 229—68 R **3 Claims**



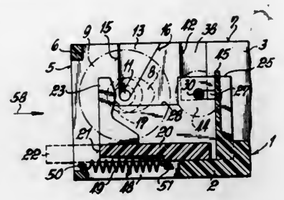
A stuffed sealed envelope including at least one insert sheet wherein the envelope back is equipped with embossment means for substantially immobilizing the insert sheet while affording improved separability.

3,777,972
SLUDGE CENTRIFUGE
Ove Allan Valentin Kjellgren, Stockholm, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed Mar. 17, 1972, Ser. No. 235,633
Claims priority, application Sweden, Mar. 25, 1971, 3877/71
Int. Cl. B04b *1/12*
U.S. Cl. 233—20 A **3 Claims**



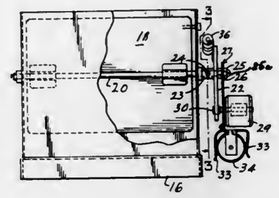
Spaced around the periphery of the centrifugal rotor are permanently open nozzles for discharging sludge separated from the liquid fed to the separating chamber of the rotor. To remove the sludge cushions accumulating on the peripheral wall of this chamber between the permanently open nozzles, the rotor periphery has at least one sludge outlet which is alternately opened and closed by an axially movable piston valve.

3,777,973
ZERO SETTING ROLLER COUNTING MECHANISM
Heinrich R. Kundisch, and Werner K. Pfundstein, both of Schwenningen/N, Germany, assignors to Irion & Vosseler, Schwenningen/N., Germany
Filed Feb. 23, 1973, Ser. No. 335,137
Claims priority, application Germany, Mar. 17, 1972, P 22 12 882.1
Int. Cl. G06c *15/42*
U.S. Cl. 235—144 HC **10 Claims**



The mechanism includes a counter frame and a plurality of toothed counting wheels rotatably mounted on a common shaft and each having a respective heart-shape resetting cam fixed thereto. To reset the counting mechanism to zero, the cams are actuable by respective zero setting fingers of a zero setting rake operable, against spring bias, by a resetting slide shiftable in the counter frame transversely of the counting wheel shaft. A plurality of counting wheel stepping pinions are mounted on a common shaft which is displaceable radially of the counting wheels. During zero setting of the counting wheels, the pinions are disengaged therefrom and are maintained in their respective angular orientations by fixed elastic tongues. The resetting slide includes a plate having a width substantially equal to the axial length of the counting wheel set, and the zero setting fingers are arranged in fixed positions on this plate. The plate has wall portions extending from its opposite longitudinal edges and mounting the common shaft of the pinions in parallel with the common shaft for the counting wheels. The common pinion shaft is mounted in elongated slots so as to be shiftable relative to the slide against frictional resistance produced by spring pressure. Releasable detent means are provided to latch the slide in a position in which the pinions are engaged with the respective counting wheels.

3,777,974
DAMPER CONTROL MECHANISM
Albert J. Sparks, 8140 Summerfield, Lambertville, Mich.
Filed Apr. 17, 1972, Ser. No. 244,718
Int. Cl. F16k *31/54, 31/04*
U.S. Cl. 236—49 **6 Claims**



A damper control mechanism for a damper which is pivotally mounted in a duct by a shaft comprising a gear sector fixed to the shaft and an electric motor pivotally suspended from said shaft and having a gear meshed with said gear sector. The electric motor comprising a low-voltage type and the battery for operating the same is suspended in the same manner as the motor. The mechanism can be mounted within or externally of the duct.

3,777,975

SPACE HEATER HAVING A HEATING AIR FLOW DUCT WITH A HEAT EXCHANGER FOR ENGINE COOLING WATER AND ONE FOR COMBUSTION GASES

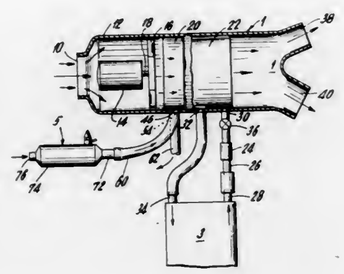
Siegfried Kofink, Leinhalde, Germany, assignor to J. Eberspacher, Esslinger, Germany

Filed Nov. 23, 1971, Ser. No. 201,352

Claims priority, application Germany, Mar. 3, 1971, P 21 10 182.6

Int. Cl. B60h *1/02*

U.S. Cl. 237—12.3 A 13 Claims



A space heater particularly for automobiles comprises a heating air flow passage in which is positioned a heat exchanger which is supplied with water from an engine cooling system and a second heat exchanger which is supplied with combustion gases from a separately operated fuel burner.

3,777,976

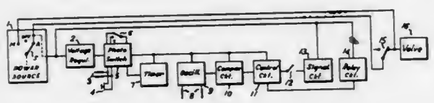
ELECTRONICALLY CONTROLLED WATERING

Slavko Milovancevic, P.O. Box 402, Torrance, Calif.

Filed Mar. 29, 1973, Ser. No. 346,179

Int. Cl. A01g *25/00*; B05b *17/04*; G01w *1/14*

U.S. Cl. 239—64 5 Claims



A pair of probes are placed in soil, the watering of which is to be controlled, the electrical resistance between the probes being a function of the moisture content of the soil. The probes are connected in the feedback circuit of an electronic oscillator, the magnitude of oscillation of the oscillator being a function of the resistance between the probes and thus the soil moisture content. The output of the oscillator is fed to a comparator circuit where it is compared with a reference voltage representing a predetermined moisture level. A control signal is generated in the comparator circuit whenever the soil moisture content is below the predetermined level during the periodic checkup, this control signal operating a warning signalling circuit. After a predetermined time has elapsed, during which a warning signal is generated, a watering control circuit is actuated which effects the watering of the soil for a predetermined period of time. In cases when manual operation is desirable or if automatic controll fails provision has been made for manually controlled operation.

3,777,977

INJECTION DEVICE

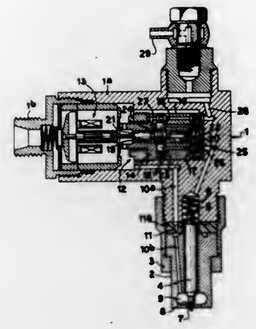
Marcel Regneault, Colombes, and Jean Perez, Levallois-Perret, both of France, assignors to Automobiles Peugeot, Paris, France

Filed June 26, 1972, Ser. No. 266,252

Claims priority, application France, July 8, 1971, 7125045

Int. Cl. F02m *41/16*

U.S. Cl. 239—96 5 Claims



Injection device in which a first chamber, located at the pointed end of the injector needle and partly defined by the seat for the end of the needle, permanently communicates with a source of fuel under pressure, such as the fuel injection pump. A second chamber into which the rear end portion of the needle extends is put in communication by a distributor valve alternately with said source of fuel and with an enclosure in which a substantially lower pressure prevails, such as a pressure in the neighborhood of atmospheric pressure.

3,777,978

AERIAL DISTRIBUTOR FOR PARTICULATE MATERIALS

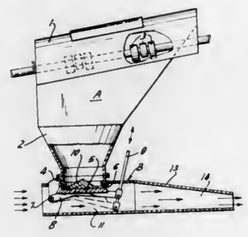
Radu Adrian M. Manicatide; Ion Olteanu, and Petre Georgescu, all of Bucarest, Romania, assignors to Institutul de Mecanica Fluidelor si Constructii Aerospatiale, Bucarest, Romania

Filed Mar. 31, 1972, Ser. No. 240,154

Claims priority, application Romania, Apr. 5, 1971, 66479

Int. Cl. B05b *17/02*

U.S. Cl. 239—171 5 Claims



The invention refers to a device and apparatus for the aerial spreading of solid materials, in powder and granular form.

The device consists of a receptacle for the materials to be dispersed, in the form of a shallow box, open in the front and back, the upper face of which is traversed by a cylindrical mouth with a lid. The lid, with a joint, is controlled by means of a rod. A diffuser is united to the box and is horizontally flared and divided by vertical walls into flow channels which widen. Pivoting shutters, on the walls, permit the control of the transverse distribution.

The equipment comprises a tank for materials, of somewhat tapered form elastically supported in the plane fuselage and connected to the cylindrical mouth.

3,777,979

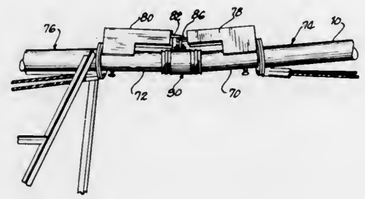
MOBILE IRRIGATION SYSTEM AND PIPE COUPLING

Max H. Ririe, Gering; Murray C. Roland, and Rich Olson, both of Scottsbluff, all of Nebr., assignors to Lockwood Corporation, Gering, Nebr.

Filed Mar. 24, 1972, Ser. No. 237,796

Int. Cl. B05b *3/00*

U.S. Cl. 239—177 6 Claims



A connection between pipe sections making up an elongate water distributing pipe for mobile irrigation apparatus to permit pivotal movement between interconnected pipe sections while maintaining a sealing relationship therebetween.

3,777,980

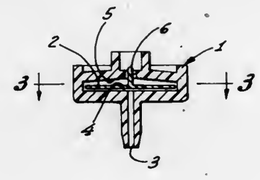
IRRIGATION FITTING

Davies Allport, 966 Muirlands Vista Way, La Jolla, Calif.

Filed Nov. 3, 1972, Ser. No. 303,521

Int. Cl. A62c *23/06*

U.S. Cl. 239—272 5 Claims



A fitting is provided which is intended to be inserted into a water pipe to supply irrigation water in controlled limited amounts to the root zone of plants. The fitting consists of a hollow cylinder with an inlet hole located in the center of one end of one cylinder and an outlet hole located in the center of the other end. The diameter of the entrance and outlet holes are considerably smaller in diameter than the hollow cavity within the cylinder and they are all located coaxially over the same centerline. The inner wall of the cavity on the outlet end of the cylinder is conical in shape in such a way that a flat resilient disc held lightly against this face will be in contact with the face only around its circumference. Additional pressure across the face of the disc will cause the disc to deform into the conical face which forms a seat for the disc. When water pressure is applied to the fitting a pressure differential across the disc results and the disc is forced against its seat and would seal the outlet hole and prevent water from passing if the surface of contact were smooth. However, these surfaces are textured so that water can seep across the seat in a multiplicity of restricted paths and flow out the outlet hole. The amount of water flow at any one pressure is determined by the size and shape of the textured pattern. When the water is turned off the disc pulls away from its seat and returns to its original flat shape and when water is again turned on, a small amount of water becomes entrapped in the seat area and as pressure builds up, the entrapped water is extruded out of the seat area through the outlet hole, flushing any solids that may tend to clog the restricted paths.

3,777,981

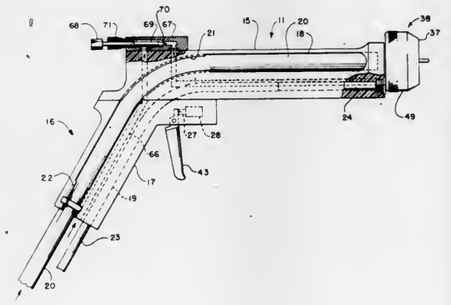
SPRAY APPARATUS AND METHOD

Richard O. Probst; Kenneth R. Pollard, both of Indianapolis, and Frank R. Stockton, Brownsburg, all of Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Nov. 18, 1971, Ser. No. 199,856

Int. Cl. E01b *1/00*

U.S. Cl. 239—1 10 Claims



Powder color change is accomplished easily and conveniently by providing a spray device having a channel or groove in its side and traversing its length in combination with one of a plurality of elongated, flexible powder feed tubes. The channel is formed from rigid material. One end of each of the feed tubes is connected to its cooperatively associated powder pump immersed in a powder reservoir. Each feed tube is adapted to be snapped into or out of the channel or groove of the spray device. The feed tube is retained in the channel in such a manner as to prevent harmful movement thereof with respect to the channel and other components of the device during the spraying operation. However, the feed tube is retained in the channel in such a manner as to permit the user to remove the tube from the channel without employing undue force or special tools. The feed tube selected to be snap fitted into the channel of the spray device dictates the color of the powder to be sprayed upon activation of the spray device.

The system employing the spray device includes control means for switching from one powder reservoir to another powder reservoir upon removal of one feed tube from the spray device and insertion of another feed tube into the spray device.

3,777,982

DISPENSING DEVICES

Anthony Sidney Britton, P.O. Box 11459, Cape Town, Republic of South Africa

Filed May 23, 1972, Ser. No. 256,156

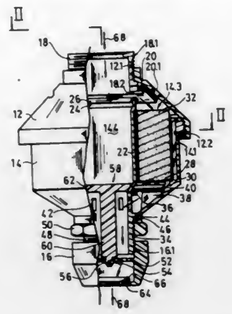
Claims priority, application South Africa, May 28, 1971, 71/3449

Int. Cl. B05b *1/18*

U.S. Cl. 239—315 5 Claims

The invention discloses a dispensing device including a first housing part having an inlet opening, which is adapted for connection to a liquid supply, and an outlet opening; a second

housing part adapted for connection to the first housing part and having an inlet for communication with the outlet opening



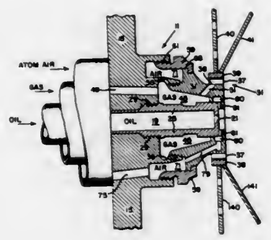
of the first housing part and further having at least one support member for supporting a block of liquid soluble material, and an outlet opening.

3,777,983

GAS COOLED DUAL FUEL AIR ATOMIZED FUEL NOZZLE

William A. Hibbins, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,843
Int. Cl. B05b *7/08*
U.S. Cl. 239—422 **7 Claims**



A dual fuel, air-atomized, fuel nozzle of the type prevalent in some gas turbine combustion chambers wherein the hot atomizing air conduit is remotely positioned with respect to a central liquid fuel or oil conduit so that the nozzle will operate cooler during liquid fuel operation. A gaseous fuel conduit is interposed between the liquid fuel conduit and the atomizing air conduit to provide additional nozzle cooling during the gaseous fuel operation while preventing thermal breakdown of any liquid fuel residuum which could cause nozzle clogging.

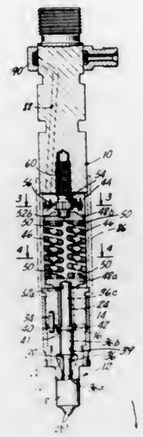
3,777,984

MINIATURE FUEL INJECTION NOZZLE AND HOLDER ASSEMBLY

Jack F. Greathouse, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.

Filed Jan. 20, 1972, Ser. No. 219,347
Int. Cl. F02m *47/00*
U.S. Cl. 239—533 **23 Claims**

A miniature fuel injection nozzle and holder assembly for internal combustion engines includes a holder body formed with a transverse slot or slots in which two or more parallel compression springs are symmetrically disposed about the axis of the nozzle valve, upon which they act. The springs are insertable into and removable from the holder body through its side by means of the slots. Interchangeable spring guides may be employed to receive adjacent ends of the springs for alignment and transmission of their compressive forces to the nozzle valve. In one embodiment, access for adjustment of the compression of the springs, and thus the valve opening pressure, may be had through the transverse slots.

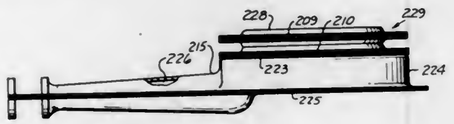


3,777,985

WATER HEATER

Robert L. Hughes, and John E. Rouse, both of West Covina, Fla., assignors to Vaskor Industries, Inc., Glendora, Calif.

Division of Ser. No. 143,899, May 17, 1971, Pat. No. 3,704,629. This application July 27, 1972, Ser. No. 275,626
Int. Cl. B05b *1/14*
U.S. Cl. 239—555 **5 Claims**



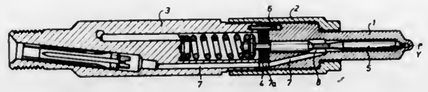
A water heater for heating water as it is being delivered, commonly called an "instantaneous water heater." The heater includes a plurality of concentric tanks which are at least partially axially overlapping and which are spaced from one another to pass hot gases in heat transfer relationship with their sidewalls. The sidewalls of the tanks are generally cylindrical. The tanks are interconnected so as to permit the flow of water to and from each of them. An inlet manifold discharges into each tank, preferably along an axis which is skew to the central axis whereby to give the water, as it flows through the tank, both a circumferential and an axial component, thus aiding in keeping the tank clean and preventing thermal "stacking" of the water. The tanks are preferably formed from concentric half-shells which are welded together at their end seams, and which have telescopic necks projecting from their sidewalls that are welded together to form a structural joinder and a fluid interconnection. A burner is placed beneath the group of tanks with deflector jets which aid in confining the rising products of combustion to a relatively narrow cross-section, so as to inject a maximum BTU input into a relatively small heater cross-section.

3,777,986

FUEL INJECTION NOZZLE

Richard Kinzel, and Walter Mladek, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 31, 1972, Ser. No. 239,929
Claims priority, application Germany, Apr. 23, 1971, P 21 19 973.5
Int. Cl. B05b *1/32*
U.S. Cl. 239—533 **5 Claims**



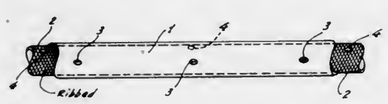
In a fuel injection nozzle that has an intermediate plate extending normal to the nozzle axis and serving in particular as an abutment for limiting the stroke of the valve needle, the aligning pins passing through separate openings in said intermediate plate are disposed in mirror symmetry with respect to a plane containing the nozzle axis. The plane defined by the pin axes is spaced from the nozzle axis. The fuel supply channel or channels which extend within the fuel injection nozzle and which pass through openings in the plate are also in mirror symmetry with respect to the first-named plane.

3,777,987

IRRIGATION DEVICE

Davies Allport, 966 Muirlands Vista Way, La Jolla, Calif.

Filed Aug. 4, 1972, Ser. No. 277,897
Int. Cl. B05b *15/00*
U.S. Cl. 239—542 **5 Claims**



An improved device is provided to supply irrigation water in controlled limited amounts to the root zone of plants. The device is constructed from an outer tube or pipe suitable for carrying water along which outlets are spaced as required for the particular crop being irrigated. An inner tube which may be an osmosis membrane; or which may be formed of resilient material, with spaced holes therein; is fitted inside the outer pipe in such a way that water pressure in the inner tube keeps the inner tube in contact with the inside wall of the outer pipe. The surface between the inner tube and the outer pipe is preferably textured with a pattern that provides multiple, continuous, restricted paths through which the water must flow from the inner tube to the outer pipe. The holes in the inner tube are located so that water passing from the interior of the inner tube to the outlets in the outer pipe must travel along these restricted paths. Therefore, the shape and size of the texturing and the distance the water travels along the restricted paths provide flow control of the water supplied to the plants in the limited quantities desired.

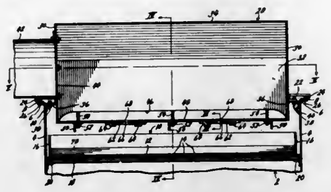
As flow control is obtained from the restricted areas, the holes in the inner tube and the outlets in the outer pipe may be relatively large and clog free. Furthermore, the resilient inner tube is of such a design that with the water turned off it will separate from the outer pipe. When turned on again, a small quantity of water flows into the textured area between the inner tube and outer pipe, and as the pressure builds up the extra water is extruded out of the outlets in the outer pipe flushing with it any solids that may tend to clog the restricted paths.

3,777,988

LIQUID DISTRIBUTING SYSTEM FOR SPRINKLER PANS

Ralph F. Thompson, Grandview, Mo., assignor to Salco, Inc., Grandview, Mo.

Filed Apr. 6, 1972, Ser. No. 241,759
Int. Cl. B05b *1/14*
U.S. Cl. 239—553.3 **6 Claims**



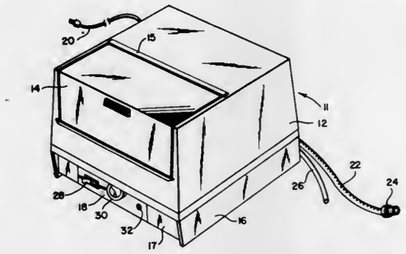
A liquid distributing system for perforated sprinkler pans consisting of a header box adapted to be disposed over a sprinkler pan intermediate its ends and to which liquid is supplied, the box having openings in the walls thereof for directing liquid toward both ends of the pan, and having an adjustably tiltable floor whereby to regulate the size and contour of the openings, the floor having adjustable openings for supplying liquid to the portion of the pan directly below it.

3,777,989

DISHWASHER WITH CYCLE TIMING SYSTEM

Gerald M. Pacella, 100 Pennypacker Dr., Willingboro, N.J., and Richard S. Eckman, 448D Garnet Mine Rd., Boothwyn, Pa.

Filed Apr. 14, 1972, Ser. No. 244,114
Int. Cl. B05b *1/18*
U.S. Cl. 239—567 **22 Claims**

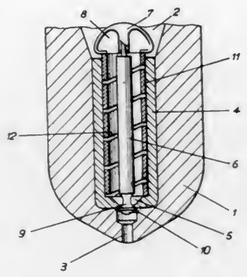


A cycle timing system for dishwasher apparatus controls the fill and drain sequence. A control shaft is manually rotated to wind a torsion spring and bias the control shaft for rotation in a first direction. This rotation is inhibited by a pair of detent arms which are biased towards a ratchet wheel mounted on the control shaft. Each detent arm is adapted to engage a tooth of the ratchet wheel, one arm being midway between a pair of adjacent teeth of the ratchet wheel when the other detent arm is engaged with a tooth of the ratchet wheel and vice versa. A float, which senses the level of water in the tube of the dishwasher apparatus, is mounted on a pivoted float arm which rotates a float arm rod having a float arm rod extension adapted to push one detent arm from the rachet wheel when the water level in the tub reaches a predetermined high level and to push the other detent arm from the ratchet wheel when the water level in the tub reaches a predetermined low level. When a detent arm is pushed from a tooth of the ratchet wheel, the control shaft is free to rotate in the first direction until a tooth of the ratchet wheel is engaged by the other detent arm. A control cam is mounted on the control shaft and actuates a valve control switch causing a valve to assume a fill or a drain position. The dishwasher includes a sprayer formed by a channel integral with the bottom wall of the tub and covered by a cover plate having a plurality of spray orifices.

3,777,990
VALVED NOZZLE FOR AN INJECTION MOLDING MACHINE

Kurt Herzog, Wilketstrasse 186, Degersheim, Switzerland

Filed Apr. 14, 1972, Ser. No. 244,150
Claims priority, application Switzerland, Apr. 20, 1971, 5743/71; Aug. 9, 1971, 11698/71
Int. Cl. B05b *1/30*
U.S. Cl. 239—571 6 Claims

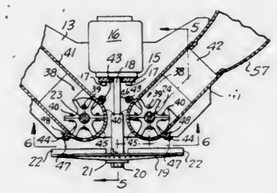


The restricted discharge orifice in a nozzle for an injection molding machine is normally held closed by a valve member in the nozzle bore which engages a valve seat in the bore contiguously adjacent the orifice. The valve member is biased toward the closed position by a helical compression spring in the nozzle bore. The spring is a metal strip of rectangular cross section whose narrow edges bound the steeply helical gap separating the spring turns. The valve is opened by the pressure of the molten plastic when used on a screw-type injection machine, or by engagement of the mold with an abutment projecting from the valve member outward of the nozzle orifice in the closed position of the valve, when the nozzle is used on a plunger-type molding machine.

3,777,991
LAWN TREATING MACHINE

Robert Picardat, 7712 Ridgecrest Dr., Alexandria, Va.

Filed Feb. 11, 1972, Ser. No. 225,556
Int. Cl. A01c *19/00*
U.S. Cl. 239—656 9 Claims

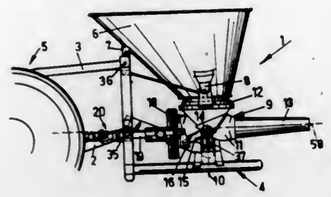


A lawn treating machine mounted on and driven by a garden tractor and including a scattering mechanism for scattering lawn treating materials carried in hoppers supported on the tractor. The scattering mechanism includes a generally horizontal rotatable disc and rotating feed elements which feed material from the hoppers to the disc.

3,777,992
SPREADER

Cornelis J. de Koning, Nieuw-Vennep, Netherlands, assignor to H. Vissers N.V., Nieuw-Vennep, Netherlands

Filed Dec. 3, 1971, Ser. No. 204,445
Claims priority, application Netherlands, Dec. 8, 1970, 7017863
Int. Cl. A01c *3/06*; E01c *19/20*
U.S. Cl. 239—689 5 Claims

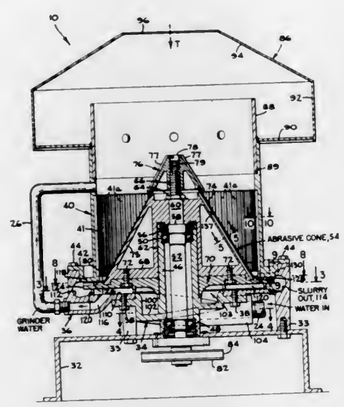


A spreader, e.g. fertilizer, comprises an oscillating spreading mechanism, owing to which the spreader as well as the towing vehicle are subject to considerable oscillating movements, causing much wear to said spreader and vehicle and worrying the human driver. The spreader according to the invention is more quiet and/or can spread fertilizer over a considerably larger width, in that compensation mass for damping movements is supported by the frame of the spreader.

3,777,993
METHOD AND APPARATUS FOR COMMINUTING

Richard N. Crandall, 17792 Lewis Dr., Huntington Beach, Calif.

Filed Nov. 8, 1971, Ser. No. 196,421
Int. Cl. B02c *18/40*
U.S. Cl. 241—15 14 Claims

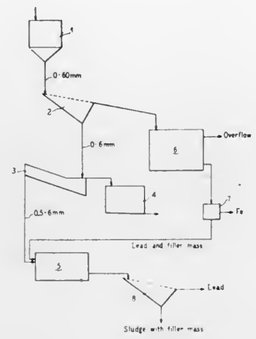


A trash grinder has a chamber with a fixed cylindrical wall containing a rotatable abrasive cone with a water impeller under the base of the cone. Water is admitted to the impeller and to the grinding chamber along with trash. The trash forms a frusto-conical mass which rotates about its own axis and about the axis of the cone and works its way down the chamber under the force of gravity. The inertia of the mass causes relative grinding motion of the mass and discrete grinding elements of the cone which reduces the mass into fine particles that form a slurry along with the water, which slurry is ejected by the impeller. The slurry can be used for disposal in a sewage system.

3,777,994
RECOVERY OF LEAD FROM ACCUMULATOR SCRAP

Rudolf Fischer, Cologne, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Jan. 26, 1972, Ser. No. 221,042
Claims priority, application Germany, Jan. 29, 1971, P 21 04 130.5
Int. Cl. B02c *21/00*
U.S. Cl. 241—24 3 Claims

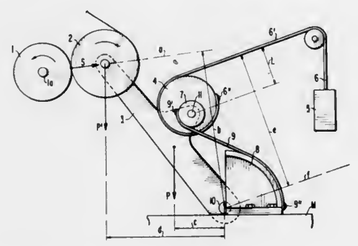


Lead accumulators or used storage batteries are coarsely ground into pieces in an impact crusher and the fine material containing metallic lead is separated and ground again and then classified. The remaining part of the coarsely ground material is subjected to a sink-flotation-separation and the fine material recovered as a sludge is introduced into a tubular vibrating mill filled with grinding bodies and ground therein, whereupon the ground material is screened and classified to recover the lead therein.

3,777,995
THREAD WINDING DEVICE

Ettore Funaioli, Bologna; Piercarlo Landini, Busto Arsizio, and Giulio Marella, Palazzolo Sull Oglio, all of Italy, assignors to Societa'Italiana Resine S.p.A., Milan, Italy

Filed July 1, 1971, Ser. No. 158,825
Claims priority, application Italy, July 1, 1970, 26847 A/70
Int. Cl. B65h *54/02*, *54/42*
U.S. Cl. 242—18 DD 1 Claim

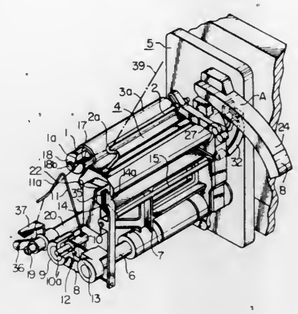


In apparatus for the winding of continuous thread, the tension of the thread is maintained constant during winding by an arrangement adapted to regulate the contact force between the roller and the reel, such regulation taking place as a function of the diameter of the reel while it is being wound.

3,777,996
BOBBIN EXCHANGE MECHANISM OF A YARN WINDER

Soichi Torii, 28, Shichiku Umenokicho, Kita-ku, Kyoto, Japan

Filed Oct. 1, 1971, Ser. No. 185,673
Claims priority, application Japan, May 9, 1971, 46/33737
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 R 4 Claims

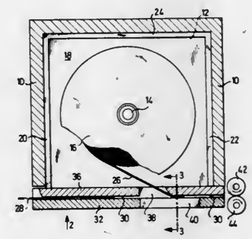


An improved bobbin exchange mechanism of a yarn winder, particularly a device for catching an end of supplied yarn upon a fresh bare bobbin after doffing a full packaged bobbin and mounting a fresh bare bobbin upon a winding mechanism of a yarn winder.

3,777,997
APPARATUS FOR APPLYING FILMED IMAGES TO PUNCHED CARDS AND COMPONENTS FOR SUCH APPARATUS

Franz Spiroch, Coburg, and Heinz G. Ostwald, Frankfurt, both of Germany, assignors to Eichner Organisation KG, Coburg, Germany

Filed Oct. 21, 1971, Ser. No. 191,325
Claims priority, application Germany, Oct. 29, 1970, P 20 53 035.2
Int. Cl. B65h *19/02*
U.S. Cl. 242—55.53 1 Claim



A cassette for holding a spool or strip of film for use with apparatus for applying images on the film separately to punched cards. The cassette has a spool holder and its own film guide consisting of a slot located between the front wall of the cassette and a guide part. Film from a spool is fed into the slot via an opening in the front wall.

3,777,998

AUTOMATIC BAND-WINDING MACHINE

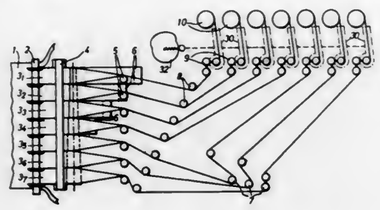
Willi Jores, Opladen; Franz Hoffacker, Langenfeld; Bernhardt Kreit; Helmut Lehmann, both of Leverkusen, and Herbert Hardenbicker, Bergisch Gladbach, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 10, 1972, Ser. No. 225,154

Claims priority, application Germany, Feb. 13, 1971, P 21 06 865.5

Int. Cl. B65h *35/02, 19/26*

U.S. Cl. 242—56.2 11 Claims



An automatic band-winding machine for a plurality of bands comprises winding heads, threading units having cutting blades, prewinding mechanisms, a band-deflecting station and a conveyor belt for carrying away the ready rolls. The winding heads, which are adapted to be driven through bevel gears and friction clutches are arranged opposite one another in one plane about a horizontal axis and are rotatable about this axis through 180°. Gravity clutches are provided for so that only the winding heads above the horizontal plane through the common axis are connected to the drive.

3,777,999

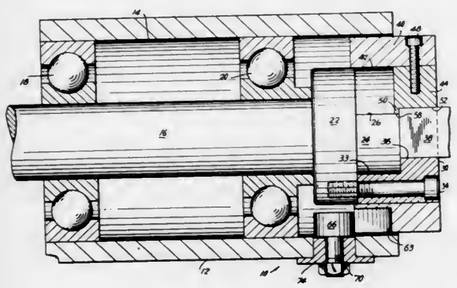
SAFETY DRIVE CHUCK

Joseph Sciola, Upper Saddle River, and Gabor Nagy, Clifton, both of N.J., assignors to Super Chuck Company, Inc., Paterson, N.J.

Filed Nov. 12, 1971, Ser. No. 198,169

Int. Cl. B65h *19/00*

U.S. Cl. 242—68.4 5 Claims



A safety drive chuck for the drive of a driven shaft is provided and comprises rotatable, open-ended socket means into which said shaft is inserted for the drive of the latter, locking means which are movable relative to said socket between a first position wherein said locking means close said socket to prevent the falling of said shaft therefrom, and a second position wherein said socket is opened to permit the removal of said shaft therefrom, and positioning means which are operable to enable movement of said locking means into said second position only when said socket is in the single position thereof which prevents the falling of said drive shaft therefrom.

3,778,000

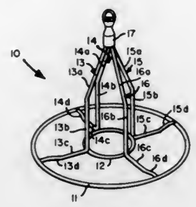
ROTATABLE REEL

James H. Breuner, 1226 Broadway, and Clarence E. Stumpf, Jr., 2255 Brommer St., both of Santa Cruz, Calif.

Filed July 26, 1972, Ser. No. 275,309

Int. Cl. B65h *75/20*

U.S. Cl. 242—77.2 8 Claims



A reel for storing a coil of wire, and for either unwinding or rewinding the wire thereon, said reel being capable of being stacked within or nested with other similar reels. The reel includes an inner annular rim and an outer annular rim. A plurality of rod members, being connected together at one of their ends, diverge and extend downwardly at substantially equal angles with respect to each other to connect to the inner annular rim, and then extend outwardly and upwardly to connect at their other ends to the outer annular rim, thereby forming a core frame and a base frame. The reel includes a rotatable suspension connector having a reel holder and a holder shaft to enable the reel to be easily suspended and to be freely rotated when desired.

3,778,001

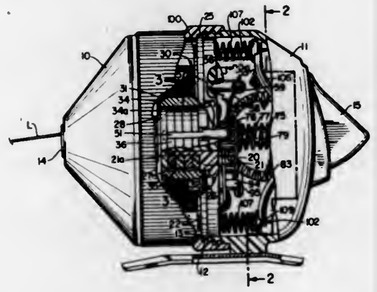
SPINNING REEL

R. Dell Hull, 6101 E. Apache St., Tulsa, Okla.

Filed Jan. 26, 1972, Ser. No. 220,755

Int. Cl. A01k *89/02*

U.S. Cl. 242—84.5 A 10 Claims



The disclosure herein relates to an improved "fine tuning" adjustment for a drag brake mechanism for heavy duty, closed face spinning reel assemblies of the type including a reel frame, a normally non-rotatable axially fixed line spool mounted on a cylindrical support projecting forwardly from the frame, and a spinner head carrying a pickup element mounted on a longitudinal main shaft supported in the frame for rotation about and displacement along a predetermined axis. Selectively predetermined, limited "drag" or rotation of the spool about its cylindrical support is accommodated through the controlled expansion and contraction of a series of split clutch rings. More specifically, the clutch rings are effectively increased in diameter by an eccentric cam actuator disposed between the split surfaces of the clutch rings, which

actuator itself is uniquely, finely adjusted by a control member at the crank lever through means of a unique arrangement which applies the displacement of a jack screw to the eccentric actuator through a coil spring and lever arm mechanism. The jack screw is actuated through a two-gear train controlled by a star wheel supported on the reel crankshaft, adjacent the reel crank lever. The crankshaft, itself, drives the main shaft through appropriate gearing.

3,778,002

DEVICE FOR CARRYING COILED MATERIAL SUCH AS A COIL OF BARBED WIRE

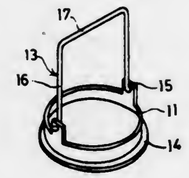
Fernand Alleweireldt, Kortrijk, Belgium, assignor to N. V. Bekaert S.A., Zwevegem, Belgium

Filed Oct. 28, 1971, Ser. No. 193,346

Claims priority, application Germany, Dec. 31, 1970, P 20 64 648.4

Int. Cl. B65h *49/00*

U.S. Cl. 242—129 7 Claims



A device adapted to carry a coil of wire or the like includes a cylindrical ring having an outside diameter about the same as the inside diameter desired for the coiled material, at least one radial projection extending outwardly from one end of the ring a distance sufficient to support the coil thereon, and a handle connected to the ring and adapted to carry the device and the coiled material thereon. The device is particularly effective for carrying coils of barbed wire. Despite the fact that only a fraction of a coil of barbed wire is supported directly by the cylindrical ring and radial projection, the layers of the coil do not sag because of their mutual coherence and adequately support the coil. In producing the coiled material the device may be mounted on the winding mandrel of a winding machine.

3,778,003

SPOOLING DEVICE FOR UNWINDING WIRE

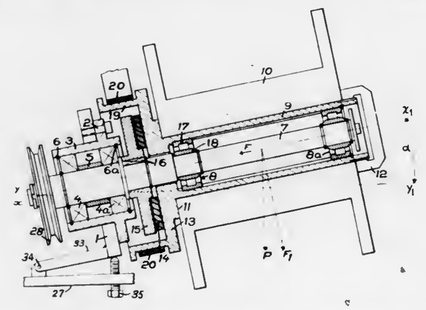
Jean Godderidge, 11, Boulevard Henri Barbusse, Houilles, France

Filed Aug. 12, 1971, Ser. No. 171,112

Claims priority, application France, Jan. 15, 1971, 7101364

Int. Cl. B65h *59/38*

U.S. Cl. 242—156 5 Claims



In a spooling device for unwinding thin wire a bobbin is arranged on a hub mounted in free rotation and capable of sliding over a support shaft, the longitudinal axis of which is inclined by an adjustable angle α with respect to the horizontal, the said support shaft being driven in rotation and being integral with a friction disc against which one face of the hub bears by means of a friction packing, under the action of a force F. The invention is of particular value in wire-drawing for unwinding thin wire from a large bobbin.

3,778,004

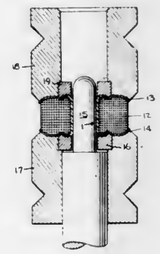
DISPOSABLE SEWING MACHINE BOBBIN

Howard E. Devine, Johnston, R.I., assignor to The American Thread Company, Stamford, Conn.

Filed Nov. 1, 1971, Ser. No. 194,240

Int. Cl. B65h *55/00*

U.S. Cl. 242—169 5 Claims



An improved prewound disposable sewing machine bobbin has a plastic core tube for superior strength and dimensional stability. The ends of the core tube are reduced in wall thickness, preferably by internal beveling, before assembly, thereby providing better crimping and reduced thread breakage during bobbin assembly.

3,778,005

MECHANISM FOR HANDLING MAGNETIC TAPES

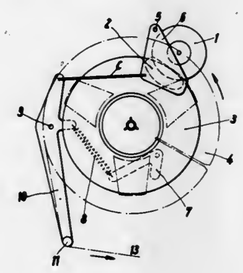
Fritz Grunlger, Stockheim; Gunther Muller, Wilhelmsthal, and Klaus Steiger, Kronach, all of Germany, assignors to Loewe-Opta GmbH, Berlin, Germany

Filed Jan. 5, 1972, Ser. No. 215,609

Claims priority, application Germany, Jan. 7, 1970, G 71 00 448.3; Jan. 7, 1970, G 71 00 449.4; Jan. 7, 1970, G 71 00 447.2

Int. Cl. B65h *59/00*; G03b *1/04*; G11b *15/32*

U.S. Cl. 242—186 14 Claims

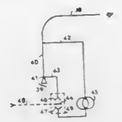


Mechanism for selectively pulling the tape of a tape recorder forwardly or retarding the tape as required to maintain the tape under constant tension. A means for scanning tape tension controls the air gap of a magnetic eddy current coupling interposed between a constant speed driving means and an eddy current disc drivingly connected to a tape spool.

3,778,006
CONVEYING INSTALLATIONS USING PNEUMATIC TUBES

Rene Jean Martin, Villeneuve-La-Garenne, France, assignor to Societe Francaise Des Tubes Pneumatiques, Haute de Seine, France

Filed Apr. 17, 1972, Ser. No. 244,655
Claims priority, application France, June 30, 1971, 7124015
Int. Cl. B65g 51/32
U.S. Cl. 243—19 2 Claims



The present invention deals with improvements to conveyor installations using pneumatic tubes.

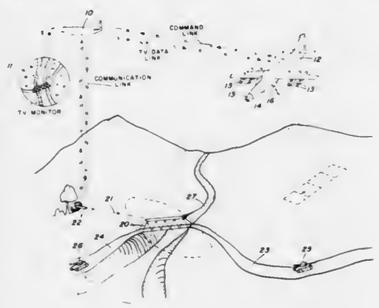
Said improvements comprise connecting the pneumatic tube element closed at one of its extremities is a dispatching-receiving station with the conduit of a pumping machine by means of two pipes each provided with a one-way floating clapper-valve, said valves being mounted in opposition, the pipe closer to the closed extremity of the pneumatic tube element permitting the passage of air only from the conduit of the pumping machine towards the pneumatic tube.

This improvement is particularly simple, effective and reliable for conveyor installations provided with a single pneumatic tube connecting different dispatching-receiving stations.

3,778,007
ROD TELEVISION-GUIDED DRONE TO PERFORM RECONNAISSANCE AND ORDNANCE DELIVERY

Stuart D. Kearney, II, Bethesda, Md., and Walter Richardson, Ventura, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 8, 1972, Ser. No. 252,931
Int. Cl. F41g 7/10
U.S. Cl. 244—3.14 10 Claims

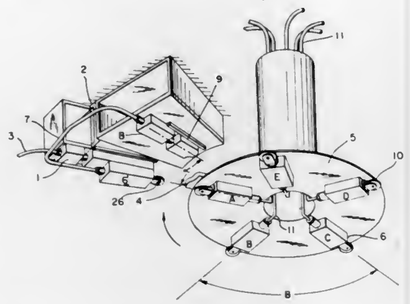


A remote observation and destruction system comprises an unmanned flight vehicle guided by a remote operator viewing a television display to perform reconnaissance and the delivery of naval ordnance. A television camera is mounted on the unmanned flight vehicle and the television picture is transmitted to a television monitor in a remote control station. The remote operator controls the flight vehicle on the basis of the information contained in the television picture. A hand held laser aimed at the target by a forward observer can be used to point out concealed targets.

3,778,008
SYSTEM FOR INITIATING ORDNANCE DEVICES MOUNTED UPON A ROTATING PLATE

Robert W. Ingham, and Milton W. Chambers, both of Hollister, Calif., assignors to Teledyne McCormick Selph, Hollister, Calif.

Filed Feb. 16, 1972, Ser. No. 226,878
Int. Cl. B64c 27/00
U.S. Cl. 244—17.11 15 Claims

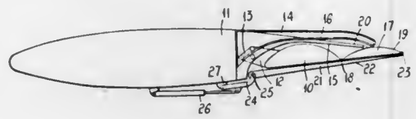


A system for the sequential transfer of lineal mechanical force to initiate ordnace detonators mounted upon a rotating plate, for example a system to sequentially detonate for the purpose of severing helicopter blades, so as to enable helicopter pilot ejection under emergency conditions.

3,778,009
AERODYNAMIC SURFACES

Peter Killcross Jones, Macclesfield, England, assignor to Hawker Siddeley Aviation Limited, Surrey, England

Filed June 23, 1971, Ser. No. 155,704
Claims priority, application Great Britain, June 23, 1970, 30,512/70
Int. Cl. B64c 3/56, 9/18
U.S. Cl. 244—42 DA 11 Claims



A high lift device at the trailing edge of an aircraft wing, consisting of members that can be extended or inflated to produce a bluff thickened trailing edge of generally semicylindrical profile. Air is blown over this semi-cylindrical profile from one or more naturally or forcibly blown slots to achieve boundary layer control.

3,778,010
AIRCREW ESCAPE SYSTEMS

Frederick John Potts, Brough, and Geoffrey Charles Wickenden, Kingston-Upon-Hull, both of England, assignors to Hawker Siddeley Aviation Limited, Surrey, England

Filed Jan. 14, 1972, Ser. No. 217,896
Claims priority, application Great Britain, Jan. 15, 1971, 2,166/71
U.S. Cl. 244—121 8 Claims

A canopy transparency break-up system is provided, for use in emergency escape from an aircraft through the cockpit canopy, in which miniature detonating cord (MDC) is held in place around the periphery of the transparency, or a selected

area of the transparency, and is formed into loops at intervals which loops act as crack iniators when the cord is detonated. The cord is clamped in place, without adhesive, by means of retaining plates of springy steel which are bolted to the canopy frame and are segmented by transverse slots at intervals along

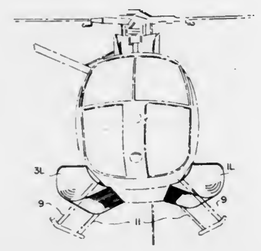


their lengths, these plates having appropriate extensions or tongues in the regions where the cord loops occur. The cord ends are brought into contiguity within a common detonator unit the axis of which is at right angles to the axes of the cord ends.

3,778,011
HELICOPTER CARGO POD

Corbitt Thomas Cannon, 109 Daniel St., Arnprior, Ontario, Canada

Filed Jan. 11, 1972, Ser. No. 216,961
Claims priority, application Canada, Nov. 9, 1971, 127,210
Int. Cl. B64d 9/00
U.S. Cl. 244—137 R 4 Claims



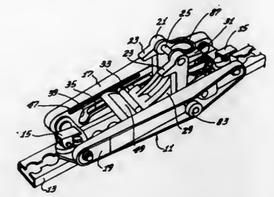
A cargo pod suitable for attachment to a passenger helicopter comprises: a faired housing forming an elongated box; a contoured inward side to the housing, shaped to fit closely at least round its edges to a part of a helicopter fuselage which lies at the sides of the helicopter and immediately below access doors of the helicopter; a reinforced upper part of that housing, forming a step arranged to carry the weight of passengers using said access doors; and attachment means by which said housing can be firmly secured to, and supported by, the helicopter fuselage.

3,778,012
AUTOMATIC PALLET LOCK

Reuel J. Fernandez, Santa Barbara, Calif., assignor to Republic National Bank of Dallas; Irving Trust Company and Union Bank, Dallas, Tex.

Filed Feb. 27, 1970, Ser. No. 15,125
Int. Cl. B65g 1/00
U.S. Cl. 248—119 R 12 Claims

A pallet lock, for use in aircraft or other carriers, having two locking dogs which are movable between unlocked positions within a frame and locking positions above the frame. A first locking dog is fixedly pivoted to the frame and is partially actuated by a trigger lever which is tripped by a first pallet and acts through a spring to move the free end of the dog toward



the locking position. A second dog is pivoted to the free end of the first dog and is movably pivoted within the frame. If the first pallet stops over the trigger, an actuating lever, indirectly pivoted to the second dog, is moved by a second pallet to force the first and second dogs into the pallet-locking position.

3,778,013
ADJUSTABLE SUPPORT

Albert A. Selenke, 1302 S. Magnolia Way, Denver, Colo.

Filed July 27, 1972, Ser. No. 275,629
Int. Cl. E04b 2/78
U.S. Cl. 248—221 15 Claims



An adjustable support for positive suspension of articles such as brackets, steps, partition walls and the like comprises an elongated rigid rod having flexible straps or cables of inextensible material wrapped at least partially therearound so as to converge at spaced intervals to define reinforcing areas. The straps at reinforcing areas define suspension locations at which reinforcing clips are retained in vertically spaced positions along the length of the rod. The bracket or other object oeing suspended from the support includes a downwardly projecting finger insertable vertically into limited space formed between the clips and the outer surface of the rod to positively retain the article in a selected position.

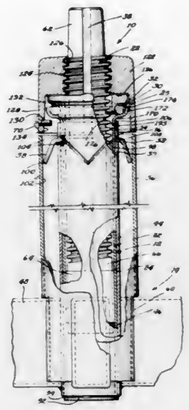
3,778,014
CHAIR BASE SWIVEL ARRANGEMENT

Richard P. Driscoll, Clarendon Hills; James W. Lannert, Oswego, and Donald V. Beaver, Brookfield, all of Ill., assignors to All-Steel Equipment Inc., Aurora, Ill.

Filed July 26, 1971, Ser. No. 166,099
Int. Cl. F16m 11/00, 13/00
U.S. Cl. 248—406 8 Claims

A chair base swivel arrangement comprising a tubular member supported in upright position from a chair base and carrying at its upper end an axially split O-shaped bearing element of antifriction material that is engaged by a sintered swivel member on which the chair base nut or hand wheel

rests. The bearing element seats of the tubular member and swivel member are of complemental semi-torus configuration relative to the bearing element peripheral surface, with the tu-



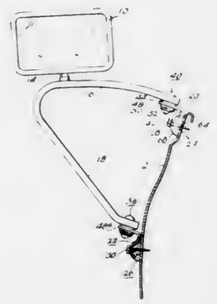
bular member seat engaging the lower radially outer quadrant of the bearing element and the swivel member seat engaging the upper radially inner quadrant of the bearing element.

3,778,015

METHOD AND APPARATUS FOR THE MOUNTING OF VEHICLE-MIRROR ASSEMBLIES

James W. Holzman, Haycock Twp., Bucks County, Pa., assignor to Delbar Products, Inc., Perkasie, Pa.

Filed July 17, 1972, Ser. No. 272,123
Int. Cl. B60r *1/06*
U.S. Cl. 248—475 R **10 Claims**



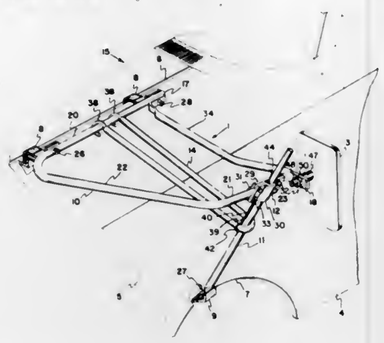
A vehicle-mirror is mounted to the exterior of a vehicle body by providing on each selected mounting area of the vehicle body an adapter member presenting a cylindrical surface against which a corresponding cylindrical surface of a mirror-supporting articulating member is positioned in angularly adjustable mating relation. The adapter member and the articulating member are secured to each other and to the vehicle body by a fastener, such as a self-tapping screw, extending through a slot in one member and a bore in the other member; a pilot hole may be made in the vehicle body for the fastener by applying a drill through the slot and bore combination with the articulating member and the adapter member in their selected mating positions. In this way a secure flush mounting is obtained for any of a variety of contours of vehicle surfaces.

3,778,016

ARTICLE MOUNT

Paul D. Gernhardt, Raytown, Mo., and Charles A. Slater, Jr., Overland Park, Kans., assignors to Peterson Manufacturing Company, Grandview, Mo.

Filed Oct. 24, 1972, Ser. No. 299,796
Int. Cl. B60r *1/06*
U.S. Cl. 248—475 R **11 Claims**



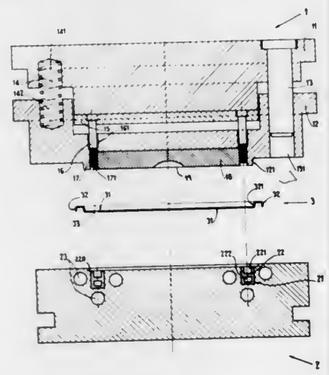
A rear view mirror support having a mounting structure for supporting a rear view mirror in spaced relation from a vehicle front fender. The mounting structure is comprised of arm members connected together and having mounting members secured to same for engaging portions of a vehicle front fender. A tensioning member is secured to and extends between the arm members for holding the mounting members in engagement with the fender by applying force to the arms.

3,778,017

APPARATUS FOR JOINT MANUFACTURE

Jacques Doucerain, and Bernard Baumann, both of Paris, France, assignors to Cebal GP, Paris and Societe De Traitements Electrolytiques Et Electrothermiques, Massy, both of France, part interest to each

Continuation of Ser. No. 842,968, July 18, 1969, abandoned.
This application Dec. 13, 1971, Ser. No. 207,696
Claims priority, application France, July 23, 1968, 68160224
Int. Cl. B22d *27/02*
U.S. Cl. 249—78 **9 Claims**



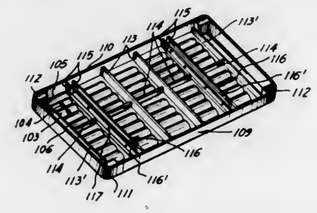
A plastic joint and apparatus for its manufacture which includes a first molding portion comprising a base supporting a body which can be displaced relative to said base, spring means biasing the body against the base and molding means being movable with respect to the base in response to displacement of the body, and a second molding portion comprising a base plate having a molding groove carrying a channel member of an electrically conductive material and induction heating means to heat the channel member to reduce a blank of a thermoplastic material contained therein, whereby the thermoplastic material is displaced between a gap between sheets of a rigid material to form a continuous closed joint body between the sheets of rigid material, the edges of the sheets being in molded engagement in continuous grooves in the joint body.

3,778,018

MOLD STRUCTURE

Juan Manuel Abalo, Buenos Aires, Argentina, assignor to Noel Y Compania Limitada Sociedad Anonima Argentina de Dulces Y Conservas, Buenos Aires, Argentina

Filed July 22, 1971, Ser. No. 165,065
Int. Cl. A23g *1/22*
U.S. Cl. 249—120 **8 Claims**



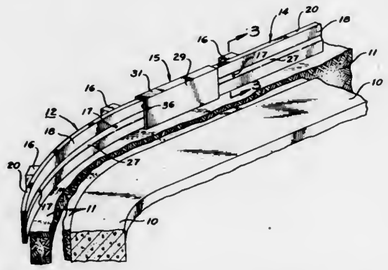
Molds used for producing foamed chocolate are subject to wear and impacts by conveyors and therefore must be provided with reinforcing means including corner reinforcing members and a grid rib arrangement below the molding cavities, said grid rib also providing rails for sliding the molds along a runway, and the conveyor must guide the molds through pressurized and non-pressurized zones, so that the conveyor must include sealing members which are also adapted to push the molds and simultaneously provide the necessary sealing.

3,778,019

FORM STRUCTURE

William J. Stegmeier, 1021 C Shary Clr., Concord, Calif.

Continuation-in-part of Ser. No. 154,290, June 18, 1971. This application Sept. 25, 1972, Ser. No. 292,073
Int. Cl. B28b *7/06*; **E04g** *17/02*
U.S. Cl. 249—189 **2 Claims**



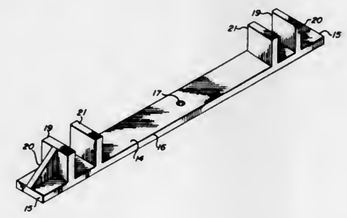
Form structure for use in pouring the concrete deck for a swimming pool. The form structure includes a plurality of elongated board structures and one or more generally tubular connector structures each of which is hollow from end-to-end thereof and dimensioned to removably receive the end portions of two successive board structures inserted thereinto from opposite directions. The extent to which such board structures are insertable into the connector is defined by stop means projecting into the interior of the connector, and the boards are tightly held by frictional gripping means able to accommodate boards of various thickness while preventing sagging thereof. The board structures have sufficient flexibility in the longitudinal direction to permit mold forms comprising the same to be curved to accurate contours required by any particular installation. The board structures are also essentially hollow but are provided with transversely oriented webs certain of which define nailing spaces therebetween that permit the boards to be removably nailed to stakes or other support members provided for this purpose.

3,778,020

FOUNDATION STRIP FOR CONCRETE MOLDING

Charles B. Burrows, 1142 E. Ruth, Phoenix, Ariz., and Edward A. Vajda, 8551 E. Thornwood Dr., Scottsdale, Ariz.

Filed Mar. 9, 1972, Ser. No. 233,207
Int. Cl. E04g *17/06*
U.S. Cl. 249—219 R **2 Claims**



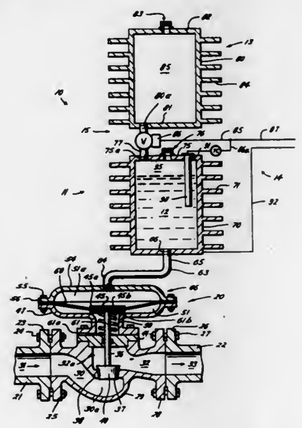
This specification discloses a foundation strip that is used to locate two vertical mold panels in spaced relation on a base and maintain the panels in these positions during the molding of a concrete wall. The strip is an integral one-piece member of plastic and is structurally designed to incorporate the necessary properties of strength and rigidity into the strip when made of plastic, as compared to metal.

3,778,021

POWER SYSTEMS FOR VALVE SYSTEMS

Joe K. Alexander, and Donald D. Williams, both of Box 92, Friendswood, Tex.

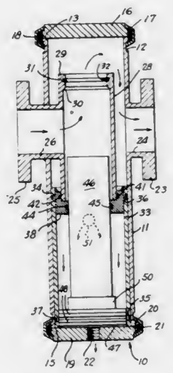
Continuation of Ser. No. 84,255, July 17, 1969, abandoned.
This application Feb. 19, 1971, Ser. No. 117,100
Int. Cl. G05d *7/06*; **F03g** *7/06*; **F16k** *31/02*
U.S. Cl. 251—11 **8 Claims**



A closed, self-sustaining power system for the operation of valves includes a first means for storing and containing an ex-

pandable system which means communicates with a responsive means of a valve system to enable the valve system to be opened, closed or controlled. A controlled energy means transmits energy to the expandable medium to thereby cause an increase in pressure in the responsive means of the valve system which enables the valve system to respond as desired. After actuation of the responsive means of the valve system, the means for storing is enabled to communicate with a reservoir means which thereby increases the area of the closed system to reduce the pressure in the closed system sufficiently to terminate actuation of the responsive means of the valve system.

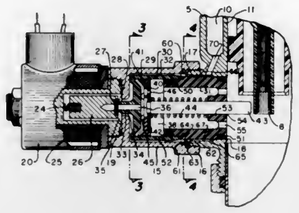
3,778,022
VALVE
Raymond Yauneridge, 605 Cherry St., Windber, Pa.
Filed Jan. 27, 1972, Ser. No. 221,331
Int. Cl. F16k *31/143, 1/00*
U.S. Cl. 251—14 **7 Claims**



A valve in which a piston plug moving through a cylinder engages a seal at one end of the cylinder to prevent the flow of fluid therethrough. The opposite end of the piston is also sealed to the cylinder to prevent leakage. A cylindrical sleeve is sealed into the valve body and has an enlarged piston mounted for sealed reciprocation therein and forming part of the piston valve. Pneumatic or hydraulic pressure applied to opposite sides of the piston reciprocating in the sleeve cylinder will cause the piston valve to reciprocate to open and closed positions. In the modified form of the invention pressure is applied to one end of the reciprocating piston and a spring is provided for its return. In a further modified form of the invention a connecting rod is coupled to the piston for hand operation of the valve. All working parts of the valve can be removed for repair without disconnecting the valve body from the line.

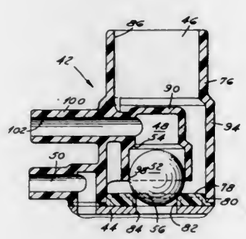
3,778,023
OPERATING ARRANGEMENT FOR FLUSH VALVES
Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.
Filed Dec. 22, 1971, Ser. No. 210,652
Int. Cl. F16k *31/10*
U.S. Cl. 251—30 **5 Claims**

A cylindrical casing is attached at one end to a flush valve and at the other end supports an electric solenoid. Connecting fluid flow passages in the flush valve body and through the length of the casing lead to the solenoid valve seat. A piston in the casing is operated by hydraulic pressure through the fluid passages when the solenoid is operated. This action projects a



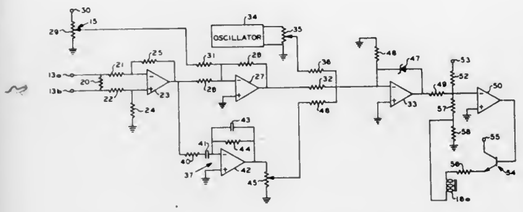
plunger forward into the flush valve to cause it to operate. The solenoid may be operated by an electrical push button located at a remote point from the flush valve.

3,778,024
FUEL VAPOR-LOSS CONTROL VALVE
Jerry B. Rogerson, Taylor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 21, 1971, Ser. No. 191,266
Int. Cl. F02m *19/00, 27/00*
U.S. Cl. 251—63 **1 Claim**



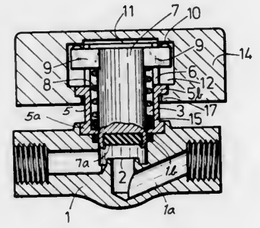
Described is a valve and a system employing such valve to control fuel vapor-loss from the bowl of a carburetor. In the fuel vapor-loss control system, the valve is positioned between the fuel bowl of the carburetor and the air cleaner attached to it. In the preferred form, the valve has a valve body including three passages. The first passage extends from the carburetor fuel bowl to a point within the air cleaner. The second passage is located in part within the first passage, but includes a second part extending to a point outside of the first passage. A third passage is connected with the carburetor fuel bowl and with a canister for the storage of fuel vapor. The second passage in the valve body has a movable member for preventing flow of vapor from the fuel bowl of the carburetor to the air cleaner when the movable member is in contact with a valve seat. Movement of the movable member is controlled by engine manifold vacuum attached to one end of the second passage in the valve body.

3,778,025
MODIFIED ON-OFF CONTROL
Donald W. Lane, Boothwyn, Pa., and Troy J. Pemberton, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 48,343, June 22, 1970, Pat. No. 3,676,782.
This application Mar. 29, 1972, Ser. No. 239,052
Int. Cl. F16k *31/06*; **G05b** *11/10, 11/38*
U.S. Cl. 251—129 **5 Claims**



A modified on-off controller is formed by adding an alternating signal to the error signal. The frequency of the added signal is sufficiently high to prevent the control element from responding at this frequency. A derivative signal can also be added.

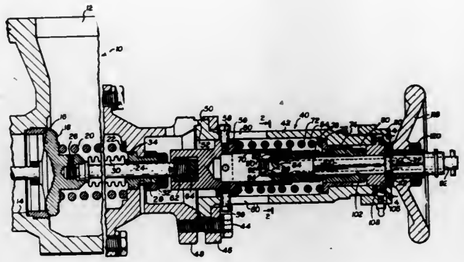
3,778,026
HANDLE FOR FAST-ACTION VALVE
Philipp Kreis, Neumarkterstr. 34-36, Munich, Germany
Filed Dec. 3, 1971, Ser. No. 204,453
Claims priority, application Germany, Mar. 26, 1971, P 21 14 847.0
Int. Cl. F16k *31/60*
U.S. Cl. 251—255 **9 Claims**



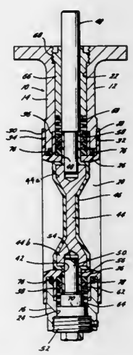
A handle for a fast-action valve having a laterally projecting rotary operator comprises a pair of symmetrically identical members joined together along a plane and forming cavity opening in line with the plane. The two handle halves may be connected together by means of adhesive bonding, pins, snap rigs, keys fitted axially into the top of the handle, etc.

3,778,027
QUICK CLOSING VALVE ACTUATOR
Richard Collins, and Donald Denise, both of Denville, N.J., assignors to Marotta Scientific Controls, Inc., Boonton, N.J.
Filed Sept. 25, 1972, Ser. No. 292,265
Int. Cl. F16k *31/56*
U.S. Cl. 251—297 **16 Claims**

This valve is opened against the force of a spring by motion-transmitting means operated by a hand wheel or other conventional valve-operating mechanism. The invention provides quick release mechanism between the valve and hand wheel to release the valve from its connection with the hand wheel so that the spring can cause instantaneous closing of the valve. In the preferred construction, balls extending into the path of a spring retainer hold the spring under the load imparted to it by the hand wheel or other hand-operating mechanism. A release pin moves a groove under the balls so that they can move inward and out of the path of the spring retainer; and this causes the spring to advance the retainer into position to close the valve and hold it closed. Movement of the hand wheel and its connections into valve closed position resets the mechanism for reopening the valve.



3,778,028
LINED BUTTERFLY VALVE
Gail W. Graves, Richmond; Gerald R. Pope; Joseph T. Stewart, Jr., both of Houston, and Willard L. Petrosky, Alief, all of Tex., assignors to John L. Dore' Co., Houston, Tex.
Filed Aug. 2, 1972, Ser. No. 277,404
Int. Cl. F16k *1/226*
U.S. Cl. 251—306 **18 Claims**

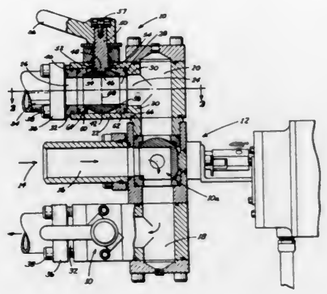


A butterfly valve for use under both pressure and vacuum conditions in corrosive fluid service, the valve having a body member, a substantially rigid plastic resin lining seated within a bore of the body, a disc encapsulated with plastic resin and pivotally mounted within the bore, and first and second packing means disposed between supporting members of the disc and the lining of the body to provide an effective seal against leakage therebetween. In a further embodiment, a resilient seat is disposed between the lining and body member to yieldably urge the lining into engagement with the disc for more positive closure of the disc relative to the body and the lining.

3,778,029
BALL VALVE

William J. Baker, Orange, Calif., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Nov. 22, 1972, Ser. No. 308,686
Int. Cl. F16k 5/06
U.S. Cl. 251—315 18 Claims

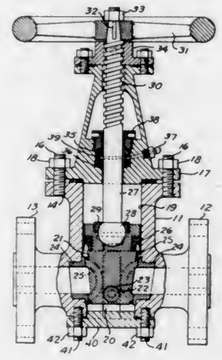


A ball valve which achieves a bubble-tight low pressure seal by a slight interference fit between the valve seats and the ball. The valve seats are precluded from blowing out when the valve is opening to flow with a high pressure differential thereacross by a relief groove and associated apertures in each of the seat carriers which permit the first flow of fluid to bypass around and behind the upstream seat through the holes in the associated seat carrier.

3,778,030
GATE VALVE

Bernard Carlin, Orange, Tex., assignor to Billy J. Garrett, Orange, N.J., a part interest

Filed Oct. 12, 1971, Ser. No. 188,192
Int. Cl. F16k 3/22, 3/316
U.S. Cl. 251—327 2 Claims

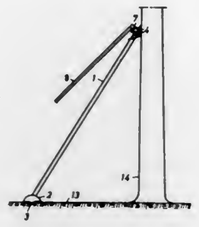


A gate valve having a rising stem actuator sealed with pressure grease retainers and a pressure fitting on the valve. A cross member in the valve body extends through a slot in the gate valve piston to prevent the piston from rotating with respect to the valve stem and valve body.

3,778,031
TREE FELLING GUIDER

Per Henry Enander, Svedbro, Gnarp, Sweden, assignor to Skogsdon Aktiebolag, Stockholm, Sweden

Filed Mar. 16, 1972, Ser. No. 235,234
Claims priority, application Sweden, May 17, 1971, 6406/71
Int. Cl. B66f 1/00, 3/00
U.S. Cl. 254—1 8 Claims

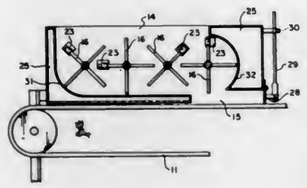


A tree felling guider in which a rod is adapted to be supported at one end on the ground in an inclined position with its other end provided with means to engage the tree trunk. The trunk engaging means comprises a stepping wheel provided with pointed teeth and means for rotating the wheel in one direction so that the rod end will move along the tree trunk toward its root. There is also provided a pawl for preventing rotation of the wheel in the opposite direction.

3,778,032
CANDY MIXER

Thomas E. Milling, Lake Zurich, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Mar. 1, 1972, Ser. No. 230,842
Int. Cl. B01f 7/04
U.S. Cl. 259—6 4 Claims



An apparatus is disclosed for mixing and conditioning aerated chocolate, aerated fat, and cereal particles in the manufacture of candy, the apparatus comprising an elongated trough open at the top and opened at one end of the bottom and having a plurality of rotatable intermeshing tines located within the trough, and wherein a material is placed at the top of one end of the elongated trough and then passes through the rotating tines and out the bottom of the other end onto the conveyor.

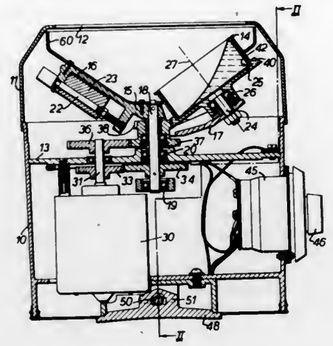
3,778,033
MIXING PROCESS AND APPARATUS

Burke Cole Pullman, London, England, assignor to Techno-Med Limited, London, England

Filed Feb. 29, 1972, Ser. No. 230,255
Claims priority, application Great Britain, Mar. 2, 1971, 5,746/71; June 14, 1971, 27,785/71
Int. Cl. B01f 9/00
U.S. Cl. 259—72 8 Claims

A mixing machine for rapid mixing of dental materials and other substances, having a high speed rotor head on a vertical

axis and an offset mixing vessel on an inclined axis with a common epicyclic drive from a single motor, such that the mixing vessel rotates at a controlled speed while the main rotor

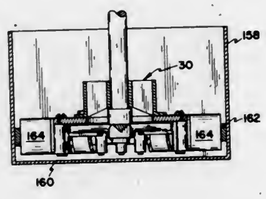


rotates at high speed. This produces an enhanced centrifugal force and internal shearing, resulting in rapid mixing without air being entrained.

3,778,034
AGITATOR ASSEMBLY FOR RECOVERY OF MINERALS

Walter C. Giebel, Sheridan, Mont.

Division of Ser. No. 842,528, July 17, 1969, Pat. No. 3,700,103. This application Aug. 10, 1972, Ser. No. 279,569
Int. Cl. B01f 7/20
U.S. Cl. 259—107 3 Claims



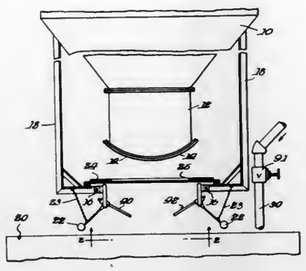
Apparatus for treating ore pulp in a treatment cell attendant to recovery of minerals therefrom, the apparatus having a rotatable shaft with an attached impeller. A stabilizer device is joined to the cell adjacent the impeller so that a shear zone is developed in the ore pulp, the stabilizer device being configurated to maximize turbulence in the shear zone and minimize surging and boiling of the ore pulp at the surface thereof.

3,778,035
MOISTURE COMPENSATING SYSTEM

Paul W. MacKinney, 1012 E. Geneva Rd., Wheaton, Ill.

Division of Ser. No. 834,036, June 17, 1969, Pat. No. 3,631,337. This application Oct. 18, 1971, Ser. No. 190,363
Int. Cl. B28c 7/04
U.S. Cl. 259—154 3 Claims

A system for measuring the moisture entrained in a batch of aggregate material discharged from a storage hopper and for compensating for said moisutre in a batch mixing apparatus. The system includes a plurality of electrical probes arranged to project into a free-falling stream of aggregate material in a plurality of vertical portions of said stream, as said stream is discharged from the storage hopper. Electrical circuit means connected to said probes create an electrical signal proportional to the conductivity and hence the moisture content of each vertical portion of the aggregate stream. Signal accumulating means is also provided to accumulate and integrate said electrical signals during the time interval of aggregate material flow past said probes to provide a resultant electrical signal

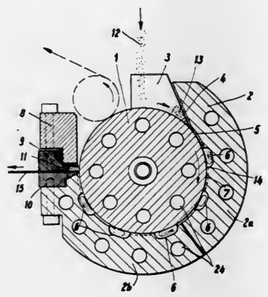


which is proportional to the total entrained moisture in the aggregate batch. Data recording means is also provided to provide indicia of said moisture content of said aggregate in response to said resultant signal.

3,778,036
DEVICE FOR PLASTICIZING AND HOMOGENIZING VISCOUS MASSES

Heinrich Collin, Wilhelm-Meister-Str. 2, Munich, Germany

Filed Mar. 1, 1972, Ser. No. 230,796
Claims priority, application Germany, Mar. 3, 1971, P 21 10 179.1
Int. Cl. B29b 1/06
U.S. Cl. 259—185 11 Claims



A device for plasticizing and homogenizing viscous masses, especially plastics and rubber, in which processing of the material takes place between a rotating drum and a stationary semicylindrical trough partially surrounding the drum which, on the inner surface facing the drum, contains several mixing grooves each extending in a generally longitudinal direction along the inner surface of the trough structure and spaced circumferentially from each other. The grooves are interconnected by channels or slots so that they operate in a sequential manner cooperatively with the drum to properly mix the material introduced at the drum surface.

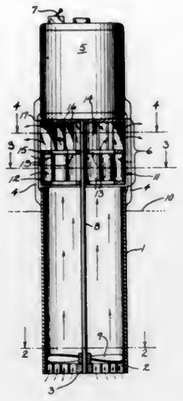
3,778,037
AERATOR WITH IMPROVED IMPELLER ACTION

Robert F. Dierbeck, Rt. 1, Adell, Wis.

Filed May 4, 1971, Ser. No. 140,028
Int. Cl. B01f 7/32
U.S. Cl. 261—28 6 Claims

An aerator for bodies of water or other liquid which includes a submerged impeller which directs water or other

liquid upwardly to an aerating means disposed above the water level. The aerating means includes a two-part rotary member. The lower portion draws air in and mixes it with the



upwardly moving water. The upper portion forces the mixed air and water outwardly, where the water falls back into the body of water.

3,778,038

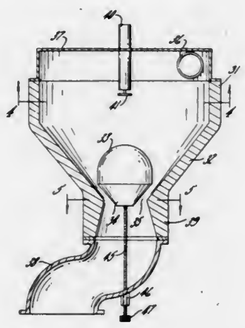
METHOD AND APPARATUS FOR MIXING AND MODULATING LIQUID FUEL AND INTAKE AIR FOR AN INTERNAL COMBUSTION ENGINE

James F. Eversole, Mamaroneck, N.Y., and Lester P. Berriman, Irvine, Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 17,086, March 6, 1970, abandoned. This application June 9, 1971, Ser. No. 151,373

Int. Cl. F02m *9/12*

U.S. Cl. 261—50 R **17 Claims**



A combustible mixture of air and minute fuel droplets is produced for supply to the cylinders of an internal combustion engine. This mixture is formed by accurately controlling both the atomization of fuel and the mass flow rate of air over substantially the entire operating range of the engine. These controls are accomplished by introducing liquid fuel into a stream of intake air and uniformly distributing the fuel in the air followed by passing the air and fuel mixture through a constricted zone to increase the velocity of the mixture to sonic. The sonic velocity air at the constricted zone divides the fuel into minute droplets that are uniformly entrained throughout the air stream. The area of the constricted zone and the quantity of fuel introduced are adjustably varied in correlation with operating demands imposed upon the engine. Downstream from the constricted sonic zone, the air and fuel mixture is accelerated to supersonic velocity in a supersonic zone without imparting substantial turbulent flow thereto. Thereafter the mixture is decelerated to subsonic velocity in a subsonic zone to produce a shock zone where the fuel droplets entrained in the air are believed to be further subdivided and uniformly distributed throughout the combustible mixture before the mixture is supplied to the engine cylinders. The supersonic and subsonic velocities occur in a gradually increasing cross-sectional area corresponding to that of a conical section having an apex angle in the range of about 6° to 18°. Operation of the engine with such a combustible mixture results in substantially reduced levels of undesirable exhaust emissions, and also permits operation of high compression ratio engines on relatively low octane fuel with good power and fuel economy characteristics. Additionally, misfire does not occur even when the engine is operated on relatively lean air-fuel ratios.

3,778,039

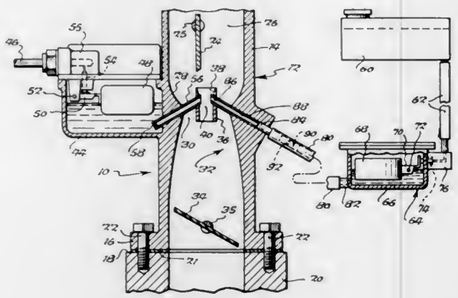
WATER INJECTION SYSTEM

Allen J. Dore, 7535 Transit Rd., East Amherst, N.Y.

Filed Dec. 5, 1972, Ser. No. 312,285

Int. Cl. F02m *25/02*

U.S. Cl. 261—18 A **4 Claims**



A system for injecting water into the boost venturi of a carburetor for ultimate introduction into the combustion chambers of a gasoline type combustion engine. The water flow is metered through an orifice in the water supply conduit at a predetermined ratio to the fuel and is injected into the constricted passage of the boost venturi at a level corresponding to the level of fuel injection.

3,778,040

FUEL SUPPLY CONTROL DEVICE

Hiroyuki Maruoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

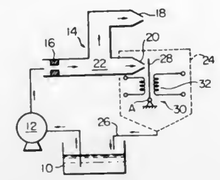
Filed Sept. 23, 1971, Ser. No. 183,111

Claims priority, application Japan, Nov. 17, 1970, 45/101218

Int. Cl. G05b *1/01*

U.S. Cl. 261—36 A **5 Claims**

A device for controlling the amount of liquid fuel to be supplied to a desired device and having a source of liquid fuel, comprising a fuel supply control unit including first and second nozzles and a pressure chamber, the degree of throttling of the second nozzle being varied by a valve member the



movement of which is controlled by a torque motor, whereby a pressure prevailing in the pressure chamber is varied thereby to control the amount of liquid fuel discharged from the first nozzle.

3,778,041

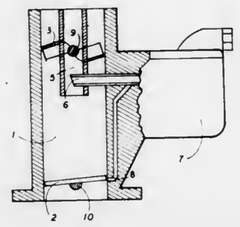
VARIABLE VENTURI CARBURETORS

Claude Robert Kincade, 804 Montgomery St., West Monroe, La.

Filed Mar. 8, 1971, Ser. No. 121,638

Int. Cl. F02m *23/02*

U.S. Cl. 261—50 A **1 Claim**



A variable venturi carburetor comprises respective vacuum sustaining and throttle plates, swingably disposed in respective input and output ends of said carburetor, said ends being connected by a through passageway mixture conduit. A nozzle tube conduit extends from said inlet end to discharge into said through passageway mixture conduit intermediate said vacuum sustaining and throttle plates. Fuel orifices are defined respectively in said nozzle tube conduit between a vacuum sustaining plate and said nozzle tube conduit discharge, and in said through passageway mixture conduit adjacent said throttle plate.

3,778,042

HUMIDIFIER FOR ENVIRONMENTAL CONTROL SYSTEM

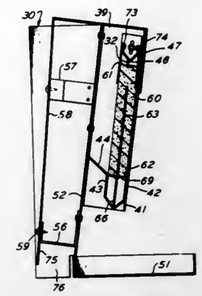
John Alan Schade, and Hans Levy, both of Cherry Hill, N.J., assignors to A.C. Manufacturing Company, Cherry Hill, N.J.

Continuation-in-part of Ser. No. 69,790, Aug. 4, 1970. This application May 18, 1972, Ser. No. 254,449

Int. Cl. B01f *3/04*

U.S. Cl. 261—105 **9 Claims**

An upstanding open support in an airway, an upper liquid feeder and a lower liquid collector, a pervious sheet extending across the support between the feeder and the collector for transmitting liquid therebetween while presenting the liquid to



passing air, and means to insure free liquid flow to and through the pervious sheet.

3,778,043

APPARATUS FOR THE COOLING OF BODIES UNDER PROTECTIVE GAS

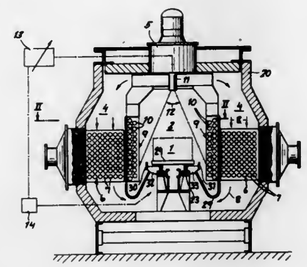
Theo Busch, Essen, and Rudolf Dienst, Baden-Baden, both of Germany, assignors to Ludwig-Ofag-Indugas Industrienlagen GmbH, Essen, Germany

Filed July 28, 1972, Ser. No. 276,152

Claims priority, application Germany, July 31, 1971, P 21 38 363.1

Int. Cl. C21d *9/00*

U.S. Cl. 266—2 R **7 Claims**



A system for the cooling of metallurgical workpieces and other singular bodies under a protective gas (i.e., a non-oxidizing or reducing gas) has a pair of cooling registers forming the walls flanking the path of the workpiece and consisting of ducts through which a cooling fluid passes transverse to the direction of flow of the protective gas. The latter passes into the cooling chamber from below after traversing a pair of heat exchangers of the tube-bank type while a control arrangement responsive to the mean value of the radiant energy omitted from the body serves to advance the workpiece from the chamber when a predetermined threshold value is attained.

3,778,044

METHOD AND APPARATUS FOR RECOVERY AND REFINING OF ZINC

Clayton R. Brown, 233 S. Hacienda Dr., Arcadia, and Milton Templer, 8013 San Lucas Dr., Whittier, both of Calif.

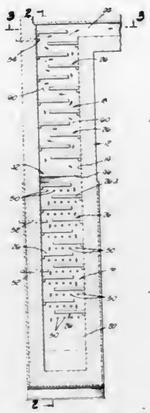
Filed July 13, 1971, Ser. No. 162,130

Int. Cl. C22b *19/14*

U.S. Cl. 266—19 **1 Claim**

A method and apparatus for recovering and refining zinc from scrap metals having a high zinc content. The scrap

metals are melted in a conventional furnace and introduced in a molten state into the distillation zone of the apparatus of the invention. The apparatus comprises an atmospherically sealed vertical column having a distillation zone and a communicating superposed fractionation zone. Arranged within the vertical column is a plurality of vertically spaced horizontally staggered trays constructed of a suitable refractory material. Molten material is continuously introduced into the apparatus through a metal seal and flows downwardly in a circuitous



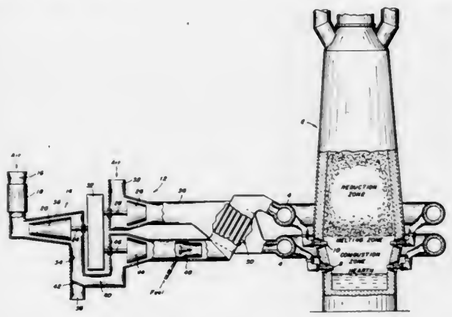
path over the trays disposed in the distillation zone. The metal in each tray is heated to temperatures sufficient to vaporize zinc by means of precisely controllable radiant heating elements located immediately above and below each tray. The zinc vapors rise through the distilling zone in countercurrent with the descending molten metal, pass through the factionating column where various impurities are removed, and then are directed into a condenser wherein they are condensed to metallic zinc of high purity.

3,778,045

GAS TURBO-BLOWER APPARATUS FOR GENERATING AND DELIVERING COMBUSTION GASES AND REDUCTION GASES TO A BLAST FURNACE

John H. Stevens, Peters Township, Washington County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1972, Ser. No. 287,934
Int. Cl. F27b *1/10*
U.S. Cl. 266—29 **1 Claim**



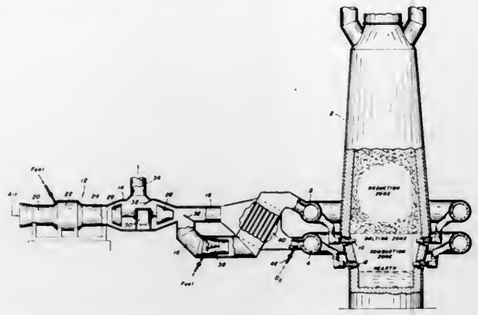
A gas turbine is utilized as the prime mover to drive a compressor in a device for supplying air at the proper temperature and pressure for combustion of carbon within a blast furnace and for supplying reducing gases at the proper temperature and pressure to assist in the reduction of iron oxides within a blast furnace.

3,778,046

JET ENGINE POWERED BLOWER FOR SUPPLYING COMBUSTION BLAST GAS AND REDUCING GAS TO A BLAST FURNACE

John H. Stevens, Peters Township, Washington County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1972, Ser. No. 287,937
Int. Cl. F27b *1/10*
U.S. Cl. 266—29 **3 Claims**



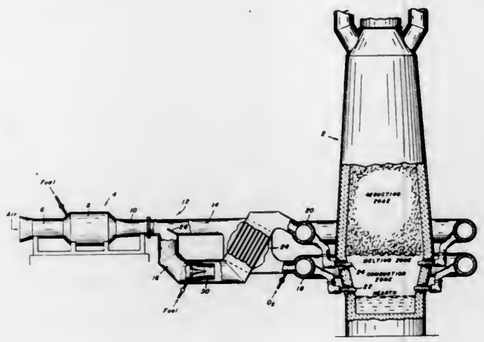
An aircraft-type jet engine is utilized as the source of gases for driving a free turbine which in turn drives a compressor to raise combustion blast gas pressure and reducing gas pressure to that required for blast furnace operation.

3,778,047

APPARATUS FOR GENERATING AND DELIVERING COMBUSTION GASES AND REDUCTION GASES TO A BLAST FURNACE

John H. Stevens, Peters Township, Washington County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1972, Ser. No. 287,938
Int. Cl. F27b *1/10*
U.S. Cl. 266—29 **2 Claims**



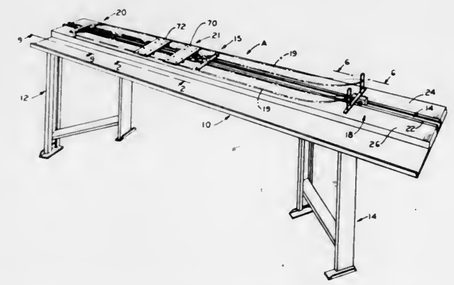
Described are two bustle pipes encircling blast furnace, one for receiving combustion blast gas under pressure and one for receiving reducing gas. Tuyeres lead from the combustion gas bustle pipe to the interior of the combustion zone of the furnace while other tuyeres lead from the reducing gas bustle pipe to the interior of the furnace immediately below its reduction zone. A gas turbine engine generates and supplies combustion blast gas made up of O_2, CO_2, H_2O and N_2 to the combustion gas bustle pipe through a duct for delivery to the combustion zone of the furnace. Part of the gas generated by the turbine engine is passed through an afterburner in the duct to raise the temperature of the gas and use up all of the excess O_2 in the gas and form CO_2 and H_2O in the process thus transforming the gas into a superheated reducing gas made up of CO_2, H_2O and N_2. Both gases pass through a heat exchanger prior to being delivered to the respective bustle pipes whereby the temperature of the combustion blast gas is raised and the reducing gas temperature is lowered. If desired, an oxygen gas inlet may be provided on the duct portion carrying the combustion blast gas so that oxgyen gas may be injected into the combustion blast gas just prior to its introduction into the combustion gas bustle pipe.

3,778,048

SKI BINDING MOUNTING APPARATUS

Zoltan L. Szohatsky, 5428 Wilson Dr., Mentor, Ohio

Continuation of Ser. No. 104,967, Jan. 8, 1971. This application Dec. 20, 1972, Ser. No. 316,960
Int. Cl. B25b *1/20*; **B23q** *3/18*; **B25h** *1/10*
U.S. Cl. 269—43 **7 Claims**



The specification and drawings disclose an apparatus for locating and mounting ski bindings. The preferred form of the invention includes first means which function to engage and locate the first end of a ski. Second means are spaced from the first and engage and locate the second end of the ski. Positioned intermediate the first and second means are third means for locating a ski binding positioning assembly relative to the ski positioned between the first and second means. At least two of the first, second and third means are mounted for movement in a direction generally along the longitudinal axis of the ski. Means interconnect the two movable means to maintain the relative spacing between the first, second and third means substantially constant during movement. Preferably, the ski binding positioning assembly comprises drilling jigs or templates having drill guide openings positioned to correspond to the screw locations on the bindings being attached. Also disclosed are special means for aligning skis having variations in toe and heel configurations.

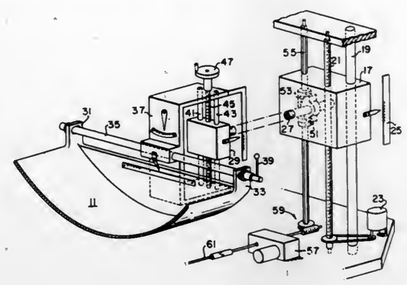
3,778,049

ANGIOGRAPHIC CRADLE

Manuel Viamonte, Jr., Coral Gables, Fla., assignor to Hyperion Incorporated, South Miami, Fla.

Filed Dec. 7, 1971, Ser. No. 205,693
Int. Cl. A61g *13/00*; **G01n** *23/00*
U.S. Cl. 269—323 **9 Claims**

The angiographic cradle disclosed herein permits a patient's body to be supported and rotated around a predetermined axis to facilitate radiological studies. The cradle itself is movable on two transverse axes with respect to the axis of rotation so that the axis of rotation can be caused to pass through a



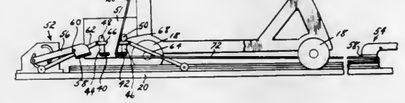
selected portion of the patient's body. In this way, changes in X-ray source and film plane spacings are avoided.

3,778,050

AUXILIARY FABRIC FEED MEANS FOR FABRIC SPREADING MACHINE

Harold Grimm, Bronx, and Ira Zuckerman, Far Rockaway, both of N.Y., assignors to Panther Machine Corp., New York, N.Y.

Filed Oct. 19, 1971, Ser. No. 190,564
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **8 Claims**



In a fabric spreading machine in which fabric is fed from a supply roll over a positive feed roller and then to fold-forming bars upon which a catcher bar falls to form a fold about the fold-forming bar and carry the fold to the table surface, means are provided for providing additional slack in the fabric as the catcher bar engages and presses down the fold on the fold-forming bar. The slack providing means includes a solenoid-operated linkage operative to move a tension-providing guide roller away from the positive feed roller to permit the fabric to hang loosely from the latter.

3,778,051

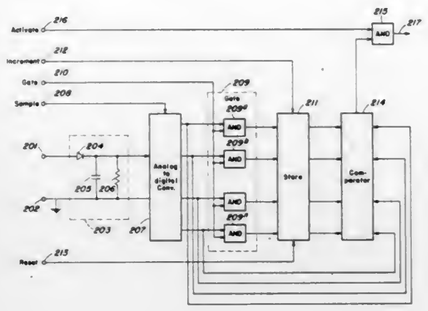
SUPERPOSED SHEET DETECTOR

James H. Allen, 17 Maryvale Dr., Webster, and Demetrios Polyzoes, 12 Buttermilk Hill, Pittsford, both of N.Y.

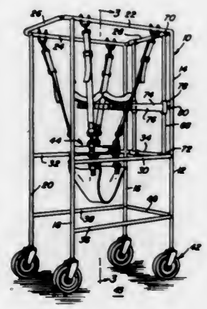
Filed Oct. 21, 1971, Ser. No. 191,459
Int. Cl. B65h *7/12*; **G06f** *7/38*
U.S. Cl. 271—57 **17 Claims**

Improved superposed sheet detecting apparatus is provided in accordance with the teachings of the present invention. Transducer means disposed in operable location to sheet feeding mechanism is adapted to produce signals proportional to the thickness of sheets of material fed past the operable loca-

tion. A multibit binary signal representative of the thickness of an initially fed sheet of material is gated into storage means whereat said multibit binary signal is stored. Multibit binary signals representative of the thickness of subsequently fed sheets of material are compared to the stored multibit binary signal by comparison means. When the thickness of a subsequently fed sheet of material exceeds the thickness of an initially fed sheet of material the comparison means produces an error signal, which error signal is detected by activatable detecting means. Detection of the error signal may result in the deflection of the subsequently fed sheet of material from the sheet feeding mechanism.

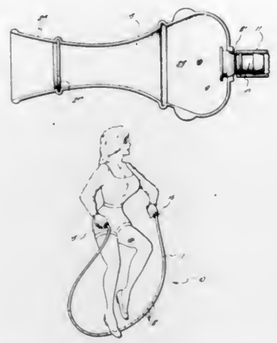


3,778,052
WALKER WITH ADJUSTABLE CRUTCH HEAD SUPPORTS
Paul Andow; David Guillen, and Raul G. Diaz, all of 215 Caples Building, El Paso, Tex.
Filed June 17, 1971, Ser. No. 153,949
Int. Cl. A61h *3/04*
U.S. Cl. 272—70.4 **4 Claims**



A wheeled support structure defining an open framework enclosure open on one side for egress thereinto and exit therefrom. The enclosure includes an adjustable height crotch sling and belt assembly for application to a handicapped person or a convalescent patient, opposite side rails defining handrails which may be gripped by the person using the walker and also vertically and transversely adjustable crutch heads for positioning beneath the base ends of the arms of a person using the walker.

3,778,053
MUSICAL JUMP ROPE
Jay Smith, III, Pacific Palisades; Gerald W. Schmidt, Woodland Hills, and Lawrence T. Jones, Pacific Palisades, all of Calif., assignors to California R & D Center, Pacific Palisades, Calif.
Filed Feb. 10, 1972, Ser. No. 225,113
Int. Cl. A63b *5/20*
U.S. Cl. 272—75 **7 Claims**

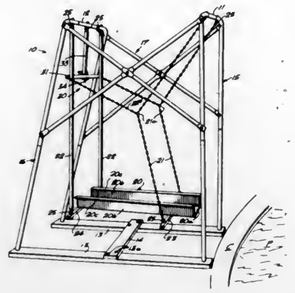


A jump rope is disclosed which functions to produce a musical tone when in use. The jump rope comprises an elongated flexible hollow tube having a plurality of apertures extending through the skin of the tube at locations near its mid-length. The extremities of the tube are rotatively connected to the ends of a pair of handles. At least one of these handles has a bulbous chamber forming a portion of the handle, the interior of which is in communication with the interior of the tube. The outer end of the bulbous chamber flairs into a bell-like horn section to form the other portion of the handle. A reed is positioned within the handle at a location approximately between the bulbous chamber and the horn section. In operation, the jump rope is utilized in the same manner as conventional jump ropes. As the tube is being swung around the user's body, the movement of the tube causes air to quickly pass over the tube's skin surface. The centrifugal forces generated within the tubes combined with the outside air passing over the apertured surfaces of the tube function to move air from the interior of the tube through the tube apertures. This evacuation of the interior of the tubing causes air to be drawn in, through the one handle, into the interior of the tube. As the air passes through the handle, it actuates the reed to set it in vibration. The bulbous chamber functions as a resonance cavity to cooperate with the reed to produce a musical tone which is amplified by the horn section of the handle.

3,778,054
POOLSIDE SWING HAVING A SEAT WITH AN EJECTION SLIDE MECHANISM
Vincent J. Esposito, Jr., 31 Jackson Ave., Wayne, N.J., assignor to Erwin M. Barnett, Miami Beach, Fla., a part interest
Continuation-in-part of Ser. No. 52,176, July 6, 1970, abandoned. This application Aug. 31, 1972, Ser. No. 285,516
Int. Cl. A63g *9/00*
U.S. Cl. 272—85 **11 Claims**

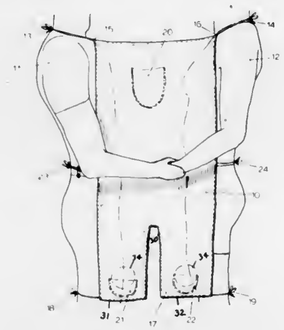
A swing-slide has an elongated seat sized and shaped to hold a rider in a seated position with his legs extended. The seat is suspended from an overhead support by front and rear suspension members to normally freely swing back and forth in a substantially horizontal position when the front suspension

member is shortened. Lengthening means for the front suspension member is automatically actuated by the height of



swing or manually by the rider whereby the front end of the seat is lowered converting the latter to an inclined slide for ejection of the rider into an adjacent body of water.

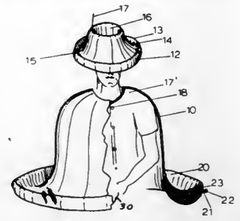
3,778,055
BALL GAME
Henry J. Witkowski, 5625 E. Lake Rd., Erie, Pa.
Filed Jan. 17, 1972, Ser. No. 218,077
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **3 Claims**



A rectangular garment with two of its sides extending vertically has two ties at each of its upper and lower corners and two ties midway along each vertical side. There is a pocket near the upper edge of the garment and two near the lower edge. The garment is attached by the ties to the necks, waists and legs of two players who are facing each other. A ball is placed in each of the lower pockets, adjacent the players' knees, and the players attempt to work the balls up between their bodies to the upper pockets adjacent their shoulders.

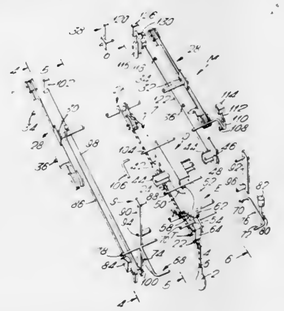
3,778,056
HAT GAME
Henry J. Witkowski, 5626 E. Lake Rd., Erie, Pa.
Filed Jan. 28, 1972, Ser. No. 221,505
Int. Cl. A63f *9/00*; **A63b** *71/04*
U.S. Cl. 273—1 R **8 Claims**

A game made up of an apron and a hat. The hat has a brim turned up to receive water and has a pin attached to the top. The apron has a trough about waist high extending around it. The hat is adapted to receive water in its trough around it. The object of the game is to fill the hat crown with water, walk over an obstacle course, and pierce a balloon which is filled with water or air and supported on a wall or the like without spilling any water from the hat crown into the hat brim. If water is spilled into the brim, it can leak out through holes in



the brim into the trough. The skirt alone may be used to play a game with a ball rolling around the trough of the skirt.

3,778,057
TETHERED BOWLING PIN APPARATUS WITH FELLED PIN SENSORS CONTROLLING OPERATION THEREOF
Jacob John Leidl, 69 Cherrystone Dr., Willowdale, Ontario, Canada
Filed Oct. 20, 1972, Ser. No. 299,262
Int. Cl. A63d *5/08*
U.S. Cl. 273—44 **23 Claims**

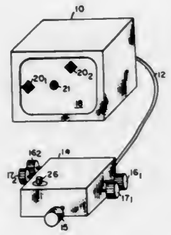


Apparatus for automatically resetting tethered bowling pins including a tether tension responsive device, a lift mechanism for raising and resetting the pins, a clutch assembly asociated with each tether, and a device for controlling the clutch assemblies. The tension responsive device includes a pawl associated with each tether in such manner as to be disengaged therefrom in response to the tension in the tether which results from the felling of the associated pin. Upon the sensing of any felled pin, the lift mechanism is operated to raise all of the pins to a standby position. After the pins have been raised to their standby position, those tethers associated with felled pins are braked by their respective clutch assemblies, and the remaining pins are reset by the lift mechanism. In the event that all the pins are felled by a ball, the operation as described above is repeated with the exception that after all of the tethers have been braked by the clutch assemblies, the latter are restored to neutral positions by the clutch assembly control device to thereby allow all the pins to be reset.

3,778,058
METHOD OF EMPLOYING A TELEVISION RECEIVER FOR ACTIVE PARTICIPATION
William T. Rausch, P.O. Box 262, off Main St., Hollis, N.H.
Division of Ser. No. 828,154, May 27, 1969, Pat. No. 3,659,284. This application June 17, 1971, Ser. No. 154,162
Int. Cl. A63f *7/06*; **G08b** *5/22*; **H04n** *7/18*
U.S. Cl. 273—85 R **10 Claims**

Methods and the additional apparatus used to carry out these methods are herein disclosed for use in conjunction with

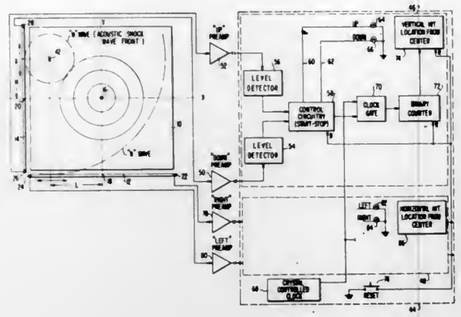
standard monochrome and color television receivers, for the generation, display and manipulation of symbols or geometric figures upon the screen of the television receivers for the purpose of playing games. The invention comprises in one embodiment a control unit, connecting cables and in some applications a television screen overlay mask utilized in conjunction with a standard television receiver. The control unit includes the control knobs switches and electronic circuitry for the generation, manipulation and control of video signals which are to be displayed on the television screen. The symbols are generated by developing current pulses proportional to predetermined portions (slices) of horizontal and vertical sawtooth waves. The connecting cables couples couple signals to the receiver antenna terminals thereby using existing electronic circuits within the receiver to process and display the signals. An overlay mask which may be removably attached to



the television screen may determine the nature of the game to be played. Control units may be provided for each of the participants. Alternatively, games may be carried out in conjunction with background and other pictorial information originated in the television receiver by commercial TV, closed-circuit TV or a CATV station.

The methods of playing the games include the steps of attaching the control unit to the television receiver, and generating at least two video signals from the control unit, which signals are displayed as a simulated "hitting" object and a simulated "hit" object on the television screen. A participant using the control unit then manipulates one of the control knobs to cause movement, independent of the hit object, of the hitting object over the television screen in a desired direction selected by the participant in an effort to make the two objects "collide" on the screen.

transmitted thereto through the respective conductor means. Four electrical signals are thus produced which are fed to



electronic circuitry to determine the location of each "hit" on the target in rectangular coordinates and providing a suitable indication thereof.

3,778,060

TARGET FOR USE ON WATER OR LAND

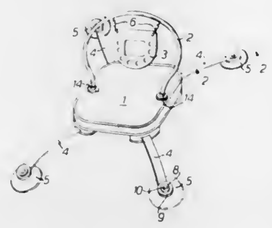
Thomas Ashley Lakeman, High Branches, Collington Rise, Bexhill-on-Sea, Sussex, England

Filed Mar. 15, 1971, Ser. No. 124,405

Claims priority, application Great Britain, Mar. 17, 1970, 12,696/70

Int. Cl. A63b *71/02*

U.S. Cl. 273—102 S **2 Claims**



A ball game apparatus having a rigid buoyant base member, an arch formed over the base member and legs projecting from the base member to minimize rotation of the apparatus in water and to render it more stable on land. A ball is tossed at the target formed by the arch over the base in an attempt to have the ball pass therethrough. The ball can also be bounced off the base member to pass through the arch.

3,778,059

AUTOMATIC GUNNERY SHOCK WAVE SCORING APPARATUS USING METALLIC CONDUCTORS AS SHOCK WAVE SENSORS

George W. Rohrbaugh, and Frank G. Bamser, Jr., both of State College, Pa., assignors to The Singer Company, New York, N.Y.

Continuation of Ser. No. 19,324, March 13, 1970, abandoned. This application Sept. 28, 1971, Ser. No. 184,605

Int. Cl. F41j *5/00*

U.S. Cl. 273—102.2 S **15 Claims**

An automatic gunnery scoring system responsive to the airborne acoustic shock wave produced by a projectile such as a bullet or the like as it passes through a target area and comprising mutually perpendicular elongated acoustic energy conductors located adjacent the perimeter of the target with one or more acoustic transducers attached to an end or ends thereof, but no more than one on each end, for producing an electrical signal when the shock wave from the projectile is

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3,778,061

CONVERTIBLE HORSESHOE PIT

Walter W. Sargent, 125 North St., Chardon, Ohio

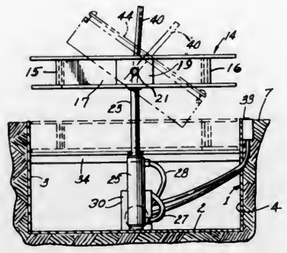
Filed Nov. 13, 1972, Ser. No. 306,354

Int. Cl. A63b *71/02*

U.S. Cl. 273—104 **6 Claims**

There is disclosed a horseshoe pit construction which is provided in a package for installation in the ground and having a pit member that is supported by a frame for raising out of a

chamber or housing and which will enable the pit member to be rotated so as to present a surface flush with the ground when lowered into position, a removable cover means being



furnished to close the member and retain the usual clay availed of in such horseshoe game play therein, at the same time allowing the clay to assume a level condition for subsequent use.

3,778,062

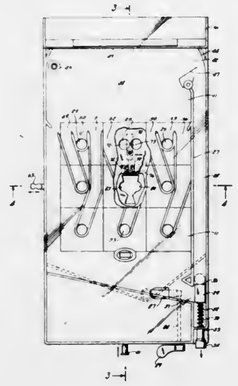
GAME APPARATUS

Kenneth C. Sherwood, New York, N.Y., assignor to Kae-Tee Development Corp., New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 213,884

Int. Cl. A63d *3/02*

U.S. Cl. 273—121 A **10 Claims**



Structure by which two or more players alternately project an element, such as the ball, to cause it to fall into different openings on a display panel, thereby to initiate display effects on a viewing element coordinated therewith. The game is played so that the players strive to provide observable effects which align themselves according to a pre-established path. The first player to achieve the alignment is the winner. Other players by the success of their operations may be able to interrupt the sequence of display on the path achieved by the other player and thereby enter an effect on their own account of a display along a different path or to destroy the sequence already established by the first player. The operation is achieved normally by projecting a ball to follow through different openings of a main panel from each of which a display is initiated. Alternate balls projected by different players occur in such a way that different display effects necessarily are developed.

3,778,063

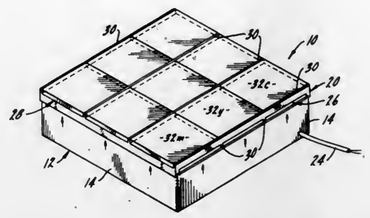
TICK-TACK-TOE-LIKE LIGHT GAME WITH COLOR CHANGEABLE SQUARES

Jack W. Strand, 1038 Park Ave., River Forest, Ill.

Filed Mar. 13, 1972, Ser. No. 234,284

Int. Cl. A63f *3/00*

U.S. Cl. 273—130 AB **12 Claims**



There is disclosed an apparatus which may be used to demonstrate the effect of adding and subtracting colors and which may also be used as a tick-tack-toe-like game. The apparatus comprises a frame member having opaque sides, an open top portion and a light source located within the frame member. At least two identical layers are positioned in vertically spaced relation to each other within the frame and above the light source. The layers each comprise a plurality of relatively movable light transmitting elements which have preselected colors. In order to see the effect of changing colors, one need only replace one of the light transmitting elements within the frame with an additional light transmitting element of a different color. In the preferred embodiment, the apparatus makes use of the principle of subtractive color mixing. Each of the individual movable elements is colored in one of the three pigment primary colors; cyan, yellow and magenta. When two primary colors are combined, a secondary color appears; namely, green, blue and red.

3,778,064

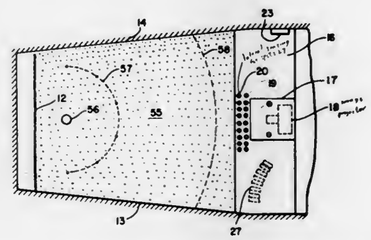
SIMULATED GOLF GAME DEVICE

Gerald E. Nutter, Canton, Mass., assignor to Golf-In Equipment Corporation, Braintree, Mass.

Filed Apr. 10, 1972, Ser. No. 242,328

Int. Cl. A63b *67/02, 69/36*

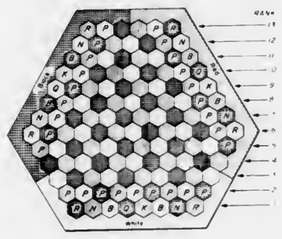
U.S. Cl. 273—176 FA **7 Claims**



A device for simulating the playing of a game of golf utilizes a screen toward which a player drives a golf ball. On the screen are projected images of a golf course recorded on a film strip showing in successive frames the distance to the green from successively closer lies of the ball. Two rows of photocells detect the passage of the golf ball and the club head. A player can thus practice swinging the golf club without setting off the device. Upon detection of the passage of the golf ball and the club head, an indication of the distance the ball would travel in an uninterrupted path is provided by the projection of an image showing the green as viewed from the approximate lie of the ball. The interval of time in which the ball passes over the two rows of photocells is converted

into distance of ball travel by the accumulation of a count in a counter. Upon the passage of the club head over the rows of photocells, a gate is opened to permit the count in the counter to be advanced to a preset total and on the attainment of that total, the gate is closed. During the time the gate is open, signals passing through the gate actuate a stepping motor which moves the film strip to the frame which shows a view of the green from the remaining distance. That frame is projected on the screen. Where the ball is driven beyond the cup, the stepping motor is conditioned to drive the film strip in the reverse direction on the next hit of the golf ball. Detection by the photocells of the passage of both the golf ball and the club head is necessary to enable the device to complete a full cycle of operation.

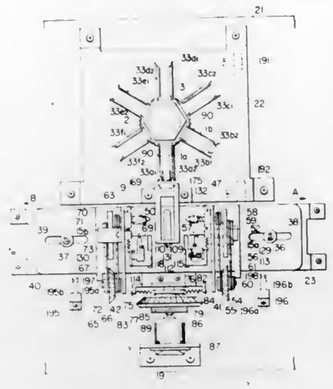
3,778,065
THREE-PLAYER CHESS GAME APPARATUS
Norman L. Hale, P.O. Box 246, Santa Cruz, N. Mex.
Filed Apr. 14, 1972, Ser. No. 244,040
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 AB **4 Claims**



A game apparatus consisting of a hexagonal, planar board comprising a plurality of equi-dimensional, contiguous, uniformly distributed hexagonal playing spaces thereon and three sets of chessmen adapted to be disposed on the board and to be moved thereover in accordance with the rules of the game. The board has a hexagonal periphery including three sides made up of eight playing spaces each and three sides made up of six playing spaces each. One-third of the spaces are of a first color, one-third of a second color, and one-third of a third color, and the spaces are so arranged that each space is completely surrounded by spaces of a different color. The sets of chessmen are differently colored and each includes nine pawns, two rooks, two bishops, two knights, a queen and a king.

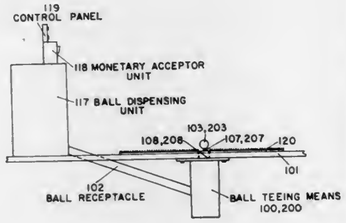
3,778,066
AUTOMATIC PLAYER FOR TAPE CASSETTES
Yoshifumi Teruuchi, Osaka; Masayuki Namiki, Chiba-ken, and Tomio Nishii, Higashi-Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza Kadoma, Kadoma-shi, Osaka, Japan
Filed July 27, 1970, Ser. No. 58,549
Claims priority, application Japan, July 28, 1969, 44/60690; July 28, 1969, 44/60691; July 28, 1969, 44/60692; July 28, 1969, 44/60693; July 28, 1969, 44/60694; July 28, 1969, 44/60695; July 28, 1969, 44/60696; July 28, 1969, 44/60697; July 28, 1969, 44/60698; July 28, 1969, 44/60699; July 28, 1969, 44/60700; July 28, 1969, 44/60701; July 28, 1969, 44/60702; July 28, 1969, 44/60703; July 28, 1969, 44/60704
Int. Cl. G11b *15/12*
U.S. Cl. 274—4 F **10 Claims**

In a magnetic tape recording and reproducing apparatus which is capable of playing a plurality of tape cassettes either selectively or continuously, an automatic payer for tape cassettes which is so designed that a plurality of tape cassettes mounted in a movable cassette mount are carried to a casette



playing section by a carrier, played at the cassette playing section and then returned to the cassette mount again by the carrier, one at a time.

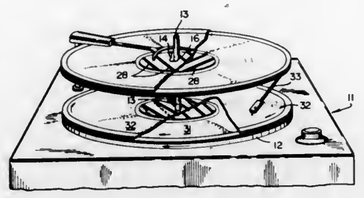
3,778,067
AUTOMATIC GOLF BALL TEEING APPARATUS
Joseph A. Gentiluomo, 1456 Belmont Ave., Schenectady, N.Y.
Filed Feb. 22, 1971, Ser. No. 117,452
Int. Cl. A63h *57/00*
U.S. Cl. 273—201 **22 Claims**



A golf ball teeing apparatus functional in providing either golf practice or golf game mode of operation through an open-loop control system to yield multi-position tee elevation, thus enabling the golfer to perform both tee and fairway shots from the same tee. The apparatus consists basically of a ball teeing means having a reciprocating tee to elevate the ball from a lowermost ball receiving position to either an intermediate ball hitting position or an uppermost ball hitting position, a ball dispensing means for storing a plurality of balls, a ball receptacle for receiving or storing balls for subsequent use by the ball teeing means, a vend initiating means for initiating apparatus operation, a counter to monitor the number of balls to be supplied to the ball teeing means per vend, and pushbutton and punched tape control means for inciting tee height positional commands to the teeing means.

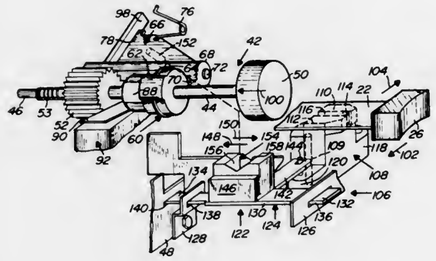
3,778,068
PHONOGRAPH RECORD INTERLOCKING MEANS
Glen T. Moore, 405 W. 57th St., New York, N.Y.
Filed Oct. 2, 1972, Ser. No. 294,256
Int. Cl. G11b *3/00*
U.S. Cl. 274—42 R **9 Claims**

Applied to or formed on the label portion of the phonograph disc is a plurality of spaced apart ridges in substantially parallel array. When two phonograph records rest flat one upon the other on a phonograph turntable, rotating slippage of the upper record relative to the lower record is prevented by virtue of the ridges on adjacent records engaging each other angularly so that the rotation of the lower record causes the



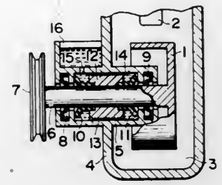
rotation of the upper record. The ridges may also be mounted on records by way of a thin, flexible plastic disc on the upper surface of which is applied or formed the array of spaced redges. The plastic disc is applied to the label area of the record by means of a pressure-sensitive adhesive or other suitable means.

3,778,069
MODE SELECTOR DISENGAGE MECHANISM
Alfred R. Harlan, Glendale Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 6, 1971, Ser. No. 205,230
Int. Cl. G11b *15/10, 15/18*
U.S. Cl. 274—4 C **10 Claims**



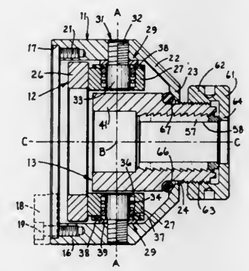
A mode selector disengage mechanism for a cassette tape player-recorder is operable to remove the player-recorder from a record mode and to actuate a cassette eject mechanism upon operation of a fast forward-reverse tape drive control. A pivotal interlock arm is engageable with a cam member on the mode selector control. Depression of the mode selector control against the force of a biasing spring causes the engagement of the interlock arm and cam member, the former thereby capturing the latter to hold the mode selector control in a record condition. The cam member likewise operates a snap-switch to complete a circuit to a holding coil for the cassette eject mechanism. A second cam member coupled to the interlock arm and the fast forward-reverse drive control pivots the interlock arm to release the first-mentioned cam member upon movement of the last-mentioned drive control to either of the fast forward or reverse positions. The biasing spring in response thereto, moves the mode selector control to a non-record condition, whereby the snap-switch is unoperated to release the holding coil, thereby permitting the eject mechanism to eject the cassette from the player-recorder.

3,778,070
ROTARY SHAFT AIR-TIGHTLY FITTING DEVICE
Yoshihiro Shimura, Nakano-ku, Tokyo, Japan, assignor to Rigaku Denki Company, Ltd., Tokyo, Japan
Filed Feb. 24, 1972, Ser. No. 228,923
Claims priority, application Japan, Aug. 31, 1971, 46/66344
Int. Cl. F16j *15/16*
U.S. Cl. 277—58 **1 Claim**



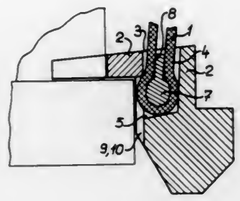
This invention relates to a device for air-tightly fitting a rotary shaft, for example, for an anode in a rotary opposite cathode X-ray tube whereby it is made possible to remarkably elongate the life of each packing by reducing the wear of the packing without causing a leakage by reducing the pressing contact force of the packing with a centrifugal force.

3,778,071
FLOATING TOOL HOLDER
James R. Buck, Ross Township, Kalamazoo County, Mich., assignor to Buck Tool Company, Kalamazoo, Mich.
Filed Jan. 31, 1972, Ser. No. 222,359
Int. Cl. B23b *31/08*
U.S. Cl. 279—16 **9 Claims**



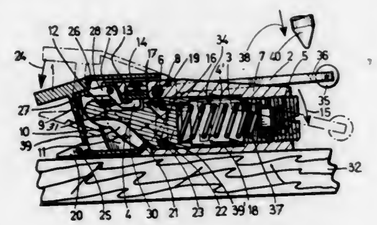
An improved floating tool holder assembly having an annular tool holder adapted to receive therein the shank of a suitable tool, such as a drill or reamer. The tool holder is pivotally mounted on an intermediate support for permitting limited pivotal movement of the tool holder about a first axis perpendicular to the longitudinal axis of the tool. The intermediate support is in turn pivotally mounted upon a surrounding housing for permitting the intermediate support to pivotally move about a second axis which is perpendicular to the longitudinal axis of the tool, the second axis also being substantially perpendicular to the first axis. Suitable resilient compression members are disposed between the housing and the intermediate support at the points of pivotal connection therebetween, and further resilient compression members are disposed between the intermediate support and the tool holder at the points of pivotal connection therebetween, whereby the tool holder can also float laterally a limited amount to compensate for irregularities or misalignment between the tool and the workpiece.

3,778,072
SECURITY BINDINGS FOR SKIS
Georges Pierre Joseph Salomon, Annecy, France, assignor to S.A. Francois Salomon & Fils, Annecy, France
Filed Dec. 4, 1970, Ser. No. 95,143
Claims priority, application France, Dec. 5, 1969, 6942070
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 N 5 Claims



A security device for maintaining a ski to the shoe of a skier after the main safety binding has opened, comprises a lash secured in a cavity of a block. The block is attached to the ski and the lash is attached to the shoe of the skier. At least a portion of the lash in the cavity is folded. At least a portion of a member enters between the fold to prevent the lash from leaving the cavity when a tensile stress is applied to the lash.

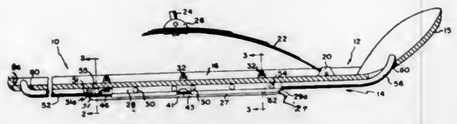
3,778,073
SKI BINDING
Georges Pierre Joseph Salomon, 34 ave de Loverchy, Haute-Savoie Annecy, France
Filed Dec. 28, 1970, Ser. No. 101,531
Claims priority, application France, June 1, 1970, 7019921
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 5 Claims



The disclosure relates to a safety binding for ski boots consisting of a jaw pivotally mounted on the base and adapted to be alternately raised and lowered relatively to the base, a lever pivotally mounted on the base and adapted to be vertically set in two positions, a locking system disposed between two elements of a kinematic chain that includes the base, the lever and a movable member connected to the lever, and means operable for unlocking the locking system; a ski binding in accordance with the present invention has the advantage of doing away with the continuous pulling effort by the skier during clamping and unclamping of the ski.

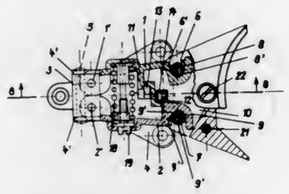
3,778,074
SNOWMOBILE SKI
Woodruff J. Kozlow, Box 728, Standish, Mich.
Filed May 16, 1972, Ser. No. 253,863
Int. Cl. B62b 17/02
U.S. Cl. 280—28 14 Claims

A snowmobile ski comprising a longitudinal runner and a keel, mounted on the underside of the runner, including a wear bar engageable with a surface to be traversed, a pair of clamps removably connected to the underside of the runner for releasably clamping opposite sides of the wear bar, and



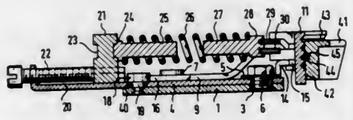
longitudinal key members locking the wear bar to the clamps to selectively prevent relative vertical movement of the wear bar and the clamps.

3,778,075
SKI BINDING
Francois Droz, La Chaux-De-Fonds; Jean-Paul Petitpierre, Les Rasses, and Joseph Tosalli, Sante-Croix, all of Switzerland, assignors to Reuge S.A., Sainte-Croix, Switzerland
Filed Nov. 29, 1971, Ser. No. 202,843
Claims priority, application Switzerland, Dec. 7, 1970, 18097/70; Dec. 23, 1970, 19123/70
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 4 Claims



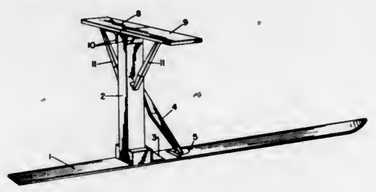
A safety ski binding device comprises a pair of levers pivotally mounted to a base plate about perpendicular axes and a spring outwardly urging the levers against respective stops. Hook shaped parts at the free ends of the levers engage cooperating parts of a boot sole gripping member to normally hold same in operative position. When a certain lateral stress is applied to said member, one of the levers is pivoted freeing the other of said cooperating parts from engagement with hook shaped part of the other lever whereupon the member pivots to a release position. The levers can also be pivoted about a transversal axis and releasably held in position by the action of said spring on cooperating ramp surfaces and rollers on the levers and base plate, or by magnetic means.

3,778,076
TOE IRON SAFETY SKI BINDINGS
Hans-Otto Frisch, Farchant, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany
Division of Ser. No. 44,811, June 9, 1970. This application Feb. 4, 1972, Ser. No. 223,728
Claims priority, application Germany, June 19, 1969, P 19 30 997.8
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 6 Claims



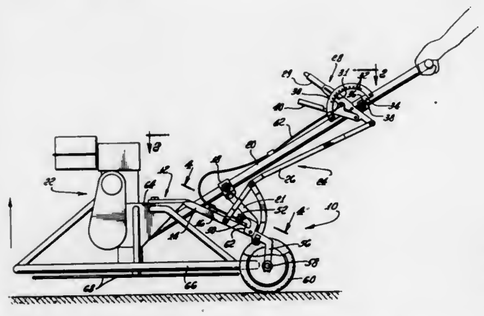
A soleholder member constitutes the coupling link of a four-bar linkage, which comprises levers layers that are connected to a carrier, which is pivoted to a baseplate that is fixed to the ski. The distance between the fulcrums of the levers exceeds the distance between the pivotal axes of the soleholder member. That arm of each lever which does not carry the soleholder or member forms a locking member, which cooperates with a stop that is rigid with the baseplate. When the soleholder member is in its normal position, said locking members lock the carrier against a pivotal movement to respective sides. A spring is held on the carrier and opposes a pivotal movement of the four-bar linkage from its normal position.

3,778,077
SKI WITH COLLAPSIBLE RIDING SEAT
Mark M. Johnson, 1122 47th St., Sarasota, Fla.
Filed Jan. 5, 1972, Ser. No. 215,472
Int. Cl. B62b 13/00
U.S. Cl. 280—12 K 1 Claim



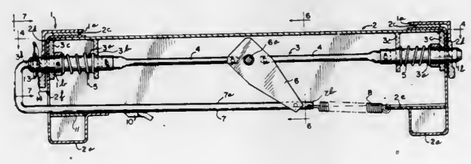
This invention relates to a ski adaptable for use both in snow skiing or water skiing and comprises a single ski having a rigid upright pivotally or hingeably connected to the upper surface of the ski between its ends, with suitable socket forming and upright supporting elements attached to the surface of the ski and engaging the upright near its end which rest upon the ski, together with seat forming members hingeably connected to the upper end of the upright which may be moved in right angular positions to the upright when used as a seat and collapsed into position substantially parallel to the upright when the upright is folded downwardly on the ski to form a compact easily portable unit. The invention further comprises hinged supporting braces connecting the upright to the ski and the seat forming members to the upright. The hinge brackets embody spring pressure means to securely hold the brackets in extended position and prevent their accidental collapse.

3,778,078
WHEEL ASSEMBLY DEVICE
Thomas Onder, 637 W. Hawthorne St., Ontario, Calif.
Filed June 5, 1972, Ser. No. 259,440
Int. Cl. B62d 21/18
U.S. Cl. 280—43 8 Claims



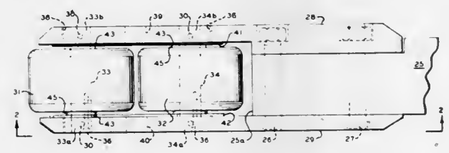
A wheel assembly device for use in conjunction with a conventional cement floor finishing machine, which permits movement of the cement floor finishing machine by a single person by means of the combination of wheels and assemblies of the wheel assembly device, which permits easy and rapid movement of the cement finishing machine without interference or damage to any part of the cement floor finishing machine.

3,778,079
APPARATUS FOR POSITIONING OF VEHICLE SUSPENSION
George F. Vornberger, and Arden A. Albaugh, both of Cincinnati, Ohio, assignors to Pullman Incorporated, Chicago, Ill.
Filed Jan. 7, 1972, Ser. No. 216,083
Int. Cl. B62d 53/06
U.S. Cl. 280—80 B 10 Claims



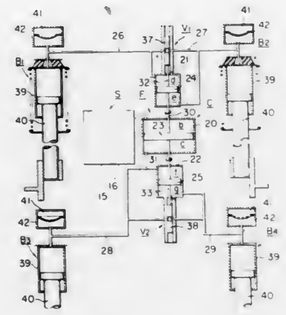
An apparatus for selectively positioning the sliding suspension frame or bogie relative to the trailer underframe including a bogie locking assembly having a handle and linkage operated spring-loaded locking pins for registering with holes in the fixed suspension rails attached to the trailer underframe wherein the handle and the locking pins are located centrally of the longitudinal extent of the bogie and wherein the locking pins and the locking pin links form a horizontal line in the locked position affording a positive lock and wherein the locking handle engages in an opening in one of the locking pins during the locked position of the bogie to the underframe and, further, wherein the locking handle may be moved to a position more outwardly of the bogie frame and held there for maintaining the bogie in an unlocked position with respect to the trailer undeframe and, further, wherein there is provided a safety pin which locks the handle to the locking pin and provides positive assurance that the locking pin will be retained in the hole of the fixed trailer underframe rail.

3,778,080
LIFT TRUCK LOAD WHEEL ARRANGEMENT
Arthur Bilco, Greene, N.Y., assignor to the Raymond Corporation, Greene, N.Y.
Filed May 15, 1972, Ser. No. 253,325
Int. Cl. B60g 1/00
U.S. Cl. 280—104.5 R 11 Claims



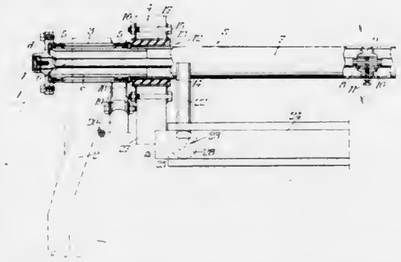
An arrangement for providing articulation of a lift truck load wheel pair without significantly increasing width or height of the truck leg supported by the pair, and without decreasing wheel size, comprises a pair of elongated rocker plates each carrying one end of a pair of wheel axles, with the rocker plates pivotally mounted in oversize openings in fixed side plates to rock against the faces of a pair of cams situated in the openings.

3,778,081
AUTOMATIC CONTROL SYSTEM TO PROVIDE STABILITY TO A VEHICLE
Noriyuki Takahashi, Tokyo; Hidehiko Inoue, Oimachi, and Yoshihiko Toshimitsu, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 10, 1972, Ser. No. 252,029
Claims priority, application Japan, May 12, 1971, 46/31188
Int. Cl. B60g *11/28*
U.S. Cl. 280—112 A **1 Claim**



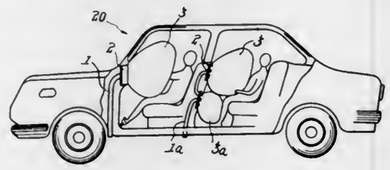
Automatic control system to provide stability to a vehicle, comprising a device which detects centrifugal force generated on the vehicle when it runs along a curved path, and cylinder means including valve and conduit means, the cylinder means being operated by the detecting device so that it adjusts the amount of fluid in one or more pairs of fluid dampers disposed respectively at right-side and left-side portions of the vehicle to incline the latter against rolling motion thereof occurring with the centrifugal force. The operation of the cylinder means is imparted to the detecting device in the form of a force counteracting the centrifugal force, to compensate the amount of fluid in the dampers, whereby the vehicle runs in a stable attitude.

3,778,082
SUSPENSIONS FOR VEHICLES
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Sept. 13, 1972, Ser. No. 288,555
Claims priority, application France, Sept. 27, 1971, 7134709
Int. Cl. B60g *11/60*
U.S. Cl. 280—124 B **13 Claims**



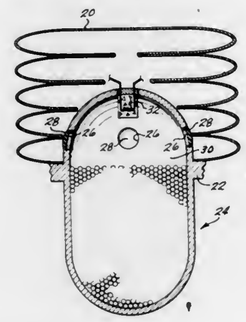
The suspension comprises an arm fast to a hub mounted on the body of the vehicle by means of a transverse rotary bearing, the hub being anchored to the end of a transverse torsion bar arranged in a tubular transverse member. The suspension comprises elastic means with variable flexibility arranged between the body and at least one arm fast in rotation to the tubular transverse member, the elastic means exerting on the arm an effect tending to oppose oscillating movement of the wheel upwardly with respect to the body. The suspension is particularly useful as a rear suspension for a light vehicle with front wheel drive.

3,778,083
RIDER'S BODY PROTECTING DEVICE FOR A HIGH SPEED VEHICLE OPERABLE IN A COLLISION THEREOF
Masafumi Hamasaki, Nobeoki, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaki, Japan
Filed May 17, 1971, Ser. No. 143,921
Claims priority, application Japan, May 25, 1970, 45/44011; June 25, 1970, 45/62639
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **5 Claims**



In a rider's body protecting device for a high speed vehicle of the type including gas producing means and an inflatable bag adapted to be filled and inflated with gases from the gas producing means to support the rider's body, gas exhaust pipe means are provided which are so sized in pipe diameter as not to have any adverse effect on the inflation of the bag and allow a part of the gases fed in the bag to be released to the exterior of the vehicle. This advantageously serves to suppress any excessive rise of the gas pressure in the bag which may otherwise occur at the instant when the rider's body moving forward by inertia hits on the bag. Also, an auxiliary shock absorbing bag is employed in combination with the main bag in order to improve the stability of inflation of the bag means and the cushioning effect of the whole device.

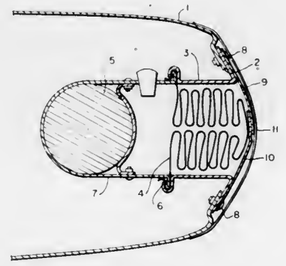
3,778,084
CRASH RESTRAINT MATRIX INFLATION SYSTEM
George S. Sutherland, Mercer Island, and Randel L. Hoskins, Woodinville, both of Wash., assignors to Rocket Research Corporation, Redmond, Wash.
Filed June 14, 1971, Ser. No. 152,627
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **4 Claims**



A crash restraint device for an automobile comprising an inflatable bag mounted forward of the automobile passenger seat, which inflates upon crash impact. A bag inflating device comprising a matrix of a first composition which produces a higher temperature gas product, interspersed with increments of a second composition which endothermically produce a gas product of a lower temperature, with the resulting gas mixture being used to inflate the bag.

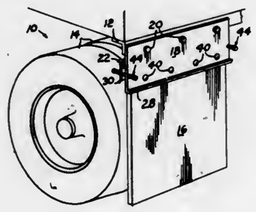
In one embodiment coolant gas producing particles are arranged in an interconnected matrix of an exothermically reacting gas producing composition. In a second embodiment there is a plurality of capsules, each having an interior of a vaporizing coolant material and a coating of an exothermically reacting composition. In a third embodiment there is a mixture of coolant particles and exothermically reacting gas producing particles.

3,778,085
CONCEALED PNEUMATIC SAFETY SYSTEM
Martin Lipkin, 445 E. 86 St., New York, N.Y.
Filed Oct. 6, 1971, Ser. No. 187,056
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **16 Claims**



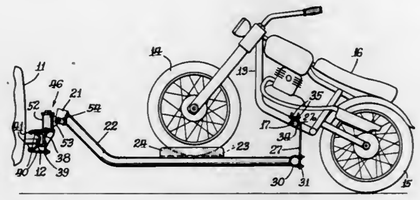
A concealed inertially operated pneumatic safety system including a box having an opening with diaphragm means therein, a collapsed balloon within said box fastened by gas-tight attachment, pressurized gas storage means and inertially powered gas release means, said gas release means being adapted to cause release of gas from said pressurized gas storage means in response to a predetermined deceleration or shock to said box, the released gas causing said balloon means to inflate sufficiently to force said diaphragm means aside and to fully inflate externally of said box means.

3,778,086
MUD FLAP MOUNTING MEANS
Peter N. Moore, and Leo F. Pierce, both of 117 S.W. 23, Oklahoma City, Okla.
Continuation-in-part of Ser. No. 116,775, Feb. 19, 1971, Pat. No. 3,700,260. This application Sept. 12, 1972, Ser. No. 288,477
Int. Cl. B62d *25/18*
U.S. Cl. 280—154.5 R **2 Claims**



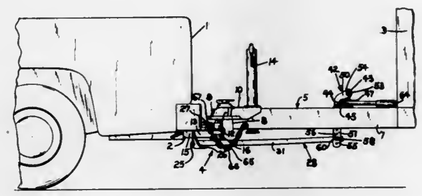
Spring urged clamp means, connected with a vehicle rearward support, grips the upper edge portion of a mud flap and supports it in combination with pins extending through the mud flap. Downwardly directed stress impressed on the depending portion of the mud flap opens the clamp means to release the mud flap.

3,778,087
MOTORCYCLE TOWING APPARATUS
Ralph M. Kallenbach, 915 Carol Ave., Elgin, Ill.
Filed Aug. 3, 1972, Ser. No. 277,666
Int. Cl. B62d *53/04*
U.S. Cl. 280—292 **4 Claims**



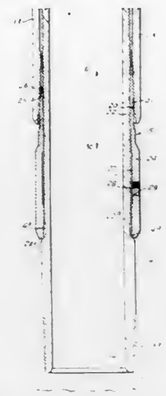
An elevated support extends under the front wheel of the motorcycle. The rear end of the support is rigidly attached to the foot pegs on the motorcycle. The front of the support is connected to the rear bumper of an automobile by a universal joint.

3,778,088
LOAD AND SWAY CONTROL FOR TRAILERS
Emmett L. Alexander, 802 S. Hayes, 12 Pembrook Square, Enid, Okla.
Filed July 26, 1971, Ser. No. 165,900
Int. Cl. B60d *1/06*
U.S. Cl. 280—406 A **8 Claims**



A load distribution and stabilizer structure for use between a towing vehicle and trailer having a tongue member with a connection or hitch member thereon engageable with a receiving member on a support bar mounted on and extending from the towing vehicle includes a truss member having arms carried below the trailer tongue and linkage members fulcrumed at the pivotal hitch. The truss member has a forward end with sliding braking engagement with a surface fixed relative the support bar and linkage adjustably connecting the rearward ends relative the tongue to apply force or leverage to the truss member to distribute the load on the trailer tongue member between the towing vehicle and the towed vehicle. The linkage and mounting holding the tongue and truss member against relative lateral movement for stabilization.

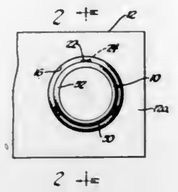
3,778,089
PIPE COUPLING
John V. Fredd. Dallas. Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Mar. 22, 1971, Ser. No. 126,539
Int. Cl. F16l 39/04, 39/04
U.S. Cl. 285—39 2 Claims



A pipe coupling for connection of a pair of longitudinally spaced pipe ends without rotation of either of the pipes connected by the well heads with service facilities at the surface or along the ocean floor. The coupling may also connect pipe members to provide a leakproof union allowing rotation of one pipe relative to the other. The coupling includes a first outer pipe section having inner threads and a second inner pipe section having external threads, at least one of such threads being tapered. The pipe sections are joined together by a threaded gland having inner threads mating with the threads on the inner pipe section and external threads mating with the inner threads on the outer pipe section. The gland has an extension projecting over the inner pipe section from the overlapping portions of the two pipe sections for engagement of a tool to turn the gland. One of the threaded connections with the gland stresses the gland sufficiently to tighten the other threaded connection with the gland. One form of coupling employing the invention comprises an extension joint for connecting spaced pipe ends. Another pipe joint embodying the invention permits two pipe sections to be aligned and the connection between them tightened by the gland without rotation of the sections themselves. Additional specific applications of the coupling shown comprise multiple section articulated pipe assemblies which are readily deformable to provide turns both within a given plane and between different planes in a universal joint type manner. The articulated pipe assemblies are especially suited to connection of underwater wee heads with service facilities at the surface or along the ocean floor. Additional specific applicatins of th coupling shwwn comprise multiple section articulated pipe assemblies which are readily deformable to provide turns both within a given plane and between different planes in a universal join type manner. The articulated pipe assemblies are especially suited to connection of underwater well heads with service facilities at the surface or along the ocean floor.

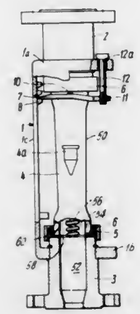
3,778,090
BEADED TUBE WITH O-RING SEAL CONNECTION
Michael F. Tobin, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 18, 1972, Ser. No. 254,561
Int. Cl. F16l 41/00
U.S. Cl. 285—222 5 Claims

A beaded tube with O-ring seal connection wherein a relative thin walled tube extending through a counterbored aperture in a tube block is upset to provide annular beads on opposite sides of the tube block to lock the tube to the tube



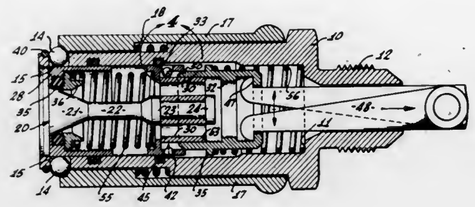
block, an O-ring being positioned to encircle the tube in sealing engagement with a bead surface of the tube and with the walls of the counterbore in the tube block.

3,778,091
FLOW METER HOUSING CONSTRUCTION
Helmut Engelhardt, Duisburg, Germany, assignor to Ludwig Krohne, Duisburg, Germany
Filed May 19, 1971, Ser. No. 144,862
Claims priority, application Germany, May 19, 1970, P 20 24 238.0; Oct. 23, 1970, P 20 52 030.3
Int. Cl. F16l 49/00
U.S. Cl. 285—238 7 Claims



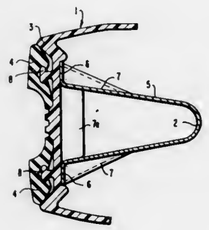
A fluid meter or gage which includes a central transparent portion through which the fluid is adapted to flow and which is usually made of a material such as glass so that a float indicator or similar phenomena therein is visible, also includes end fittings which are adapted to bear against respective ends of the central transparent member and be sealed therewith. The end fittings of the housing are interconnected by a yoke which includes a sleeve portion extending around each fitting and an interconnecting straight member extending between the sleeves. The packing elements surrounding the transparent portion is urged to bear in sealing engagement with the end fitting at each end thereof by lever means in the form of a U-shaped member having leg portions which are pivoted in selected recesses on the interconnecting straight member of the yoke and which has an intermediate bearing forming a fulcrum which presses against the packing to urge it into a sealing position around the associated end of the transparent intermediate member. Force is applied to the U-shaped lever by a threaded screw member which is engaged with the collar at each end.

3,778,092
FRONT END LOADING-SELF LOCKING FEMALE COUPLING
Vincent G. Magorien, Granada Hills, Calif., assignor to Seaton-Wilson Incorporated, Burbank, Calif.
Filed Sept. 20, 1971, Ser. No. 182,049
Int. Cl. F16l 37/18
U.S. Cl. 285—316 16 Claims



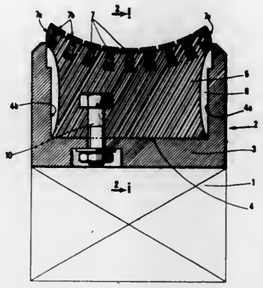
A female connector for fluid carrying lines which is assembled from its front end and in which the internal components are self-locking. All internal components are inserted from the front end of the female connector. A special tool inserted from the back end of the connector body then draws back one of the internal elements, allowing all of the internal components to be fully inserted. Release of the internal element by the special tool forces a plurality of locking balls outwardly, causing the internal components to lock within the female connector.

3,778,093
BUMPER FOR MOTOR VEHICLES
Hermann Renner, Boblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkeim, Germany
Filed Sept. 17, 1971, Ser. No. 181,384
Claims priority, application Germany, Sept. 17, 1970, P 20 45 962.5
Int. Cl. B60r 19/08
U.S. Cl. 293—71 R 26 Claims



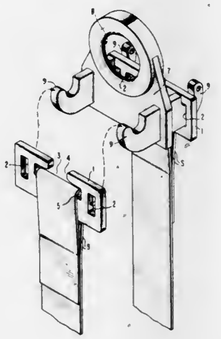
A bumper or the like for motor vehicles, especially for passenger motor vehicles, in which the bumper includes a bearer member constructed V-shaped, as viewed in cross section, whose leg ends are bent off vertically or nearly vertically into flanges and are so arranged that they are disposed on the side of the bearer member opposite the vehicle; a protective bar of rubber or similar material is mounted on the bumper, possibly by the interposition of a support member.

3,778,094
GRIPPING SHOE FOR A TRACTION DEVICE ADAPTED FOR PULLING AN ELONGATED MEMBER
Pierre Grolet, Orgerus, and Jean Thiery, Le Peco, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Ruell-Malmaison, France
Filed July 21, 1972, Ser. No. 273,709
Claims priority, application France, July 22, 1971, 7126959
Int. Cl. A47f 13/06
U.S. Cl. 294—1 6 Claims



A gripping shoe for a traction device adapted for pulling an elongated member, including a rigid body provided with a recess, and forming part of the traction device, a deformable element housed in said recess and integral with said rigid body, said deformable element being provided with gripping means for contacting the elongated member and being constituted of a material resiliently deformable under the action of a compressional stress, substantially without any volume variation of said material, a free space being provided between said deformable element and the walls of said recess so as to accomodate the deformations of said deformable element.

3,778,095
SLINGS
David William Bentley Carr, Marthall, England, assignor to Spanset Inter AG, Basel, Switzerland
Filed Sept. 7, 1971, Ser. No. 177,935
Claims priority, application Great Britain, Sept. 5, 1970, 42,646/70
Int. Cl. B66c 1/18
U.S. Cl. 294—74 4 Claims



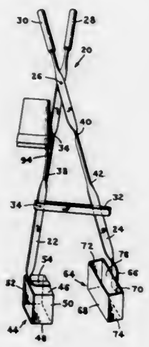
An end plate for a cargo sling having a pair of apertures for engagement by the terminal block of a crane, and a slot between the apertures, said slot being open on its top surface to enable a loop of webbing to be engaged in the slot, said opening having a width less than the length of the slot.

3,778,096
CONTAINER CARRIER AND PACKAGE
Stuart Allen Smith, Northbrook, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Mar. 6, 1972, Ser. No. 231,924
Int. Cl. B65d *71/00*
U.S. Cl. 294—87.2 **1 Claim**



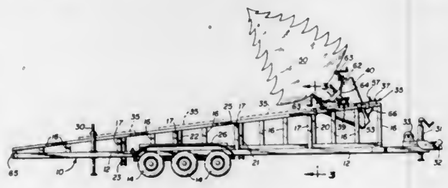
The present invention relates generally to improvements in carriers or receptacles and to packages resulting from the use thereof, said carriers being of the type particularly adapted to accommodate containers such as beverage cans and the like, wherein the extremity of the container is formed with an enlargement or bead. The embodiment of the container carrier or receptacle disclosed herein includes a strip of resilient, deformable, and elastic plastic material such as polyethylene, having a plurality of container-accommodating, longitudinally and transversely aligned apertures. These apertures are intended for telescopic association with the ends of the containers so that the margins of the strip aligning said apertures may be stretched and deformed to form circumferentially continuous lips embracing said containers beneath the peripheral enlargements thereof. Transversely aligned web sections connect said circumferentially continuous strip edges in longidudinal rows, and openings are provided for rendering said web sections frangible. Certain of said openings are of greater extent than others, whereby to facilitate the ease with which a portion of the strip supporting a plurality of containers may be detached as a unit from said strip.

3,778,097
METHOD AND DEVICE FOR RETRIEVING LITTER
Peter A. Dorzan, 1 Muir Pl., Vauxhall, N.J.
Filed Apr. 3, 1972, Ser. No. 240,461
Int. Cl. A47f *13/06*
U.S. Cl. 294—118 **14 Claims**



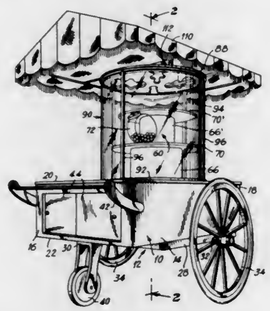
A device for retrieving litter has manually actuated positioning means connected to a litter receptacle holder and a pushing member adapted to be enclosed in an envelope releasably secured about the pushing member. Actuation of the positioning means causes coaction between a litter receptacle mounted in the litter receptacle holder and the enveloped pushing member, so that litter is forced into the litter receptacle and held in the litter receptacle by the pushing surface. While the litter is being held within the litter receptacle by the enveloped pushing member, the envelope is released from about the pushing member and reversed to envelop the opening of the litter receptacle. The litter receptacle can then be manually ejected into the envelope when the positioning means are actuated to move the pushing member away from the litter receptacle.

3,778,098
TREE CARRYING VEHICLE
Victor Tawara, 3750 S. Federal Blvd., Englewood, Colo.
Filed Mar. 16, 1972, Ser. No. 235,200
Int. Cl. B60p *3/00*
U.S. Cl. 296—3 **2 Claims**



The tree carrying vehicle comprises a wheeled frame including a pair of spaced apart, longitudinally extending, parallel, inclined side rails which support a plurality of carriers movable thereon, a bucket for receiving the earth embedded root end of a tree for each carrier, cooperating means on each carrier and bucket pivotally detachably mounting a bucket on a carrier, and means retaining each carrier in a selected position on said side rails. Means for raising and lowering opposite ends of the frame to facilitate loading of carriers and buckets on the side rails, and means for retaining the buckets in selected tilted positions are also provided. The buckets have means therein for compressing the earth in which the tree roots are embedded.

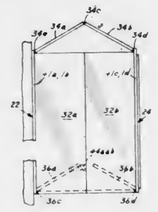
3,778,099
CART
Harry Rogove, and Roslyn Rogove, both of Bayside, N.Y., assignors to Remember When Sweet Shop, Inc., Valley Stream, N.Y.
Filed Aug. 30, 1972, Ser. No. 285,089
Int. Cl. B60p *3/02*
U.S. Cl. 296—21 **6 Claims**



A vending cart construction is described as including a base and a rotatable display member upstanding from and rotatably

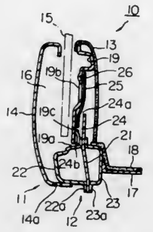
attached to the base. Rotation of the display member is provided by a motor means. The base is mounted on a conventional carriage structure and includes outer and inner walls defining a forward storage space and a motor means storage space. A transparent display cover encircles the display member for the purpose of defining therewith an effectively air-tight display space. A door is included in the display cover to allow access to the display space.

3,778,100
EXPANDABLE ROOM FOR PORTABLE LIVING QUARTERS
Paul A. Dillard, 5722 Chestnut Ave., Littleton, Colo.
Filed Oct. 22, 1971, Ser. No. 191,944
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 G **15 Claims**



An expandable room, having folding floors, side walls and roof, folds to a very thin addition when not in use; for living units, attachments for trailers, campers and the like, and when expanded provides additional living space for such units.

3,778,101
SEALING ARRANGEMENT FOR VEHICLE BODY CONSTRUCTION
Yasuhisa Tsuda, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama, Japan
Filed July 10, 1972, Ser. No. 270,170
Claims priority, application Japan, July 10, 1971, 46/4650677
Int. Cl. B60j *5/04*
U.S. Cl. 296—154 **8 Claims**



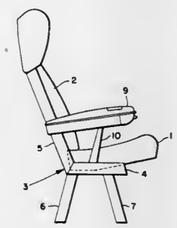
A sealing arrangement used in a vehicle body construction for intercepting from the occupant compartment any water flowing into an enclosure accommodating therein a side window. The sealing arrangement is provided with upper and lower inner panels which are partially juxtaposed at a spacing from each other. The partially juxtaposed portions of the two panels define therebetween a water passage. The upper panel has at least one partially offset lowermost end adhered to the base enclosure member. A sealing partition is interposed between the two panels to extend midway of the water passage. Any water having stolen into the enclosure is blocked by the sealing partition and then is drained to the exterior of the vehicle body through a water vent formed in the base member.

3,778,102
TABLE AND CHAIR STRUCTURE AND MEANS FOR PIVOTALLY MOUNTING CHAIRS
Bobbie L. Snyder, Lake Winnebago, Mo.; Ambrose Spencer, Merriam, Kans., and Harlan Butts, Lees Summit, Mo., assignors to Fixtures Mfg. Corp., Kansas City, Mo.
Filed May 19, 1972, Ser. No. 255,094
Int. Cl. A47c *3/00*
U.S. Cl. 297—170 **8 Claims**



A table and chair combination wherein a table top is supported on a plurality of spaced chairs with each having a separable connection providing a pivotal relation and a latch preventing separation in all positions except the separable position.

3,778,103
VEHICLE SEAT
Robert L. Edwards, Mansfield, Ohio, assignor to National Seating Company, Mansfield, Ohio
Filed June 30, 1971, Ser. No. 158,230
Int. Cl. B60n *1/06*; **A47c** *1/032*
U.S. Cl. 297—331 **10 Claims**

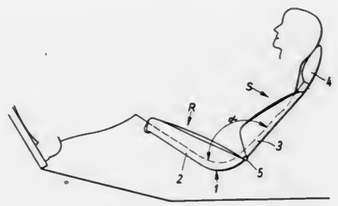


A vehicle seat having pivotally mounted seat and back cushions, with the position of the back cushion being adjustable by a recline actuator in the seat arm, such actuator having a cam operated trip release mechanism associated therewith which is operative both automatically to return the back cushion to an upright position by releasing the actuator when the seat cushion is pivoted upwardly and to hold the seat back in its upright position when the seat is subsequently pivoted downwardly.

3,778,104
SEAT CONSISTING OF SEAT PORTION AND BACKREST, ESPECIALLY DRIVER SEAT FOR MOTOR VEHICLES

Heinz Peter Kusters, Erdmannhausen, Germany, assignor to Firma DR. -Ing. h.c.F. Prosche K.G., Stuttgart-Zuffenhausen, Germany

Filed Apr. 21, 1971, Ser. No. 135,834
Claims priority, application Germany, Apr. 21, 1970, P 20 19 069.6
Int. Cl. A47c 7/00, 7/20, 3/00; B60n 1/06
U.S. Cl. 297—458 19 Claims



A seat with cushion supports for vehicles, especially motor veicles, which consists of a seat portion and a backrest, and in which a fatigue-free seating is achieved by the combination of the following features:

a. the seat portion and the backrest consist of molded shells that are covered with removable cushion supports;

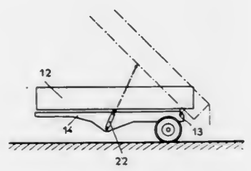
b. the backrest of the seat is provided with support surfaces within the area of the shoulder blades and of the lumbar vertebrae; and

c. the cushion support of the seat portion is constructed more hard within the area of the ischium tuberosities of the pelvis.

3,778,105
DEVICE FOR STABILIZING REAR-TIPPING VEHICLES

Andre Widhoff, Paris, France, assignor to Frangeco, a Societe Anonyme Francaise, Puteaux-Hauts de Seine, France

Filed Dec. 30, 1970, Ser. No. 102,679
Claims priority, application France, Jan. 6, 1970, 7000238
Int. Cl. B60p 1/04
U.S. Cl. 298—17 S 1 Claim

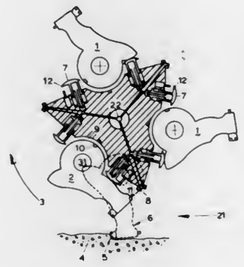


Means are provided on either side of the rear axle of a dumping vehicle to limit the distance that the sides of dumping body can move away from the axle on being dumped, so as to avoid any lateral shifting of the center of gravity of the load due to relaxation of one of the side springs, especially when the vehicle is parked for dumping on a laterally inclined surface.

3,778,106
CONTROL MECHANISM FOR ROCK CUTTING EQUIPMENT

Richard F. Taylor, Honeydew, and Christos Dimitriou, Johannesburg, both of Republic of South Africa, assignors to Anglo-Transvaal Consolidated Investment Company Limited, Johannesburg, Transvaal, Republic of South Africa

Filed July 25, 1972, Ser. No. 275,051
Claims priority, application South Africa, July 29, 1971, 71/5063
Int. Cl. E21c 29/00
U.S. Cl. 299—1 9 Claims

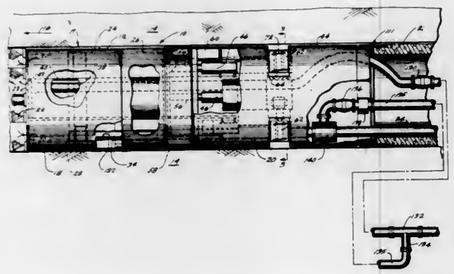


This invention relates to the control of the speed of traverse of a rock cutting machine utilizing an operating head in the form of a rotor carrying swinging hammers. The control is effected by comparing the position of the hammer relative to the rotor at a predetermined time after impact with the position at which the hammer would have been if it had struck at its optimum position relative to the rotor. Any difference in the positions compared is then used to control the speed of traverse of the machine to bring about an elimination of this difference and thus ensure that the hammers strike in their optimum positions.

3,778,107
REMOTE-CONTROLLED BORING MACHINE FOR BORING HORIZONTAL TUNNELS AND METHOD

John C. Haspert, Arcadia, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Jan. 3, 1972, Ser. No. 214,681
Int. Cl. E01g 3/04
U.S. Cl. 299—11 41 Claims

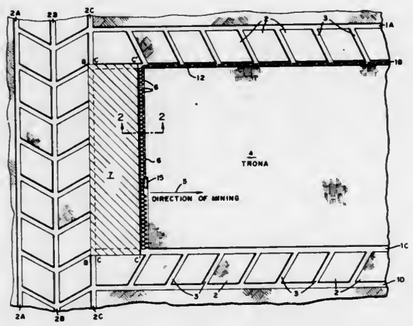


A remote-controlled tunnel boring machine for drilling a substantially horizontal tunnel in a formation includes a rotary drilling head at the heading of the tunnel, and a rotary drill pipe coupled to the drilling head and extending back to the portal of the tunnel for connection to drive means for rotating the drill pipe. The drilling head has fore and aft sections which are movable longitudinally relative to each other, the aft section being coupled with a series of interconnected tunnel liner sections jacked into place behind it from the portal as the drilling head advances through the tunnel. Hydraulic rams between the fore and aft sections periodically advance the drilling head to excavate material at the heading of the tunnel, the weight of the aft section and the tunnel liners acting as a thrust base or back-up for the extension of the rams. A second set of hydraulic rams at the portal periodically force new tunnel liner sections into place behind the string of tunnel liners. Cuttings are continuously removed from the tunnel heading by drilling fluid circulated in a closed system which includes an elongated conduit extending from the portal to the drilling head to continuously supply drilling fluid to the tunnel heading. The cuttings and drilling fluid are continuously returned from the tunnel heading to the portal area through the interior of the constantly rotating drill pipe. A ring-shaped inflatable balloon between the fore and aft sections of the drilling head forms a fluid-tight seal between the inner wall of the tunnel and the exterior of the drilling head to provide controlled hydrostatic fluid pressure at the tunnel heading.

3,778,108
TRONA MINING METHOD

James Ronald Pennington, Basking Ridge, N.J., and Errol Murray Gardiner, Green River, Wyo., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 29, 1972, Ser. No. 230,415
Int. Cl. E21c 41/08
U.S. Cl. 299—11 3 Claims



In the mining of a substantially horizontal bed of trona, stronger than the overlying and underlying strata, the method of driving substantially parallel entries into the trona formation, connecting said entries by at least one primary passage thereby defining the main trona pillar to be mined, supporting the roof of a primary passage by means of a movable roof supporting structure and mining the exposed face of the trona pillar under the protection of the roof supporting structure, removing the mined material and advancing the supporting structure so that it remains essentially adjacent and parallel to the mine face as it recedes, continuously advancing the roof supporting structure to incrementally effect caving of the previously supported roof and continuing the mining of the exposed face of the trona pillar under the protection of the roof supporting structure, removing the mined material and advancing the supporting structure so that it remains essentially adjacent and parallel to the mined face as it recedes.

3,778,109
LOW-NOISE PROCESS FOR PAVEMENT FRAGMENTATION

Philip J. Anderson, Deerfield, Ill., and James W. Dally, College Park, Md., assignors to The Institute of Gas Technology, Chicago, Ill.

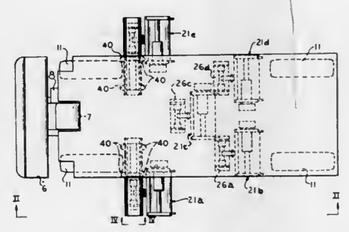
Filed May 17, 1972, Ser. No. 254,156
Int. Cl. E01c 23/09
U.S. Cl. 299—14 4 Claims

A low noise method of fragmenting pavement wherein a continuous free surface delineating the area within which the pavement is to be fragmented is created. Thereafter, the pavement within this delineated area is pre-weakened by fracturing it. While the continuous free surface and the pre-weakening of the pavement within this delineated area can be accomplished in numerous different ways, it is preferred to use microwave energy to fracture and pre-weaken the pavement. After having pre-weakened the pavement, the pavement is impacted with a series of water slugs or jets which pressurize all or part of the fracture network displacing or unkeying the pavement fragments bounded by these fractures so as to facilitate their removal. The displaced pavement fragments then can be removed by conventional means, such as shoveling. By pre-weakening the pavement in the above-described fashion, and then pressurizing all or part of the fracture network with a series of water slugs or jets, the energy required is far less and the breakage rate is far greater.

3,778,110
SUPPORTING CUTTER ASSEMBLIES FOR MULTIPLE GROOVING OF PAVEMENT

Donald C. Staab, Warrington, Pa., assignor to Cardinal Industries, Incorporated, Conshohocken, Pa.

Filed Dec. 27, 1971, Ser. No. 212,253
Int. Cl. E01c 23/09
U.S. Cl. 299—39 10 Claims



Vehicular apparatus for multiple grooving of pavement is provided with ganged cutter assemblies, certain of which are stowable inboard when not in use and are movable to outboard use positions as desired. A preferred ganging has a W-shaped plan, with a cutter assembly located at each apex and each end of the W.

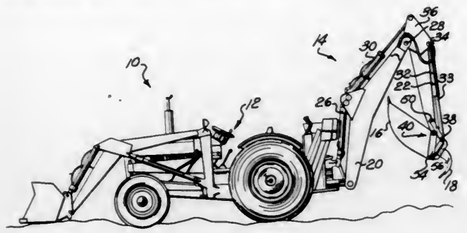
3,778,111
RIPPER TOOTH ATTACHMENT FOR A BACKHOE

Pio Antonio Ciofani, Richmond Heights, Ohio

Filed Mar. 27, 1972, Ser. No. 238,573
Int. Cl. E02f 3/76
U.S. Cl. 299—67 15 Claims

A ripper tooth attachment for a backhoe having a bucket pivotably mounted on a boom, hydraulic means for rotating the bucket relative to the boom and a linkage pivotably connecting the hydraulic means and the bucket. The ripper tooth attachment comprises a sharpened end portion for engaging material to be ripped and a support member which is connected to the linkage for movement therewith and which supports the sharpened end portion in a position substantially per-

pendicular to the linkage. Upon actuation of the hydraulic means the bucket is pivoted between an operative and inoperative position. When the bucket is in an operative position, the linkage is disposed so as to position the ripper tooth in an inoperative position and when the bucket is moved to its



inoperative position the linkage is disposed to support the ripper tooth in an operative position. This arrangement enables the ripper tooth and the bucket to be simultaneously mounted on the backhoe and moved between their operative and inoperative positions by merely actuating the hydraulic means of the vehicle.

3,778,112

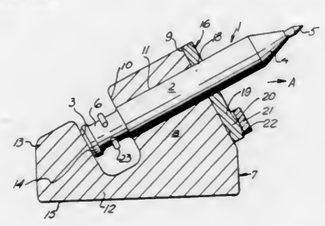
ANTI-CORING DEVICE FOR USE WITH BIT MOUNTING MEANS ON MINING, EARTH WORKING AND DIGGING MACHINES

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

Continuation-in-part of Ser. No. 842,791, June 30, 1969, Pat. No. 3,622,206, which is a continuation-in-part of Ser. No. 753,398, Aug. 19, 1968. This application Sept. 20, 1971, Ser. No. 181,771

Int. Cl. E21c *35/18*

U.S. Cl. 299—86 **8 Claims**



An anti-coring device to protect the bit mounting means on a mining machine, digging machine, earth working machine or the like. The anti-coring device comprises a replaceable member detachable affixed at the forward face of the mounting means and configured with respect to the mounting means to be subjected to the wear by cores which would normally be sustained by the mounting means. In certain embodiments, the anti-coring device will be provided with a notch or perforation through which the bit passes, so that support for the anti-coring device can be provided in part at least by the bit.

3,778,113

ROCK BREAKING EQUIPMENT

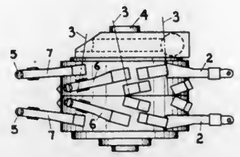
Richard F. Taylor, Johannesburg, Transvaal Province, Republic of South Africa, assignor to Anglo-Transvaal Consolidated Investment Company Limited, Johannesburg, Transvaal, Republic of South Africa

Filed Feb. 29, 1972, Ser. No. 230,246

Int. Cl. E21c *37/18*

U.S. Cl. 299—86 **6 Claims**

Rock breaking equipment which utilize a rotor carrying pivoted hammers thereon wherein the axes of the pivots for the hammers are offset from and inclined to the axis of the rotor. The hammer pivots are inclined to the plane at right angles to the axis of the rotor at an angle of 45 degrees and this



construction provides a nested assembly of hammers and also the possibility of the hammer striking path lying outside the physical boundaries of the rotor and drive assembly.

3,778,114

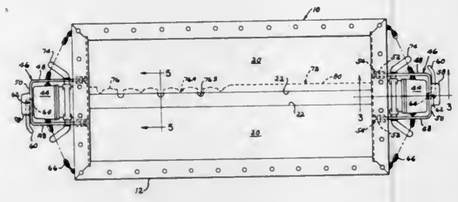
HOPPER OUTLET STRUCTURE FOR PNEUMATIC UNLOADING

John L. Carney, Jr., and Richard H. Dugge, both of St. Louis, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed July 19, 1971, Ser. No. 163,702

Int. Cl. B65g *53/40*

U.S. Cl. 302—52 **6 Claims**



A pneumatic bottom discharge outlet for a covered hopper railway car having a lower fixed tubular conduit for the discharge of lading and a rotatable valve member for controlling the flow of lading into the conduit. The valve member comprises an arcuate segment positioned between the lower portions of the sloping outlet side walls and having end portions extending beyond the outlet end walls. The end portions of the valve member are suspended in secured relation to rotatable sleeves mounted on end rings fixed to the end walls. The inner surface of the end rings form a continuation of the smooth bottom of the tubular conduit without any obstruction thereby to provide an even flow path for the discharge of lading.

3,778,115

PNEUMATIC BRAKE SYSTEM

Kenneth D. Ryburn, Chillicothe; Robert J. McClone, and Charles H. Fox, both of Washington, all of Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.

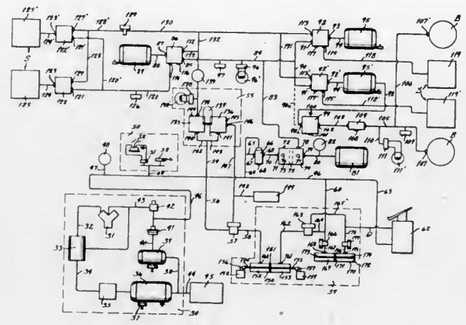
Division of Ser. No. 108,579, Jan. 21, 1971, Pat. No. 3,702,715. This application June 8, 1972, Ser. No. 261,120

Int. Cl. B60l *7/00*; B60t *17/04*

U.S. Cl. 303—3 **7 Claims**

A pneumatic brake system for an electrically driven vehicle having conventional service and novel parking brakes, which system integrates a service braking system, a dynamic braking system, an emergency braking system, and a parking braking system for selective and automatic application. The dynamic and service brakes are controlled by a brake application valve having a foot treadle adapted for engagement by the vehicle operator and connected in tandem with service and dynamic

braking valves so that upon initial engagement of said treadle dynamic braking is effected and upon further engagement service braking is effected. The emergency brake system is operated automatically through the use of emergency relay valves upon attainment of a predetermined air pressure within



the brake system and includes a brake reapplication system which may be employed to release and then reapply the service brakes after an emergency braking conditions. The parking brake is of the spring operated, air pressure released type and is adapted for independent application by a manual control valve disposed within the parking brake line.

3,778,116

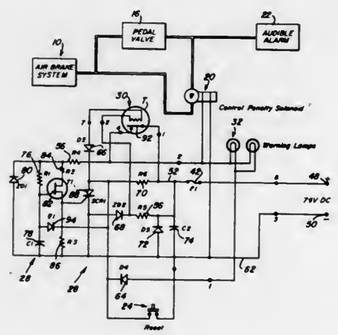
SAFETY DEVICE REQUIRING PERIODIC ATTENTION OF VEHICLE OPERATORS

Leroy P. Kennedy, 5118 Hathaway Dr., S.W., Roanoke, Va.

Filed Apr. 9, 1971, Ser. No. 132,730

Int. Cl. B60t *7/14*

U.S. Cl. 303—19 **6 Claims**



The control penalty solenoid of an air brake system is maintained energized during a first timing cycle of a control circuit and during a second timing cycle of a time delay relay through which the control circuit and solenoid are energized from a voltage source. Completion of the first timing cycle initiates the second timing cycle during which a warning device alerts the operator. Normal actuation of a reset switch by the operator before completion of the second timing cycle, prevents the energization of the solenoid.

3,778,117

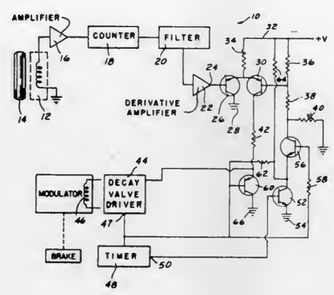
SIMPLIFIED ADAPTIVE BRAKING LOGIC

James M. Needham, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Feb. 22, 1972, Ser. No. 227,748

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 CG **10 Claims**



An adaptive braking system for a wheeled vehicle is described which includes the usual control circuitry which senses an incipient skidding condition in a corresponding vehicle wheel and which then actuates a modulator to relieve braking pressure in the corresponding brake. The control circuitry includes a comparator which actuates the modulator and a timer circuit when wheel deceleration reaches a predetermined reference level. The timer circuit produces a signal for a predetermined time period after its initial actuation. The signal from the timer switches the reference level of the comparator and also inhibits the output of the latter after termination of the comparator output within the predetermined time period.

3,778,118

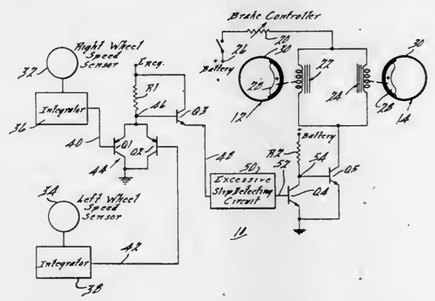
WHEEL SLIP CONTROL SYSTEM FOR VEHICLES WITH ELECTRIC BRAKES

Robert S. Podlewski, Jackson, and William T. Birge, Plymouth, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Sept. 13, 1971, Ser. No. 179,858

Int. Cl. B60t *8/10*

U.S. Cl. 303—21 EB **3 Claims**

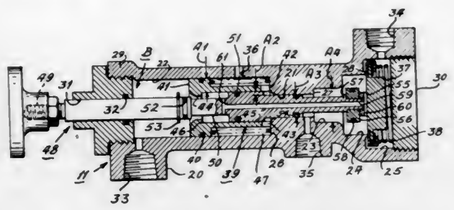


A wheel slip control system for a wheeled vehicle having an electrically operated brake for at least one wheel thereof and an electric brake controller for modulating the actuation of the brake which includes a wheel speed sensor for the wheel, a detector for detecting an incipient excessive slip condition, and means for relieving brake actuation upon the detected occurrence of an incipient excessive slip condition.

3,778,119
CONTROL VALVE

Raymond J. Kersting, Dellwood, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Aug. 24, 1971, Ser. No. 174,340
Int. Cl. B60t 15/02
U.S. Cl. 303—68 27 Claims



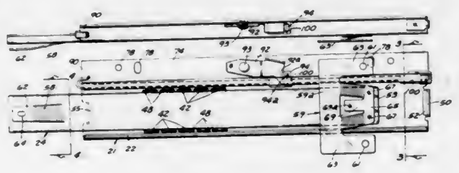
A control valve is provided with an application member for effecting the application therethrough of one supplied fluid pressure and driving a valve member to also effect the application through said control valve of another supplied fluid pressure, said application and valve members being movable toward positions isolating the one and other supplied fluid pressures and exhausting the applied fluid pressures, and resiliently urged means is provided to drive said application member to its isolating position in response to the reduction of the one supplied fluid pressure to a value less than a predetermined value.

This invention relates generally to control valves and in particular to a control valve for use in a fluid pressure system to control a spring set brake actuator thereof.

3,778,120
PRECISION TELESCOPING BALL BEARING DRAWER SLIDE SUSPENSION FOR WOOD AND METAL FURNITURE PRODUCTION

Magnus F. Hagen, 3713 Twilight Dr., Fullerton, Calif., and Fred H. Jordan, 14906 Lodosa, Whittier, Calif.

Filed Feb. 15, 1972, Ser. No. 226,424
Int. Cl. F16c 21/00
U.S. Cl. 308—3.8 7 Claims

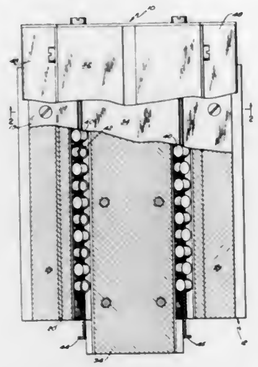


A progressive, full ball bearing, precision, telescoping slide mechanism for the suspension of drawers having means for accommodation to absorb variations of cabinet structure to which the two non-moving slide members are mounted and the two sides of drawer to which the moving members of the telescoping ball slide are secured. Also, the slide mechanism has other features combined with it such as progressive movement, and/or an adaptor attached to the drawer to provide simple attachment without tools to the drawer and to permit the drawer to be easily — without tools — removed from the slide when it is desired to do so, and readily reinserted, or interchanged with other drawers. Another feature is a combination of stops which will absorb any metal clicking noise at times of opening or closing of drawer, thus, contributing to the elimination of today's harmful "noise pollution" modern office ecology is exposed to.

3,778,121
SLIDE GUIDE HAVING PRELOADED HOLLOW AND SOLID ROLLER BEARINGS

George N. Levesque, Warwick, R.I., assignor to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.

Filed Nov. 18, 1971, Ser. No. 199,993
Int. Cl. F16c 29/00
U.S. Cl. 308—6 R 7 Claims

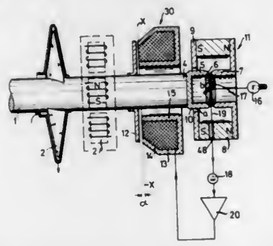


A machine slide having a support member and a carriage member movable on said support. One of said members having a channel formed in it and the other member having a guide tongue that extends into the channel. Raceways are formed along the inner surfaces of the channel opposite surfaces of the guide tongue. Roller bearings have a portion of their circular surfaces in bearing contact with the raceways and also a portion of their circular surfaces in bearing contact with the wall surfaces of the guide tongue which are opposite the raceways. The roller bearings are comprised of both solid rolls and hollow rolls. The distance between all the opposite surfaces upon which the hollow rolls bear when assembled is less than the diameter of the hollow rolls whereby when the hollow rolls are positioned in place between their opposite bearing surfaces they are compressed between said bearing surfaces to strain them and pre-loaded solid rolls.

3,778,122
SYSTEM FOR CONTACT-FREE, AXIALLY STABILIZED AND RADIALLY CENTERED POSITIONING OF A ROTATING SHAFT, PARTICULARLY OF AN OPERATING MACHINE FOR LOW TEMPERATURES

Robert Doll, Mettinghstr. 1, 8 Munich 19, and Hartmut Berndt, Konigsteinstr. 11, 8 Munich 13, both of Germany

Filed July 19, 1972, Ser. No. 273,318
Claims priority, application Germany, July 29, 1971, P 21 37 850.7
Int. Cl. F16c 39/06
U.S. Cl. 308—10 12 Claims

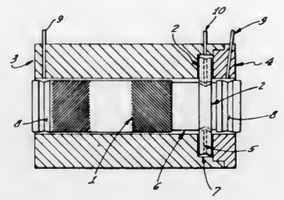


A system for contact-free, axially stabilized and radially centered positioning of a rotating shaft, particularly of an operating machine for low temperatures.

3,778,123
LIQUID BEARING UNIT AND SEAL

Harvey S. Hendler, Wayne; William C. Albert, Boonton, and John Evans, Oakland, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 17, 1971, Ser. No. 199,619
Int. Cl. F16c 33/72
U.S. Cl. 308—36.3 10 Claims

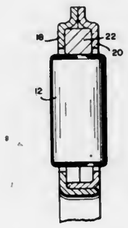


A self-contained, hydrodynamic liquid bearing unit, or cartridge, is provided which has general utility, and which finds particular application in present day gyroscopes. The bearing cartridge of the invention, in the embodiment to be described, includes a journal member rotatably contained in a bore in a housing, and a layer of bearing fluid separating the journal member from the inner peripheral surface of the bore. Rotary seals of a non-wetting liquid, such as mercury, are provided at each end of the cartridge to segregate the bearing from the other elements of the instrument in which it is incorporated. When the liquid bearing cartridge of the invention is used in a gyroscope, for example, the rotor of the gyroscope is able to run in a stable vacuum with virtually no power losses due to windage effects.

3,778,124
SEPARATOR INSERT FOR THRUST BEARINGS

Richard L. Alling, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Jan. 17, 1972, Ser. No. 218,159
Int. Cl. F16c 33/38
U.S. Cl. 308—235 4 Claims



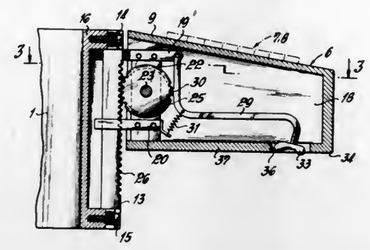
A thrust bearing separator insert is claimed which reduces wear due to inertial forces in high speed bearings, and prevents wedging of retainer halves in high thrust applications.

3,778,125
OFFICE MACHINE WORKTABLE CONSTRUCTION

Karl Gutmann, Jr., Unterkirnach/Schw., and Joachim Meinherz, Paderborn, both of Germany, assignors to Firma Karl Gutmann AG, Talstrasse, Germany

Filed Aug. 6, 1971, Ser. No. 169,746
Claims priority, application Germany, Apr. 7, 1970, P 20 16 413.0; Apr. 7, 1970, P 20 16 412.9
Int. Cl. A47b 21/00, 51/00
U.S. Cl. 312—272.5 6 Claims

A worktable particularly for data processing systems which includes one or more keyboards and mechanical or electronic parts of the system which are arranged separate from one another, comprises a table having a support for a printing unit and a console which is carried at the front of the table adjacent the printing unit and mounted for movement vertically.

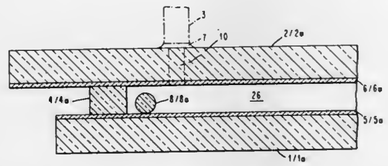


The console is adapted to receive one or more keyboards and to have a rest for holding the work. The console may additionally carry a keyboard which is extendable outwardly from the front face thereof or, which may be moved inwardly into a recessed or completely withdrawn obscured position.

3,778,126
GAS DISPLAY PANEL WITHOUT EXHAUST TUBE STRUCTURE

Donald Miller Wilson, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,174
Int. Cl. H01j 9/38
U.S. Cl. 316—20 10 Claims



Projecting exhaust tube constructions of earlier gas panels are eliminated by the disclosed process. In the present method an unfused low-softening-point glass sealant, arranged in a picture frame pattern, is sandwiched loosely between aligned flat glass plates, and the disjoint assembly is placed in a vacuum oven enclosure. The enclosure is successively evacuated, filled with the requisite gas mixture at predetermined pressure and heated above the softening point of the sealant to establish a sealed gas-filled envelope within the assembly. Previously the plates have been joined initially by heat fused sealant to form an envelope which is thereafter evacuated and filled with gas by connection to a thin glass tubular orifice projecting from one of the plates. Manipulation of this tube for evacuation and gas back-filling of the envelope, which is a difficult operation requiring considerable time, technique and skill, is eliminated by the present method.

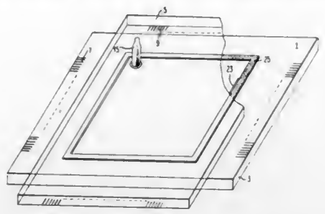
3,778,127
SEALING TECHNIQUE FOR GAS PANEL

Perry R. Langston, Jr., Poughkeepsie; Rao R. Tummala, Wappingers Falls, and Donald M. Wilson, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,298
Int. Cl. H01j 9/38
U.S. Cl. 316—20 6 Claims

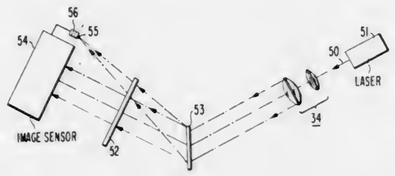
In a method for sealing a gaseous display and/or memory device, an unfused, low-softening point glass rod sealant, ar-

ranged in a picture frame pattern, together with high-softening point glass spacing rods are positioned between a pair of aligned flat glass plates, and the resulting assembly is placed in an oven enclosure. The assembly is then heated above the soft-



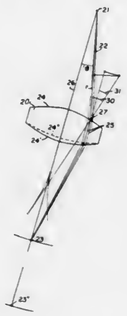
tening point of the glass rod sealant which reflows and fuses the plates to establish a gas-filled envelope. As the sealing material softens, the upper plate settles upon the spacing rods to thus establish a predetermined and uniform spacing within the envelope.

3,778,128
GATED HOLOGRAPHIC CODING SYSTEM FOR REDUCING ALIGNMENT REQUIREMENTS
William James Hannan, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 30, 1972, Ser. No. 257,680
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **2 Claims**



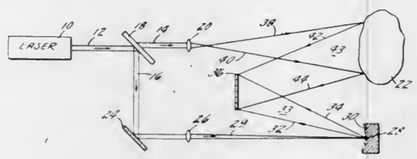
Holographic techniques are used to encode and decode information. The image of a point source of light is used to trigger an image sensor into detecting the decoded information when the relative encoding coordinates between a code plate and hologram are reestablished in a decoding apparatus.

3,778,129
OPTICAL SCANNER
Ernest Wildhaber, 124 Summit Dr., Rochester, N.Y.
Filed Aug. 31, 1972, Ser. No. 285,515
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **12 Claims**



This optical scanner uses a rotor with lenses. The lens surfaces are special and made up of surface elements parallel to the rotor axis. Preferably the source of light is a laser emitting very nearly parallel light rays. The rays are directed through a narrow line-like area that may lie on the rotor axis, and that emits a narrow fixed light bundle. A rotor lens forms an image of said line-area on a record. The thus illuminated area moves along a character line of the record as the rotor turns. To cover the entire length of a line of characters with the fixed narrow light bundle, the lens profile in a plane perpendicular to the rotor axis has a varying curvature. Its curvature radius is smallest in the mid-portion. The light reflected from the illuminated record area is gathered by a stationary elongated lens that extends along a plane perpendicular to the rotor axis at a constant distance from the record surface. This elongated lens has a portion, such as an opening, adapted to let the incoming light through without alteration. The reflected light passing through said elongated lens and through the adjacent lens of the rotor reaches a photocell.

3,778,130
HOLOGRAM FORMATION WITH A SPECKLE REFERENCE POINT SOURCE
James P. Waters, Rockville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 30, 1972, Ser. No. 239,737
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **7 Claims**

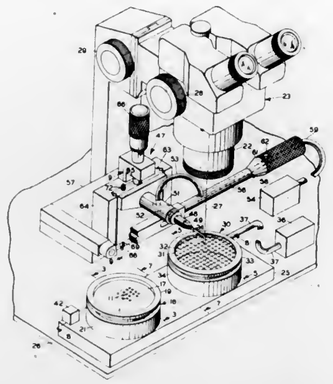


Disclosed are hologram systems in which the necessary degree of vibration isolation of the object being recorded is substantially less than is required in conventional holographic systems. A source beam is divided into a first beam and a second beam: the first beam is expanded and directed onto the object being recorded to form an object bearing beam; the second beam is focused onto a diffusely scattering surface to form a reference beam that self compensates for vibratory motion of the object.

3,778,131
APPARATUS FOR MICROSCOPICALLY INSPECTING OPPOSITE SIDES OF OBJECTS
William R. Wanesky, Wescosville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 30,379, April 21, 1970, Pat. No. 3,680,947. This application May 18, 1972, Ser. No. 254,436
Int. Cl. G02b *21/00*
U.S. Cl. 350—81 **4 Claims**

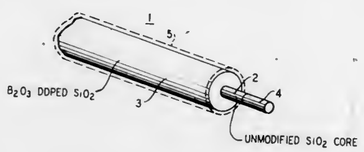
Microscopic inspection of objects such as beam-lead integrated circuits is accomplished by positioning the objects mounted on platforms in a spaced relationship under a vacuum pickup needle located in the field of view of the microscope. Rapid and accurate positioning is aided by air bearing facilities. One of the platforms includes a transparent disc for supporting the bottom sides of the objects. The disc is parallel to and spaced from a mirror which reflects an image of the bottom sides to the microscope. The microscope is first raised to its upper position along its principal axis and focused on the top sides of the objects so that the mirror image of the bottom sides is out of focus and not visible. The top sides are then individually inspected. Next, the microscope is moved to its lower position along its axis and then focused on the mirror image of the bottom sides of the objects so that the top sides

are out of focus. Preferably, the magnification of the microscope while in its lower position is increased to provide a larger image of the bottom sides to thereby facilitate their inspection. The increasing of the magnification also decreases the depth of field of the microscope so that an image of the top sides is far out of focus and therefore not visible. This im-



proves the clarity of the image of the bottom sides to further facilitate their inspection. The bottom sides are then individually inspected. During the inspection the objects are separated in accordance with certain characteristics with the aid of a vacuum pickup needle. The movement of the needle is limited by a ball plunger to prevent damage to the objects.

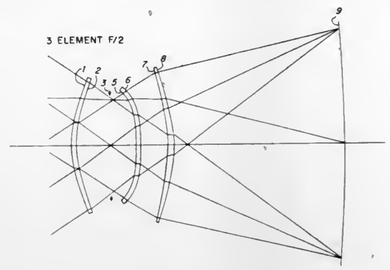
3,778,132
OPTICAL TRANSMISSION LINE
Douglas Arthur Pinnow, Berkeley Heights; Legrand Gerard Van Uitert, Morris Township, and John Charles Williams, Whippany, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Oct. 6, 1972, Ser. No. 295,718
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **12 Claims**



Optical transmission lines suitable for transmitting electromagnetic radiation within the visible spectrum and adjoining portions of the infrared and ultraviolet spectra consists of a pure amorphous silica core clad by a B_2O_3-modified silica cladding. The cladding may manifest a substantial uniform refractive index of a value at least 0.1 percent less than that of the core or may be graded to such a lowered value.

3,778,133
LENS SYSTEM HAVING AT LEAST ONE THIN, HIGHLY DEFORMED PLATE WITH ASPHERICAL SURFACES
Berge Tatian, Stoneham, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed July 26, 1972, Ser. No. 275,276
Int. Cl. G02b *3/04, 9/12, 13/14*
U.S. Cl. 350—2 **11 Claims**

Four embodiments of fast (F/2 or faster), wide angle (70°), infrared lens systems are disclosed. Each of the lens systems is formed of a plurality of thin, highly deformed germanium plates. Each highly deformed plate has two, substantially parallel, highly deformed aspheric surfaces. The high index of

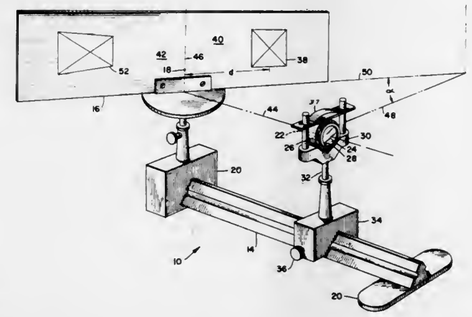


refraction of germanium generates the power in each lens system despite the substantially parallel nature of the aspheric surfaces of each plate, and the aspheric surfaces are utilized for the correction of aberrations.

ERRATUM

For Class 351—13 see:
Patent No. 3,778,135

3,778,134
REFLECTIVE HALF-LENS RECTIFIER
Brian H. Welham, Fairport, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 15, 1971, Ser. No. 106,729
Int. Cl. G03b *21/00, 21/14*
U.S. Cl. 353—5 **5 Claims**

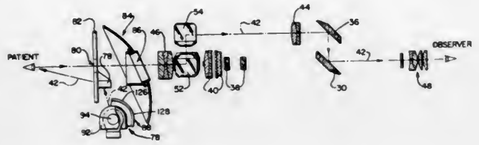


A photograph or other graphical display having a tilted image is illuminated on an input stage which is coplanar with an output stage. Apparatus for the removal or inducement of distortions in various kinds of terrestrial photographs and other graphics. In such apparatus reflective half-lens is arranged for arcuate motion about a pivot point located coplanar with the input and output stages. Rays emanating from the input photograph are passed through the lens to a mirror, reflect from the mirror and are passed through the lens again to form an image on the output stage, which image may be a unit-magnification, rectified image of the input photograph if the lens has first been suitably adjusted along its arcuate path. Alternately, the lens may be fixed in position and the input-output stages let to pivot about the pivot point.

3,778,135
OPHTHALMOMETER HAVING ALTERNATIVE VIEWING AND MEASURING SYSTEMS AND INCLUDING AN IMPROVED ILLUMINATION SYSTEM

Joseph C. Dianetti, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 29, 1972, Ser. No. 310,505
Int. Cl. A61b 3/10; G01b 9/00; F21v 33/00
U.S. Cl. 351—13 10 Claims

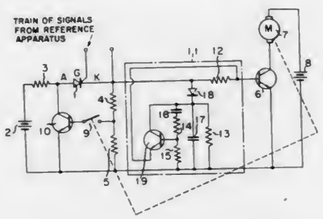


Ophthalmometer including a measuring circuit for measurement of the curvature of the cornea and contact lens curvatures with a built-in viewing circuit which is activated by the movement of a lever to allow visible inspection of the cornea and contact lenses. An interference ultraviolet filter in communication with a single light source permits the cornea to be viewed under ultraviolet light as well as ordinary visible light.

3,778,136
PULSE SYNCHRONIZING SYSTEM FOR MOTION PICTURE APPARATUSES

Torataro Takahashi, Gifu, Japan, assignor to Elmo Company Limited, Mizuho-ku, City of Nagoya, Aichi Prefecture, Japan

Filed Sept. 18, 1972, Ser. No. 289,882
Claims priority, application Japan, Sept. 23, 1971, 46/87071
Int. Cl. G03b 31/04
U.S. Cl. 352—17 6 Claims

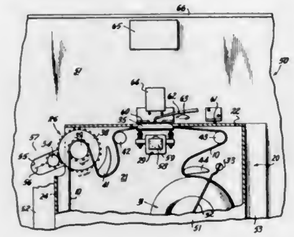


A system for effecting a synchronized operation of an apparatus to be controlled relative to a reference apparatus, such as a motion picture projector and tape recorder. The apparatus to be controlled is driven by a direct current motor connected in series with a direct current source under the control of a transistor connected thereto, and the reference apparatus causes a train of turn-on pulse signals to be produced at a recurrence rate proportional to a predetermined speed of the apparatus to be controlled. The system circuit has a thyristor having a gating electrode, an anode and a cathode, the train of turn-on pulse signals being applied to the gating electrode of the thyristor to turn it on, and the above transistor being connected to the cathode of the thyristor and turned on when the thyristor is made conductive by the train of turn-on pulse signals. The apparatus to be controlled is driven only when the transistor is in the conductive state and operates a switching circuit to produce a train of turn-off pulse signals at a rate proportional to the speed thereof, so that the thyristor is turned off at intervals which are determined by one of the train of turn-on pulses and a successive one of the train of turn-off pulses.

3,778,137
CARTRIDGE-LOADED SOUND MOTION PICTURE PROJECTION

Peter J. Castellano, Deer Park, and Jerry H. Galuten, Elmhurst, both of N.Y., assignors to Audio-Optics Corporation, New York, N.Y.

Division of Ser. No. 65,869, Aug. 21, 1970. This application Sept. 25, 1972, Ser. No. 292,116
Int. Cl. G03b 23/02
U.S. Cl. 352—72 5 Claims

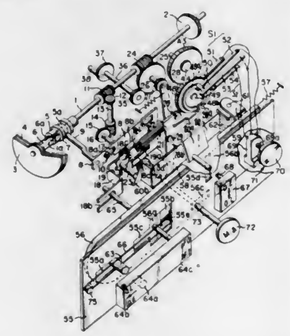


A cartridge containing an endless loop of motion picture film is inserted into a projector having a shutter, a frame advancing claw and a resiliently mounted drive pinion. The cartirdge includes a drive wheel mounted in an opening therein which cooperates with the drive pinion of the projector for continuously advancing the film mounted in the opening. The resiliently mounted drive pinion is positioned in the projector so that it is beyond the dead center position of the drive wheel when the cartridge is fully inserted into the projector for holding the same in place.

3,778,138
SPECIAL PHOTOGRAPHING DEVICE FOR A CINECAMERA

Yozo Iida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 22, 1971, Ser. No. 182,667
Claims priority, application Japan, Sept. 30, 1970, 45/85419
Int. Cl. G03b 21/36
U.S. Cl. 352—91 15 Claims

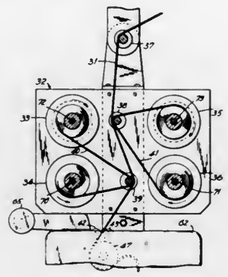


A photographing device incorporated in a cinecamera having means to control the output of an electric drive motor either by selecting forward or reverse circuits for the motor or by actuating a mechanical clutching mechanism. Film metering means and exposure opening varying means are coordinated with the drive motor output control means for effecting various modes of special photography with the camera, including normal exposure, double exposure, overlap exposure, automatic fade-out, automatic fade-in and reverse exposure.

3,778,139
FILM PROJECTION WITH CLEANING ATTACHMENT

Joseph Kelly, 128 Turtlecove Ln., Huntington, L. I., N.Y.

Division of Ser. No. 809,620, March 24, 1969, Pat. No. 309,020. This application Nov. 4, 1970, Ser. No. 87,006
Int. Cl. G03c 11/00
U.S. Cl. 352—130 3 Claims

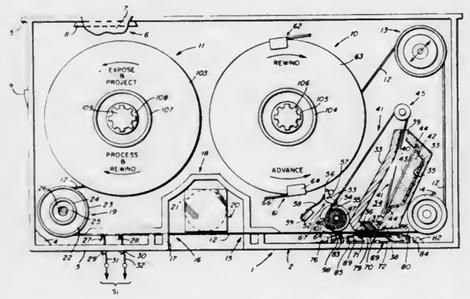


A film projector is provided with a cleaning attachment through which the film passes prior to entering the interior of the projector. The cleaning attachment includes cleaning tapes on opposite sides of the film. The tapes contact the film at spaced positions. The tapes are driven in opposite direction to that of the film.

3,778,140
PHOTOGRAPHIC SYSTEM COMPRISING FILM CASSETTE INCLUDING SELF-CONTAINED PROCESSING APPARATUS AND FILM DRIVE AND PROJECTION SYSTEM CONTROLLED THEREBY

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 17, 1972, Ser. No. 227,082
Int. Cl. G03c 11/00
U.S. Cl. 352—130 10 Claims

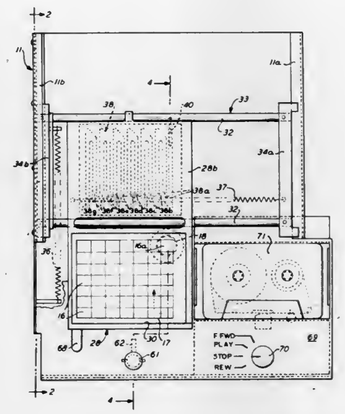


A photographic system comprising a self-processing film cassette containing a film strip transferable between takeup and supply reels by way of a film gate. A processor is enclosed within the cassette and responds to film position and direction of motion to process exposed film during its passage from takeup to supply reels. An electrical signal generator is located in the housing and responds to the processed or unprocessed state of the film to produce an external signal for selecting the mode of operation of a film drive and projection system adapted to receive the cassette. The film drive and projection system comprises a cyclic drive system, for selectively advancing the film onto the takeup reel and then rewinding it onto the supply reel; a projection lamp; a lens; and a selectively operable shutter for the lens. If the film is unprocessed, the projection system will process it with the lens closed and lamp off, and then project the processed film and rewind it. If the film is processed, it will simply be projected and rewound.

3,778,141
AUTOMATIC ADVANCE MECHANISM FOR MICROFICHE READER

Joseph Peterpaul, West Orange, N.J., assignor to E.R.E. Laboratory, Inc., West Orange, N.J.

Filed June 22, 1972, Ser. No. 265,389
Int. Cl. G03b 23/12, 31/06
U.S. Cl. 353—15 11 Claims



A microfiche reader keyed to a tape recorder includes a platen receiving a microfiche having a series of images or frames arranged in successive parallel rows and columns. The platen is mounted slidably on a carriage for movement laterally of the reader in the direction of a row or X axis of the microfiche and the carriage is in turn mounted slidably on a chassis for movement front-to-back in the direction of a column or X axis of the microfiche. The platen and carriage are each spring-biased in one direction of their travel into end positions placing one of the images in the beam of a light source. A track in a face of the platen of a grid formation has parallel track sections for the respective columns interconnected at the ends. A guide pin on the chassis engages this track and a pawl-rack mechanism is operable to step the carriage against the force of its return spring by successive images. When the guide pin has reached the end of a track section the pawl is disengaged and the carriage is spring returned and the platen spring shifted sidewise to place the first image of the next column into the light beam, and so on until all images have been scanned. When the end of the microfiche is reached the guide pin is disengaged causing the carriage to be spring returned home and the platen is shifted manually against its spring bias to start position after which the guide pin is reengaged with the track. The microfiche may then be replayed or be replaced by another.

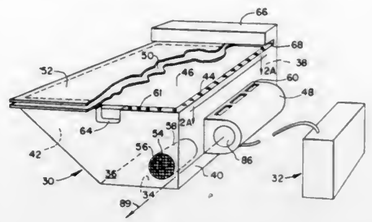
3,778,142
LOW PROFILE EPISCOPIC PROJECTOR AND OPAQUE MATERIALS THEREFOR

Gerald Altman, Newton Centre, Mass., assignor to Norsid Industries, Inc., Waltham, Mass.

Continuation-in-part of Ser. Nos. 780,313, Dec. 2, 1968, abandoned, and Ser. No. 742,423, July 3, 1968, Pat. No. 3,614,199. This application Oct. 19, 1970, Ser. No. 81,987
Int. Cl. G03b 21/132, 21/06
U.S. Cl. 353—44 4 Claims

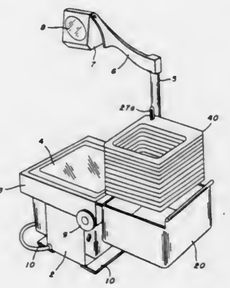
A portable episcopic projector, in which the presence of elevated optics in front of the screen is avoided, uses opaque sheeting that is adapted to receive related graphic matter on

its upper and lower faces. Simultaneously, the upper face is unobstructedly available for direct observation and manual



access, and the lower face is unobtrusively available for image projection through a folded optical path below the opaque sheeting and a projection lens at the side of the projector.

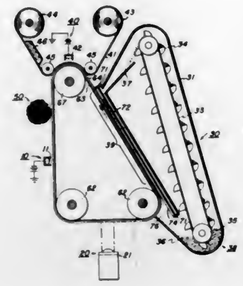
3,778,143
REMOTE CONTROLLED SLIDE CHANGER FOR OVERHEAD PROJECTOR
James E. Treher, 609 Oxford Blvd., Pittsburgh, Pa.
Filed Feb. 5, 1973, Ser. No. 329,537
Int. Cl. G03b *23/06*
U.S. Cl. 353—111 **9 Claims**



A remotely-controlled transparency slide changer moves a stack of slides on a spindle in an arc from a position clear of the top of the light box of an overhead projector to a position over the light box, releases the lowermost slide from the stack and returns to its starting position while at the same time a sweep arm moves in the reverse direction to remove a previously exhibited slide from a position over the top of the light box to a position where said slide is clear of the light box and slides down the said spindle into a receiving tray. The upper part of the spindle non-rotatably but slidably receives each of the slides in the stack but the lower part of the spindle is slidably and rotatably received in the exhibited slides.

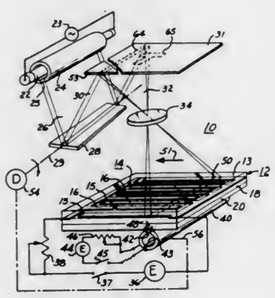
3,778,144
XEROGRAPHIC DEVELOPMENT ELECTRODE APPARATUS
Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 18, 1971, Ser. No. 172,839
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 DD **4 Claims**

Improved xerographic development electrode apparatus for eliminating the problem of clogging of developer composition in the development zone associated with high speed development. The development electrode comprises a plurality of taut



parallel spaced elongated wire electrodes supported by a housing element.

3,778,145
MAGNETIC IMAGING
Richard J. McClure, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Division of Ser. No. 29,583, April 17, 1970, Pat. No. 3,717,459. This application Dec. 27, 1972, Ser. No. 318,787
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **8 Claims**

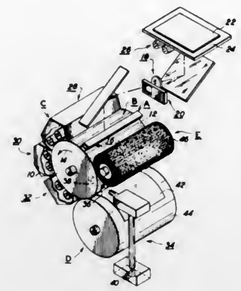


A composite recording medium comprises a photoconductive layer, a plurality of interdigitated first and second electrodes in electrical contact with the photoconductive layer, and an electrically conductive magnetic recording layer in electrical contact with the photoconductive layer. Methods and apparatus for magnetically recording an image with the assistance of this composite recording medium are also disclosed.

3,778,146
ILLUMINATING APPARATUS
Lowell W. Knapp, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 2, 1972, Ser. No. 294,064
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **8 Claims**

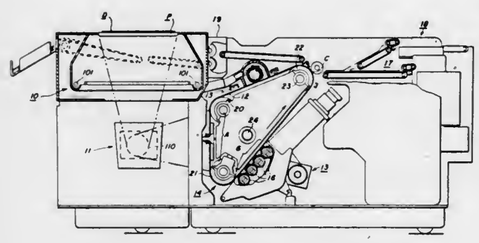
An apparatus in which light rays are generated for illuminating a transparent electrode adapted to electrostatically attract

toner particles thereto. The intensity of light rays passing through the electrode indicates the density of toner particles



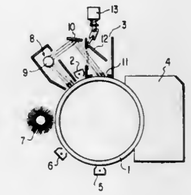
adhering thereon. In this manner, the concentration of toner particles within a development system of an electrophotographic printing machine is determined.

3,778,147
ELECTROSTATIC REPRODUCTION MACHINE HAVING SELECTABLE MAGNIFICATION RATIOS
Edward G. Reehil, Henrietta, and Gerald A. Buddendeck, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed July 11, 1972, Ser. No. 270,579
Int. Cl. G03g *15/00*
U.S. Cl. 355—8 **15 Claims**



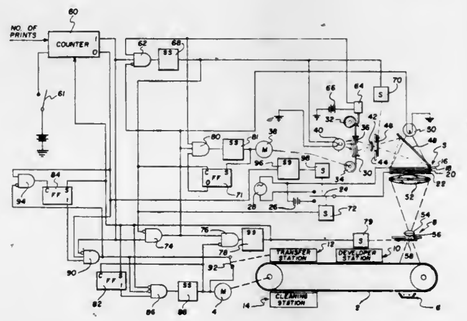
Apparatus for regulating the magnification ratio between a copy produced by an electrostatic reproduction machine and the original document from which the copy is produced is provided in accordance with the teachings of the present invention. Movable lens means projects a light image of the original document onto a moving photoreceptor disposed in an image plane, said lens means being movable along a rectilinear path to determine a magnification ratio in accordance with the relative position of said lens means with respect to said original document and said photoreceptor. Manually operable selecting means produce electrical representations of selected magnification ratios. Positioning means responds to the produced electrical representations to position the lens means at a selected location along the rectilinear path to thereby establish the selected magnification ratio. In one embodiment of the instant invention, the copy of the original document is produced by flashing a pulsed light image of the original onto the photoreceptor. Flash control means applies a flash energizing pulse to illumination means for the generation of the light pulse in timed relation with the movement of the photoreceptor. The flash control means is responsive to a preselected one of the selected magnification ratios for delaying the application of the flash energizing pulse to the illumination means for a predetermined interval of time.

3,778,148
APPARATUS AND METHOD FOR SELECTIVELY DISCHARGING THE PHOTOCONDUCTIVE SURFACE OF AN ELECTROSTATIC DRUM COPIER TO FACILITATE THE CLEANING THEREOF
Kaoru Fujitsuka, Oomiya, and Ko Honda, Iwatsuki, Saitama, both of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1972, Ser. No. 317,779
Claims priority, application Japan, Dec. 27, 1971, 46/105483
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **6 Claims**



In a copying machine characterized in that a charging device, an exposure device, a development device, a transferring device for transferring the developed image to a transfer medium such as paper, a cleaning device and a discharging device are provided around a photoconductive drum in the foregoing order, the improvement comprising means for introducing a discharging light disposed next to the charging device, and a shutter which intercepts the discharging light for a time corresponding to the length of the transfer medium only when the transfer medium enters the body of the copying machine.

3,778,149
METHOD AND APPARATUS FOR MAKING MULTIPLE COPIES FROM AN ORIGINAL
Gary D. Fields, Parker, Colo., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 17, 1972, Ser. No. 227,238
Int. Cl. G03g *15/14*
U.S. Cl. 355—16 **15 Claims**



Apparatus is disclosed for making multiple copies from an original by forming a first temporary image from the original which temporary image is used to sequentially expose a plurality of photosensitive surfaces to form multiple images. Thus, while successive photosensitive surfaces are being exposed, a first original may be replaced in an exposure station with another original from which copies are to be made. Time delay is reduced since the original from which subsequent co-

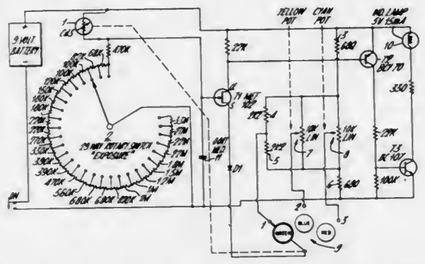
pies are to be made can be positioned in the exposure station while multiple copies are being made from a temporary image formed from the first original. The temporary image is formed on a photoconductive-liquid crystal sandwich by a first source of radiation to which the photoconductive layer is sensitive, and is projected by a second source of radiation which may be within another portion of the electromagnetic spectrum to which the photoconductive layer is not sensitive.

3,778,150

PRINTING OF PHOTOGRAPHIC COLOUR NEGATIVES

Keith Aston, 20 Summerville Gardens, Surrey, England

Filed Oct. 27, 1971, Ser. No. 192,956
Int. Cl. G03b *27/72*
U.S. Cl. 355—38 **10 Claims**



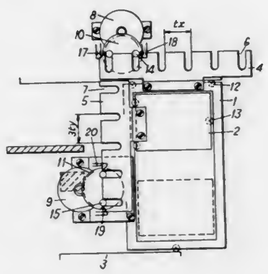
Apparatus for screening photographic colour negatives to determine the exposure time and colour filtering required to produce an acceptable colour print. The apparatus incorporates a photoresistor connected in series with an adjustable resistance calibrated in terms of exposure times, the photoresistor and adjustable resistance constituting two arms of a bridge circuit. A further two arms are constituted selectably by either a fixed resistor network or by one or other of two potentiometers calibrated in terms of colour filter densities, switches being provided to enable selection. Alternatively one potentiometer appropriately switched can serve the function of the two potentiometers. A detector circuit senses balance in the bridge circuit. The calibration of the adjustable resistance and potentiometers, and the way the apparatus is used are explained.

3,778,151

MICROFILM CAMERA WITH LONGITUDINAL AND CROSS SLIDES MOVABLE IN STEPS

Hans Zimmet, Dresden, Germany, assignor to VEB Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed Oct. 2, 1972, Ser. No. 294,307
Int. Cl. G03b *27/42*
U.S. Cl. 355—53 **4 Claims**



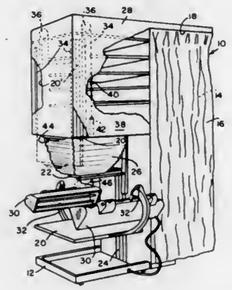
A microfilm camera includes a housing, a longitudinal slide which can be moved in steps in said housing, and a cross slide which can also be moved in steps within the housing. A cross slide is provided within the housing for carrying one film sheet at a time. To the longitudinal slide and the cross slide there are attached transport bars having grooves which are cut transversely to the movement of the respective slide and which are engaged by pins mounted on plates drivable by electric motors. The pins are diametrically arranged on the pin plates and are spaced at a distance equal to the distance between the grooves in the transport bars. The pins also serve to actuate contacts for opening and closing the circuits of the respective electromotors.

3,778,152

MOBILE CAMERA ASSEMBLY

Gary E. Raymond, Box 531, Kenvil, N.J.

Filed July 19, 1971, Ser. No. 163,880
Int. Cl. G03b *27/32*
U.S. Cl. 355—56 **8 Claims**



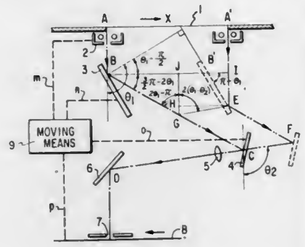
The assembly comprises a camera and copyboard, together with a platen, having a gear train and handwheel arrangement by means of which both the camera and copyboard are moved simultaneously. The single handwheel effects the movement of both the camera and copyboard, relative to the platen, and the camera moves in a linear motion while the copyboard moves non-linearly, to realize a reduction or enlargement of the photographic objective borne by the copyboard.

3,778,153

OPTICAL IMAGING SYSTEM

Noboru Iki, Omiya City, Japan, assignor to Fuji Shashin Koki Kabushiki Kaisha, Omiya-shi, Saitama, Japan

Filed Mar. 29, 1972, Ser. No. 239,139
Claims priority, application Japan, Mar. 31, 1971, 46/18706
Int. Cl. G03b *27/70*
U.S. Cl. 355—66 **1 Claim**



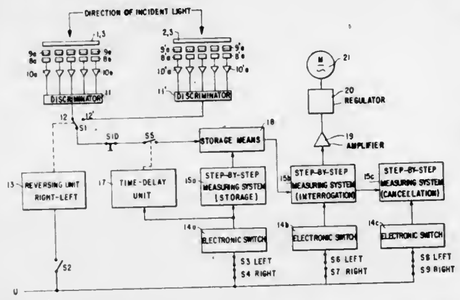
An optical imaging system for image exposing a static image on a photosensitive plate comprising scanning means for progressively scanning the static object at a first speed with a light source; means for moving a first mirror in parallel in the same direction as the scanning means at a second speed, the plane containing the first mirror being inclined with respect to the plane containing the static image; means for moving a second mirror in parallel in the same direction as the first mirror at a third speed, the second mirror facing the first mirror, the plane containing the second mirror being inclined with respect to the plane containing the static image so that the optical length along the path defined by the scanning means, first mirror and second mirror is substantially constant at all points during the movement of the scanning means, first mirror and second mirror; means for optically focusing the image reflected from the second mirror onto the photosensitive plate; means for moving the photosensitive plate at a speed relative to the scanning means whereby the imaging system can be compactly arranged because the plane containing the second mirror is inclinded to the plane containing the static image.

3,778,154

METHOD OF AND APPARATUS FOR AUTOMATICALLY CONTROLLING THE SPEED AT WHICH AN ORIGINAL AND COPYING MATERIAL PASS THROUGH A COPYING MACHINE

Werner Dennhardt, Bleidenstadt, and Herbert Schroter, Hahn/Taunus, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Apr. 20, 1972, Ser. No. 245,713
Claims priority, application Germany, Apr. 22, 1971, P 21 19 373.7
Int. Cl. G03b *27/72*
U.S. Cl. 355—68 **24 Claims**



This invention relates to an electronic method of automatically controlling the speed of a motor used to pass an original and copying material, on which an image of said original is to be produced, through the exposure zone of a copying machine, successive originals continuously passing through the machine in a manner such that a succeeding original gives rise to a speed-determining signal before a preceding original has left the exposure zone, which comprises storing a signal until the preceding original has left the exposure zone, interrogating the said signal for the purpose of controlling the speed of the motor for the period during which the said succeeding original is passed through the exposure zone, and cancelling the interrogated signal. This invention also relates to an apparatus for performing the method.

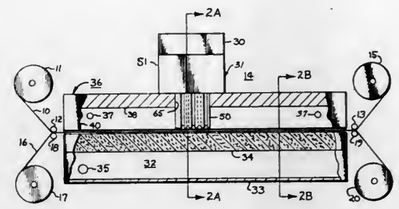
3,778,155

METHOD AND APPARATUS FOR REDUCING OPTICAL INTERFERENCE PATTERNS RECORDED BY CONTACT PRINTERS

Minard A. Leavitt, Sepulveda, Calif., assignor to Cutter-Hammer, Inc., Milwaukee, Wis.

Filed Aug. 7, 1972, Ser. No. 278,634
Int. Cl. G03b *27/20*
U.S. Cl. 355—91 **24 Claims**

Optical interference patterns between adjacent surfaces of a flexible photographic transparency and an unexposed film is reduced by applying to the transparency a time variable, preferably directionioscillating force to vary the separation and/or angle between irregular areas of the adjacent surfaces. In a continuous contact printer where a length of transparency and a length of unexposed film are transported past a light source, a spatially variable force field is established along the length of the transparency by inducing flow of oppositely



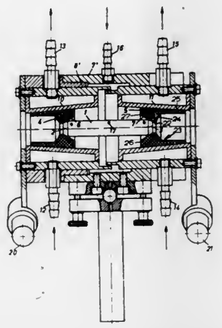
directed gas streams. A first plurality of transverse grooves formed in a block overlying the non-adjacent surface of the transparency are connected to a source of fluid under pressure. A second plurality of transverse grooves formed in the block between respective ones of the first plurality of grooves are connected to a fluid sink at lower pressure. Fluid from each one of the first plurality of grooves flows to the adjacent ones of the second plurality of grooves.

3,778,156

HEATED SAMPLE CELL

Helga Schmedes; Paul Hansen, both of Uberlingen, and Bernhard Welz, Merrsburg, all of Germany, assignors to Bodenseewerk Perkin-Elmer Co., GmbH, Uberlingen/Bodensee, Germany

Filed Sept. 28, 1972, Ser. No. 292,891
Claims priority, application Germany, Sept. 30, 1971, P 21 48 743.2
Int. Cl. G01j *3/30*
U.S. Cl. 356—244 **7 Claims**



A known type of heated sample cell assembly for atomic absorption spectroscopy includes an open-ended graphite sample tube having a central hole for initially introducing the sample into the tube and for allowing an inert protective gas to circulate from the otherwise closed surrounding housing into the tube to protect the interior surfaces from oxidization when the device is heated, as by large electrical currents supplied from electrodes in contact with both ends of the graphite tube. A known improvement includes the addition of holes near the ends of the graphite tube to reduce the speed at which a given total protective gas flow causes the sample to be expelled from the open end of the tube, thereby increasing useful measuring time. The present change includes providing bores through

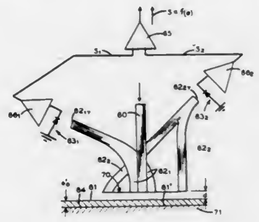
the electrodes so that the inert protective gas flows into the area immediately adjacent the open ends of the graphite sample tube. This technique of supplying additional protective gas tends to exclude air from reaching any part of the graphite tube, without causing eddy currents at the tube or complicating manufacturing of the tube by requiring carefully made additional holes in the graphite tube.

3,778,157

OPTICAL DISTANCE CONVERTER

Rene Brelot, Paris, and Jean Tourret, Montrouge, both of France, assignors to Compagnie des Compteurs, Paris, France

Filed Nov. 4, 1971, Ser. No. 195,768
Claims priority, application France, Nov. 6, 1970, 7040004
Int. Cl. G01c *3/08*; **G01b** *11/00*
U.S. Cl. 356—4 **7 Claims**



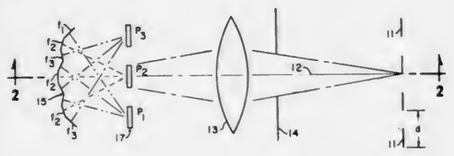
According to an illustrative embodiment an apparatus is provided for producing signals varying as a function of the distance of a surface relative to a reference face, comprising a fiber optic bundle for transmitting light to an emitting end thereof to illuminate a light reflecting surface. A fiber optic receiver bundle having at least one receiving end for picking up light reflected by the surface is provided for transmitting a flux of reflected light to produce a signal related to this relative distance by a linear relationship over a certain range of variation of such distance. The receiving end is transversely separated from the emitting end by an amount selected in accordance with a desired predetermined distance about which extends the above-mentioned range in which the signal to distance relationship is linear. For the purpose of measuring the thickness of transparent bodies as measured by the distance of an inner and an outer face thereof opposite the emitting end, the converter has at least two receiving ends arranged for providing respective signals linearly related respectively to the average distances of these inner and outer faces.

3,778,158

ELECTRO-OPTIC DISPLACEMENT DEVICE

Kent E. Erickson, Brookside, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Mar. 1, 1972, Ser. No. 230,758
Int. Cl. G01p *3/36*; **G02b** *5/08*
U.S. Cl. 356—28 **1 Claim**



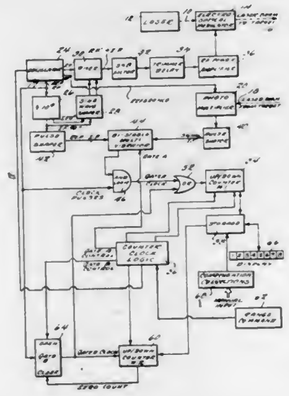
A device for determining and measuring the direction and extent of displacement of a regularly divided linear or circular scale comprises means for illuminating the scale over a plurality of divisions and detector means for imaging the illuminated portion of the scale upon an image divider which directs corresponding portions of the scale image to different ones of a plurality of photo-electric cells. The light thus incident upon the various photocells represents an average over a number of scale rulings and regularly varies with displacement in phase-displaced relationship among the photocells to provide a plurality of signals which can be employed in a directional electronic counting device.

3,778,159

DISTANCE MEASURING APPARATUS AND METHOD UTILIZING PHASE COMPARISON OF MODULATED LIGHT BEAMS

Robin H. Hines; William L. Hollinshead, and Thomas O. Bolden, all of Tullahoma, Tenn., assignors to Laser Systems & Electronics, Inc., Tullahoma, Tenn.

Continuation of Ser. No. 18,101, March 10, 1970, abandoned.
This application Mar. 30, 1972, Ser. No. 239,456
Int. Cl. 343 *12*; **G01c** *3/08*
U.S. Cl. 356—5 **9 Claims**



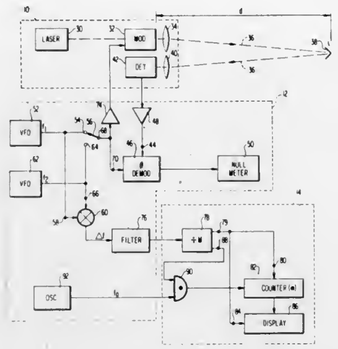
Apparatus and method for accurately measuring and digitally displaying the distance between remotely separated points involves modulating a light beam at a known radio frequency, transmitting the light beam from one of the points to reflect from the remote point and return to the transmitting point, digitally measuring the phase difference between the transmitted and returned beams, and determining from such phase difference the distance between the points. The light beam is modulated in sequence with a plurality of RF signals of different frequency in order to resolve ambiguities associated with phase comparison distance measuring techniques, the primary one of such modulating signals being obtained by mixing a reference radio frequency (RF) signal with a reference intermediate frequency (IF) signal derived by division of that reference RF signal, thus retaining a fixed frequency ratio with the reference RF signal. The return RF signal is also mixed with the reference RF signal to derive a second IF signal for comparison with the reference IF signal in a digital phase comparator which utilizes as the clock signal the reference RF signal. This method of deriving from a single oscillator source the various comparative signals greatly increases the tolerances of the system and reduces the need for expensive oscillators of extreme stability. The remaining modulating signals are likewise derived by mixing various RF signals with the reference IF signal, yet all modulating signals are maintained within a narrow frequency band, thus greatly reducing compensation requirements while improving accuracy, by utilizing as the additional RF signals those having frequency differences with the reference RF signal corresponding to half-wavelengths which are related to the half-wavelength of the primary beam-modulating RF signal by different powers of 10.

3,778,160

ELECTRONIC DISTANCE MEASURING DEVICE AND METHOD

John R. Wolcott, Orlando, Fla., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,560
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **16 Claims**



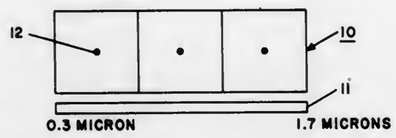
An electronic distance measuring device and method for determining the distance between two locations utilizing light or other electromagnetic wave energy. The wave energy is transmitted from one location to the other and is reflected back toward the transmitting location. The energy is detected and compared in phase with the transmitted energy, and the phase relationship between the transmitted and detected energy is varied until a predetermined phase relationship exists. The frequency of the transmitted wave energy is then varied until a predetermined phase relationship exists at a different frequency. The difference frequency may then be utilized to provide a direct digital display of distance between the predetermined locations.

3,778,161

EXTENDED-RANGE SPECTROSCOPE FOR INTENSE RADIATION SOURCES

Peter D. Poulsen, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Oct. 12, 1971, Ser. No. 188,270
Int. Cl. G01j *3/00*
U.S. Cl. 356—51 **22 Claims**



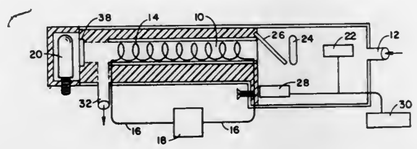
An improved spectroscope for securing simultaneous data regarding both spatial and spectral information from intense sources of radiation. A dual-mode optical system is utilized wherein spatial information is directed to three adjacent screens for the near ultraviolet, visible, and near infrared, respectively, and spectral information is directed to an elongated spectra screen located directly below the three spatial screens. This dual-mode function is performed through the use of fluorescent material technology which replaces the more conventional and complex image tube and detector array technology, thereby resulting in a truly portable spectroscope which is light weight, compact, low cost, requires little maintenance, and has very low power requirements.

3,778,162

APPARATUS FOR THE COLLECTION AND MEASUREMENT OF THE AMOUNT OF MERCURY VAPORS PRESENT IN A VOLUME OF AIR OR OTHER GASES

Preston L. Gant; Bill G. Motes, and Jerry T. Aylor, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 24, 1972, Ser. No. 237,840
Int. Cl. G01j *5/56*; **G01n** *21/22*
U.S. Cl. 356—51 **6 Claims**



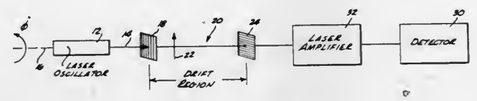
Apparatus for the collection and measurement of the amount of mercury vapors present in a volume of air or other gases. The apparatus includes a hollow chamber having a noble metal absorbent mounted therein for the absorption of mercury vapor present in gases passed therethrough, a power source connected to the absorbent for heating thereof, a light source mounted at a first end of the chamber, a first photo cell at a second end of the chamber positioned to receive a beam of light emanating from the lamp passing through the chamber, a mercury vapor reservoir adjacent the first photo cell and positioned in order that the beam of light emanating from the lamp passes through the reservoir prior to receipt thereof by the first photo cell, a second photo cell at a second end of the chamber positioned to receive a beam of light emanating from the lamp passing through the chamber without passing through the mercury vapor reservoir, a means for measuring the absorbence of the first and second photo cells and calculating the differential when the means for heating is activated, and a means for exiting the gases after the activation and measurement has been completed.

3,778,163

ROTATION-RATE MEASURING APPARATUS

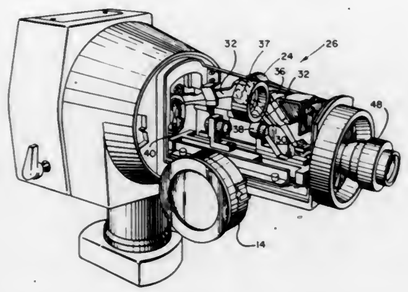
Robert L. Forward, Oxnard, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 555,018, June 3, 1966, abandoned.
Filed Apr. 30, 1969, Ser. No. 832,537
Int. Cl. G03b *27/04*
U.S. Cl. 356—114 **9 Claims**



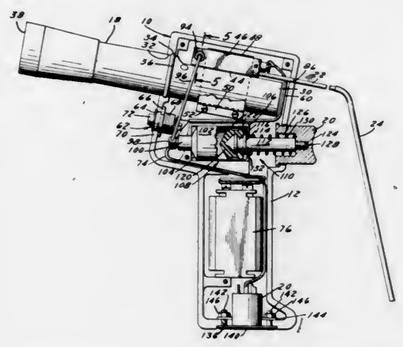
This invention is a gyro-type apparatus for sensing the rate of its rotation about a predetermined axis. In one embodiment, a light beam from an appropriate source is propagated through a drift region generally defined by two spaced optical polarizers having individual directions of polarization at a predetermined fixed angular relationship. Light energy passing through the far end of the drift region is detected to indicate the amount of change and direction of beam polarization that has taken place in the drift region due to the rotation of the apparatus.

3,778,164
OPHTHALMOMETER HAVING ALTERNATIVE VIEWING MEASURING SYSTEMS AND INCLUDING IMPROVED CONTACT LENS HOLDING MEANS
Terence Walker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed Nov. 29, 1972, Ser. No. 310,292
Int. Cl. G01b *9/00, 21/04;* **A61b** *3/10*
U.S. Cl. 356—124 **12 Claims**



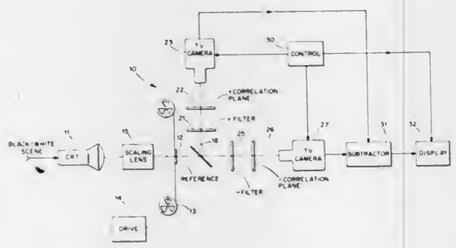
Ophthalmometer including a measuring circuit for measurement of the curvature of the cornea and contact lens curvatures with a built-in viewing circuit which is activated by the movement of a lever to allow visible inspection of the cornea and contact lenses. An interference ultraviolet filter in communication with a single light source permits the cornea to be viewed under ultraviolet light as well as ordinary visible light.

3,778,165
PORTABLE FLOW-THROUGH DISPENSING REFRACTOMETER APPARATUS
John J. Grubb, La Habra, and Keichi Tomei, Monterey Park, both of Calif., assignors to Hamilton Company, Whittier, Calif.
Filed May 24, 1971, Ser. No. 146,283
Int. Cl. G01n *21/46*
U.S. Cl. 356—128 **9 Claims**



A portable flow-through dispensing refractometer apparatus having a specimen plate and a meter with refractive index scales. There is a flow-through cell, which includes the specimen plate, and a finger operated pump for precise volume pick up of specimens, or samples, for introduction into the flow-through cell. A built-in light source provides for illumination of the specimen plate to improve visual reading of the scales of the meter. There is a rechargeable battery in the handle of the apparatus and a stand to which the refractometer apparatus is removably attached and supported; a rectifier in the stand is adapted to be connected to a source of electrical energy and supplies electric current to the battery for charging it when the refractometer apparatus is attached to the stand.

3,778,166
BIPOLAR AREA CORRELATOR
Richard R. Pease, Hingham; Frank Blitzer, Framingham; Arthur A. Giordano, Burlington, and Frank L. Less, Wrentham, all of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.
Filed Feb. 26, 1973, Ser. No. 336,005
Int. Cl. G06k *9/08*
U.S. Cl. 356—71 **23 Claims**

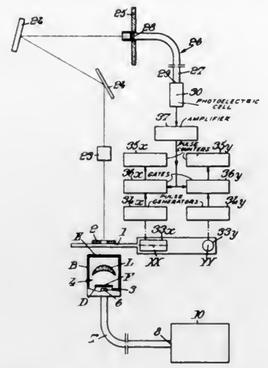


An optical area correlator employing a cathode ray tube for producing an image of a scene illuminated with incoherent light. Light rays from the image of the scene pass through transparent regions of a bipolar reference representing a feature being sought in the scene. By any of various means the transparent regions designating positive values of the reference are distinguished from the transparent regions designating negative values. The positive and negative components of light passing through the positive and negative transparent regions of the reference are separated so as to form separate + and − correlation images, respectively. The two correlation images are separately viewed by a TV camera or cameras and the resulting electrical signals are algebraically added by a linear subtractor. The output of the subtractor is the correlation output which is a measure of the degree of correlation of the reference with the scene. This output may be applied to a TV monitor which produces a resultant correlation image for direct viewing in essentially real time.

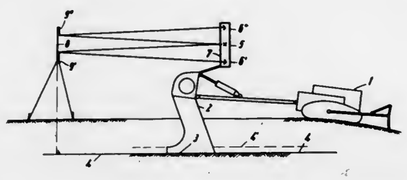
3,778,167
OPTICAL MONITORING SYSTEM
Rene Claret, Sceaux, and Jean Francois Picard, Versailles, both of France, assignors to Societe d'Applications Generales d'Electricite et de Mecanique SAGEM, Paris, France
Filed Oct. 1, 1971, Ser. No. 185,776
Claims priority, application France, Dec. 17, 1970, 7045542
Int. Cl. G01b *11/00*
U.S. Cl. 356—167 **12 Claims**

A support is arranged to bear the part to be measured or checked and an optical device illuminates the part by diascopy or by episcopy by a parallel beam of light. The light source is the output end of a light guide placed at the focus of the optical device. At the distant input end is a light generator. A photoelectric receiver collects the beam of light emerging from the optical device after it has illuminated the part by diascopy or by episcopy. Relative displacement between the support and the optical device-receiver device assembly, is effected in a transverse direction with respect to the light beam.

A pulse generator is actuated by this movement and delivers a number of electrical pulses proportional to the amplitude of the movement. A pulse counter receives the pulses from the pulse generator, through an electronic gate actuated by a signal from the receiver.



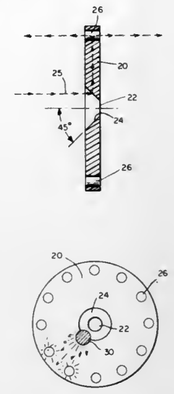
3,778,168
APPARATUS FOR THE CONTROL OF TRAVELING CONSTRUCTIONAL IMPLEMENTS
Kurt Willner, Kurt Willner Legederstrasse 12, Munster, Germany
Filed July 22, 1971, Ser. No. 165,304
Claims priority, application Germany, July 27, 1970, P 20 37 130.6
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **11 Claims**



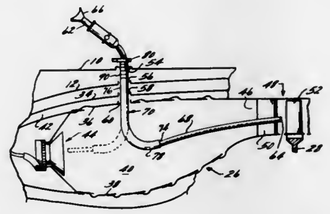
An apparatus for controlling travelling constructional implement using guide planes, comprising a transmitter and receiver device, having at least one transmitter and one receiver connected with the implement, and a reflector fixed to the ground, the reflector having the properties of a plane mirror adapted to reflect radiation between the transmitter and the receiver means.

3,778,169
OPTICAL ALIGNMENT TARGET APPARATUS
Larry D. Adams, Collingswood, N.J., assignor to Metrologic Instruments Inc., Bellmawr, N.J.
Filed Feb. 26, 1973, Ser. No. 335,500
Int. Cl. G02b *5/16;* **G01d** *7/06;* **B01b** *11/26*
U.S. Cl. 356—172 **13 Claims**

An alignment target for use with a collimated light source, comprising a disc of translucent material with a 45° annular surface around the center thereof, which surface receives light directed perpendicular to the disc and directs it radially outward by scattering, refraction or reflection toward passive light indicators spaced circumferentially around the outer portion of the disc. In use of the target, a light source such as a laser is directed upon the disc, and any misalignment of the laser results in a light indication from specific ones of the passive light indicators corresponding to the angle of misalignment, enabling the operator to realign the laser until it is centered within the counterbore of the target.



3,778,170
BORESCOPE GUIDE TUBE
Charles B. Howell, Cincinnati, and Richard E. Drew, Loveland, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Nov. 2, 1972, Ser. No. 303,198
Int. Cl. G01n *21/16*
U.S. Cl. 356—241 **10 Claims**



An inspection assembly for inspecting the interior of a gas turbine engine, or similar complicated structure, is shown to include a guide tube which is insertable through a number of aligned access ports in the engine. The guide tube is designed to direct the distal tip of a suitable inspection device, such as a fiber optic borescope, to appropriate internal areas for inspection. The tube includes a curved section, which is formed of material with a built-in "memory," i.e., will retain its initial curvature when in its free state, but also is sufficiently flexible to permit straightening such that extremely small access ports may be provided in the device being inspected. A novel method of using such apparatus is also disclosed.

3,778,171
SAMPLE CELL FOR ULTRACENTRIFUGE UTILIZING-MULTIPLE-BEAM INTERFERENCE OPTICS
Charles Henry Chervenka, Sunnyvale, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Nov. 9, 1972, Ser. No. 304,909
Int. Cl. G01n *1/10, 21/24*
U.S. Cl. 356—246 **5 Claims**

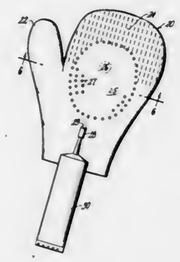
This invention provides a sample cell for an analytical ultracentrifuge which allows recording of solution-solvent

fringes and solvent-solvent fringes simultaneously from the cell under exactly the same experimental conditions. A unique feature of the cell is that it permits the passage of three or four



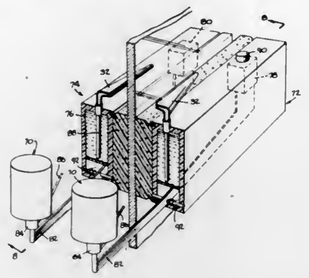
beams of light through it, rather than the usual two. The multiple beams of light form two sets of interference patterns, from which one can correct for the contribution of cell windows to refractive index changes.

3,778,172
BODY SCRUBBING ARTICLES
Darrell P. Myren, 4425 Pacific Coast Hwy., Torrance, Calif.
Filed Mar. 10, 1969, Ser. No. 805,509
Int. Cl. A46b *5/04*
U.S. Cl. 401—7 **7 Claims**



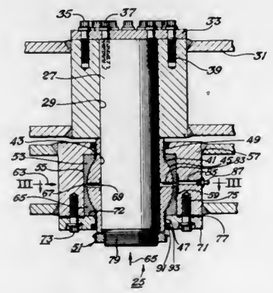
Somewhat pressure-deformable articles such as scrubbing pads or mittens have a flexible surface area of resiliently upstanding (nylon) loops, which are used in conjuction with detergent material to scrub a person's skin without abrading it, thus to remove such difficultly cleanable substances as printer's ink, mechanic's grime and grease, etc. Such scrubbing article, being water-repellent is itself cleaned simply by a flow of hot water. The mitten has a valved liquid-detergent pouch in its palm from which portions can be expelled simply by the wearer pressing his hand against the skin surface being cleaned; the palmar finger area outward from the pouch is covered by the upstanding loops for scrubbing. The alternate scrubbing pad is formed with separate portions of (a) readily-compressible backing material and (b) relatively rigid backing material each of which is covered by the napped sheet material; the former portion enables easy conformance with contacted skin curvature, and the latter provides a firm area for greater frictional application in scrubbing.

3,778,173
WINDOW CLEANING APPARATUS
Joseph P. De Carlo, 200 Harding Ct., Centerport, N.Y.
Division of Ser. No. 187,369, Oct. 7, 1971, which is a continuation-in-part of Ser. No. 21,050, March 19, 1970, abandoned. This application Sept. 28, 1972, Ser. No. 293,059
Int. Cl. A47l *1/08*
U.S. Cl. 401—10 **4 Claims**



Apparatus for simultaneously cleaning both sides of a window comprises master and slave magnetic cleaning units. When the cleaning units are aligned on opposite sides of the window, magnetic attraction causes the slave cleaning unit to press against and to slide on the outside of the window in response to corresponding movement of the master cleaning unit on the inside of the window. Self-contained cleaning fluid reservoirs in alternative embodiments of the cleaning units controllably dispense cleaning fluid onto the window surfaces in response either to gravity forces, controlled by orientation of the master unit with respect to the vertical, or to magnetic biasing means actuated by a control means on the master unit. In the present invention, magnetic biasing means acts indirectly to control energy storage means, such as a pressurized container in the slave unit, which in turn generates the pumping pressure for forcing cleaning fluid from the reservoir in the slave unit.

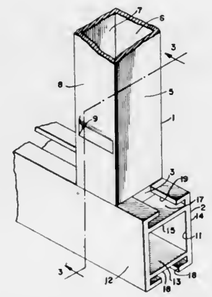
3,778,174
ADJUSTABLE SELF-ALIGNING PIVOT BEARING, AND BALL PIN AND SOCKET EMPLOYING SAME
Lloyd A. Molby, Longview, Tex., assignor to R. G. LeTourneau, Inc., Longview, Tex.
Division of Ser. No. 94,684, Dec. 3, 1970, Pat. No. 3,711,121. This application Aug. 10, 1972, Ser. No. 279,497
Int. Cl. B62d *53/02*
U.S. Cl. 287—96 **10 Claims**



A pin and socket for use in a pivot connection characterized by a shaft carrying a pivot having a spherically shaped exterior portion; a bearing having at least two sections covering substantially the entire spherical exterior portion for sustaining

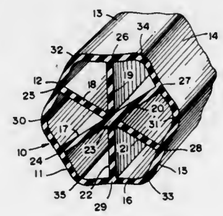
maximum radial and thrust forces, but having a small clearance adjacent the equator of the spherical portion for wear adjustment and for lubrication; and a cavity and thrust plate means for retaining the bearing sections fittingly engaging the spherical exterior portion of the pivot. With the disclosed structure, misalignment is prevented and the pin and socket easily and precisely adjusted for wear.

3,778,175
SNAP LOCKING STRUCTURAL JOINT ASSEMBLY
Ernest C. Zimmer, Rte. 2, P.O. Box 307, Wellsburg, N.Y.
Filed June 4, 1971, Ser. No. 150,002
Int. Cl. F16b *7/22*
U.S. Cl. 287—54 C **17 Claims**



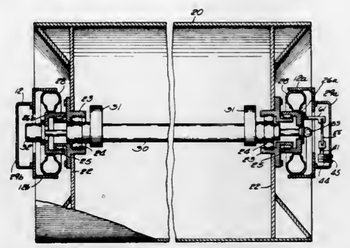
A snap-locking structural joint assembly and method of assembling same comprising an elongate structural connecting member having longitudinally extending channel means in at least one side thereof and a fastening clip means having flange means thereon adapted to be received in said channel means to secure said fastening clip to said elongate structural member, and locking means operatively associated with opposite, spaced apart legs of said fastening clip means to lock said fastening clip means to a second elongate structural member for releasably joining said second elongate structural member to said first elongate structural member.

3,778,176
HEXAGONAL HOLLOW ELASTOMER SEALING STRIPS
James H. Pax, Findlay, Ohio, assignor to The D. S. Brown Company, North Baltimore, Ohio
Filed July 22, 1971, Ser. No. 165,004
Int. Cl. E01c *11/10*
U.S. Cl. 404—65 **4 Claims**



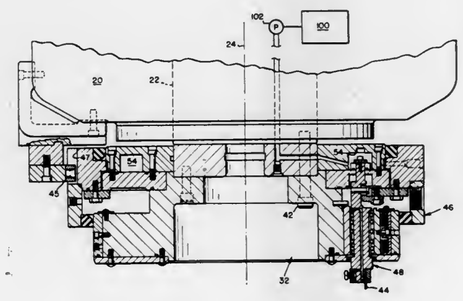
Elastomer seals embodying hexagonal tube with the internal elongated elastomer web structures characterized by elongated, inner webs joined together at their inner edges in the longitudinal axis of said tube and respectively intersecting the approximate mid-portion of the sides of said tube; useful for sealing concrete joints and other sealing applications, including automotive applications.

3,778,177
VIBRATION METER SYSTEM FOR VIBRATORY COMPACTION MACHINES
Edwin J. Haker, Elm Grove, and Norman L. Peterson, Wauwatosa, both of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Dec. 30, 1971, Ser. No. 214,290
Int. Cl. E01c *19/38*
U.S. Cl. 404—117 **8 Claims**



A soil and road-grade compaction machine includes a heavy rigid frame, a roller having a power driven eccentric weight rotating about the roller axis, and cushion means which allows the roller to vibrate with only nominal movement of the frame. The vertical component of the movement of the roller relative to the frame or "bounce" of the roller operates an electric current generator having its output inductively attenuated and then rectified and measured by a meter which indicates any increase or decrease in the bounce of the roller in relative terms.

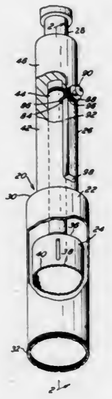
3,778,178
APPARATUS FOR CONTROLLING BLADE POSITIONING IN A CUTTER HEAD ASSEMBLY
Ernst J. Hunkeler, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.
Filed July 31, 1972, Ser. No. 276,620
Int. Cl. B23b *41/12, 47/18*; **B23d** *5/02*
U.S. Cl. 408—54 **12 Claims**



Apparatus for controlling operative positioning of individual blades in a cutter head assembly of a type which may be used for cutting "blind" arcuate slots in a workpiece, such as the seal slots required for rotors of rotary, combustion engines. A plurality of blade-holding structures, and their associated blades, is positioned about a circumference of the cutter head. Each blade-holding structure is mounted so as to be independently movable axially relative to the cutter head to thereby provide for successive and progressive engagement and disengagement of individual blades with the workpiece as the cutter head rotates during a cutting operation. A portion of each blade-holding means is carried within a fluid chamber

which communicates with a fluid pressure system so as to normally urge each blade-holding structure toward its cutting position. In addition, a stop limit means is contained in the fluid chamber to limit the movement of each blade-holding means in a cutting direction. Each stop limit means is arranged to create a dash pot effect with fluid contained in the chamber during final increments of movement of the blade-holding means to its extended limit position. This arrangement reduces shock and vibration in the cutter head assembly and minimizes noise during operation of the assembly. Also, the dash pot effect eliminates any tendency for the blade-holding structure to bounce as it moves very rapidly to its limit position for cutting a slot.

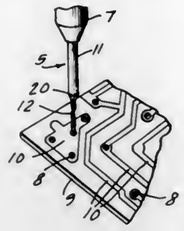
3,778,179
DUAL REPLACEABLE HOLESAW BIT
Dayton F. Rivas, 62 Mt. Prospect Ave., Clifton, N.J.
Filed Sept. 6, 1972, Ser. No. 286,632
Int. Cl. B23b *51/04*
U.S. Cl. 408—206 **15 Claims**



A bit for use with a drill for cutting concentric holes of different diameters. The bit includes a holder comprising first and second elongated members which are movable relative to one another from a first position to a second position and vice-versa. A first separately replaceable hole saw is connected to the first member and a separately replaceable hole saw is concentrically disposed within the first hole saw and connected to the second member. The second hole saw is retracted within the first hole saw when the members are in the first position. The second hole saw extends out of the first hole saw when the members are in the second position.

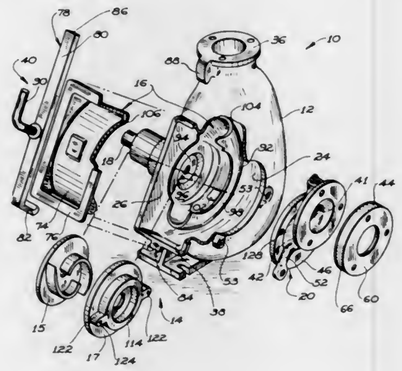
3,778,180
CIRCUIT BOARD DRILL AND METHOD
Charles T. Ostrom, Gardena, Calif., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Mar. 10, 1972, Ser. No. 233,563
Int. Cl. B23b *51/02*
U.S. Cl. 408—226 **3 Claims**

A circuit board drill of the straight shank shouldered type has the cutting edge flutes extended up through the shoulder between the shank and the smaller diameter fluted portion of



the drill to enable rejecting of drilled material shavings, such as copper which otherwise tend to cling to the shoulder.

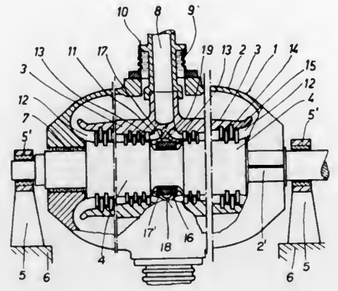
3,778,181
CENTRIFUGAL PUMP
Stanley B. McFarlin, Jeromesville, Ohio, assignor to The Gorman-Rupp Company, Mansfield, Ohio
Filed Mar. 24, 1971, Ser. No. 127,446
Int. Cl. F04d *9/02, 7/00, 29/40*
U.S. Cl. 415—53 **18 Claims**



A centrifugal pump is disclosed which comprises a pump housing containing a centrifugal pumping assembly. The housing has an access opening at one side of the pumping assembly and the parts of the pumping assembly are detachably supported within the housing for removal through the access opening. A number of different pumping assemblies can be supported in the housing so that various pumping characteristics can be obtained.

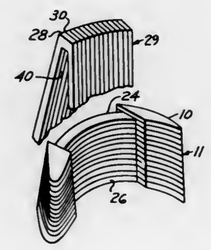
3,778,182
TURBOMACHINE STRUCTURE
Alfred Hohn, and Peter Novacek, both of Kirchdorf, Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Feb. 8, 1972, Ser. No. 224,573
Claims priority, application Switzerland, Feb. 19, 1971, 2438/71
Int. Cl. F01d *3/02, 11/10*
U.S. Cl. 415—101 **4 Claims**

A turbomachine enclosed within a casing and provided with pedestal type plain bearings located outside the casing at opposite ends of the latter for supporting the rotor shaft. In addition to the externally located pedestal bearings, a flexible, centering, auxiliary bearing is mounted on the guide blade carrier within the casing to provide additional support for the rotor,



this auxiliary bearing being located at the point of maximum amplitude of the fundamental oscillation frequency of the rotor so as to reduce shaft vibration disturbances.

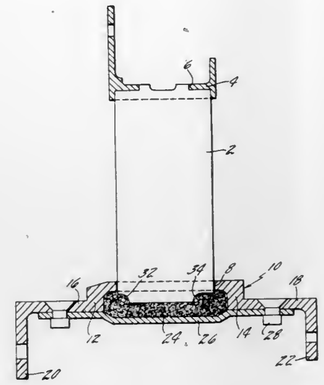
3,778,183
COOLING PASSAGES WAFER BLADE ASSEMBLIES FOR TURBINE ENGINES, COMPRESSORS AND THE LIKE
Werner P. Luscher, El Dorado Hills, and Leonard Schoenman, Citrus Heights, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed Apr. 22, 1968, Ser. No. 723,203
Int. Cl. F01d *5/14*
U.S. Cl. 415—115 **2 Claims**



A blade according to the present disclosure comprises a stack of a plurality of discrete wafers. A control passage of flow passages is provided on a planar surface of each wafer and means is provided for delivering coolant to the flow passages. The wafers are sufficiently thin as to permit thermal equalibrium between the wafers and the coolant flowing in the passages so that the blades are transpiration cooled.

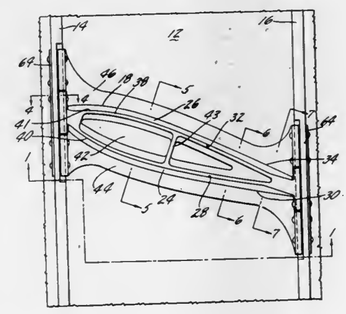
3,778,184
VANE DAMPING
Donald H. Wood, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed June 22, 1972, Ser. No. 265,413
Int. Cl. F01d *11/08, 1/02, 9/00*
U.S. Cl. 415—174 **4 Claims**

Damping of compressor or turbine vanes in the supporting shroud is accomplished by surrounding one end of the vane with a damping material of the steel wool or felt metal type



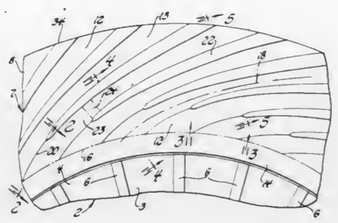
held in contact with the shroud in which the vane is loosely supported.

3,778,185
COMPOSITE STRUT JOINT CONSTRUCTION
James S. Plowman, Longmeadow, Mass., and Ivar G. Fowkes, East Hartford, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 28, 1972, Ser. No. 284,388
Int. Cl. F01d *9/02*; **F04d** *29/44*
U.S. Cl. 415—217 **9 Claims**



A composite strut includes an end extending radially through an opening in the wall of a cylindrical duct. The end of the strut has tapering surfaces forming a wedge-shaped cavity, and a wedge having the shape of the cavity is bonded to the surfaces of the cavity. The end of the strut also includes outwardly facing surfaces substantially parallel to and spaced from the tapered surfaces of the cavity. Stiffeners having surfaces in face-to-face abutting relationship to the outwardly facing surfaces are fixed to the duct and prevent the strut from being pulled radially through the duct opening. The stiffeners also absorb torsional and bending loads from the strut and transfer those loads into the duct.

3,778,186
RADIAL DIFFUSER
Phiroze Bandukwalla, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 25, 1972, Ser. No. 229,408
Int. Cl. F04d 21/00, 29/44
U.S. Cl. 415—481 2 Claims



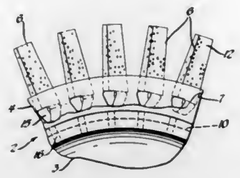
A diffuser for a centrifugal compressor has diffusing passages of circular or oval cross section which converge toward a throat and then diverge. The passages are of generally spiral curvature, at least in the converging portion. The entrances of the diffuser passages merge to define leading edges of generally elliptical shape between the passages.

3,778,187
CONTROLLABLE PITCH PROPELLERS FOR MARINE VESSELS
Peder K. Wennberg, Port Washington, N.Y., assignor to Propulsion Systems, Inc., Port Washington, N.Y.
Filed Apr. 13, 1971, Ser. No. 133,682
Int. Cl. B63h 3/08
U.S. Cl. 416—95 22 Claims



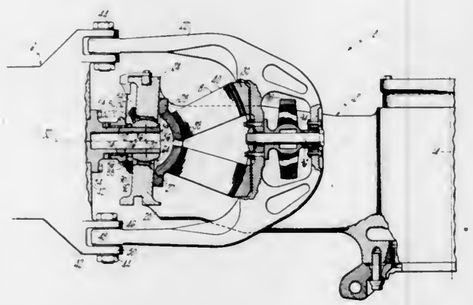
In a controllable pitch propeller arrangement of the type having a hydraulic piston-and-cylinder type motor in the propeller hub for effecting pitch settings, the power oil is passed to and from the motor through oil tubes nested in the hollow propeller shaft, and the follow-up or feedback member, which gives read-out of actual pitch, is relatively isolated from the temperature effects of the power oil, preferably by arranging the follow-up or feedback member as the central member of a nested arrangement in which the power oil tubes are radially spaced from the feedback member about the circumference of the nested assembly. Preferably the feedback member and the oil tubes are arranged as a unitary bundle, made up of several sections, and the oil tubes of each section are provided with sliding seals at the section coupling, whereby thermal expansion and contraction of the oil tubes is absorbed by the sliding seals in each section and will not affect the overall length of the bundle or the feedback member, thus preventing or minimizing erroneous pitch feedback signals. The follow-up member preferably is tubular, and an air tube passes therethrough to feed air to the propeller blades.

3,778,188
COOLED TURBINE ROTOR AND ITS MANUFACTURE
Robert H. Aspinwall, Zionsville, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 11, 1972, Ser. No. 287,888
Int. Cl. F01d 5/18
U.S. Cl. 416—97 3 Claims



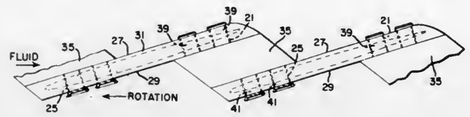
An integral cast turbine rotor wheel includes a disk and porous blades extending from the disk and into the rim of the disk, the disk defining cooling air entrance ports communicating with the porous blades so that cooling air may be circulated through them. The method of manufacture of the wheel includes providing cores defining air ports and blades, the blade portion of each core being porous, placing the cores in a mold shaped to conform to the wheel and pouring metal to define the cast body. The cores are then removed and any necessary machining of the wheel is performed.

3,778,189
ELASTOMERIC HELICOPTER ROTOR HEAD WITH DYNAMIC AND STATIC BLADE CONING AND DROOP STOPS
Donald L. Ferris, Newtown, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 5, 1972, Ser. No. 286,509
Int. Cl. B64c 27/38
U.S. Cl. 416—140 22 Claims



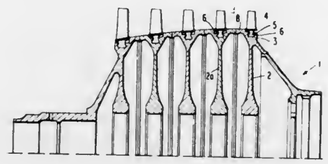
An elastomeric helicopter rotor having a blade mounted for universal motion about the intersection of the blade pitch change, flapping and lead-lag axes and including blade coning and droop stops, including a ring member rotatably mounted about the pitch change axis on the blade and coning and droop stops constituting segments of circular members whose centers lie on the blade lead-lag axes and with the ring member and coning stop and droop stop members presenting mating surfaces to one another so that as the blade moves in lead-lag motion while the blade ring member is in line or surface mating contact with either the coning stop surface or the static or dynamic droop stop surfaces, a relative rotation will be established therebetween for full support of the blade throughout the lead-lag motion, without affecting blade pitch angle or flapping angle, without preventing independent blade pitch change, and without scuffing of parts.

3,778,190
BUCKET COVER ATTACHMENT
Joseph H. Ouellette, Albany, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 1, 1971, Ser. No. 185,670
Int. Cl. F01d 5/22
U.S. Cl. 416—196 3 Claims



In a turbomachine having a turbine wheel including a rotor with a plurality of circumferentially mounted turbine buckets thereon; adjacent turbine buckets interconnected by a diagonal cover piece; a bucket cover attachment device which permits limited articulation of the buckets relative to one another as the turbine buckets twist and untwist.

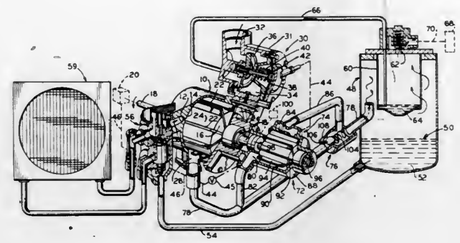
3,778,191
BLADE MOUNTING
Heinz Brockmann, Ober-Erlenbach/uber Bad Homberg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Jan. 21, 1971, Ser. No. 108,350
Claims priority, application Germany, Jan. 21, 1970, P 20 02 469.5
Int. Cl. F01d 5/32
U.S. Cl. 416—215 33 Claims



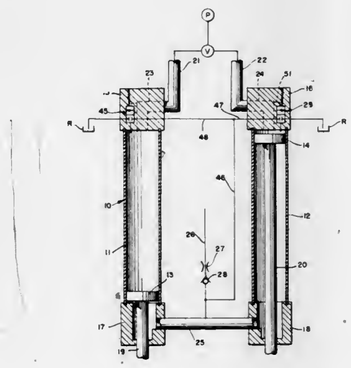
A blade fastening for the blades of compressors and/or turbines, especially for blades retained in dove-tail tangential grooves provided along the outer diameter of the rotor disks; the webs of the tangential grooves cover the hammer-head-like bases of the blades substantially over the entire rotor disk circumference while the blades provided with the hammer-head-like bases are adapted to be inserted by rotation into the tangential groove provided with small apertures; in order to fix the blades in a predetermined position relative to the rotor disk diameter, filler, clamping and locking elements are provided.

3,778,192
METHOD AND APPARATUS FOR UNLOADING A ROTARY COMPRESSOR
Terrence Caffrey, Kent, Ohio, assignor to The Davey Compressor, Kent, Ohio
Filed Apr. 7, 1972, Ser. No. 242,166
Int. Cl. F04b 23/04
U.S. Cl. 417—286 12 Claims

A method and apparatus are disclosed for relieving the fluid pressure at the outlet of an air compressor when the latter pressure exceeds the pressure of air in a compression cell of the compressor arriving at the outlet. The air pressure at the outlet is relieved by blocking backflow of air under pressure at a point downstream from the outlet and transferring air under pressure at the outlet to a point downstream of the point of backflow blocking. Blocking is achieved by means of a fluid pressure responsive check valve in a flow path between the outlet and a point of use for the compressed air, and transfer of air under pressure from between the outlet and the check valve is achieved by an auxiliary compressor, having a smaller input capacity than the output of the main compressor. During operation of the main compressor to deliver its rated volume of air at its rated pressure the auxiliary compressor and check valve cooperate to deliver the compressor output toward the point of use.



3,778,193
SLAVE SYSTEM FOR A PAIR OF HYDRAULIC CYLINDERS
Gerald H. Reinert, 6 Brightwood Rd., Cold Spring, Ky.
Filed Sept. 8, 1971, Ser. No. 178,762
Int. Cl. F04b 17/00
U.S. Cl. 417—342 3 Claims

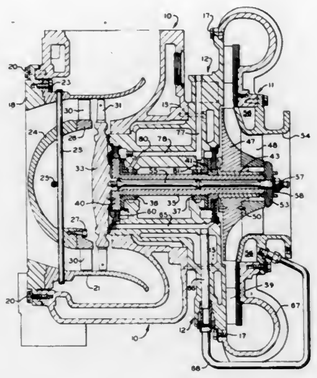


A slave system for a pair of hydraulic cylinders and pistons for retracting one piston while the other piston is extended is provided with valves for venting excess hydraulic fluid when each piston reaches its fully retracted position. The line for the make-up fluid for the slave system is connected to a spool valve in the retracting or rearward end of each cylinder, and when each piston is fully retracted it forces a spool valve open to vent excess make-up fluid and slave fluid. The spool valve is spring-biased to a closed position, and when the piston begins to extend the valve closes.

3,778,194
TURBOCHARGER STRUCTURE

Arthur J. Miller, Irwin, and Robert A. Miller, Jeannette, both of Pa., assignors to Carrier Corporation, Carrier Parkway, Syracuse, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,181
Int. Cl. F04b *17/00*
U.S. Cl. 417—407 2 Claims

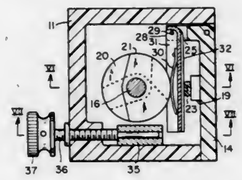


The turbine-impeller shaft is journaled in a pair of bearings mounted in the intermediate section of the turbocharger casing. An oil seal is mounted in that section intermediate the turbine disc and one of the shaft bearings and a second seal is mounted intermediate the impeller and the other bearing. The seals are formed with radially disposed passages communicating with the area between the seals and the shaft. An air passage extends from the output of the compressor section to the seal passages for the discharge of air between the seals and the shaft for cooling the same and the lubricating oil. An oil return baffle is disposed intermediate the turbine disc and the contiguous seal. The baffle extends radially inwardly between the seal and the disc in overlying relation to the seal and the end of the shaft. The baffle serves to redirect any oil leakage passing between the seal and the shaft to an oil drain cavity.

3,778,195
PUMP FOR PARENTERAL INJECTIONS AND THE LIKE

George Bamberg, Salem Church Rd., R.D. No. 4, Belle Vernon, Pa.

Filed July 20, 1972, Ser. No. 273,500
Int. Cl. F04b *43/08, 45/06*
U.S. Cl. 417—474 4 Claims

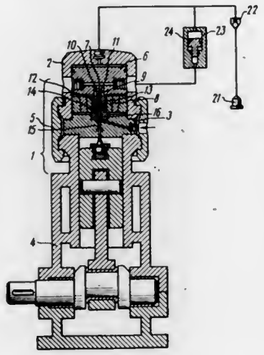


The pump for parenteral injections and the like operates by a peristaltic type action. the pump includes a shaft having a plurality of cams spaced therealong. The cams act on spring loaded members adjacent the cam which, in turn, sequentially squeeze a disposable, flexible tubing held by a support. An adjusting mechanism is also positioned adjacent the members so as to control the cross sectional area of the disposable, flexible tubing. The rate of flow is controlled by the adjusting mechanism.

3,778,196
HIGH-PRESSURE PLUNGER COMPRESSOR

Leonid Fedorovich Vereschagin, Kutuzovsky prospekt, 2/I, kv. 231; Jury Sergeevich Konyaev, ulitsa Fersmana, 11, kv. 26; Evgeny Valentinovich Polyakov, Belyaeyo-Bogorodskoe, 39, kv. 73, all of Moscow, and Ivan Efimovich Surkov, ulitsa Shkolnaya, 6, kv. 53, Moskovskaya Oblast, all of U.S.S.R.

Filed July 14, 1971, Ser. No. 162,424
Claims priority, application U.S.S.R., July 23, 1970, 1453652
Int. Cl. F04b *7/04*
U.S. Cl. 417—501 3 Claims

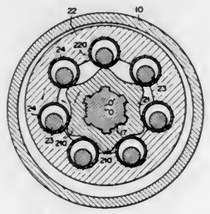


The present invention relates to devices designed for building up high pressures. A high-pressure plunger compressor comprises a cylinder with a compression chamber. Pressed to the cylinder is a piston with a discharge channel. A plunger is passed with a clearance through the compression chamber. The cylinder with the compression chamber is arranged in a clamp coaxially with respect to a clearance forming an annular space. The annular space is sealed on the side facing the piston end and on the side of the base of a conical portion of a sealing bushing. In addition, the annular space on its end communicates with the channel intended for the discharge of compressed working fluid. A gas or liquid can be used as the compressed working fluid. This invention makes possible an extended service life of the cylinder with the compression chamber.

3,778,197
FLUID PRESSURE DEVICE

Moriyuki Takagi, 31, Katayama, Niiza-shi, Japan

Filed May 18, 1972, Ser. No. 254,639
Claims priority, application Japan, May 22, 1971, 46/34873
Int. Cl. F04c *1/06*; F01c *1/02*
U.S. Cl. 418—61 4 Claims



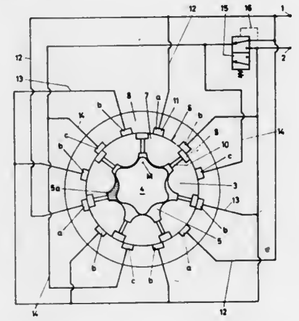
A rotary motor includes a casing in which there is disposed a shaft mounted on an externally toothed gear. The shaft can rotate about its axis without orbital or planetating movement

by the aid of an outer cylinder and cams provided in the interspace between the gear and outer cylinder and contacting them when the pressure fluid is introduced in the interspace to move the cams, cylinder and gear.

3,778,198
MESHING ROTARY PISTON MACHINE WITH AN INTERNAL SHAFT

Svend Giversen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordberg, Denmark

Filed July 14, 1972, Ser. No. 271,810
Claims priority, application Germany, Aug. 13, 1971, P 21 40 569.6
Int. Cl. F01c *1/02*; F03c *3/00*; F04c *1/02*
U.S. Cl. 418—61 8 Claims

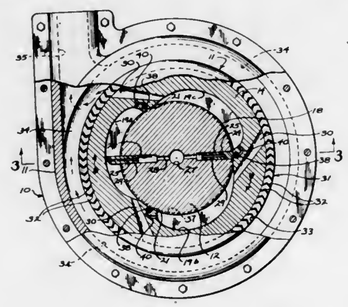


The invention relates to fluid pressure motors and pumps of the type having a gerotor displacement mechanism and an axial type of valve. The casing has inlet and outlet ports and a speed and load control port. The rotary valve has first and second sets of alternately arranged passages with one set having the usual constant fluid communication with the casing outlet port. The other set of valve passages includes some passages in constant fluid communication with the casing inlet port and at least one passage in constant fluid communication with the casing control port. A change over unit has a fluid supply inlet, a fluid exhaust outlet and a control outlet connected to the casing control port referred to above. The change over unit has means for selectively and alternately connecting the control port to the supply inlet and exhaust outlet thereof.

3,778,199
ROTARY ENGINE

George W. Meacham, 2021 Edgewater Dr., Clearwater, Fla.

Filed Mar. 24, 1972, Ser. No. 237,815
Int. Cl. F01c *19/00*
U.S. Cl. 418—104 11 Claims

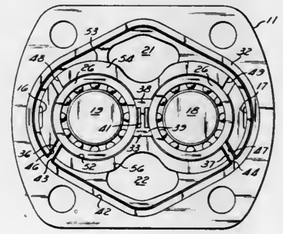


Fluid-pressure operated rotary engine has annular rotor mounted to rotate in an annular chamber in fixed housing, rotor having plurality of peripherally spaced cavities defining cam surfaces between intermediate bearing lands for rotational engagement on cylindrical hub having peripherally spaced radial slots. Fluid-pressure medium efficiently and effectively fed through rotor to said radial slots urges slide plates radially outwardly for cam engagement with cam surfaces and lands with rotation of said rotor induced by predetermined proportion of fluid-pressure medium being by-passed through slide plates to the cam cavities. Outlet passage means in rotor controls removal expended fluid-pressure medium from cam cavities.

3,778,200
ROTARY FLUID PUMP OR MOTOR

Ellis M. Wellman, Chardon, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Feb. 2, 1972, Ser. No. 222,909
Int. Cl. F01c *19/08*; F03c *3/00*; F04c *15/00*
U.S. Cl. 418—132 7 Claims

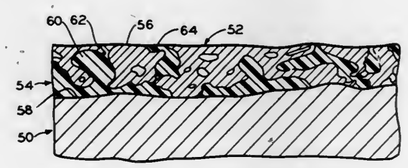


A gear pump is disclosed in which pressure plates engage and provide a dynamic seal with the ends of the gear elements. The side of each pressure plate remote from the gear is divided into two separate pressure balancing zones, one of which is maintained substantially at inlet pressure and the other at outlet pressure. A simplified seal assembly functions to seal the main housing and end caps and also to separate the two pressure zones. The main seal is ring-shaped and is formed with integral inwardly extending projections. The structure is arranged so that this seal can only be installed in the proper position. A second I-shaped seal separates the two pressure zones at a location between the bearings. Here again, such seal can be installed only in a single proper installed position. Both seals are pressure actuated to insure proper and complete sealing.

3,778,201
COMPRESSOR BLADE

Terence Caffrey, Kent, Ohio, assignor to The Davey Compressor Company, Kent, Ohio

Filed Mar. 23, 1972, Ser. No. 237,281
Int. Cl. F01c *21/00*
U.S. Cl. 418—152 6 Claims



An improved blade or vane structure is provided for a rotary, vane-type fluid compressor. The vane has a solid body of

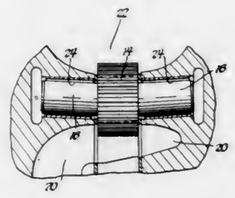
a metal having a low density and a high heat conducting capacity. The metal body is coated with an abrasion-resisting coating which has voids therein between the outer surface of the coating and the vane body. The voids are filled with plastic material to strengthen the coating against collapse in response to forces imposed on the vane during operation of the compressor. An outer coating of self-lubricating material may be bonded to the outer surface of the abrasion-resisting coating.

3,778,202

POWER TRANSMISSION

Anthony Lindsay, Troy; Ronald Lee Imperati, Livonia, and Philipp Becker, Rochester, all of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed Feb. 17, 1972, Ser. No. 227,226
Int. Cl. F01c *1/18*
U.S. Cl. 418—206 **1 Claim**



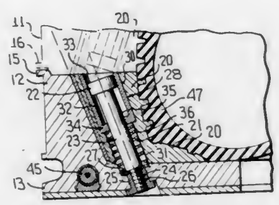
A gear pump or motor mounts the gears in the body by means of shaft journals projecting on opposite sides of each gear into bearings in the body. The bearing portions of the body are formed as cantilevers which are free to deflect under fluid pressure forces and follow the deflection of the shaft journals under the same forces. This reduces the localized loadings at the corners of the bearings and enables the device to operate at higher pressures than is possible with journal bearings solidly supported in the body.

3,778,203

MATRIX ASSEMBLY WITH SEGMENTED MATRICES

Kenneth T. MacMillan, 4992 Wesleyan Woods Dr., Macon, Ga.

Continuation-in-part of Ser. No. 90,687, Nov. 18, 1970, abandoned. This application Apr. 11, 1972, Ser. No. 243,366
Int. Cl. B29h *5/04*
U.S. Cl. 425—20 **6 Claims**



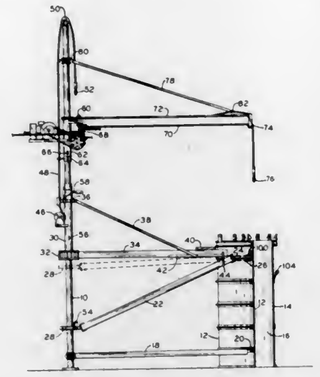
This disclosure relates to a matrix assembly for treading tires and includes a pair of matrix shell halves each of which has mounted therein segments which combine to define one half of a matrix. The matrix segments are resiliently urged out of the matrix shell in guided relation so that when the matrix assembly is open for the reception or discharge of a tire, the matrix segments are expanded so as to facilitate the loading and unloading of the matrix. A principal feature is the provision of wear retarding means whereby the matrix segments, which are normally formed of a relatively soft metal, such as aluminum, are not unduly worn as they shift relative to the shell halves.

3,778,204

APPARATUS FOR ERECTING CONCRETE STRUCTURES

Ewald D. Kuck, R.R. No. 1 4247 Road 90, New Breman, Ohio

Filed Apr. 20, 1971, Ser. No. 135,598
Int. Cl. E04g *11/22*
U.S. Cl. 425—63 **14 Claims**



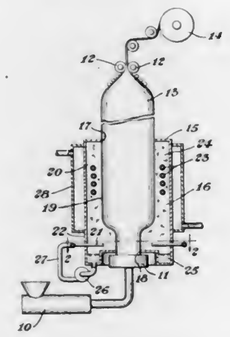
An apparatus, for erecting concrete structures, particularly cylindrical structures, such as silos. The apparatus includes axial form sections with the structure beng erected by pouring concrete into one form section consisting of inner and outer forms with a second portion of the structure being poured in a second set of forms mounted on top of the first set. Further portions of the structure are poured by removing the lower set of sections and setting them on top of the upper set of sections, and continuing this shifting of forms until the structure is completely erected. A center pole erected on the axis of the structure includes winches for lifting the forms and a plurality of radially extending braces can also be included on the center pole for bracing the forms against movement.

3,778,205

APPARATUS FOR COOLING BLOWN POLYMER FILMS

Robert Burton Turner, Lake Jackson, Tex., and Emilio Lawrence Poli, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 11, 1970, Ser. No. 57,877
Int. Cl. B29c *25/00*
U.S. Cl. 425—71 **5 Claims**



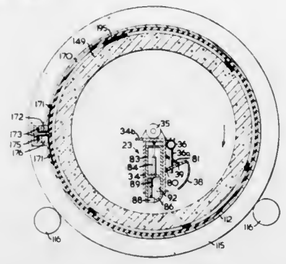
This invention relates to the cooling of blown polymer film by spraying a relatively low boiling point liquid onto the film, thereby causing cooling and solidification of the heat plastified polymer. The vaporized liquid coolant is condensed on the exterior wall of a cooling chamber which surrounds the blown film and the condensate is collected and re-cycled.

3,778,206

APPARATUS FOR PRODUCING CEMENT SHEETS

William C. Barratt, 595 Sheppard St., Niagara Falls, Ontario, Canada

Continuation-in-part of Ser. No. 166,780, July 28, 1971, abandoned. This application Jan. 3, 1973, Ser. No. 320,768
Claims priority, application Great Britain, Feb. 1, 1972, 4712/72
Int. Cl. B28b *21/08*
U.S. Cl. 425—86 **16 Claims**



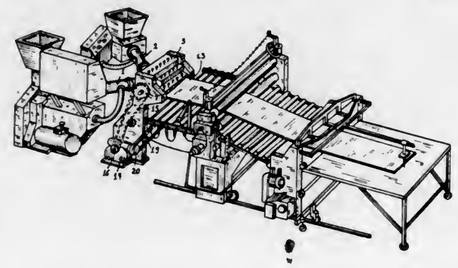
Apparatus for producing a cement sheet, including a rotatable mould into which a cement mix is fed to form a soft, centrifugally moulded cylinder, which is then removed from the mould, divided longitudinally, and laid out flat to harden. The mould is initially fitted with a flexible liner of metal, rubber or plastics. The soft cement cylinder is removed by means of a mandrel inserted into the cylinder while in the mould. During removal from the mould, the cement cylinder is held onto the mandrel either by vacuum applied to perforations in the wall of the mandrel, or by connecting together the edges of the liner which surrounds the cylinder while it is removed from the mould on the mandrel. The longitudinal division in the cement cylinder may be formed by a longitudinal inwardly projecting member within the mould or forming part of the liner, or by slitting the cylinder on the mandrel after its removal from the mould. The apparatus is particularly useful for producing small quantities of asbestos cement sheets with special laminations or surface effects. Apparatus in accordance with the invention may be used for producing sheets of flowable hardenable material other than cement.

3,778,207

APPARATUS FOR MOLDING THERMOPLASTIC LAMINATE, SHOWING STRIP VARIEGATIONS

Marisa Luraschi, c/o Cicogna Franco & Co. 14a Via Visconti di Modrone, Milano, Italy

Continuation-in-part of Ser. No. 50,504, June 29, 1970, Pat. No. 3,718,413. This application May 11, 1971, Ser. No. 142,225
Claims priority, application Italy, May 13, 1970, 24565 A/70
Int. Cl. B29f *1/12, 3/12*
U.S. Cl. 425—131 **5 Claims**



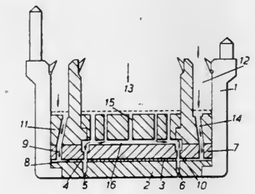
A machine for the manufacture of a thermoplastic laminate, showing multiform interlacing variegations, including two or more extruders, supplying the thermoplastic material to two different ducts one of which is connected to a die-plate, consisting of a main duct connected to a distribution duct adjacent a cavity in which there is accomodated a rotary screw conveyor and provided with grooves at its peripheric surface, said screw conveyor supplying the molten thermoplastic material to the openings of the die-plate disposed perpendicular to the main duct and communicating with the flow of molten thermoplastic material conveyed by the other extruder according to the patent application Ser. No. 50,504, filed June 29, 1970, now U.S. Pat. No. 3,718,413, the improvement residing in the fact that the aforesaid openings of the die-plate are arranged in groups of two or more openings, said groups being spaced from each other.

3,778,208

APPARATUS FOR THE MANUFACTURE OF ECCENTRIC CORE/SHEATH CONJUGATE FILAMENTS

Douglas Chisholm Bisset, and Kenneth Mervyn Pugh, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 19, 1972, Ser. No. 263,905
Claims priority, application Great Britain, June 18, 1971, 28,765/71
Int. Cl. D01d *3/00*
U.S. Cl. 425—131 **6 Claims**



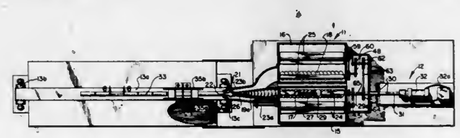
Apparatus for the manufacture of sheath/core conjugate filaments in which the sheath component flows into a channel containing a dilobate end portion formed in a plateau on the surface of a spinneret plate and is extruded through an extrusion orifice contained in a counter-bore communicating with the dilobate channel, the core forming material being injected through a D-shaped orifice into the same counter-bore to yield a filament having an eccentrically located D-shaped core.

3,778,209

EXTRUDER FOR FOOD PRODUCTS SUCH AS TAMALES

Paul K. Wallace, and Banjamin K. Wallace, both of Salt Lake City, Utah, assignors to Dan Morrison Meat Pies, Inc., Salt Lake City, Utah

Filed Dec. 16, 1971, Ser. No. 208,869
Int. Cl. A21c *11/14*; **B29f** *3/01, 3/12*
U.S. Cl. 425—133 **7 Claims**

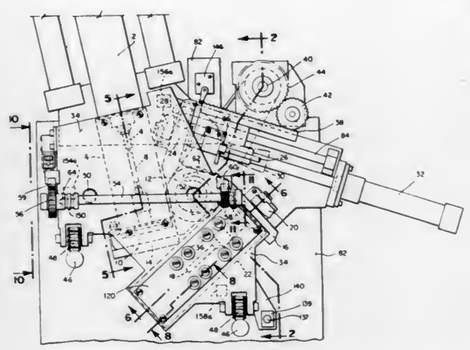


A food product suitable for deep frying in either a fresh or a frozen state, wherein an inner meat food is totally enrobed by an outer moldable food, such as potato, and a machine capable of continuously extruding the food product.

3,778,210
INJECTION BLOW MOLDING MACHINE

Harry Garett Heath, Jr., Milmay, and Carl Holzapfel, Ocean City, both of N.J., assignors to Wheaton Industries, Millville, N.J.

Filed Jan. 5, 1972, Ser. No. 215,524
Int. Cl. B29c *1/00*; B29f *1/00*
U.S. Cl. 425—242 15 Claims

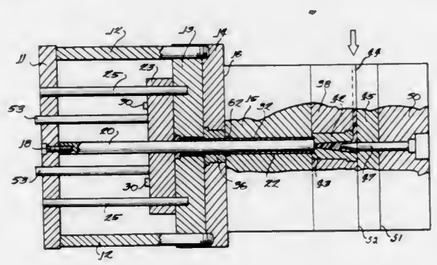


An injection blow mold machine having a rotary wheel indexing means adapted to be indexed and precisely positioned in a simple manner and further adapted to be used in conjunction with simplified injection pressure resistance means and simplified air inlet means, all of the injection blow molding apparatus being adapted to be utilized in a modified conventional injection molding machine. The rotary wheel indexing means comprises a central portion with radial arms extending therefrom and core rods mounted perpendicularly on said radial arms. Compressive force limiting means interposed between the blow mold and the movable platen on which the movable injection and blow mold halves are mounted distributes a disproportionately greater stress to the injection mold than to said blow mold. Still other unique features of the machine include a 360°–180° limit switch and precise and simple means for positioning molds in the apparatus mold receiving members.

3,778,211
PLASTIC INJECTION MOLD APPARATUS

Raymond S. Moen, Melrose Park, and Edward T. Sanelli, Buffalo Grove, both of Ill., assignors to Redmer Plastics, Inc., Franklin Park, Ill.

Filed Dec. 27, 1971, Ser. No. 211,932
Int. Cl. B28b *1/24*
U.S. Cl. 425—245 3 Claims

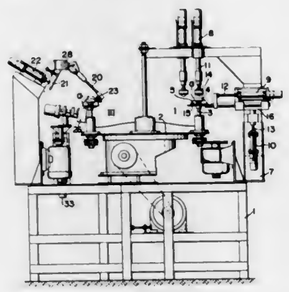


Apparatus for injection molding of hollow plastic articles having substantially uniform wall thickness throughout. Plastic is injected into a mold cavity around an article-defining core member. Associated with the core member is a movable sleeve member which controls the disposition of the plastic material around the core and retains the core centrally located within the cavity.

3,778,212
APPARATUS FOR FORMING AND FINISHING CERAMIC WARE FOOT

Koji Takahashi, Nagoya, Japan, assignor to Nippon Toki Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan

Filed Dec. 20, 1971, Ser. No. 209,643
Claims priority, application Japan, Dec. 21, 1970, 45/114926
Int. Cl. B28b *1/02, 1/29*
U.S. Cl. 425—264 12 Claims

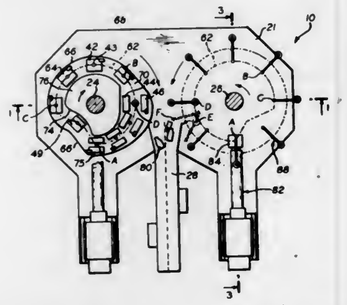


Apparatus for forming and finishing ceramic ware foot the operations of which are carried out while high speed rotating spindles are intermittently driven. The apparatus comprises a vertically movable pressing head which is engageable with a work piece and a vertically movable work-piece supporter. The centering and fixing of the work piece is carried out by the co-operation of the pressing head and the supporter. In operation, when the spindles are intermittently rotated a cutting of ceramic ware foot, a rough cutting of rim, roller finishing and damp finishing of said foot and said rim are simultaneously carried out at a plurality of operating stations.

3,778,213
APPARATUS FOR MASS PRODUCING HOLLOW OBJECTS

Antoine Di Settembrini, 4 Avenue Alfred de Vigny, F-95, Soisy-sous-Montmorency, France

Filed Apr. 6, 1972, Ser. No. 241,644
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 B 12 Claims

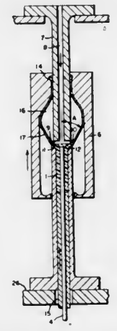


An apparatus for mass producing hollow objects, such as bottles, wherein the objects are formed from molds which are moved along a predetermined path and are injected with a hot plastically deformable material, such as plastic, at a first station along said path. Gas is thereafter blown into the mold thereby forming a hollow object therein. When the object in each mold cools down enough so that it may be removed without self-deformation, it is so removed at a second station along the path. The object is then held apart from, and preferably in tracking relation with, the mold wherein it is further cooled to a lower finishing temperature as the mold continues to move along its path. The object is then released at a third station along said path. By removing each object from a mold before it has cooled to said finishing temperature, such object may be cooled faster and the mold may be refilled more frequently during each operation thereby increasing the output of hollow objects.

3,778,214
APPARATUS FOR PREPARING A BIAXIALLY ORIENTED THERMOPLASTIC ARTICLE

Nathaniel Convers Wyeth, Mendenhall, Pa., and Ronald Newman Roseveare, Lynchburg, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 93,571, Nov. 30, 1970, Pat. No. 3,733,309, which is a continuation-in-part of Ser. No. 885,853, Dec. 17, 1969, abandoned. This application June 14, 1972, Ser. No. 262,593
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 31 Claims



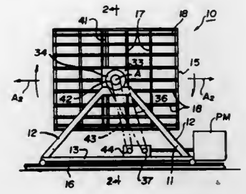
Apparatus for preparing a biaxially oriented thermoplastic article, particularly a bottle useful in bottling liquids under pressure such as carbonated beverages. The apparatus is comprised of a sliding mold, an annular extrusion orifice located within the mold cavity, means for extruding a hollow slug through the extrusion orifice, means in the mold to accept the extruded slug, means for sliding the mold from a first location to a second location relative to the extrusion orifice while the slug is continuously extruded to draw the extruded slug into the interior of the mold forming a hollow shell out of the extrudate, and means to introduce a fluid into the interior of the hollow shell while the slug is being extruded to expand the hollow shell against the interior of the mold.

3,778,215
ROTATIONAL MOULDING MACHINE WITH INNER AND OUTER MOLD CAGES ROTATING ABOUT INTERSECTING AXES

Anthony J. Starr; Gustave A. Shindel, both of Wilmington, and Harry G. Keith, Jr., New Castle, all of Del., assignors to Container Corporation of America, Chicago, Ill.

Filed Sept. 1, 1972, Ser. No. 285,610
Int. Cl. B28b *1/20*
U.S. Cl. 425—435 4 Claims

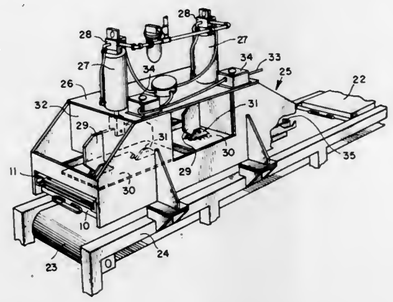
A machine for moulding a body by rotating a mould about a pair of intersecting axes comprises a pair of frames supporting an outer mould cage for rotation about the first of said axes, and an inner mould cage supported along exterior cylindrical surfaces thereof within the outer mould cage and supporting a mould for rotation with said inner mould cage about the second of said axes. Driving means for both of the cages is mounted on one of the frames and turns about a single axis and comprises a first driving shaft operatively connected to the outer mould cage to rotate same about the first axis, and a second drive shaft nesting with the first driving shaft and having an operative connection with the inner mould cage for rotating same about the second axis. The operative connection between the inner mould cage and the second driving shaft comprises an endless driven member supported on the cylindrical surfaces of the inner mould cage, and a driving member fast on the second driving shaft and engageable with the endless driven member. The mould is capable of being adjusted in its position within the inner mould cage, so that the machine at all times operates in a condition substantially of both static and dynamic balance.



3,778,216
MOLDS FOR USE IN FREEZING FOOD PRODUCTS TOGETHER WITH MEANS TO EJECT THE FROZEN BLOCKS FROM THE MOLD FRAMES

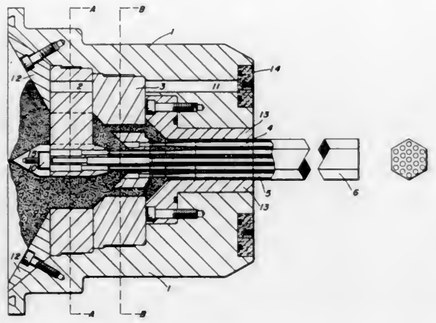
Remi Harold Gowen, Standish, Maine, assignor to Gowen, Inc., Portland, Maine

Filed May 13, 1971, Ser. No. 143,087
Int. Cl. B28b *13/04*
U.S. Cl. 425—444 1 Claim



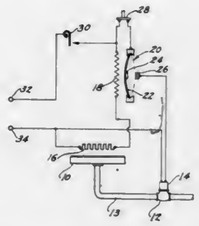
Molds are disclosed for use in the freezing of food products, each consisting of a pan, a mold frame, and a cover. The outer face of each side of the frame has a channel extending from end-to-end thereof and providing a shoulder exposed when the cover is removed above the pan. An ejector straddles the infeed end of a pan conveyor and has side supports providing a slideway underlying the frame shoulders to slidably support the food filled frame and the pan frozen to the bottom thereof above the conveyor with the frame held horizontally and against any material side-to-side play. The ejector has air-operated means operable to engage each food block and push it downwardly from its frame so that it and the pan drop to the conveyor with the resulting jolt freeing the block from the pan.

3,778,217
EXTRUSION DIE
Santiago J. Bustamante, and Donald H. Schell, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Oct. 31, 1963, Ser. No. 320,587
Int. Cl. B29c *17/00*
U.S. Cl. 425—467 5 Claims



1. An extruding die for extruding an article having a multiplicity of ducts through its length, comprising a plurality of spiders, a plurality of pins extending from each of said spiders, one spider having a central duct and an off-center duct so that the material to be extruded can pass through both ducts.

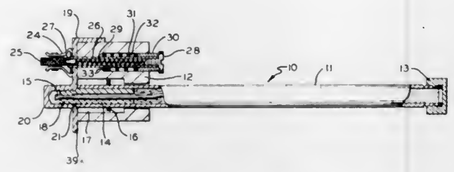
3,778,218
IGNITION AND CONTROL SYSTEMS FOR GAS BURNERS
James A. Wright, Webster Groves, Mo., and Robert L. Forrest, Edwardsville, Ill., assignors to Emerson Electric Co., St. Louis, Mo.
Int. Cl. F23h *5/20*
U.S. Cl. 431—67 4 Claims



A burner ignition and control circuit in which a normally open thermal relay having an electrical resistance heater series connected across a power source with an electrical resistance glow igniter closes to effect the energization and opening of a normally closed solenoid gas vale when the igniter and resistance heater have been energized for a period of time sufficient to insure that the igniter has attained gas ignition temperature.

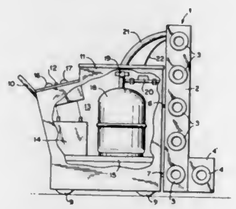
3,778,219
SEALED LIGHTER
Thomas M. Owens, Wanakena, N.Y.
Filed Nov. 15, 1972, Ser. No. 306,600
Int. Cl. F23q *25/00*
U.S. Cl. 431—152 2 Claims

A lighter, of the type having a tubular fluid and wick container on which a lighter head is slideably mounted, has a plate-like cover on one end of the head, to which is secured a rotatable steel wheel, a cap for the wick-bearing end of the container and a flint carrying tube. The cover is rotatable about the flint tube as pivot from a position in which the cap is aligned with the container to a position uncovering the wick end of the container and in which the wheel is in position for lighting the wick. The cap is internally threaded and the wick end of the container has a neck around the wick which is threaded for engagement within the cap. The cap and neck have mating ground seats thereon so that the container may be



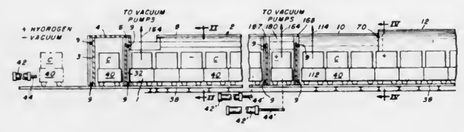
rotated to seal the wick end of the container. The other end of the container has a removable stop and closure member. The cover is normally spring biased against the end of the head and has a leg at 90° to the cover normally in engagement with one of two adjacent flat sides of the head, the lineal corner between the flat sides having an arcuate groove in its end adjacent the cover so that the cover can only be rotated when it is withdrawn away from the head to clear the wick-bearing end of the container. Stop means are provided on the container to prevent withdrawal of the container from the head when the cap and container neck are not in engagement.

3,778,220
APPARATUS AND METHOD FOR SHRINKING PLASTIC SHEET MATERIAL ABOUT STACKED GOODS
Heinrich Ahrendt, Monchengladbach-Hehn, and Karl Birkendahl, Niederkruchten-Elmpt, both of Germany, assignors to Ahrendt & Birkendahl oHG, Monchengladbach-Hehn, Germany
Filed Oct. 24, 1972, Ser. No. 299,115
Claims priority, application Germany, Oct. 25, 1971, P 21 53 001.8
Int. Cl. F27d *9/14*
U.S. Cl. 432—5 11 Claims



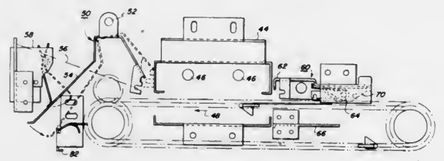
Forced-draft gas burners mounted on a support in vertically offset relationship discharge respective streams of combustion gases against a stack of goods loosely enveloped in a bag of heat-shrinkable plastic sheet material. To reach all sides of the stack, the support may be mounted on a wheeled carriage and moved around the stack, or the stack may be moved on a turntable relative to the stationary support. The top of the stack may be reached by combustion gases from a separate, downwardly directed burner or by gases originating in burner units directed against the side of the stack and deflected toward the top by an adjustable hood.

3,778,221
ANNEALING FURNACE AND METHOD FOR ITS OPERATION
William M. Bloom, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 802,548, Feb. 26, 1969, Pat. No. 3,606,289. This application Sept. 17, 1971, Ser. No. 181,504
Int. Cl. F27b *9/02*
U.S. Cl. 432—11 14 Claims



A furnace, and method of furnace operation, for annealing whole coils of steel, particularly silicon steel. The furnace includes a welded gas-tight shell lined with varying thicknesses of refractory material defining a plurality of independently controllable heating and cooling zones and in which a vacuum is maintained at the entry section and a hydrogen atmosphere in all other sections. The furnace additionally includes vacuum-purged vestibules at both ends to accommodate the entrance and exit of coils from the interior atmosphere of the furnace.

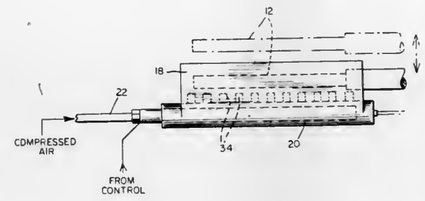
3,778,222
FIRE PREVENTION APPARATUS
Katsuo Suzuki, Tokyo, Japan, assignor to Xerox Corporation, Stamford, Conn.
Filed Sept. 18, 1972, Ser. No. 290,018
Int. Cl. F27b *9/14*
U.S. Cl. 432—35 10 Claims



An apparatus in which an article passageway through a fusing device is closed to prevent a fire originating therein from spreading therefrom.

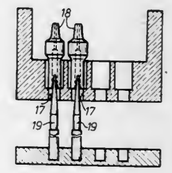
The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,778,223
DEVICE FOR INJECTION BLOW MOLDING PVC BOTTLES
Theodore C. Wheaton, III, Ocean City; Albert J. Tamagni, Vineland, and Robert W. Moshinsky, Blackwood, all of N.J., assignors to Wheaton Industries, Millville, N.J.
Filed Oct. 18, 1971, Ser. No. 189,930
Int. Cl. F27d *3/00*
U.S. Cl. 432—227 1 Claim



Core rods or mandrels, on which PVC parisons are first injection molded and subsequently blown into bottles, are thermally conditioned prior to injection molding of the parison thereon, by a heating unit including means for selectively heating various segments of the core rod along the length thereof. In the preferred form of the present invention, compressed air is passed through a tubular electrical resistance heating element along the length thereof and reversed at one end thereof so as to pass in an opposite direction through an annular space surrounding the tubular heating element. The outer wall of the annular space includes numerous openings aligned with the core rod to be thermally conditioned, each of these individual openings being disposed so as to direct heated air onto a preselected segment of the core rod. Preferably the device also includes baffles or side walls to direct the heated air over the core rod being treated.

3,778,224
JIG FOR FIRING OF CERAMIC SPARK PLUG INSULATION
Josef Duffner, Bamberg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Mar. 3, 1972, Ser. No. 231,606
Claims priority, application Germany, Mar. 16, 1971, P 21 12 507.5
Int. Cl. F27b *21/00*
U.S. Cl. 432—258 6 Claims



A jig for firing of stepped-diameter ceramic spark plug insulators has a bottom wall which is provided in its upwardly directed surface with a plurality of apertures each of which is adapted to accommodate a spark plug insulator during firing. Each of the apertures has a wider portion extending inwardly from the upper surface and emerging into a narrower portion which extends to the lower surface of the bottom wall. Side walls may or may not be provided extending upwardly from the upper surface.

3,778,225
REACTIVE DYEING OF EPOXY ALKYL QUATERNARY AMMONIUM CELLULOSE OR POLYVINYL ALCOHOL TEXTILES

Georges Cuvelier, Sotteville-les-Rouen, and Daniel Wattiez, Saint-Etienne-Durouvray, both of France, assignors to Institut Textile de France, Boulogne-sur-Siene, France

Filed June 26, 1972, Ser. No. 266,330
Claims priority, application France, Aug. 30, 1968, 68164694
Int. Cl. D06p *1/38*
U.S. Cl. 8—31 2 Claims

Fibers of hydroxylised polymers are modified by replacing hydroxyl groups thereof with quaternary ammonium groups and then dyed with a fiber-reactive dye. Included in the modification of the fibers is an impregnation of the hydroxylised polymers with an aqueous solution containing epoxypropyl ammonium salts or precursors thereof.

3,778,226
DURABLE-PRESS AND SOIL-RELEASE COMPOSITIONS

Erik Kissa, Wilmington, Del., assignor to E. I. du Pont de Nemours and Co., Wilmington, Del.

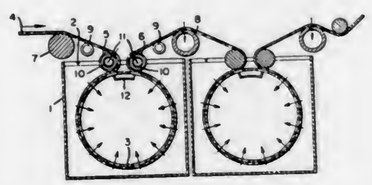
Filed Apr. 15, 1970, Ser. No. 28,924
Int. Cl. D06m *15/56, 15/58*
U.S. Cl. 8—115.5 3 Claims

A durable-press, soil-release agent comprising a durable-press aminoplast resin precursor, a selected water soluble organic acid or sulfonic acid salt containing amino or hydroxyl groups, and a selected surface active agent.

3,778,227
PROCESS FOR THE WET-TREATMENT OF LIQUID PERMEABLE MATERIALS

Heinz Fleissner, Wolfsgartenstrasse 6, Frankfurt/Main, Germany

Division of Ser. No. 687,320, Dec. 1, 1967, Pat. No. 3,608,340.
This application July 17, 1970, Ser. No. 62,774
Int. Cl. B05c *8/04*
U.S. Cl. 8—151 6 Claims



The present disclosure relates to a process and apparatus for the wet-treatment preferably for washing and impregnating liquid-permeable materials which can be stressed in the lengthwise direction. More particularly, the present disclosure is directed to a process and apparatus for washing and impregnating textile materials wherein during the treatment process, advantageously after the material has been wet-treated, said material is vacuum extracted to draw off particles which have floated onto the textile material during said treatment process.

3,778,228
PROCESS FOR THE CONTINUOUS DYEING AND PRINTING OF FIBRE MATERIALS OF SYNTHETIC POLYAMIDES

Robert Kuth, Cologne; Dietrich Hildebrand, Odenthal, and Hans-Samuel Bien, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

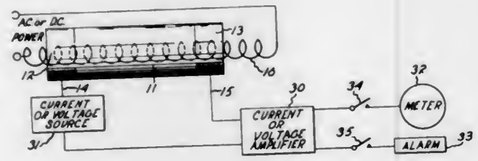
Filed Aug. 6, 1970, Ser. No. 61,805
Claims priority, application Germany, Aug. 13, 1969, P 19 41 105.3
Int. Cl. D06p *1/68*
U.S. Cl. 8—174 5 Claims

Thermosol process for the continuous dyeing and printing of fibre materials of synthetic polyamides from organic solvents with dyestuffs containing carboxylic and/or sulphonic acid groups, characterised in that dyeing or printing is carried out with chlorinated hydrocarbon dyestuff liquors which contain amine salts or amine addition products of dyestuffs containing carboxylic and/or sulphonic acid groups, which are derived from an amine containing at least eight carbon atoms and exhibiting an uninterrupted chain of at least three carbon atoms. With the aid of the process according to the invention it is possible to produce on fibre materials of synthetic polyamides intense, level and well developed dyeings and prints with an excellent dyestuff yield.

3,778,229
OZONE GAS DETECTOR

Harold F. Webster, Scotia, and Lawrence A. Harris, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,215
Int. Cl. G01n *27/14*
U.S. Cl. 23—254 E 1 Claim

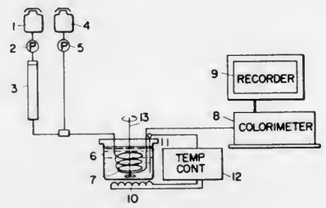


A tubular substrate of high electrical resistivity is provided with a metal oxide coating whose resistance increases significantly with ozone concentration in the atmosphere. Electrodes connected to the metal oxide coating at the tube ends provide a means for connection to an electronic circuit for obtaining a signal of level sufficient to operate a meter or alarm device.

3,778,230
METHOD OF AUTOMATICALLY ANALYZING AMINO ACIDS BY LIQUID CHROMATOGRAPHY AND COLOR-DEVELOPING SOLUTION THEREFOR

Yoshijiro Arikawa, 3-20-22 Ose-cho; Seiji Takeuchi, 3-13-1 Ose-cho, both of Hitachi, and Hisayuki Sagusa, 1030, Ichige, Katsuta, all of Japan

Filed Dec. 27, 1971, Ser. No. 212,197
Claims priority, application Japan, Dec. 25, 1970, 45/117605
Int. Cl. G01n *31/22*
U.S. Cl. 23—230 M 15 Claims



A color-developing solution for use in automatic amino acid analysis by liquid chromatography, which comprises ninhydrin, an organic solvent, a buffer and ascorbic acid as a reducing agent for ninhydrin in an amount of from 0.2×10^{-3} to 0.5×10^{-3} mole per liter of solution.

3,778,231
METHOD OF PRODUCING SILICON NITRIDE ARTICLES

Richard Alan Taylor, Coldfield, England, assignor to The Birmingham Small Arms Company Limited, Birmingham, England

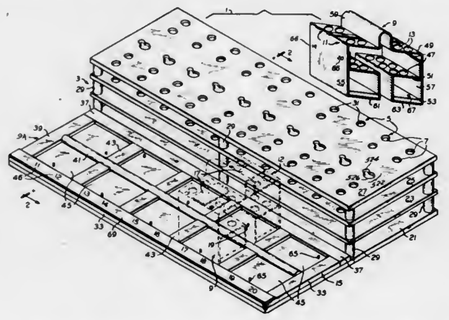
Continuation-in-part of Ser. No. 749,987, Aug. 5, 1968, abandoned. This application Mar. 11, 1971, Ser. No. 123,431
Int. Cl. C01b *21/06*; B29f *5/02*
U.S. Cl. 423—290 3 Claims

A method of producing a silicon nitride article comprising forming an article as a compact of silicon powder, sintering the silicon compact in an atmosphere substantially free of nitrogen, machining the silicon compact to a required accuracy, and nitriding the machined silicon compact to produce the silicon nitride article.

3,778,232
BLOOD TYPING SYSTEM

John J. McMorrow, Jr., 652 W. 170th St., New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,486
Int. Cl. B01l *9/00*
U.S. Cl. 23—253 R 25 Claims

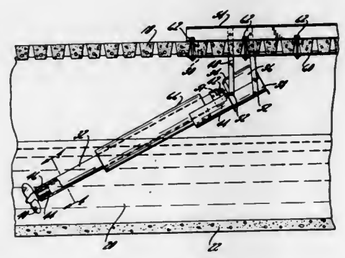


A blood typing system comprises a first section having a plurality of lines of test tube holding means. A second section has a plurality of lines of test tube holding means, each line in said second section associated with only one line in said first section. Receiving means positively aligns each line in said second section with its associated line in said first section. Preferably said second section is a removable centrifuge carrier. Other additional means are disclosed which comprise a better blood typing system.

3,778,233
APPARATUS FOR LIQUID COMPOSTING

Ronald S. Blough, and Robert D. Jones, both of Fairfield, Iowa, assignors to Fairfield Engineering and Manufacturing Co., Fairfield, Iowa

Filed Apr. 20, 1971, Ser. No. 135,597
Int. Cl. C05f *3/06*
U.S. Cl. 23—259.1 8 Claims



The apparatus generally comprises an elongated hollow shaft having a propeller secured to its lower end and driven at its upper end by a motor mounted on a swingable frame. Air may enter the upper end of the shaft and may exit adjacent the propeller. Rotation of the shaft and propeller thus induces air into the material. The shaft is immersed in the material at an angle to break the air into a multitude of fine bubbles while simultaneously moving the material around the reservoir.

3,778,234
PROCESS FOR GROWING CRYSTALS USING AN OZONE ENRICHED HYDROGEN-OXYGEN FLAME

Carolus Cobb, Arlington, Mass., assignor to American Science & Engineering, Inc., Cambridge, Mass.

Filed Feb. 14, 1972, Ser. No. 226,253
Int. Cl. C09k *1/10*; B01j *17/24*
U.S. Cl. 252—301.4 R 3 Claims

A flame fusion process for the formation of high melting refractory oxide single crystals using a hydrogen-oxygen flame substantially enriched in ozone. The enrichment of the flame with ozone increases burning speed, thereby reducing flame size and increasing flame temperature. This produces a more closely confined flame area permitting the growth of new single crystalline materials, such as beryllium oxide, magnesium oxide, barium zirconate, calcium oxide, etc. Single crystals grown in accordance with this invention have utility as superior integrated circuit substrates and high energy solid state laser hosts.

3,778,235
NITRIDE-STRENGTHENED STAINLESS STEEL COMPOSITE

Lynn E. Kindlimann, Natrona Heights, and Alexander B. Greene, New Kensington, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 803,442, Feb. 28, 1969, Pat. No. 3,672,037. This application Nov. 19, 1971, Ser. No. 200,504

Int. Cl. B32b *15/00*

U.S. Cl. 29—196.1 **10 Claims**

The application describes composite members containing a plurality of layers at least one of which is nitride strengthened stainless steel and a pressure bonding method for producing them.

3,778,236
PLATED COPPER BASE ALLOY ARTICLE

Alan J. Goldman, Silver Springs, Md., and Stanley Shapiro, New Haven, Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 143,220, May 13, 1971, which is a continuation-in-part of Ser. No. 867,358, Oct. 17, 1969, abandoned. This application Mar. 29, 1972, Ser. No. 239,308

Int. Cl. B32h *15/00*

U.S. Cl. 29—199 **9 Claims**

The instant disclosure teaches an improved article consisting essentially of a white copper base alloy plated with a silver plating, wherein the white copper base alloy consists essentially of nickel from 0.5 to 5 percent, zinc from 15 to 35 percent, manganese from 5 to 20 percent, balance copper, wherein the total of manganese plus zinc cannot exceed 40 percent. The article of the present invention is particularly desirable for articles of flatware or hollow ware.

3,778,237
PLATED COPPER BASE ALLOY ARTICLE

Stanley Shapiro, New Haven; Derek E. Tyler, Cheshire, and Michael J. Pryor, Woodbridge, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 65,277, Aug. 19, 1970, which is a continuation-in-part of Ser. No. 9,997, Feb. 9, 1970, abandoned. This application Mar. 29, 1972, Ser. No. 239,309

Int. Cl. B32b *15/00*

U.S. Cl. 29—199 **9 Claims**

The instant disclosure teaches an improved article consisting essentially of a white copper base alloy plated with a silver plating. The white copper base alloy substrate consists essentially of a substantially nickel-free alloy containing manganese in an amount from 8 to 16 percent, zinc in an amount from 20 to 31 percent, balance essentially copper. The article of the present invention is particularly desirable for articles of flatware or hollow ware.

3,778,238
COMPOSITE METAL ARTICLE

Derek E. Tyler, 53 Elmwood Dr., Cheshire, and Stanley Shapiro, 1860 Boulevard, New Haven, both of Conn.

Filed Apr. 14, 1972, Ser. No. 244,113

Int. Cl. B32b *15/00*

U.S. Cl. 29—196.3 **8 Claims**



The present disclosure teaches a composite metal article having a variety of uses, especially for the manufacture of jewelry. The composite of the present invention is a copper base alloy containing from 5 to 40 percent manganese bonded to nickel or a nickel base alloy or stainless steel. Additional layers may be bonded to this composite, such as a thin layer of a gold filled alloy or other decorative metal or alloy.

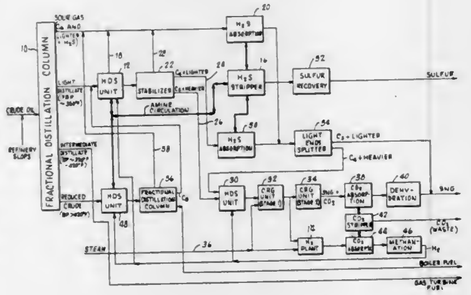
3,778,239
PRODUCTION OF GASEOUS AND LIQUID FUELS FROM CRUDE OIL

Gerard C. Gambs, New York, N.Y.; William H. Nix, Westfield, N.J.; James H. Barnhart, and John G. Cathcart, both of Dallas, Tex., assignors to Ford, Bacon & Davis, Incorporated, New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,925

Int. Cl. C01b *2/18*; **C07c** *9/04*

U.S. Cl. 48—214 **4 Claims**



Method of producing gaseous and liquid fuels from crude oil involving fractionally distilling crude oil to four basic fractions: (1) a light distillate composed of hydrocarbons that boil at less than about 350° F.; (2) an intermediate distillate composed of hydrocarbons having a boiling range of from about 320° F. to about 420° F.; (3) a reduced crude oil residue, i.e., heavier hydrocarbons that boil at greater than about 420° F., and (4) sour gas, i.e., hydrocarbons principally having four or less carbon atoms and H_2S.

The light distillate fraction is treated to desulfurize it and then is further processed by catalytic treatment to produce synthetic natural gas, i.e., methane-rich gas. The sour gas fraction is desulfurized and used directly or catalytically enriched as a component of the synthetic natural gas. The intermediate distillate fraction is typically used directly as gas turbine fuel, but may be desulfurized if desired. The reduced crude oil fraction is desulfurized and may serve principally as a boiler fuel.

3,778,240
COKING PREVENTION SYSTEM

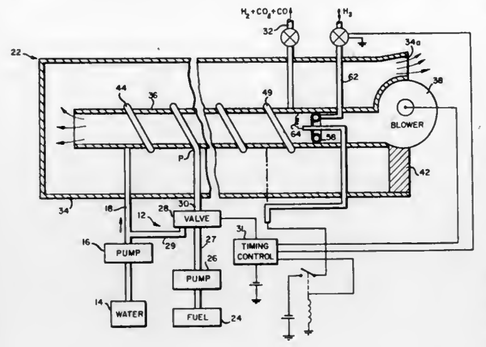
Robert Naiman, c/o International Materials, P.O. Box 934, 445 Broadway, Lynnfield, Mass.

Filed Jan. 19, 1972, Ser. No. 219,066

Int. Cl. C01b *2/14*

U.S. Cl. 48—105 **4 Claims**

In fuel reformation systems of the type wherein fuel and water are pumped through separate delivery lines to a heated conduit in a reaction chamber to be thermally cracked to generate hydrogen and other gases, the relatively hot fuel delivery tube tends to become clogged with coke deposits. In the present system, a slug of water is injected periodically into the fuel delivery tube and this water vaporizes generating a high pressure which is sufficient to scrub the delivery tube of the gasoline and coke deposits present there from the previous cycle, thus maintaining a clean fuel delivery tube.



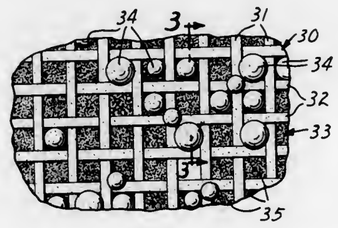
3,778,241
SPHEROIDAL PEENING PARTICLES ADHESIVELY BONDED TO A WOVEN CLOTH

Phillip M. Winter, and Gary A. Gardner, both of 2501 Hudson Rd., St. Paul, Minn.

Division of Ser. No. 746,366, July 22, 1968, Pat. No. 3,638,464. This application June 25, 1970, Ser. No. 59,850

Int. Cl. B32b *5/16*

U.S. Cl. 161—87 **3 Claims**



A rotary wheel, in which spheroidal peening particles are affixed to radially extending circumferentially spaced flaps of fibrous sheet material, is used to impart compressive stress to, or aid in shaping, metallic substrates.

3,778,242
LOW TEMPERATURE SEALANT GLASS FOR SEALING INTEGRATED CIRCUIT PACKAGE PARTS

Josef Francel, Toledo; Lester C. Minneman, Maumee, and Neil Brian Nofziger, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 30, 1970, Ser. No. 102,886

Int. Cl. C03c *27/00, 3/12, 3/30*

U.S. Cl. 65—43 **18 Claims**

Provided are sealing glass compositions particularly useful for sealing together alumina ceramic components in microelectronic circuitry. The sealing glass compositions are crystallizable and comprise a devitrifiable solder glass admixed with (1) a refractory material and (2) a pre-crystallized glass which together are employed in an amount sufficient to substantially reduce the time necessary to effect in situ crystallization and at the same time form a strong hermetic seal. The sealing glass compositions may be employed in any conventional form and are fired at about 400°–500° C. for about one minute to less than about 60 minutes to form a seal as described.

3,778,243
METAL OXIDE COATED GLASS BLOCKS

William D. Johnston, Pittsburgh, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Filed Nov. 10, 1971, Ser. No. 197,472

Int. Cl. C03b *23/24*; **C03c** *17/00*

U.S. Cl. 65—58 **9 Claims**

The method of preparing transparent metal oxide coated glass blocks includes forming the blocks in halves by positioning a molten mass of glass in a suitable mold that has a fixed bottom plate and a vertical exterior forming shell. A plunger is inserted into the mold to shape the molten mass of glass into a half of a glass block with an upwardly extending rectangular edge portion. While at an elevated temperature of above 1,000° F. the rectangular edge portions of two block halves are positioned in overlying abutting relation and are flame sealed. While still at an elevated forming temperature of between about 900° F. and 1,150° F. the sealed block is sprayed with a heat decomposable metal organic salt in organic solution to form a metal oxide coating on the block exterior surface. After spraying at this elevated forming temperature the block is annealed in a conventional manner. Another embodiment includes spraying the inside surface of the block halves at this elevated temperature immediately after forming and prior to sealing. Still another embodiment includes spraying the outside surface of the block halves immediately after forming and prior to sealing while at the elevated temperature of between about 900° and 1,150° F.

3,778,244
BENDING OF FLAT GLASS ON A MOLD WITH VACUUM

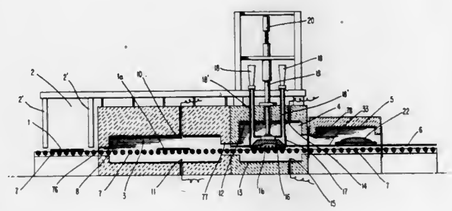
Maurice Nedelec, Versailles, and Jean-Marc Pettitcollin, Plessis-Brion, both of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Apr. 22, 1971, Ser. No. 136,501

Claims priority, application France, Apr. 23, 1970, 7014794

Int. Cl. C03b *23/02*

U.S. Cl. 65—106 **29 Claims**

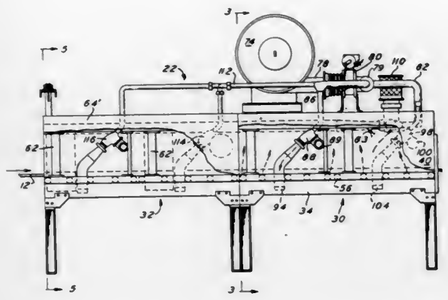


The invention involves a method of bending a sheet of thermoplastic material which comprises heating the sheet to bending temperature, placing it adjacent a shaping form, pneumatically forcing the sheet toward and bending it against the form, and cooling the bent sheet; and apparatus for the bending of thermoplastic sheets which comprises a bending form, means to transport a hot thermoplastic sheet into proximity to the bending form, pneumatic means to bend the sheet against the form, and means to cool the bent sheet.

3,778,245
METHOD AND APPARATUS FOR HEAT TREATING GLASSWARE

Willard Clark, Farmland, and Charles Campbell, Muncie, both of Ind., assignors to Maul Bros., Inc., Millville, N.J.

Filed Dec. 22, 1970, Ser. No. 100,636
Int. Cl. C03b 25/04
U.S. Cl. 65—119 12 Claims

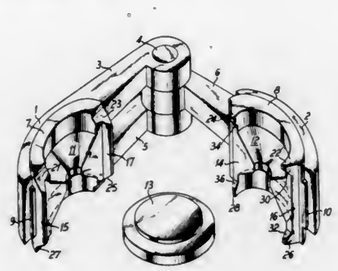


A heat treating lehr is disclosed wherein glassware is heated, annealed, precooled, and then cooled in that order. Precooling is done in a zone of the lehr having a vertical air curtain which prevents temperature drift due to air currents from the cooling zone flowing to the annealing zone.

3,778,246
MULTI-PART MOLD WITH MEANS FOR ALIGNING MOLD PARTS

Josef Rankl, Zwiesel, Germany, assignor to Vereinigte Farbenglaswerke Aktiengesellschaft, Zwiesel (Niederbayern), Germany

Continuation-in-part of Ser. No. 16,909, March 5, 1970, abandoned. This application Apr. 27, 1972, Ser. No. 248,250
Claims priority, application Germany, Mar. 7, 1969, P 19 11 600.8
Int. Cl. C03b 9/04
U.S. Cl. 65—360 6 Claims



A multipart mold in which at least two mold parts are mounted on hingedly connected arms for movement into and out of the molding position. In molding position, the parts form an annular body having an open bottom. The mold parts have projection-recess combinations for providing horizontal and vertical alignment of the mold parts. A bottom closure is provided, having a flange for receiving the lower edges of said mold parts and which cooperate with the projection-recess combinations to provide improved and distributed alignment of the mold parts.

3,778,247
METHOD FOR REGULATING PLANT GROWTH

William J. Pyne; James M. Gullo, both of Painesville, Ohio, and Bobby F. Adams, Pasadena, Tex., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 43,215, June 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 8,152, Jan. 19, 1970, abandoned, which is a division of Ser. No. 642,708, June 1, 1967, abandoned. This application Feb. 8, 1971, Ser. No. 113,658
Int. Cl. A01n 9/22
U.S. Cl. 71—95 13 Claims

A process for regulating plant growth using pyrrolidinyl-carboxanilides and pyrrolidinyl-thiocarboxanilides has been found. Both substituted and unsubstituted pyrrolidinylcarboxanilides and pyrrolidinyl-thiocarboxanilides can be used in the process.

3,778,248
CHLORAMBEN PRODUCTS AND PROCESSES FOR USE WITH RICE

Warren E. Weston, Lansdale, Pa., and Anson R. Cooke, St. Thomas, V.I., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Oct. 13, 1970, Ser. No. 80,490
Int. Cl. A01n 9/24
U.S. Cl. 71—115 7 Claims

Chloramben products and processes for use with rice wherein chloramben (3-amino-2,5-dichlorobenzoic acid) and its herbicidally active functional derivatives either alone or in conjunction with other herbicides or fertilizers is applied to the pool of water in which rice grows (known as a "paddy") such that the growing rice plant remains substantially unharmed while certain common rice paddy weeds are effectively controlled.

3,778,249
DISPERSION STRENGTHENED ELECTRICAL HEATING ALLOYS BY POWDER METALLURGY

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. Nos. 849,133, Aug. 11, 1969, abandoned, and Ser. No. 853,327, Aug. 27, 1969, Pat. No. 3,660,049, which is a continuation-in-part of Ser. No. 709,700, March 1, 1968, Pat. No. 3,591,362. This application June 9, 1970, Ser. No. 44,706The portion of the term of this patent subsequent to July 6, 1988, has been disclaimed.
Int. Cl. B22f 9/00
U.S. Cl. 75—.5 BC 5 Claims

This invention relates to the powder metallurgy of wrought, dispersion strengthened, electrical heating elements characterized metallographically by a uniform distribution of dispersoids in both the longitudinal and transverse directions, and also to a powder metallurgy method for producing the same.

3,778,250
METHOD FOR TREATING METALLIC MELTS

Gert P. Bernsmann, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 802,518, Feb. 26, 1969, Pat. No. 3,615,085. This application Dec. 11, 1970, Ser. No. 97,384
Int. Cl. C21c 7/00; C22c 33/00
U.S. Cl. 75—58 7 Claims

Method and apparatus for treating a metallic melt, such as molten steel in a ladle, are disclosed. The apparatus includes an inner tubular member, through which an additive is delivered to within the melt, and a coaxially disposed outer tubular member, the annulus between the two tubular members serving as a passageway for gas delivered to the melt. The gas is introduced into the melt through a porous refractory element positioned about the ends of the tubular members.

3,778,251
SHOE STIFFENER MATERIALS

Blair D. Trask, Haverhill, Mass., assignor to Bixby Box Toe Co., Inc., Haverhill, Mass.

Filed Mar. 17, 1971, Ser. No. 125,055
Int. Cl. B32b 27/12; A43d 31/00
U.S. Cl. 117—68 12 Claims



Improved shoe stiffener materials such as box toe blanks and counter blanks are formed of a base layer of an impregnated fabric carrying a polystyrene-type impregnant in incompletely coalesced particle form. At least one and preferably both sides of the base layer carries a polycaprolactone thermoplastic layer. The shoe stiffener material is solid and non-tacky at standard room temperature and has sufficient softness and flexibility to permit ease of use in conventional box toe and shoe back part forming apparatus. Heat is used to form a continuous thermoplastic film of the polymers in the shoe stiffener when formed into three-dimensional box toes and counters. The heat also acts to adhesively unite the stiffener with surrounding layers such as shoe uppers and shoe linings.

3,778,252
PROCESS FOR SEPARATION AND RECOVERY OF GOLD

Harold W. Wilson, El Paso, Tex., assignor to The Golden Cycle Corporation, Victor, Colo.

Filed Feb. 12, 1970, Ser. No. 11,011
Int. Cl. C22b 3/00, 11/04
U.S. Cl. 75—101 R 18 Claims

Processes for and compositions utilized in the recovery of the gold content of gold containing substances by subjecting such substances —preferably in comminuted form— to the action of one of the following solvent system families:

A. Aqueous gold solvation systems comprising primary or secondary mono-hydroxy alcohols, saccharides and/or carboxylic acids and iodine or bromine.

B. Aqueous iodine-containing gold solvation systems comprising primary or secondary monohydroxy alcohols and ditri- and polyhydric alcohols in the place of or in addition to saccharides and carboxylic acids.

C. Essentially non-aqueous gold solvating systems comprising secondary alcohols and iodine.

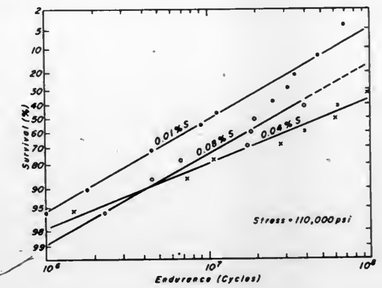
Solvation of the gold occurs during agitation and heating of the slurry. The gold contents are removed from the gold pregnant solution by displacement onto a non-noble metal surface. The solid gold containing residue is treated with sufficient aqueous hydroxide solution to convert excess non-noble metal into its water-soluble salt. The remaining insoluble material containing the gold metal recovered is rinsed to remove any remaining unreacted alkali and the soluble salts and is then digested with concentrated sulfuric acid to dissolve any remaining acid soluble impurities, the remaining acid insoluble residue is rinsed, dried and comprises substantially pure gold metal.

3,778,253
ULTRA-HIGH STRENGTH STEEL

Cornelius M. Lyne, Wexford; August Kasak, Bridgeville, and William Stasko, Munhall, all of Pa., assignors to Crucible Steel Company of America, Pittsburgh, Pa.

Filed Sept. 11, 1967, Ser. No. 666,850
Int. Cl. C22c 37/00, 39/00
U.S. Cl. 75—123 R 8 Claims

The present invention relates generally to ultra-high strength steel and, in more particular aspects, relates to an ultra-high strength steel that is characterized by improved fatigue life resulting from the addition of sulfur to the steel in a significant amount. It has been found that fatigue life of ultra-high strength steel may be improved by the addition of at least about 0.04 percent sulfur, preferably 0.04 to 0.25 percent and most advantageously from 0.04 to 0.15 percent sulfur.



3,778,254
BRAZING FILLER METAL FOR MOLYBDENUM

Nancy C. Cole, Knoxville, Tenn.; Ronald W. Gunkel, Kokomo, Ind., and Clarence W. Houck, Lake City, Tenn., assignors to The United States of America as represented by the Atomic Energy Commission, Washington, D.C.

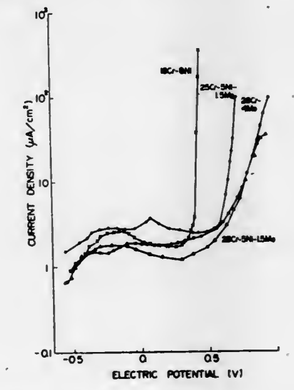
Filed Nov. 18, 1971, Ser. No. 200,235
Int. Cl. C22c 37/00, 39/00
U.S. Cl. 75—123 R 1 Claim

This invention relates to an alloy consisting essentially of, in weight percent, adding up to 100 percent, 0.5 to 4.0 percent boron, 0.5 to 5.0 percent carbon, 15 to 30 percent molybdenum, and the balance iron. Germanium, in a range of 2 to 20 weight percent, may be added to this alloy for improved characteristics in some applications.

3,778,255
CORROSION RESISTANT LOW CARBON CHROMIUM ALLOY STEEL

Tohei Ototani, Sendai; Saburo Shimodaira, Izumi, and Yasuzi Kataura, Sendai, all of Japan, assignors to The Research Institute For Iron, Steel and Other Metals of the Tohoku University, Sendai-shi, Japan

Filed July 25, 1972, Ser. No. 275,072
Claims priority, application Japan, Apr. 5, 1972, 47/33437
Int. Cl. C22c 39/14, 39/20
U.S. Cl. 75—126 C 3 Claims



A chromium-containing steel having excellent corrosion resistance whose content of calcium is 0.0005 – 0.02 weight per-

cent, content of carbon is not more than 0.02 weight percent and content of chromium is 25 – 38 weight percent. Such a steel can be produced by adding calcium or an alloy thereof to a melt of ferrochromium containing chromium within the foregoing range and thereafter carrying out the refining operations of decarbonization, deoxidation and desulfurization.

3,778,256

HEAT-RESISTANT ALLOY FOR A COMBUSTION LINER OF A GAS TURBINE

Ryoichi Sasaki; Humio Hataya; Yutake Fukui, and Tetsuo Kashimura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1971, Ser. No. 213,050

Claims priority, application Japan, Dec. 28, 1970, 45/119867

Int. Cl. C22c *19/00, 31/00*

U.S. Cl. 75—134 F **13 Claims**

An alloy for a combustion liner of a gas turbine, characterized by comprising 0.03 to 0.10 weight percent of carbon, 0.3 to 1.0 weight percent of silicon, 0.50 to 3.00 weight percent of manganese, 43.0 to 50.0 weight percent of nickel, 22.0 to 30.0 weight percent of chromium, 0.10 to 0.50 weight percent of titanium, at least one of 0.005 to 0.20 weight percent of elements of cerium group in rare earth elements and 0.20 to 0.90 weight percent of niobium, and the balance iron and impurities accompanying thereto.

3,778,257

LIGHT-DUTY ELECTRICAL CONTACTS OF SILVER AND RUTHENIUM OXIDE

Terrence Ardern Davies, Horton, England, assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 21, 1971, Ser. No. 191,564

Claims priority, application Great Britain, Oct. 21, 1970, 49,660/70

Int. Cl. C22c *5/00*

U.S. Cl. 75—173 A **2 Claims**

A light-duty electrical contact material which consists of a mixture of silver and ruthenium oxide, the ruthenium oxide contact being in the range 0.1 to 13.0 atomic per cent. For reasons of economy, the preferred ruthenium oxide content is 1.3%. The material is produced by powder metallurgical techniques from fine, irregular silver powder and preferably ultra fine ruthenium metal powder. Fine ruthenium oxide powder can be utilized in place of the ruthenium metal powder.

3,778,258

TITANIUM BRAZING ALLOY

Richard A. Endsley, Van Nuys, Calif., assignor to Alloy Metals, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 102,080, Dec. 28, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 316,174

Int. Cl. C22c *5/00*

U.S. Cl. 75—173 R **2 Claims**

A strong, ductile, corrosion resistant alloy suitable for brazing titanium and titanium based alloys comprising a mixture of about 3–30 percent aluminum, about 3–17 percent palladium and about 55–94 percent silver.

3,778,259

ALLOY OF TIN, SILVER AND NICKEL

Gaetano Thomas Viglione, R.F.D. No. 1, Amesbury, Mass.

Continuation-in-part of Ser. No. 145,514, May 20, 1971, Pat. No. 3,738,920. This application June 21, 1972, Ser. No. 264,887

Int. Cl. C22c *5/00*

U.S. Cl. 75—134 B **5 Claims**

An alloy of tin, silver, balance nickel and impurities is contemplated. The alloy in proportions is tin, 1 to 45 percent, preferably 20 to 45 percent, silver, 45 to 98 percent, balance, nickel and impurities.

3,778,260

SUPERCONDUCTING MATERIALS

Ushio Kawabe; Mitsuhiro Kudo, both of Tokyo; Masato Ishibashi, and Shigeo Fukase, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 9, 1971, Ser. No. 178,925

Claims priority, application Japan, Sept. 9, 1970, 45/78421

Int. Cl. C22c *27/00*

U.S. Cl. 75—174 **8 Claims**

Intermetallic compound superconducting materials having a stable β-W type crystal structure represented by a general formula of A_3B brought into their closest packed structure and having high critical temperatures in which a part of the atoms either in the A-sites or in the B-sites are replaced by the atoms of a tetra-, penta- or hexa-valent transition metal so that the ratio between the average atomic radius of the atoms in the A-sites and that of the atoms in the B-sites lies close to 1.

3,778,261

MANUFACTURING COMPOSITE ARTICLES

Michael George Nicholas, Wantage, and Iain MacPahil, Reading, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 3, 1971, Ser. No. 139,837

Claims priority, application Great Britain, May 4, 1970, 21,460/70

Int. Cl. C22c *29/00*; **B22f** *1/00, 3/00*

U.S. Cl. 75—204 **8 Claims**

A method of manufacturing a composite article comprises forming a metal matrix which includes a suitable carbide forming constituent contacting the matrix with a carbonaceous material to be incorporated in the matrix, and heating the matrix to a predetermined temperature below the melting point of the matrix for a sufficient length of time to induce the carbide forming constituent to diffuse through the matrix to the interface between the carbonaceous material and the matrix and react with the carbonaceous material to form a bonding carbide layer between the matrix and the carbonaceous material.

3,778,262

IMPROVED ELECTROPHOTOGRAPHIC PROCESS

Carl A. Queener; William G. Ralston; Thomas C. Smith, and Joseph P. Welsh, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,756

Int. Cl. G03g *13/08*

U.S. Cl. 96—1 R **6 Claims**

This is an electrophotographic process comprising the step of contacting a latent electrostatic image with a developer comprising carrier and toner. The carrier is a core coated with a continuous film of a fluoropolymer and a modifying resin. This carrier has a positive triboelectric charge with respect to the toner. This positive charge is obtained by curing the coated carrier at a temperature less than 700°F.

3,778,263

ZINC OXIDE PHOTOCONDUCTIVE ELEMENT WITH STARCH REACTION PRODUCT INTERLAYER

Fumiaki Arai, Tokyo; Wasaburo Ohta; Junji Kurokawa, both of Yokohama; Noriyuki Usui, Kawasaki; Sakae Shimizu, Tokyo, and Tetsuo Tanaka, Kasukabe, all of Japan, assignors to Kabushiki Kaisha Ricoh, Ota-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 830,252, June 4, 1969, Pat. No. 3,682,632. This application June 19, 1972, Ser. No. 264,385

Claims priority, application Japan, June 14, 1968, 43/40585; Sept. 9, 1968, 43/64277; Oct. 2, 1968, 43/71153; Oct. 12, 1968, 43/74449; Oct. 9, 1968, 43/73174

Int. Cl. G03g *5/04, 5/08*

U.S. Cl. 96—1.8 **2 Claims**

An electrophotographic copying material having a photoconductive layer formed on the surface of a support, whose back is pre-coated with an electroconductive layer, with an intermediary layer between said photoconductive layer and the support, said intermediary layer comprising a printing-durable polymer consisting of methylol starch or a mixture of methylol starch and vinyl polymer.

3,778,264

ZINC OXIDE PHOTOCONDUCTIVE ELEMENT WITH AN EPOXY GROUP CONTAINING INTERLAYER

Fumiaki Arai, Tokyo; Wasaburo Ohta; Junji Kurokawa, both of Yokohama; Noriyuki Usui, Kawasaki; Sakae Shimizu, Tokyo, and Tetsuo Tanaka, Kasukabe, all of Japan, assignors to Kabushiki Kaisha Richo, Ota-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 830,252, June 4, 1969, Pat. No. 3,682,632. This application June 26, 1972, Ser. No. 266,146

Int. Cl. G03g *5/04, 5/08*

U.S. Cl. 96—1.8 **2 Claims**

An electrophotographic copying material having a photoconductive layer formed on the surface of a support, whose back is pre-coated with an electroconductive layer, with an intermediary layer between said photoconductive layer and the support, said intermediary layer comprising a printing-durable polymer consisting of the reaction product of (A) a polymer having epoxy groups and (B) at least one member selected from the bridge-making agent group consisting of water-soluble amino resin, amino compound, dibasic acid and acid anhydride.

3,778,265

NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

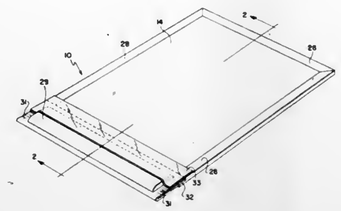
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. Nos. 65,084, Aug. 19, 1970, Pat. No. 3,672,890, and Ser. No. 782,075, Dec. 9, 1968, Pat. No. 3,573,043, and Ser. No. 846,442, July 31, 1969, Pat. No. 3,576,625, and Ser. No. 782,056, Dec. 9, 1968, Pat. No. 3,573,043, which is a continuation-in-part of Ser. No. 622,283, March 10, 1967, Pat. No. 3,415,644. This application June 13, 1972, Ser. No. 262,332

Int. Cl. G03c *7/00*

U.S. Cl. 96—3 **45 Claims**

The present invention relates to photography and, more particularly, to diffusion transfer process photographic film units which comprise a photosensitive element adapted to provide, by diffusion transfer photographic processing, selective dye image recordation of incident actinic radiation as a function of the point-to-point degree of photosensitive element exposure, which film unit includes a plurality of essential layers including a photosensitive silver halide layer having associated therewith diffusion transfer process dye image-forming material, a layer adapted to receive dye image-forming material diffusing thereto which is a substantially continuous polymeric layer comprising, in essence, a neutral polymer adapted to interact with an aqueous alkaline processing composition in contact with the layer to reduce the alkalinity thereof and to thereby increase the stability of a dye transfer image carried by such layer, and a mordant associated with



the layer adapted to mordant dye image-forming material diffusing to the layer; and to specified diffusion transfer processes employing such film units.

3,778,266

METHOD OF FORMING A BLACK PATTERNED PORTION ON A PHOSPHOR SCREEN OF A CATHODE-RAY TUBE FOR COLOR TELEVISION SETS

Hideaki Mizuno, Tokyo; Toshio Konno, Yokohama, and Naoki Akiyama, Yurigaoka, all of Japan, assignors to Victor Company of Japan, Limited, Kanagawa-ku, Yokohama, Japan

Filed July 29, 1970, Ser. No. 59,301

Claims priority, application Japan, July 31, 1969, 44/60574

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.1 **12 Claims**

A method of forming a black patterned portion on the inner surface of a face plate of a panel section of a cathode-ray tube for color television sets. The black patterned portion is formed in gaps between the phosphor dots to be formed on the inner surface of a face plate by deposition of a black patterned portion forming composition by vaporization.

3,778,267

PHOTOGRAPHIC DEVELOPER

Simeon Braunstein, Malden, Mass., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Oct. 14, 1971, Ser. No. 189,327

Int. Cl. G03c *5/30*

U.S. Cl. 96—66 HD **1 Claim**

A photographic developer for achieving maximum film sensitivity by increasing the dynamic range of a photographic film which includes an additive mixture of N-(p-hydroxyphenyl glycin) and 1-phenyl-3-pyrazolidone.

3,778,268

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Rintaro Ushiyama; Osakazu Sugino; Teruhide Haga, and Koichi Horigome, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 39,568, May 21, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 288,160

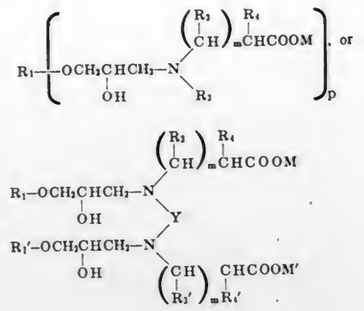
Claims priority, application Japan, May 28, 1969, 44/40991

Int. Cl. G03c *1/38, 1/40, 1/04*

U.S. Cl. 96—74 **4 Claims**

A light-sensitive silver halide photographic material con-

taining as anti-spotting agent, at least one compound represented by the general formula



3,778,269

METHOD FOR USE OF INORGANIC AZIDES AS PHOTOSENSITIVE MATERIALS AT LOW TEMPERATURES

Donald A. Wiegand, Landing, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 19, 1971, Ser. No. 200,616
Int. Cl. G03c *5/00, 5/16, 5/18*
U.S. Cl. 96—27 R **4 Claims**

A new method is provided for the production of permanent photographic images at low temperatures by the use of heavy metal azides such as thallium, lead and silver azide as the photosensitive material in the photographic process.

3,778,270

PHOTOSENSITIVE BIS-DIAZONIUM SALT COMPOSITIONS AND ELEMENTS

Leo Roos, New Shrewsbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 833,774, June 16, 1969, abandoned. This application Nov. 12, 1970, Ser. No. 89,133
Int. Cl. 96 *36.3*; **G03f** *7/08*; **G03c** *1/54*
U.S. Cl. 96—75 **10 Claims**

A crosslinkable-photosensitive composition which comprises a bis-diazonium salt with a natural or synthetic macromolecular organic polymer having pendant reactive groups. The compositions are useful in elements for the preparation of relief images, photo-resist applications, etc.

3,778,271

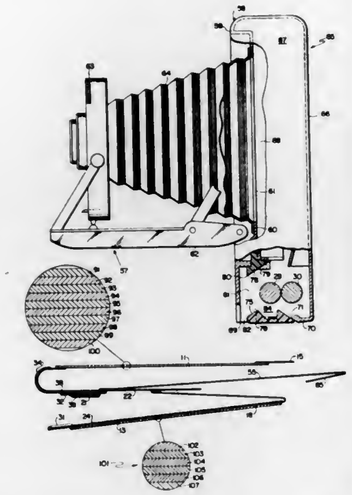
PHOTOGRAPHIC PRODUCTS COMPRISING AN OPACIFYING AGENT IN ASSOCIATION WITH A REFLECTING AGENT

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 22, 1971, Ser. No. 191,941
Int. Cl. G03c *1/48, 5/54, 7/00*
U.S. Cl. 96—77 **15 Claims**

Film assemblies in the nature of a self-developing film which comprise a photosensitive element including an opaque support carrying photosensitive silver halide having associated diffusion transfer process dye image-providing material; an image-receiving element including a transparent support carrying a diffusion transfer image-receiving layer and a reflecting layer; rupturable container means retaining a fluid processing composition for distribution between the photosensitive and the image-receiving elements; and including opacifying agent disposed in the fluid processing composition and/or integral with or as a layer on the surface of the image receiving element's reflecting layer opposite the transparent support, for processing external a camera in which the film assembly is exposed and adapted to provide a color reflection print as a function of the film unit's photoexposure.

Subsequent to exposure, the film unit is specifically adapted to be withdrawn from the camera between pressure-applying members which effect release of the fluid processing composition for production of the dye transfer image. During and subsequent to processing, formation of the color reflection print may be viewed through the image-receiving element's transparent support against the background provided by the element's reflection layer and the reflection layer, taken together with the opacifying agent, is specifically adapted to protect the photosensitive silver halide from exposure during processing in the presence of radiation incident on the viewing surface.



3,778,272

PHOTOGRAPHIC TRANSFER MATERIALS

Martin Hepher, Berkhampstead, England, assignor to Norprint Limited, London, England

Filed Aug. 16, 1971, Ser. No. 172,254
Claims priority, application Great Britain, Aug. 17, 1970, 39,493/70
Int. Cl. G03c *1/78*
U.S. Cl. 96—87 R **8 Claims**

Photographic transfer materials are described incorporating adhesive substratum layers which are used in order to transfer the photosensitive layer from the transfer layer to another surface. An intermediate substratum layer comprising a polyamide soluble in a mixture of an alcohol and water is used. The photosensitive layer is preferably based on a water-soluble colloid or polymeric material.

3,778,273

PHOTOGRAPHIC MATERIAL

Herbert Gernert, Munich; Hans Glockner, Pullach; Ernst Meier, Munich; Hans Ohlschlager, Cologne, and Oskar Riester, Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 28, 1972, Ser. No. 267,168
Claims priority, application Germany, June 30, 1971, P 21 32 393.3
Int. Cl. G03c *1/89*
U.S. Cl. 96—84 R **6 Claims**

Antihalation layers or filter layers for photographic materials containing a combination of the following dyes: (I) Condensation products of alkoxyaldehydes with pyrazolones in which the dye molecule contains an acid group, a diffusion-preventing radical and in addition an alkoxy substituted phenyl ring, (II) tri- or pentamethine oxonoles of alkyl substituted thiobarbituric acids preferably in form of their silver salt and (III) color lakes of aurin tricarboxylic acid. Said antihalation layers or filter layers absorb predominantly in the blue and green region of the spectrum and can be decolorized as completely as possible even if a filter is processed automatically in a roll development machine with a very rapid throughput.

3,778,274

SPECTRALLY SENSITIZED DIAZO MATERIAL

Eiichi Inoue, and Toshihiro Yamase, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1971, Ser. No. 132,074
Claims priority, application Japan, Apr. 8, 1970, 45/29875
Int. Cl. G03c *1/60*; **G03f** *7/08*
U.S. Cl. 96—91 R **4 Claims**

A dithiocarbamate is mixed with a photolytic aromatic diazo compound to improve the intrinsic sensitivity and spectral sensitivity of the photosensitive material for diazo photography.

3,778,275

SEDIMENTATION PROCESS FOR FLOCCULATED DISPERSIONS

Edward G. Denk, Waltham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Dec. 28, 1971, Ser. No. 213,100
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 **13 Claims**

The rate of sedimentation of floccules from dispersion may be accelerated by introducing in said dispersion a small amount of insoluble particles. Each of these particles adsorbs onto the protective colloid layer of more than one floccule and through a "bridging" mechanism acts to hold those floccules together in aggregates which precipitate at a rate much faster than the floccules individually. The process of this invention is particularly useful during the washing steps of photographic silver halide emulsion preparations employing flocculation methods.

3,778,276

PHOTOGRAPHIC ELEMENT COMPRISING A GELATIN AQUEOUS COMPOSITION CONTAINING A HALOMETHYL KETONE OF BENZYLOXYCARBONYL PHENYLALANINE

Elliott N. Shaw, Shoreham, N.Y., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed May 22, 1972, Ser. No. 255,709
Int. Cl. G03c *1/02*; **A23l** *3/34*
U.S. Cl. 96—94 R **7 Claims**

Aqueous solutions of gelatin and gelatin-containing layers such as photographic silver halide emulsions containing benzyloxycarbonyl phenylalanine chloromethyl ketone and benzyloxycarbonyl phenylalanine bromomethyl ketone to control enzyme activity and decelerate bacterial growth and reproduction. A phenolic biostat may optionally be added for improved results.

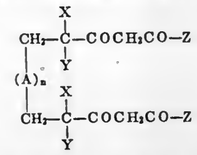
3,778,277

LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL WITH BIS-TYPE YELLOW COLOR COUPLER

Mitsuto Fujiwhara, Tamotsu Kozima, Hiroyuki Imamura, and Takaya Endo, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,681
Claims priority, application Japan, May 30, 1970, 45/46,030
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **8 Claims**

A light-sensitive silver halide color photographic material containing a yellow coupler of the general formula



wherein X is an alkyl group, Y is an alkyl, alkoxy or aralkyl group, Z is an aromatic amino group linked to the chain through an amide linkage. A is a divalent aliphatic, aromatic or heterocyclic residue and *n* is 0 or 1.

3,778,278

PHOTOGRAPHIC GELATINO-SILVER HALIDE EMULSIONS CONTAINING HYDROLYZED MODIFIED GELATIN, AND A PROCESS FOR THEIR MANUFACTURE

Bohdan Rakoczy, East Brunswick, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 49,167, June 23, 1970. This application Apr. 26, 1972, Ser. No. 247,521
Int. Cl. G03c *1/72*
U.S. Cl. 96—114.8 **20 Claims**

A method for increasing the covering power of a gelatino-silver halide emulsion without producing deleterious haze comprising the substitution of about 15–35% of the total gelatin binder of the emulsion with a gelatin reaction product which has first been hydrolyzed in an aqueous solution of a strong acid (pH 0.1 to 1.0) or a strong base (pH 10.5–13.5) and further modified by reaction of the product from said hydrolysis with a dibasic acid anhydride. The dibasic acid anhydride may comprise an aliphatic, aromatic, cycloalkyl, cyclo-olefinic or heterocyclic structure having the anhydride group attached thereto. The hydrolyzed and modified gelatin may be added as the binder supplement during the preparation of the emulsion or admixed after said preparation. Alternatively, the hydrolyzed, modified gelatin may be incorporated into a layer contiguous to the silver bearing stratum.

3,778,279

SENSITISATION OF PHOTOGRAPHIC SILVER HALIDE LAYERS FOR THE SILVER DYE BLEACH PROCESS

Johannes Göte, Bergisch Neukirchen, and Erich Böckly and Oskar Riester, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 14, 1971, Ser. No. 162,665
Claims priority, application Germany, July 18, 1970, P 20 35 727.1
Int. Cl. G03c *1/08*
U.S. Cl. 96—140 **8 Claims**

The spectral sensitivity of silver halide emulsions for the silver dye bleach process is increased by addition of urea substituted merocyanines of the formula defined below.

3,778,280

PAINTS AND COATINGS

Werner Dittrich, Herten, Baden, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Continuation of abandoned application Ser. No. 101,136, Dec. 23, 1970. This application June 30, 1972, Ser. No. 267,821
Claims priority, application Germany, Jan. 3, 1970, P 20 00 199.4
Int. Cl. C09d *5/10*
U.S. Cl. 106—1 **7 Claims**

Galvanic action coating material having improved properties comprising a pigment, such as zinc dust, lithopone, iron oxides, titanium dioxide or cadmium sulfide,

and a bonding agent comprising an alkyl silicate in which there has been incorporated a trialkyl, preferably triethyl, phosphate.

3,778,281

FUSION BONDED VERMICULITE MOLDING MATERIAL

Patrick M. Brown, Baltimore, Md., Heyman C. Duecker, Cambridge, Mass., and Dorothy C. de Vore, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,601
Int. Cl. C04b *33/00*
U.S. Cl. 106—67 11 Claims

Fusion bonded vermiculite molding material prepared from vermiculite, sodium borate, sodium metaphosphate and clay is used to prepare a variety of materials and structures including, among others, a strong, lightweight decorative fire resistant board, a superior foundry mold and a lightweight synthetic aggregate.

3,778,282

PIGMENTARY COMPOSITIONS, THEIR PREPARATION AND THEIR APPLICATIONS TO THE COLOURATION IN BULK OF CELLULOSE ESTERS

Francis Rene Daniel Manier, Villemomble, France, assignor to Ugine Kuhlmann, Paris, France

No Drawing. Filed Mar. 23, 1971, Ser. No. 127,400
Claims priority, application France, Mar. 25, 1970, 7010704
Int. Cl. C08b *21/04, 27/28, 27/38*
U.S. Cl. 106—187 15 Claims

Pigmentary composition comprising:

(a) at least one colouring matter insoluble in water and in the organic solvents used for spinning fibres based on cellulosic esters,

(b) a non-ionic surface-active substance insoluble in water, but soluble in the organic solvents used for spinning fibres based on cellulosic esters, in an amount B of between 1% and 10% inclusive, of the weight (A) of the colouring matter, and

(c) A cellulosic ester in an amount C such that the ratio

$$\frac{A\times 100}{A+B+C}$$

is between 20 and 95 inclusive.

The pigmentary composition may be prepared by a process wherein (a) On the one hand zinc chloride, and on the other hand a cellulosic ester, are introduced into an aqueous dispersion of the water-insoluble colouring matter and the non-ionic surface-active substance, the amounts of colouring matter (A), water (A′), non-ionic surface-active substance (B), cellulosic ester (C) and zinc chloride (D) used being such that the following relations are satisfied:

$$20\leq\frac{A\times 100}{A+B+C}\leq 95$$

$$\frac{A}{00}\leq B\leq\frac{A}{10}$$

$$55\leq\frac{D\times 100}{A'+D}\leq 70$$

then (b) the mixture is diluted with water until the ratio:

$$\frac{\text{Weight of zinc chloride}}{\text{Weight of water}+\text{weight of zinc chloride}}$$

becomes equal to or less than 0.4, and (c) the precipitate thus obtained is isolated. The pigmentary composition is useful for the colouration of bulk cellulosic esters.

The present invention concerns pigmentary compositions, their preparation and their applications to the colouration in bulk of cellulosic esters.

3,778,283

BINDERS BASED ON ALKALI METAL SILICATES

Helmut von Freyhold, Dusseldorf-Oberkassel, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,084
Claims priority, application Germany, Mar. 3, 1971, P 21 10 059.4
Int. Cl. C09d *1/04*
U.S. Cl. 106—84 6 Claims

Binders based on aqueous alkali metal silicate solutions comprise an admixture of triglycidylisocyanurate with an epoxide content over 14% by weight, in amounts from 0.03 to 2.0% by weight, based on the solid content of the alkali metal silicate solution; water-soluble amines which contain at least 2 active hydrogen atoms, bound to nitrogen, in amounts from 0.1 to 5% by weight, based on the solid content of the alkali metal silicate solution; and water-soluble quaternary and/or polyquaternary nitrogen compounds in amounts from 0.1 to 5% by weight, based on the solid content of the alkali metal silicate solution.

3,778,284

METHOD OF MANUFACTURING A BINDER IN A VARNISH FOR VARNISHING ELECTROPLATES

Carl-Artur Akerblom, Surahammar, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

No Drawing. Filed Dec. 16, 1971, Ser. No. 208,883
Claims priority, application Sweden, Dec. 21, 1970, 17,261/70
Int. Cl. C08b *25/00*
U.S. Cl. 106—162 10 Claims

Electrical steel sheet is varnished with a varnish produced by oxidizing a carbohydrate so that carboxyl groups are formed in the molecule and adding furfural to the oxidized carbohydrate.

3,778,285

HIGH K DIELECTRIC PRINTING PASTES

Daniel W. Mason, West Peabody, Mass., assignor to Owens-Illinois, Inc.

No Drawing. Application Jan. 18, 1971, Ser. No. 107,566, now Patent No. 3,679,440, dated July 25, 1972, which is a continuation-in-part of abandoned application Ser. No. 54,591, July 13, 1970. Divided and this application Jan. 27, 1972, Ser. No. 221,426
Int. Cl. C08b *27/42, 27/04*
U.S. Cl. 106—179 14 Claims

Unique dielectric compositions may be used to formulate thick film pastes for printing microelectronic capacitors. The resulting dielectrics exhibit dielectric constants greater than about 500 and capacitances greater than about 80,000 picofarads per square inch at a thickness of at least about 1.0 mil. The unique dielectric compositions comprise about 55–76 percent by weight of a ferroelectric material and 45–24 percent of a glass binder. The glass binder employed comprises a lead barium borosilicate glass and a ferroelectric material previously dissolved therein. The composition is formulated into a printing paste by first dissolving 20–30 percent by weight ferroelectric into 70–80 percent by weight lead barium borosilicate glass binder, cooling the newly formed glass to a solid state, comminuting the glass to a particle size of less than about 1 micron and thereafter admixing the comminuted glass with the same particulate ferroelectric in an amount as indicated. This admixture is then added to a liquid organic carrier vehicle to formulate the printing paste. The printing paste is then printed into

a chosen design and fired at a temperature of approximately 1,000–1,050° C. to produce a highly dense, uniform, and substantially crack-free dielectric material.

3,778,286

PROTECTION OF RUBBER SURFACES FROM OXIDATION EFFECTS

Stavros A. Kyriakides, 9215 Hillview Drive, Clarence, N.Y. 14031

No Drawing. Continuation-in-part of application Ser. No. 39,900, May 21, 1971. This application Jan. 3, 1972, Ser. No. 215,102
Int. Cl. C08c *17/24*
U.S. Cl. 106—287 R 12 Claims

Synthetic and natural rubber vulcanizates are stabilized and protected against the effects of weather deterioration and ozone attack (surface cracking) by chemically treating the surface of rubber products with a composition comprising an alkyl substituted paraphenylene diamine, a wetting agent, such as an alkyl arylsulfonate, a terpene liquid, and a volatile solvent carrier. The composition is designed for migrating beneath the surface of the rubber vulcanizate, thereby assuring complete use and effectiveness of the antiozonant, and the protective coating is not impaired by flexing or scuffing.

3,778,287

PIGMENT DISPERSIONS

James Frederick Stansfield and Arthur Topham, Manchester, England, assignors to Imperial Chemical Industries Limited, Millbank, London, England

No Drawing. Filed Dec. 2, 1971, Ser. No. 204,328
Claims priority, application Great Britain, Dec. 22, 1970, 60,903/70; June 14, 1971, 27,768/71
Int. Cl. C09c *3/02*
U.S. Cl. 106—308 Q 8 Claims

Dispersions of inorganic pigments or lakes or toners in organic liquids which contain dissolved therein one or more polyesters or a salt thereof derived from a hydroxycarboxylic acid of the formula: HO—X—COOH wherein X is a divalent saturated or unsaturated aliphatic radical containing at least 8 carbon atoms and in which there are at least 4 carbon atoms between the hydroxy and carboxylic acid groups, or from a mixture of such a hydroxycarboxylic acid and a carboxylic acid which is free from hydroxy groups. The dispersions are finely divided and well deflocculated, and are valuable in the manufacture of inks and paints.

3,778,288

METHODS FOR PREPARING MASTER BATCHES OF ADDITIVE CONCENTRATES

Alvin Arthur Ridge and Jack Marquis Polchet, Sasolburg, Republic of South Africa, assignors to South African Coal, Oil and Gas Corporation Limited, Sasolburg, Republic of South Africa

Filed Nov. 15, 1971, Ser. No. 198,814
Int. Cl. C08h *17/04*
U.S. Cl. 106—308 Q 6 Claims

High melt point waxes or their derivatives are intermixed with pigments or other additive compositions in "high speed" mixers of the Henschel type, for example, to form "master batches" of additive concentrates and color concentrates for addition to plastics and/or polymers, resins, waxes, wax-resin mixtures and the like. Mixing temperatures are elevated above room temperature for predetermined mixing times. During mixing, the waxes or wax derivatives soften and coat the additive particles. Concentrate particles are thus formed whose average particle size increases unexpectedly with mixing time, apparently by the operation of a "progressive agglomeration" phenomenon, until the optimum concentrate particle-size is produced. Subsequent size reduction by grinding techniques are partly or wholly eliminated by the methods of the invention, and high quality concentrates with excellent dispersion characteristics are produced.

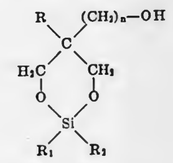
3,778,289

RENDERING INORGANIC PIGMENTS DISPERSIBLE BY INCORPORATION OF HYDROXY-SUBSTITUTED 1,3-DIOXA-2-SILA-CYCLOHEXANES

August Böckmann, Krefeld-Bockum, Gerhard Trenczek, Krefeld-Uerdingen, Hans Rudolf, Krefeld-Bockum, Wolfgang Wiegreffe, Krefeld, and Wolfgang Ritter, Dusseldorf, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 14, 1972, Ser. No. 234,665
Claims priority, application Germany, Mar. 19, 1971, P 21 13 297.8
Int. Cl. C08j *1/36*
U.S. Cl. 106—308 Q 10 Claims

Inorganic pigments such as titanium dioxide are rendered easily dispersible in aqueous or non-aqueous systems by the presence of about 0.1 to 5% by weight of hydroxy-substituted 1,3-dioxa - 2 - sila-cyclohexanes, preferably of the formula



(I)

wherein

R is hydrogen, alkyl, alkoxyalkyl or aryl,
R_1 and R_2 each independently is alkyl, and
n is 0 or 1,

the alkyl radicals of R, R_1 and R_2 each containing up to about 6 carbon atoms.

3,778,290

DECORATIVE FLOORING SURFACES

Herbert Jackson Shearing, Manchester, England, assignor to Imperial Chemical Industries Limited, Millbank, London, England

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,420
Claims priority, application Great Britain, Mar. 18, 1970, 13,041/70; Aug. 11, 1970, 38,631/70; Dec. 24, 1970, 61,328/70
Int. Cl. B44c *1/22;* C04b *7/02*
U.S. Cl. 117—8 11 Claims

A process for the manufacture of decorative flooring surfaces which comprises applying to the floor to be surfaced a composition having as essential ingredients a hydraulic cement, a filler in the form of fragments or coarse particles, water and an organic polyisocyanate, allowing the composition to harden and then grinding or otherwise-treating the surface of the composition to expose the fragments or particles of filler. The filler may be, for example, fragments of plastic material, glass or stone, or stone aggregate. The compositions set rapidly and the final surface is very durable.

3,778,291

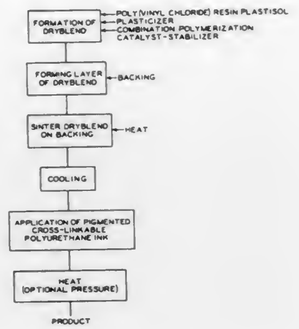
PROCESS FOR PRODUCING A DECORATIVE SURFACE COVERING

Charles G. Elliott, Landisville, and Richard P. Mazzur, Millersville, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Feb. 11, 1972, Ser. No. 225,447
Int. Cl. D06n *7/04;* E04f *15/10*
U.S. Cl. 117—21 8 Claims

A process for producing a flexible resinous composition surface covering by preparing a granular resinous dry-

blend containing a catalyst adapted to cure a noncatalyst-containing resinous system different from that of the dry-blend, comprising depositing a layer of the catalyst-containing dryblend on a backing sheet, heating the granules to form a porous cohesive layer therefrom, cooling the



layer and applying to the porous layer a different, non-catalyzed cross-linkable resinous liquid which will penetrate thereinto, and applying heat and/or heat and pressure to cause catalytic cross-linking of the resinous liquid and fusion of the resinous granules.

3,778,292

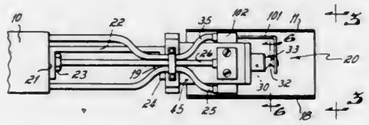
METHOD OF STRIPING THE INSIDE SEAMS OF CANS

Alvin A. Rood, Westlake, and Edwin F. Hogstrom and William C. Stumphauzer, Sheffield Lake, Ohio, assignors to Nordson Corporation, Amherst, Ohio

Original application Jan. 19, 1971, Ser. No. 107,632, now Patent No. 3,702,107. Divided and this application Mar. 9, 1972, Ser. No. 233,228

Int. Cl. B05c *7/02*

U.S. Cl. 117—43 **3 Claims**



A method and apparatus for applying an impervious protective coating over the seams of cylindrical metal can bodies either before or after the seams are welded, soldered, or cemented and prior to spray coating the complete interior of the bodies. The apparatus is operable to intermittently apply an airless spray to the interior seams of the cans as they continuously move past an airless spray gun secured to the end of a stubhorn of a can forming line. The apparatus includes a new and improved airless spray nozzle which is operable to atomize the spray nearer the nozzle than has heretofore been possible. It also includes a pair of air jets located on opposite sides of the spray and operable to confine the atomized spray or fog to the seam of the can so that little or no excess material is sprayed onto that portion of the can located adjacent the seam.

ERRATUM

For Class 117—68 see:
Patent No. 3,778,251

3,778,293

METHOD OF MAKING REGENERATIVE HEAT-EXCHANGER SEALS

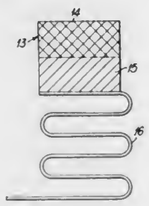
Calvin Eric Silverstone, Alcester, England, assignor to British Leyland Truck and Bus Division Limited, Leyland, Lancashire, England

Filed July 17, 1972, Ser. No. 272,398

Claims priority, application Great Britain, Sept. 30, 1971, 45,513/71

Int. Cl. B05b *5/06;* **F28d** *19/00*

U.S. Cl. 117—93.1 PF **4 Claims**



A method of manufacturing a counterface cold-side seal for a rotary disc-type matrix of a regenerative heat-exchanger comprises: forming a mixture of a temperature-resistant polymer and a solid lubricant, and depositing this mixture onto a counterface support pad of the seal by means of flame or plasma spraying.

3,778,294

PRODUCTION OF POLYMERS WITH A FIBROUS STRUCTURE

Carl Heinrich Krauch, Heidelberg, and Axel Sanner, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application July 16, 1968, Ser. No. 745,113. Divided and this application Sept. 22, 1971, Ser. No. 182,860

Claims priority, application Germany, July 22, 1967, P 17 20 286.7; Feb. 24, 1968, P 17 20 350.8; May 30, 1968, P 17 70 528.1, P 17 70 529.2; May 31, 1968, P 17 70 543.0; June 1, 1968, P 17 70 552.1

Int. Cl. B44d *1/50;* **D06m** *13/20*

U.S. Cl. 117—93.31 **11 Claims**

Polymers having a fibrous structure are obtained by the polymerization of solutions and/or emulsions or dispersions fully or partially solidified in crystalline form, of ethylenically unsaturated monomers with at least two polymerizable double bonds or mixtures containing at least 0.01% by weight of these monomers and monoethylenically unsaturated monomers by irradiation, which polymers can be obtained in the form of novel porous materials (=poromeric materials) having properties similar to leather.

3,778,295

CHEMICAL PLATING METHOD OF PREPARING RADIATION SOURCE MATERIAL

Paul K. Smith and Richard T. Huntoon, Aiken, and Wilbur C. Mosley, Jr., New Ellenton, S.C., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,933

Int. Cl. B44d *1/02*

U.S. Cl. 117—100 B **5 Claims**

A uniform dispersion of a radioisotope within a noble metal matrix is provided by chemically plating a noble metal coating onto particles including a dissociable compound of the radioisotope. A suspension of the dissociable compound in a chemically reductive solution is prepared and noble metal cations added to produce the noble metal coatings. The coated particles are filtered, dried and heated to calcine the dissociable compound to a refractory powder. The powder can be encapsulated in measured portions or consolidated and shaped into an elongated form for easy apportionment as radiation source material.

3,778,296

PROCESS FOR THE PRODUCTION OF SILICON CARBIDE WHISKERS

Eduard Thalmann, Zug, and Hans-Rudolf Staub, Eggenwil, Switzerland, assignors to Lonza Limited, Gampel, Valais, Switzerland

No Drawing. Filed May 4, 1971, Ser. No. 140,270

Claims priority, application Switzerland, May 14, 1970, 7,191/70

Int. Cl. C23c *13/04*

U.S. Cl. 117—106 C **4 Claims**

The present invention is concerned with a process for the production of silicon carbide whiskers by growing the whiskers at an elevated temperature on a substrate from a gaseous phase containing the whisker components, wherein there is used a substrate to which has been applied a layer comprising at least one crystal growth-promoting material, carbon and a lacquer.

3,778,297

CHROMIZING FERROUS METAL SUBSTRATES

Kenneth Urmston Holker, Harrogate, England, assignor to National Steel Corporation, Pittsburgh, Pa.

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,150

Claims priority, application Great Britain, Jan. 5, 1971, 496/71

Int. Cl. C23c *9/00*

U.S. Cl. 117—107.2 P **20 Claims**

In order to mitigate the formation of a layer of sintered powder on the surface of ferrous substrates chromized by the application of an adhesive layer followed by the application of chromium powder and a heat treatment to bring about the formation of a diffusion alloy surface layer, hydrated magnesium or aluminum halides or magnesium oxyhalide is applied to the substrate before, with or after the chromium. Preferably the halide is applied as an aqueous solution before the chromium so as to form the adhesive layer. pH modifiers may be incorporated to reduce the acidity of the solution in the case where aluminum chloride is used as the halide.

3,778,298

PROCESS OF METALLIC CEMENTATION

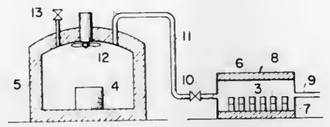
Norio Kanetake, Tokyo, and Hiroshi Shirai, Yokohama, Japan, assignors to Kabushiki Kaisha Kito, Kawasaki-shi, Kanagawa-ken, Japan

Filed May 3, 1971, Ser. No. 139,600

Int. Cl. C23c *11/04*

U.S. Cl. 117—107.2 R **5 Claims**

A chromium cementation process comprises heating an object to be cemented along with a porous body of chromium which has absorbed chromium halide in order to effect a chromium cementation of the object. The object to be cemented may be placed in a chamber along with one or more of the agents and both heated together in the chamber which may advantageously be an electric furnace chamber. The object to be cemented with chromium may also be placed in an electric furnace separately and the agent placed in a halide generating apparatus wherein the metal halide fine particles are carried by an unoxidizing gas into the electric furnace into contact with the object to be cemented. A further arrangement is to place the agent in a tank containing neutral salts which is contained in the furnace and then heating the agent along with the object to be cemented which is



also placed in the tank. The apparatus employed may comprise a separate furnace having a halide generating apparatus connected therethrough to a connecting line and with a fan in the furnace for circulating the gas which is directed first to the halide generating apparatus and then through the connecting line into the electric furnace.

3,778,299

ROTARY BARREL DIFFUSION COATING IN MOLTEN LEAD

John J. Rausch, Antioch, and Ray J. Van Thyne, Oak Lawn, Ill., assignors to Surfalloy Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 768,187, Oct. 16, 1968, now Patent No. 3,620,816. This application Nov. 12, 1971, Ser. No. 198,404

Int. Cl. C23c *9/00*

U.S. Cl. 117—109 **3 Claims**

A novel process for diffusion coating of ferrous articles in a lead bath by sealing all of the constituents in a barrel which is rotated in a non-vertical position at the chromizing temperature. Such processing results in extremely diffused zones on irregularly-shaped parts.

3,778,300

METHOD OF FORMING IMPERMEABLE CARBIDE COATS ON GRAPHITE

Cornel Wohlberg, Los Alamos, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 7, 1966, Ser. No. 586,000

Int. Cl. C23f *11/00*

U.S. Cl. 117—118 **8 Claims**

A method of forming an impermeable refractory metal carbide coating on graphite in which a metal containing oxidant and a carbide former are applied to the surface of the graphite, heated to a temperature of between 1200° C. and 1500° C. in an inert gas, and applying a vacuum and continuing to heat to about 2300° C.

3,778,301

METHOD OF COATING GRAPHITE TUBES WITH REFRACTORY METAL CARBIDES

Cornel Wohlberg, Jeanette, Pa., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Apr. 28, 1967, Ser. No. 636,573

Int. Cl. C23f *11/00*

U.S. Cl. 117—118 **3 Claims**

A method of coating graphite tubes with a refractory metal carbide and in which an alkali halide is reacted

with a metallic oxide, said metallic portion being selected from the IVth or Vth group of the Periodic Table, the resulting salt reacting in turn with the carbon to give the desired refractory metal carbide coating.

3,778,302

CERTAIN PERMEABLE MATERIALS IMPREGNATED WITH A POLYURETHANE POLYMER

Rolf Dahl, West Columbia, S.C., assignor to Continental Tapes, Incorporated, Columbia, S.C.

No Drawing. Application Mar. 30, 1970, Ser. No. 23,983, now Patent No. 3,702,781, which is a continuation-in-part of abandoned application Ser. No. 297,190, July 24, 1963. Divided and this application Mar. 16, 1972, Ser. No. 235,398

Int. Cl. C09j *7/04*

U.S. Cl. 117—122 PB **9 Claims**

Permeable materials containing "active" hydrogen, such as paper, are markedly improved in dry and wet tensile strengths and delamination resistance without loss of flexibility, by impregnation with certain polyurethane polymers.

3,778,303

PROCESS FOR PROTECTING A SUBSTRATE WITH AN ARYLSULFONAMIDOPYRIDINE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., asssignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Feb. 11, 1972, Ser. No. 225,639

Int. Cl. C09d *5/18;* **C09k** *3/28*

U.S. Cl. 117—136 **6 Claims**

Intumescent compositions of the invention comprise certain arylsulfonamidopyridines, such as the 2-, 3-, and 4-sulfanilamidopyridines. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied to a substrate in any suitable manner, such as by electrodeposition, spraying onto an adhesive substrate, or the application of a coating composition comprising the intumescent agent.

3,778,304

MAGNESIUM OXYCHLORIDE FIREPROOFING

Henry C. Thompson, Saratoga, Calif., assignor to Thompson Chemicals, Inc., Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 811,616, Mar. 28, 1969, which is a continuation-in-part of application Ser. No. 589,808, Oct. 27, 1966, both now abandoned. This application Nov. 1, 1971, Ser. No. 194,557

Int. Cl. C09k *3/28;* **C04b** *9/02*

U.S. Cl. 117—138 **4 Claims**

A method of making a foamed fireproof product of magnesium oxychloride cement and the resulting product. A porous substrate is impregnated with a foaming mixture of magnesium chloride, magnesium oxide, and frothing agent in water. The mixture hardens with small voids throughout the porous substrate, thus providing a fireproof product of low density. The foamed product may be formed in a mold with fibrous elements introduced into the foaming mixture. The cement mixture may be co-foamed with polyurethane foam. The fireproof products of relatively low density are particularly valuable for building and construction purposes. Magnesium powder is the preferred frothing agent which, in combination with a surfactant, induces a large volume of small bubbles that remain in the composition as it is set.

3,778,305

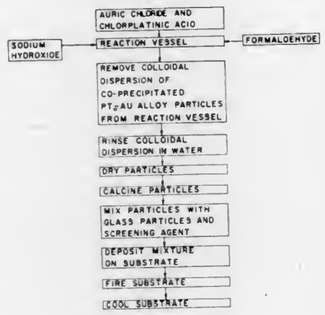
ELECTRICALLY CONDUCTIVE ELEMENT AND METHOD OF MAKING THE SAME

Curtis L. Holmes, Elkhart, Ind., and Lynn J. Brady, Edwardsburg, Mich., assignors to CTS Corporation, Elkhart, Ind.

Original application Aug. 2, 1968, Ser. No. 749,890. Divided and this application June 14, 1971, Ser. No. 153,024

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 **14 Claims**



An electrically conductive composition mixed with a screening agent, is deposited on a substrate and fired at an elevated temperature to form a termination bonded to the substrate. The composition comprises a homogeneous mixture of approximately 70–95% by weight co-precipitated platinum-gold alloy particles, co-precipitated palladium-gold alloy particles or co-precipitated platinum-palladium-gold particles and approximately 5–30% by weight of glass frit.

3,778,306

TAPE

Robert H. Stow, White Bear, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 703,872, Feb. 8, 1968. This application Jan. 4, 1971, Ser. No. 103,872

Int. Cl. B44c *1/18;* **C09c** *1/44*

U.S. Cl. 117—226 **3 Claims**

An electrically conductive pressure-sensitive adhesive tape comprising a flexible electrically conductive backing and an adhesive that includes a base soft rubber-resin adhesive material and conductive carbon black dispersed in the base adhesive material.

3,778,307

ELECTRODE AND COATING THEREFOR

Henri Bernard Beer, Kalmthout, Belgium, assignor to Chemnor Corporation, Panama City, Panama

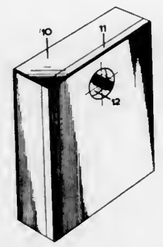
Original application Feb. 2, 1968, Ser. No. 702,695, now Patent No. 3,632,498, dated Jan. 4, 1972. Divided and this application May 19, 1971, Ser. No. 144,882

Claims priority, application Great Britain, Feb. 10, 1967, 6,490/67

Int. Cl. B01k *3/04*

U.S. Cl. 117—221 **34 Claims**

A method of making a coated electrode for use in an electrolyte, the electrode made thereby, and the method of using the electrode. At least part of the surface of a conductive base corresponding to the working area of the electrode is coated at least once with a solvent-containing composition of at least one material from which an oxide of a film-forming metal can be formed by evaporation and heating and at least one further material from which at least one non-film forming conductor can be formed by evaporation and heating. The base has at least



the outer surface portion thereof corresponding to the working area of the electrode made of a conductor resistant to the electrolyte in which the electrode is to be used. The solvent of said solution is evaporated, and the residue remaining on said base after evaporation is heated to deposit an electrically conductive coating on the electrode, which coating will transfer electrical energy between the electrolyte and the electrode. The electrode is used in various electrolytic processes.

3,778,308

MAGNETIC STORAGE DEVICE COATING AND PROCESS

Kent G. Roller, George H. Ahlborn, and Richard E. Brown, Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,528

Int. Cl. H01f *10/00*

U.S. Cl. 117—234 **6 Claims**

The magnetic surfaces of magnetic storage devices are protected against abrasion and friction by applying a lubricating coating of a perfluoroalkyl polyether and an optional thin coating of a trifluorochloroethylene copolymer to the surface thereof. The perfluoroalkyl polyethers employed preferably have a molecular weight of at least 1000.

3,778,309

DESCALING PROCESS FOR ALLOYS CONTAINING CHROMIUM

Raymond Pennoyer Jackson, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed June 25, 1971, Ser. No. 157,005

Int. Cl. C23g *1/14, 1/28*

U.S. Cl. 134—2 **7 Claims**

Process for descaling high chromium alloy members in which the scaled alloy members are first provided with a coating of sodium carbonate and then heated to obtain a reaction between the coating and the scale. The reaction product is readily removed from the members, as by rinsing in water, for example, and the remaining scale may then be removed by conventional means, i.e., an acid pickling bath.

3,778,310

HIGH ENERGY DENSITY BATTERY HAVING UNSATURATED HETEROCYCLIC SOLVENT CONTAINING ELECTROLYTE

Bruce Hollis Garth, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,415, Feb. 3, 1971. This application May 1, 1972, Ser. No. 249,049

Int. Cl. H01m *11/00*

U.S. Cl. 136—100 R **9 Claims**

High energy density galvanic batteries having high utilization of active electrode material with low gas production can be prepared using voltaic cells having an anode of one of the light metals of Groups I–A or II–A of the Periodic Table, a compatible metal cathode and an electrolyte containing a solvent component consisting essentially of a mixture of from 5 to about 80% by weight of a five membered unsaturated heterocyclic hydrocarbon compound and complementally from 95 to about 20% by weight of a saturated ether and a dissolved salt having the formulas $MM'F_6$, MSCN or $MClO_4$ where M is Li, Na, or K and M' is P, As or Sb.

3,778,311

FOIL FOR GAS DIFFUSION ELECTRODES FOR ELECTROCHEMICAL CELLS AND PROCESS OF MAKING THE SAME

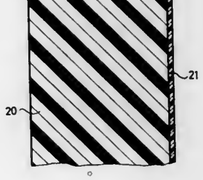
Hans Metzger, Tubingen-Lustnau, Klaus Brill, Korntal, and Friedrich Hornung, Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 9, 1972, Ser. No. 233,238

Claims priority, application Germany, Mar. 31, 1971, P 21 15 618.3

Int. Cl. H01m *13/00*

U.S. Cl. 136—120 FC **5 Claims**



An air-permeable, electrolyte-impermeable composite foil for self-breathing gas diffusion electrodes for use in electrochemical cells and in particular fuel cells, comprises a rigid sintered carrier foil of a fluorine-containing polymeric compound and, firmly bonded thereto, a non-sintered microporous layer of a fluorine containing polymeric compound. The foil is of light weight, thin and mechanically stable and thus forms an excellent support for a catalyst coating.

3,778,312

SOLAR CELL GENERATOR FOR FLIGHT MISSIONS IN THE VICINITY OF THE SUN

Siegfried Karius, Wedel, Holstein, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Jan. 22, 1969, Ser. No. 793,061

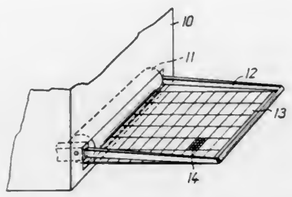
Claims priority, application Germany, Jan. 22, 1968, P 16 39 298.6

Int. Cl. H01l *15/02*

U.S. Cl. 136—89 **6 Claims**

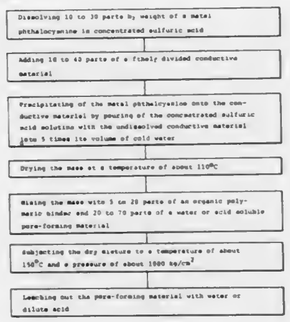
A solar cell generator for use in spacecraft for missions in the vicinity of the sun. The generator includes a

support carrying a field of solar cells which are bounded by a leading end region and a trailing end region. The support is movable relative to the spacecraft between a retracted position, in which the field of solar cells is out of the path of solar radiation, and an exposed position wherein the field of solar cells is exposed to the solar radiation. The support is capable of occupying intermediate positions, in each of which the leading end region of the field of solar cells and a portion of the field are exposed. The field of solar cells is covered by means for



filtering the solar radiation. This filtering means has its minimum radiation permeability at the leading end region of the field and its maximum radiation permeability at the trailing end region, the radiation permeability thus increasing from the leading end to the trailing end region. The solar cell generator finally includes a device responsive to the amount of radiation striking the solar cells for moving the support between the retracted and the exposed positions to maintain a constant output from the field of solar cells.

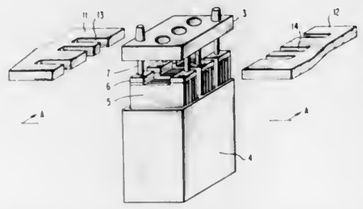
3,778,313
METHOD OF MAKING AN OXYGEN ELECTRODE FOR FUEL CELLS
Harald Reber, Stuttgart-Feuerbach, Horst Jahnke, Gerlingen, and Walter Steiner, Stuttgart, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Original application Oct. 23, 1967, Ser. No. 677,179, now abandoned. Divided and this application Mar. 3, 1971, Ser. No. 120,615
Claims priority, application Germany, Oct. 25, 1966, B 89,549
Int. Cl. H01m *13/00*
U.S. Cl. 136—120 FC **8 Claims**



The oxygen electrode for use in a fuel cell is formed by dissolving 10 to 30 parts by weight of a metal phthalocyanine in concentrated sulfuric acid, adding 10 to 40 parts of a finely divided conductive material and causing precipitation of the solute onto the conductive material, drying the mass and mixing it with 5 to 20 parts of a binder and 20 to 70 parts of a pore-forming material and subjecting the dry mixture to heat and pressure followed by removal of the pore-forming material.

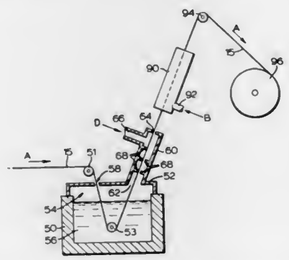
The electrode is acid resistant and can therefore be used in fuel cells operated with acidic electrolytes.

3,778,314
METHOD FOR JOINING COVER AND CASING OF A BATTERY
Seizo Kano, Uji, and Shinsaku Tanaka, Yoshiaki Mizoi, and Kenji Ojima, Kyoto, Japan, assignors to Japan Storage Battery Co., Ltd., Minami-ku, Kyoto-shi, Japan
Filed June 14, 1972, Ser. No. 262,881
Int. Cl. H01m *1/02*
U.S. Cl. 136—176 **5 Claims**



A method for joining the cover to the casing of a battery of a type wherein the cover and the casing are made of a thermo-plastic material and poles and connecting bars are embedded beforehand in the cover, involves the steps of elevating the cover a predetermined distance from said casing, inserting a plurality of comb-shaped heating plates having a plurality of slots, between the cover and the casing in such a manner that the poles are accommodated in the slots, depressing the cover so that required portions on the cover and casing are brought into contact with the heating plates, removing the heating plates, and depressing the cover against the casing so that the required portions of the cover and the casing are thereby bonded together completely.

3,778,315
COATING PROCESS
Philip P. Booker, Burlington, Ontario, and Richard Zeliznak, Thorold, Ontario, Canada, assignors to Cominco Ltd., Montreal, Quebec, Canada
Filed May 24, 1971, Ser. No. 146,107
Claims priority, application Canada, June 11, 1970, 85,200
Int. Cl. C23f *7/02*
U.S. Cl. 148—6.3 **8 Claims**



A process for the production of coloured coatings on articles coated with a carrier metal of zinc, tin or lead-tin alloys having an oxygen-avid additive alloyed therewith, by oxidation of the said carrier metals to form an oxide film having discernible light interference colour effects. The oxide film thickness is controlled to produce desired colour effects such as by heating the coating during oxidation, by avoiding contact with preformed oxides and by pretreating articles to be coated to remove deleterious oxidizable elements, particularly in the operation of a continuous process.

3,778,316
METHOD FOR PRODUCING STAINLESS STEEL
Kenneth E. Pinnow, Jayendra M. Mehta, and Arthur Moskowitz, Pittsburgh, Pa., assignors to Crucible Steel Corporation, Pittsburgh, Pa.
No Drawing. Filed May 28, 1968, Ser. No. 732,542
Int. Cl. C22f *1/04*
U.S. Cl. 148—12 **2 Claims**

This invention relates to a stainless steel and a method for producing the same, whereby material particularly adapted for use in structural applications such as the manufacture of cargo boxes is achieved. Specifically, the material is characterized by an improved combination of strength and toughness that is achieved by producing hot-band material having a substantially martensitic microstructure of a composition consisting of .10 max. percent carbon, 2 max. percent manganese, 1 max. percent nickel, 9.5 to 13.5 percent chromium, and the balance iron. This material has a maximum titanium to carbon ratio of about 8. With titanium to carbon ratios of between 4 to 8, nickel must be present within the range of .5 to 1 percent. For optimum weld-toughness the maximum titanium to carbon ratio is about 4, either with or without nickel. To achieve the desired combination of strength and toughness, the material in hot-band gage is annealed for a time at temperature to achieve a hardness of at least 80 R_b and preferably 82 to 92 R_b.

3,778,317
METHOD FOR HEAT TREATMENT OF A THICK STEEL PLATE
Seinosuke Yano, Kitakyushu, Hiroshi Sakurai, Kawasaki, Nobuo Wakita, Inagi, and Hiroshi Mimura, Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Dec. 29, 1971, Ser. No. 213,413
Claims priority, application Japan, Dec. 31, 1970, 46/123,752
Int. Cl. C21d *7/14*
U.S. Cl. 148—12 **4 Claims**

A method of heat treatment of a thick steel plate characterized in that a steel plate after hot rolling is cooled, directly from its finishing temperature or after cooling to an optional temperature below the Ar_1 transformation point is reheated to austenitize, and then cooled slowly at a cooling rate of less than 20° C. per minute in the range between the Ac_3 and Ar_3 transformation points, and is then hardened by a usual method.

3,778,318
COPPER BASE COMPOSITION
Walter L. Finlay, New York, N.Y., and Henry J. Fisher, Wellesley Hills, and Donald A. Hay, Medfield, Mass., assignors to Cooper Range Company, New York, N.Y.
Original application Feb. 24, 1969, Ser. No. 802,330, now Patent No. 3,677,745. Divided and this application June 7, 1972, Ser. No. 260,379
Int. Cl. C22c *9/00*; C22f *1/08*
U.S. Cl. 148—12.7 **11 Claims**

A copper-magnesium-phosphorous alloy (optionally containing silver and/or cadmium) wherein the magnesium is present in amounts from 0.01 to 5.0 weight percent, the phosphorous from .002 to 4.25 weight percent with copper making up the remainder. When silver or cadmium are employed, they are employed in amounts of from 0.02 to 0.2 weight percent and from 0.01 to 2.0 weight percent, respectively. These alloys have unexpectedly good combinations of mechanical heat resistance and conductivity properties.

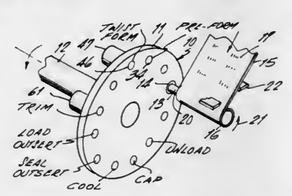
3,778,319
HIGH-ENERGY PLASTIC-BONDED EXPLOSIVE
Theodore M. Benziger, Santa Fe, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Jan. 30, 1973, Ser. No. 327,898
Int. Cl. C06b *15/02*
U.S. Cl. 149—92 **1 Claim**

A high-energy, plastic-bonded explosive of the nominal composition 95 wt. percent HMX, 2.5 wt. percent Estane, and 2.5 wt. percent DNPAF having improved temperature stability and significantly better handling safety than standard plastic-bonded explosives.

3,778,320
NON-POLLUTING DISPOSAL OF EXPLOSIVES AND PROPELLANTS
Samuel J. Yosim, Woodland Hills, LeRoy F. Grantham, Calabasas, and Donald A. Huber, Canoga Park, Calif., assignors to Rockwell International Corporation
No Drawing. Filed June 20, 1972, Ser. No. 264,680
Int. Cl. C06b *1/04*
U.S. Cl. 149—109 **14 Claims**

Unwanted explosives and propellants are destroyed in a safe non-polluting manner by being contacted with a hot molten salt containing as essential reactive component alkali metal carbonate or hydroxide or mixtures thereof. Some of the resulting decomposition products that would ordinarily be released as atmospheric pollutants react with or are retained in the melt. Any combustible matter present in the melt may be further reacted by use of oxidative molten salts alone or in combination with oxygen added to the melt. Formed gaseous products may be treated in a second reaction zone to complete oxidation of any combustible matter present before discharge of the gases to the atmosphere. The reactive component of the treated melt may be regenerated, or the melt may be disposed of, preferably by reaction with lime in an aqueous or molten medium to form a water-insoluble calcium salt residue. Particularly effective and preferred reactive molten salts are the NaOH-KOH and Li_2CO_3-Na_2CO_3-K_2CO_3 eutectic mixtures.

3,778,321
APPARATUS FOR MAKING ROLLED COLLAPSIBLE CONTAINER HAVING PLASTIC OUTSERT
Joseph L. Abbott, Loveland, Ohio, assignor to Victor Metal Products Corporation, Cincinnati, Ohio
Filed Oct. 14, 1971, Ser. No. 189,083
Int. Cl. B29c *27/00*; B65b *7/14*
U.S. Cl. 156—446 **16 Claims**

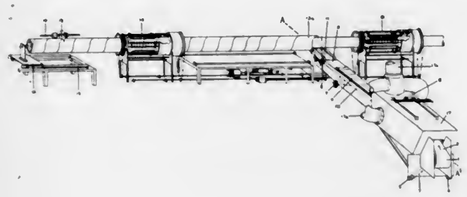


A collapsible container body is formed by sealing the longitudinal margins of a rolled length of a thin sheet of suitable material. One end of the container body is preformed and then folded into a shoulder and neck configuration. An outsert having the desired shape is slipped over the formed end of the container and secured thereto. A wide variety of container shapes can be formed using simplified apparatus.

3,778,322
PROCESS OF FORMING SPIRALLY WOUND PRODUCT

Donald George Keith, Mount Eliza, Victoria, Australia, Douglas Barrett Morris, Manley, England, Horst Egon Fred Ludwig Maack, Horgen, Switzerland, and Ernest Arthur Mason, Frodsham, and Robert John Woolgar, Northwich, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 22, 1971, Ser. No. 117,457
Claims priority, application Great Britain, Feb. 23, 1970, 8,478/70
Int. Cl. B65h *81/00*
U.S. Cl. 156—187 13 Claims

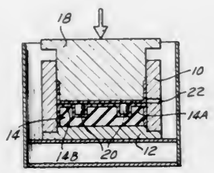


Process and apparatus for producing spirally wound products. The process comprises advancing a tubular or rod-like workpiece along its longitudinal axis while rotating it about the axis, by positive drive feeding a flexible ribbon tangentially to the rotating advancing workpiece at a preselected rate and preselected angle of less than 90° to the longitudinal axis thereof such that the resultant spiral ribbon windings form a sheath enveloping a greater cross-sectional area than that of the workpiece, providing a filling material in the space between the workpiece and the spiral ribbon windings and bonding the spiral ribbon windings together or to the workpiece or both.

3,778,323
METHOD OF MAKING A MOLD SECTION

Richard Posner, East Northport, N.Y., assignor to Creative Polymer Products Corp., Long Island City, N.Y.

Continuation-in-part of application Ser. No. 784,998, Nov. 25, 1968, now Patent No. 3,600,489. This application June 14, 1971, Ser. No. 152,810
The portion of the term of the patent subsequent to Aug. 16, 1988, has been disclaimed
Int. Cl. B29c *1/04;* B32b *31/00*
U.S. Cl. 156—212 8 Claims

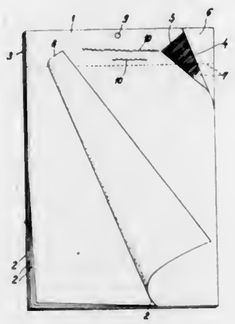


A mold section is made by covering one surface of a slab of polymerizable material which flows under pressure with a sheet of plastic barrier material. A pattern is then placed on this so-covered surface. A compressive force and heat are applied to the slab which is then polymerized with the sheet bonded thereto.

3,778,324
PAD OF STACKED DETACHABLE SHEETS, AND METHOD AND ELEMENTS FOR MANUFACTURING THE SAME

Jean Lavigne, 57 Avenue Port-Royal des Champs, 78 Le Mesnil-Saint-Denis, France

Continuation-in-part of abandoned application Ser. No. 888,481, Dec. 29, 1969. This application Mar. 17, 1971, Ser. No. 125,068
Claims priority, application France, Dec. 30, 1968, 181,591; Mar. 19, 1970, 7009820
Int. Cl. B32b *7/14, 31/00*
U.S. Cl. 156—257 3 Claims



A new pad having a rigid stub and stacked detachable sheets is made by interposing between any two adjacent sheets at least one film of heat-activable glue, heating said stub portion to the activating temperature of said glue, applying pressure on said stub portion maintained at said temperature, then cooling the assembly at room temperature.

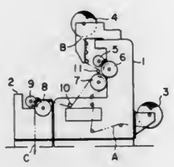
When the sheets are to be printed, the film of glue can preferably be replaced by a printing coating on a face of the stub of the said sheets, with a thermogluing ink.

This new pad can advantageously be used as a calendar.

3,778,325
METHOD OF MANUFACTURING ARTIFICIAL LEATHER

Saburo Oohara, Kyoto, Koitsuro Amemiya, Osaka, Yasushi Nishijima, Hirakata, Mitsuyoshi Fukushima, Tondabayashi, and Kunio Shimizu, Settsu, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Original application Aug. 11, 1970, Ser. No. 62,947, now Patent No. 3,677,871. Divided and this application Feb. 17, 1972, Ser. No. 226,573
Int. Cl. B32b *31/24*
U.S. Cl. 156—278 11 Claims

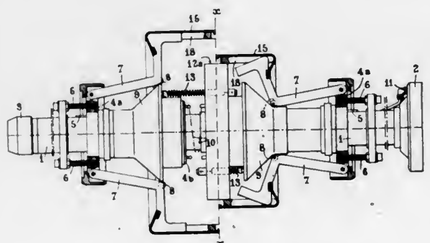


Natural leather-like sheet materials of homogeneous microporous structure having high bending strength and excellent moisture-permeability and abrasion resistance, which are composed of four layers: a substrate layer of non-woven fabric finished with a synthetic butadienic rubber; a woven fabric layer; a microporous adhesive layer consisting of a specific polyurethane and conjoining the above-mentioned two layer; and a microporous grain layer consisting of another specific polyurethane which has a dynamic modulus of elasticity higher than that of the adhesive layer and covers uniformly the top surface of the woven fabric layer. An improved process for manufacturing such sheet materials, which comprises setting a woven fabric superimposed on a substrate, simultaneously with coagulating a grain layer polyurethane resin laid on the woven fabric, and an apparatus employed therefor are also proposed.

3,778,326
TIRE-MAKING DRUM

Georges Gazuit, Chemin Chauveau, 03 Montlucon, France

Filed June 21, 1971, Ser. No. 154,987
Claims priority, application France, Jan. 26, 1971, 7102503
Int. Cl. B29h *17/16*
U.S. Cl. 156—417 4 Claims



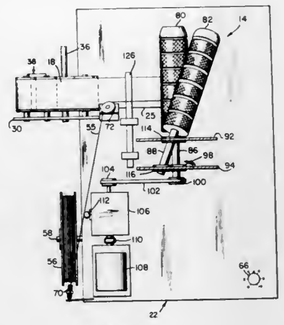
This tire-making drum intended notably for machines of the type utilized for making conventional or radial-ply heavy truck tires comprises on either side an assembly surrounding an axial spindle, each assembly comprising an annular sleeve rigid with the spindle and formed with end radial extensions forming with said sleeve and an annular cam member slidably mounted on said sleeve a variable-capacity chamber connected to a source of fluid under pressure. One extension of said sleeve is strap-shaped and has pivoted thereon a double-crank lever carrying on its first elbow a roller engaging a tapered outer face of said annular cam member, all the outermost rectilinear segments of the two opposite sets of levers are covered by a resilient membrane reinforced by inner blades and transverse members. Spring means urge the annular members symmetrically towards each other and towards the median plane of the drum. When these annular cam members are in their innermost position, i.e. close to said median plane, said chambers have zero capacity and the membrane has its maximum diameter; introducing pressure fluid into these chambers will move the annular cam members to their outermost position in which the membrane has its smallest diameter. The members reinforcing said resilient membrane are adapted to engage corresponding grooves formed in the outer surfaces of said outermost rectilinear segments of the double-crank levers.

3,778,327
FLEXIBLE TUBING MANUFACTURING MACHINE

Wayne K. Fairchild, Santa Ana, Calif., assignor to Automation Industries, Inc., Century City, Los Angeles, Calif.

Filed Mar. 5, 1971, Ser. No. 121,419
Int. Cl. B31c *3/00*
U.S. Cl. 156—425 7 Claims

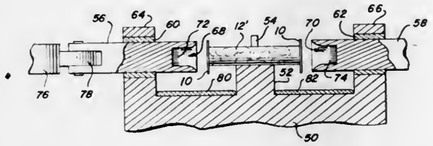
A machine is disclosed herein which is particularly adapted for continuously making an indefinite length of flexible ducting. The machine includes a mandrel upon which an indefinite length of a tape or strip of flexible material and an indefinite length of a flexible spiral spring are wound and bonded together to form the duct. The mandrel includes a pair of cylindrical rollers which are rotatably positioned adjacent each other with their axes skew. As the strips of flexible material and spring are continuously wrapped around the rollers and bonded together, they advance axially along the rollers whereby a flexible duct is continuously produced.



3,778,328
METHOD FOR MANUFACTURING JET IMPINGEMENT TYPE FILTERS FOR SMOKING ARTICLES

Hoyt S. Beard, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 13, 1971, Ser. No. 171,700
Int. Cl. A24c *5/50;* B31d *5/00*
U.S. Cl. 156—215 4 Claims



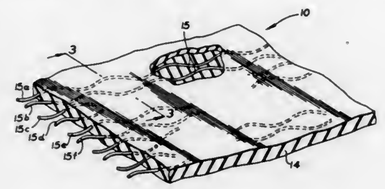
This improved process and apparatus for manufacturing jet impingement type filters for smoking articles utilizes a substantially air impervious sheet material and a rod of smoke pervious filter material. A tab of the sheet material is positioned over the end of the rod of filter material with peripheral areas of the tab extending radially outwardly from the longitudinal surface of the rod. The peripheral areas are folded over the end of the rod so as to form a cup-like enclosure or cap and are secured to the surface of the rod, preferably by a heat-activatable, pressure-sensitive adhesive which is precoated on the sheet material. Smoke passing perforations are provided in the sheet material and function, in the finished combination when smoked, as accelerating jets or orifices for the smoke which impinges on the pervious filter material.

The preferred apparatus for assembling the filter comprises a female die, means for successively aligning filter rods adjacent the opening therein with tabs of the sheet material therebetween and means for effecting relative reciprocal movement whereby the female die caps the tabs over the filter ends. The resulting filter plug is then disposed in gaseous communication with a smokable material such as a cigarette rod by, for example, an overwrap of conventional tipping paper.

3,778,329
REINFORCED TIRE FABRIC OF HELICALLY FORMED, LATERALLY SPACED, SINGLE FILAMENT WIRES

Sterling W. Alderfer, Akron, Ohio, assignor to The Steelastic Company, Akron, Ohio

Original application Jan. 6, 1970, Ser. No. 858, now Patent No. 3,682,222. Divided and this application Apr. 22, 1971, Ser. No. 136,479
Int. Cl. B29h *17/28;* **B60c** *9/16*
U.S. Cl. 161—47 **6 Claims**

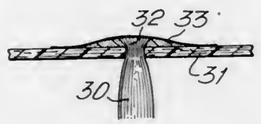


A reinforced tire fabric comprising an elastomeric body portion in which a plurality of helically formed, single filament wires constitute the reinforcing. The helix delineated by each reinforcing wire has a relatively long lay and the diameter thereof is preferably no greater than three times the diameter of the wire itself. The wire filaments may be cold formed into their respective helices by being drawn through relatively rotatable orifice means—adjacent filaments preferably being opposite hand—and encapsulated into a continuously extruded ribbon that is manipulated and appropriately severed to form the fabric. The ribbon may be wound into an annulus that is subsequently slit into a ply strip, or successive lengths of the ribbon may be joined into a ply strip. By either approach the bias of the reinforcing filaments in the finished tire may be preselected.

3,778,330
TUFTED CARPET

Stanley Shorrock, "The Braids," Billinge End Road, Blackburn, England

Filed Dec. 15, 1971, Ser. No. 208,381
Claims priority, application Great Britain, Dec. 31, 1970, 62,093/70
Int. Cl. D03d *27/00*
U.S. Cl. 161—67 **1 Claim**



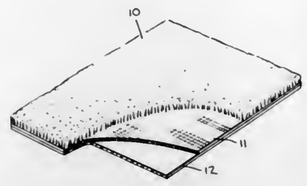
A process for making a tufted carpet in which cylindrical tufts of pile yarn are inserted in a backing fabric so that long ends project on one side to form a pile, and short ends project on the other side. The filaments of the short ends are splayed apart and fixed to the backing fabric with an adhesive.

3,778,331
STATIC-CHARGE RESISTANT SYNTHETIC YARNS

Walter G. Scharf, Forge Hollow, Lakeville, Conn. 06039

Filed Oct. 6, 1971, Ser. No. 187,082
Int. Cl. A47g *27/02;* **B32b** *15/08, 27/34*
U.S. Cl. 161—67 **6 Claims**

A static-charge resistant yarn constituted by a non-woven permeable paper ribbon whose faces are vacuum-plated with tin or other non-oxidizing metal that impregnates the paper to create, a non-reflective, electrically conductive, static discharge path. The paper ribbon preferably formed of non-woven nylon fibers, is twisted,



texturized or wrapped about a filamentary core to form a metallized textile yarn which is intermixed with conventional yarns and woven, tufted or other wise processed to create textile fabrics for clothing and coverings or for carpets and rugs.

ERRATUM

For Class 161—87 see:
Patent No. 3,778,241

3,778,332
HYDROPHILIC-POROMERIC FOAM

Eugene B. Butler, Kent, Ivan A. Fak, Munroe Falls, and Lawrence L. Line, Kent, Ohio, assignors to The General Tire & Rubber Company

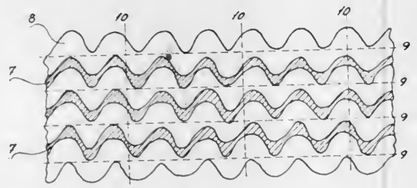
No Drawing. Original application June 1, 1970, Ser. No. 42,592, now Patent No. 3,644,229. Divided and this application July 28, 1971, Ser. No. 167,018
Int. Cl. B32b *3/26, 5/18*
U.S. Cl. 161—159 **3 Claims**

This invention is a hydrophilic and poromeric foam made by a unique process that is adapted to be made into a synthetic leather-like material having many of the desirable aesthetic and physical properties of natural leather and, in addition, is made from relatively inexpensive materials.

3,778,333
MICROPLEATED COMPOSITE FIBROUS PRODUCT

Ole-Bendt Rasmussen, Copenhagen, Denmark (7 Topstykket, 3460 Birkerod, Denmark)

Continuation-in-part of abandoned application Ser. No. 751,205, Aug. 8, 1968. This application May 27, 1971, Ser. No. 147,496
Claims priority, application Great Britain, Aug. 9, 1967, 36,531/67
Int. Cl. B32b *3/28, 5/02*
U.S. Cl. 161—169 **10 Claims**



Filaments, fibres and fibre-like structures consisting of thin ribbon-like layers formed of different polymeric materials and transversely pleated with the spacing between adjacent pleats being up to about 100μ. To make

an intermediate product, a sandwich-like structure having microscopically thin layers is simultaneously compressed in one direction in the plane of the layers and expanded perpendicularly thereto, also in the plane of the layers under conditions at which the materials of the layers are in states of different fluidity. The intermediate product is subjected to splitting action to form the final product.

3,778,334
HIGH MODULUS ORGANIC FIBER LAYERS ALTERNATING WITH INORGANIC FIBER LAYERS IN A RESIN MATRIX

Donald L. G. Sturgeon, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 20, 1971, Ser. No. 135,800
Int. Cl. B32b *5/12, 5/28*
U.S. Cl. 161—156 **7 Claims**

Fibrous reinforced resin composites comprising high modulus organic fibers and inorganic fibrous materials in specified proportions demonstrate surprising increases in a structural property above those predicted by the Rule of Mixtures.

3,778,335
SODIUM ALUMINOSILICATE GLASS ARTICLE STRENGTHENED BY A SURFACE COMPRESSIVE STRESS LAYER

David C. Boyd, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,345
Int. Cl. B32b *33/00*
U.S. Cl. 161—164 **4 Claims**

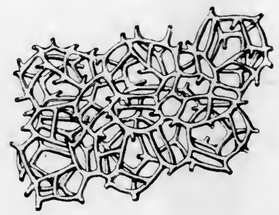
Improved glass compositions are described for a sodium aluminosilicate glass article having a surface compressive stress layer that strengthens the article. The surface compressive stress layer is chemically developed by an ion exchange in which a relatively large monovalent ion is introduced into the surface of the glass article in exchange for the sodium ion at a temperature below the strain point of the glass. The improved compositions provide glasses having unusual liquidus characteristics, and consist essentially, on an oxide basis in mole percent, of 5–25% Na_2O, 1–5% MgO, an amount of ZrO_2 effective to improve chemical durability of the strengthened glass but not over 3%, at least 8% Al_2O_3, the total ZrO_2 plus Al_2O_3 being not over 13.5%, and the balance essentially silica.

3,778,336
HEAT RESISTANT AND OXIDATION RESISTANT STRUCTURES

Whitney R. Adams, Northshire, Wilmington, Del., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation of abandoned application Ser. No. 488,019, Sept. 17, 1965. This application May 8, 1969, Ser. No. 824,751
Int. Cl. B32b *3/12*
U.S. Cl. 161—168 **18 Claims**

Porous cellular structures comprised of an infusible resin, which may or may not be pyrolyzed or carbonized wholly or in part, and which may be a coating upon a skeletal structure which is the pyrolyzed product of the material comprising an original structure, the infusible resin having a coating thereon of a suitable heat-resistant and oxidation-resistant resin which may be either thermoplastic or thermosetting. A method for treating cellular structures to form the above structures from materials which fuse or melt at relatively low temperatures, that is, below about 400° F. such that the finally evolved product will assume substantially the same physical or structural shape of the relatively low fusion temperature material and yet will provide a structure which is relatively stable and possess greater strength at higher temperatures, that is, on the order of 700° F. or higher. In the method, a first basic structure having a desired configuration and comprised of material having a low fusion or deterioration temperature is coated at even lower temperatures with an infusible resin which is capable of being cured at a temperature lower than the relatively low fusion or deterioration temperature of the material comprising the first basic structure. The resulting coated structure is then subjected to elevated temperatures so that the basic structure is pyrolyzed and carbonized leaving a stronger, high-

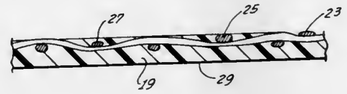


temperature-resistant structure substantially in the image of said first basic structure. The above structure is then coated with any one of a number of high temperature-oxidation-resistant organic resins having a fusion temperature and a viscosity such that they will adhere to a structure and maintain an integral oxidation-resistant coating at temperatures of up to 700° F. and even higher.

3,778,337
DECORATIVE WALL COVERING

Emery M. Mand and Henry C. Shapiro, Los Angeles, Calif., assignors to California Weavers, Inc., Los Angeles, Calif.

Filed July 22, 1971, Ser. No. 165,269
Int. Cl. B32b *3/26, 5/18*
U.S. Cl. 161—95 **7 Claims**



A decorative wall covering including a woven material such as jute having strands therein of different and varying thicknesses. A fire-retardant foam backing is bonded to the woven material and penetrates the weave to varying depth, depending upon the thickness of the strands at any given location.

3,778,338
TOUGHENED GLASS

David Duncan Murphy, Leamington Spa, and David George Giddings, Stourbridge, England, assignors to Pilkington Brothers Limited, Liverpool, England

No Drawing. Original application Dec. 30, 1969, Ser. No. 889,340, now Patent No. 3,679,388. Divided and this application Feb. 9, 1972, Ser. No. 224,944
Int. Cl. C03b *27/00;* **B32b** *17/10*
U.S. Cl. 161—192 **8 Claims**

A toughened glass article, in particular a sheet of soda-lime-silica glass of thickness in the range 4 mm. to 12 mm. has a central tensile stress in the range 500 kg./cm.^{2} to 1200 kg./cm.^{2} and a stress ratio of surface compressive stress to central tensile stress in the range 2:1

to 4:1. A toughened glass sheet may be embodied in a laminated assembly for example an aircraft windscreen assembly.

3,778,339

PAPER CONTAINING A POLYAMIDEPOLYAMINE-EPICHLOROHYDRIN WET STRENGTH RESIN

Laurence Lyman Williams, Stamford, and Anthony Thomas Coscia, South Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Oct. 12, 1970, Ser. No. 80,181. Divided and this application Apr. 14, 1972, Ser. No. 244,313

Int. Cl. D21h *3/58*

U.S. Cl. 162—164 **2 Claims**

Water-soluble cationic thermosetting polyamidepolyamine-epichlorohydrin resins containing phenylene linkages are prepared by reacting ⅓ to ¾ mol of a nonorthophthalic acid with 1 mol of a water-soluble polyalkylenepolyamine, reacting the resulting monomeric phthalamide with ⅔ to ¼ mol of a C_3–C_{10} saturated aliphatic dicarboxylic acid to form a chain polymer (the total amount of the acids being ¾ to 5/4 mol per mol of the polyamine), and rendering the chain polymer thermosetting by reaction with epichlorohydrin. The polymers are wet strength resins for paper.

3,778,340

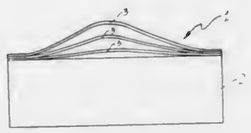
INSULATING DEVICES FOR AUTOMOBILE MANIFOLDS AND METHODS OF MAKING AND USING THE SAME

William H. McNiff, 9858 Valley Drive, St. Louis, Mo. 63137

Filed Sept. 17, 1971, Ser. No. 181,301

Int. Cl. B32b *15/20, 17/06;* **F01n** *7/10*

U.S. Cl. 161—39 **3 Claims**



The present invention relates to an insulating device for use on automobile manifolds and the like which may be manually installed without fasteners comprising base means composed of a suitable flexible insulating material and a plurality of elongated aluminum foil backing strips operably fastened at opposite extremities of said base means.

ERRATUM

For Class 162—164 see:
Patent No. 3,778,339

3,778,341

NONWOVEN TEXTILE FABRICS AND METHODS OF MAKING THE SAME

Charles H. Plummer, Princeton, and Donald V. Skistimas, Milltown, N.J., assignors to Johnson & Johnson

Filed Mar. 17, 1971, Ser. No. 125,034

Int. Cl. D21f *11/04*

U.S. Cl. 162—125 **21 Claims**

A nonwoven textile fabric having excellent softness, drape, and hand, as well as excellent tensile, burst, and tear strengths and stitch-like qualities of comprising: (1) a relatively flat, sheet-like fibrous portion of overlapping and intersecting structural textile fibers having an average length of from about ¼ inch to about 1¼ inches or more, in which structural fibrous portion there may be included relatively short fibers having an average length of from about ⅛ inch to about 1/25 inch or less; and (2) a relatively flat, sheet-like fibrous portion of relatively short fibers having an average length of from about ⅛ inch to about 1/25 inch or less, the individual fibers of each fibrous portion, as well as the fibrous portions themselves, being adhered and bonded to each other by interfiber entanglement and by discrete resin binder materials

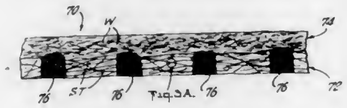


Fig. 3A.

adhered to the individual fibers thereof, the individual fibers of the structural fibrous portion being additionally bonded to each other by an intermittent print pattern of discrete synthetic resin binder areas, whereby a nonwoven textile fabric is obtained having excellent softness, drape and hand, as well as excellent tensile, burst, and tear strengths and stitch-tear qualities. Methods of making such nonwoven textile fabrics and particularly methods involving the use of wet-forming manufacturing techniques are also included.

3,778,342

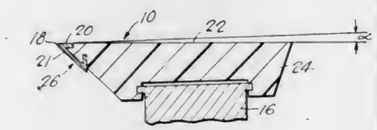
WEAR RESISTANT OUTSERT FOR A PAPER MACHINE FOIL

Fernand Armand Charbonneau, Brossard, Quebec, Canada, assignor to JWI Ltd., Montreal, Quebec, Canada

Filed Apr. 12, 1971, Ser. No. 133,020

Int. Cl. D21f *1/48*

U.S. Cl. 162—352 **22 Claims**



A paper machine foil having a wear resistant outsert releasably yet securely positioned thereon to form the supporting surface, doctoring surface and leading edge of the foil. The leading edge of the outsert is formed by a small radius of curve and a wear resistant coating is applied to the supporting surface, the leading edge and a portion of the doctoring surface of the outsert.

3,778,343

DEVICE FOR PLASMA CONFINEMENT AND HEATING BY HIGH CURRENTS AND NON-CLASSICAL PLASMA TRANSPORT PROPERTIES

Bruno Coppi, Winchester, and Donald B. Montgomery, Wayland, Mass., assignors to the United States of America as represented by the United States Atomic Energy Commission

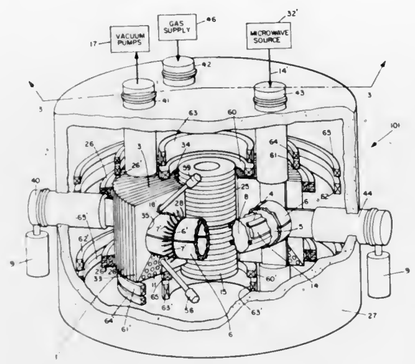
Filed Mar. 11, 1971, Ser. No. 123,319

Int. Cl. G21b *1/00*

U.S. Cl. 176—3 **11 Claims**

Toroidal plasma containment device having means for inducing high total plasma currents and current densities

and at the same time enhanced plasma heating, strong magnetic confinement, high energy density containment,



magnetic modulation, microwave-induced heating, and diagnostic accessibility.

3,778,344

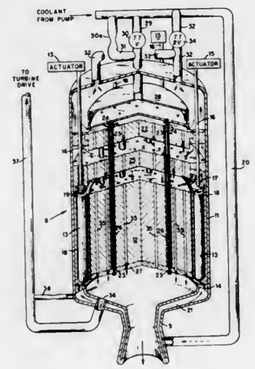
NUCLEAR ENGINE FLOW REACTIVITY SHIM CONTROL

Joseph M. Walsh, Pittsburgh, Pa., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 21, 1968, Ser. No. 715,132

Int. Cl. G21c *7/28*

U.S. Cl. 176—22 **15 Claims**



A nuclear engine control system is provided which automatically compensates for reactor reactivity uncertainties at the start of life and reactivity losses due to core corrosion during the reactor life in gas-cooled reactors. The coolant gas flow is varied automatically by means of specially provided control apparatus so that the reactor control drums maintain a predetermined steady state position throughout the reactor life. This permits the reactor to be designed for a constant drum position and results in a desirable, relatively flat temperature profile across the core.

3,778,345

DEVICE FOR ENGAGING AND DISENGAGING PINION AND RACK IN DRIVE OF NUCLEAR REACTOR REGULATING ELEMENT

Boris Arkadievich Maslenok, Kolpino, ulitsa V. Slutskoi 34, kv. 40; Viktor Grigorievich Zlobin, Kolpino, ulitsa V. Slutskoi 38, kv. 223; Anatoly Sergeevich Khegai, Kolpino, ulitsa Vokzalnaya 11, kv. 10; Vladimir Petrovich Nikolaev, Kolpino, ulitsa Proletarskaya 58, kv. 91; and Evgeny Adolfovich Krjuger, Zanevsky prospekt 51, kv. 12, all of Leningrad, U.S.S.R.

Filed Mar. 31, 1972 Ser. No. 240,078

Int. Cl. G21c *7/12*

U.S. Cl. 176—36 R **1 Claim**



The invention relates to a device for engaging and disengaging the pinion and rack in the drive of a nuclear reactor regulating element.

The device according to the invention is characterized in that the electromagnet which engages the pinion with, and disengages it from, the rack is installed coaxially with the rack axis whereas the swinging balance arm carrying the pinion is connected with the electromagnet core by articulated rods set at an acute angle to the rack axis.

This simplifies the drive of the regulating element, reduces the lateral dimensions of the drive and cuts down the time elapsing from the moment of receiving the signal for the movement of the regulating element in the reactor zone to the beginning of its movement both under the regulating and emergency protection conditions.

3,778,346

NUCLEAR POWER STATION

Oskar Profos, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Sept. 16, 1968, Ser. No. 762,185

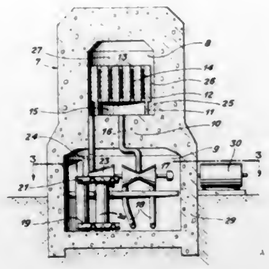
Claims priority, application Switzerland, Sept. 29, 1967, 13,103/67

Int. Cl. G21c *13/10*

U.S. Cl. 176—60 **7 Claims**

The nuclear power station is constructed to house the reactor pressure vessel above the machine room ceiling

with the ceiling being of a thin thickness. Should a leak of working medium occur in the machine room, the pressure on the ceiling of the machine room is counterbalanced by the weight of the reactor.



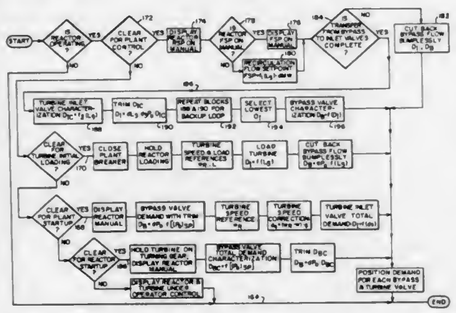
3,778,347
METHOD AND SYSTEM FOR OPERATING A BOILING WATER REACTOR-STEAM TURBINE PLANT PREFERABLY UNDER DIGITAL COMPUTER CONTROL

Theodore C. Giras, 336 Sharon Drive, Pittsburgh, Pa. 15221, and Leaman B. Podolsky, 714 W. 38th St., Wilmington, Del. 19802

Continuation of abandoned application Ser. No. 779,091, Nov. 26, 1968. This application Sept. 27, 1971, Ser. No. 184,157

Int. Cl. G21c *7/36*

U.S. Cl. 176—24 **21 Claims**



A digital computer control system operates a boiling water nuclear reactor and a steam turbine in an electric power plant. The computer applies feedforward control to the reactor system and to the turbine inlet and bypass steam valves to meet plant load demand within throttle pressure constraints. The plant is operated by the computer in the turbine follow mode or the coordinated mode.

3,778,348
NUCLEAR FUEL ELEMENT WITH AXIALLY ALIGNED FUEL PELLETS AND FUEL MICROSPHERES THEREIN

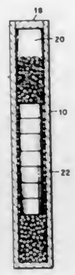
John D. Sease and Francis E. Harrington, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Continuation-in-part of application Ser. No. 115,118, Feb. 12, 1971, now Patent No. 3,683,975. This application July 3, 1972, Ser. No. 268,261

Int. Cl. G21c *3/26, 3/28*

U.S. Cl. 176—67 **2 Claims**

Elongated single- and multi-region fuel elements are prepared by replacing within a cladding container a coarse fraction of fuel material which includes plutonium and uranium in the appropriate regions of the fuel element and then infiltrating with vibration a fine-sized fraction of uranium-containing microspheres throughout all interstices in the coarse material in a single loading. The fine, rigid material defines a thin annular layer between the coarse fraction and the cladding to reduce adverse mechanical and chemical interactions.



3,778,349
PRODUCTION OF SINGLE CELL PROTEIN MATERIAL

Guy R. Carta, Blacksburg, Va., assignor to Research Corporation, New York, N.Y.

No Drawing. Filed June 7, 1971, Ser. No. 150,798

Int. Cl. C12b *1/00*

U.S. Cl. 195—33 **3 Claims**

A single cell protein material useful as an animal feed or human food supplement is prepared by culturing the microorganism *Cellulomonas cartalyticum* (ATCC No. 21681). A suitable substrate for culturing this microorganism for growth and production of the cell protein material is an aqueous cellulose-containing medium, such as papermill white water.

3,778,350
DIAGNOSTIC AGENT AND METHOD FOR DETERMINING GLUCOSE

Hans Ulrich Bergmeyer, Tutzing, Upper Bavaria, Erich Bernt, Munich, Wolfgang Gruber, Garatshausen, Felix Helmut Schmidt, Mannheim-Seckenheim, and Harald Stork, Lampertheim, Hesse, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,503

Claims priority, application Germany, Aug. 11, 1969, P 19 40 816.3

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 C **8 Claims**

Glucose is determined enzymatically with a stable diagnostic agent mixture comprising hexokinase, glucose-6-phosphate dehydrogenase, ATP, magnesium sulfate, NADP, and a buffer containing an azide.

3,778,351
AUTOMATIC BACTERIAL SPECIMEN STREAKER

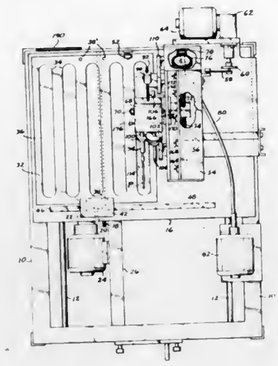
Robert J. Rosov, Springfield, Oreg., assignor to Oregon Research Institute, Eugene, Oreg.

Filed Mar. 16, 1971, Ser. No. 124,802

Int. Cl. C12k *1/10*

U.S. Cl. 195—127 **8 Claims**

A frame mounts a table for controlled movement in the longitudinal direction of a specimen plate supported on the table while a disposable pipette mounted on a subframe above the specimen plate oscillates transversely of the latter to deposit a specimen on the plate in a sinusoidal pattern. Means is provided for controlling the volume rate of delivery of specimen from the pipette to the specimen plate. Automatic means is provided for discarding each pipette after use and for producing pipettes from a supply coil of plastic tubing.



3,778,352
PLASMINOGEN ASSAY SYSTEM

Robert C. Bishop, San Gabriel, Lajos F. Fekete, Valinda, and Edward Shanbrom Santa Ana, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Continuation of abandoned application Ser. No. 764,628, Oct. 2, 1968. This application Feb. 23, 1973, Ser. No. 335,278

Int. Cl. G01n *13/00, 31/14, 33/16*

U.S. Cl. 195—99 **5 Claims**

Plasminogen in blood plasma is quantitatively determined by measuring the diameter of the clear radial diffusion zone produced by the reaction of the blood plasma with known amounts of clotted fibrinogen and plasminogen suspended in a stable gel medium.

3,778,353
REMOVING A CELL CULTURE FROM A CARRIER

Hans Muller, Im Allmendli, Erlenbach, Zurich, Switzerland

Continuation-in-part of application Ser. No. 274,063, July 21, 1972. This application Mar. 6, 1973, Ser. No. 338,509

Claims priority, application Switzerland, Aug. 13, 1971, 11,986/71; Apr. 6, 1972, 5,095/72; Apr. 28, 1972, 6,457/72

Int. Cl. C12b *1/00*

U.S. Cl. 195—105 **5 Claims**

A method of removing a cell culture from the surfaces of a spiral culture carrier located in a chamber is disclosed, according to which a slurry containing granular particles is admitted into the chamber so as to surround the spiral carrier, whereupon the spiral carrier is rotated in the slurry so as to obtain separation of the cell culture from the carrier due to frictional retardation of the cell culture.

3,778,354
USE OF COBALT IN A NONORGANIC COPPER SULFATE ELECTROPLATING BATH

Emil Toledo, Natick, Mass., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Sept. 13, 1972, Ser. No. 288,611

Int. Cl. C23b *5/34*

U.S. Cl. 204—44 **12 Claims**

An inorganic copper sulfate bath for electroplating copper is provided which contains minor quantities of cobalt.

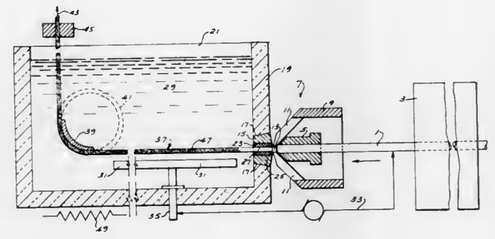
3,778,355
METALLIC COVERING OF CONTINUOUS METALLIC CORE MATERIAL

Keith N. Johnson, Cumberland, R.I., and Paul O. Hagarman, North Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 25, 1968, Ser. No. 770,678

Int. Cl. C23b *5/18, 5/58, 5/60*

U.S. Cl. 204—28 **2 Claims**



A core-forming wire, to be covered with metal, is continuously drawn first through a circumferential milling device for skin removal and then through an axially operating shaving and protective die to provide a virgin surface. From the shaving die it moves in uncontaminated condition into a bath for applying a metal cover or sheath to its surface by electroplating, hot-dipping, tinning or the like. The core is in covered condition after leaving the bath and after solidification of the sheathing material is passed through suitable finishing means.

The electroplating, hot-dipping or tinning of continuous lengths of core-forming metal for forming a different metallic coating or sheath thereon requires that the core surfaces be very clean. This is particularly true in the case of aluminum wire required to be electroplated with copper, for aluminum is extremely prone to rapid reoxidation in air after oxide removal. Such oxide acts as a contaminant interfering with application of a satisfactory metal covering. Thus the invention is particularly useful for improvedly electroplating a copper sheath on an aluminum core wire but it is also useful for other combinations of core and covering metals employing hot-dipping, tinning or the like.

3,778,356
PROCESS FOR THE ELECTROLYTIC FORMATION OF ALUMINUM COATINGS ON METALLIC SURFACES IN MOLTEN SALT BATH

Akira Miyata, Chikayoshi Tomita, and Akio Suzuki, Tokyo, and Hideyo Okubo and Masahiko Nagakuni, Kanagawa-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

No Drawing. Application Mar. 24, 1969, Ser. No. 828,049, now Patent No. 3,699,012, which is a division of application Ser. No. 507,034, Nov. 9, 1965, now Patent No. 3,480,521. Divided and this application July 6, 1970, Ser. No. 60,994

Claims priority, application Japan, Nov. 13, 1964, 39/63,827; Feb. 24, 1965, 40/10,330, 40/10,331

Int. Cl. C23b *5/22, 5/48*

U.S. Cl. 204—29 **2 Claims**

Process for coating electrolytically metallic surfaces with aluminum in a molten salt bath containing aluminum chloride. The metallic surface is coated with an inorganic aqueous solution and then is electrolytically coated in the bath. The process results in coatings of superior smoothness and bonding strength between the surfaces.

3,778,357
ELECTROLYTE AND METHOD FOR ELECTRODEPOSITING COPPER

Wolfgang Dahms and Hans-Gunther Todt, Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

No Drawing. Filed Dec. 22, 1972, Ser. No. 317,720
Claims priority, application Germany, Jan. 26, 1972, P 22 04 326.1
Int. Cl. C23b *5/20, 5/46*
U.S. Cl. 204—52 R 5 Claims

The throwing and covering power of acid copper plating electrolytes at high average current densities, particularly in the presence of brighteners and levelling agents, is improved by small amounts of ions of the formula



wherein R_1 to R_4 may be lower alkyl, halo-, amino- or hydroxy derivatives thereof, benzyl, cyanobenzyl, carb-lower-alkoxy, carb-lower-alkoxy-lower-alkyl, naphthyl-lower - alkyl, trialkyl - phosphonium-alkyl-diphenylalkyl, phenyl, cycloalkyl having 5 to 8 carbon atoms, or lower alkenyl. Additionally, R_1 and R_2 jointly with the P may constitute phosphindolinium, and R_4 may also be

$$-(CH_2)_n-Y^-$$

wherein n is an integer between 1 and 4, and Y is SO_3, SO_4, PO_4, PO_3, or CO_2.

3,778,358
ZINC PLATING SOLUTION

Kenneth Urmston Holker, Kidderminster, England, assignor to Albright & Wilson Limited, Oldbury, near Birmingham, England

No Drawing. Filed July 6, 1972, Ser. No. 269,396
Claims priority, application Great Britain, July 20, 1971, 33,891/71
Int. Cl. C23b *5/12, 5/46*
U.S. Cl. 204—55 R 15 Claims

Electrolyte solution for use in the electrodeposition of zinc comprises an aqueous solution of (A) zinc sulphamate and (B) fluoroboric acid and/or one or more soluble salts of fluoroboric acid and/or a combination of fluoroboric acid and hydrofluoric acid. Preferred solutions comprise 0.5 to 4 mols per litre zinc sulphamate and 0.01 to 0.5 mols per litre fluoroboric acid. Brightening agents, e.g. 1 to 75 gms. per litre boric acid, and levelling agents, e.g. 0.05 to 1 gm. per litre gelatin, may also be present.

3,778,359
ZINC ELECTROPLATING BATHS AND PROCESS

Francine Popescu, nee Micsunescu, 32 Rue Etienne Solet, 94 Saint Maur, Val-de-Marne, France

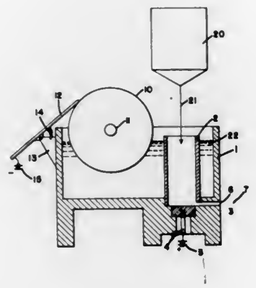
No Drawing. Continuation-in-part of application Ser. No. 105,119, Jan. 8, 1971. This application Mar. 8, 1972, Ser. No. 232,916
Int. Cl. C23b *5/12, 5/46*
U.S. Cl. 204—55 R 13 Claims

A zinc electroplating bath has a pH between 3.5 and 7.5 and; in addition to the usual zinc salts, conducting salts, buffering salts, complex forming salts; includes (a) a brightening agent of the type produced by the reaction of acetylenic alcohols with aromatic aldehydes or aromatic ketones, (b) a wetting agent of the type produced by condensation of ethylene oxide, (c) about 0.1–20 grams/liter of a monocarboxylic aromatic acid (or salt thereof) having the carboxyl group bonded directly to the aromatic nucleus, and (d) about 0.05–5 grams/liter of an aromatic aldehyde or aromatic ketone.

3,778,360
PROCESS FOR THE ELECTROLYTIC RECOVERY OF COPPER FROM ITS ORES

John Gordy, 1011 Dennis Crescent E., Richmond, British Columbia, Canada

Continuation-in-part of abandoned application Ser. No. 558,419, June 17, 1966. This application Feb. 25, 1970, Ser. No. 14,172
Int. Cl. C09d *1/00;* C22d *1/16*
U.S. Cl. 204—107 12 Claims

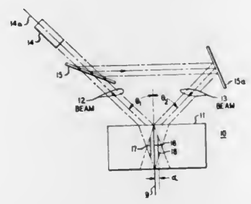


This invention relates to a method of solubilizing copper metal from copper ores, such as copper sulfide ores comprising the step of electrolyzing a slurry of the finely ground ore, in the presence of a catalyst, in the anodic chamber of an electrolytic cell, said catalyst comprising an ion complex of cuprous chloride in aqueous hydrogen chloride and plating coper metal on the cathode. An ion-permeable membrane is used to separate the anodic compartment containing ore slurry from the cathodic compartment.

3,778,361
PROCESS FOR RENDERING TRANSPARENT MEDIA ARTIFICIALLY OPALESCENT AND RESULTING PRODUCT

Jeofry Stuart Courtney-Pratt, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Sept. 1, 1972, Ser. No. 285,823
Int. Cl. B01j *1/10*
U.S. Cl. 204—157.1 R 11 Claims

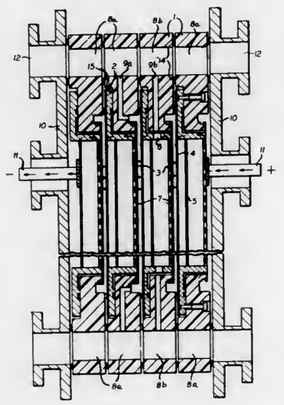


An opalescent effect is created artificially in suitable bulk material by the interference of two beams directed into the material at the Bragg angle. Optical energy is thus concentrated along desired planes and a planar alteration of refractive index along these planes is achieved. Suitable bulk materials include polymethyl methacrylate. A general class of suitable materials is characterized. Production techniques are set forth.

3,778,362
ELECTROLYTIC APPARATUS INCLUDING BIPOLAR ELECTRODES DEFINING AN ENCLOSED VOLUME AND HELD IN A NON-CONDUCTIVE FRAME

Herbert Wiechers, Opladen, and Reinhard Heikaus, Cologne-Stammheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of abandoned application Ser. No. 739,470, June 24, 1968. This application Nov. 17, 1971, Ser. No. 199,776
Claims priority, application Germany, June 27, 1967, F 52,800
Int. Cl. B01k *3/04, 3/10*
U.S. Cl. 204—254 10 Claims



Bipolar hollow plate electrode unit including an electrically conductive spacer body having a pair of opposed end face portions carrying respectively a cathode plate electrode and an anode plate electrode in transverse spaced relation to define thereby a hollow space between said electrodes, said plate electrodes being electrically interconnected through said spacer body at said end face portions, the spacer body in turn being carried in an electrically non-conductive spacer frame peripherally enclosing said spacer body and said plate electrodes, said frame having a corresponding pair of opposed end face portions and being of slightly greater transverse thickness than that of said body such that the corresponding end face portion of said frame adjacent the end face portion of said body carrying said cathode plate electrode extends slightly beyond said cathode plate electrode a given transverse distance, preferably with the cathode being a porous, e.g. wire gauze, plate electrode and with a separating wall disposed in the hollow space between the plate electrodes to define a catholyte space adajcent the cathode, e.g. with the porous cathode being covered with a diaphragm in contact with the surface thereof remote from the catholyte space, and preferably with the anode being in the form of an imperforate titanium plate containing a noble metal coating thereon on the side thereof remote from the cathode of the given bipolar electrode, e.g. with the opposite side of the anode having an electrically highly conductive metal coating thereon to enhance the electrical conductivity of the anode and peripherally being in contact with the corresponding spacer body end face portion adjacent thereto and preferably with such connection between the anode and the spacer body being in the form of an electrically highly conductive soldered joint; and electro-chemical cell arrangement for carrying out electrochemical reactions using an aqueous alkali metal halide solution as electrolyte, in the form of an aggregate of internally electrically interconnected cells made up of such bipolar units in side-by-side disposition with appropriate end electrodes and current terminal means to complete the system.

3,778,363
COBALT METATITANATE-MODIFIED SOLID SOLUTION

James M. Kolb, Mentor, and Kevin J. O'Leary, Cleveland Heights, Ohio, assignors to Electronor Corporation, Panama City, Panama

No Drawing. Continuation-in-part of abandoned application Ser. No. 104,743, Jan. 7, 1971. This application Feb. 2, 1972, Ser. No. 222,995
Int. Cl. B01k *3/06*
U.S. Cl. 204—290 F 16 Claims

A coherent mixture of crystalline cobalt metatitanate with a valve metal oxide-platinum metal oxide solid solution is provided. Typical use of the mixture is as an adherent electrically-conductive electrocatalytically-active coating applied to an electrically-conductive substrate for use as an electrode.

3,778,364
RADIATION PROCESS FOR MAKING PLASTIC PAPER CONTAINING EXPANDABLE, THERMOPLASTIC MICROSPHERES

Inder Mani and George J. Atchison, Midland, Mich., assignors to The Dow Chemical Corporation, Midland, Mich.

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,745
Int. Cl. B01j *1/00, 1/16*
U.S. Cl. 204—159.15 12 Claims

A mixture containing a component polymerizable upon exposure to ionizing radiation and expandable thermoplastic microspheres is cast as a film. Preferably the mixture contains an inorganic filler such as calcium carbonate. The microspheres are caused to expand while the film is exposed in an inert atmosphere to a sufficient amount of ionizing radiation to polymerize the mixture. The resultant product is a plastic paper having an excellent writing and printing surface. The polymerizable component comprises hydroxyalkyl acrylate monomer and may also contain minor amounts of a copolymerizable monomer and/or a resin having two or more polymerizable unsaturated groups such as an unsaturated polyester resin.

3,778,365
HYDROCRACKING AND HYDRODENITROGENATION OF SHALE OIL

Glen P. Hamner, Baton Rouge, and Ralph B. Mason, Denham Springs, La., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 735,546, June 10, 1968. This application July 27, 1970, Ser. No. 58,646
Int. Cl. B01j *11/40;* C01b *33/28;* C10g *13/02*
U.S. Cl. 208—111 26 Claims

A process, and nitrogen-bearing bimetallic catalyst, for upgrading heavy hydrocarbon oils by means of catalytic hydrocracking and hydrodenitrogenation. Heavy hydrocarbon oils containing appreciable quantities of nitrogen, particularly shale oils, are subjected to catalytic hydrocracking in the presence of hydrogen and a catalyst, prepared by ammonia activation of a catalyst composite comprising a mixture of nonnoble metals deposited on a suitable cracking base, particularly a crystalline zeolite base. Nitrogen is removed while the oil is selectively converted to lower boiling valuable products.

3,778,366
PROCESS FOR TREATMENT OF AQUEOUS SUSPENSIONS

Kurt A. Kraus, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed May 28, 1971, Ser. No. 148,132
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **3 Claims**

A method of treating aqueous waste streams for the purpose of removing a soluble or dispersed moiety which comprises passing said stream through a vertically disposed, porous, permeable material which contains a zone of fluidization and a solid fluidizing medium in said zone at a velocity sufficient to affect transpiration of a purified water product through said material.

3,778,367
TREATMENT OF PROCESS WATER

Robert D. Pruessner, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Sept. 22, 1971, Ser. No. 182,908
Int. Cl. C02b *1/20*
U.S. Cl. 210—51 **18 Claims**

Separation of emulsifiers which are salts of the condensation product of naphthalene sulfonic acid and formaldehyde from process water by contacting the process water with an amine having at least two amine groups separated by an aliphatic radical having no more than 5 carbon atoms with the separation being made at a pH of less than 7.0. For example, polychloroprene is produced by emulsion polymerization using said salts as surfactants with the salts being washed out into process water which is contacted with polyethyleneamine and the pH of mixture lowered to 4.0 to effect separation of said salt.

3,778,368
DISPOSAL OF METAL-CONTAINING WASTE WATER

Yoshiro Nakamura, Morioka, Akira Umehara, Osaka, and Itsuyo Yamada, Kobe, Japan, assignors to Sankyo Kasei Company, Limited, Osaka-shi, Japan

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,352
Claims priority, application Japan, Aug. 18, 1971, 46/63,156
Int. Cl. C02b *1/26;* **C02c** *5/02*
U.S. Cl. 210—54 **6 Claims**

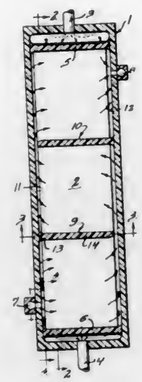
In treating waste water containing at least one of metal ions having a normal electrode potential of at least −0.440 v. (at 25° C.) to remove the metal ion therefrom, a method which is characterized in that to the waste water is added at least one of mercapto-s-triazines and water-soluble salts thereof.

3,778,369
HEMODIALYZER WITH TAPERED SLIT BLOOD PORTS AND BAFFLES

Finley W. Markley, Naperville, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 3, 1972, Ser. No. 223,270
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **4 Claims**

A new parallel flow hemodialyzer, which provides greater dialysis efficiency and better blood flow distribution, has baffles to direct blood flow and a new type of blood port. Baffles are placed across the width of the tubes from one side wall of the casing forcing the blood to flow around the baffles across the tubes a multiple number of times in passing through the hemodialyzer. The baffles are made from epoxy resin strips placed across the width of each tube. The new blood ports extend across the width of the side of the casing near its ends. The ports have an end adjacent the edge of the casing which defines an opening from the exterior of the hemodialyzer which leads to a tapered slit opening to the interior of the hemodialyzer, this slit tapering to a smaller width as the distance from the exterior opening increases and tapering



to a close at the edge of the casing opposite the exterior opening.

3,778,370
LUBRICATING OIL ADDITIVES AND COMPOSITIONS CONTAINING SUCH ADDITIVES

Brian R. Kennedy, San Rafael, and Louis de Vries, Greenbrae, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Nov. 15, 1971, Ser. No. 199,034
Int. Cl. C10m *1/54*
U.S. Cl. 252—42 F **6 Claims**

Esters of 4-hydroxy- and 4-thiol-benzoic acids, dithio, 1,4-dihydro-1-oxo-4-dithiomethylenebenzenes and 1,4-dihydro-1-oxo-4-(dithiacyclopent-2-ylidene)-benzenes in which the hydroxy, thiol and oxo groups are sterically hindered are provided. Also provided are intermediates for such esters and substituted benzenes. In addition, processes are provided for preparing these intermediates for such compounds and processes for preparing such compounds. These compounds and mixtures thereof are useful as additives for lubricating oils providing such oils with high resistance to oxidative change. In addition, oils containing certain of the esters, particular bis-alkylene esters, and certain of the dithiacyclopentylidene benzenes and mixtures thereof demonstrate superior extreme pressure lubricating properties.

3,778,371
LUBRICANT AND FUEL COMPOSITIONS

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 138,758, Apr. 29, 1971. This application May 19, 1972, Ser. No. 255,223
Int. Cl. C10m *1/32;* **C10l** *1/22*
U.S. Cl. 252—34 **33 Claims**

High molecular weight N-hydrocarbyl-substituted quaternary ammonium salts in which the hydrocarbyl group has a molecular weight of from about 350–3000 such as a polybutene ammonium chloride are effective detergents and dispersants for gasoline and lubricating oils.

3,778,372
LUBRICANTS AND FUELS CONTAINING NITROGEN-BEARING COMPOSITIONS

John P. Murphy, Willoughby, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 773,298, Nov. 4, 1968. This application Dec. 23, 1971, Ser. No. 211,771
Int. Cl. C10l *1/22;* **C10m** *1/32*
U.S. Cl. 252—51.5 A **22 Claims**

This invention is directed to lubricants and fuels comprising nitrogen-containing compositions and more specifically to a process for preparing nitrogen-containing compositions particularly useful as rust-inhibitors for lubricants and fuels. The nitrogen-containing compositions are prepared by reacting effective amounts of at least one alkylene amine with formic acid or a formic acid-producing compound at a temperature of at least about 25° C.

3,778,373
IRON CONTAINING FERROMAGNETIC CHROMIUM OXIDE

Harry Robbins, Los Angeles, Calif., assignor to Bell & Howell Company

No Drawing. Filed Nov. 8, 1971, Ser. No. 196,714
Int. Cl. C01g *37/02*
U.S. Cl. 252—62.56 **2 Claims**

Ferromagnetic chromium oxide having an intrinsic coercive force above 600 oersteds is prepared by heating an intimate mixture of chromium (III) and iron (III) combined with oxygen with an oxidizing agent. In particular embodiments, the mixture is obtained by co-precipitation of the hydroxides from a solution of chromium (III) and iron (III) salts.

3,778,374
PROCESS FOR PRODUCING FERRITES

Yuzo Shichijo, 12, 2-chome, Seifuso, Toyonaka, Osaka Prefecture, Japan; Gyoichi Asano, 15–30 Segawa, Minoo, Osaka Prefecture, Japan; and Eizo Takama, 233 Koshien, Nishinomiya, Hyogo Prefecture, Japan

Continuation-in-part of application Ser. No. 117,120, Feb. 19, 1971, which is a continuation of application Ser. No. 16,261, Mar. 3, 1970, which is a continuation-in-part of application Ser. No. 656,301, July 5, 1967, which in turn is a continuation-in-part of application Ser. No. 351,754, Mar. 13, 1964, all now abandoned. This application Dec. 22, 1971, Ser. No. 211,936
Claims priority, application Japan, May 27, 1963, 38/27,338
Int. Cl. C04b *35/38*
U.S. Cl. 252—62.62 **2 Claims**

A process of producing a spinel-type ferrite having high magnetic permeability and high flux density comprises presintering in air, sintering in a more reducible atmosphere than that of next sintering without depositing any other phase than the spinel-type ferrite one so as to activate reaction, sintering in an equilibrium atmosphere and cooling in an equilibrium atmosphere.

3,778,375
PHOSPHORUS- AND NITROGEN-CONTAINING LUBRICANT ADDITIVES

Milton Braid, Westmont, and David B. Quinty, Willingboro, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,937
Int. Cl. C10m *1/36, 1/46*
U.S. Cl. 252—49.9 **7 Claims**

The addition of an additive made by reacting a phosphonate with oleamide to a lubricant imparts improved frictional characteristics thereto. In addition, levels of corrosion and chatter and squawking noises resulting from interrupted power transmission are eliminated or reduced to acceptable levels.

3,778,376
FUNCTIONAL FLUIDS

John F. Herber, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 562,520, July 5, 1966. This application Dec. 8, 1969, Ser. No. 883,341
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 **3 Claims**

Functional fluids comprising a major amount of a phosphoramidate and a minor amount of a mixture of (1) a nitrogen-containing antioxidant and (2) a nitrogen-containing heterocyclic compound have greatly reduced corrosiveness to metal mechanical members in contact with said fluids. The fluid compositions are useful as hydraulic fluids, damping fluids, heat transfer fluids and the like.

3,778,377
PROTECTING METAL DURING ACID CONTACT

Herbert D. Clark, Burbank, Calif., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Oct. 6, 1971, Ser. No. 187,120
Int. Cl. C02b *5/06*
U.S. Cl. 252—82 **7 Claims**

Protecting metal during contact with acid by incorporating an inhibitor mixture of a polyaminomethylenephosphonate and an N,N'-dicycloalkyl-thiourea. The inhibitor mixture is used in descaling, acid cleaning, acid pickling, etc.

3,778,378
SOAP FORMULATION FOR POLISHING ALUMINUM SURFACES

Evandro Antonini, Anzio, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,455
Claims priority, application Italy, Apr. 5, 1971, 49,547/71
Int. Cl. C11d *17/04*
U.S. Cl. 252—91 **4 Claims**

Metallic mat scouring pads including a soap formulation containing about from 1 to about 10 percent by weight of pentahydrate borax. The soap formulation can also contain from 8 to about 60 percent saponified fatty acids, from 1 to 8 percent anhydrous sodium carbonate and about 20 to 60 percent water.

3,778,379
FLUOROCARBON DRY CLEANING COMPOSITIONS

Plutarch Constantine Papannou, Carneys Point, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 21, 1972, Ser. No. 219,791
Int. Cl. C11d *7/52*
U.S. Cl. 252—171 **11 Claims**

Dry cleaning compositions containing 1,1,2-trichloro-1,2,2-trifluoroethane or trichlorofluoromethane, an alkylbenzenesulfonate, for example, isopropylammonium dodecylbenzenesulfonate, an alkyl phosphate, for example, diethanolammonium mixed mono- and di(C_{8-12})alkyl phosphates, and water (optionally), said compositions being especially useful in commercial dry cleaning processes to minimize redeposition of particulate soil and to minimize water damage to the clothing if water is employed in the dry cleaning system.

ERRATUM

For Class 252—301.40 R see:
Patent No. 3,778,234

3,778,380
METHOD FOR PRODUCING UO_2 LOADED REFRACTORY METALS
Richard D. Baker, Sidney W. Hayter, and Homer D. Lewis, Los Alamos, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Oct. 31, 1966, Ser. No. 591,017
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R **9 Claims**

A finely divided dispersion of UO_2 in tungsten or molybdenum is prepared by co-precipitating the metals from mixed aqueous solution with oxine. The co-precipitate thus formed is separated from the solution, dried, calcined, and finally reduced to UO_2 and refractory metal.

3,778,381
FLUOROCARBON MICROEMULSIONS
Henri L. Rosano, Oradell, N.J., and William E. Gerbacia, Bronx, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Apr. 24, 1972, Ser. No. 247,039
Int. Cl. B01j *13/00*
U.S. Cl. 252—311 **23 Claims**

ABSTRACT OF THE DISCLOSURE

Microemulsions of liquid fluorinated organic compounds having more than 4 carbon atoms are prepared by (1) admixing the fluorinated compound with a low boiling fluorohalocarbon which is either miscible with or a solvent for the fluorinated compound, (2) adding this mixture to an aqueous system containing a surfactant while stirring until a microemulsion is formed and (3) removing the fluorohalocarbon by evaporation. The microemulsion so produced are highly stable and are capable of absorbing a large amount of oxygen and carbon dioxide. As such they are useful in the preservation of animal organs.

3,778,382
HYDROPEROXIDE TREATMENT
Richard Bruce Poenisch, League City, and Fernando Francis Birch, La Porte, Tex., assignors to Oxirane Corporation
No Drawing. Filed Nov. 3, 1970, Ser. No. 86,612
Int. Cl. B01d *3/34;* **C23f** *11/00*
U.S. Cl. 252—326 **11 Claims**

Aqueous tertiary butyl hydroperoxide compositions are treated with a neutral salt or an organic acid to permit sharp and rapid phase separation.

3,778,383
PROCESS FOR THE ENCAPSULATION OF SUBSTANCES WHICH ARE FINELY DISTRIBUTED IN A LIQUID AND CAPSULE COMPOSITIONS PRODUCED THEREBY
Luzius Schibler, Riehen, and Melvin Harris, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Continuation-in-part of abandoned application Ser. No. 145,030, May 19, 1971. This application Nov. 11, 1971, Ser. No. 197,946
Claims priority, application Switzerland, May 26, 1970, 7,813/70; May 6, 1971, 6,696/71
Int. Cl. B01j *13/02;* **B44d** *1/02, 1/14*
U.S. Cl. 252—316 **15 Claims**

An encapsulation process is provided wherein the substances to be encapsulated are dispersed in a distribution medium in the presence of a reactive tenside which is capable to form a compound insoluble in the distribution medium. The dispersed reactive tenside is converted to the irreversible, insoluble state forming a primary capsule suspension and then mixed with an aminoplast precondensate solution to form a secondary suspension of capsules having strengthened walls.

The reactive tenside and the aminoplast precondensate also may be added together and converted to the irreversibly insoluble state at the same time.

The capsules are useful to encapsulate most diverse active substances, such as solvents, dyestuffs, pigments or pesticides.

3,778,384
DIAGNOSTIC COMPOSITION FOR THE QUANTITATIVE DETERMINATION OF GLUCOSE
Joseph Francis Dooley, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 203,840, Dec. 1, 1971. This application July 28, 1972, Ser. No. 275,926
Int. Cl. G01n *21/06, 33/16*
U.S. Cl. 252—408 **3 Claims**

An o-toluidine reagent composition containing an arsenic compound for use in the determination of glucose in biological fluids.

3,778,385
COMPOUNDS OF Mo OR W WITH ORGANOMETALS AS OLEFIN REACTION CATALYSTS
Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Continuation-in-part of application Ser. No. 717,028, Mar. 28, 1968, which is a continuation-in-part of application Ser. No. 635,649, May 3, 1967, both now abandoned. This application Apr. 26, 1971, Ser. No. 137,676
Int. Cl. C07c *3/62*
U.S. Cl. 252—431 C **15 Claims**

A catalyst active for the olefin reaction including olefin disproportionation which comprises a cordination compound of molybdenum or tungsten wherein the metal is complexed with at least one of a carbonyl; trialkyl or triaryl phosphines, arsines or stilbines; or hydrocarboxylic acid ligand combined with an organometallic compound of Groups I–A, II–A, II–B, or III–A.

3,778,386
OXIDATION CATALYST FOR OXIDATION OF OLEFINS TO UNSATURATED ALDEHYDES
Shigeo Takenaka, Yasuji Kido, Tatsutoshi Shimabara, and Masanobu Ogawa, Takasaki, Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan
No Drawing. Filed Apr. 24, 1970, Ser. No. 31,757
Claims priority, application Japan, May 2, 1969, 44/33,597
Int. Cl. B01j *11/82*
U.S. Cl. 252—432 **4 Claims**

The preparation of an oxidation catalyst is described, represented by the following general formula:

$$Ni_aCo_bFe_cBi_dL_eM_hMo_fO_g$$

in which L is phosphorous, arsenic or boron and M is potassium, rubidium or cesium; and wherein a and b have a value of from 0 to 15, $a+b$ being 2 to 15, c is 0.5 to 7, d is 0.1 to 4, e is 0 to 4, f is 12, g is 35 to 85 and h is 0.01 to 0.5. The oxidation catalyst is useful in a process to produce acrolein by oxidizing propylene in vapor phase.

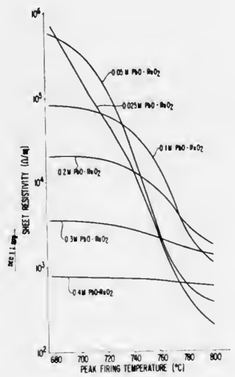
3,778,387
ACTIVATED CARBON WITH ANTIOXIDANT PROPERTIES AND A METHOD OF PREPARING THE SAME
John Emery Urbanic, Pittsburgh, and Robert Francis Sutt, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.
No Drawing. Filed June 21, 1971, Ser. No. 155,269
Int. Cl. C01b *31/08*
U.S. Cl. 252—428 **5 Claims**

An activated carbon with antioxidant properties is prepared by first acid washing the carbon to remove ash, then air oxidizing the carbon, and finally impregnating the carbon with a ketone.

3,778,388
CHROMIA-ALUMINA CATALYST
Edward B. Cornelius, Swarthmore, Pa., and David W. Koester, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.
No Drawing. Original application May 28, 1970, Ser. No. 41,549, now Patent No. 3,665,049. Divided and this application Dec. 13, 1971, Ser. No. 207,672
Int. Cl. B01j *11/06, 11/32*
U.S. Cl. 252—465 **6 Claims**

Triethyl aluminum is employed as reactant in a conversion to valuable products, forming an alumina by-product consisting predominantly of alumina alpha-monohydrate and a significant amount of amorphous alumina. Particles of this by-product are marketed as a technical grade of boehmite. A precursor mixture is prepared comprising calcined alumina powder, a larger amount of said technical grade of boehmite, and an aqueous solution containing ammonium dichromate. Said mixture is extruded, sliced into pellets, calcined in steam, and cooled to provide dehydrogenation catalyst consisting of about 20% chromia and 80% alumina. Propane at subatmospheric pressure is dehydrogenated at a high conversion per pass to provide an attractive yield of propene over said catalyst at 570–680° C. at a space velocity of from about 0.2 to about 5 volumes of liquid propane per volume of catalyst per hour during a commercially acceptable catalyst life.

3,778,389
ELECTRO-CONDUCTIVE MATERIAL CONTAINING PBO AND RuO_2
Toru Kasanami and Osamu Kano, Kyoto-fu, Japan, assignors to Murata Manufacturing Co., Ltd., Otokunigun, Kyoto-fu, Japan
Filed Dec. 28, 1970, Ser. No. 101,515
Claims priority, application Japan, Dec. 26, 1969, 44/1,062
Int. Cl. H01b *1/06*
U.S. Cl. 252—520 **25 Claims**



An electro-conductive material essentially consisting of a double oxide obtained from PbO and RuO_2 in a molar ratio of 3:1 to 1:3, which is useful as the fundamental composition for production of a resistor paste, a ceramic resistor or the like.

3,778,390
HYDROLYTICALLY UNSTABLE POLYURETHANE FOAMS
Donald Aloysious Ulrich, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed July 17, 1972, Ser. No. 272,594
Int. Cl. C08g *22/10, 22/44*
U.S. Cl. 260—2.5 AN **3 Claims**

Water-disintegratable, sewerage disposable, polyurethane foams wherein the conventional polyol reactant is replaced in whole or in part with a hydrolytically unstable polyester polyol, said foams being especially adapted to use in personal hygienic articles.

3,778,391
PROCESS FOR CONCENTRATING AQUEOUS COLLOIDAL DISPERSIONS OF POLYTETRAFLUOROETHYLENE
Paul S. Morris, Acton, Mass., and Robert H. Hutzler, Chatham, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Feb. 24, 1972, Ser. No. 229,190
Int. Cl. C08d *9/06*
U.S. Cl. 260—17.4 ST **6 Claims**

In the creaming process for concentrating dilute aqueous colloidal dispersions of polytetrafluoroethylene, using as creaming agent naturally-occurring water-soluble colloids, in the presence as stabilizer of non-ionic surface active agent to obtain a concentrated dispersion phase and a supernatant aqueous phase, followed by phase separation, viscosity of the resultant concentrated dispersion is reduced, without concomitant loss in stability, by a process improvement which comprises adding aqueous hydrogen peroxide to the dispersions to be creamed in amount of about 2 to 20 parts by weight per 100 parts of creaming agent.

3,778,392
POLYMERIC STARCH COMPOSITION
John F. Hughes, Montreal, Quebec, Canada, assignor to Cellcor Corporation of Canada Ltd., Montreal, Quebec, Canada
No Drawing. Filed Nov. 23, 1971, Ser. No. 201,312
Int. Cl. C08b *25/02*
U.S. Cl. 260—17.3 **9 Claims**

A novel polymeric starch composition as well as a process for its production is described. The composition is obtained by

(a) reacting a hydrolysed starch with an amino amide or a diamide, e.g. urea,
(b) reacting the product obtained with an olefinic oxide or dioxide, and
(c) reacting the second product with a carbonyl compound, e.g. formaldehyde, to obtain the final product. This product cures under drying conditions to produce a crosslinked resin composition which shows excellent bonding characteristics to many different materials as well as showing excellent strength properties and water resistance.

3,778,393
GELS FOR USE IN GEL CHROMATOGRAPHIC PROCEDURES AND PROCESSES FOR PRODUCING THE SAME
Gerd Greber and Herbert Schott, Freiburg im Breisgau, Germany, assignors to Papierwerke "Waldhof-Aschaffenburg" AG, Munich, Germany
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,545
Claims priority, application Germany, Jan. 26, 1970, P 20 03 266.0; June 25, 1970, P 20 31 366.0
Int. Cl. A61k *27/12*
U.S. Cl. 260—17.45 G **9 Claims**

Gels having covalent built in nucleic acid groups as an integral part of the gel structure, in which at the least a nucleobase is present which provides the free functional groups required for base coupling or exchange and method of making and using such gels.

3,778,394

POLYMERIC FATTY ACID POLYAMIDE MODIFIED WITH A ROSIN ADDUCT

Roger A. Lovald, Roseville, and David W. Glaser, St. Paul, Minn., assignors to General Mills Chemicals, Inc.

No Drawing. Filed Aug. 24, 1972, Ser. No. 283,457
Int. Cl. C08g *20/00*; C09d *11/08*
U.S. Cl. 260—18 N **4 Claims**

A polyamide resin-dicarboxylic acid or anhydride adduct. The dicarboxylic acid or anhydride component is selected from maleic acid, maleic anhydride and fumaric acid. The adducts have unique properties as ink varnish binders.

3,778,395

PRINTING INKS COMPRISING A URALKYD

Gregory J. Huelsman, Wyckoff, and Robert E. Bell and Gerald Edward Rohe, Cincinnati, Ohio, assignors to Borden Inc.

No Drawing. Continuation of application Ser. No. 27,124, Apr. 9, 1970, which is a continuation-in-part of application Ser. No. 664,270, Aug. 30, 1967, both now abandoned. This application Feb. 18, 1972, Ser. No. 227,628
Int. Cl. C09d *3/72, 11/10*
U.S. Cl. 260—22 TN **9 Claims**

This invention relates to printing inks drying by oxidative polymerization having a low tack to viscosity ratio comprising a coloring agent and a vehicle in which the vehicle comprises from 10% to 100% of a modified uralkyd, said uralkyd prepared by the sequential steps of making an alkyd prepolymer, said prepolymer being the reaction product of an unsaturated fatty acid or ester thereof, a polyol and a polycarboxylic acid and then reacting the prepolymer with a polyisocyanate.

3,778,396

REINFORCED ELASTOMER COMPOSITIONS

Kunihiko Fujimoto, Masayuki Matsui, Shigeto Kishinami, and Toshio Nishi, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 19, 1971, Ser. No. 144,722
Claims priority, application Japan, May 20, 1970, 45/42,384
Int. Cl. C08d *9/12*; C08f *45/08*
U.S. Cl. 260—27 BB **6 Claims**

A new rubber composition comprising rubber reinforced by distributing therein carbon fibers, carbon black and softener in combination respectively in a particular amount. The suitable amounts are 0.02 to 0.10 volume fraction of carbon fibers, 0.05 to 0.25 volume fraction of carbon black and 0.02 to 0.30 volume fraction of softener. Substantially uniformly distributed carbon fibers, carbon black fine particles and further finer softener particles disperse the concentrated strain locally generated in the rubber composition to effectively prevent the sudden deterioration of the rubber article which phenomenon can be observed in some types of rubber. Thus the vulcanized rubbers made of said composition have high resistance to fatigue, elongation, mechanical strength and elasticity in combination which makes them very useful for tires, conveyor belts etc. to be subjected to severe dynamic conditions.

3,778,397

PROCESS FOR PREPARING RUBBERIZED BITUMINOUS PAVING COMPOSITIONS

Charles R. Gannon and George H. Beddoe, Ashland, Ky., assignors to Ashland Oil, Inc., Houston, Tex.

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,802
Int. Cl. C08c *11/68*; C08f *45/52*; C08i *1/02*
U.S. Cl. 260—28.5 AS **15 Claims**

Aqueous emulsions of polymer rubber and aqueous emulsions of asphalt are mixed at temperatures slightly above ambient (90–100° F.) and then combined with heated aggregate in a pug mill to formulate a paving composition. Use of this process minimizes depolymerization of the polymer in the final paving composition during mixing.

3,778,398

PARAFFIN WAX COATING COMPOSITIONS

Thomas S. Mestetsky, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed June 8, 1972, Ser. No. 260,856
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 R **18 Claims**

A copolymer of vinyl ester and vinyl pyrrolidone is incorporated into paraffin wax, alone or in conjunction with the incorporation therein of a copolymer of ethylene and vinyl acetate to provide a blended paraffin wax composition having enhanced scuff resistance and/or grease resistance and/or slip characteristics. The vinyl pyrrolidone content of the copolymer of vinyl ester and said vinyl pyrrolidone is from about 10% to about 70% by weight, based on the total weight of said copolymer. At least about 5% by weight of said copolymer of vinyl ester and vinyl pyrrolidone is employed based on the total weight of said wax composition, the amount of said copolymer employed ranging up to about 75% by weight when said copolymer is employed alone and up to about 50% by weight when said copolymer is employed in conjunction with said copolymer of ethylene and vinyl acetate.

3,778,399

NOVEL EMULSION ADHESIVE COMPOSITIONS OF VINYL ACETATE POLYMERS

Chris T. Fazioli, La Grange Park, Ill., and Julius Sirota, South Plainfield, and Richard A. Weidener, Berkeley Heights, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 810,792, Mar. 26, 1969. This application May 6, 1971, Ser. No. 141,007
Int. Cl. C08f *45/26*
U.S. Cl. 260—29.6 ME **4 Claims**

Novel, high solids, adhesive compositions based on an emulsion of a homo- or copolymer of vinyl acetate are described wherein the continuous phase of the emulsion comprises an essentially non-volatile, water soluble liquid or a mixture of water and an essentially non-volatile, water soluble liquid. The novel adhesive compositions are particularly suited for use in the manufacture of window envelopes whereby a transparent patch, or window, is adhered onto the face of the envelope blank.

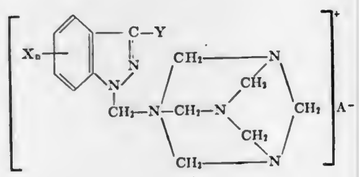
3,778,400

PRESERVATIVES FOR AQUEOUS COMPOSITIONS WHICH CONTAIN ADDITION POLYMERS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Original application Nov. 22, 1971, Ser. No. 201,194, now abandoned. Divided and this application Mar. 15, 1973, Ser. No. 341,560
Int. Cl. C08d *11/00*; C08f *45/64*; C09d *5/14*
U.S. Cl. 260—29.6 MN **9 Claims**

Aqueous compositions that are subject to decomposition and spoilage by the action of bacteria are preserved by incorporating in them a small amounf of a compound having the structural formula



wherein X represents halogen, nitro, acoylamino, aroylamino (halobenzylidene)amino, or methyleneimino; Y represents hydrogen, halogen, acoylamino, or methyleneimino; A represents halogen; and *n* represents a number in the range of zero to 4. Illustrative of these compounds is N-(3-chloro-6-nitroindazolyl-N′ - methyl)hexamethylenetetraammonium chloride.

3,778,401

RESTORING AND/OR PRESERVING PAPERS OR LIKE MATERIALS

Curtis Benjamin Hayworth, Morristown, N.J., assignor to World Patent Development Corp., New York, N.Y.

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,102
Int. Cl. C08f *29/26, 45/24*
U.S. Cl. 260—29.6 ME **20 Claims**

A stable monophasic composition is here taught consisting of a solution of polyvinyl acetals in a solvent mixture consisting of a chlorinated hydrocarbon containing two carbon atoms such as trichloroethylene and basic agents in aqueous solution useful for restoring and preserving papers and similar materials while providing desired basicity.

3,778,402

POLYMERIZATION OF 2-PYRROLIDONE USING A CATALYST FORMED BY REACTION BETWEEN 2-PYRROLIDONE AND AQUEOUS KOH

Tomiaki Kimura, Yasuhiro Ohmura, Tamotsu Yoshimura, Katsuhisa Kohyama, and Kenzo Watanabe, Tokyo, Japan, assignors to Alrac Corporation, Stamford, Conn., and Mitsubishi Chemical Industries Limited, Tokyo, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,682
Claims priority, application Japan, Dec. 28, 1970, 46/127,185
Int. Cl. C08g *20/18*
U.S. Cl. 260—78 P **4 Claims**

2-pyrrolidone is polymerized using potassium pyrrolidonate having been prepared by reaction between 2-pyrrolidone and an aqueous solution of KOH.

3,778,403

ORGANOSOLS OF AZIRIDINYL ALKYL ACRYLATE OR METHACRYLATE ACRYLIC GRAFT POLYMERS

Aloysius N. Walus, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 22, 1970, Ser. No. 100,795
Int. Cl. C08f *45/28, 45/32, 47/20*
U.S. Cl. 260—31.4 R **3 Claims**

The organosol coating composition consists essentially of a graft copolymer dispersed in an organic liquid. The backbone of the graft copolymer is insoluble in the organic liquid and is of polymerized units of an alkyl methacrylate, an alkyl acrylate, acrylonitrile, methacrylonitrile, styrene or a mixture of these constituents and has grafted into the backbone through an aziridinyl acrylate or methacrylate coupling unit an acrylic side chain that is soluble in the organic liquid. The composition is particularly useful as an exterior coating for automobiles and trucks.

3,778,404

HOT MELT COATING COMPOSITION AND METHOD

Robert N. Henkel, Arthur, Ill., and John H. Kruschinski, Fairfield, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed June 19, 1970, Ser. No. 47,888
Int. Cl. C08f *45/34*
U.S. Cl. 260—33.2 R **6 Claims**

Hot melt extrusion of coatings based on polyethylene or copolymers of ethylene and vinyl acetate, containing as chill roll release agents very small quantities of polyethylene glycol.

3,778,405

PROCESS FOR PREPARING A POLYPHENYLENE LACQUER AND LAMINATES FABRICATED THEREWITH

Norman Bilow, Los Angeles, Calif., assignor to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,462
Int. Cl. C08g *51/30*
U.S. Cl. 260—33.8 R **7 Claims**

A substantially void-free laminate or composite is provided that comprises a reinforcing material coated with a cured copolymer of polyphenylene and a polysulfonyl halide, the copolymer having been prepared by reaction in an alcohol-free chloroform medium and applied to the reinforcing material as a solution in the medium.

3,778,406

PROCESS FOR IMPROVING ADHERENCE OF RUBBER MIXTURES TO TEXTILE FABRICS

Erhard Klötzer, Hanau am Main, and Johannes Pochert, Wessling, near Cologne, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation of application Ser. No. 845,649, July 9, 1969, which is a continuation of application Ser. No. 620,634, Mar. 6, 1967, both now abandoned. This application Dec. 14, 1970, Ser. No. 98,172
Claims priority, application Germany, Mar. 8, 1966, D 49,530; July 6, 1966, D 50,489
Int. Cl. C08c *11/02, 11/10*; C08d *9/10*
U.S. Cl. 260—41.5 A **6 Claims**

Method of improving bond between textiles and rubber vulcanizates obtained by vulcanizing filler containing rubber mixtures and resin forming mixtures of amines or phenols and aldehydes capable of forming resins wherein finely divided active reenforcing silica and/or aluminum silicate and/or calcium silicate and/or calcium carbonate is employed as a filler improving the bond obtained. Further improvement in bond obtained by addition of lead oxide to rubber mixture. Still further improvement obtained by adding resin forming components, particularly, the phenol, in the form of a premix with the filler.

3,778,407

FLAME-PROOF GLASS-FIBER-REINFORCED POLYAMIDE CONTAINING PHOSPHORUS

Willi Hild, Limburgerhof, Franz Zahradnik and Erwin Zahn, Ludwigshafen, and Edmund Priebe, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Continuation of abandoned application Ser. No. 47,153, June 17, 1970. This application Apr. 24, 1972, Ser. No. 246,770
Claims priority, application Germany, June 20, 1969, P 19 31 387.2
Int. Cl. C08g *51/04, 51/10, 51/56*
U.S. Cl. 260—37 N **5 Claims**

Self-extinguishing glass-fiber-reinforced molding composition based on glass-fiber-reinforced polyamide containing red phosphorus as a flame retardant.

3,778,408

FLAME-RETARDANT, POLYURETHANE COATING COMPOSITIONS

Joseph P. Burns and Joseph Feltzin, Wilmington, Del., and Frank T. Sanderson, Huntington Valley, Pa., assignors to ICI America Inc., Wilmington, Del.

No Drawing. Original application Dec. 9, 1968, Ser. No. 782,484, now Patent No. 3,369,295. Divided and this application Aug. 24, 1970, Ser. No. 66,597
Int. Cl. C08g *22/14, 51/26, 51/58*
U.S. Cl. 260—45.7 P **10 Claims**

Polyurethane coating compositions are provided which, after application to substrates, yield transparent coatings having superior flame-retardancy and resiliency. The coat-

ing compositions comprise a solvent and a polyurethane reaction product of halogen containing polyol, phosphorus containing polyol, and organic polyisocyanate.

3,778,409

ALPHA,ALPHA'-BIS-(2 - HYDROXYPHENYL)-DIISOPROPYL BENZENES AS STABILIZERS FOR POLYURETHANES

Harald Oertel, Odenthal-Globusch, Ernst Roos, Cologne, and Kurt Ley, Odenthal-Globusch, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 9, 1971, Ser. No. 122,557

Claims priority, application Germany, Mar. 14, 1970, P 20 12 285.4

Int. Cl. C08g *51/58, 51/60*

U.S. Cl. 260—45.8 N **14 Claims**

The invention relates to a process for stabilising polyurethanes, particularly polyurethane elastomer threads and films, against degradation and discoloration under the action of light or UV radiation, oxygen, atmospheric constituents (e.g. nitrogen oxides) and heat by the addition of bisphenols.

3,778,410

PROCESS FOR PREPARING A FINAL COPOLYESTER BY REACTING A STARTING POLYESTER WITH AN ACYLOXY AROMATIC CARBOXYLIC ACID

Herbert F. Kuhfuss and Winston J. Jackson, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 28, 1972, Ser. No. 293,292

Int. Cl. C08g *17/02, 17/14*

U.S. Cl. 260—47 C **8 Claims**

The process of this invention for preparing a final copolyester having an inherent viscosity of at least 0.4 is comprised of two steps. The first step of the process comprises preparing a fragmented polyester by contacting an acyloxy aromatic carboxylic acid with a starting polyester which has an inherent viscosity of at least 0.2 and is formed from a dicarboxylic acid and a diol. The second step comprises increasing the inherent viscosity of the fragmented polyester to at least 0.4 to form the final copolyester. When the starting polyester and acyloxy aromatic carboxylic acid are contacted, acidolysis occurs and there is formed a fragmented polyester composed of low molecular weight polyester molecules. The inherent viscosity of the fragmented polyester is then increased to form the final copolyester comprised of divalent radicals from the dicarboxylic acid portion of the starting polyester, divalent radicals from the diol portion of the starting polyester and divalent radicals remaining after removal of the acyl and hydroxy groups from the acyloxy aromatic carboxylic acid.

3,778,411

POLYAMIDE ACIDS AND POLYAMIDEIMIDES

Carl M. Emerick, Ballston Spa, and Denis R. Pauze, Scotia, N.Y., assignors to General Electric Company

No Drawing. Filed July 30, 1971, Ser. No. 167,837

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 **7 Claims**

New and useful polyamideimides and their precursor polyamic acids are provided. The polyamic acid is prepared by reacting diacid with polyamine material including polymethylene polyaniline and further reacting this reaction product with organic dianhydride and aliphatically unsaturated organic anhydride. The polyamic acid is cured to provide the final polyamideimide.

3,778,412

POLY-as-TRIAZINES

Paul M. Hergenrother, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

No Drawing. Continuation-in-part of application Ser. No. 139,884, May 3, 1971, which is a continuation-in-part of application Ser. No. 846,576, July 31, 1969, both now abandoned. This application Sept. 8, 1972, Ser. No. 287,407

Int. Cl. C08g *9/06*

U.S. Cl. 260—50 **25 Claims**

Disclosed are poly-as-triazines, solutions thereof and processes for preparing same wherein a dihydrazidine and a bis-(1,2-dicarbonyl) compound are reacted in a solvent such as m-cresol, anisole or chloroform. The poly-as-triazines are particularly useful in high temperature adhesive, laminating resins, protective coatings and films.

3,778,413

PROCESS FOR THE PREPARATION OF COPOLYCONDENSATES COMPRISING REACTING PHENOL, A FURFURAL, A UREA AND AN ALIPHATIC ALDEHYDE

Hans Junger, Troisdorf, and Franz Weissenfels, Siegburg, Germany, assignors to Dynamit Nobel Aktiengesellschaft

No Drawing. Filed Dec. 15, 1970, Ser. No. 98,480

Claims priority, application Germany, Dec. 24, 1969, P 19 64 961.7

Int. Cl. C08g *9/10*

U.S. Cl. 260—51.5 **6 Claims**

Production of copolycondensates of 0.1 to 1 mole of a phenol, 0.3 to 1 mole of a urea, 0.1 to 1 mole of a furan and 2 to 4 moles of an aliphatic aldehyde. These polycondensates are prepared by step-wise reaction where no catalyst is used in the first step and alkaline catalysts are used in the second and subsequent stages. The polycondensate product can be cross-linked with a suitable acid catalyst.

3,778,414

RUBBER MIXTURES REINFORCED BY PHENOL NOVOLAC RESINS AND PROCESS FOR PREPARING PHENOL NOVOLAC RESINS SUITABLE THEREFOR

Arnold Giller, Wehen, Taunus, Kurt Hultzsch, Wiesbaden, and Wolfgang Hesse, Wiesbaden-Biebrich, Germany, assignors to Chemische-Werke Albert, Wiesbaden-Biebrich, Germany

No Drawing. Application Nov. 13, 1969, Ser. No. 871,551, now Patent No. 3,586,735, which is a continuation of abandoned application Ser. No. 544,404, Apr. 22, 1966. Divided and this application Mar. 4, 1971, Ser. No. 121,196

Int. Cl. C08g *5/08*

U.S. Cl. 260—51 R **6 Claims**

A phenolic novolac prepared by the acid condensation of a diphenylolalkane with formaldehyde in the presence of an inert organic solvent.

3,778,415

PROCESS FOR PREPARING A MONOALKYL AROMATIC

Daniel Y. C. Ko, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 13, 1971, Ser. No. 171,541

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T **10 Claims**

An improvement in a process wherein a first compound and a second compound react with each other to produce a third compound and a fourth compound in essentially irreversible reactions and the second and fourth compounds react with each other to produce the third compound in equilibrium-limited reactions, the second compound being present in the reaction mixture in excess of that required for the reactions, and the excess amount

of the second compound is recycled to the reaction zone, which involves reducing the amount of the second compound in the reaction mixture, introducing therein the fourth compound in an amount greater than would be present at equilibrium and terminating the process before the reaction mixture reaches equilibrium.

3,778,416

PROCESS FOR THE MANUFACTURE OF FILAMENTS AND FIBERS FROM ACRYLONITRILE COPOLYMERS

Robert Zoller, Alterschrofen, Walter Fester, Konigstein, Taunus, Franz Jakob, Hofheim, Taunus, and Alexander Dahmen, Schonberg, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,822

Claims priority, application Germany, Jan. 7, 1971, P 21 00 450.2

Int. Cl. C08f *15/00, 15/40*

U.S. Cl. 260—78 UA **3 Claims**

The present invention provides a process for the manufacture of filaments and fibers from acrylonitrile copolymers and modacrylic copolymers by copolymerizing acrylonitrile or mixtures thereof with common modifying comonomers with 0.5 to 50% by weight, calculated on the monomer mixture, of N-substituted maleinimides and spinning the copolymers obtained. The filaments and fibers obtained are distinguished by a raised glass transition temperature and hence, an improved dimensional stability at elevated temperature, and by their excellent degree of whiteness.

3,778,417

POLYAMIDE-IMIDE COMPOSITION CONTAINING P-TOLUENE SULFONIC ACID AS STRIPPING AGENT

Carl Serres, Jr., Naperville, and Benjamin A. Bolton, Winfield, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Original application Mar. 29, 1971, Ser. No. 129,110, now Patent No. 3,691,136. Divided and this application Apr. 7, 1972, Ser. No. 242,236

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF **1 Claim**

Polyamide-imide compositions useful for film preparation are disclosed. These compositions comprise the polyamide-imide polymer, a solvent system for said polymer, and one of the following stripping agents: phosphoric acid, phosphites, esters of phosphoric acid and strong organic acids.

3,778,418

MALEINIZATION PROCESS

Yasuharu Nakayama, 1200 Yabata, Hiratsuka, Japan

No Drawing. Filed Sept. 22, 1971, Ser. No. 182,912

Claims priority, application Japan, Sept. 24, 1970, 45/84,344; Sept. 28, 1970, 45/85,244

Int. Cl. C08c *5/00;* **C08f** *27/00*

U.S. Cl. 260—78.4 D **20 Claims**

In maleinization process in which a maleic anhydride compound is reacted with at least one of unsaturated polymers having ethylenoic double bond in the molecule, unsaturated fatty acids having 8 to 18 carbon atoms and esters of said unsaturated fatty acids to produce a maleinized product, the improvement wherein said reaction is carried out in the presence of at least one of nitrogen-containing compounds selected from the group consisting of ammonia, ammonium salts of saturated fatty acids, monoamine compounds, diamine compounds and amide compounds.

3,778,419

VULCANIZATION PROCESS WITH S,S'-CARBONYL-BIS-DIALKYLDITHIOPHOSPHATE

Rudiger Schubart, Ulrich Eholzer, Theo Kempermann, and Ernst Roos, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

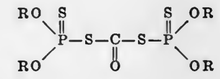
No Drawing. Original application Dec. 21, 1970, Ser. No. 100,361, now Patent No. 3,697,433. Divided and this application Feb. 2, 1972, Ser. No. 222,978

Claims priority, application Germany, Jan. 13, 1970, P 20 01 151.2

Int. Cl. C08d *9/00, 13/28;* **C08f** *27/06*

U.S. Cl. 260—79.5 B **5 Claims**

A process for the vulcanization of terpolymers of ethylene and propylene, also known as EPDM rubbers, is described. More particularly vulcanization accelerators for such a process having the formula



in which the radicals R represent the same or different straight chained or branched lower alkyl radicals, each of which may be substituted by a lower alkoxy group, are described.

3,778,420

COPOLYMERS OF CYCLIC MONOOLEFINS AND CYCLIC POLYOLEFIN COMPOUNDS

James D. Brown and Carl A. Uraneck, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 27, 1970, Ser. No. 58,728

Int. Cl. C08f *17/00*

U.S. Cl. 260—80.7 **12 Claims**

Cyclic monoolefins are copolymerized with cyclic polyolefin compounds. Further, copolyomers of cyclic monoolefins, cyclic polyolefins, and acyclic olefins are prepared. The novel polymers produced have improved properties which enables them to be used successfully in various applications.

3,778,421

PROCESS FOR PRODUCING RESINS OF WEATHER RESISTANCE

Hideo Hayashi, Kawasaki, and Hisatake Sato and Akio Oshima, Yokohama, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed July 16, 1971, Ser. No. 163,177

Claims priority, application Japan, July 22, 1970, 45/63,563

Int. Cl. C08f *15/42*

U.S. Cl. 260—82 **5 Claims**

A process for producing an aromatic hydrocarbon resin having excellent weather resistance and heat resistance which comprises separating a fraction containing a certain amount of conjugated diolefin and indene and indene alkyl derivatives from a hydrocarbon fraction having a boiling point of 140°–220° C. obtained from thermal cracking of petroleum, then adding Friedel-Crafts type catalysts to said fraction, subjecting to polymerization reaction at −30°–+60° C. for 10 minutes to 15 hours, thereafter decomposing and removing said catalyst and separating unreacted oils and low polymers from the reaction products by evaporation or distillation. Additionally, a process for concurrently producing the above-described resin and another aromatic hydrocarbon resin having a softening point of 160° C. or more, the two resins being polymerized products of two different fractions derived from the said hydrocarbon fraction having a boiling point of 140°–220° C., comprising separately polymerizing the said fractions in the manner described above.

3,778,422
PROCESS FOR THE PRODUCTION OF VINYL HALIDE POLYMERS
Elliott Farber, Trenton, and Milton K. Rosen and Ashok C. Shah, Flemington, N.J., assignors to Tenneco Chemicals, Inc.
No Drawing. Filed May 17, 1971, Ser. No. 144,417
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.8 W **10 Claims**

The polymerization of vinyl halide is carried out in an aqueous medium in the presence of an organic peroxydicarbonate and a very small amount of an alkyl hydroperoxide.

3,778,423
METHOD FOR REDUCING POLYMER DEPOSIT IN POLYMERIZATION OF VINYL CHLORIDE
William M. Reiter, Mentor, Ohio, assignor to Universal PVC Resins, Inc., Plainesville, Ohio
No Drawing. Filed June 28, 1971, Ser. No. 157,752
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.8 W **4 Claims**

In the polymerization of vinyl chloride in the presence of an oil-soluble polymerization initiator, adhesion of vinyl chloride polymer to the interior surface of the polymerization vessel is substantially reduced by coating the surface, prior to polymerization, with a free radical inhibitor.

3,778,424
PROCESS FOR THE PREPARATION OF 1,2-POLYBUTADIENE
Shotaro Sugiura and Haruo Ueno, Chiba, Minoru Kono, Ube, and Hisawaki Hamada, Ichihara, Japan, assignors to Ube Industries Ltd., Yamaguchi-ken, Japan
Filed Dec. 1, 1970, Ser. No. 94,019
Claims priority, application Japan, Dec. 2, 1969, 44/96,253, 44/96,254
Int. Cl. C08d *1/14, 1/34, 3/06*
U.S. Cl. 260—94.3 **7 Claims**

A process for the preparation of 1,2-polybutadiene which comprises polymerizing 1,3-butadiene in the liquid phase in the presence of a catalyst composition composed of:

(a) a cobalt compound,
(b) an organoaluminum compound of the formula, AlR_3, in which R is a hydrocarbon radical of 1 to 6 carbon atoms, and
(c) carbon disulfide, and optionally
(d) a nitrile compound of the formula,

$$R(CN)_n$$

in which R is an alkyl of 1 to 10 carbon atoms, an aralkyl of 7 to 10 carbon atoms, or an aryl of 6 to 12 carbon atoms, and n is 1 or 2.

Syndiotactic 1,2-polybutadiene obtained from such process has an intrinsic viscosity [η] measured in 135° C. Tetralin of at least 0.3, and a melting point measured with differential scanning calorimeter of at least 200° C.

3,778,425
PROCESS FOR THE MANUFACTURE OF GRANULAR OR POWDERY PURIFIED WHOLE EGG PROTEIN
Makoto Kandatsu and Michio Yamaguchi, Tokyo, Japan, assignors to Tokyo Daigaku, Tokyo, Japan
No Drawing. Filed Oct. 30, 1968, Ser. No. 771,987
Claims priority, application Japan, Oct. 31, 1967, 42/70,091
Int. Cl. A23j *1/08*
U.S. Cl. 260—112 R **9 Claims**

A process for producing a purified protein substance obtained from whole eggs by heating a mixture of an alcohol and eggs to dehydrate and defat the eggs and form coagulated protein particles which are then contacted with hot water to remove carbohydrates and inorganic salts, whereafter the water is removed by contact with an organic, dehydrating, solvent and any remaining fat is removed by contact with an organic defatting solvent. The resulting protein substance is dried to form a granular product which may then be crushed to powder form. The product is useful as a protein source in foods, or as an animal feed, or as a food supplement.

3,778,426
THERAPEUTICALLY USEFUL POLYPEPTIDES
Victor A. Najjar, Cohasset, Mass., assignor to Research Corporation, New York, N.Y.
No Drawing. Filed Dec. 16, 1970, Ser. No. 98,890
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **14 Claims**

Disclosure relates to therapeutically useful polypeptides containing up to about nineteen amino acids, particularly tetrapeptides in which two basic amino acids are joined together through proline. Such compounds exhibit varying degrees of phagocytosis or pinocytosis stimulation or inhibition.

3,778,427
HEXAPEPTIDE
George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
No Drawing. Filed Nov. 2, 1971, Ser. No. 199,394
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **4 Claims**

The synthesis of the hexapeptide Tyr-Gly-Leu-Arg-Pro-Gly-amide carrying easily removable protective groups on the Tyr and Arg moieties is described; the correspondingly protected pentapeptide is used as the starting material. The hexapeptide, upon removal of any protective group on the nitrogen of the tyrosine moiety, is an important intermediate for the preparation of the gonadotropin-releasing hormone.

3,778,428
PROCESS FOR THE PRODUCTION OF PEPTIDES
Teruaki Mukaiyama, 145 1-chome, Ogikubo, Suginami-ku; and Massaaki Ueki, 11–2 1-chome, Nishi-Kamata, Ohta-ku, both of Tokyo, Japan; Hiroshi Maruyama, 482 Mori-machi, Isogo-ku, Yokohama, Japan; and Rei Matsueda, % Product Development Laboratories, Sankyo Co., Ltd., 2–58 1-chome, Hiro-machi, Shinagawa-ku; and Kuniaki Gotow, 170–5 4-chome, Nishi Ohkuba, Shinjuku-ku, both of Tokyo, Japan
No Drawing. Continuation of abandoned application Ser. No. 829,741, June 2, 1969. This application Dec. 20, 1971, Ser. No. 210,201
Claims priority, application Japan, Nov. 22, 1968, 43/85.890
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **6 Claims**

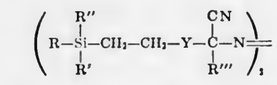
Process for the preparation of a peptide by reacting an aliphatic or aromatic carboxylic acid with an aliphatic or aromatic amine in an organic solvent in the presence of an organometallic compound of mercury and an aromatic disulfide which has a lower alkyl, halogen, phenyl or nitro-substituted phenyl group as a substituent on the sulfur.

3,778,429
METHOD OF SULFATING A TYROSINE MOIETY
Miguel A. Ondetti, North Brunswick, Josip Pluscec, East Brunswick, and John T. Sheehan, Middlesex, N.J., and Johan E. Jorpes, Stockholm, and Viktor Mutt, Farsta, Sweden, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Original application May 3, 1968, Ser. No. 726,558. Divided and this application Dec. 23, 1969, Ser. No. 889,770
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **10 Claims**

Disclosed herein is a method of sulfating the hydroxyl group of an L-tyrosine moiety by treating said moiety with a mixture of potassium bisulfate and concentrated sulfuric acid.

3,778,430
SILICON SUBSTITUTED AZONITRILES
Joel D. Citron, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed May 25, 1971, Ser. No. 146,801
Int. Cl. C07c *107/00*
U.S. Cl. 260—192 **8 Claims**

Compound of the formula



where R is alkyl, fluoro-substituted alkyl wherein the fluoro substituent is no closer than the gamma position with respect to Si, phenyl, lower alkyl substituted phenyl, fluoro-substituted phenyl, benzyl or lower alkyl substituted benzyl; R′ is a lower alkoxy, aryloxy, alkaryloxy or lower aralkoxy; Y is a saturated lower alkylene; R″ is independent of R and R′ and is any of the above named groups representing R or R′; and R‴ is a lower alkyl, lower alkyl substituted phenyl, benzyl, or lower alkyl substituted benzyl wherein substitution is at other than an alpha position. The compounds find use as free radical initiators in polymerization reactions, and are particularly useful for preparing moisture curable fluorocarbon caulking compounds.

3,778,431
GELATINIZABLE CROSSLINKED CATIONIC STARCH AND METHOD FOR ITS MANUFACTURE
Adrian P. Kightlinger, Edward K. Crosby, and Edwin L. Speakman, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.
No Drawing. Filed Oct. 16, 1972, Ser. No. 298,067
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R **13 Claims**

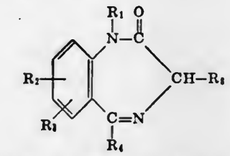
A gelatinizable crosslinked cationic starch especially suitable for paper sizing is produced by (1) reacting starch with an alkali-catalyzable crosslinking agent and the reaction product of the crosslinking agent with ammonia or with an amine and (2) depolymerizing the resultant cationic crosslinked product.

3,778,432
ISOCYANATES AND CARBAMATES OF PENICILLINS AND 3-CEPHEM-4-CARBOXYLIC ACIDS
Seemon H. Pines, Murray Hill, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Dec. 13, 1971, Ser. No. 207,624
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **5 Claims**

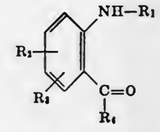
Preparation of 6-amino-6-methoxy penicillins and 7-amino-7-methoxy-3-cephem-4-carboxylic acid and its esters which are useful as intermediates in the production of the antibiotics 7-acylamido-7-methoxy-3-cephem-4-carboxylic acid and its esters and salts. The products are prepared by removal of the substituted oxycarbonyl group from a 6(or 7)- substituted oxycarbonylamino-6(or 7)-methoxy compound by reduction employing a chemical, catalytic or photochemical method under non-acidic conditions.

3,778,433
PROCESS FOR PRODUCING BENZODIAZEPINE DERIVATIVES
Hisao Yamamoto, Nishinomiya, Shigeho Inaba, Takarazuka, Toshiyuki Hirohashi, Ashiya, Michihiro Yamamoto, Toyonaka, Kikuo Ishizumi, Minoo, Mitsuhiro Akatsu, Ikeda, Isamu Maruyama, Minoo, Yoshiharu Kume, Takarazuka, Kazuo Mori, Kobe, and Takahiro Izumi, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
No Drawing. Filed Apr. 7, 1970, Ser. No. 26,409
Claims priority, application Japan, Apr. 18, 1969, 44/30,601, 44/30,603, 44/30,606; Apr. 24, 1969, 44/32,220; May 28, 1969, 44/41,873; May 29, 1969, 44/42,213; July 3, 1969, 44/52,868
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **6 Claims**

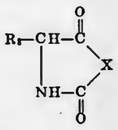
A novel process for producing benzodiazepine derivatives, which have prominent effects as tranquilizer, muscle relaxant, antispasmodic, anticonvulsant and hypnotic, represented by the formula,



wherein R_1 represents hydrogen, alkyl, alkenyl, alkynyl, haloalkyl, trifluoroalkyl, cyanoalkyl, cycloalkylalkyl, alkoxyalkyl, alkylthioalkyl, alkenyloxyalkyl, carbamoylalkyl, alkylcarbamoylalkyl, acyloxyalkyl, alkylcarbonylalkyl, phenylalkyl, substituted phenylalkyl, unsubstituted or substituted aminoalkyl or substituted carbamoylalkyl; R_2 represents hydrogen, halogen, alkyl, nitro cyano, trifluoromethyl, trifluoromethoxy, dialkylamino, piperidino, alkoxy, alkylthio, alkylsulfonyl, alkylsulfinyl, carbamoyl or sulfamoyl; R_3 represents hydrogen, nitro, alkyl or halogen; R_4 represents alkyl, cycloalkyl, cycloalkenyl, unsubstituted or substituted phenyl, phenylalkyl or heterocycle; R_8 represents hydrogen, alkyl, alkoxyalkyl, alkylthioalkyl, phenyl, halogenated or alkoxylated phenyl, or benzyl. These benzodiazepine derivatives are produced by reacting an aminophenyl ketone derivative represented by the formula,



wherein R_1, R_2, R_3 and R_4 are as defined above, with an oxazolid-2,5-dione or thiazolid-2,5-dione derivative represented by the formula,



wherein R_8 is as defined above and X represents oxygen or sulfur.

3,778,434
9 ALPHA, 11-DIMETHYL-SUBSTITUTED STEROIDS
Robert V. Coombs, Chatham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed Apr. 20, 1972, Ser. No. 245,968
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 C **27 Claims**

The compounds are 9α,11-dimethyl-substituted steroids of the estrane-type, e.g. 9α,11-dimethyl-17α-ethynylestra-

4-en-17β-ol-3-one. The compounds are useful as pharmaceuticals.

3,778,435

MOLECULAR COMPLEXES OF A BIS-(5-NITROFURFURYLIDENE)-ACETONEGUANYLHYDRAZONE COMPOUND AND AN AMINE

Jacobus Nooi, Baarn, Netherlands, assignor to Heterochemical Corporation, Valley Stream, N.Y.

No Drawing. Filed Nov. 6, 1970, Ser. No. 87,632
Int. Cl. C07d *5/30, 51/38*
U.S. Cl. 260—240 A **5 Claims**

Novel molecular complexes of a bis-(5-nitrofurfurylidene)-acetoneguanylhydrazone compound and an amine and feed additive premixes and feed compositions containing these complexes.

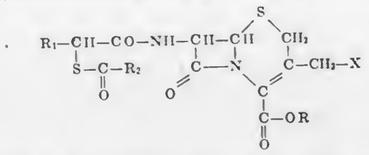
3,778,436

ACYLTHIOACETYL CEPHALOSPORINS

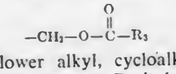
Uwe Treuner, Regensburg, and Hermann Breuer, Burgweinting, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,490
The portion of the term of the patent subsequent to July 24, 1980, has been disclaimed
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **8 Claims**

Acylthioacetylcephalosporins of the general formula



wherein R is hydrogen, lower alkyl, aralkyl, tri(lower alkyl)silyl, a salt forming ion, or the group



R_1 is hydrogen, lower alkyl, cycloalkyl, aralkyl, aryl or certain heterocyclic groups; R_2 is lower alkyl, cycloalkyl, aryl or certain heterocyclic groups; R_3 is lower alkyl, aryl or aralkyl; and X is hydrogen, hydroxy, lower alkanoyloxy, aralkanoyloxy, the radical of a nitrogen base, a quaternary ammonium radical, or together X and R represent a bond linking carbon and oxygen in a lactone ring; are useful as antibacterial agents.

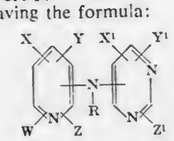
3,778,437

CHEMICAL COMPOUNDS AND COMPOSITIONS

Charles Brian Barlow, Camberley, and Clive Dudley Spencer Tomlin, Maidenhead, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,629
Claims priority, application Great Britain, Sept. 3, 1970, 42,222/70
Int. Cl. C07d *57/12*
U.S. Cl. 260—256.4 N **4 Claims**

Compounds having the formula:



wherein R represents an atom of hydrogen, an unsubstituted or substituted hydrocarbon group or an acyl group; W, X, X^1, Y, Y^1, Z and Z^1 represent atoms of hydrogen or halogen, provided that at least four of W, X, X^1, Y, Y^1, Z and Z^1 are atoms of halogen. These compounds are useful for combatting pests.

3,778,438

4-AMINO-ISOXAZOLO[5,4-d]PYRIMIDINES AND NITRATES THEREOF

William R. J. Simpson, Mendham, N.J., assignor to Sandoz-Wander Inc., Hanover, N.J.

No Drawing. Filed May 30, 1972, Ser. No. 257,678
Int. Cl. C07d *51/46*
U.S. Cl. 260—256.4 F **12 Claims**

Disclosed are compounds of the class of isoxazolo [5,4-d]pyrimidines which are substituted at the 4-position by an amino function bearing a hydroxyalkyl nitrate moiety, e.g., 4-(5-hydroxypentyl) amino-3-methyl-isoxazolo[5,4-d]pyrimidine nitrate. The compounds have pharmacological activity in animals and are useful, for example, as antianginal agents and in the treatment of shock. Also disclosed are the corresponding hydroxy intermediates useful in preparation of the nitrates and also useful as anti-anginal agents and in the treatment of shock.

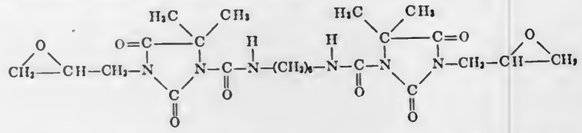
3,778,439

BINUCLEAR N-HETEROCYCLIC POLYGLYCIDYL COMPOUNDS

Juergen Habermeier, Alemannenweg 12, Pfeffingen, Basel, Switzerland, and Daniel Porret, Zeigerweg 37, Binningen, Switzerland

No Drawing. Filed Oct. 28, 1971, Ser. No. 193,559
Claims priority, application Switzerland, Nov. 2, 1970, 16,201/70
Int. Cl. C07d *49/32, 51/18*
U.S. Cl. 260—256.4 C **7 Claims**

Polyglycidyl compounds are manufactured by reacting adducts of 1 mol of a diisocyanate and 2 mols of a hydantoin or dihydrouracil, for example N,N'-bis-(5,5-dimethylhydantoin-1-carbonyl) - hexamethylenediamine, with an epihalogenohydrin or β-methylepihalogenohydrin, for example epichlorohydrin, in the presence of a catalyst. Example: the new compound of the formula



The new polyglycidyl compounds can be converted, by means of the customary curing agents for epoxide resins, such as dicarboxylic acids or polyamines, into mouldings having good mechanical and dielectric properties.

3,778,440

1-SUBSTITUTED AMINO-ISOQUINOLINES AND NITRATES THEREOF

William R. J. Simpson, Hanover, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,989
Int. Cl. C07d *35/36, 51/70*
U.S. Cl. 260—288 R **8 Claims**

Disclosed are compounds of the class of isoquinolines substituted at the 1-position by an amino function bearing a hydroxy-alkyl nitrate moiety, e.g., 1-(5-hydroxypentyl)-amino-6,7-methylene-dioxyisoquinoline nitrate. The compounds have various pharmacological activities in animals and are useful, for example, as anti-hypertensive agents, anti-anginal agents and in the treatment of shock. Also disclosed are the corresponding hydroxy intermediates which are useful in preparation of the nitrates and also as hypotensive agents or as agents in the treatment of shock.

3,778,441

IODOETHYNYL PYRIDINE COMPOUNDS

Urs Burckhardt, Basel, and Markus Zimmermann, Rieben, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 24, 1972, Ser. No. 229,173
Claims priority, application Switzerland, Mar. 5, 1971, 3,203/71
Int. Cl. C07d *31/24*
U.S. Cl. 260—290 **4 Claims**

Iodoethynyl compounds of the formula

$$R—C\equiv C—I$$

in which R denotes an aromatic six-membered ring containing 1, 2 or 3 nitrogen atoms, and which may have a fused benzene ring, the ring system being unsubstituted or substituted by one or more radicals, which may be the same or different, selected from lower alkyl, lower alkoxy, lower alkylthio, trifluoromethyl and amino groups and halogen atoms and their acid addition salts have useful antimicrobial activities; compositions containing such compounds and methods for protecting against microbial attack are provided; an illustrative embodiment is 2-methoxy-4-iodoethynylpyrimidine.

3,778,442

HETEROCYCLIC AMINE ESTERS OF 2-PHENYL-CYCLOHEXEN-3-CARBOXYLIC ACID

Luigi Turbanti, Via B. da Padule 10, Pisa, Italy

No Drawing. Original application Oct. 2, 1968, Ser. No. 766,029, now Patent No. 3,699,109, dated Oct. 17, 1972. Divided and this application June 15, 1972, Ser. No. 262,985
Claims priority, application Italy, Oct. 7, 1967, 21,367/67
Int. Cl. C07d *87/36*
U.S. Cl. 260—247.2 B **1 Claim**

This invention relates to alkylamine and heterocyclic amine esters of 2-phenyl-cyclohexen-3-carboxylic acid as well as physiologically acceptable salts thereof. These new compounds have been found to have antispastic and antiulcer action. The invention also relates to the production of these compounds.

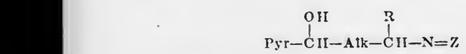
3,778,443

4-TETRAHYDRO PYRIDYL, HYDROXY ALKYL PYRAZOLES

Vishwa Prakash Arya, Bombay, India, assignor to Ciba-Geigy AG

No Drawing. Original application Feb. 13, 1969, Ser. No. 705,013, now Patent No. 3,652,573. Divided and this application Sept. 21, 1971, Ser. No. 182,555
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 R **6 Claims**

The compounds of the formula



in which N=Z denotes an N-azacycloaliphatic residue containing 5–8 ring members and at most one carbon-carbon double bond, Pyr denotes a 4-pyrazolyl residue optionally substituted in 1-position by lower alkyl or hydroxy-lower alkyl, Alk represents a 1:1-lower alklidene residue, and R denotes a hydrogen atom or a lower alkyl group, or salts thereof have antihypertensive, as well as antitussive or anti-inflammatory properties.

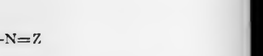
3,778,444

1-PHENYL, 4-ALKANOYL PYRAZOLES

Vishwa Prakash Arya, Bombay, India, assignor to Ciba-Geigy AG

No Drawing. Original application Feb. 13, 1968, Ser. No. 705,013, now Patent No. 3,652,573. Divided and this application Sept. 21, 1971, Ser. No. 182,511
Claims priority, application Switzerland, Mar. 1, 1967, 2,975/67; Jan. 24, 1968, 1,061/68
Int. Cl. C07d *31/48*
U.S. Cl. 260—296 R **10 Claims**

The compounds of the formula



in which N=Z denotes an N-azacycloaliphatic residue containing 5–8 ring members and at most one carbon-carbon double bond, Pyr denotes a 4-pyrazolyl residue substituted in 1-position by an optionally substituted phenyl group, Alk represents a 1:1-lower alkylidene residue, and R denotes a hydrogen atom or a lower alkyl group, or salts thereof have antihypertensive, as well as antitussive or anti-inflammatory properties.

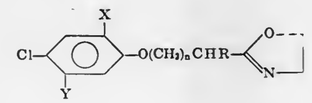
3,778,445

PHENOXYALKYLOXAZOLINES

Richard J. Timmons and William E. Gallant, Marysville, Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

No Drawing. Filed June 28, 1971, Ser. No. 157,711
Int. Cl. C07d *85/36*
U.S. Cl. 260—307 F **3 Claims**

Compounds of the formula



where X is hydrogen, chlorine, or methyl; Y is hydrogen or chlorine, *n* is 0 or 2; and R is hydrogen or methyl when *n* is 0 and hydrogen when *n* is 2. Examples of compounds with the foregoing formula are:

2-(2,4-dichlorophenoxymethyl)-2-oxazoline
2-[3-(2,4-dichlorophenoxy)propyl]-2-oxazoline
2-[1-(2,4,5-trichlorophenoxy)ethyl]-2-oxazoline
2-[1-(2-methyl-4-chlorophenoxy)ethyl]-2-oxazoline
2-(2-methyl-4-chlorophenoxymethyl)-2-oxazoline
2-(4-(chlorophenoxymethyl)-2-oxazoline.

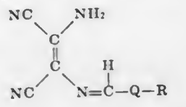
Also disclosed are methods of preparing compounds with the foregoing structural formula, methods of using such compounds as herbicides and as growth regulators, and herbicidal and growth regulator formulations including such compounds.

3,778,446
2-SUBSTITUTED - 4,5-DICYANOIMIDAZOLES AND THEIR PREPARATION FROM DIAMINOMALEONITRILE

Frank J. Weigert, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 23, 1971, Ser. No. 165,747
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **15 Claims**

Described are 2-substituted-4,5-dicyanoimidazoles, e.g., 2-ethoxy-4,5-dicyanoimidazole, and their preparation by heating a Compound III of the formula



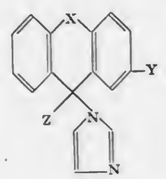
where Q is O or S and R is hydrocarbyl, in an oxidizing medium, e.g., a benzoquinone. The new compounds are useful as buffering agents. Compound III may be prepared, e.g., from diaminomaleonitrile by the method of Woodward, U.S. Pat. 2,534,331.

3,778,447
N-[SUBSTITUTED]FLUORENE-, DIBENZOCYCLOHEPTANE- AND DIBENZOCYCLOHEPTENE-IMIDAZOLES

Wilfried Draber, Wuppertal-Elberfeld, Helmut Timmler, Wuppertal-Vohwinkel, and Karl Heinz Buchel and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,495
Claims priority, application Germany, Oct. 29, 1970, P 20 53 080.7
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **16 Claims**

Antimycotic agents of the formula:



wherein

X is a carbon-carbon bond, oxygen, sulfur, ethylene or vinylene;
Y is hydrogen or halogen; and
Z is lower alkyl, lower alkenyl, lower alkynyl or cycloalkyl of 3 to 6 carbon atoms,

are prepared from thionyl-bis-imidazole and the appropriate fused dibenzocarbinol. A typical embodiment is 9-methyl-9-imidazolylfluorene.

3,778,448
MANUFACTURE OF 1,2,3,3-TETRA-SUBSTITUTED INDOLENINIUM SALTS

Hans-Juergen Sturm, Grunstadt, and Claus Tritschler, Heddesheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,880
Claims priority, application Germany, Sept. 30, 1969, P 19 49 293.4
Int. Cl. C07d *27/56*
U.S. Cl. 260—315 **7 Claims**

Manufacture of 1,2,3,3-tetra-substituted indoleninium salts by reacting a substituted indole with an alkylating agent in the presence of compounds of metals in Group II of the Periodic System. The compounds produced by the process of the invention are valuable intermediates for the manufacture of dyes and pesticides.

3,778,449
INDENOPYRAN- AND INDENOTHIOPYRAN-ALKYLAMINES

Ivo Jirkovsky, Leslie G. Humber, Christopher A. Demerson, and Thomas A. Dobson, Montreal, Quebec, Canada, assignors to Ayerst, McKenna and Harrison Limited, St. Laurent, Quebec, Canada

No Drawing. Filed Oct. 12, 1972, Ser. No. 297,129
Int. Cl. A61k *27/00;* **C07d** *65/04, 7/18*
U.S. Cl. 260—327 TH **9 Claims**

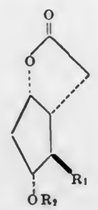
Indenopyran- and indenothiopyranalkylamine derivatives characterized by having an amino(lower)alkyl radical attached to the 1 position of a indeno[2,1-c]pyran or indeno[2,1-c]thiopyran nucleus are disclosed. The amino portion of the amino(lower)alkyl radical may be further substituted with one or two lower alkyl groups or incorporated into a heterocyclic amine radical. The derivatives are further substituted at position 1 and may be optionally substituted at positions 3, 4, 5, 6, 7, 8, and 9. The indenopyran- and indenothiopyranalkylamine derivatives of this invention are useful antidepressant agents. Methods for their preparation and use are disclosed.

3,778,450
CERTAIN BICYCLIC LACTONES

Udo F. Axen, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Mar. 23, 1971, Ser. No. 127,346
Int. Cl. C07d *5/40*
U.S. Cl. 260—343.3 **6 Claims**

Bicyclic lactone compounds of the formula



(I)

wherein R_1 is methylol or carboxaldehyde and R_2 is benzoyl, substituted benzoyl, mono-esterified phthaloyl, isophthaloyl, or terephthaloyl, naphthoyl, or substituted napththoyl. These compounds are useful intermediates in preparing prostaglandins having pharmacological utility.

3,778,451
PROCESS FOR THE MANUFACTURE OF PROPYLENE OXIDE

Michel Poite, Paris, France, assignor to Naphtachimie, Paris, France

No Drawing. Continuation of abandoned application Ser. No. 679,170, Oct. 30, 1967. This application Dec. 7, 1970, Ser. No. 95,956
Int. Cl. C07d *1/08, 1/12*
U.S. Cl. 260—348.5 L **2 Claims**

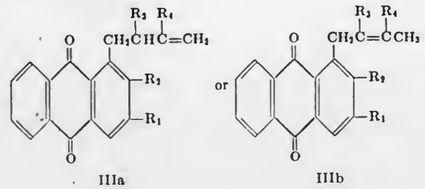
A process for the manufacture of organic epoxides by the reaction of hydrogen peroxide in an organic solvent medium with an organic compound having at least one ethylenic double bond, in the presence of a transition compound of a metal selected from the group consisting of molybdenum, tungsten, vanadium, niobium, tantalum, uranium and rhenium, said compound being soluble in the reaction medium, and in the presence of a nitrogenous organic compound which is soluble in the reaction medium and in which the amount of water present in the reaction medium at the end of the reaction is less than 20% by weight.

3,778,452
1-ALKENYL-9,10-ANTHRAQUINONES

Alden D. Josey and Jack R. Kirchner, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

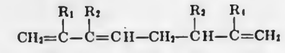
No Drawing. Filed Oct. 9, 1970, Ser. No. 79,642
Int. Cl. C07c *49/68*
U.S. Cl. 260—369 **8 Claims**

There are disclosed certain 1-alkenyl-9,10-anthraquinones of the formula



IIIa IIIb

wherein each of R_1 and R_4 is an alkyl group, or either is an alkyl group and the other is hydrogen; and each of R_2 and R_3 is an alkyl group or hydrogen, provided that R_2 is always hydrogen when each of R_1 and R_3 is hydrogen, which alkyl group or groups are 1–8 carbon straight chain hydrocarbon alkyl groups. Also disclosed is a method for preparing such substituted anthraquinones of Formula IIIa which involves effecting a Diels-Alder condensation between 1,4-naphthoquinone and an alkyl substituted 1,3,7-octatriene of the formula



wherein R_1, R_2, R_3 and R_4 are as defined above; partially oxidizing the resulting adduct which is a 1,4,4a,9a-tetrahydro-1-alkenylanthraquinone with either cupric acetate, or with oxygen or air in the presence of a weak base to obtain a 1,4-dihydro-1-alkenyl-anthraquinone; and then further oxidizing the latter with oxygen or air in the presence of a strong base such as potassium hydroxide. Alternatively, the adduct from the Diels-Alder condensation can be converted directly to the anthraquinone of Formula IIIa by oxidation with oxygen or air in the presence of a strong base such as potassium hydroxide. Heating the compounds of Formula IIIa in the presence of a strong acid such as p-toluene sulfonic acid rearranges their structure to that of Formula IIIb.

The above 1-alkenyl anthraquinones can be converted to tetrahydro-1-alkylanthraquinones that are outstandingly useful as working intermediates in cyclic reduction-oxidation methods for producing hydrogen peroxide.

3,778,453
1-AMINO - 4 - (4',5'-DILOWER ALKYL-3-SULPHAMOYLPHENYLAMINO)ANTHRAQUINONE-2-SULFONIC ACIDS

Peter Hindermann, Bottmingen, and Hubert Meindl, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,990
Claims priority, application Switzerland, Apr. 5, 1967, 4,892/67
Int. Cl. C07c *143/56;* **C09b** *1/34*
U.S. Cl. 260—374 **5 Claims**

A process for producing 1-amino-4-(4',5'-di-lower alkyl-3-sulphamoyl-phenyl)-amino anthraquinones is described which affords very high yields of these novel dyestuffs free from by-products and involves the reaction of a 1-amino-4 - halogeno-anthraquinone with a 1 - amino-4,5-dialkyl-3-sulphamoyl-benzene. The novel anthraquinones which preferably bear a sulphonic acid group in 2-position at the anthraquinone nucleus are practically free from isomers having a sulphamoyl group in 2- or 6-position at the 4,5-dialkylphenylamino moiety, and dye natural and synthetic polyamide fibres in level vivid, pure blue shades of good fastness properties, especially fastness to light; the brilliance of the shade does not suffer even when observed under artificial light.

3,778,454
COMPLEX ESTER

Joseph P. Kleiman, Birmingham, and Larry Plonsker, Troy, Mich., assignors to Ethyl Corporation, Richmond, Va.

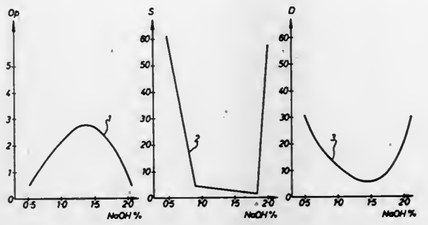
No Drawing. Filed Feb. 18, 1970, Ser. No. 12,466
Int. Cl. C07c *69/44;* **C10m** *1/26, 3/20*
U.S. Cl. 260—404.8 **5 Claims**

A complex ester lubricant is made by reacting a mole of trimethylolpropane with 0.1–0.3 mole of a C_{4-10} aliphatic dicarboxylic acid and esterifying the remaining hydroxyl groups with C_{4-12} aliphatic monocarboxylic acids having an average carbon chain of about 5–9 carbon atoms. The esters have very low pour points and high viscosity indexes. Certain of the esters have physical properties meeting Navy MIL–L–23699–B and Air Force MIL–L–27502 specifications for esters used in jet aircraft engines.

3,778,455
SYNTHETIC CARBOXYLIC ACIDS OF HIGH MOLECULAR WEIGHT

Pierre James Bernard, Mont-Saint-Aignan, France, assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Mar. 26, 1970, Ser. No. 22,814
Claims priority, application France, Mar. 28, 1969, 6909388
Int. Cl. C08h *17/36*
U.S. Cl. 260—413 **5 Claims**



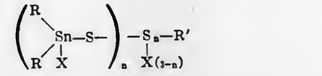
Synthetic carboxylic acids of high molecular weight are made by a process in which a halogen is reacted with a mixture of a polyolefin, unsaturated nitrile (e.g. acrylonitrile), and water. The polyolefin can be a C_2 to C_5 monoolefin polymer having a molecular weight of between about 377 and 3000. Also the acid thus prepared can be used as an anionic emulsifier in a bitumen emulsion.

3,778,456
ORGANO DISTANNTHIANES AND THE PREPARATION THEREOF

Peter Albert Theodore Hoye, Stourbridge, and Donald Albert Wood, Quinton, Birmingham, England, assignors to Albright & Wood Limited, Oldbury, near Birmingham, England

No Drawing. Original application Feb. 24, 1969, Ser. No. 801,825, now Patent No. 3,609,120, dated Sept. 28, 1971. Divided and this application Oct. 16, 1970, Ser. No. 81,546
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **4 Claims**

This invention is one of novel compounds of the formula



wherein R and R′ are hydrocarbons, X is a hydrocarbon bonded to a tin atom through a sulfur atom and n is an integer of less than 4, and of halogen-containing polymers stabilized against the deteriorative effects of heat by the presence therein of said novel compounds.

3,778,457

CLAY-ARENE COMPLEXES AND PROCESS OF PRODUCING SAME

Max M. Mortland, East Lansing, Mich., and Harvey E. Doner, Lafayette, Calif., assignors to the Board of Trustees of Michigan State University, East Lansing, Mich.

Continuation-in-part of abandoned application Ser. No. 78,126, Oct. 10, 1970. This application May 1, 1972, Ser. No. 249,686

Int. Cl. C07f *1/08, 1/10*

U.S. Cl. 260—430 **12 Claims**

A clay-arene complex characterized by π-bonding of the arene molecule to the clay through a metal ion base exchanged onto the surface of the clay. Such a complex is characterized by an intense color dependent on the particular arene in the complex and the ion on the clay and by an infrared absorption spectrum totally different from that of the liquid or solid arene and of the physically adsorbed arene.

3,778,458

LACTONE-SILICONE COMPOSITIONS

Edward Lewis Morehouse, New City, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application May 3, 1968, Ser. No. 726,588, now abandoned. Divided and this application Mar. 22, 1971, Ser. No. 127,009

Int. Cl. C07f *7/02, 7/18*

U.S. Cl. 260—448.2 B **18 Claims**

Novel lactone-silicone block copolymers containing a block of at least two siloxy units:

$$R_dSiO_{\frac{4-d}{2}}$$

and a block of lactone units,

$$-[CR_2']_eCOO-$$

with or without units of the formula —DO— such as oxyalkylene units of the formula, $\{C_aH_{2a}O\}$, such copolymers being exemplified by polycaprolactone siloxanes containing the siloxy unit:

$$\left[R'O([CR_2']_eCOO)_s(C_aH_{2a}O)_b(OC)_wR'''\right]_y\begin{matrix}R_x\\|\\SiO\end{matrix}_{\frac{4-x-y}{2}}$$

and novel polycaprolactone silanes having the formula:

$$[R'O([CR_2']_eCOO)_s(C_aH_{2a}O)_b(OC)_wR''']_zSiR''_{4-z}$$

wherein R is selected from the class consisting of hydrogen, a monovalent hydrocarbon group free of aliphatic unsaturation and having 1 to 18 carbon atoms, and a divalent organic, preferably hydrocarbon, connecting group free of aliphatic unsaturation and having 2 to 18, preferably 2 to 12, carbon atoms bonded to silicon by a linkage selected from the class consisting of silicon to carbon bonds and silicon to oxygen to carbon bonds, at least one R being a divalent organic connecting group interconnecting a silicone block with a lactone block, R′ is selected from the class consisting of hydrogen, a monovalent hydrocarbon group free of aliphatic unsaturation and having 1 to 18 carbon atoms, and an acyl group of the formula: R″C(O)— wherein R″ is selected from the class consisting of hydrogen and a monovalent hydrocarbon group free of aliphatic unsaturation and having 1 to 18 carbon atoms, R‴ is a divalent hydrocarbon group free of aliphatic unsaturation and having 2 to 18 carbon atoms, (OC) is a carbonyl groups, the group $(OC)_wR'''$ having 3 to 18 carbon atoms, R° is selected from the class consisting of hydrogen, halogen, monovalent hydrocarbon free of aliphatic unsaturation, alkoxy and aryloxy groups and having no more than 18 carbon atoms; R^2 is selected from the class consisting of hydrogen and monovalent hydrocarbon groups free of aliphatic unsaturation and having 1 to 18 carbon atoms, —DO— is a divalent organic group derived from an epoxide by opening of the oxirane ring, w is an integer of 0 to 1; a is an integer of 2 to 10; b is an integer of 0 to about 100; c is an integer of 1 to about 100; d is an integer of 1 to 3; g is an integer of 5 to 6; x is an integer of 0 to 2; y is an integer of 1 to 3; z is an integer of 1 to 4; and $x+y$ is an integer of 1 to 3. These polycaprolactone silicones are exceptionally useful as foam stabilizing agents, especially in the manufacture of polyurethane foams. Also disclosed are procedures for making the polycaprolactone silicones and polyurethane foams using the polycaprolactone silicone materials.

3,778,459

SILYL MALEATES AND POLYSILOXANE MALEATES

Abe Berger and Terry G. Selin, Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

No Drawing. Original application May 17, 1971, Ser. No. 144,306. Divided and this application Dec. 18, 1972, Ser. No. 315,803

Int. Cl. C07f *7/10, 7/18*

U.S. Cl. 260—448.2 N **10 Claims**

Silyl maleates and fumarates and polysiloxane maleates and fumarates useful as glass sizing agents are prepared in accordance with the present invention. The silyl maleates and polysiloxane maleates and fumarates are formed by reacting either the cis- or trans-1,2-biscarbalkoxyethylenes having an unsaturated alkynyl group therein with a hydrogen silane or hydrogen polysiloxane in the presence of a platinum catalyst.

3,778,460

HYDROCARBYL-HYDROXYPHENYL DITHIOCARBAMATES AND THEIR USE AS ANTI-OXIDANTS

John C. Wollensak and Edward F. Zaweski, Royal Oak, Mich., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Original application Feb. 27, 1967, Ser. No. 619,004, now Patent No. 3,462,368. Divided and this application Jan. 2, 1969, Ser. No. 816,851

Int. Cl. C07c *155/08*

U.S. Cl. 260—455 A **6 Claims**

Hydrocarbyl - hydroxyphenyl - dihydrocarbyldithiocarbamates are prepared by the reaction of dihydrocarbyl halophenols with a metal salt of a dihydrocarbylthiocarbamate. For example, the reaction of 2,6-di-tert-butyl-4-bromophenol with the sodium salt of dimethyldithiocarbamate yields 3,5-di-tert-butyl-4-hydroxyphenyl dimethyldithiocarbamate. The compounds are useful as antioxidants. Effectiveness is enhanced by dihydrocarbyl thiodialkanoates and organic phosphites or phosphonates.

3,778,461

BICYCLOHEPTENE DERIVATIVES

Edward Douglas Brown and Timothy John Leeney, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 30, 1972, Ser. No. 239,770

Claims priority, application Great Britain, Apr. 13, 1971, 9,223/71

Int. Cl. C07c *121/48*

U.S. Cl. 260—464 **4 Claims**

The disclosure relates to novel bicycloheptene-7-syn-carbaldehydes, a process for their manufacture and their use in the manufacture of prostaglandins and prostaglandin-like compounds.

3,778,462

OLEFIN HYDROCYANATION REACTION

Brian W. Taylor, Richland Township, Allegheny County, and Harold E. Swift, Gibsonia, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed June 7, 1971, Ser. No. 150,784

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.3 **9 Claims**

Hydrocyanation of a non-conjugated olefin such as hexene-1 occurs in the presence of a catalyst system comprising a zero valent nickel complex, free of carbon monoxide, and a promoting amount of a cation of a metal such as zinc chloride using as a solvent an aryl hydrocarbon containing at least one hydroxyl group directly connected to a ring carbon atom such as para-cresol.

3,778,463

AROMATIC α-AMINO ACIDS

Salo Schmul Gronowitz and Uri Michael, Lund, and Berndt Olof Harald Sjoberg, Sodertalje, Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

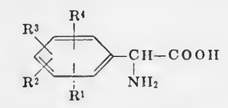
No Drawing. Filed Apr. 29, 1971, Ser. No. 138,747

Claims priority, application Sweden, May 4, 1970, 6,120/70

Int. Cl. C07c *10/06*

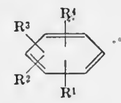
U.S. Cl. 260—471 A **10 Claims**

A method for preparing amino acids of the formula



(I)

wherein R^1, R^2, R^3 and R^4 are located in positions 2, 3, 4, 5 or 6 on the benzene ring and are the same or different and selected from the class consisting of hydrogen, hydroxy, alkoxy having 1 to 3 carbon atoms, alkyl having 1 to 3 carbon atoms and halogen, provided that at least one of R^1, R^2, R^3 and R^4 are selected from the class consisting of hydroxy, alkyl and alkoxy, by reacting a compound of the formula

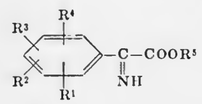


(II)

with

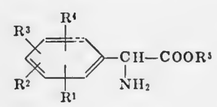
CN—COOR⁵ (III)

wherein R^5 is selected from the group consisting of alkyl having 1–4 carbon atoms monocarbocyclic aryl and dicarbocyclic aryl to obtain a compound of the formula



(IV)

and reducing to form a compound of the formula



(V)

and hydrolyzing to obtain compound I.

3,778,464

SUBSTITUTED HYDROXYLAMINE ANTI-OXIDANTS

Peter Klemchuk, 148 Upland Road, Yorktown Heights, N.Y. 10598

No Drawing. Original application Apr. 13, 1971, Ser. No. 133,700, now abandoned. Divided and this application Oct. 10, 1972, Ser. No. 296,450

Int. Cl. C07c *101/00*

U.S. Cl. 260—482 P **1 Claim**

Substituted hydroxylamines exhibit activity as anti-oxidants for a diverse group of substrate materials under specific conditions of exposure to an oxidizing environment. Illustrative embodiments of substituted hydroxylamine anti-oxidants are bis(p-nitrobenzyl)hydroxylamine and 2 - diethylamino-4,6-bis(N-n-propyl-N-hydroxyamino)-s-triazine.

3,778,465

PROCESS FOR THE PRODUCTION OF HYDROXY-FATTY ACID ESTERS

Joachim Barnstorf, Dusseldorf-Holthausen, Germany, assignor to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Apr. 27, 1971, Ser. No. 137,968

Claims priority, application Germany, May 2, 1970, P 20 21 530.9

Int. Cl. C07c *67/00, 69/66;* **C11c** *3/00*

U.S. Cl. 260—409 **10 Claims**

A process for the production of hydroxy-fatty acid esters comprising hydrogenating epoxidized fatty acid esters with hydrogen in the presence of heavy metal catalysts of the 8th Group of the Periodic Table at temperatures between 100° C. and 250° C. and a hydrogen pressure of at least 50 atmospheres and recovering said hydroxy-fatty acid esters.

3,778,466

METHOD FOR MANUFACTURE OF 3-PENTENOIC ACID ESTER

Akio Matsuda, Kashiwa, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,452

Claims priority, application Japan, June 18, 1971, 46/43,323

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 AC **4 Claims**

An ester of 3-pentenoic acid is produced by allowing butadiene, carbon monoxide and an alcohol to react in isoquinoline as the solvent in the presence of cobalt carbonyl as the catalyst. Isoquinoline has low toxicity, a high boiling point and a low solubility with respect to paraffins. Thus, it proves to be a convenient solvent in the distillation and extraction treatments needed for the isolation of the 3-pentenoic acid ester from the reaction mixture. The catalyst and the solvent both can be used cyclically in the present operation.

3,778,467

AMINOALKYL-ETHANOANTHRACENES

Max Wilhelm, Allschwil, and Walter Riess, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

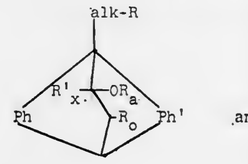
No Drawing. Filed Apr. 29, 1969, Ser. No. 820,319

Claims priority, application Switzerland, May 16, 1968, 7,284/68; Mar. 25, 1969, 4,480/69

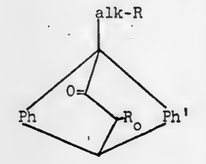
Int. Cl. C07c *91/00, 93/00, 97/10*

U.S. Cl. 260—490 **10 Claims**

Compounds of the formula



and



in which

Ph and Ph′ are optionally substituted o-phenylene radicals

alk stands for lower alkylene

R stands for an optionally substituted amino group

R_o represents hydrogen or lower alkyl

R'_x represents hydrogen or lower alkyl

R_a represents hydrogen or acyl

are useful as psychopharmaceuticals.

3,778,468

PROCESS FOR PREPARING ETHYLENE GLYCOL ESTERS

John Kollar, Wyckoff, N.J., assignor to Halcon International, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 819,507, Mar. 24, 1969, now Patent No. 3,689,535, which is a continuation-in-part of abandoned application Ser. No. 763,001, Sept. 26, 1968. This application June 27, 1972, Ser. No. 266,818

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 R **4 Claims**

Ethylene glycol esters are prepared by the molecular oxygen oxidation of ethylene in the presence of a liquid phase reaction medium containing a carboxylic acid, with the reaction being catalyzed by cationic selenium and at least one member of the group consisting of elemental bromine, elemental chlorine, a bromine-containing compound and a chlorine-containing compound.

3,778,469

ISOLATION OF PROSTAGLANDINS FROM *PLEXAURA HOMOMALLA*

Jesse Lee Baker, Emerson, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 17, 1972, Ser. No. 307,721

Int. Cl. C07c *67/06*

U.S. Cl. 260—499 **6 Claims**

This disclosure describes a multistep process for recovering a prostaglandin enriched isolate from the cortex of the sea coral *Plexaura homomalla*.

3,778,470

CHEMICAL INTERMEDIATES FOR THE PRODUCTION OF SUBSTITUTED 2-ANILINOPHENYLACETIC ACIDS AND ESTERS

Alfred Sallman, Joachimsackerstrasse 12, Bottmingen, Switzerland, and Rudolf Pfister, Newbadstrasse 128, Basel, Switzerland

No Drawing. Application Oct. 2, 1970, Ser. No. 77,763, which is a continuation-in-part of application Ser. No. 861,571, Sept. 29, 1969, which is a continuation-in-part of applications Ser. No. 782,206 and Ser. No. 782,473, both Dec. 9, 1968, and Ser. No. 625,326, Mar. 23, 1967, all now abandoned. Said Ser. No. 782,206, being a continuation-in-part of said applications Ser. No. 625,326 and Ser. No. 539,829, Apr. 4, 1966, now abandoned. Divided and this application Aug. 23, 1972, Ser. No. 283,012

Int. Cl. C07c *101/44*

U.S. Cl. 260—518 R **6 Claims**

Substituted 2-anilinophenylacetonitriles, 2-anilinobenzyl alcohols and 2-anilinophenylglyoxylic acids are valuable chemical intermediates for the prepariaton of substituted 2-anilinophenylacetic acids and esters thereof. The 2-anilinophenylacetic acids and -phenyl-acetates have desirable absorption patterns for protecting the skin against the irritating effects of ultraviolet light and are also anti-inflammatory agents. The 2-anilinophenylacetonitriles are obtained from the 2-anilinobenzyl alcohols through formation of the intermediate 2-anilinobenzyl chlorides. The 2-anilinobenzyl alcohols are obtained from the corresponding N-phenyl anthranilic acid. The 2-anilinophenylglyoxylic acids are obtained from N-phenylanilines.

3,778,471

PROCESS FOR PRODUCING ALIPHATIC CARBOXYLIC ACIDS AND AROMATIC CARBOXYLIC ACIDS

Takeshi Yamahara, Hyogo, and Takashi Deguchi, Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Dec. 12, 1969, Ser. No. 884,437

Claims priority, application Japan, Aug. 29, 1969, 44/68,854

Int. Cl. C07c *63/02, 63/26*

U.S. Cl. 260—524 R **10 Claims**

A process for the simultaneous production of an aliphatic carboxylic acid and an aromatic carboxylic acid in a high yield by oxidizing an aliphatic secondary alcohol and an alkyl-substituted aromatic hydrocarbon in the liquid phase in an amount of from 0.05 to 1.0 times the weight of said aliphatic secondary alcohol at a temperature of from 100 to 160° C. and at a partial pressure of oxygen of lower than 3 kg./sq. cm. in the presence of a cobalt compound.

3,778,472

PHENOXYPHENYLPHOSPHINIC ACIDS AND IMPROVED POLYPHENYL THIOETHER LUBRICATING COMPOSITIONS

Frank S. Clark, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application May 28, 1971, Ser. No. 148,123. Divided and this application Oct. 6, 1972, Ser. No. 296,393

Int. Cl. C07f *9/48*

U.S. Cl. 260—502.4 R **10 Claims**

Phenoxyphenylphosphinic acids and lubricating compositions comprising polyphenyl thioethers, polyphenyl ethers-thioethers or mixtures thereof and small amounts of said acids have improved lubricating properties over wide temperature ranges.

3,778,473

ORGANIC COMPOUNDS AND PROCESS

Gabriel Kornis and Eldon G. Nidy, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 19, 1971, Ser. No. 145,016

Int. Cl. C07c *127/18*

U.S. Cl. 260—553 A **3 Claims**

A number of new m-aminobenzaldoxime derivatives have been found to possess herbicidal and plant growth regulator activity. The amine grouping has been converted into an urea, thiourea, carbamate or thiocarbamate function, and the oxime group has been converted by the formation of O-ethers.

3,778,474

PRODUCTION OF ACETOACETYL AMIDES

August Stocker, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Basel, Switzerland

Continuation-in-part of application Ser. No. 682,653, Nov. 13, 1967, which is a continuation-in-part of application Ser. No. 366,592, May 11, 1964, which in turn is a continuation-in-part of application Ser. No. 112,215, May 24, 1961, all now abandoned. This application Oct. 6, 1970, Ser. No. 78,358

Int. Cl. C07c *103/42*

U.S. Cl. 260—561 K **9 Claims**

Lower acetoacetyl alkylamides, which have a melting point not exceeding 80° C., may be prepared by reacting diketone with a monoalkylamine having 6 to 15 carbon atoms in a straight chain or a dialkylamine having 2 to 7 carbon atoms in each alkyl group in the presence of a reaction medium consisting of the preformed lower acetoacetyl alkylamide reaction product, at a temperature not exceeding 80° C. A continuous process is shown where there is automatically controlled addition of the alkylamine.

3,778,475

PROCESS FOR THE PREPARATION OF HYDROXAMOYL CHLORIDES

Julius Jakob Fuchs, 1104 Greenway Road, Wilmington, Del. 19803

No Drawing. Continuation-in-part of abandoned application Ser. No. 787,581, Dec. 27, 1968. This application Feb. 14, 1972, Ser. No. 226,219

Int. Cl. C07c *119/18*

U.S. Cl. 260—566 A **2 Claims**

Certain α-hydroxyiminoketones are converted to hydroxamoyl chlorides by reaction with a chlorinating agent, such as elemental chlorine, in aqueous medium at a temperature of about −15 to 30° C. The hydroxamoyl chloride obtained in this process are useful intermediates to thiolhydroxamate esters and carbamates having insecticidal properties.

3,778,476

POLYMERIC ORGANIC HALOGEN SALTS

Alan Rembaum and Robert F. Landel, Altadena, and Hendrik Keyzer, Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

No Drawing. Filed May 11, 1970, Ser. No. 36,431

Int. Cl. C07c *87/30;* **C08g** *33/02, 33/06*

U.S. Cl. 260—567.6 P **14 Claims**

Halogen containing polymer salts formed from the reaction of linear polymers containing quaternizable nitrogens dissolved in a suitable solvent, with a halogen source under conditions sufficient to precipitate the halogen containing polymer salts from the solution.

3,778,477

MANUFACTURE OF α,β-UNSATURATED CARBONYL COMPOUNDS

Herbert Mueller, Frankenthal, and Norbert Goetz, Bobenheim-Roxheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,212

Int. Cl. C07c *45/00*

U.S. Cl. 260—599 **12 Claims**

A process for the manufacture of α,β-unsaturated carbonyl compounds by contacting the corresponding β,γ-unsaturated alcohols with a dehydrogenation catalyst at temperatures ranging from 150° to 600° C. The reaction proceeds particularly well when carried out in the presence of catalytic amounts of certain nucleophilic substances.

3,778,478

PROCESS FOR PREPARING POLYTHIODIGLYCOL

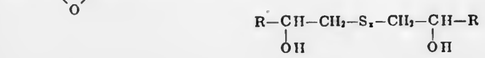
Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed May 12, 1972, Ser. No. 252,693

Int. Cl. C07c *149/12*

U.S. Cl. 260—608 **6 Claims**

A process for preparing polythiodiglycols directly from monoepoxides, H_2S, and sulfur using water or the polythiodiglycol itself as the reaction medium either with or without an inorganic base catalyst according to the following reaction is disclosed.



$$2R-CH(O)CH_2 + H_2S + (x-1)S \longrightarrow R-CH(OH)-CH_2-S_x-CH_2-CH(OH)-R$$

3,778,479

UNSATURATED ALCOHOLS AND DERIVATIVES THEREOF

John J. Morrisroe, Whittier, and Thomas F. Banigan, Arcadia, Calif., assignors to Pilot Chemical Company, Santa Fe Springs, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 687,137, Dec. 1, 1967, which is a continuation-in-part of application Ser. No. 618,824, Feb. 27, 1967, now Patent No. 3,544,603. This application Apr. 19, 1971, Ser. No. 135,428

Int. Cl. C07c *43/00, 43/14*

U.S. Cl. 260—615 B **3 Claims**

Linear 3-alken-1-ols of from 11 to 15 carbon atoms are formed by reacting formaldehyde and a linear olefin. Compounds exhibiting desirable detergent properties result from sulfation, ethoxylation, ethoxylation and sulfation, or ethoxylation and dihydroxylation of the 3-alken-1-ols.

3,778,480

PROCESS FOR POLYMERIZATION OF TETRAHYDROFURAN

Kazuo Matsuda, Wakayama, Yoshiaki Tanaka, Osaka, and Takeyo Sakai, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,218

Claims priority, application Japan, Sept. 16, 1970, 45/81,007

Int. Cl. C07c *41/00, 43/02*

U.S. Cl. 260—615 B **5 Claims**

Tetrahydrofuran is polymerized in the presence of a catalyst system of 5–50 percent by weight of fuming sulfuric acid, based on the weight of tetrahydrofuran, and 0.01–70 mol percent of fluorine-containing compound, based on the free SO_3 in the fuming sulfuric acid.

3,778,481

PROCESS FOR THE PRODUCTION OF ALKYL DIHYDROXY BENZENES

Efim Biller, Fribourg, Switzerland, Roman Goller, Vienna, Austria, Hellmuth Pflugk, Wesseling, Germany, and Richard Schlegel, Vienna, Austria, assignors to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft, Wesseling, near Cologne, Germany

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,342

Claims priority, application Germany, Feb. 17, 1969, P 19 07 879.6

Int. Cl. C07c *37/02*

U.S. Cl. 260—629 **4 Claims**

Production of alkyl dihydroxy benzenes by reacting an alkyl chloro phenol with caustic potash in suspension in an inert solvent at elevated temperatures, whereby the water formed during the reaction is removed, wholly or in part.

3,778,482

1,3,4-TRIOLS AND DERIVATIVES THEREOF

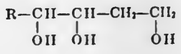
John J. Morrisroe, Whittier, and Thomas F. Banigan, Arcadia, Calif., assignors to Pilot Chemical Company, Santa Fe Springs, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 687,137, Dec. 1, 1967, which is a continuation-in-part of application Ser. No. 618,824, Feb. 27, 1967, now Patent No. 3,544,603. This application Apr. 19, 1971, Ser. No. 135,427

Int. Cl. C07c *31/18, 43/04*

U.S. Cl. 260—635 R **4 Claims**

Described herein is a novel class of compounds of formula



$$R-CH(OH)-CH(OH)-CH_2-CH_2(OH)$$

where R is a hydrogen or linear alkyl group of from 1 to about 11 carbon atoms. The compounds are prepared by dihydroxylation of a 3-alken-1-ol; e.g., by peroxidation in formic acid to the formate ester which latter is hydrolyzed to the 1,3,4-triol of the invention. The multifunctional compounds can be converted to surfactants, emulsifiers and lubricants, and are useful in the formation of urethanes and alkyd-type resins.

3,778,483
METHODS FOR THE MANUFACTURE OF MACROCYCLIC COMPOUNDS

Joseph J. Becker, Geneva, Karl-Heinrich Schulte-Elte, Chatelaine, Geneva, and Gunther Ohloff, Bernex, Geneva, Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

No Drawing. Original application Dec. 7, 1967, Ser. No. 688,684. Divided and this application June 25, 1971, Ser. No. 156,966

Int. Cl. C07c *13/32*

U.S. Cl. 260—666 PY **2 Claims**

The present invention relates to a new method for the manufacture of macrocyclic compounds, in particular of cyclopentadecanone ("Exaltone"; registered trademark) and a 3-methyl-cyclopentadecan-1-one (muscone). These ketones are odoriferous substances, known per se, which have a musk odor and are indispensable in the perfume industry.

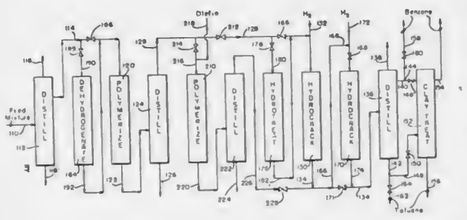
3,778,484
METHOD AND RECOVERY OF BENZENE AND TOLUENE

Stephen M. Kovach, Ashland, and Ralph E. Patrick, Flatwoods, Ky., assignors to Ashland Oil, Inc., Columbus, Ohio

Original application Sept. 28, 1966, Ser. No. 582,652, now abandoned. Divided and this application July 19, 1971, Ser. No. 163,631

Int. Cl. C07c *7/04*

U.S. Cl. 260—674 R **2 Claims**



A method of recovering benzene and toluene from normally liquid hydrocarbon mixtures containing in excess of 50% of benzene and toluene, together with acyclic mono - olefins, acyclic diolefins, cyclo - paraffins, cyclic mono-olefins, cyclic diolefins, and in some cases, sulfur and nitrogen or oxygen compounds, including distilling the mixture to recover a fraction boiling in the benzene-toluene range, subjecting this fraction to a hydrogen treatment in the presence of a catalyst and under conditions to dehydrogenate acyclic diolefins and hydrogenate acyclic mono-olefins, polymerizing the hydrogenation product, if desired, distilling the polymer product to recover a fraction boiling in the benzene-toluene range, subjecting the benzene - toluene fraction to a hydrogen treatment in the presence of a catalyst and under conditions sufficient to convert non-aromatic cyclic compounds to aromatic compounds and crack other non-aromatic compounds of lower boiling point.

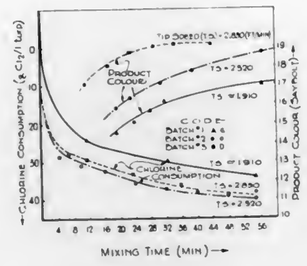
3,778,485
TURPENTINE PURIFICATION PROCESS

Oldrich Prochazka, Ste. Foy, Quebec, Canada, assignor to Anglo Paper Products, Limited, Quebec, Quebec, Canada

Filed Mar. 3, 1972, Ser. No. 231,531

Int. Cl. C09f *3/02*

U.S. Cl. 260—675.5 **6 Claims**



The process of the invention relates to a method of producing solvent grade turpentine by the vigorous agitation of a crude sulfate turpentine, containing malodorous sulfur compounds and/or colored impurities, with an oxidizing hypochlorite solution. This treatment removes the odor-producing sulfur compounds, substantially improves the color of the product, and removes the need for distilling the "light ends." The odor-producing sulfur compounds are converted to water-soluble compounds which are removed in a subsequent washing step in order to prevent the turpentine reverting to its previous malodorous state.

3,778,486
TURPENTINE FRACTION PURIFICATION

Clayton B. Hamby, Jr., Orange Park, Fla., assignor to SCM Corporation, Cleveland, Ohio

Filed Apr. 19, 1972, Ser. No. 245,555

Int. Cl. C07c *13/00, 27/02*

U.S. Cl. 260—675.5 **4 Claims**

Set forth is a process for treating a turpentine hydrocarbon fraction having not substantially more than about 500 parts per million sulfur content with activated carbon for the purpose of removing such sulfur to an essentially negligible quantity. It comprises the steps of feeding a sulfur-laden turpentine fraction to a primary stage containing activated carbon and removing essentially all of the sulfur material in said fraction stage and then regenerating the resulting sulfur-laden carbon in a plurality of steps; the first being done at a temperature sufficient for removing a substantial proportion of adsorbed hydrocarbon compounds without removing substantial sulfur compounds from said carbon and the second being at a temperature sufficient for removing said sulfur compounds without effecting substantial damage to said carbon.

3,778,487
POLYISOBUTYLENE OIL HAVING A HIGH VISCOSITY INDEX

Gary L. Driscoll, Boothwyn, Irl N. Duling, West Chester, and David S. Gates, Swarthmore, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed July 6, 1970, Ser. No. 52,301

Int. Cl. C07c *9/00*

U.S. Cl. 260—676 R **14 Claims**

Novel polyolefin oils of monomers of the formula



wherein R is $-CH_3$ and $-C_2H_5$ and R_1 is an alkyl group of from 1 to 10 carbon atoms, have exceptionally high viscosity indices and high coefficients of traction and consists essentially of unisomerized, true oligomer, such as true polyisobutylene oligomers (e.g. $C_{16}H_{32}$, $C_{20}H_{40}$, $C_{24}H_{48}$ . . . $C_{48}H_{96}$). The novel oils are useful as electrical oils, as chemical intermediates or as tractants (i.e. as traction fluids or as components of traction fluids). The hydrogenated oils are novel and especially useful as tractants, particularly when hydrogenated to a bromine number less than 10 (more preferably, less than 5). The unique character of these novel oils, whether olefine and/or paraffin, can be proved by a combination of gas chromatography and nuclear magnetic resonance spectroscopy (NMR). These olefins, and the paraffins produced by hydrogenation thereof are characterized by "crowded" and sterically hindered geminal methyl and isolated methylene groups. The individual species in the range of C_{16} to C_{48} can be separated from the whole oil by vapor phase chromatography. One such novel polyolefin oil having an ASTM viscosity index greater than 85, consists essentially of monoolefins of carbon numbers, C_{24}, C_{28}, C_{32}, C_{36} and C_{40} and having repeating isobutylene structures.

3,778,488
IRON ALLOY CATALYZED OXIDATIVE DEHYDROGENATION

Louis J. Croce, Seabrook, Tex., and Laimonis Bajars, Princeton, N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,920

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **7 Claims**

Iron alloys are excellent oxidative dehydrogenation catalysts. They are particularly useful because of their strength and metallic properties. Some of these catalysts can be used to build reactors or reactor liners, others can be prepared as screens or wire or in various other desirable shapes to be used in fixed or moving bed dehydrogenation.

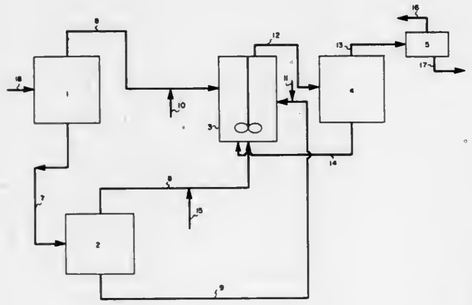
3,778,489
ALKYLATION WITH SEPARATE OLEFIN STREAMS INCLUDING ISOBUTYLENE

Paul T. Parker, Baton Rouge, La., and Ivan Mayer, Summit, N.J., assignors to Esso Research and Engineering Company

Continuation-in-part of abandoned application Ser. No. 99,707, Dec. 18, 1970. This application Dec. 16, 1971, Ser. No. 208,873

Int. Cl. C07c *3/52, 3/54*

U.S. Cl. 260—683.43 **27 Claims**



An alkylation process comprising contacting a paraffin, preferably a C_4-C_6 isoparaffin, and a strong alkylation catalyst in an alkylation zone with a first olefin-containing stream substantially free of isobutylene and 2-methyl-butene-1 and a second olefin-containing stream comprising isobutylene or 2-methyl-butene-1, where the first and second olefin-containing streams are introduced into the alkylation zone at separate points along the zone, the points situated so as to prevent any appreciable mixing of the first and second olefin-containing streams with each other prior to contacting the catalyst and recovering alkylate product of high octane number.

3,778,490
POLAR COMPOUND ADJUVANTS FOR IMPROVED BLOCK POLYMERS PREPARED WITH PRIMARY HYDROCARBYLLITHIUM INITIATORS

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application Apr. 23, 1969, Ser. No. 818,804, now Patent No. 3,639,521, dated Feb. 1, 1972. Divided and this application June 25, 1971, Ser. No. 156,986

Int. Cl. C08f *19/08*

U.S. Cl. 260—880 B **18 Claims**

High raw tensile strength radial and linear block polymers are prepared by the incremental addition of monomers employing a particular sequence of addition using primary hydrocarbyllithium initiators with small amounts of polar compound adjuvants, followed by the addition of a polyfunctional treating agent.

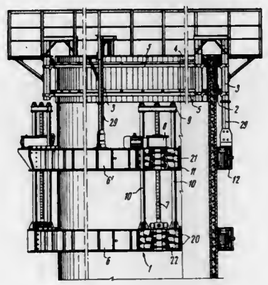
3,778,491
METHOD OF ERECTING MONOLITHIC CONCRETE AND REINFORCED CONCRETE CONSTRUCTIONS

Valentin Efimovich Andreev, ulitsa Artema 84, kv. 78; Vyacheslav Ivanovich Pankovsky, ulitsa Cheljuskintsev 151, kv. 60; Yakov Davidovich Zengin, ulitsa Universitetskaya 93, kv. 28; and Taras Fedorovich Golub, ulitsa Universitetskaya 18, kv. 19, all of Donetsk, U.S.S.R.; and Alexei Nikolaevich Buryabash, deceased, late of Donetsk, U.S.S.R.; by Nelya Vasilievna Buryabash, adminstratrix, ulitsa Kirova 151v, kv. 2, Donetsk, U.S.S.R.

Filed July 8, 1970, Ser. No. 53,140

Int. Cl. E04b *1/16;* **E04g** *11/22*

U.S. Cl. 264—32 **1 Claim**



The erection of monolithic concrete and reinforced concrete construction in which the casing rests on the side surfaces of the erected part of the construction due to friction forces and simultaneously a pitch vertical displacement of the casing is effected in the course of concreting, with support members being disposed one above the other in at least two stories and interconnected by hoists, and the support members being equipped with

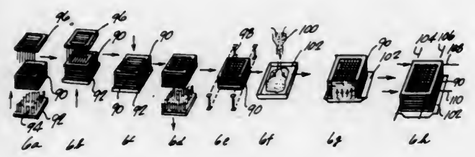
shields made extensible in the horizontal direction to hold the casing on the side surfaces of the erected part of the construction.

3,778,492

FABRICATION OF THREE-DIMENSIONAL REINFORCED FOAM INSULATION BLOCKS

Carl Robert Lemons, Westminster, Calif., assignor to McDonnell Douglas Corporation

Filed Apr. 3, 1972, Ser. No. 240,524
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 **4 Claims**



A method of making three-dimensional reinforced foam insulation blocks wherein an X, Y, Z grid is made of the reinforcement fibers through which the insulative foam expands in the fabrication process. The placement of Z fibers through the multiple layers of the X–Y grid fibers utilizes a tube array for guidance. Frames for the X–Y fibers form a disposable mold to contain the foam while it expands and cures.

3,778,493

COMPACTING REFRACTORY PARTICLES HAVING A SURFACE COATING OF GELLED SILICA SOL

Richard Dudley Shaw, Dunedin, High Elms Road, Downe, Kent, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 87,348, Nov. 3, 1969. This application Nov. 4, 1971, Ser. No. 195,851
Int. Cl. C04b *33/12, 33/20, 35/14*
U.S. Cl. 264—63 **8 Claims**

Refractory particles are coated with a silica sol derived by hydrolysis of an alkyl silicate and the silica sol is caused to set or gel. The coated particles are dried to a powder, the dry powder is compacted to a desired shape and sintered. Up to 3 percent of alcohol can optionally be added to the dry powder prior to compaction.

3,778,494

SLAKING QUICKLIME IN AQUEOUS SODIUM/POTASSIUM SILICATE SOLUTION IN MANUFACTURE OF HYDROUS CALCIUM SILICATE PRODUCTS

Jerry L. Helser, Hebron, Ohio, assignor to Owens-Corning Fiberglas Corporation

Continuation of abandoned application Ser. No. 819,593, Apr. 28, 1969. This application Aug. 18, 1971, Ser. No. 172,882
Int. Cl. C04b *1/06, 15/12, 31/08*
U.S. Cl. 264—82 **4 Claims**

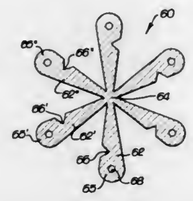
In the manufacture of hydrous calcium silicate thermal insulation products containing fiber reinforcement "voids" and "fold planes" in the final product are a frequent problem. These problems are abated by slaking the quicklime in water containing dissolved sodium or potassium silicate in prescribed amounts. The dissolved silicate forms a coating on the particles of calcium hydroxide that acts as a barrier and retards further and continued hydration. Later the other conventional ingredients are added, the resultant slurry is poured into molds of desired shape, the filled molds are heated with steam to preharden the slurry and finally the filled molds are autoclaved to harden and dry the molded products.

3,778,495

CONTINUOUS PROCESS OF MANUFACTURING POLYMERIC COMPOSITION WRITING POINTS AND DEVICES

Donald D. Woolley, Alhambra, Calif., assignor to The Gillette Company, Santa Monica, Calif.

Continuation-in-part of application Ser. No. 53,571, July 9, 1970. This application Jan. 24, 1972, Ser. No. 220,209
Int. Cl. B28h *21/54;* **B29f** *3/00*
U.S. Cl. 264—177 F **12 Claims**



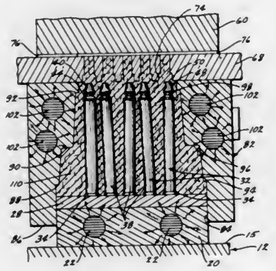
Relates to a method of manufacturing homogeneous, unitary writing elements in a continuous manner whereby the structural and physical properties of a synthetic thermoplastic polymer (or co-polymer) can be utilized at best advantage. The methods herein disclosed are particularly directed to the production of writing elements having a gross cross-sectional area not appreciably greater than 32,000 square mils, such elements having a plurality of minute ink-conveying channels distributed within a circumaxial area not appreciably exceeding one-fourth of the gross cross-sectional area of the element, the aggregate cross-sectional area of the channels being less than about 4% of the gross area of the element. The method utilizes and discloses steps and conditions of extruding and melt-drawing a polymer and then reforming the internal portions of the extruded body by a compressive drawing operation, under stated conditions, to obtain channels of desired size. As a further step the extruded article may be stabilized and relieved of internal stresses by annealing.

3,778,496

METHOD OF EMBEDDING THIN WALL TUBULAR MATERIAL IN PLASTIC UNDER HIGH PRESSURE CONDITIONS

Floyd R. Ladd, West Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Apr. 5, 1971, Ser. No. 131,022
Int. Cl. B29d *3/00*
U.S. Cl. 264—162 **4 Claims**



A method and means of embedding thin wall tubular material in plastic under high pressure conditions is disclosed herein. The means of this invention comprises a

first plate means with a plurality of spaced apart studs extending upwardly therefrom which are adapted to support tubular members thereon in a substantially vertically disposed position. A casting means is positioned above the first plate means and has a cavity formed therein which is adapted to receive casting material therein and which is adapted to receive the tubular members therein when the casting means is moved downwardly with respect to the first plate means. The casting means has a plurality of guide openings formed therein at the upper end of the cavity which are adapted to receive the tapered upper ends of the tubular members to properly position the same when the casting means is moved to its lower position. Heating elements are also provided to heat the casting material to cause the same to harden at the proper time. The method of embedding the tubular members in the casting material is disclosed with the method causing the tubular members to be properly positioned in a parallel, spaced apart manner so that the finished product can be used as a fluid manifold in an injection machine.

3,778,497

PLUTONIUM RECOVERY FROM ORGANIC MATERIALS

Ronald L. Deaton, Germantown, and Gary L. Silver, Centerville, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed July 28, 1972, Ser. No. 276,210
Int. Cl. C01f *13/00*
U.S. Cl. 423—2 **5 Claims**

The invention comprises a method for removing plutonium or the like from organic material wherein the organic material is leached with a solution containing a strong reducing agent such as titanium (III) (Ti^{+3}), chromium (II) (Cr^{+2}), vanadium (II) (V^{+2}) ions, or ferrous ethylenediaminetetraacetate (EDTA), the leaching yielding a plutonium containing solution which is further processed to recover plutonium. The leach solution may also contain citrate or tartrate ion.

3,778,498

PROCESS FOR RECOVERING URANIUM

Masayuki Yano, Iwao Yamamoto, and Nobuo Yasuhira, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,536
Claims priority, application Japan, Dec. 29, 1969, 45/818; Mar. 12, 1970, 45/21,037; Aug. 31, 1970, 45/76,551
Int. Cl. C01g *56/00*
U.S. Cl. 423—7 **13 Claims**

A process for recovering uranium from a uranium-bearing aqueous solution which comprises contacting a titanated polyvinyl alcohol in the form of particles, flakes, films, filaments, fibers, battings or fabrics with a uranium-bearing aqueous solution to absorb the uranium on the titanated polyvinyl alcohol, and thereafter desorbing the uranium with an aqueous solution of sodium carbonate or ammonium carbonate.

3,778,499

ATMOSPHERE PURIFICATION OF RADON AND RADON DAUGHTER ELEMENTS

Lawrence Stein, Downers Grove, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,704
The portion of the term of the patent subsequent to May 2, 1989, has been disclaimed
Int. Cl. B01d *53/34*
U.S. Cl. 423—210 **8 Claims**

A method for purifying an atmosphere of radon and radon daughter elements which may be contained therein by contacting the atmosphere with a fluorinating solution, whereby the radon and radon daughters are oxidized to their respective fluorides. The fluorides dissolve in the fluorinating solution and are removed from the atmosphere, which may then be recirculated.

3,778,500

METHOD OF PRODUCING $NaF \cdot 2UF_4$

Gifford G. Briggs, Cincinnati, Ohio, assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed May 23, 1972, Ser. No. 256,065
Int. Cl. C01g *43/00*
U.S. Cl. 423—253 **6 Claims**

A method is described for the production of uranium metal from uranyl nitrate or uranyl chloride with an intermediate product of $NaF \cdot 2UF_4$.

3,778,501

REGENERATION OF FLUE GAS DESULFURIZATION SORBENTS

Robert J. Lang, Watchung, N.J., Eugene L. Holt, Elmhurst, N.Y., and David N. Stoneback, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 790,844, Jan. 13, 1969. This application June 4, 1971, Ser. No. 150,173
Int. Cl. B01d *53/34*
U.S. Cl. 423—244 **5 Claims**

Solid sorbents for the removal of sulfur dioxide from gases, such as copper oxide on a suitable carrier material such as alumina, are regenerated with a regeneration gas comprising hydrogen and about 50 to 95% by volume of steam. The presence of steam in the amounts indicated reduces the amount of sulfide formation and thereby increases the capacity of the sorbent and improves the utilization of reducing gas.

3,778,502

METHOD FOR COMBATTING SCALING OF THE SCALP

Guy Aubin, Gentilly, and Georges Manoussos, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 748,185, July 29, 1968. This application Feb. 2, 1971, Ser. No. 112,092
Claims priority, application Luxembourg, Aug. 1, 1967, 54,253
Int. Cl. A61k *27/00, 15/12*
U.S. Cl. 424—266 **14 Claims**

A method for combatting scaling of the scalp which comprises applying to the hair and scalp a composition comprising a solution of, as an active ingredient, arginine, histidine and lysine as well as the citric, nicotinic and malic acid salts thereof, including mixtures thereof in a solvent such as water, a lower alkanol and an aqueous solution of a lower alkanol. The active ingredient is present in amounts ranging from 0.2–5 weight percent of the composition which has a pH ranging from about 7.0 to about 11.

3,778,503

SODIUM TETRACYCLINE-METHYLENE-SULFAMETHOXYPYRIDAZINE - PROPANE - SULFONATE AS AN ANTIBACTERIAL AGENT

Maurice Georges Rouchy, Usine de la Claire, Bosseval par Donchery, France

No Drawing. Filed June 30, 1970, Ser. No. 51,388
Claims priority, application France, July 1, 1969, 6922133
Int. Cl. A61k *27/00, 21/00*
U.S. Cl. 424—227 **1 Claim**

The invention relates to new chemical compounds which are useful as drugs and a method of preparing said

compounds. The new compounds are antibiotics of the tetracycline group combined with sulfonamides having free amino or free alkylamino function, the connection between the two types of base molecules being effected by means of an aldehyde bridge. The drugs have properties which are derived directly from those of the base molecules. The drugs are antibiotic, antibacterial and antiparasitic agents.

3,778,504

CERTAIN BENZIMIDAZOLES USED AS ANTI-INFLAMMATORY AGENTS

Francois Clemence, Rosny-sous-Bois, and Odile Le Martret, Paris, France, assignors to Roussel-UCLAF, Paris, France

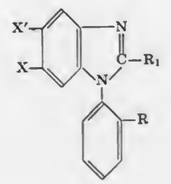
No Drawing. Original application Mar. 18, 1969, Ser. No. 808,298, now Patent No. 3,644,382. Divided and this application Oct. 8, 1971, Ser. No. 187,915

Claims priority, application France, Mar. 20, 1968, 144,581; June 20, 1968, 155,808, 155,810

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **21 Claims**

Benzimidazoles of the formula



wherein X and X′ may be different and are selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, trihalomethyl and nitro, R is selected from the group consisting of —COOH—, —COOR′, and



R′ is selected from the group consisting of aliphatic and hydroxylated residue of a glycol, A and B are selected from the group consisting of hydrogen and optionally substituted aliphatic and R_1 is selected from the group consisting of hydrogen, lower aliphatic hydrocarbon, unsubstituted and polysubstituted aryl, arylaliphatic, a thienyl, a β-pyridyl and a furyl with the proviso that when R_1 is phenyl, X′ and X are other than halogen, alkoxy and trifluoromethyl which compounds possess anti-inflammatory and antiviral activity and a novel process for their preparation.

3,778,505

LITHIUM SALT BASED PHARMACEUTICAL COMPOSITION AND METHODS OF USE

Liliane Saint-Martin, Bourg-la-Reine, France, assignor to Societe Civile de Recherches et d'Etudes Therapeutiques, Anthony, France

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,040

Claims priority, application France, Dec. 1, 1970, 7043183; June 17, 1971, 7122039

Int. Cl. A61k *27/00*

U.S. Cl. 424—317 **11 Claims**

A pharmaceutical composition for the treatment of mental affections contains, in dosage form, between about 0.25 and 2.5 g. per administrable dose of a lithium salt of an acid selected from the group consisting of gluconic acid and its isomers, glucoheptonic acid and its isomers, the phosphates of the compounds and mixtures thereof.

3,778,506

USE OF PROSTAGLANDINS TO INDUCE MEDICAL ABORTION

Kenneth T. Kirton, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed June 1, 1971, Ser. No. 148,896

Int. Cl. A61k *27/00*

U.S. Cl. 424—318 **18 Claims**

Prostaglandins are administered in sterile pharmaceutical dosage forms into the fluid of the amnion of a gestating mammal to induce a medical abortion during the second trimester of the gestation period.

3,778,507

DERIVATIVES OF PHLOROGLUCINOL FOR CAUSING AN ANTISPASMODIC EFFECT

Madeleine Vaille, born Penciolelli, Brunoy, France, assignor to Societe Anonyme dite: ORSYMONDE, Paris, France

No Drawing. Original application Aug. 29, 1969, Ser. No. 854,264, now Patent No. 3,657,359, dated Apr. 18, 1972. Divided and this application Sept. 16, 1971, Ser. No. 181,190

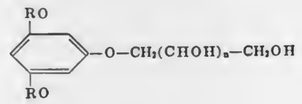
Claims priority, application France, Sept. 4, 1968, 42,137

Int. Cl. A61k *27/00*

U.S. Cl. 424—340 **9 Claims**

This invention is concerned with the use as antispasmolytic agents of phloroglucinol derivatives which are represented by the formula:

(I)



wherein R is a lower alkyl group and *n* is 0 or 1. These compounds having interesting pharmacological properties are obtained by reacting 3,5-dialkoxy-phenol with either glycol chlorhydrin or glycerol chlorhydrin.

3,778,508

FEED COMPOSITIONS AND METHODS

Gino J. Marco, Webster Groves, Mo., and Robert B. Grainger, Palm Desert, Calif., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 7, 1969, Ser. No. 874,956

Int. Cl. A61k *27/00*

U.S. Cl. 424—300 **15 Claims**

Compositions containing at least one compound of the class of dithiocarbamates are useful for improving the growth response in animals.

3,778,509

CONTROL OF FUNGI ON COTTON PLANTS

Harold Loyd Lewis, Raleigh, N.C., assignor to Cotton, Incorporated, New York, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,178

Int. Cl. A01n *9/24*

U.S. Cl. 424—343 **11 Claims**

Monohydric aliphatic alcohols containing from 4 to 12 carbon atoms are effective in the control of microorganisms which cause diseases of plants such as cotton or which produce toxins that impair the usefulness of products of plants intended for human or animal consumption such as cottonseed oil or meal.

3,778,510

PROCESS FOR THE PRODUCTION OF LYOPHILIZED LIVER EXTRACT

Pierre Blonde, Avenue Noel, 19 bis, Saint-Maur-des-Fosses, France

No Drawing. Continuation of abandoned application Ser. No. 28,550, Apr. 14, 1970. This application Aug. 22, 1972, Ser. No. 282,832

Claims priority, application France, Apr. 15, 1969, 6911589; Mar. 24, 1970, 7010548

Int. Cl. A61k *17/00*

U.S. Cl. 424—106 **2 Claims**

Lyophilized pharmaceutical compositions which dissolve rapidly in water while having improved mechanical strength and resistance to atmospheric moisture are made by lyophilizing medicaments in aqueous admixture with a crystallizable extender and a water soluble colloid.

3,778,511

α-(1,2,3,4-TETRAHYDRO-6-QUINOYL)-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF FOR TREATING INFLAMMATION

Raymond Bernasconi, Oberwil, Basel-Land, Switzerland, assignor to Ciba-Geigy Corporation

No Drawing. Original application Apr. 14, 1970, Ser. No. 28,532, now abandoned. Divided and this application Aug. 23, 1972, Ser. No. 283,009

Claims priority, application Switzerland, Apr. 21, 1969, 5,972/69; Mar. 4, 1970, 3,132/70

Int. Cl. A61k *21/00*

U.S. Cl. 424—258 **4 Claims**

(1,2,3,4-tetrahydro-6-quinolyl)-acetic acids substituted in at least one of the positions 1–5, 7, 8 and α, in which substituents optionally present in the α-position and/or 1-position are lower aliphatic or cycloaliphatic hydrocarbon residues, their esters and derivatives, in which two hetero-atoms, of which at least one is a nitrogen atom, are bonded to the C-atom of the modified carboxyl group, and their salts are useful as antiphlogistic agents.

3,778,512

FUNGICIDAL METHOD UTILIZING FURANCARBOXAMIDES

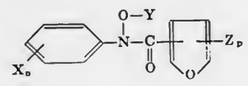
John Krenzer, Oak Park, and Sidney B. Richter, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Original application Dec. 28, 1967, Ser. No. 694,075, now abandoned. Divided and this application June 23, 1970, Ser. No. 59,771

Int. Cl. A01n *9/28*

U.S. Cl. 424—285 **6 Claims**

A compound of the formula:



wherein *n* is an integer of from 1 to 3; X is selected from the group consisting of halogen, an aliphatic radical, nitro, hydroxy, alkoxy, acyl, acyloxy and cyano; Y is selected from the group consisting of hydrogen, alkyl, acyl, alkoxycarbonyl, alkylthiocarbonyl, alkoxycarbonylalkylene, and a carbamoyl radical; Z is selected from the group consisting of halogen, alkyl, alkoxy and nitro; and *p* is an integer of from 0 to 3 having utility in the control of fungi.

3,778,513

PROCESS FOR PREPARING MEAT EXTRACT-LIKE SEASONING

Akio Shiga and Kengo Ishida, Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 754,964, Aug. 23, 1968. This application Dec. 20, 1971, Ser. No. 210,101

Claims priority, application Japan, Aug. 25, 1967, 42/54,204

Int. Cl. A23l *1/26*

U.S. Cl. 426—7 **14 Claims**

A process for preparing a meat extract-like seasoning by subjecting the cells of a yeast, bacterium, mold or ray fungus to enzyme or acid decomposition to form an amino acid-peptide mixture having an average peptide length of about 4 to 5 units, adding to the mixture saccharides, organic acids, and/or salts of these acids, 5′-nucleotide and nucleosides, and gelatin and/or sodium alginate, and reacting the resultant mixture at an elevated temperature.

3,778,514

NUTRITIONAL PRODUCT OF WHEY PROTEIN AND COLLAGEN HYDROLYSATE

Floyd C. Olson, Madison, Wis., assignor to Oscar Mayer & Co. Inc., Madison, Wis.

No Drawing. Filed Oct. 9, 1970, Ser. No. 79,674

Int. Cl. A23k *1/00, 1/08*

U.S. Cl. 426—61 **6 Claims**

Food product comprising whey protein and protein hydrolysate from steam rendering of fats has attractive amno acid profile. Other proteins can be added to further improve the amino acid profile to round out nutritional value; fats or oil can be added to provide a milk-substitute calf food.

3,778,515

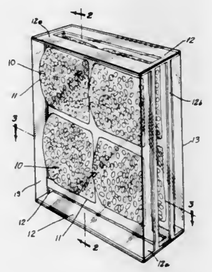
LOW POLLUTION FOOD UNIT

James D. Ashley, 939 Darlington Lane, Crystal Lake, Ill. 60014

Filed Dec. 17, 1970, Ser. No. 99,210

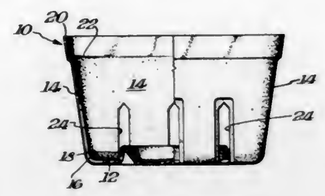
Int. Cl. B65b *25/00*

U.S. Cl. 426—108 **2 Claims**



A low pollution food unit is described comprising a ready-to-eat breakfast cereal completely enclosed in an edible milk soluble pouch. This package in in turn completely enclosed in a moisture-proof container.

3,778,516
FRUIT CONTAINER
William J. Cornelius, Hendersonville, N.C., assignor to Keyes Fibre Company, Waterville, Maine
Filed Apr. 21, 1972, Ser. No. 246,386
Int. Cl. B65d *1/00, 85/34*
U.S. Cl. 426—119 **3 Claims**



Fruit container comprises bottom wall with upwardly and outwardly flaring side wall connected around periphery of bottom wall. Locating structure in center region of bottom wall extends upwardly therefrom and is arranged to support and locate single fruit layer in container at center of bottom wall. Locating structure is sufficiently spaced from periphery of bottom wall so that second layer of four fruit may be positioned in container above single fruit layer with each fruit of second layer supported by lower single fruit and side wall of container.

3,778,517
COMPOSITIONS OF MATTER CONTAINING HELIOTROPYL NITRILE AS A FLAVORING AGENT AND SWEETENER
James S. Neely, Liberty Township, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Jan. 20, 1971, Ser. No. 106,936
Int. Cl. A23l *1/26*
U.S. Cl. 426—175 **40 Claims**

Compositions which contain as a flavoring agent and sweetener from about .0001% to about 20.0% of heliotropyl nitrile, i.e. piperonyl nitrile.

3,778,518
FLAVORING WITH CERTAIN 2-ACYL-2-THIAZOLINES
Harald Copier, Velp, and Christiaan Herman Theodoor Tonsbeek, Zevenaar, Netherlands, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Original application Jan. 7, 1970, Ser. No. 1,284. Divided and this application May 23, 1972, Ser. No. 256,190
Int. Cl. A23l *1/26;* **C07j** *91/24*
U.S. Cl. 426—175 **5 Claims**

The fried, roast or baked flavour of foodstuffs is improved by adding 2-acyl-2-thiazolines.

3,778,519
PROCESS FOR THE IMPREGNATION TREATMENT AND EVENTUAL STERILIZATION OF COCOA SEEDS OR BEANS WITH WATER OR ALKALINE SOLUTIONS
Claudio Taralli and Elio Stefani, Milan, Italy, assignors to Carle & Montanari S.p.A., Milan, Italy
Filed Dec. 2, 1969, Ser. No. 881,414
Claims priority, application Italy, Jan. 8, 1969, 848,426/69
Int. Cl. A23g *1/02*
U.S. Cl. 426—352 **5 Claims**

A process for impregnating a solid vegetable substance, such as cocoa seeds or beans, with an aqueous fluid, such as water or an alkaline solution wherein the vegetable substance is subjected to vacuum action in a suitable environment for a selected period of time, and is then mixed with the impregnating fluid in an environment maintained at a pressure of at least one atmosphere and a temperature of 120° C. or more (sterilization temperature). The impregnated substance is then rapidly dried in an environment at a pressure which is less than one atmosphere.

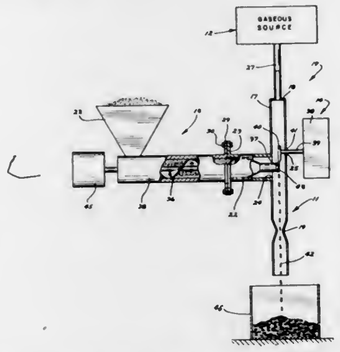
3,778,520
PROCESS FOR EXTRUDING TUBULAR, CORRUGATED PRODUCTS
Richard D. Reinhart and Robert O. Straughn, Minneapolis, Minn., assignors to General Mills, Inc.
Original application Feb. 1, 1967, Ser. No. 613,254, now Patent No. 3,577,435. Divided and this application Dec. 21, 1970, Ser. No. 100,375
Int. Cl. A23l *1/18*
U.S. Cl. 426—446 **2 Claims**

A method for extruding an elongated, tubular, corrugated product having a plurality of longitudinally extending indentations or depressions on its surface. Extrudable material is forced through an annular extrusion orifice formed by a die opening in an extrusion apparatus, and a mandrel positioned in the opening. Either the opening or the mandrel is formed in such a manner that the thickness of the space surrounding the mandrel varies at a number of different points.

3,778,521
PROCESS FOR THE CONTINUOUS PRODUCTION OF BULGUR
Glen W. Fisher, Bellevue, and Dewey H. Robbins, Victor J. Evans, and Gene E. Davidson, Seattle, Wash., assignors to Fisher Flouring Mills Co., Seattle, Wash.
Continuation-in-part of abandoned application Ser. No. 806,890, Mar. 13, 1969. This application May 14, 1970, Ser. No. 37,097
Int. Cl. A23l *1/10*
U.S. Cl. 99—80 PS **21 Claims**

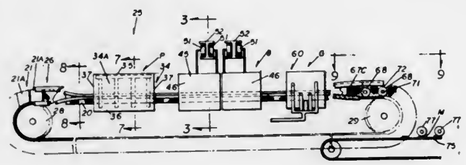
A wheat gelatinization system is provided to produce bulgur on a continuous basis without grain steeping in a relatively short period of time and without employment of a separate cooking stage.

3,778,522
METHOD OF TEXTURIZING PROTEIN
Palmer K. Strommer, Osseo, Minn., assignor to General Mills, Inc.
Filed July 23, 1971, Ser. No. 165,564
Int. Cl. A23j *3/00*
U.S. Cl. 426—511 **10 Claims**



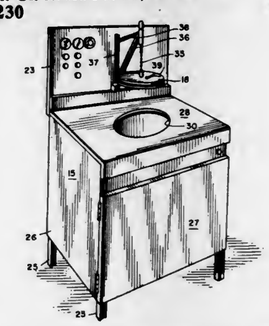
A method for producing a bland textured protein product. The method includes the steps of mixing untextured protein material and water to form an untextured protein dough which is then extruded through a screw extruder into a flowing stream of hot, pressurized vapor such as steam or air.

3,778,523
METHOD FOR COOKING STRIPS OF MEAT
Wayne P. Le Van, 310 E. 44th St., New York, N.Y. 10017
Original application July 24, 1970, Ser. No. 57,904, now Patent No. 3,677,171. Divided and this application Feb. 10, 1972, Ser. No. 225,309
Int. Cl. A22c *18/00*
U.S. Cl. 426—510 **2 Claims**



This disclosure is directed to a method for cooking or broiling strips of meat comestibles, e.g. bacon by conveying a plurality of strips of bacon between a pair of complementary heat pervious belts arranged to travel in unison so that the relative linear speed therebetween is maintained substantially zero. The strips so conveyed are first advanced through a steam oven or bath wherein the strips are preheated to a predetermined temperature. The preheated strips are then conveyed through a broiling oven. Subsequent to the broiling operation the cooked strips are passed through a vacuum chamber in which the liquified fat or grease is removed by evacuation. The bacon strips are then subsequently blotted on each side to further remove the grease or fat adhering thereto prior to the packaging operation.

3,778,524
METHOD FOR CLOSING THE OPENING OF A FOOD COOKING RECEPTACLE
Charles Jere Albright, 83 E. Elm St., Chicago, Ill. 60611; and Clifford E. Fitch, Sr., 279 Homewood Court; and Clifford E. Fitch, Jr., 38 W. 23rd St., both of Chicago Heights, Ill. 60411
Continuation-in-part of application Ser. No. 793,392, Jan. 23, 1969. This application Sept. 29, 1971, Ser. No. 184,892
Int. Cl. A22c *18/00;* **A23l** *1/00*
U.S. Cl. 426—230 **4 Claims**



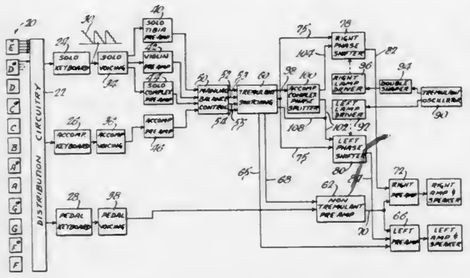
A closure lid and method for effecting an air-tight seal of the opening in a receptacle for the pressurized cooking of food in high temperature, non-aqueous liquids, wherein the closure lid is manually positioned through said opening into the receptacle and is held upwardly into sealing engagement with the rim of said opening by the pressure in said receptacle, said closure lid being manually removable from said opening when the pressure in said receptacle is released.

ELECTRICAL

3,778,525
ELECTRONIC MUSICAL INSTRUMENT WITH PHASE SHIFT TREMULANT SYSTEM

Willis E. Chase, Sierra Madre, and Bradley J. Plunkett, Van Nuys, both of Calif., assignors to Warwick Electronics Inc., Chicago, Ill.

Filed Apr. 17, 1972, Ser. No. 244,573
Int. Cl. G 10h *1/04*
U.S. Cl. 84—1.25 **16 Claims**

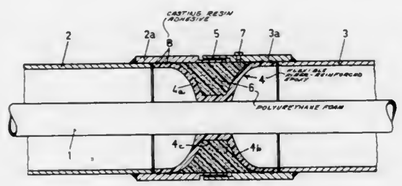


A tremulant circuit includes cascaded phase shifting networks in right and left amplifying channels of an electronic organ. An oscillator and associated circuitry produce offset signals of different wave shape which energize lamps associated with light responsive impedances in the phase shifting networks in the right and left channels. A switching circuit interconnects the phase shifting networks in different configurations to adapt the tremulant effect to a selected organ voice in order to produce the most pleasing and realistic acoustical output.

3,778,526
INSULATION GAS-FILLED TUBULAR CASING STRUCTURE FOR HIGH-VOLTAGE CONDUCTOR

Dieter Floessel, Fislisbach, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed June 12, 1972, Ser. No. 261,933
Claims priority, application Switzerland, Aug. 4, 1971, 11449/71
Int. Cl. H02g *15/24*; **H01b** *9/06*
U.S. Cl. 174—13 **5 Claims**

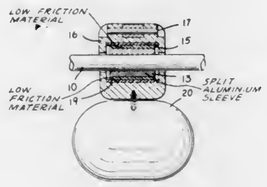


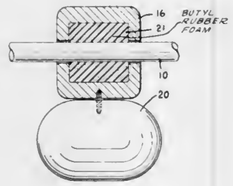
A high-voltage electrical conductor is encapsulated within a rectilinear tubular casing comprising a plurality of tubular sections connected together in essentially end-to-end relation by means of a coupling structure that includes telescoped coupling sleeves secured respectively to the end portions of the casing sections and an elastic support insulator through which the conductor passes and is supported centrally within the casing. The support insulator also includes two oppositely directed cup portions the side walls of which adjoin and are secured to the inner surfaces of the coupling sleeves. Being elastic, the cup portions of the insulator yield elastically in association with a corresponding longitudinal movement of the coupling sleeves to accommodate temperature-induced longitudinal expansions and contractions of the metallic casing sections.

3,778,527
MEANS FOR PREVENTING OR INHIBITING GALLOPING VIBRATIONS IN OVERHEAD TRANSMISSION LINES

Olaf Nigol, 272 Markland Dr., Etobicoke, Ontario, Canada

Filed Mar. 23, 1972, Ser. No. 237,380
Int. Cl. H02g *7/14*; **H01b** *5/08*
U.S. Cl. 174—42 **12 Claims**





In combination with a transmission line conductor suspended from a stationary support structure to which it is connected at a plurality of longitudinally spaced points, the suspended conductor defining a torsionally oscillating system, torsional restraint means connected to or incorporated in the conductor at each span intermediate said spaced points for limiting torsional movements whereby to prevent build up of galloping vibrations.

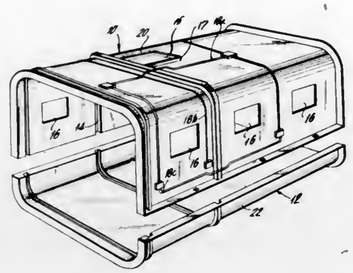
3,778,528
MODULAR BUILDING UNIT AND METHOD FOR MAKING SAME

Saul Heifetz, 3 Ulman Ter.; George Mandelbaum, 3 Windsor Ter., and Irwin Kushner, 1 Ackertown Rd., all of Monsey, N.Y.

Filed Apr. 27, 1972, Ser. No. 247,986
Int. Cl. H02g *3/26*
U.S. Cl. 174—48 **10 Claims**

A prefabricated building module of substantially all plastic construction is provided which can comprise an entire housing unit of one or more rooms thereof. The module is formed in a virtually completed state ready for delivery to a building site for final erection and finishing. The module has walls, floor and ceiling and may include interior partitions to section the unit into a plurality of rooms and to house plumbing, as well as windows, doorways, and doors. The walls, floor and ceiling are formed from inner and outer shells of molded reinforced

plastic material. An insulating core of polyurethane foam material is sandwiched between the shells. All of the electrical, heating, ventilation, air-conditioning and/or gas conduits,

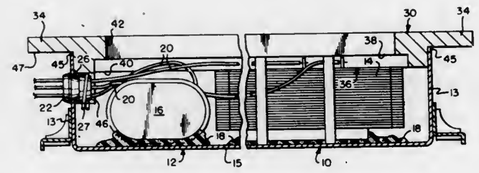


junction boxes, terminals and the like can be provided in the insulated core in place and ready for connection and use at the building site. A method for forming the building module unit is also provided.

3,778,529
MOISTURE-RESISTANT HOUSING FOR ELECTRICAL COMPONENTS AND METHOD AND APPARATUS FOR MAKING THE SAME

Imrich M. Miller, Paterson, N.J., assignor to Universal Manufacturing Corporation, Paterson, N.J.

Filed May 11, 1972, Ser. No. 252,427
Int. Cl. H05k *5/06*
U.S. Cl. 174—52 PE **14 Claims**



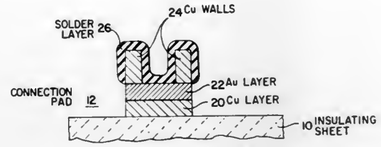
A cover is provided over a housing containing various electrical components which, upon formation with a seam to make the housing substantially waterproof, has a channel portion formed which can flex in response to an outward force generated within the housing. A guide plate having spacers is provided for use during the potting of the electrical components which forms areas within the housing for receiving the channel portion of the cover formed during the seaming of the cover to the housing.

3,778,530
FLATPACK LEAD POSITIONING DEVICE

William George Reimann, 8163 Willow Glen Rd., Los Angeles, Calif.

Division of Ser. No. 130,402, April 1, 1971, Pat. No. 3,700,443. This application July 5, 1972, Ser. No. 269,126
Int. Cl. H05k *3/34*
U.S. Cl. 174—68.5 **10 Claims**

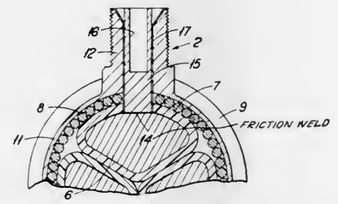
A printed circuit board for mounting integrated circuit and resistor network packages commonly referred to as flatpack components and a process for fabricating the circuit board. The printed circuit board has a conductive pattern of electrical connection pads for connecting to electrical leads from flatpack components and electrical conductors for connecting the pads to circuitry external to the board. A channel for receiving and aligning each electrical lead from a flatpack component is formed by printed circuit techniques. The surface layer of each channel is formed of solder which simplifies the process of electrically connecting flatpack leads and reduces errors occuring in the soldering process.



3,778,531
DISTRIBUTION CABLE WITH COAXIAL CONNECTORS PERMANENTLY CONNECTED THERETO AND A METHOD OF MANUFACTURE THEREOF

Peter Higgins, Hounslow, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed Oct. 2, 1972, Ser. No. 294,082
Int. Cl. H01r *3/02, 43/00*
U.S. Cl. 174—72 R **18 Claims**



In an electrical distribution cable comprising a number of insulated electric power conductors and a neutral conductor, the assembly of conductors being enclosed in a protective insulating sheath, a coaxial connector is permanently secured to the cable at each of a plurality of spaced locations along its length before it is installed. The inner conductive element of each connector is electrically connected to one of the power conductors of the cable and the outer conductive element of the connector is electrically connected to the neutral conductor of the cable. Each of the coaxial connectors is at least partially embedded in a protective insulating covering integral with or bonded to the protective sheath of the cable. The neutral conductor may be laid up helically with or parallel to the power conductors or it may be in the form of an outer concentric conductor.

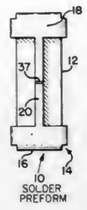
3,778,532
ELECTRICAL CIRCUIT COMPONENT HAVING SOLDER PREFORM CONNECTION MEANS

Denver Braden, San Diego, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.

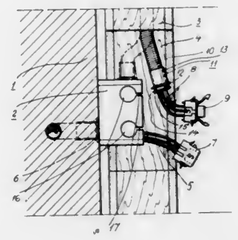
Filed July 3, 1972, Ser. No. 268,357
Int. Cl. H05k *1/18*
U.S. Cl. 174—74 R **6 Claims**

An electrical circuit component including a solder preform which envelops connection terminals on the ends of an electrical circuit body of the element is disclosed. When heat is applied to the solder preform, the solder flows and electrically

connects the component into an electric circuit. The solder preform has two end portions that are joined by a bar of reduced cross section which melts upon the application of heat. The solder preform also includes laterally extending flaps which embrace the side edges of the circuit element.



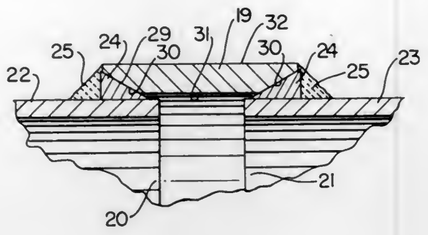
3,778,533
DEVICE FOR JUNCTION BOXES
Kjell Hundal, Trombvagen 8, 17500 Jakobsberg, Sweden
Filed Feb. 14, 1972, Ser. No. 226,044
Int. Cl. H02g *3/18*
U.S. Cl. 174—65 R **1 Claim**



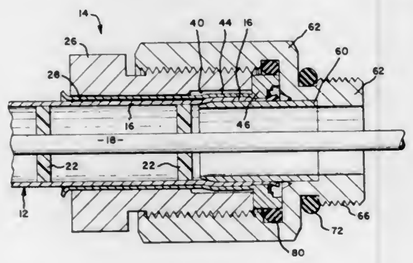
A junction box is made from a resilient plastic material and has in its envelope surface openings which via narrow slots open towards the open end portion of the box. The wires which are to be introduced in the box are preferably provided with connecting means for electrically connecting them with other wires and at least one of said wires is in addition thereto provided with a sleeve having a reduced portion the dimension of which corresponds to that of the openings such that said sleeve may be received therein. By exerting upon the surfaces at each side of said slot opposite directed pressures said sleeve may be secured to the box and the wires sideways introduced in the box.

3,778,534
COUPLING CONSTRUCTION AND METHOD AND APPARATUS FOR MAKING THE SAME
William B. Jenkins, Henrico County, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Sept. 29, 1971, Ser. No. 184,726
Int. Cl. H02g *15/08*
U.S. Cl. 174—88 C **6 Claims**

A pair of electrically conductive metallic sheath members respectively have ends disposed adjacent and spaced from each other in aligned relation with a metallic coupling sleeve disposed in telescoping relation about the adjacent ends of the sheath members. A pair of annular metallic shims are respectively deformed into substantially sealing engagement with and between a respective sheath member end and the sleeve to substantially close the spacing between the sleeve and the respective sheath ends whereby weld material subsequently utilized for securing the deformed shims respectively to the coupling sleeve and the sheath members at the exterior thereof does not cause contamination in the interior of the coupling sleeve and sheath members to adversely affect the high voltage conductor passing therethrough.



3,778,535
COAXIAL CONNECTOR
Edgar Wilmot Forney, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed May 12, 1972, Ser. No. 252,791
Int. Cl. H02g *15/08*
U.S. Cl. 174—88 C **8 Claims**

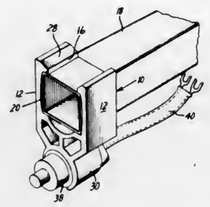


A coaxial cable connector featuring inner and outer ferrules between which the outer conductor of a semi-rigid cable is squeezed. The assembly of the connector onto the cable is accomplished with ordinary standard hand wrenches operating on an outer coupling containing the outer ferrule nut threadedly engaging a connector body containing the inner ferrule. The structure of the connector preserves the critical diameters of the coaxial cable thereby reducing or eliminating reflective loss of radio frequency energy.

3,778,536
ELECTRICAL INSULATION
Robert W. Smearing, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 20, 1971, Ser. No. 210,087
Int. Cl. H01b *7/02;* **B32b** *15/14*
U.S. Cl. 174—121 SR **3 Claims**

The resin content and electrical insulating capability of porous insulation is enhanced by providing the outer portion of the insulation with cure accelerator for the resin impregnant whereby the outer portion cures more rapidly than the inner portion.

3,778,537
CLIP DEVICE FOR MOUNTING ACCESSORY ON AN ANTENNA BOOM
Richard A. Miller, Burlington, Iowa, assignor to Antennacraft Company, Burlington, Iowa
Filed Jan. 5, 1973, Ser. No. 321,387
Int. Cl. F16b *2/22*
U.S. Cl. 174—138 R **5 Claims**

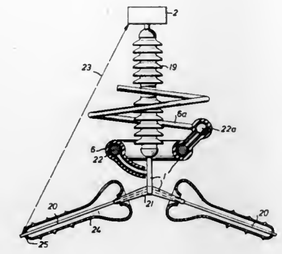


A clip device for mounting accessories on antenna booms comprising a frame of plastic material having a first U-shaped clamp portion, the arms and base of which have interior surfaces that generally conform to three sides of a straight boom of square cross-section. The arms have inwardly projecting retainer flanges, respectively, on the distal ends thereof. The flanges have inner surfaces that generally conform to the fourth side of the aforesaid boom. The flanges have outer cam surfaces that are flat and incline downwardly and inwardly toward the base. The facing surfaces of the arms between the ends are slightly curved outwardly, the arms being resilient. The base is provided with a part-cylindrical depression symmetrically disposed between the ends. The inner surfaces of the clamp portion are symmetrical about and generally parallel to an axis through the central portion. A second clamp portion is disposed beneath the base and is secured thereto by a rigid connection, all these parts being integrally formed. The second clamp portion is part tubular in shape and so disposed that the opening thereof extends oppositely to that of the opening in the first clamp portion. The arms of the second clamp portion are also resilient.

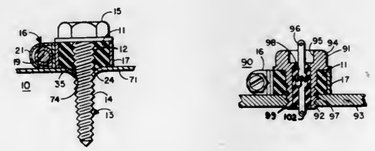
Adapters are provided for altering the interior shape of the clamp portion, one typical adapter having a part-cylindrical curvature on the inner side thereby to adapt the clip device to be fastened to a cylindrical boom. Another typical adapter is primarily square shaped thereby to adapt the clip device for fastening to a boom of square cross section smaller than that to which the first clamp portion may be directly fastened.

3,778,538
INSULATING ARRANGEMENT FOR INCREASING BREAKING VOLTAGE STABILITY OF HIGH VOLTAGE INSTRUMENTALITIES
Werner Widmann, Stuttgart, 50 Germany, assignor to Transformatoren Union Aktiengesellschaft, Stuttgart-Cannstatt, Germany
Filed Dec. 20, 1971, Ser. No. 210,069
Claims priority, application Germany, Dec. 18, 1970, P 20 62 359.0; May 12, 1971, P 21 23 566.5
Int. Cl. H01b *17/46;* **H01t** *17/00*
U.S. Cl. 174—140 R **15 Claims**

A high voltage instrumentality including electrodes having wide sparking distances and inhomogeneous field lines between them in air. An insulating arrangement provides a guided path for premature discharges in a direction from one of the electrodes to another of the electrodes. The insulating arrangement is substantially closed on all sides defining the guided path which is longer than the path which would be traversed without guidance. The premature discharges which develop whenever ionization field strength is exceeded are conducted within the insulating barrier arrangement.



3,778,539
PLUG HAVING INDEPENDENT AXIAL AND LATERAL COMPRESSION MEANS
John P. Baier, 61 W. Parkway, Greece, N.Y.
Filed Sept. 5, 1972, Ser. No. 286,110
Int. Cl. H01b *17/30;* **F16j** *15/10;* **B65d** *53/00*
U.S. Cl. 174—152 R **10 Claims**

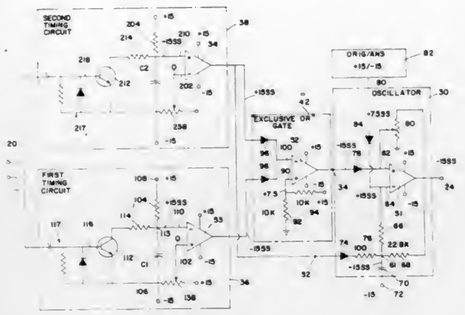


Plug having independent axial and lateral compression means for plugging holes in a container, a housing and the like is disclosed. The plug complies to irregular surfaces and reacts in three directions utilizing compression and shearing forces to effect a pressure tight seal.

3,778,540
AUTOMATIC ELECTRONIC HERE IS GENERATOR
Richard D. Fretwell, 1891 Willoway Cir. North, Columbus, Ohio
Filed Apr. 20, 1972, Ser. No. 245,792
Int. Cl. H04l *15/34*
U.S. Cl. 178—4.1 B **10 Claims**

A "here is" generator, for an automatic answering data terminal, which generates a WRU code and applies it to the ter-

minal's answer-back mechanism. The generator has a square wave oscillator and a pair of timing circuits which initially free

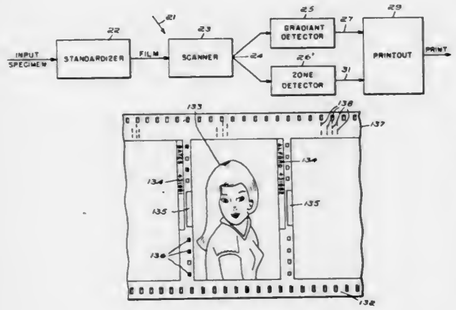


the oscillator for oscillation then clamp it in a mark output and finally clamp it in a steady state space output.

3,778,541
SYSTEM FOR ANALYZING MULTICOLORED SCENES

John Kent Bowker, Marblehead, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Sept. 3, 1971, Ser. No. 181,141
Int. Cl. H04n *1/22*
U.S. Cl. 178—5.2 R **27 Claims**



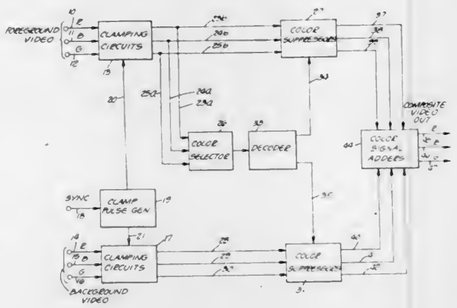
A given scene such as that retained by a colored photograph is scanned both by a high resolution scanner that detects image density gradients and a color analyzer with lower resolution. Controlled by the gradient detecting scanner is a printer that produces, on an appropriate work surface, a line drawing delineating prominent object boundaries in the image. The color information extracted from discrete areas of the image by the color analyzer is compared by a computer with colors available in a preselected finite set of distinctly colored substances and an appropriate selection is made from the set for each area analyzed. In response to the computer selections, a color indicia printer produces on the work surface a color outline of surface areas geometrically corresponding in position to the discrete areas of the image. The color outline is superimposed on the line drawing but is distinguishable therefrom. Also produced by the color printer within each surface area is indicia representing the particular colored substance selected for application thereto.

In a preferred embodiment, the density gradient and color analyzer scans are made simultaneously in parallel adjacent paths across the image. The line printer responds instantaneously to the output of the high resolution gradient detector. The color analyzer, however, supplies information at intervals along the scan and the color indicia printer prints on each scan line information from the preceding scan line and in a position corresponding to the area from which the information was obtained. The delay in color indicia printout provides time for color evaluation by the computer.

3,778,542
BLUE SCREEN TRAVELLING MATTE SYSTEM

Leo C. Hanseman, Burbank, Calif., assignor to Technicolor Inc., Hollywood, Calif.

Filed Nov. 30, 1970, Ser. No. 93,574
Int. Cl. H04n *9/00, 5/22*
U.S. Cl. 178—5.4 R **21 Claims**



There is disclosed herein apparatus and methods for the creation of special photographic effects, such as blue screen travelling matte effects. A particular selectable saturated color appearing in the simultaneous red, blue and green video output signals of an electronic color camera, for example, is sensed and removed from the video signals by electronic subtraction of the selected color. The output red, blue and green video signals derived from a second electronic color camera are substituted for the removed saturated-color. The final composite red, blue and green video output signals therefore contain picture elements from both cameras, combined in a manner such that the specific saturated color from the first camera is completely eliminated and replaced by picture elements derived from the second camera.

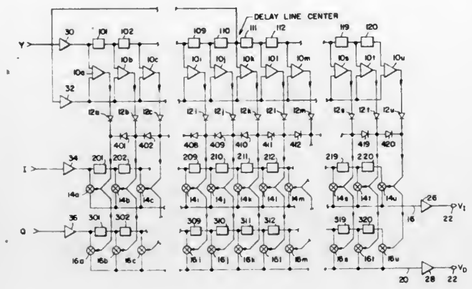
3,778,543
PREDICTIVE-RETROSPECTIVE METHOD FOR BANDWIDTH IMPROVEMENT

John D. Lowry, Willowdale, Ontario, Canada, assignor to Elianin Investments Ltd., Ontario, Canada

Filed Sept. 5, 1972, Ser. No. 286,456
Int. Cl. H04n *5/14*
U.S. Cl. 178—5.4 R **10 Claims**

The relatively long rise and fall time of narrow-bandwidth television chroma signals is sharply reduced by the use of a processing circuit using the corresponding luminance signal as a control. The processing circuit determines the presence of a transistion in the video signal and, through the use of delay line chains, averages the chroma signals from a plurality of preceding time points up to the center of the transition, and

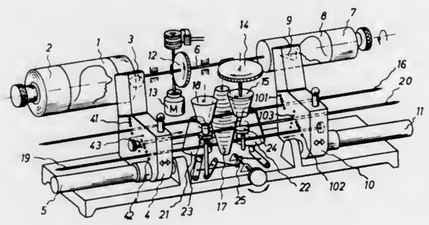
then switches to average the chroma signal from a plurality of subsequent time points. The thus averaged chroma signals exhibit a very rapid rise time which results in a much sharper color transition in the picture than the unprocessed video signal can produce.



3,778,544
APPARATUS FOR THE ELECTRO-MECHANICAL PRODUCTION OF PRINTING MATRICES ON VARIABLE SCALE OF REPRODUCTION

Friedrich Richter, Preetz/Holst., Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Kiel, Germany

Filed Sept. 28, 1971, Ser. No. 184,500
Claims priority, application Italy, Oct. 2, 1970, 70293 A/70
Int. Cl. H04n *1/22*
U.S. Cl. 178—6.6 B **7 Claims**



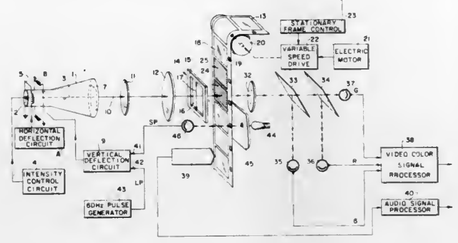
In an apparatus for producing printing matrices wherein a scanning means scans a picture or image and an engraving device produces a picture, a reduction gear introduced between the image carrier drive and the feed or displacement of the engraving device, the reduction gear having a translating ratio which is variable so that either a longer or smaller scale reproduction can be produced.

3,778,545
FILM SCANNING FOR TELEVISION REPRODUCTION

Lenard M. Metzger, and David L. Babcock, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,493
Int. Cl. H04n *5/36*
U.S. Cl. 178—7.2 **32 Claims**

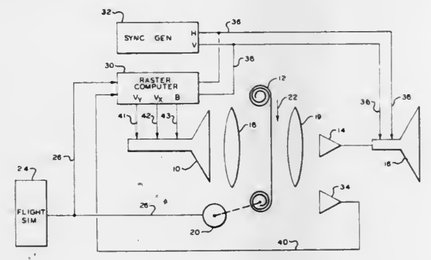
A continuously moving or stationary image bearing medium is automatically scanned to produce video signals for television in response to the detected rate of movement of the medium. The image frames of the medium are scanned in a television field scanning raster pattern of spaced lines at the standard horizontal and vertical deflection frequencies. The rate of movement of the medium is detected, and two 180° out of phase, half-frame rate frequency, sawtooth wave form signals are generated therefrom. Periodic portions of one or the other of the two sawtooth wave forms are combined with the standard vertical deflection frequency, sawtooth wave form signal to produce a complex vertical deflection frequency, sawtooth wave form signal that is effective to automatically register the scanning raster pattern on the proper moving image frame. A stationary frame is detected and automatically scanned by the standard vertical deflection, sawtooth wave form signal, and irregularities in the spacing of the frames or the film rate are automatically compensated for.



3,778,546
CRT DISPLAY OF A MOTION PICTURE FILM

John R. Trzeciak, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Continuation-in-part of Ser. No. 174,110, Aug. 23, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 297,899
Int. Cl. H04n *3/16*
U.S. Cl. 178—7.2 **7 Claims**



The light spot of a flying spot scanner is directed upon a scanned frame of a motion picture film which is transported at a desired frame rate through the scanning field of the scanner. The light spot is deflected in response to horizontal and vertical deflection voltages provided to the scanner. The horizontal deflection voltage is proportional to the horizontal deflection of the beam of a cathode ray tube whereon a viewing raster is traced. The vertical deflection voltage is provided by a summing amplifier which has one input connected to a signal proportional to the vertical deflection of the beam and the other input connected to the output of an integrator circuit which provides a displacement signal proportional to the integral of the frame rate. In response to the deflection signals, the spot of the scanner traces a scanning raster which is shifted to compensate for the frame rate of a scanned frame. Disposed to receive light emanating from the scanned frame is

a photomultiplier which provides a video signal proportional to the emanating light to the cathode ray tube, thereby displaying the scanned frame thereon. In response to the displacement signal being greater or equal to a signal representative of the scanned frame leaving the scanning field during the vertical retrace of the scanning raster, the integrator circuit is reset to provide a displacement signal representative of the displacement of a succeeding frame in the scanning field.

3,778,547

TELECINE EQUIPMENT

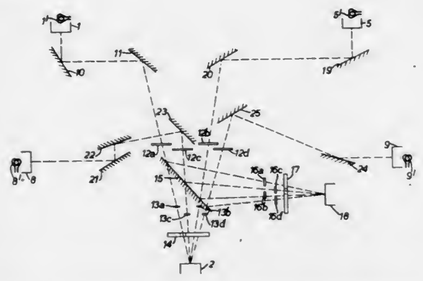
Donald Alexander Pay, W. Hanningfield, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England

Filed Apr. 6, 1972, Ser. No. 241,779

Claims priority, application Great Britain, Apr. 6, 1971, 8,815/71

Int. Cl. G02b *27/14*

U.S. Cl. 178—7.88 **16 Claims**



Images from several projectors are selectively directed onto the viewing tube of a telecine equipment via an adjustable shutter, and onto a monitor tube via another adjustable shutter. The images traverse separate optical paths, each of which includes focussing lenses and mirrors to achieve a correct orientation of the image.

3,778,548

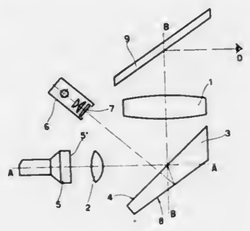
OPTICAL APPARATUS FOR COLLIMATION TO INFINITY OF TWO LUMINOUS IMAGES WHOSE FREQUENCIES FALL WITHIN DIFFERENT SPECTRAL BANDS

Raffaello Nistri, Rome, Italy, assignor to Ottico Meccanica Italiana-OMI-S.p.A., Rome, Italy

Filed Sept. 6, 1972, Ser. No. 286,776

Int. Cl. G02b *27/10;* **H01j** *29/89*

U.S. Cl. 178—7.88 **6 Claims**



An optical display apparatus for use in an aircraft includes a cathode ray tube operating with one color display on the screen thereof and another source of visual information operating with another colour. These two information sources are displayed to an observer after collimation to superimpose the information on a distant scene.

The visual signal from the cathode ray tube is reflected by a dichroically treated surface and the visual signal from the second source is refracted by the same dichroic surface and reflected by a second surface at an angle with the dichroic surface. Both visual signals are then displayed superimposed on a semitransparent imaging means.

The second source is located between the cathode ray tube and the imaging means and on the same side with respect to the dichroic filter as the cathode ray tube and the imaging means.

3,778,549

TRANSMISSION ARRANGEMENT

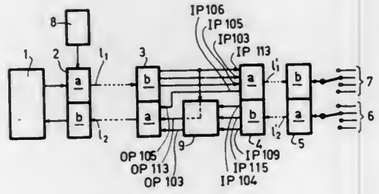
Jurgen Schroder; Gunter Ochel, and Hans-Joachim Von Horsten, all of Bremen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,565

Claims priority, application Germany, Feb. 13, 1971, P 21 06 835.9

Int. Cl. H04l *15/00*

U.S. Cl. 178—68 **7 Claims**



In a transmission system for connecting a computer selectively to various pieces of equipment through a transmission network using modulators-demodulator (modem) transmission, a clock-pulse generator is directly coupled to the transmitter of an internal modem so that the equipment selectively connected to the computer through an external modem and the internal modem is synchronized with the frequency of the clock pulse generator although delayed in phase therewith. The signals received from the equipment selectively connected to the computer by the receiver of the internal modem are alternately stored in two flip-flops of a coupling device under the control of a first two-phase clock signal derived from the signal received in the internal modem. The receiver of the external modem connected to the computer interrogates the storage flip-flops alternately with a second two-phase clock signal derived from the clock pulse generator connected to the external modem. Thus, storage of the received data under the control of the first two-phase clock pulse signal derived from the frequency of the data and subsequent interrogation of the stored information under the control of a second two-phase clock signal derived from the clock pulse generator used to transmit signals to the equipment producing the data signals synchronizes the phase of the received data signals with the phase of the transmitted information.

3,778,550

SYSTEM FOR SYNCHRONIZING CLOCK SIGNALS TO INCOMING DATA

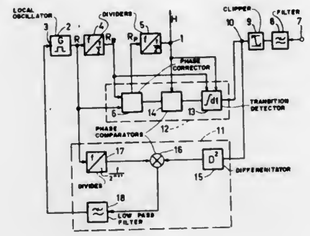
Guy Albert Jules David, Thiais, and Michel Guy Amedee Duquenne, Meudon Bellevue, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 27, 1971, Ser. No. 166,480

Claims priority, application France, July 31, 1970, 7028316

Int. Cl. H04l *7/00*

U.S. Cl. 178—69.5 R **7 Claims**



A synchronizing device locally reproducing with very high precision the phase of a clock signal at the rhythm of which data are received, comprising two independent control circuits, one for correcting the frequency of the local oscillator, the other for correcting the phase of the local clock signal; in the phase correcting arrangement a device detecting the transition of the incoming data supplies pulses at the zero passages of the digital integrators, which pulses are filtered in a digital filter which produces phase-correction instructions to a correction device.

3,778,551

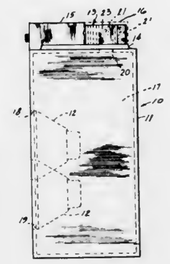
AIR COOLED AUDIO AMPLIFIER ASSEMBLY

Robert M. Grodinsky, Skokie, Ill., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.

Filed Jan. 17, 1969, Ser. No. 791,921

Int. Cl. H04m *1/02*

U.S. Cl. 179—1 E **10 Claims**



An audio amplifier assembly employs transistors which are subject to substantial heating, and which are mounted on heat sinks situated on the cabinet of the device, there being air passages leading from the speaker cavity within the cabinet directly to such transistors so that the speaker cone serves as a pump for cooling air that passes across such transistors.

3,778,552

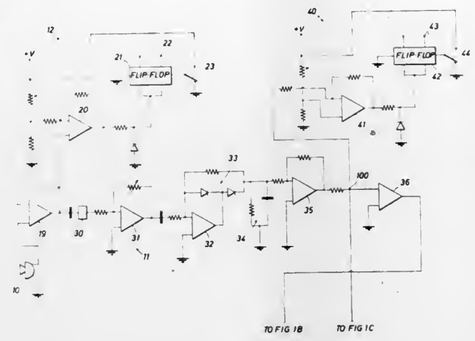
PERSONAL SOUND MONITOR

Julius A. Edinborgh, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sept. 27, 1972, Ser. No. 292,593

Int. Cl. G01h *5/00*

U.S. Cl. 179—1 N **10 Claims**



A personal sound monitor wherein the sound is detected by a microphone and converted to a related electrical signal. The level of the signal is used to gate one of the plurality of levels in a scanning digital counter, the levels corresponding to various predetermined sound levels. The scanning counter controls the gating of various frequencies to an accumulating counter so that the total count is proportional to the integrated sound level to which the individual has been exposed.

3,778,553

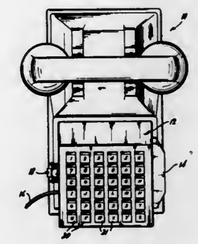
ATTACHMENT FOR FACILITATING USE OF A PUSH-BUTTON TELEPHONE SET AS A DATA TERMINAL

Michael I. Rackman, 1710 Glenwood Rd., Brooklyn, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,307

Int. Cl. H04m *1/06*

U.S. Cl. 179—2 DP **20 Claims**

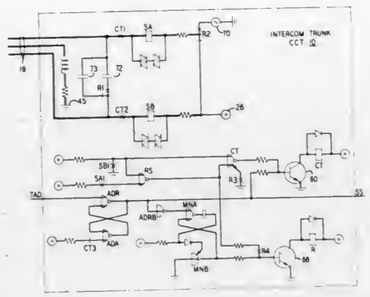


An attachment for a push-button telephone set which fits directly over the ten (or twelve) telephone push-buttons. On top of the attachment there is provided a separate push-button for each letter and digit. Whenever one of the attachment push-buttons is pressed down, two telephone set push-buttons are pressed down in succession so that a two-digit code is transmitted for each letter or digit without requiring the user to operate two telephone set push-buttons in succession to distinguish between letters and digits.

3,778,554
SINGLE THREE-WIRE-PORT PBX INTERCOM TRUNK CIRCUIT ARRANGEMENT

David William Weiner, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 24, 1971, Ser. No. 146,243
Int. Cl. H04q 1/28
U.S. Cl. 179—18 AD 4 Claims



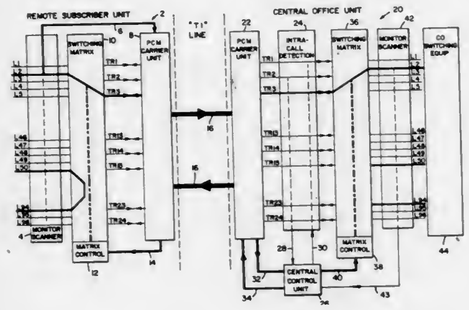
A single three-wire-port PBX intercom trunk circuit supplies battery, ringing, and supervision through a switching network from the trunk circuit to a pair of interconnected stations. The intercom trunk circuit and line circuits of the stations are arranged to provide all essential controls for the calling and called stations.

Interconnections from the intercom trunk circuit to the stations are arranged so that talking current conducted to any one station is substantially independent of the loop resistance of any other station to which the one station is connected.

3,778,555
TELEPHONE SUBSCRIBER LINE SYSTEM INTRA CALL APPARATUS AND METHOD

K. Fredrik Nordling, Sonoma, and Samuel T. Huey, Larkspur, both of Calif., assignors to Digital Telephone Systems, Inc., San Rafael, Calif.

Filed July 19, 1971, Ser. No. 163,669
Int. Cl. H04q 3/60
U.S. Cl. 179—18 FC 18 Claims

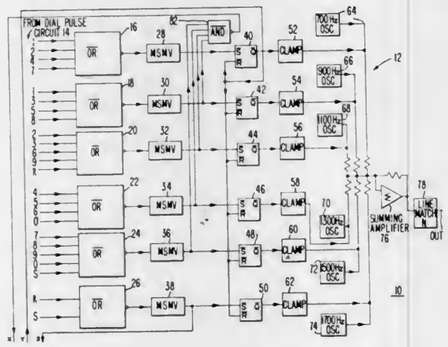


Intra-calling capability is provided at the remote unit of a telephone subscriber line system (SLS). When a subscriber calls another subscriber on the same SLS he initially goes "off-hook," receives one of the carrier trunks, dials, and the switching network at the serving central office in turn applies ringing to the station being called. If this station is served by the same SLS, a transfer of the call will be made to an intra link upon answering of the call by the called subscriber, thus leaving the two trunk carrier channels for use by other subscribers. The lines of the two subscribers on the intra link appear busy at the central office. Should all the intra links be in use, the system still permits two subscribers on the same SLS to continue their use of two trunks. There is no numbering restriction placed on the lines.

3,778,556
TELEPHONE SIGNALING AND TESTING APPARATUS WITH PROVISIONS FOR EITHER PULSE OR MULTIFREQUENCY DIALING

James G. Mees, Saratoga; Andre Lubarsky, Jr., and Goro R. Tahara, both of Sunnyvale, all of Calif., assignors to Telecommunications Technology, Inc., Palo Alto, Calif.

Filed July 2, 1971, Ser. No. 159,446
Int. Cl. H04m 1/30
U.S. Cl. 179—90 K 17 Claims

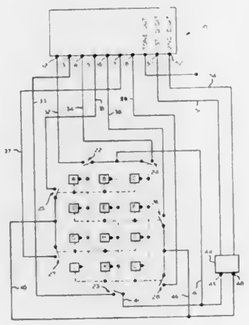


Telephone signaling and testing apparatus is provided to generate either dial pulse coded signals or multiple frequency coded signals for use in signaling or testing along transmission lines.

3,778,557
ENCODER

Jeffrey E. Frederiksen, Milwaukee, Wis., assignor to Post Corporation, Appleton, Wis.

Filed Mar. 22, 1972, Ser. No. 237,156
Int. Cl. H04m 1/26
U.S. Cl. 179—90 K 32 Claims

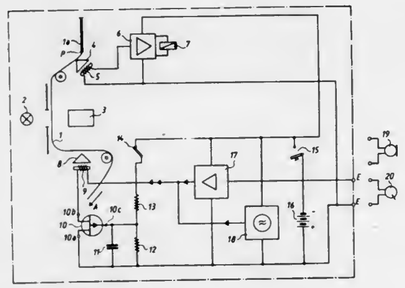


A programmable binary frequency dividing circuit is connected to an oscillator for providing predetermined number of frequency signals. The first and second plurality of logic gates are each coupled to the frequency divider for receiving preselected ones of the frequency signals and for providing output tones having a frequency dependent upon the relationship of the frequency signals received. Switching means sequentially provide output tones from selected pairs of the logic gates.

3,778,558
METHOD AND ARRANGEMENT FOR SOUND TRACK RECORDING IN WHICH BACKGROUND MUSIC IS DAMPED DURING SPEECH SIGNALS

Richard Wick, Munich; Alfred Brath, Unterhaching, and Eduard Wagensonner, Munich, all of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 3, 1971, Ser. No. 168,553
Claims priority, application Germany, Aug. 8, 1970, P 20 39 461.0
Int. Cl. G11b 27/22, 27/30, 5/02
U.S. Cl. 179—100.2 MD 11 Claims

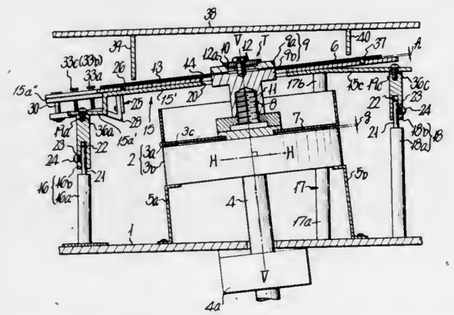


Speech and background music to be recorded on a sound track. Speech recorded first. During subsequent recording of background music, the background music is damped over portions of sound track having sound signals.

3,778,559
ROTARY HEAD MAGNETIC RECORDING AND REPRODUCING APPARATUS WITH PLIANT RECORD DISK FOR STILL REPRODUCTION OF VIDEO SIGNALS

Nobutoshi Kihara, Tokyo, and Yoichi Odagiri, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 9, 1972, Ser. No. 261,414
Claims priority, application Japan, June 15, 1971, 46/50956; July 8, 1971, 46/60092
Int. Cl. H04n 5/76; G11b 5/00
U.S. Cl. 179—100.2 T 9 Claims

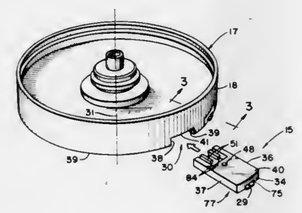


An apparatus which magnetically records and/or reproduces signals, particularly video signals, by means of a rotary magnetic head which scans skewed record tracks on a magnetic tape as the latter is advanced, for example, about the periphery of a guide drum, in a path that coincides with at least a portion of the circular path of the rotary head, is further provided with a pliant record disk secured at its center to the drive shaft for the rotary head and having a magnetizable surface that confronts a support plate extending perpendicular to the shaft axis and through which a stationary magnetic head extends for recording, in a circular track on the record disk, the signals reproduced from a skewed record track on the magnetic tape, and for repeatedly reproducing the signals recorded in such circular track, as during still reproduction of video signals.

3,778,560
MAGNETIC TRANSDUCING HEAD AND DRUM ASSEMBLY WITH HEAD INSERTABLE RADIALLY INTO A SLOT IN DRUM FOR ALIGNMENT

Raymond J. Precin, Des Plaines, and Robert T. Mattoon, Hanover Park, both of Ill., assignors to Ampex Corporation, Redwood City, Calif.

Filed Oct. 12, 1971, Ser. No. 188,203
Int. Cl. G11b 5/10, 5/50
U.S. Cl. 179—100.2 T 4 Claims



A magnetic transducing head is precisely located with respect to a circumferential wall of a rotating drum of a magnetic recording and reproducing apparatus and is located at a predetermined angular position on the drum and in plane perpendicular to the rotational axis of the drum. A radially directed slot is formed in the drum to slideably accept the transducing head which has a pole piece tip preset to project for a predetermined distance from the circumferential wall when a reference surface on the magnetic head is aligned with a reference surface on the drum. Preferably, the reference surface on the transducing head is a curved outer wall having the same radius of curvature as the circumferential wall for alignment with the latter to locate the tip precisely beyond the circumferential wall to engage the magnetic tape with a preferred head-to-tape contact pressure. Other slideably engaged surfaces on the transducing head and the slot align with the head at its predetermined angular position and in the plane perpendicular to the axis of the drum.

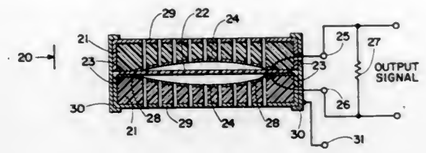
3,778,561
ELECTRET MICROPHONE

Cornelis Wilfred Reedyk, Ottawa, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed June 21, 1972, Ser. No. 264,889
Int. Cl. H04r 19/00
U.S. Cl. 179—111 E 4 Claims

An electroacoustic transducer uses an electret which does

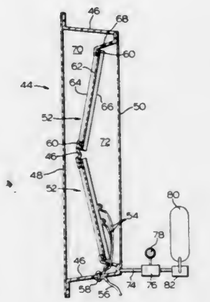
not require metallization of a surface thereof. The electret is sandwiched between a pair of stationary, air-permeable electrodes disposed substantially coplanar and the output of the transducer is obtained from across the pair of electrodes.



3,778,562
ELECTROSTATIC LOUDSPEAKER HAVING ACOUSTIC WAVEFRONT MODIFYING DEVICE

William Michael D. Wright, Thornhill, Ontario, Canada, assignor to Dayton Wright Associates Limited, Toronto, Ontario, Canada

Filed Oct. 21, 1973, Ser. No. 191,221
Int. Cl. H04r *19/02*
U.S. Cl. 179—111 R **12 Claims**



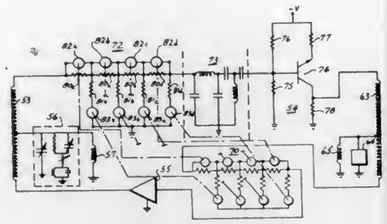
An Acoustic Wavefront Modifying Device can be used with acoustic waves having audio frequencies within the range of human hearing as a lens or prism. The device comprises an enclosure having at least a portion of its surface space acoustically transparent and having therein a gas in which the speed of sound differs from the speed of sound in the ambient gas. The device is most particularly embodied in an electrostatic loudspeaker having one or a plurality of electrostatic transducer units within a gas enclosure and having acoustically transparent front and back surfaces. The gas is usually sulphurhexafluoride or perfluoropropane or a mixture of them or either of them with air.

3,778,563
VOICE FREQUENCY REPEATER

Donald L. Bise, Tustin, and Ronald J. Surprenant, Anaheim, both of Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Mar. 29, 1972, Ser. No. 239,026
Int. Cl. H04b *3/36*
U.S. Cl. 179—170 R **3 Claims**

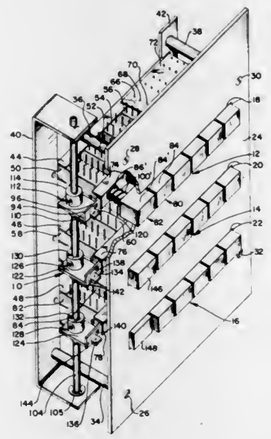
A repeater useful in 2-wire line telephone systems employs a pair of hybrid sets, each of which is rotated 90 degrees relative to the normal operation position. A relatively small hybrid set having a relatively low inductance has an inductor connected in the secondary, which has an inductance related to the inductance of the primary, to eliminate the need for the retard coils typically employed in the direct current line for repeaters, and also the need for isolation transformers. Consequently, the repeater is relatively economical and smaller in size. An attenuator employing L half-sections in the input of each amplifier provides direct reading gain and a bandpass amplifier in the input of each amplifier provides increased stability by eliminating the high and low frequencies outside the voice frequency band.



3,778,564
SWITCH RESETTING APPARATUS FOR MULTI-BANK PUSH BUTTON SWITCHES

William F. Nocella, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 7, 1972, Ser. No. 269,820
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 R **7 Claims**

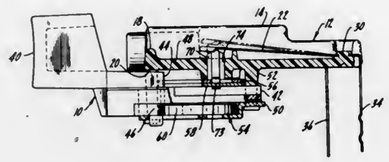


A unitary reset linkage for a multiple-bank push button switch has a shaft and a plurality of associated levers to transmit latch bar motion from one bank of switches to another thereby to expedite clearing of the banks when switching from one bank to another.

3,778,565
POWER RATED PUSHBUTTON SWITCH WITH SLIDE BAR AND WASHER TYPE BLOCKOUT INTERLOCK STRUCTURE

Raymond F. Lewandowski, Mount Prospect, and William C. Markison, Crystal Lake, both of Ill., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed Oct. 5, 1972, Ser. No. 295,185
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 E **27 Claims**

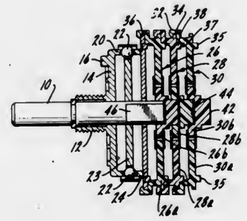


A plurality of pushbuttons are mounted in a switch frame, with each button being arranged to move contacts between open and closed positions. A pair of slide bars are positioned for movement in the frame in a path generally perpendicular to the paths of movement of the buttons. There are followers, which move in response to actuation by the slide bars, for opening and closing the contacts. Washers are positioned between adjacent pushbuttons for performing a blockout function.

3,778,566
MULTISECTION ROTARY WAFER TYPE SWITCH ASSEMBLY WITH INTERLOCKING STATOR AND ROTOR SECTIONS

Vladas Gusaras, Madison, Wis., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Nov. 6, 1972, Ser. No. 304,197
Int. Cl. H01h *19/58*
U.S. Cl. 200—14 **8 Claims**

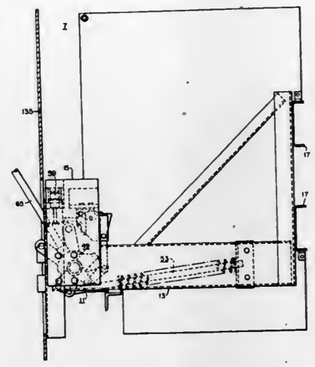


A rotary switch construction includes a plurality of generally identical switch sections and a switch shaft of fixed length. There are interlocking means between the stators and rotors of each of the switch sections, with one of the rotors interlocking with the switch shaft. Thus, any number of switch sections may be connected to the fixed length shaft through the interlocking arrangement between the rotors with the advantage that a single length shaft can provide rotary movement of different numbers of switch rotors.

3,778,567
CIRCUIT INTERRUPTER WITH INTERLOCKING MECHANISM

Norman Davies, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1972, Ser. No. 277,954
Int. Cl. H01h *9/22*
U.S. Cl. 200—50 A **10 Claims**

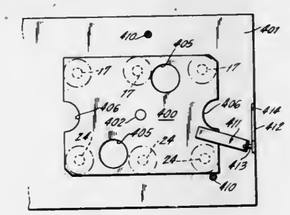


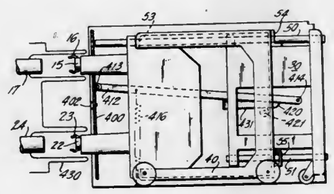
A circuit interrupter with an interlocking system is provided with stored energy overcenter spring operating means for operating the interrupter between open and closed positions. A latch device latches the operating means in charged positions for the opening and closing operations. An interlocking system provides adequate safety to operating personnel by rendering the latch device inoperable when an enclosure door is opened, or to prevent opening of the door when the interrupter is in the closed position.

3,778,568
DRAW OUT SWITCHGEAR-COMPARTMENT SHUTTER

George A. Wilson, Pineville, Pa., assignor to ITE Imperial Corporation, Philadelphia, Pa.

Filed Aug. 21, 1972, Ser. No. 282,325
Int. Cl. H01h *9/22*
U.S. Cl. 200—50 AA **4 Claims**





A switchboard cubicle compartment disconnect contact shutter in which a plurality of stationary disconnect contacts

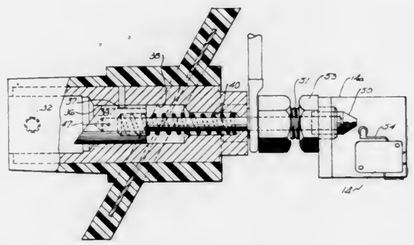
are mounted in recesses in a back wall of the compartment and a truck mounted circuit interrupter is introducible into a compartment, the truck mounted circuit breaker having a frame movable with respect to the truck frame toward and away from the disconnects in the back wall. The shutter structure is rotatably mounted on the back wall and has openings therein; one angular position of the shutter causes the openings to register with the recesses for the stationary disconnect contacts in the compartment; a second angular position of the shutter causes the openings to move away from registration with the recesses for the stationary disconnect contacts in the back wall. A connection between the frame carrying the circuit interrupter elements and the shutter rotates the shutter to provide access to the stationary disconnect contacts in the back wall when the circuit interrupter frame is moved with respect to the truck frame towards said back wall; and moves the shutter to the second mentioned angular position as the circuit interrupter frame is racked out toward test position with respect to the truck frame. This action is obtained by a rotatable lever on a stationary pivot on the side wall of the compartment; one end of the lever being connected to the shutter and the other end of the lever being engageable by a member on the circuit interrupter carrying frame to rotate the lever and hence the shutter between the first and second angular positions in accordance with the location of the circuit interrupter carrying frame within said compartment and with respect to the truck frame.

3,778,569

ELECTRICAL CONNECTOR WITH SAFETY SWITCH

Albert P. Newman, and Clem Edward Haun, both of Cincinnati, Ohio, assignors to Empire Products, Inc., Cincinnati, Ohio

Filed Dec. 30, 1971, Ser. No. 213,943
Int. Cl. H01r *33/30*
U.S. Cl. 200—51.09 **9 Claims**



An insulated electrical connector comprising a male member and female member, having a movable member integral with one of said members, and adapted for movement upon the interengagment of the said male and female members, said movement causing the activation of a series connected current interrupting switch.

3,778,570

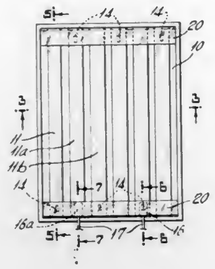
ENURESIS BED PAD

Joseph G. Shuman, 20 Highlander Dr., Scotch Plains, N.J.

Filed Oct. 5, 1972, Ser. No. 299,437
Int. Cl. G01n *27/30*
U.S. Cl. 200—61.05 **3 Claims**

An enuresis bed pad is constructed with a plurality of parellel electrically conductive sensor strips which are bonded to but not embedded in, nor flush with, one surface of an essentially non-stretchable, water-proof, electrically insulative substrate. The sensor strips are spaced on the substrate so that they are normally electrically insulated. The complete structure is relatively thin, flexible and crease resistant.

When any two adjacent sensor strips are bridged electrically by the electrolytes in urine, an external circuit is closed and



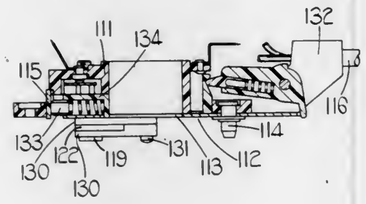
audible and/or visual signals are activated. The sleeping person is awakened.

3,778,571

DIRECTION INDICATOR SWITCHES FOR ROAD VEHICLES

Edward Cryer, Higham, near Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 1, 1972, Ser. No. 230,600
Claims priority, application Great Britain, Mar. 20, 1971, 7,540/71
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.35 **8 Claims**



This invention relates to novel direction indicator switches for motor vehicles.

A direction indicator switch for a motor vehicle includes a rotor movable between two extreme operating positions and a central inoperative position. The rotor carries a pair of spring loaded pawls for engagement with a striker on a steering column of the motor vehicle. Each pawl has a slot therein through which passes a post on the pawl. A ball is carried in each slot and is movable in a profiled recess in the rotor so that movement of each pawl relative to the rotor is permitted in one direction to allow movement of the striker without movement of the rotor but is opposed in the other direction to permit movement of the rotor to its central position by one of the strikers moving in a switch cancelling direction when the rotor is not manually retained in one of its operating positions.

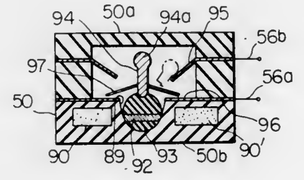
The switch provides an improved means whereby manual retention of the switch in an operative position is permitted when a switch cancelling movement of the striker occurs.

3,778,572

INERTIA SENSOR SWITCH ASSEMBLIES WITH MAGNETIC HOLDING MEANS OR THE LIKE

Shunji Matsui; Kenzo Hirashima, both of Yokohama; Yoshikazu Hayakawa, Yokosuka, and Nagayuki Marumo, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Mar. 22, 1972, Ser. No. 237,005
Claims priority, application Japan, Mar. 25, 1971, 46/21178 (utility model); Mar. 26, 1971, 46/21002 (utility model); Mar. 31, 1971, 46/23476 (utility model); June 24, 1971, 46/54615 (utility model); July 31, 1971, 46/68595 (utility model); Oct. 14, 1971, 46/94666 (utility model); Oct. 28, 1971, 46/100203 (utility model); Oct. 16, 1971, 46/81824
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 M **56 Claims**



An impact detecting device for use in a motor vehicle safety device, in which the detecting device is made up of a movable contact assembly having a conductive weight which is rockingly suspended in a housing by a conductive support means, a stationary contact assembly having at least a conductive contact member which is in alignment with the weight, and a biasing means such as a magnet which urges the weight, by a predetermined biasing force, to a rest position which is spaced apart from the contact member of the stationary contact assembly. When a force of inertia greater than a predetermined magnitude overcoming the biasing force is applied to the weight, then the weight is moved from the rest position to contact the contact member to the stationary contact assembly whereby electrical connection is established between the movable and stationary contact assemblies. An arrangement is also proposed which uses the above noted detecting device so as to be operable to actuate the safety device at different rates depending upon the speed of the motor vehicle involved in a collision.

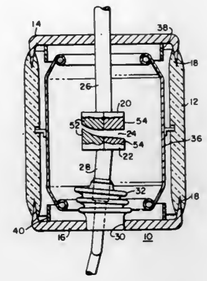
3,778,573

VACUUM-CIRCUIT INTERRUPTER HAVING IMPROVED CONTACT STRUCTURE

Ronald T. Harrold, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 23, 1972, Ser. No. 265,904
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **9 Claims**

A vacuum type circuit interrupter is provided having a contact structure comprising separable mating contacts. The contact structure is constructed so that the mating contacts close on a first material and open on a second material. The first material on which the mating contacts close is made from weld free material so that contact welding does not occur when the vacuum interrupter is closed. The second material on which the contacts open, possesses good contact opening



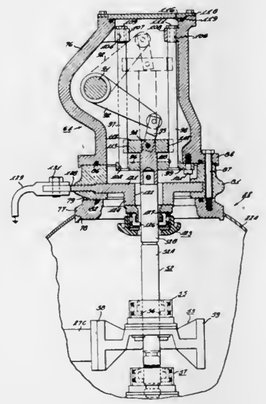
characteristics and interrupting that is, opening of the contacts will occur without excess current chopping.

3,778,574

GROUND-TEST SWITCH

Thomas F. Clark, Canton, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 26, 1972, Ser. No. 266,253
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 B **14 Claims**



A ground and test switch for metal enclosed gas insulated switchgear which allows testing of the internal conditions of the enclosed switchgear without draining the insulating gas therefrom. Operation of the circuit breaker contacts, contact resistance measurement, high voltage insulation testing, and other electrical and/or mechanical tests requiring connection to the high voltage conductor may be made.

3,778,575

CIRCUIT CONTROL SWITCH WITH CONTACT BRIDGE SPRING BIASED TOWARDS FIXED CONTACT

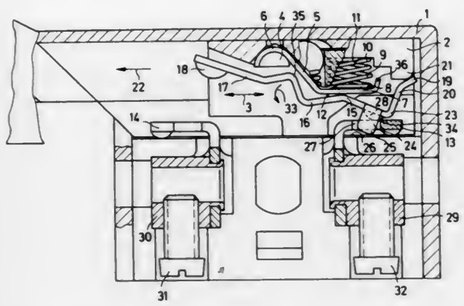
Fritz Prestel, Rietheim, Germany, assignor to Firma J & J Marquardt, Rutheim, Germany

Filed June 5, 1972, Ser. No. 259,405

Claims priority, application Germany, June 16, 1971, P 21 29 823.7

Int. Cl. H01h *1/36*

U.S. Cl. 200—153 LA **4 Claims**



In an electric switch having at least one movable contact bridge and, associated with each contact bridge and cooperating therewith, two serially-disposed fixed contacts, the contact bridge being of angular construction, one spring-loaded angle arm, in the open switch position, being inclined with respect to a line defined by the contact surfaces, while the other can be coupled to a thrust member, the improvement comprising the contact bridge being provided with one or a plurality of mutually parallel supporting lugs extending opposite to the direction of the other arm and through which the contact bridge particularly in the region of the corner, and being supported on a tilting and sliding plane, and a face or edge of the supporting lug which is directed opposite to the free end of one angle arm being pressed against a fixed abutment.

3,778,576

TUNGSTEN ELECTRICAL SWITCHING CONTACTS

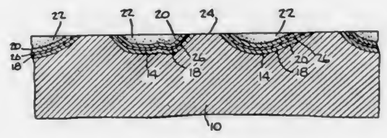
Harold Francis Anderson, Guilford; Gordon William Shove, Mt. Carmel, both of Conn.; Louis George Morin, Tarrytown, N.Y., and Henry Clinton Gackstetter, North Branford, Conn., assignors to The Echlin Manufacturing Corporation, Branford, Conn.

Division of Ser. No. 6,784, Jan. 29, 1970, Pat. No. 3,671,314.

This application Oct. 7, 1971, Ser. No. 187,555

Int. Cl. H01h *1/02*

U.S. Cl. 200—166 C **14 Claims**



A tungsten contact disc is treated by burnishing so as to smooth and compact the contact surface and remove the surface-crazed metals and oxides, while simultaneously filling the surface pores with a contaminant such as iron. The contaminants present in the pores are subsequently removed by immersing the contact disc in a dissolving agent, and the remaining natural oxides of the tungsten are removed from the walls of the pores by cathodic reduction, so as to create large pore sites which are free of oxides and contaminants. Next, there is applied a coating of a diffusion-absorbing metal, such as nickel, to the contact disc to provide a diffusion-absorbing layer for an outer film of gold. The gold lining the pore sites is applied with a thickness sufficient to maintain an amount of non-alloyed gold on the contact surface after some of the gold has been diffusion absorbed by the underlying nickel layer. During electrical switching operations, the gold alloys with the nickel, and the gold and gold alloy lining the pore surfaces are effective to prevent oxide formation on the pore surfaces and to substantially reduce surface destruction by the arc heat, thereby affording a longer contact operating life.

3,778,577

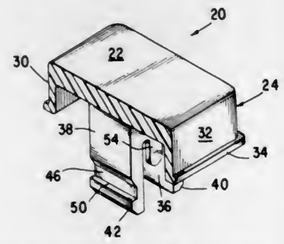
MOISTURE SEALING DEVICE FOR TOGGLE SWITCHES

Charles Thomas Fromknecht, Anderson, and John C. Davis, Greenwood, both of S.C., assignors to The Singer Company, New York, N.Y.

Filed Jan. 3, 1973, Ser. No. 320,800

Int. Cl. H01h *9/04*

U.S. Cl. 200—168 G **13 Claims**



A cap and wall structure for sealing a toggle switch against entry of moisture. The cap comprises an annular skirt encapsulating an annular wall formed about an opening in the wall structure or cover plate. The cap includes a pair of legs which lock it to the wall or plate but allows the cap to slide while a pair of tabs entrap the switch actuating member to actuate the same in response to movement of the cap.

3,778,578

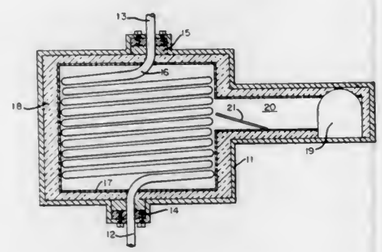
APPARATUS FOR PRODUCING SUPER HEATED FLUIDS

Raymond E. Long, 26323 Ridge Rd., Damascus, Md., and Ralph C. Boles, Jr., 12005 Claridge Rd., Wheaton, Md.

Filed Nov. 10, 1971, Ser. No. 197,422

Int. Cl. H05b *9/06*; **B60k** *3/00*

U.S. Cl. 219—10.55 **7 Claims**



The disclosure relates to an apparatus for producing super heated fluids by converting electromagnetic energy into thermal energy within the fluid. A coil of low dielectric tubing is placed in a microwave resonant chamber and extends from a fluid inlet to a vapor outlet. The fluid to be super heated passes through the coil and is vaporized directly by microwave energy. The invention is particularly applicable to a vapor powered vehicle that produces no environmental pollution.

3,778,579

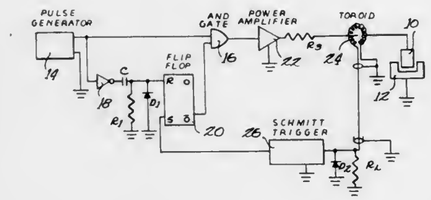
ARC CONTROL

Eiichi Takarada, Rockford, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Apr. 27, 1972, Ser. No. 248,271

Int. Cl. B23p *1/08*

U.S. Cl. 219—69 S **3 Claims**



A toroid senses the time rate of change of current at the gap between an electrode and a workpiece in an electrical discharge machining apparatus. An abnormal time rate of change of current causes a signal to be developed by a Schmitt trigger, which causes interruption of power flow to the gap.

3,778,580

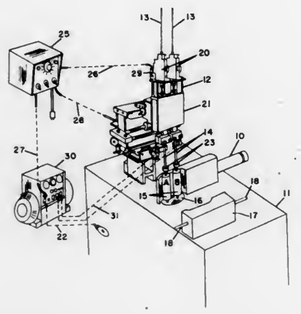
METHOD FOR PROVIDING ALLOYED ZONES ON A HARDFACED WORKPIECE

Stanton F. Bierwith, San Leandro, Calif., assignor to Great Canadian Oil Sands, Limited, Toronto, Canada

Filed Mar. 29, 1972, Ser. No. 239,071

Int. Cl. B23h *9/18*

U.S. Cl. 219—73 **2 Claims**



A method for hardfacing a metal workpiece to provide a hardfaced work surface varying in composition over a cross section of the face thereof said method utilizing consumable guide nozzles and electroslag welding procedures.

3,778,581

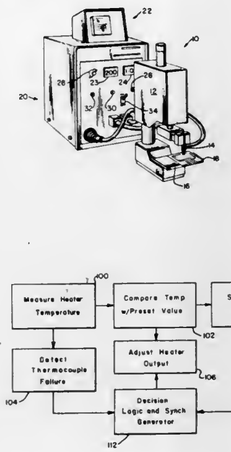
TIME-AT-TEMPERATURE A-C REFLOW SOLDERING POWER SUPPLY

Bradley J. Denny, Vista, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 3, 1972, Ser. No. 277,849

Int. Cl. B23k *1/02*

U.S. Cl. 219—85 **3 Claims**



An improved a-c power supply for use in a reflow soldering system is disclosed. The output from a thermocouple attached to the heater bar is amplified and compared to a preset reference voltage. This controls the rate at which a-c current is fed to the heater and thus controls the heater temperature. A timing circuit synchronized to the line frequency is activated when the heater temperature reaches its preset value. A fail-safe shutdown circuit is provided to disable the output should one of the thermocouple leads break. Furthermore, should the heater not reach the desired temperature within a reasonable time, the power is turned off, thereby protecting the circuit elements in the event of a shorted heater or cabling to the heater.

3,778,582

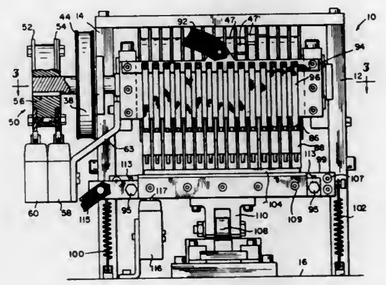
MATERIAL WORKING MACHINE

Jacob D. Schiller; Scott L. Cheslik, both of Indianapolis, and J. Tim Gonzales, Carmel, all of Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Oct. 14, 1971, Ser. No. 189,429

Int. Cl. B23k *11/10*

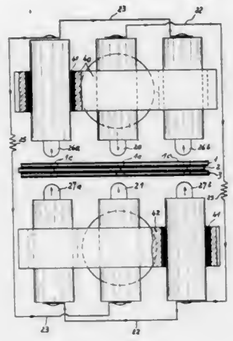
U.S. Cl. 219—87 **3 Claims**



A bank of individual working tools are selectively movable in response to movement of a cam means, the working tools

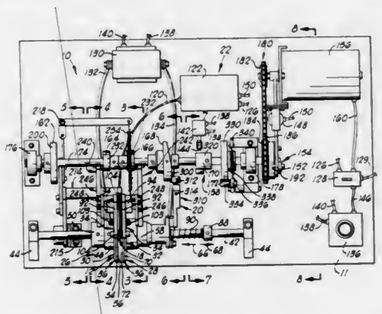
being counterbalanced to regulate the pressure at which they engage a workpiece.

3,778,583
RESISTANCE WELDING OF SHEET METAL COATED WITH LAYERS
Otto Alfred Becker, 59 Robert-Koch-Strasse, Saarbrucken, Germany
Division of Ser. No. 704,684, Feb. 12, 1968, Pat. No. 3,643,057. This application Dec. 30, 1970, Ser. No. 102,951
Int. Cl. B23k *11/10*
U.S. Cl. 219—91 **3 Claims**



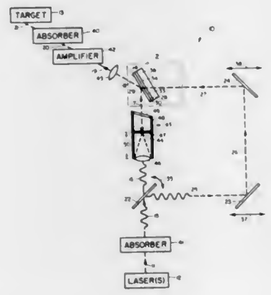
The invention relates to a method for the resistance welding of sheet metal coated with layers, wherein firstly electrical contact is established between the sheets to be interwelded and between the welding electrodes and said sheets, and subsequently welding is effected across the coating layers. The invention relates also to machines for carrying out this method.

3,778,584
APPARATUS FOR CLAMPING AND ALIGNING PARTS FOR WELDING
John Fajt, and James V. Neal, Jr., both of Pauls Valley, Okla., assignors to El-Tronics, Inc., Cherry Hill, N.J.
Filed Jan. 10, 1972, Ser. No. 216,494
Int. Cl. B23k *9/02*
U.S. Cl. 219—101 **23 Claims**



An improved welding apparatus for effecting a weld junction between end portions of two parts or conductors wherein the operation cycle of the welding apparatus is automatically initiated when the parts or conductors are in an initial, predetermined start position in a jaw assembly, the jaw assembly being then automatically positioned to securedly hold the parts or conductors as the parts or conductors are automatically positioned in a predetermined overlapping, welding position. The welding cycle is automatically initiated subsequent to the parts or conductors being positioned in the welding position to effect the weld junction therebetween, and the joined parts or conductors are then automatically ejected from the welding apparatus, the welding apparatus being then automatically positioned in the start position for receiving subsequent parts or conductors to be joined via a weld junction.

3,778,585
PROTECTION DEVICE FOR PREVENTING DAMAGE TO RADIATION SOURCE FROM BACKSCATTER
Philip J. Mallozzi; Harold M. Epstein; Craig T. Walters; David C. Applebaum, all of Columbus, and William J. Gallagher, Worthington, all of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio
Filed Apr. 21, 1972, Ser. No. 246,161
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 LM **34 Claims**



Methods and apparatus for directing an incident radiation pulse from a laser to a target and preventing any substantial backscattering of the radiation along the reverse path.

A beam splitter directs a major portion of the incident pulse energy in a main path beginning in one direction and a minor portion in a secondary path beginning in a different direction.

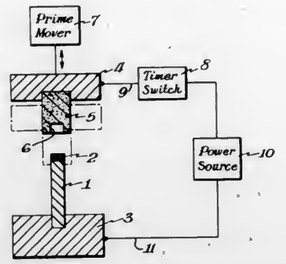
The front surface of a layer of copper having high reflectivity is located in the main path to direct the major energy portion on to the target, and a layer of germanium having high absorptivity to the radiation is located with its front surface adjacent the back surface of the copper layer. Mirrors in the secondary path direct the minor energy portion over a longer route to strike the back surface of the germanium layer in the region of the main path, after the entire main pulse has been reflected from the copper surface and before any pulse energy backscattered from the target has reached it.

The absorptivity of the germanium layer and the energy of the minor portion are sufficient to distort the surface of the copper in the region struck, and thus to reduce the reflection along the reverse path sufficiently to prevent any substantial portion of the backscattered energy from reaching the laser.

Alternatively, the germanium layer is omitted and the minor energy portion actuates an electrical discharge to vaporize the copper surface.

3,778,586
PROCESS FOR COATING METALS USING RESISTANCE HEATING OF PREFORMED LAYER
Ernest J. Breton, and Dexter Worden, both of Wilmington, Del., assignors to Composite Sciences, Inc., Wilmington, Del.
Filed Apr. 2, 1970, Ser. No. 25,090
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **16 Claims**

An improved process for coating a metal substrate with a metallic coating or an abrasive-filled metallic coating metallurgically bonded to the substrate comprising placing on a metal substrate a coating layer having a desired thickness said layer comprising a mixture of a powdered metal or alloy and a binder or a mixture of a powdered metal or alloy, powdered abrasive and a binder; contacting the metal substrate with an electrode connected to a source of high amperage electrical



power; contacting, under moderate pressure, the coating layer with a second electrode also connected to said high amperage electrical source and for a short period of timg passing sufficient high amperage electrical current through the substrate and coating layer to decompose the binder and fuse the powdered metal or alloy. The process is useful for producing metallic articles having a corrosion or a wear-resistant coating.

3,778,587
CORED WIRE ELECTRODE HAVING 200 TO 2000 PPMO$_2$
Robert A. Kubli, Scotch Plains, N.J.; Frederick H. Sasse, Yorktown Heights, N.Y.; Gerald D. Uttrachi, Westfield, N.J.; Le Roy L. Van Dyke, Mahopac, and Masahiro Nakabayashi, Dobbs Ferry, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Dec. 27, 1971, Ser. No. 212,756
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **5 Claims**

A hollow tubular sheath containing manganese and silicon ingredients with iron powder, the total wire chemistry containing between 200 and 2000 parts per million oxygen.

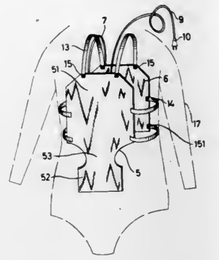
3,778,588
SELF-SHIELDING CORED WIRE TO WELD CAST IRON
Robert Anthony Bishel, Huntington, W. Va., assignor to The International Nickel Company, Inc., New York, N.Y.
Filed Mar. 29, 1972, Ser. No. 239,351
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **8 Claims**

A cored wire welding electrode for welding cast iron having an outer sheath made of nickel or a nickel-iron alloy and a powdered core composition containing copresent metallic magnesium and graphite and slag-forming and alloying ingredients. The electrode is particularly useful for open-arc welding of cast iron to itself and to compatible metals.

3,778,589
AIR OPERATING CORED WIRE
Masahiro Nakabayashi, Briarcliff Manor, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 31, 1972, Ser. No. 276,779
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **7 Claims**

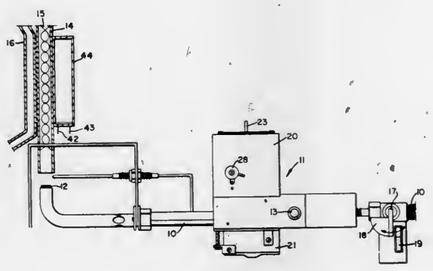
A cored wire electrode for welding in air containing as major core materials Potassium Oxalate $K_2C_2O_4$; Magnesium Mg; and Manganese Oxide MnO.

3,778,590
SUIT FOR KEEPING WARMTH IN WATER
Toru Iizuka; Katsuo Tonooka, both of Ashikaga; Torahiko Saitoh, Tokyo, and Isao Yasuda, Ashikaga, all of Japan, assignors to Kohkoku Chemical Industry Co., Ltd., Tokyo, Japan
Filed May 24, 1972, Ser. No. 256,282
Claims priority, application Japan, June 2, 1971, 47/38378; Jan. 12, 1972, 47/5660; July 20, 1971, 46/63483
Int. Cl. H05b *3/04*
U.S. Cl. 219—211 **10 Claims**



A suit for keeping warm in water, comprising basic warming materials, consisting of a chest and abdomen contact part and a back contact part, in which one or more of plate-like heating units are enveloped, back and face, and perfectly sealed within water-proof sheets, having electrical insulation. The contact parts are secured together by connecting pieces, both ends of which are sewn in or bonded with the edges on both ends of the basic materials. Water-proof electric wires connect the enveloped plate-like heating units with each other, and a lead wire connects the water-proof electric wire with an electric source for generating heat to keep warm.

3,778,591
CONTROL APPARATUS FOR A COOLING DEVICE
Johan Ragnar Ellstrom, Bromma, Sweden, assignor to Junkers & Co. G.m.b.H., Wernau, Germany
Filed June 28, 1971, Ser. No. 157,219
Int. Cl. F25b *27/00*
U.S. Cl. 219—279 **7 Claims**



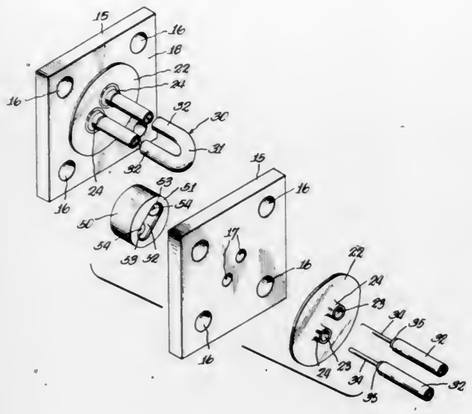
A control apparatus designed to control the flow of a gas from an inlet to an outlet is shown. The control apparatus includes a housing provided with switch means operatively connected thereto. A gas filled closed member is connected to a bellows with the bellows being responsive to pressure changes within the gas filled member. A gear is connected to a worm screw which in turn is connected to the housing. The gear is also connected to a valve spindle which in turn is connected to control mechanism and to a selectively openable and closeable valve.

3,778,592

ELECTRIC HEATING ASSEMBLIES

Michael Williams, Warren, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 16, 1972, Ser. No. 307,108
Int. Cl. F24h *1/00*; **H05b** *1/00*
U.S. Cl. 219—336 **7 Claims**



The invention relates particularly to an electric immersion heater for use in heating liquid in a tank, such as a hot water tank. The heater includes the standard construction of a mounting flange and a sheathed heating element rigidly carried by the flange in cantilever fashion so that it may be positioned through a tank opening and in contact with the liquid to be heated.

A corrosion shield overlies the flange surface which is exposed to the liquid in the tank, the shield having a collar through which an end of the heater sheath passes, such end also passing through an opening in the mounting flange. The collar is deformed radially inwardly against the wall surface of the sheath, the deformation causing the wall of the collar to be reduced in cross-section and substantially cold welded to the sheath to form a liquid-tight joint therewith.

The flange is staked to the sheath to provide a mechanically rigid joint therebetween. A dielectric terminal block is rigidly connected to the mounting flange and has a pocket in which an end seal bushing at the sheath end is compressed.

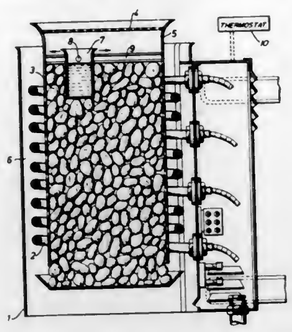
3,778,593

ELECTRICAL HEATING UNITS

Gunnar Wilhelm Wikstrom, Enkoping, Sweden, assignor to AB Bahco Ventilation, Enkoping, Sweden

Filed Nov. 2, 1971, Ser. No. 194,975
Claims priority, application Sweden, Nov. 3, 1970, 14847/70
Int. Cl. H05b *1/00*; **A61h** *33/06*; **F24h** *7/02*
U.S. Cl. 219—362 **3 Claims**

A steam bath unit is disclosed including a heat accumulator comprising a stone magazine located in a container, the walls of the container being surrounded by an electrical heating element. The temperature to which the stones are to be heated by the element is set by a thermostat. An open water container is partially submerged in the stone magazine. The water container is so mounted that its lateral location relative to the walls of the container may be varied. As the water in the container is heated essentially by heat received from the surrounding stones, the time at which the water boils is thereby



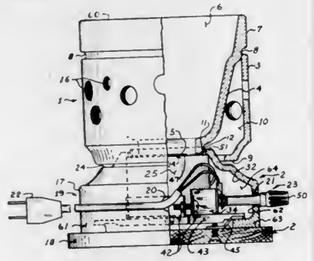
controlled by the container's location in the stone magazine i.e., the time at which the surrounding stones are heated.

3,778,594

POSITIVE LIQUID TEMPERATURE CONTROLLING DEVICE

John W. Wightman, 3 Ridgecreek, St. Louis, Mo.

Continuation-in-part of Ser. No. 111,185, Feb. 1, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 297,799
Int. Cl. F27d *11/02*
U.S. Cl. 219—430 **4 Claims**



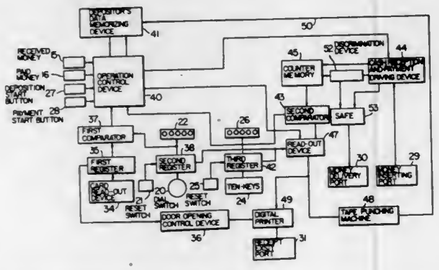
A cup and base combination is provided by which liquid contents of the cup can be maintained at a desired potable temperature at every level of the liquid.

3,778,595

AUTOMATIC TELLER SYSTEM

Yoshihiro Hatanaka, and Akio Ueba, both of Himeji, Japan, assignors to Kabushiki Kaisha Kokuei Kikai Seisakusho, Himeji-shi, Hyogo-ken, Japan

Filed Oct. 15, 1971, Ser. No. 189,646
Claims priority, application Japan, Oct. 17, 1970, 45/91425
Int. Cl. G06r *7/01*
U.S. Cl. 235—61.7 B **5 Claims**



An automatic bank teller system comprises means for reading out a depositor's code from a card of a user, means operated by the user for selecting the operation of the system

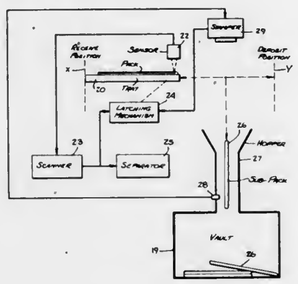
between reception and payment of money, means also operated by the user for designating a sum of money to be received or paid, means for memorizing the bank file of depositors' accounts to send out the depositor's account in correspondence to the read-out code from the card, and means for receiving or paying the desired sum of money upon confirmation of the balance as calculated from the output of said memorizing means and the sum of money to be received by or paid to the user of the teller system.

3,778,596

AUTOMATIC BANKING DEPOSIT MACHINE

Joseph S. Wapner, Levittown, Pa., assignor to Metalogics Corporation, Chicago, Ill.

Filed Sept. 20, 1971, Ser. No. 181,882
Int. Cl. G06k *17/00*
U.S. Cl. 235—61.9 R **13 Claims**



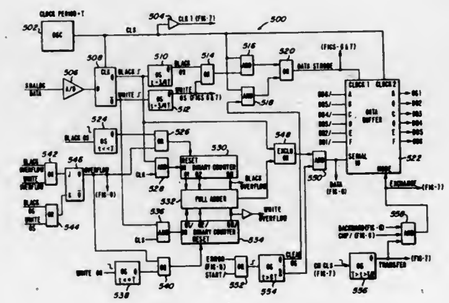
An automatic banking deposit machine adapted to accept a deposit pack constituted by an envelope containing the items to be deposited and a deposit-slip assembly adhered to the face of the envelope and including an original slip on which the items to be deposited are entered, and a duplicate slip separable from the pack. When the pack is placed on the machine; the filled envelope and the original deposit slip adhered thereto are separated from the duplicate slip and fed into a locked vault, whereas the duplicate slip is stamped with receipt data and returned to the depositor.

3,778,597

RECORD READING SYSTEM

James L. Vanderpool, Centerville, and Bruce W. Dobras, Dayton, both of Ohio, assignors to The Monarch Marking Systems Company, Dayton, Ohio

Filed Jan. 8, 1971, Ser. No. 105,007
Int. Cl. G06k *7/14*
U.S. Cl. 235—61.11 E **5 Claims**



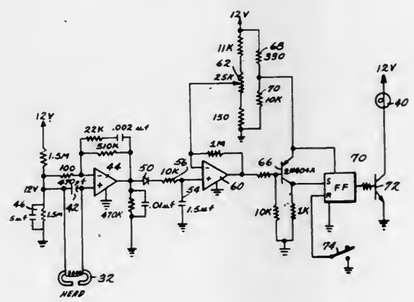
A machine-readable record or label includes alternating areas or bars of different reflectivity whose relative widths are varied to provide a binary coded data record. The record includes start and stop codes between which is recorded a plural character message capable of being read in forward and backward directions. A record interpreting system compares the widths of consecutive bars and, by reference to the sequence in which the bars are read, enters binary "0"s and "1"s into a shift register. The system includes a detector that continuously samples the shift register contents for a start indication and, on detection thereof, stores a start and the direction of reading. This changes the system from a scan mode to a read mode in which the contents of the shift register are transferred to a display only as each complete character code is received. The system includes a reversing and complementing control for reverse read codes and both error and message end detecting means for returning the system from a read mode to a scan mode.

3,778,598

DOCUMENT AUTHENTICATION METHOD AND APPARATUS

David H. Eberly, Jr., Fairfield, Conn., and Peter E. Hanke, White Plains, N.Y., assignors to United States Banknote Corporation, New York, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,079
Int. Cl. G06k *7/08*; **G01r** *33/12*; **G06k** *19/06*; **G11b** *5/70*
U.S. Cl. 235—61.11 D **6 Claims**



A method and apparatus for authenticating a document having intaglio printing such as a stock certificate, currency or security stamp, whereby a magnetic head is passed over successive lines of magnetic ink on the document so as to produce successive electrical pulses. These pulses are amplified, half-wave rectified and applied to an integrating circuit so that the output of the integrating circuit increases as successive lines are passed. The integrated signal is then applied to an operational amplifier together with a constant voltage whose amplitude can be manually adjusted by a potentiometer. The output of the operational amplifier is applied to a transistor so that, when the potentiometer is properly adjusted, the transistor shifts to its non-conductive state when the last of the lines is encountered by the head. A flip flop is connected to the transistor so that it changes state to cause a bulb to light, indicating authentication, when the transistor becomes non-conductive, or a solenoid to operate to divert counterfeit documents or products.

3,778,599

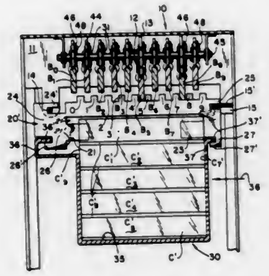
INFORMATION CARRIER SELECTION SYSTEM

Norman J. Rosenburgh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 36,821, May 13, 1970, Pat. No. 3,647,064. This application Aug. 23, 1971, Ser. No. 174,247
Int. Cl. B07c *9/00*; **G06k** *21/00*
U.S. Cl. 235—61.12 R **3 Claims**

An apparatus for positively separating preselected information carriers from an arrangement of similar carriers, includes

a frame and a container, and is adapted to be used with a plurality of selector tabs releasably suspended from the frame and releasably suspending the container. A plurality of information carriers are symmetrically supported within the container and are respectively connected in sliding frictional relation to the selector tabs. Each selector tab has an edge configuration of alternative lands and notches that is coded to identify a respectively connected carrier by removing preselected of such lands. To make a selection, appropriate selector bars on the frame are actuated to a blocking position within corresponding notches of the coded selector tabs, and the container is shifted one notch pitch. The selected carrier selector



tabs, i.e., those which have lands removed adjacent the actuated selector bars, will move with the shifted container and will remain fixed thereto while releasing from the frame. However, the selector tabs of the nonselected carriers will each have at least one of their lands blocked by an actuated selector bar. The blocked selector tabs will be prevented from moving with the shifted container and will release therefrom while remaining suspended from the frame. The selected carriers whose selector tabs have been released from the frame are then positively separated from the suspended arrangement of nonselected carriers in response to movement of the container away from such arrangement.

3,778,600

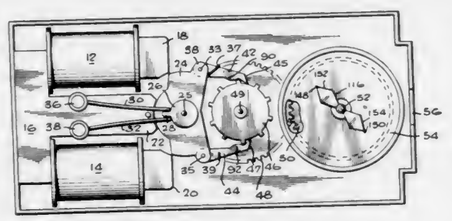
MODULAR COUNTER CARRY CIRCUIT

John S. Burton, 11349 Elderwood St., Los Angeles, Calif.

Continuation-in-part of Ser. No. 66,036, Aug. 21, 1970. This application Mar. 15, 1972, Ser. No. 234,976

Int. Cl. G06m *1/276, 3/14*

U.S. Cl. 235—92 C **10 Claims**



Herein described is a carry circuit used with pulse counters which convey carry information from one module of a digit counter to an associated module as, for example, in a decade counter. A commutator associated with one digit is energized by a pair of brushes which are rotated by the count wheel thereof. The count wheel is designed to start its rotational indexing movement only after termination of an input count pulse, thereby causing the brushes to rotate only when current has ceased to be applied to the circuit. The counter includes, for example, an add coil and a subtract coil. The commutator includes a segment coupled to the add coil on the next preceding digit counter and a segment coupled to the subtract coil of the next preceding digit coil. When the index wheel is moved into a nine position, the brushes and commutator are simultaneously aligned to provide for actuation of the next decade counter simultaneously with the first decade counter upon receipt of an additional add pulse. Upon removal of such pulse, the first decade wheel moves from nine to zero, while the second decade wheel moves one increment. Stepping of additional decade wheels are likewise provided for. Likewise, receipt of a subtract pulse when the index wheel is moved into a zero position would cause a reverse rotation in applicable decade wheels due to the particular design and alignment of the brushes and commutator.

3,778,601

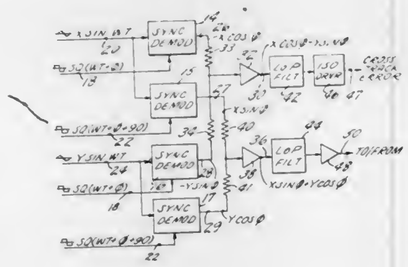
AUTOMATIC TRACK INSERTION AND DISPLAY

Larry D. Brock, Collinsville, and John E. Games, Granby, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 3, 1972, Ser. No. 268,252

Int. Cl. G06g *7/22, 7/78*

U.S. Cl. 235—150.27 **4 Claims**



Digital values of designated track angles for various portions of a preplanned flight are presented by a storage unit for different segments of the flight plan. These values are converted to quadrature square waves of a phase related to the designated track angle, which are used to synchronously demodulate sinusoidal signals of X and Y coordinates from the aircraft to a way point relating to the flight plan segment, the result being combined to provide along-track distance to way point and cross track error. The square wave signals may be used to drive a conventional differential resolver so as to automatically adjust the resolver to the designated track angle to provide an indication thereof; alternatively, a digital display of the stored value may be used.

3,778,602

AREA NAVIGATION COMPUTER AND SOLID STATE FILTER

Jerry C. Schmitt, Overland Park, Kans., assignor to King Radio Corporation, Olathe, Kans.

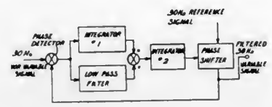
Filed Oct. 30, 1970, Ser. No. 85,644

Int. Cl. G06g *7/78*

U.S. Cl. 235—150.26 **15 Claims**

A solid state filter for area navigation computers and similar avionics equipment which rejects errors commonly resulting from VOR course scalloping and multipath effect on signal propagation between the ground station and an airborne receiving unit. The subject filter operates to sense the rate at which the ground station signal phase is changing and adds a compensating signal thereto in the receiving unit. As a result,

the ground station signal can be filtered with a long time constant to reject course scalloping and other errors while, at the



same time, compensating for the resulting aircraft position lag. The amount of course scalloping rejection can be increased until limited by the desire to maneuver the aircraft.

3,778,603

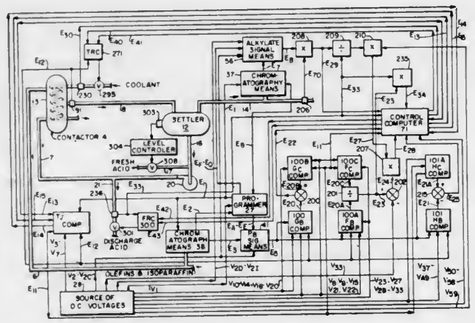
MEANS AND METHOD FOR ACHIEVING AN OPTIMUM OPERATING CONDITION FOR AN ALKYLATION UNIT

Donald E. Sweeney, Jr., Beaumont, Tex., assignor to Texaco Inc., New York, N.Y.

Filed May 26, 1972, Ser. No. 257,408

Int. Cl. G06f *15/46*; **G06g** *7/58*; **G05b** *13/02*

U.S. Cl. 235—151.12 **12 Claims**



A system controls the temperature at which olefins are contacted with an isoparaffin in the presence of acid in an alkylation unit, and the flow rate of acid entering or leaving the alkylation unit. The system senses conditions of a hydrocarbon product, which results when the acid is removed from a hydrocarbon-acid mixture after the contacting process, the contact temperature, a condition relating to the contact acid and the olefin composition. The system includes a source providing signals corresponding to the economic values related to the octane rating of alkylate, which is produced from the hydrocarbon product, to the acid consumption and to the cost of controlling the contact temperature. The system uses the signals corresponding to the sensed conditions and the economic value signals to develop control signals for apparatus that control the contact temperature and the acid flow rate.

3,778,604

DIGITAL MEANS FOR COMPUTING FOURIER TRANSFORM OF A SERIES OF SAMPLES

Henri J. Bosc; Jean-Marie H. Colin, both of Paris, and Jean-Claude A. Debuisser, Fontenay-le-Fleury, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

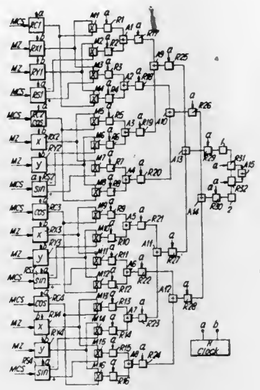
Filed Dec. 29, 1971, Ser. No. 213,249

Claims priority, application France, Dec. 29, 1970, 7046963

Int. Cl. G06f *1/02, 15/34*

U.S. Cl. 235—152 **3 Claims**

A digital computer device for computing an approximation of the Fourier transform of a sequence of m sample pairs having known times of occurrence. An equation expressing the transform is programmed into the computer device. Binary words representing multiplier coefficients are placed in a first cyclically read memory. The m sample pairs are coded into p-digit words in a second memory from which they are simultaneously available. At each first memory reading 2 m multiplier coefficients are applied at the same time as the 2 m sample binary words to 4 m multipliers. The p-digit multiplier outputs are applied to a plurality of binary adders to perform the algebraic additions required by the equation. The device is particularly adapted for computation of Fourier transform approximations in a received signal processing system for a coherent pulse Doppler radar.



3,778,605

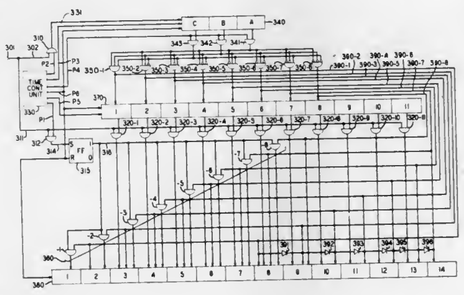
DIGITAL EXPANDOR FOR PCM CODE WORDS

William Lloyd Montgomery, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 16, 1971, Ser. No. 134,704

Int. Cl. H04l *3/00*

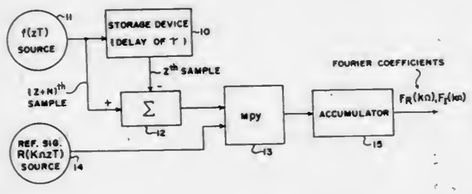
U.S. Cl. 235—154 **13 Claims**



Compressed PCM digital code words having the serial form SABCWXYZ are expanded in accordance with a prescribed format. A control signal is generated in response to the binary number represented by the logical signals in the ABC bit positions. The control signal, in turn, is utilized to read the logical signals in the serial WXYZ bit positions directly into selected

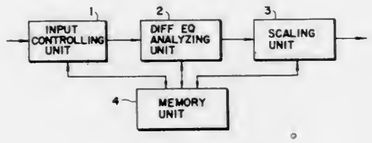
stages of a storage register and to supply a predetermined logical signal to other stages of the storage register, thereby completing the expanded digital code word in accordance with the expansion format.

3,778,606
CONTINUOUSLY UPDATING FOURIER COEFFICIENTS EVERY SAMPLING INTERVAL
Joseph W. Schmitt, Hudson, and Donald L. Starkey, Amherst, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Feb. 23, 1972, Ser. No. 228,545
Int. Cl. G06f *15/34*
U.S. Cl. 235—156 **4 Claims**



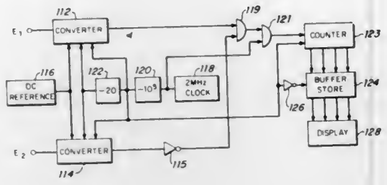
A method and apparatus for continually producing updated Fourier coefficient values of an input signal during each sample time. The Fourier coefficient $F(k\Omega)$ is first calculated for any sequence of N samples of the input signal $f(zT)$. To calculate the Fourier coefficients for the next ensuing sample time, the previously calculated Fourier coefficient value is updated by the addition of the product of the reference value and the difference between the new sample and the sample which occurred N samples earlier in time. This process is continued for each new sample.

3,778,607
AUTOMATIC SCALING SYSTEM
Shigeru Watanabe, Hachioji; Norio Yokozawa, Futyu; Shigeru Yabuuchi, Hachioji, and Ituko Terakado, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 23, 1972, Ser. No. 237,268
Claims priority, application Japan, June 25, 1971, 46/45676
Int. Cl. G06g *7/32*
U.S. Cl. 235—193 **10 Claims**



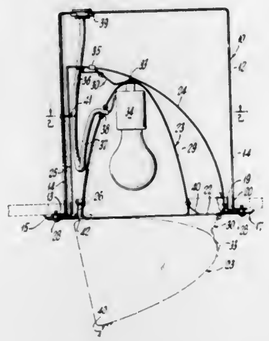
An automatic scaling system wherein means are provided which, in the case of programming of an analog operator, numerically analyzes an original differential equation in digital form for evaluating approximate solutions for the variables of the equation and for calculating the maximum values of the respective variables from the approximate solutions. Additionally, means are provided for determining voltage scale factors from the maximum values and thus, voltage and time scalings are automatically carried out.

3,778,608
ELECTRICAL MEASURING SYSTEMS USING A QUARTER-SQUARE MULTIPLIER
Peter L. Richman, 22 Barberry Rd., Lexington, Mass.
Division of Ser. No. 39,791, May 22, 1970, Pat. No. 3,633,116. This application Aug. 30, 1971, Ser. No. 176,027
Int. Cl. G06g *7/16*; **G01r** *11/32*
U.S. Cl. 235—194 **10 Claims**



A system for measuring electrical power and including a pair of converters for providing a pair of output pulse trains, the duration of the pulse being proportional to the means squared value of input signals to the converters. A circuit is included for generating a signal proportional to the difference between corresponding pulses; where the input signals to the converters are $E + I \cos \theta$ and $E - I \cos \theta$, the difference signal is essentially $E I \cos \theta$, the power sought.

3,778,609
RECESSED LIGHTING FIXTURE
Milton Liberman, 65 Seawane Rd., East Rockaway, N.Y.
Filed July 19, 1972, Ser. No. 273,272
Int. Cl. F21s *1/02*
U.S. Cl. 240—73 HA **7 Claims**

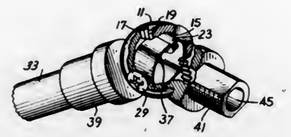


A recessed lighting fixture having a reflector and lamp mounted in a housing having at least one opening therein. A curved track is mounted in the housing with the lamp assembly being slidably mounted on the track for movement between a first position in which the lamp assembly is substantially wholly contained substantially wholly within the housing and a second position in which the lamp assembly is positioned outside the housing.

3,778,610
ADJUSTABLE JOINT FOR ELECTRICAL FIXTURES
Leo Wolf, 5701 Sheridan Rd., Chicago, Ill.
Filed Dec. 4, 1972, Ser. No. 311,968
Int. Cl. F21v *21/00*
U.S. Cl. 240—73 BJ **6 Claims**

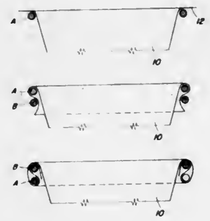
An adjustable joint for electrical fixtures and the like is constructed of two opposed hollowed housing members having

circular mating surfaces that are toothed. A spring internally joins the two housing members and urges them together in a yieldably lockable arrangement. The spring is disposed and ar-



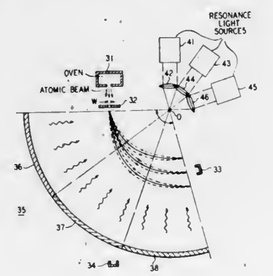
ranged to avoid passing through or blocking a passage between the circular mating surfaces, and provides a pivot for adjustment. The toothed mating surfaces serve as both a bearing and a lock.

3,778,611
LAMPSHADE AND METHOD OF ASSEMBLY
Robert E. Burridge, Hillsdale, N.J., and Peter O. Everson, Darien, Conn., assignors to Craftings, Inc., Englewood, N.J.
Filed Apr. 19, 1972, Ser. No. 245,316
Int. Cl. F21v *1/06, 1/14*
U.S. Cl. 240—108 D **7 Claims**



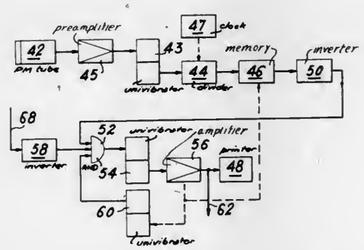
Decorative lampshades in a variety of pleasing designs are quickly and simply constructed with a tube of stretch fabric, a plurality of resilient wire rings, and a technique herein referred to as a roll-finish lock. Simple mounting and electrical accessories adapt the shade so produced for use as a hanging ceiling fixture, a table lamp or a floor lamp.

3,778,612
NEUTRAL PARTICLE BEAM SEPARATOR AND VELOCITY ANALYZER USING RADIATION PRESSURE
Arthur Ashkin, Allencrest Rd., Rumson, N.J.
Continuation-in-part of Ser. No. 885,070, Dec. 15, 1969, Pat. No. 3,710,279. This application Nov. 1, 1971, Ser. No. 194,733
Int. Cl. H01j *39/34*
U.S. Cl. 250—251 **6 Claims**



In the disclosed neutral-particle molecular-beam or atomic-beam separator, velocity analyzer or synchrotron, it is proposed to use the saturated value of radiation pressure on the particles, illustratively neutral particles, to deflect them in semicircular paths or in circular orbits. A light field at a resonance radiation frequency for the particles is created that converges radially in a horizontal plane throughout the desired portion or arc of a circle with intensity sufficient to exceed the saturated value and thus create a constant central force field. The field of use includes studying the interaction of atoms with high-intensity monochromatic light, and also includes separating, velocity analyzing or trapping neutral atoms having a specific hyperfine level or belonging to a specific isotopic species, such as those useful for nuclear power generation.

3,778,613
PIPE-LINE LEAK DETECTION METHOD AND DEVICE
Gerard Dorgebray, la Chaussee-d Ivry, France, assignor to Elf Union, Paris, France
Filed Apr. 9, 1971, Ser. No. 132,641
Claims priority, application France, Apr. 17, 1970, 7014071
Int. Cl. G01n *23/12*
U.S. Cl. 250—43.5 MR **14 Claims**

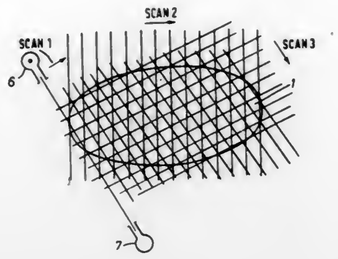


For detecting and locating leaks in subterranean pipe lines which transport fluids, a radioactive tracer is circulated in the line, the line is flushed and a detection pig is moved along the line. A counting assembly in the pig monitors the radioactivity along the line and the distance from the starting point is printed each time the radioactivity exceeds a predetermined threshold.

3,778,614
METHOD AND APPARATUS FOR MEASURING X- OR γ-RADIATION ABSORPTION OR TRANSMISSION AT PLURAL ANGLES AND ANALYZING THE DATA
Godfrey Newbold Hounsfield, Winthorpe Aerodrome Farm, near Newark, England, assignor to EMI Limited, Hayes, Middlesex, England
Continuation of Ser. No. 861,538, Aug. 21, 1969, abandoned. This application Dec. 27, 1971, Ser. No. 212,778
Claims priority, application Great Britain, Aug. 23, 1968, 40,317/68
Int. Cl. G01n *23/08*
U.S. Cl. 250—362 **28 Claims**

In apparatus for examining a body by means of X or Y radiation, a two-dimensional matrix of elements of the body is exposed to radiation from a number of directions and the transmission of the radiation by a plurality of paths of small cross-sectional area through the body is measured, the directions and numbers of the paths being such that each ele-

ment of the matrix is intersected by a group of paths which intersect different groups of elements. From these measure-



ments, the absorptions or transmissions in of the individual elements of the matrix are calculated and used to produce a cathode ray tube display and/or a photograph.

3,778,615
MIXED ALKALINE EARTH SULFATE PHOSPHOR FLUORESCENT SCREENS AND RADIOGRAPHIC ELEMENTS

George W. Luckey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

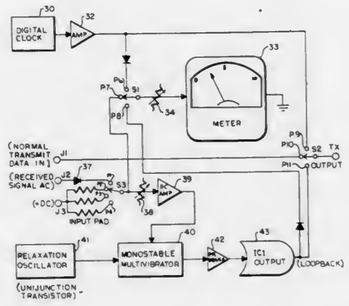
Division of Ser. No. 868,224, Oct. 21, 1969, Pat. No. 3,650,976. This application May 18, 1971, Ser. No. 144,673
Int. Cl. H01j *1/62*
U.S. Cl. 250—475 **4 Claims**

Novel phosphors comprising lanthanide-activated plural mixed alkaline earth sulfates such as europium-activated strontium barium sulfate, are prepared by coprecipitation of the lanthanide ion and said plural alkaline earth ions in dilute solution. The phosphors show high efficiency of fluorescence when excited by x-rays and are particularly useful in intensifying screens in combination with radiographic image recording elements.

3,778,616
OPTICAL PATH ALIGNMENT INSTRUMENT

Don E. Ranniger, 2890 Robb Cir., Denver, Colo.

Filed May 30, 1972, Ser. No. 257,858
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **8 Claims**

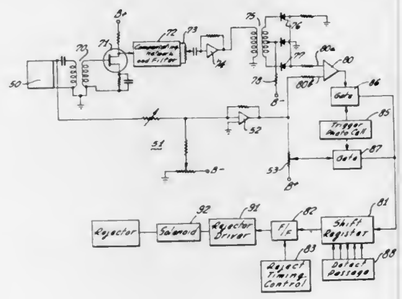


A communications system operating in visible or infra red light bands, includes station **1** having a transmitter and station **2** having a receiver, and an alignment instrument utilizing clocked digital data is inserted in the transmitter of station **1** which may be utilized by station **2** to align its receiver to maximum signal. The received signal at station **2** may be fed into an alignment instrument utilizing a pulse generator, and the received signal is used to change the normal duty cycle of the pulse generator to 25 percent on and 75 percent off, and the output of the alignment instrument may be connected to the output of station **2** in loopback. The received signal voltage at station **2** will increase the duty cycle above the 25 percent proportional to the level of the received signal voltage. By transmitting this back to the station **1**, its received signal can be increased or decreased by vertical and/or horizontal adjustment of station **1** transmitter.

3,778,617
CONTAINER INSPECTION APPARATUS

Frederick L. Calhoun, Torrance, Calif., assignor to A-T-O Inc., Cleveland, Ohio

Division of Ser. No. 660,978, Aug. 16, 1967, Pat. No. 3,529,167. This application Feb. 12, 1970, Ser. No. 10,884
Int. Cl. H01j *39/12*
U.S. Cl. 250—223 B **4 Claims**

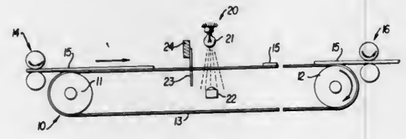


A container inspection device is disclosed wherein the bottom of a bottle is observed by an exchangeable lens system with a nutating, instantaneous object field of view. A reticle with opaque and transparent area of greatly differing size modulates the light from the object field and the modulated light is detected by a solar cell. The solar cell is a-c coupled to a detector circuit responding to a-c signals within a particular frequency range when exceeding a threshold. The threshold level is controlled through a circuit which is d-c coupled to the solar cell. Signals exceeding the threshold control separation of the bottle from others.

3,778,618
PHOTODETECTION OF NON-OPAQUE OBJECTS TRANSPORTED ALONG A CONVEYOR BY USE OF A LIGHT BLOCKING OPAQUE FLAP

Kenneth W. Laskowski, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 8, 1972, Ser. No. 251,493
Int. Cl. H01j *3/14*
U.S. Cl. 250—223 **3 Claims**

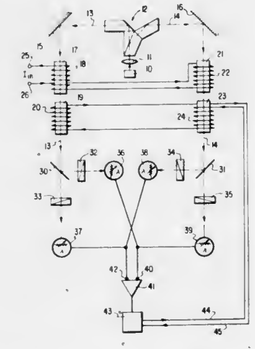


Photodetection of the passage of transparent or translucent sheets along a conveyor is effected by placing an opaque flexible flap in the path of movement of the sheets on the conveyor. The flap is engaged and moved forward by the sheets a short distance along the conveyor, into the photodetector light path.

3,778,619
INPUT CONNECTIONS FOR DIFFERENTIAL AMPLIFIERS

Alain Carnel, Paris, France, assignor to Compteurs Schlumberger, Montrouge, France

Filed Mar. 22, 1972, Ser. No. 236,926
Claims priority, application France, Jan. 28, 1971, 7109978
Int. Cl. G02t *1/18*
U.S. Cl. 250—225 **4 Claims**

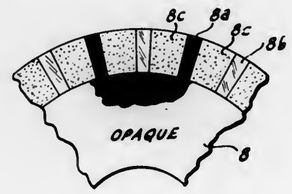


Two polarized light beams from the same source are rotated by passage through Faraday rods having windings supplied by a current to be measured. The beams are then counterrotated by passage through second Faraday rods having windings supplied by a compensating current. Each beam is then applied to a beam splitting semi-reflective mirror which displaces it into distinguishable components. Optical analyzers then attenuate each beam in accordance with a function of the angular displacement from reference or preferential polarization planes. Pairs of photoresponsive detectors transduce the resulting beams into pairs of electrical signals, each pair having a signal of different sign or sense. Signals of like sign are then combined and the two resulting signals are applied to the two inputs of a differential amplifier. The amplifier output is used to develop a proportional compensation signal for the second Faraday rods and can be displayed as a measure of input current.

3,778,620
SQUARE WAVE ROTARY PULSE TRANSDUCER

Robert W. Lindemann, and John W. Parmley, both of Watertown, Wis., assignors to Cutler-Hammer Inc., Milwaukee, Wis.

Filed Apr. 24, 1972, Ser. No. 246,803
Int. Cl. G01d *5/36*
U.S. Cl. 250—232 **8 Claims**

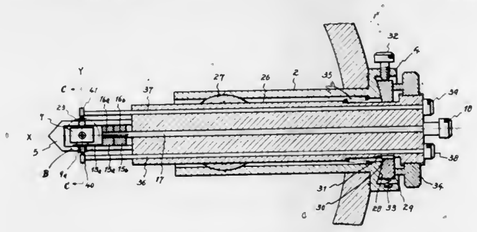


An electro-optical pulse generator. A disc having alternate transparent and opaque areas at its periphery is rotated between a light emitting diode (LED) and a photo-transistor to generate pulses. In order to avoid generation of spurious pulses in the event of slight rotation due to vibration or the like causing shifting across the opaque-to-transparent tripping point, gray (semi-transparent) areas are interposed on this disc between the transparent and opaque areas. These gray areas will not cause tripping and, thus, lengthen the angular distance between the high (transparent) tripping point and the low (opaque) tripping point to prevent unwanted pulses.

3,778,621
SPECIMEN TILTING DEVICE FOR AN ELECTRON OPTICAL DEVICE

Akio Mikajiri, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed June 13, 1972, Ser. No. 262,208
Int. Cl. H01j *37/26*; **G01n** *23/02*
U.S. Cl. 250—442 **4 Claims**

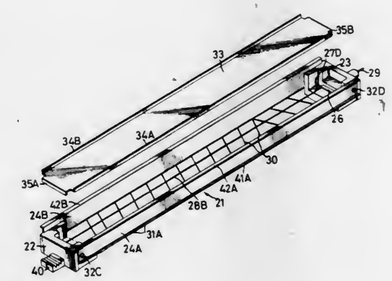


A specimen tilting device for inserting a specimen into the objective lens of an electron optical device in a direction perpendicular to the electron optical axis of the microscope. The specimen stage is located on a plane defined by two tilting axes perpendicular to said electron optical axis. The stage may be rotated about each tilting axis so as to tilt or incline said specimen in any direction and at any desired angle.

3,778,622
CHARGING APPARATUS FOR ELECTRO-PHOTOGRAPHIC COPYING MACHINES

Akira Kobayashi; Tadashi Sugano; Toshio Koike, and Minehiro Sakata, all of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Sept. 30, 1970, Ser. No. 76,886
Int. Cl. G03g *15/00*
U.S. Cl. 250—324 **12 Claims**

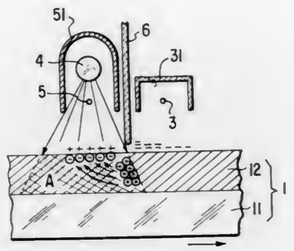


A charging apparatus for electrostatically charging copying material in an electro-photographic copying machine includes a receptacle with its bottom plate fitted detachably and held in place by a spring. This receptacle holds a tungsten wire to produce a corona discharge and the wire can be easily replaced by removing the bottom plate.

3,778,623
CHARGING METHOD OF ELECTROPHOTOGRAPHIC MATERIALS

Masamichi Sato; Masaaki Takimoto; Isoji Takahashi, and Takao Komaki, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 18, 1972, Ser. No. 281,927
Claims priority, application Japan, Aug. 20, 1971, 46/63430
Int. Cl. G03g *13/02*
U.S. Cl. 250—325 **3 Claims**

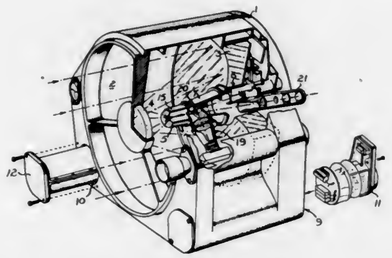


A charging method for an electrophotographic material comprising a highly insulating support and a photoconductive insulating coating thereon, which comprises subjecting a first region of the photoconductive coating to a first corona discharge of one polarity while simultaneously irradiating with light, whereby said irradiation is absorbed by said photoconductive coating, and at the same time subjecting a second region of said photoconductive coating which is continuous to and radiation insulated from said first region, to a second corona discharge of the opposite polarity and causing a relative movement between said electrophotographic material and the corona discharge devices in such a manner that said electrophotographic material is subjected to said first corona with light irradiation and then is subjected to said second corona successively, is disclosed.

3,778,624
THERMAL IMAGING DEVICE

Neal K. Jones, Brighton, South Australia; Douglas W. Faulkner, Salisbury Heights, South Australia; Robert T. Johnston, North Walkerville, South Australia, and Murray R. Meharry, Elizabeth Park, South Australia, all of Australia, assignors to The Commonwealth of Australia, Melbourne, Victoria, Australia

Filed May 1, 1967, Ser. No. 637,036
Int. Cl. H01j *39/00*
U.S. Cl. 250—333 **30 Claims**

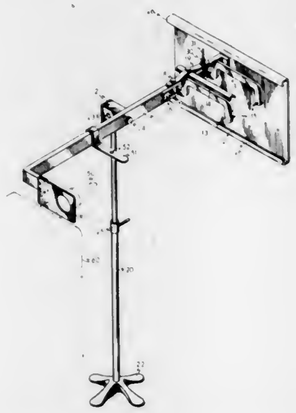


A thermal imaging device comprising collector means to focus infra-red rays, a fluorescent screen enclosed in a sealed evacuated capsule and including a phosphor on a membrane, said fluorescent screen being positioned at the focal plane of the collector means, an energizing source for the fluorescent screen and means for varying the fluorescence which results from the presence of an infra-red image on the screen.

3,778,625
CEPHALOMETRIC DEVICE

Robert Schwartz, 1271 Westfield Ave., Rahway, N.J., and Morris Goldberg, 14 Vonderventer Ave., Port Washington, N.Y.

Continuation of Ser. No. 108,325, Jan. 21, 1971, abandoned. This application July 17, 1972, Ser. No. 272,295
Int. Cl. G03b *41/16*
U.S. Cl. 250—444 **8 Claims**



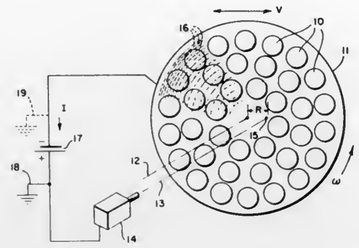
A cephalometric device useful in the preparation of substantially duplicatable skull X-rays is comprised of an elongated boom member having an inner and outer end, a cone holding member connected to the inner end of the boom member, a film cassette holder connected to the outer end of the boom member, a head locator system and an orbital pointer positioned on the boom immediately adjacent to the film cassette holder, and a stand member adapted to position the boom member in a substantially horizontal position. The cephalometric device is adapted to be employed in conjunction with a standard X-ray machine. The combination of cephalometric device and X-ray machine is used to produce lateral view X-ray plates or pictures of the head that are duplicatable within reasonable accuracy.

3,778,626
MECHANICAL SCAN SYSTEM FOR ION IMPLANTATION

Gordon Ian Robertson, Ewing Twsp., Mercer City, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed July 28, 1972, Ser. No. 276,230
Int. Cl. B05c *11/00*; **G01n** *23/00*
U.S. Cl. 250—492 **22 Claims**

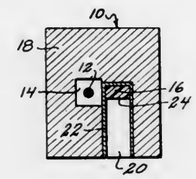
Workpieces to be implanted with a uniform ion dose are attached to a major surface of a target positioned in the path of an ion beam. The target is rotated and traversed so that the ion beam traces segments of spiral paths on each workpiece. The uniformity of the ion dose in the workpieces is controlled by regulating the position of the target during each traversal according to the accumulated ion dose, or by regulating the traversing speed according to the ion beam current.



3,778,627
HIGH INTENSITY, PULSED THERMAL NEUTRON SOURCE

John M. Carpenter, Ann Arbor, Mich., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 17, 1973, Ser. No. 351,893
Int. Cl. G21g *3/04*
U.S. Cl. 250—499 **14 Claims**



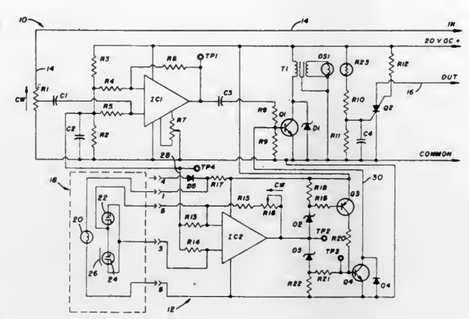
This invention relates to a high intensity, pulsed thermal neutron source comprising a neutron-producing source which emits pulses of fast neutrons, a moderator block adjacent to the fast neutron source, a reflector block which encases the fast neutron source and the moderator block and has a thermal neutron exit port extending therethrough from the moderator block, and a neutron energy-dependent decoupling reflector liner covering the interior surfaces of the thermal neutron exit port and surrounding all surfaces of the moderator block except the surface viewed by the thermal neutron exit port.

3,778,628
SECONDARY DETECTION CIRCUIT WITH SHARP CUTOFF FOR SECURITY VALIDATING

Frank A. Novak, Seven Hills; Kenneth T. Schreiber, Bedford, and Steven J. Hydo, Berea, all of Ohio, assignors to ARDAC/USA Incorporated, Willoughby, Ohio

Filed Aug. 2, 1971, Ser. No. 168,088
Int. Cl. G01n *21/32*
U.S. Cl. 250—556 **11 Claims**

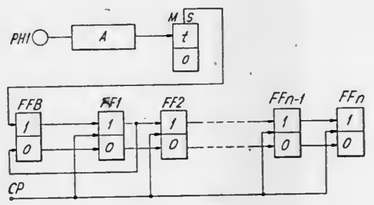
A secondary detection circuit for a paper security validating device which device scanned a portion of one surface of the paper security. The secondary detection circuit compares the level of reflection of light from the reverse side of the security with a known level and, if the reflected level falls below a first value or exceeds a second greater value, the secondary detection circuit blocks the output of the primary detection circuit regardless of whether or not an authentic signal is produced by the primary circuit.



3,778,629
JAMMING DETECTION

Raymond M. F. Terryn, Borgerhout, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,373
Claims priority, application Netherlands, Mar. 17, 1971, 7103555
Int. Cl. B65h *7/00*; **G01n** *21/30*; **G08b** *21/00*
U.S. Cl. 250—557 **6 Claims**

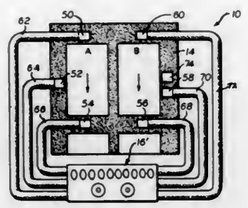


This supervisory detection arrangement for a document handling system particularly provides for an alarm condition whenever documents are lost from the conveying path and when they are jammed up or otherwise abnormally delayed. A document passing in front of a first photocell at the entrance of a document conveyor path starts a shift register shifting a 1-state through it at a main clock pulse rate. A number of registering bistable devices corresponding with a same number of photocells, placed along the conveyor path are set by an intermediate clock pulse phase-shifted with respect to the main clock pulse when a corresponding shift register stage is set. Each registering bistable device is reset by a document passing in front of a corresponding photocell and its condition is tested when the same or one of the following shift register bistable devices is in the 1-state and at the occurrence of a second intermediate clock pulse. Alarm conditions are thus detected when the registering bistable has not been reset.

3,778,630
MICROFILM SEARCHING SYSTEM

Eugene T. White, 40 New Mill Rd., and Joseph H. McEnroy, 10 Sandpiper Ct., both of Smithtown, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,513
Int. Cl. G01n 21/30; G03b 23/12; G06f 7/38
U.S. Cl. 250—557 15 Claims

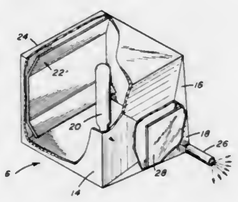


In an automatic microfilm searching system wherein a plurality of spaced images recorded on a film are displayed on the screen of a film reader at least one at a time, an apparatus and method for locating a particular one of the images for display by sensing the images displayed in accordance with at least one of a plurality of available distinct sensing formats and then counting the number of images so sensed. Each sensing format is defined by a distinct set of indicia on the film which are sensed and counted. The indicia of at least one available sensing format includes the images themselves, such as a preselected edge of each image.

3,778,631
METHOD AND APPARATUS FOR OPTICALLY DETECTING DEFECTS IN SPECULAR WEBS

Hubert B. Allinger, and Harry L. Edwards, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1972, Ser. No. 251,442
Int. Cl. G01n 21/30
U.S. Cl. 250—572 3 Claims

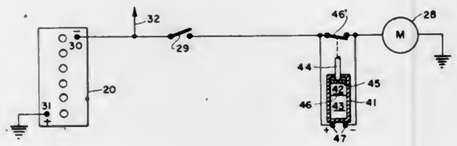


Webs of reflecting material are inspected for defects by directing upon the web surface a beam of light having a radiating pattern substantially of the type produced by an ideal point light source. The rays, which spread outwardly from the light source, are redirected by the reflecting web to continue on to a receiving device for monitoring. Light reflected from a defect-free portion of the web presents at the receiving device a uniform pattern having no abrupt changes in intensity, while rays reflected from a defect deviate from the said uniform pattern, the nature of the deviation being related to the type of defect. Because of the spreading characteristic of the rays, the pattern deviations enlarge as the rays travel to the receiving device, and consequently they present a readily detectable defect indication even when produced by small defects. Hence, enlarged indication of defects is achieved without requiring lenses, thereby avoiding the depth of field, alignment, and dust accumulation considerations which lenses present. The receiving devices may rely on visual monitoring or monitoring achieved through sensing devices.

3,778,632
EMERGENCY STARTING POWER FOR ENGINES

Robert I. Sarbacher, Santa Monica, Calif., assignor to John C. Bogne, Santa Monica, Calif.

Filed Sept. 14, 1971, Ser. No. 180,331
Int. Cl. F02n 11/14
U.S. Cl. 290—50 5 Claims

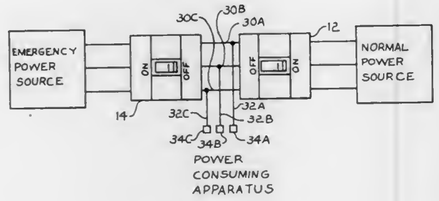


An emergency power system is designed to provide additional battery power for starting engines operating on petroleum products, when the normal battery supply for this purpose has insufficient energy available. The system utilizes either primary reserve cells or dry charged secondary cells for the supplemental power and connects them in such a manner that they can be activated immediately when required.

3,778,633
AUTOMATIC ELECTRIC POWER SOURCE TRANSFER APPARATUS

Christian DeVisser, Clinton, and Donald Orville Myers, Normal, both of Ill., assignors to General Electric Company, New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,108
Int. Cl. H02j 9/00
U.S. Cl. 307—64 10 Claims

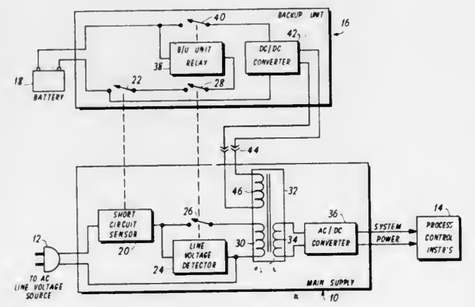


A pair of over-center spring mechanism type molded case electric circuit breakers are disposed in end-to-end spaced alignment. The circuit breakers are each multi-pole circuit breakers and each includes a single operating handle of the reciprocating toggle type. The handle of each of the breakers must travel a greater portion of the possible full length of travel in going from OFF toward ON position in order to operate the contacts than the same handle has to when moving from ON toward OFF position in order to operate the contacts. As a result, when both handles are operated simultaneously by a slide member, the circuit breaker which was in ON condition at the beginning of travel is moved to OFF condition before the circuit breaker which was in OFF condition at the beginning of travel moves far enough to actuate its mechanism to ON condition. Accordingly, the initially closed circuit breaker is opened before the initially open circuit breaker is closed, thereby avoiding any possibility of an overlap condition in which both circuit breakers may be closed at the same time, which might short circuit the power sources. As a further precaution; a "walking beam" interlock member is included at the back of the supporting base. The walking beam carries projections at each end extending into the circuit breakers respectively and positively preventing the closing of both circuit breakers at the same time.

3,778,634
POWER SUPPLY WITH BATTERY BACKUP

James P. Hanrihan, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed May 18, 1973, Ser. No. 361,677
Int. Cl. H02j 9/00
U.S. Cl. 307—64 8 Claims

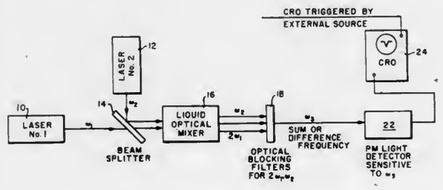


A power supply configuration is shown which provides for the addition of battery backup capabilities without unnecessary conversions or hardware. This configuration includes logic circuitry for automatically activating the backup unit in case of line voltage failure while disabling the backup unit in case of a short circuit.

3,778,635
LIQUID PARAMETRIC OPTICAL MIXING DEVICE

John F. Giuliani, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 8, 1972, Ser. No. 260,863
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 8 Claims

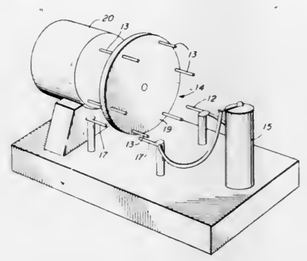


A laser-light mixing device in which the nonlinear medium for mixing two collinear laser beams comprises the chemical compound hexafluoroisopropanol, $(CF_3)_2CHOH$, which has an index of refraction which varies by only one part per thousand over a spectral range of 6,300 to 7,700 A, thus enabling mixing to occur over a long pathlength. The light resulting from the mixing action is then passed through an optical filter which allows only the sum or difference frequency to pass.

3,778,636
LINE-TYPE GENERATOR HAVING AN ACTIVE CHARGING CIRCUIT

Charles Elroy Chase, Sr., Auburndale, Mass., assignor to Tachisto Inc., Auburndale, Mass.

Filed Dec. 3, 1971, Ser. No. 204,497
Int. Cl. H03k 3/64
U.S. Cl. 307—108 10 Claims

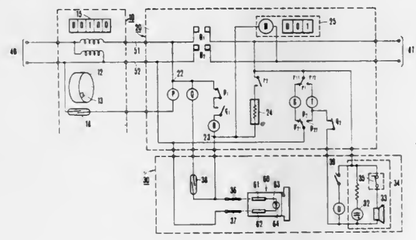


A line-type pulse generator having an active charging circuit to provide intermittent charging during the interpulse period, capable of infinite variations in pulse rate, an unexpectedly high charging efficiency, sequential charging of multiple energy-storage elements and subsequent discharge into independent loads, and complete elimination of misfiring. The switch of the active charging circuit may be provided by a dual rotary spark gap including, in particular, elements in common with the switch of the discharging circuit. Two rotary-spark-gap pulsers are described in detail.

3,778,637
APPARATUS FOR SUPPLYING A PREDETERMINED QUANTITY OF ELECTRIC POWER

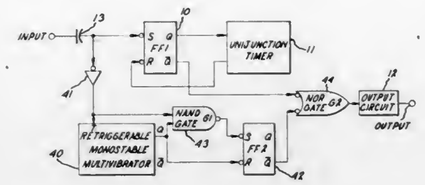
Koshei Arita, 10, 23, 2-chome, Minamimagome, Ohota-ku, Tokyo, Japan

Filed Dec. 10, 1971, Ser. No. 206,684
Claims priority, application Japan, June 18, 1971, 46/43352
Int. Cl. G07f 1/06
U.S. Cl. 307—140 10 Claims



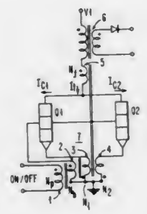
Apparatus for supplying a predetermined measured quantity of electric power. Specially designed chit in form of a chip inserted in a receptacle operates a switch in main power line to supply predetermined measured quantity of power whereupon apparatus automatically opens switch if apparatus has not been reactivated by insertion of another chip. An alarm system is activated in advance of measured amount of power being used to warn consumer that service will be discontinued if apparatus is not reactivated by insertion of another chip.

3,778,638
FREQUENCY-TO-VOLTAGE CONVERTER HAVING HIGH NOISE IMMUNITY
Philip M. Garratt, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 9, 1972, Ser. No. 304,994
Int. Cl. H03d *13/00*; **H03k** *5/20*
U.S. Cl. 307—233 **18 Claims**



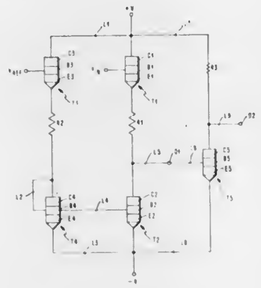
An electronic frequency-to-voltage converter employs a retriggerable second timing circuit for detecting a monitored predetermined frequency input slightly below a specific rated frequency. The second timing circuit is interconnected with a main timing circuit through digital logic circuitry and overrides the main timer when the input exceeds the predetermined frequency and also causes the converter output voltage to abruptly rise to, and remain at, a voltage amplitude corresponding to the rated frequency input. Noise interference is eliminated by interconnecting a binary counter in the circuit for counting up to a predetermined number of input pulses which may include noise, during the timing cycle of the second timing circuit. The overriding function of the second timing circuit is thereby delayed until the predetermined number of pulses have occurred during the timing cycle of the second timing circuit.

3,778,639
TRANSISTOR SWITCH USING A CURRENT SHARING PULSE TRANSFORMER
Hobart Atsushi Higuchi, and Lawrence Paul Trubell, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 12, 1972, Ser. No. 252,766
Int. Cl. H03k *17/60*, *17/06*
U.S. Cl. 307—254 **11 Claims**



The invention relates to a transistor switch circuit which employs the use of a current sharing pulse transformer. The current sharing pulse transformer has a secondary winding in the emitter circuit of each of the two transistors used within the circuit. Another secondary winding is connected to the bases of the two transistors used. Finally, another secondary winding is connected in the collector circuit of the transistor switch to provide a feedback signal. The current sharing pulse transformer is used to control the turn-on and turn-off of the transistor switch circuit. More specifically, the secondary windings in the emitter circuit controls the turn-off characteristic associated with the two transistors such that they will turn off at the same time.

3,778,640
SIGNAL VOLTAGE LEVEL TRANSLATING CIRCUIT
Steven Platt, Underhill, Vt.; Jehoshua N. Pomeranz, Suffern, N.Y., and Dinesh K. Tewarson, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 3, 1972, Ser. No. 268,315
Int. Cl. H03k *17/00*
U.S. Cl. 307—254 **9 Claims**

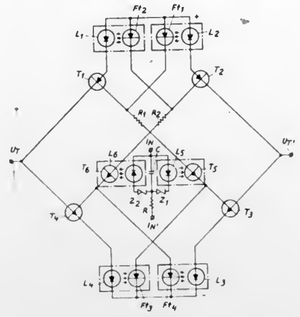


A signal voltage level translating circuit receives an input electrical signal having predetermined voltage swings about a first predetermined voltage level and translates the voltage level of the signal so that at the output there is provided an output electrical signal having the same voltage swings about a second predetermined voltage level translated with respect to the first voltage level. An input transistor has its base connected to the input node and its emitter connected to one end of a first impedance element having its other end connected to the collector of a current source transistor. A fixed reference voltage is applied to the base of a reference voltage transistor having its emitter connected to one end of a second impedance element having an impedance equal to that of the first impedance element. The other end of the second impedance element is connected to the collector of a diode-connected transistor having its base connected to the base of the current source transistor. The emitter of the diode-connected transistor is connected to the emitter of the current source transistor. If implemented in the form of a monolithic integrated circuit, the diode-connected transistor and current source transistor may have the same base and the same emitter. The translated signal is taken at the output where the first impedance element is connected to the collector of the current source transistor.

3,778,641
ARRANGEMENT FOR ALTERNATION OF TWO OUTPUTS IN DEPENDENCE ON A CHANGE IN THE DIRECTION OF A CURRENT APPEARING ON AN INPUT
Sven-Eric Gote Persson, Farsta, Sweden, assignor to Telefonaktiebolaget L.M., Ericsson, Stockholm, Sweden
Filed Jan. 20, 1972, Ser. No. 219,389
Claims priority, application Sweden, Jan. 29, 1971, 1056/71
Int. Cl. H03k *17/30*, *17/78*
U.S. Cl. 307—255 **5 Claims**

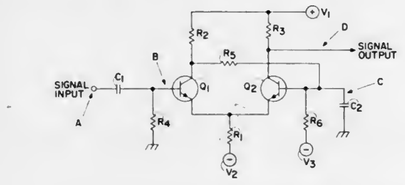
The arrangement in accordance with the present invention carries out an alternation of the polarities of two output terminals upon a change in the direction of an input current such that the polarities of the output terminals always represent the actual direction of the input current. For one direction of the

current one transistor in each of two pairs of transistors is made conducting and for the other direction of said current, the other transistor in each of said pairs is made conducting,



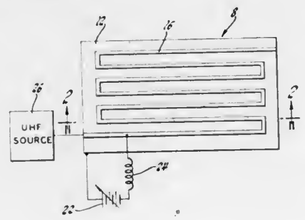
whereby in the first case a reference potential is connected to one of the output terminals and in the other case the reference potential is connected to the other of the output terminals.

3,778,642
REGENERATIVE SWITCHING CIRCUIT
Robert Michael Gray Frame, Kanata, Ontario, Canada, assignor to Bell-Northern Research Ltd., Ottawa, Ontario, Canada
Filed Apr. 17, 1973, Ser. No. 352,042
Int. Cl. H03k *5/01*; **H04b** *3/58*
U.S. Cl. 307—268 **4 Claims**



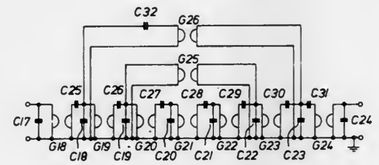
A switching circuit for regenerating pulses in the repeater of a digital transmission system which utilizes an R-C compensating network to minimize base line wander resulting from low frequency cut-off in the input coupling network.

3,778,643
A SOLID STATE VARIABLE DELAY LINE USING REVERSED BIASED PN JUNCTIONS
James M. Jaffe, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 18, 1972, Ser. No. 254,613
Int. Cl. H03k *17/26*; **H03h** *7/30*
U.S. Cl. 307—293 **2 Claims**



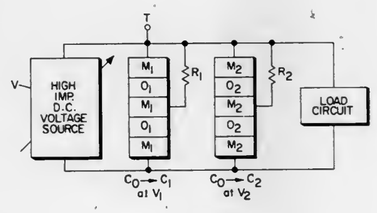
An electronically variable delay line including a wafer of silicon on one side of which a thin insulating layer is deposited. A highly conducting ground plane contacts the silicon wafer on its remaining side while a highly conducting microstrip line contacts the insulating layer. The microstrip line contacts the silicon wafer through small holes etched in the insulating layer at predetermined intervals. At these holes, P-N junctions are formed. The P-N junctions are reverse biased so as to vary the effective thickness of the insulating layer to vary the delay time by creating a depletion layer within the silicon wafer which acts as an effective insulator.

3,778,644
FILTER CIRCUIT
Bernd Kohlhammer, Markbronn, Germany, assignor to LICENTIA Patent-Verwaltungs GmbH, Frankfurt am Main, Germany
Filed Oct. 18, 1971, Ser. No. 189,975
Claims priority, application Germany, Oct. 17, 1970, P 20 51 061.6; Nov. 16, 1970, P 20 56 204.3; Feb. 17, 1971, P 21 07 523.0
Int. Cl. H03h *7/02*, *7/44*
U.S. Cl. 307—295 **19 Claims**



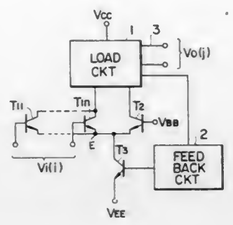
A filter circuit formed with a plurality of gyrators and a plurality of impedances. Each of the gyrators has a pair of input terminals and a pair of output terminals. At least one of the gyrators is a bridging gyrator which bridges an odd number of the remaining gyrators . One input terminal and one output terminal of each gyrator are connected to a point of reference potential.

3,778,645
SOLID-STATE SWITCHING CAPACITOR
Robert J. Mattauch, and Thomas J. Viola, Jr., both of Charlottesville, Va., assignors to The Rector and Visitors of the University of Virginia, Charlottesville, Va.
Filed Jan. 31, 1972, Ser. No. 222,210
Int. Cl. H01g *7/00*
U.S. Cl. 307—318 **10 Claims**



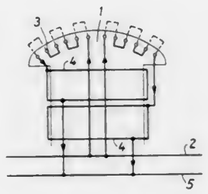
A capacitor structure comprising a first thin film tunneling capacitor in circuit with a resistor and a second capacitor wherein the capacitance value of said structure switches abruptly with applied bias potential.

3,778,646
SEMICONDUCTOR LOGIC CIRCUIT
Akira Masaki, Kanagawa-ken, Sagamihara-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 31, 1972, Ser. No. 222,247
Claims priority, application Japan, Feb. 5, 1971, 46/4229
Int. Cl. H03k 19/34, 5/08, 1/14
U.S. Cl. 307—215 14 Claims



A current mode type semiconductor logic circuit comprises at least one grounded-emitter transistor through which a power source is connected to the logic circuit. The output of the logic circuit is fed back to the grounded-emitter transistor through a feedback circuit. As a result, the variation in the output of the logic circuit can be controlled to a minimum even when the load of the logic circuit is varied.

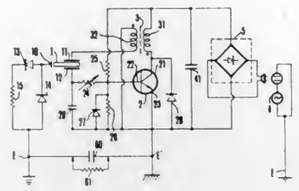
3,778,647
ELECTRIC SALIENT-POLE MACHINE
Werner Leistner, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed July 14, 1972, Ser. No. 272,080
Claims priority, application Germany, Sept. 24, 1971, P 21 48 439.9
Int. Cl. H02k 9/00
U.S. Cl. 310—54 10 Claims



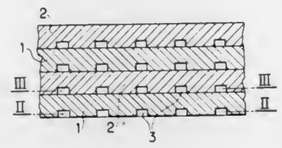
An electric salient-pole machine has excitation and damping windings which are directly cooled with a liquid. These windings are connected hydraulically in series so that the cooling liquid always flows first through the conductors of the damper winding. This cooling arrangement is especially advantageous for synchronous machines which are started asynchronously.

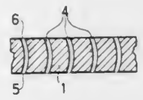
3,778,648
PIEZOELECTRIC TRANSFORMERS
Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Company, Ltd., Tokyo, Japan
Filed June 28, 1972, Ser. No. 267,250
Claims priority, application Japan, July 5, 1971, 46/49448
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 7 Claims

In a driving circuit for driving a piezoelectric transformer including a piezoelectric member provided with a pair of driving electrodes and an output electrode, there are provided a transformer having primary and secondary windings and a transistor. The collector electrode of the transistor is connected to one pole of a DC source through the primary winding, and the secondary winding and the driving electrodes are connected in series across the base and emitter electrodes thereby forming an oscillation circuit for producing a high frequency driving voltage.



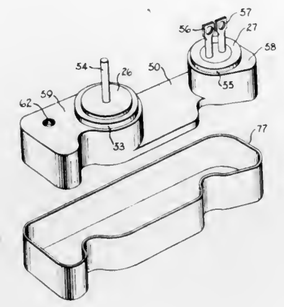
3,778,649
ROTOR WINDING FOR ELECTRICAL MACHINES WITH GROOVED CONDUCTORS
Christian Lehuen, Cravanche, and Roger Gillet, Belfort, both of France, assignors to Societe Generale De Constructions Electriques Et Mecaniques (Alsthom), Paris, France
Filed July 10, 1972, Ser. No. 270,033
Claims priority, application France, July 8, 1971, 7125140
Int. Cl. H02k 1/32
U.S. Cl. 310—61 7 Claims





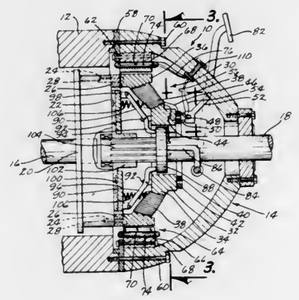
The invention relates to the rotors of electrical machines, and particularly to a cooling arrangement therefor providing a circulation of cooling gas through a stack of grooved conductors. It is characterized in that the grooves in the conductors are curvilinear and the ends thereof are placed opposite each other. The invention is applicable notably to conductors disposed in rotor slots, which eliminates any risk of shearing of the conductors.

3,778,650
BATTERY CHARGING REGULATOR-RECTIFIER MODULE
Paul A. Tharman, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Oct. 10, 1972, Ser. No. 296,084
Int. Cl. H01l 1/12
U.S. Cl. 310—68 D 3 Claims



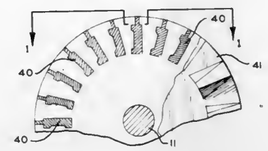
A power diode and an SCR are secured in snug bores in a metal holder that serves as heat sink and electrical connector. One terminal element of a plug connector is crimped directly to the anode terminal of the diode, thus enabling the whole plug to be fixed relative to the holder before the holder with attached compoents is inserted into a container that is filled with potting material. Leads of components are crimp connected directly to one another.

3,778,651
ELECTRICAL GENERATING DEVICE FOR USE WITH ENGINE CLUTCH MECHANISM
William H. Cone, 1151 Meadow Lane Apt. 3A, Waterloo, Iowa
Filed June 19, 1972, Ser. No. 264,271
Int. Cl. H02k 7/02
U.S. Cl. 310—74 5 Claims



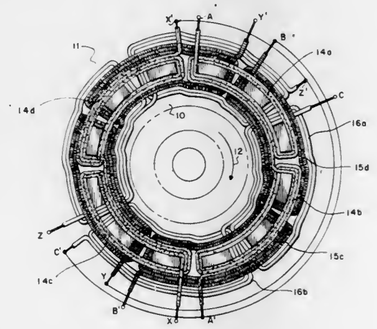
The present invention comprises an electrical generating device in combination with an engine clutch mechanism. The current generating device includes a rotor which is rigidly connected to a flywheel and is adapted to rotate therewith. A stator is mounted within the clutch housing and surrounds the rotor so that rotation of the rotor causes electrical current to be generated in the stator windings. Also mounted within the clutch housing is a clutch mechanism.

3,778,652
ROTOR STRUCTURE WITH SQUIRREL CAGE WINDING
James W. Endress, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 8, 1972, Ser. No. 278,847
Int. Cl. H02k 3/06
U.S. Cl. 310—211 2 Claims



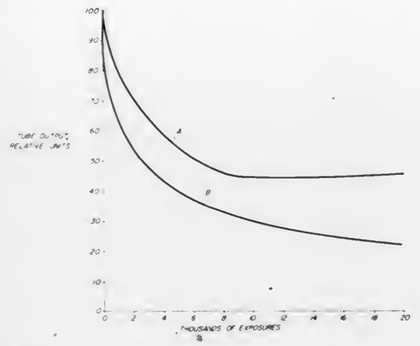
The laminae or punchings forming the rotor core are arranged in groups in stack formation. All the punchings are of identical shape and are formed with radially disposed slots which are, in the assembled rotor, aligned to form conductor bar receiving slots extending lengthwise of the rotor core. The slot in each punching is formed with an outer narrow portion and an inner wider portion. A projection extends from one side wall of the wide inner portion of the slot toward the opposite side wall thereof. The punchings in certain groups are arranged with the projections therein at one side of the rotor slot. In the intermediate groups, the projections are located at the opposite side of the rotor slot. Such arrangement provides a tortuous passage for reception of cast conductor bars, the projections serving to limit shrinkage of the bar metal in directions lengthwise of the rotor slot and also radially.

3,778,653
ALTERNATING CURRENT MACHINE ARMATURE
Harold C. Scott, 2114 Marvel, Irving, Tex.
Filed Feb. 24, 1972, Ser. No. 228,896
Int. Cl. H02k 13/02
U.S. Cl. 310—144 6 Claims



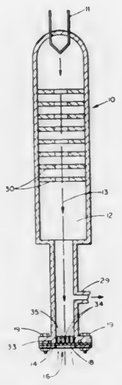
Disclosed is an improved armature construction for an alternating current generator wherein a plurality of separate sets of armature windings disposed within a magnetic flux field have their respective outputs coupled to respective output terminals which are coupled by unidirectional current means to produce a plurality of output currents which are defined multiples of one another.

3,778,654
MOLYBDENUM ALLOY TARGET FOR MAMMOGRAPHIC USAGE IN X-RAY TUBES
Robert E. Hueschen, Hales Corners, and Frank Bernstein, Milwaukee, both of Wis., assignors to General Electric Company, Milwaukee, Wis.
Filed Nov. 2, 1972, Ser. No. 303,015
Int. Cl. H01j *35/10*
U.S. Cl. 313—60 **9 Claims**



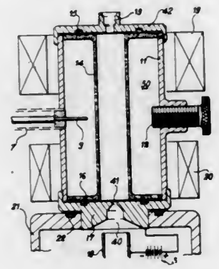
Low temperature ductility and high temperature strength of a molybdenum target for X-ray tubes employed in mammographic applications is achieved by alloying molybdenum with tungsten. The alloy target provides the necessary characteristic radiation of molybdenum while maintaining exceptional resistance to surface fracture and radiation output degradation under the required exposure condition for mammography.

3,778,655
HIGH VELOCITY ATOMIC PARTICLE BEAM EXIT WINDOW
George A. Luce, 1512 Villanova Dr., Austin, Tex.
Filed May 5, 1971, Ser. No. 140,499
Int. Cl. H05h *7/00*
U.S. Cl. 313—63 **4 Claims**



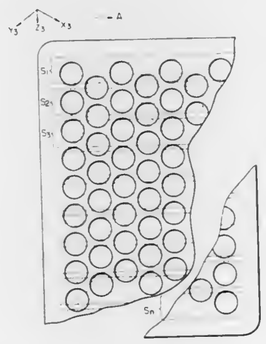
A composite metal foil exit window for use in an atomic particle accelerator. The exit window is formed from cohesively joined, bonded, or chemically attached layers of a metal having a low energy loss or stopping power for atomic particles, and an unreactive material. An exit window so constructed has improved chemical stability in a hostile environment and yet allows passage of a great number of high velocity atomic particles with small energy loss. Preferred embodiments of the exit window include those having cohesively joined layers of: aluminum and aluminum oxide.

3,778,656
ION SOURCE EMPLOYING A MICROWAVE RESONANT CAVITY
Charles Fremiot, Grenoble, and Jean Grando, Sassenage, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed July 26, 1972, Ser. No. 275,304
Claims priority, application France, July 29, 1971, 7127812
Int. Cl. H05h *13/00*
U.S. Cl. 313—63 **11 Claims**



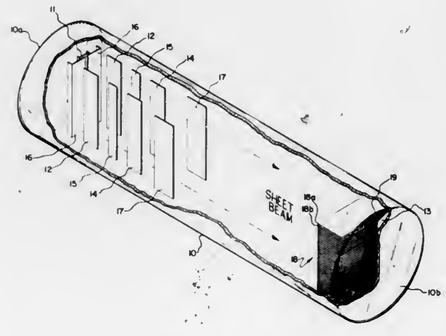
The ion source comprises a plasma source employing a microwave cavity which is excited in one of its modes of resonance and a static magnetic field adjusted to the electron cyclotron resonance, means for extracting the ions from the plasma and comprising an expansion cup pierced by an aperture which communicates with the cavity and ion-extraction electrodes brought to suitable potentials. The density of the plasma is of maximum value in the vicinity of the aperture and the static magnetic field is substantially zero in the vicinity of the extraction electrodes.

3,778,657
TARGET HAVING A MOSAIC MADE UP OF A PLURALITY OF P-N JUNCTION ELEMENTS
Shuji Kubo, and Hiroshi Naito, both of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Kadoma, Osaka, Japan
Continuation-in-part of Ser. No. 859,448, Sept. 16, 1969, abandoned. This application Feb. 9, 1972, Ser. No. 224,991
Int. Cl. H01j *31/28*
U.S. Cl. 313—65 A **2 Claims**



An image pick-up device has a target arranged to be scanned by an electron beam in a scanning direction and comprising a semiconductor of P- or N- type substrate, and a plurarity of semiconductive regions of N- or P-type on the substrate and forming P-N junction elements spaced from and isolated from each other, which elements are so arranged that at least one axis defined by a line connecting the centres of successive most closely adjacent elements is oblique relative to the scanning direction.

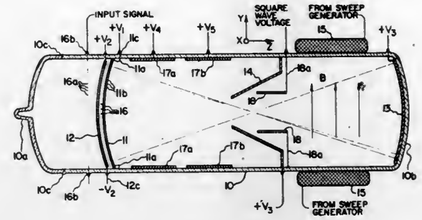
3,778,658
MULTIBEAM CATHODE RAY TUBE UTILIZING D.A.M. GRID
Lawrence A. Harris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Sept. 1, 1972, Ser. No. 285,911
Int. Cl. H01j *29/46, 29/80*
U.S. Cl. 313—69 R **14 Claims**



An electron gun within a glass envelope generates a sheet electron beam which is focussed into a line on a phosphor screen positioned at the output end of the glass envelope. A plurality of parallel metal plates oriented in planes defined by the scan direction and normal to the phosphor screen are positioned within the glass envelope in close proximity to the phosphor screen. The plates are in the direct path of the sheet beam and result in the beam being divided into a plurality of parallel beams of number one less than the plurality of plates. Input signals simultaneously applied to the plates produce intensity modulation of the electron beams by generating electrostatic fields between adjacent plates in accordance with the input signal voltages and thereby control or modulate the fraction of each beam that passes between adjacent plates and reaches the screen. The plates thus function as a divide and modulate (D.A.M.) grid. Deflection coils or plates positioned between the electron gun and D.A.M. grid simultaneously deflect the sheet beam and resultant modulated beams in the scan (beam sweep) direction whereby the input signals can be simultaneously displayed on the screen.

3,778,659
INVERTED IMAGE MULTIBEAM CATHODE RAY TUBE
John M. Houston, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Sept. 1, 1972, Ser. No. 285,912
Int. Cl. H01j *29/46, 29/52*
U.S. Cl. 313—69 R **21 Claims**

An electron gun within a glass envelope simultaneously emits a plurality of coplanar electron beams through corresponding apertures in a concave shaped electrode. The apertures are arranged in a single row along a vertical diameter of the concave electrode in the case where the sweep lines developed by the electron beams on an output phosphor screen are in a horizontal direction. A like plurality of grids are positioned between the concave electrode and a cathode, and are aligned with the concave electrode apertures. Input signals simultaneously applied to the grids produce intensity modulation of the electron beams. An anode positioned between the concave electrode and phosphor screen accelerates the electron beams along straight cross-over paths to

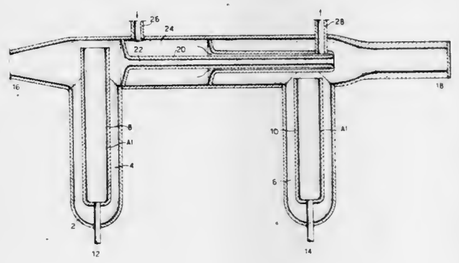


provide an inverted image on the screen. Deflection coils or plates positioned between the anode and screen simultaneously deflect all the electron beams in the sweep direction whereby the input signals can be simultaneously displayed.

3,778,660
FLUORESCENT LAMP OF HIGH COLOR RENDERING
Shigeru Kamiya, Hirakata, and Haruo Shibata, Takatsuki, both of Japan, assignors to Matsushita Electronics Corporation, Kadoma City, Osaka Prefecture, Japan
Filed June 11, 1971, Ser. No. 152,217
Claims priority, application Japan, June 12, 1970, 45/51186
Int. Cl. C09k *1/28, 1/36, 1/38*
U.S. Cl. 313—109 **3 Claims**

A low pressure mercury vapor fluorescent discharge lamp, having a color rendering value as high as 97 is obtainable by applying on the inner wall of the lamp a layer of a phosphor mixture comprising a basic magnesium arsenate phosphor containing 0.02 –0.2 gram-atom of manganese per 6 mols of magnesium oxide, magnesium tungstate, tin-activated strontium magnesium orthophosphate and antimony-and-manganese-activated calcium halophosphate.

3,778,661
ELECTRICAL GAS DISCHARGE LAMP
Aharon Gedanken, Nitzana 29, Givataylm; Joshua Jortner, Beeri 50, Tel Aviv; Abraham Szoke, Harakafot 22, Kfar Shmaryahu, and Baruch Raz, Hofien 7, Ramat Aviv, all of Israel
Filed Jan. 24, 1972, Ser. No. 220,090
Int. Cl. H01j *61/16*
U.S. Cl. 313—185 **5 Claims**



Electrical gas discharge lamps exhibiting an emission spectrum similar to the pure xenon molecular emission spectrum are characterized in that the gas in the lamps includes a mix-

ture of xenon and argon the partial pressure of the xenon being less than 50 torr and constituting at least 50 parts per million of the gas mixture.

3,778,662

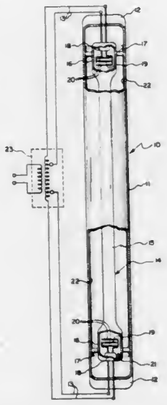
HIGH INTENSITY FLUORESCENT LAMP RADIATING IONIC RADIATION WITHIN THE RANGE OF 1,600–2,300 A.U.

Peter D. Johnson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. Nos. 80,896, Oct. 15, 1970, abandoned, and Ser. No. 80,901, Oct. 15, 1970, abandoned. This application Oct. 31, 1972, Ser. No. 302,582

Int. Cl. H01j *1/62*

U.S. Cl. 313—109 **10 Claims**



Very high intensity fluorescent lamp apparatus includes a lamp envelope having a coating therein of a phosphor which emits visible radiation when excited by far ultraviolet ionic radiation. Interior of the envelope, a far ultraviolet radiation source includes a pair of discharge electrodes and a suitable pressure of a vaporizable, ionizable metal together with a partial pressure of noble gas, the metal and noble gas being sufficient, under excitation of a high current density discharge to produce far ultraviolet ionic radiation at current densities of approximately one ampere per square centimeter or greater.

3,778,663

ELECTRIC LAMPS AND DISCHARGE DEVICES

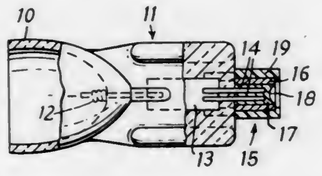
Eric John George Beeson; Kenneth Frederick Furmidge; Horace Edward Stanyon, and John Rueben Thomas Speller, all of London, England, assignors to Thorn Electrical Industries Limited, London, England

Filed Mar. 17, 1972, Ser. No. 235,758

Claims priority, application Great Britain, Apr. 7, 1971, 8,981/71

Int. Cl. H01j *5/52*

U.S. Cl. 313—318 **4 Claims**



An end construction of an electric lamp or discharge device has an hermetic pinch seal through which an electrical lead-out conductor passes, the conductor terminating in a cap unit which includes an externally-insulated metal tube filled with brazing alloy. The cap unit enhances dissipation of heat from the seal and thereby improving resistance to failure of the lead-out conductor by oxidation.

3,778,664

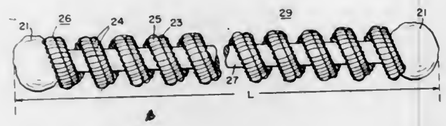
BEADED COILS FOR ELECTRIC LAMPS AND SIMILAR DEVICES

James Petro, Little Falls, and Clair M. Rively, Old Bridge, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 792,988, Jan. 22, 1969, abandoned. This application Dec. 22, 1972, Ser. No. 317,880

Int. Cl. H01j *1/16, 19/10*

U.S. Cl. 313—344 **18 Claims**



The tangling of helically coiled wire articles during bulk handling and shipment is prevented by providing integral beads of fused metal at each end of the articles which enclose the severed ends of the wire. In the case of tungsten wire coils that are designed for use in fluorescent or incandescent lamps and similar devices and are wound on iron mandrels, the fused beads are composed of tungsten-iron alloy and are formed in situ during coil manufacture by melting the ends of the mandrel with a concentrated heat source such as a focused laser beam. The tungsten-iron alloy beads remain on the end turns of the coil during the subsequent mandrel-dissolving operation, are ductile and are formed without embrittling the tungsten wire.

Various methods and apparatus embodiments for manufacturing such beaded-end coils on a mass production basis using a CO_2 laser are disclosed.

Since the beads can readily be made larger than the diameter of the coil and be spaced a predetermined distance apart, they provide built-in guides or "reference points" for mounting incandescent lamp type filament coils on their lead wires and thus accurately controlling the lighted-length of the mounted coils.

3,778,665

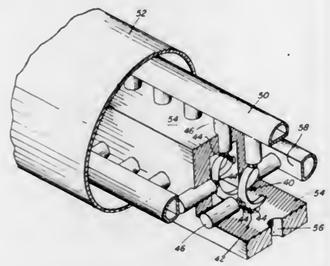
SLOW WAVE DELAY LINE STRUCTURE

Robert Harper, Concord, and David Zavadil, Newton Center, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 24, 1972, Ser. No. 283,460

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **12 Claims**



A slow wave guiding structure such as a helix delay line for electron interaction type devices of the traveling wave type is disclosed having diamond heat sink supports for substantial enhancement of power levels of operation. The supports are bonded to metallic members to dissipate thermal energy. The invention is applicable to numerous slow wave structures including ladder, ring-bar, meander, as well as interdigital types.

3,778,666

CONVERGENCE DEFLECTING DEVICE FOR SINGLE-GUN, PLURAL-BEAM COLOR PICTURE TUBE

Senri Miyaoka, Kanagawa, and Minoru Morio, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 813,827, April 7, 1969, Pat. No. 3,619,687. This application June 8, 1971, Ser. No. 151,003

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **3 Claims**



In a color picture tube of the single-gun, plural-beam type in which a central beam and two side beams originate in a common horizontal plane and are all made to pass through the center of an electron lens for focussing the beams on the color screen with the central beam emerging from the lens along the optical axis of the latter and the side beams emerging from the lens along paths that are oppositely divergent from the axis, the divergent side beams are acted upon by an electrostatic convergence deflecting device constituted by pairs of horizontally spaced plates arranged along the divergent paths and having voltages applied thereacross to produce electric fields by which the divergent side beams passing therethrough are deflected to converge at a common spot with the central beam on the apertured grill or mask associated with the screen, and a main deflection yoke produces magnetic fields by which the beams are deflected horizontally and vertically, respectively, for causing the beams to scan the screen; the horizontal distances between the plates of each pair are varied in the vertical direction from a maximum at the common horizontal plane to minimums at the opposed edges of the plates remote from such common plane so as to correspondingly vary the strengths of the electric fields and thus correct distortions in the rasters of the side beams.

3,778,667

DISPLAY CONTROL APPARATUS FOR DRAWING ACCURATE LINES

Gordon Hughes, Macclesfield, England, assignor to International Computers Limited, London, England

Filed May 11, 1972, Ser. No. 252,297

Claims priority, application Great Britain, May 15, 1971, 15,153/71

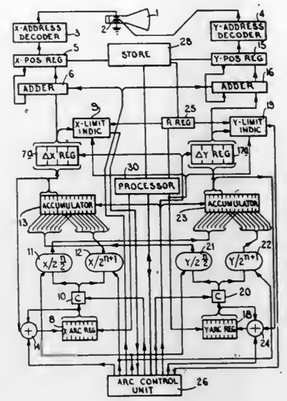
Int. Cl. H01j *29/70*

U.S. Cl. 315—18 **9 Claims**

The development of a simplified arrangement for drawing arcuate lines on a display, such as a cathode ray tube face, by the successive specification of a sequence of displacement positions is explained, and apparatus is described for calculating the sequence of displacement positions by relative right-shifting and selective addition of a pair of initially calculated values, one for each of two co-ordinate axes.

The apparatus includes a first register for each of the initial values and an accumulator for each axis, the values from the first registers being entered into each of the accumulators to form a new value. The resultant values are used to specify a drawing displacement for each axis and are recirculated to replace the values in the first registers, this cycle of events being repeated as required until the line is drawn.

Where an arc extends beyond a quadrant bounded by the axes the signs of the values entered into the accumulators are changed as required for drawing an arc in the new quadrant.



The change of sign is effectively accomplished by selective complementing of the values as they are entered into the accumulators.

3,778,668

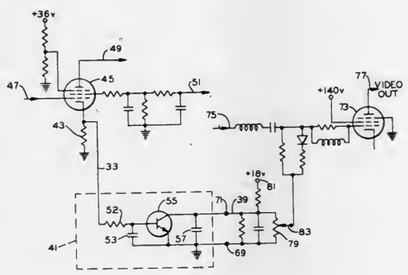
AUTOMATIC BEAM CURRENT LIMITER

Jack R. Chipman, and Donald McCombs, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed Jan. 24, 1972, Ser. No. 220,087

Int. Cl. H01j *29/70*

U.S. Cl. 315—30 **8 Claims**

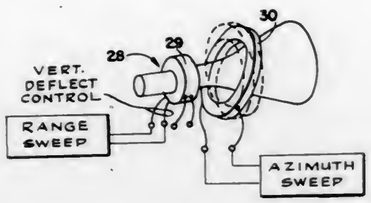


A circuit for limiting the beam current in a cathode ray tube or the current in the horizontal output tube comprising means for detecting changes in the average value of the cathode current of the horizontal output tube and providing an output indicative of these changes and means for diminishing the beam current when that output indicates a predetermined value has been exceeded is disclosed. The beam current is diminished by coupling the collector-emitter circuit of a switching transistor to an impedance intensity point in the receiver such as the brightness or bias control potentiometers and driving that switching transistor from the voltage across a capacitor which represents the average value of the current flowing in the horizontal output tube.

3,778,669
MAGNETIC DEFLECTION SYSTEM FOR DEPRESSED-CENTER SECTOR SCAN DISPLAY

George P. Cooper, Corona Del Mar, and Thomas H. Moore, Santa Ana, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 13, 1972, Ser. No. 234,015
Int. Cl. H01j 29/70
U.S. Cl. 315—23 15 Claims

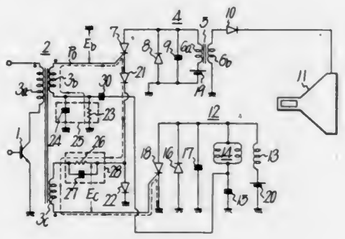


An electromagnetic deflection system to provide a low-cost, depressed-center CRT display for a sector scanning sensor. An auxiliary coil (usually a ring) is wound about a cathode ray tube, axially spaced intermediate the conventional deflection yoke and the display face of the CRT, and oriented relative to the longitudinal axis of the tube to provide a resultant magnetic vector which is mutually angled relative to such longitudinal axis. The deflection system can be driven by conventional low cost flyback deflection circuits producing sawtooth deflection currents. For example, in a display for an azimuthally scanning radar, the radar range sweep generator frequency output need be applied only to the vertical deflection winding of the conventional deflection yoke, while the radar azimuth scan frequency is applied either to the auxiliary coil alone or to the auxiliary coil and the horizontal deflection winding of the conventional deflection yoke in series.

3,778,670
HORIZONTAL DEFLECTION CIRCUIT

Tamiji Nagai, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 1, 1972, Ser. No. 222,498
Claims priority, application Japan, Jan. 29, 1971, 46/3404; Nov. 6, 1971, 46/103701
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 11 Claims

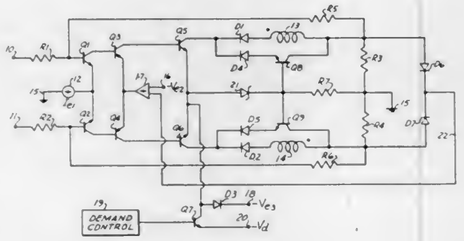


A solid-state horizontal deflection circuit including a high voltage applying circuit for a television receiver or the like in which a gate-controlled switching device is used for applying a deflection current to a horizontal deflection coil to perform horizontal beam scanning and another semiconductor switching device is used for applying a pulse voltage to a flyback transformer to produce a high voltage supplied to a cathode ray tube, and further a couple of diodes connected in series are provided in connection with the above two switching devices. Both switching devices are turned on in response to a horizontal driving signal supplied to at least one of them and turned off by the recovery current of the series-connected diodes.

3,778,671
DIFFERENTIAL MAGNETIC DEFLECTION AMPLIFIER

Fred William Erickson, Northridge, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sept. 29, 1971, Ser. No. 184,881
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 10 Claims

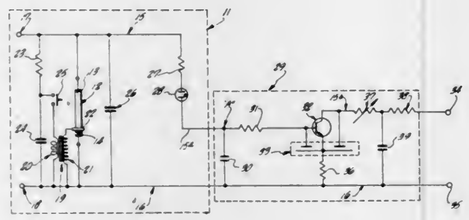


A differential magnetic deflection amplifier comprises a plurality of cascaded Class A biased emitter-coupled differential amplifier stages driving a high current output stage operated in a Class A-B bias. An antisaturation clamp is provided to assure linearity of feedback signals during major position moves, and voltage-on-demand means is provided to reduce power dissipation.

3,778,672
AUDIBLE ALERT SIGNAL FOR AN ELECTRONIC FLASH UNIT

Gerald F. Fountain, Santa Monica, Calif., assignor to Ponder & Best, Inc., Los Angeles, Calif.

Filed July 27, 1972, Ser. No. 275,690
Int. Cl. H05b 37/02
U.S. Cl. 315—133 18 Claims

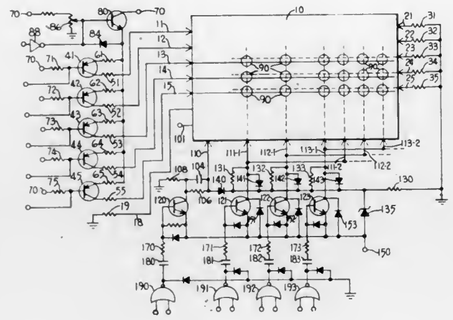


A circuit in an electronic flash unit including an audio oscillator for providing an audible alert signal to indicate the "ready" state of the flash unit.

3,778,673
LOW POWER DISPLAY DRIVER HAVING BRIGHTNESS CONTROL

Mark F. Eisenberg, and George E. Holz, both of North Plainfield, N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 21, 1971, Ser. No. 154,729
Int. Cl. H05b 37/00
U.S. Cl. 315—169 7 Claims

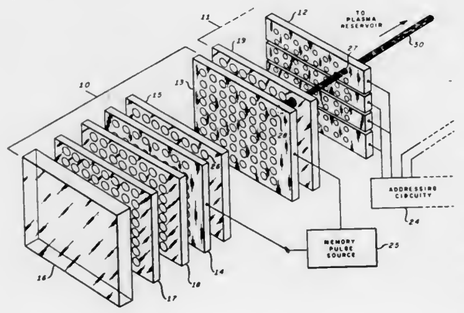


Low power drive apparatus connected for operating display devices including a plurality of gas-filled cells and gas communication channels extending between adjacent columns of cells for scanning of them by glow transfer from column to column. The driving apparatus includes series-connected drive circuits for the display control anodes of the devices, operated in the current-controlling mode of the input data signals. The display anode drivers are connected as controllable current sources which do not saturate when activated. A variable voltage device is connected to the current drivers for controlling the brightness of the display by regulating the amount of current conducted to the display cells when activated.

3,778,674
D. C. GAS DISCHARGE DISPLAY APPARATUS WITH PULSE TRAIN MEMORY SUSTAINING POTENTIAL

Claude D. Lustig, Lexington, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,011
Int. Cl. H05b 37/00
U.S. Cl. 315—169 R 7 Claims

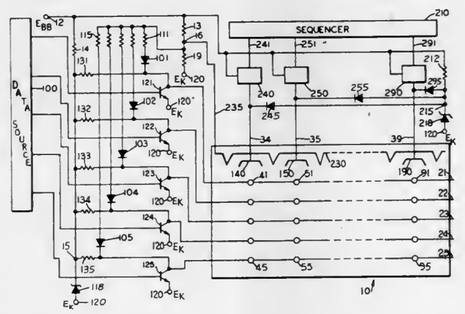


Display apparatus comprises d.c. gas discharge display cells with a sustaining potential thereacross comprising a pulse train with pulse amplitude, pulse duration and pulse spacing such that an ignited cell is reignited upon application of each sustaining pulse and an extinguished cell remains extinguished upon application of the sustaining pulses unless ignited or extinguished by external means.

3,778,675
CIRCUIT FOR OPERATING MULTIPLE POSITION DISPLAY TUBES

Edgar Lloyd Harvey, Old Bridge, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 126,825, March 22, 1971, abandoned. This application Jan. 16, 1973, Ser. No. 324,023
Int. Cl. H01j 17/48; H05b 37/00, 41/00
U.S. Cl. 315—169 R 21 Claims



The disclosed apparatus is adapted for operating multiple position display devices having several groups of display cathode segments or elements, with corresponding elements electrically interconnected, an anode associated with each group of segments, and an auxiliary electrode common to all of the groups of electrodes for electrically isolating the electrode groups and preventing spurious glow between them. The subject circuits include a common impedance or a voltage divider connected to both the auxiliary electrode and the cathode drivers to bias the auxiliary electrode proportional to a reference potential and to vary the common impedance inversely proportional to the number of cathode segments being energized, for inhibiting electrical discharge between the cathode segments and any other than the associated anode. Apparatus is also provided for biasing the OFF cathodes and the OFF anodes in a non-conductive state when not energized.

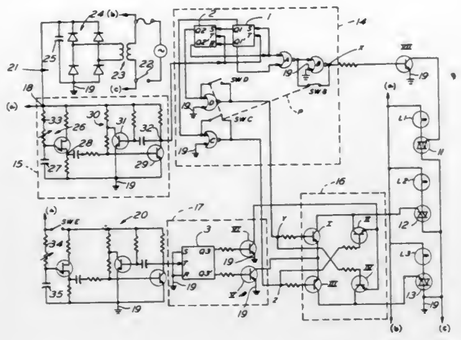
3,778,676
CONTROL APPARATUS FOR SELECTIVELY ILLUMINATING A GROUP OF LAMPS

John M. Keller, 7918 Roosevelt Blvd., Philadelphia, Pa.

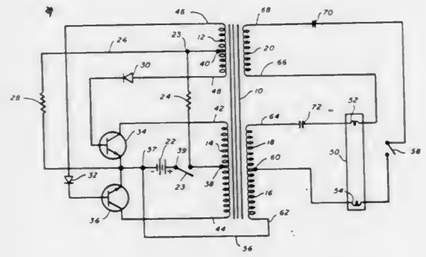
Filed June 7, 1971, Ser. No. 150,314
Int. Cl. H05b 37/02
U.S. Cl. 315—217 12 Claims

Control apparatus associated with a group of three lamps selectively illuminates the lamps in predetermined sequences, there being a mode in which the sequence creates an illusion in the eye of an observer of a moving light spot surrounded by darkness, and a mode in which it appears that a moving dark spot is surrounded by light. The apparatus includes a three-state combinational switching circuit having one input which controls the illumination of one lamp; the two other outputs of the circuit, together with a two-state control switch, establish

the state of a four element switching network which in turn controls the illumination of the other two lamps. Complementing the states of the combinational switching circuit changes the mode of operation; and changing the state of the control switch reverses the direction of apparent movement.



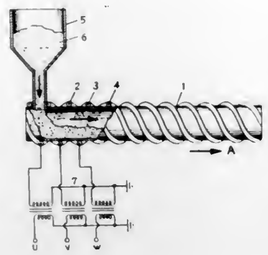
3,778,677
INVERTER BALLAST CIRCUIT
Richard P. Kriege, Skiatook, Okla., assignor to Lowrance Electronics Mfg. Corp., Tulsa, Okla.
Filed Aug. 25, 1972, Ser. No. 283,824
Int. Cl. H05b *37/02*
U.S. Cl. 315—219 **4 Claims**



This invention describes a circuit for providing high voltage A.C. potential for the initiation of discharge, and for powering a fluorescent lamp, from a low voltage battery. A principal improvement lies in the use of an additional secondary winding to raise both filaments of the fluorescent lamp to a high voltage A.C. above the ground plane of the battery. This induces ionization inside of the lamp tube by capacitive coupling to the ground plane, and permits more prompt initiation of the discharge in the lamp.

3,778,678
APPARATUS FOR ELECTRIC FIELD CURTAIN OF CONTACT TYPE
Senichi Masuda, 40-10-605,1-chome, Nishigahara, Kita-ku, Tokyo, Japan
Filed Feb. 16, 1972, Ser. No. 226,750
Int. Cl. B05b *5/02*
U.S. Cl. 317—3 **2 Claims**

A tubular duct of insulating material has three elongated electrodes spirally wound along it on its outer surface, uniformly spaced from one another. The electrodes are connected with the terminals of an alternating current source having a voltage of the order of 5–10 KV to produce a wave-like electric field within the duct by which particles are repelled from the inner duct surface and repulsively propelled in one lengthwise direction along the duct.



3,778,679
TEMPERATURE SENSITIVE ELECTRICAL REGULATING DEVICE
Gaylord D. Jonassen, Smithtown, N.Y., assignor to Telecommunication Industries, Inc., Copiague, N.Y.
Filed Dec. 8, 1972, Ser. No. 313,584
Int. Cl. H02h *5/04*
U.S. Cl. 317—40 A **13 Claims**

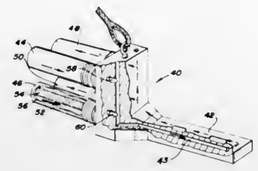


A Temperature Sensitive Electrical Regulating Device comprising a multi-electrode gas tube arrestor having electrically coupled to each electrode an electrically conductive coupling element comprising an electrically insulative outer covering defining a cavity, and an electrically conductive member contained within said cavity such that upon the reaching of a particular temperature, the electrically conductive member changes its physical state causing a break in the electrical conductivity of said conductive member thereby lifting the three electrode gas tube arrestor off the line.

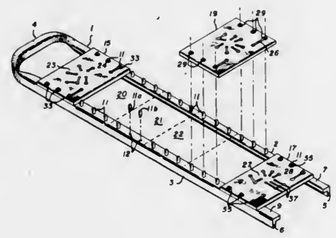
3,778,680
HIGH AMPERAGE SWITCH APPARATUS WITH RESILIENTLY MOUNTED FLUID COOLED TERMINALS
Dick Vaneerden, 131 Curtis Dr., Avon Lake, Ohio
Filed Sept. 26, 1972, Ser. No. 292,329
Int. Cl. H05k *7/20*; **H02b** *1/04*
U.S. Cl. 317—100 **10 Claims**

A high amperage electrical switching apparatus especially adapted for use in a corrosive atmosphere is provided which comprises a housing, a pair of spaced apart first and second

electrical terminals which extend from the housing having fluid cooling means associated therewith, electrical conducting means positioned inside of the housing which communicate electrically with the first and second electrical terminals and are provided with fluid cooling means, and electrical circuit breaking means capable of being in an open or closed position electrically communicating with the electrical conducting means whereby when the circuit breaking means is in the closed position electrical current is capable of flowing between the first and second electrical terminals.

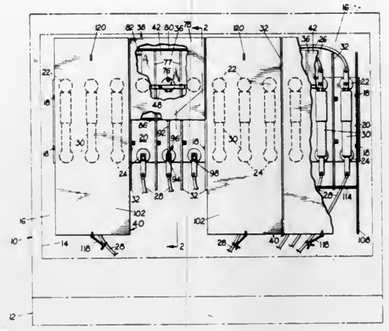


3,778,681
MODULAR PRINTED CIRCUIT BOARD ASSEMBLY
Randy Eugene Wilson, Springfield, Mo., assignor to Litton Systems, Inc., Springfield, Mo.
Filed Aug. 23, 1972, Ser. No. 283,196
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 DH **3 Claims**



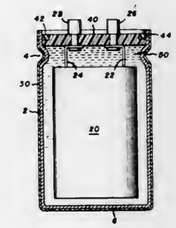
A printed circuit card holder assembly includes a U-shaped metal member having elongated rails for supporting the cards between the rails. The rails include a plurality of upwardly projecting metal prongs. The rails are of an L-shaped cross section such as is found in common aluminum channel members. A plurality of printed circuit boards containing electrical circuit paths are mounted side by side along the rails with each board bridging the two rails. Each circuit board card includes a plurality of metal walled passages at each of its opposed ends, which plurality corresponds in number with the adjacent metal prongs, and the cards are individually held in place atop the rails by means of a friction fit between the prongs and the passages in the printed circuit board. One or more passages in each board may be placed electrically in common with one or more of the electrical circuit paths printed on the circuit card. In this way those electrical circuit paths on the board are placed electrically in common with the metal rails. And each circuit board may be individually inserted or removed from the supporting metal member without disturbing the remaining circuit boards.

3,778,682
SHIELDING APPARATUS FOR ELECTRICAL EQUIPMENT
William L. Bright, 0605 S.W. Curry St., Portland, Oreg.
Filed Dec. 6, 1971, Ser. No. 204,857
Int. Cl. H02b *1/14*
U.S. Cl. 317—119 **10 Claims**



Shielding apparatus for use by workmen to cover live electrical contacts so that work can be safely carried on in adjacent areas. A base bracket includes a flange for support on upright barrier walls associated with the electrical equipment and also includes clamp fingers for securely attaching such bracket to the barriers in supported relation thereon. The base bracket in turn supports a first shielding box or cover by overlapping hook means. Such box includes a front wall, side walls, and a bottom wall for shielding live contacts from all directions from which work may be performed in adjacent areas by workmen. Tie-down means are associated with the shielding box for anchoring it securely in place. One or more second shielding boxes are provided having greater length than the first shielding box to shield additional live contacts in adjacent areas. The second shielding boxes also includes tie-down means for anchoring them in a supported position. The base bracket and shielding boxes are constructed of electrically insulating material and each is provided with eye means for handling them by an insulated stick.

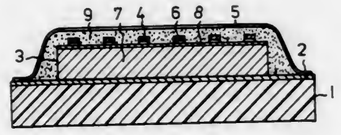
3,778,683
SELF-BONDING CAPACITOR CASE INSULATION
Joel B. Buice, and David G. Schwenker, both of Columbia, S.C., assignors to General Electric Company, Owensboro, Ky.
Filed Aug. 28, 1972, Ser. No. 284,440
Int. Cl. H01g *9/00*
U.S. Cl. 317—230 **4 Claims**



An improved aluminum electrolytic capacitor is provided having an electrically insulating coating securely bonded to the casing. The coating comprises an epoxy resin preferably

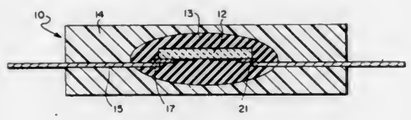
applied as a powder and cured to the empty casing at an elevated temperature to secure a proper bond without damage to the electrical components subsequently assembled therein.

3,778,684
SEMICONDUCTOR ELEMENT AND METHOD OF MAKING IT
Horst Fischer, Heilbronn, and Eduard Justi, Braunschweig, both of Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany
Filed Jan. 13, 1972, Ser. No. 217,597
Claims priority, application Germany, Mar. 17, 1971, P 21 12 812.1
Int. Cl. H01l *15/00*
U.S. Cl. 317—234 R **9 Claims**



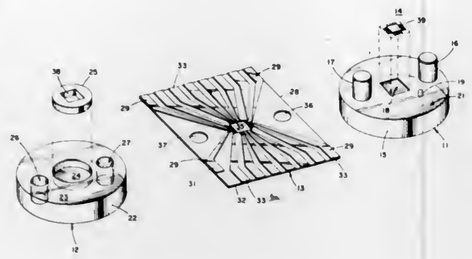
A semiconductor element comprises a semiconductor body with at least one metal electrode mounted thereon, a conducting layer consisting at least partly of palladium, rhenium or rhodium being provided between the metal electrode and the semiconductor body. A method of manufacturing such a semiconductor element is also disclosed.

3,778,685
INTEGRATED CIRCUIT PACKAGE WITH LEAD STRUCTURE AND METHOD OF PREPARING THE SAME
Bobby W. Kennedy, Arab, Ala., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.
Filed Mar. 27, 1972, Ser. No. 238,047
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **6 Claims**



A beam-lead integrated circuit package assembly including a beam-lead integrated circuit chip, a lead frame array bonded to projecting fingers of the chip, a rubber potting compound disposed around the chip and an encapsulating molded plastic. The lead frame array is prepared by photographic printing of a lead pattern on a base metal sheet, selectively etching to remove metal between leads and plating with gold. Joining of the chip to the lead frame array is carried out by thermocompression bonding of mating gold-plated surfaces. A small amount of silicone rubber is then applied to cover the chip and bonded joints, and the package is encapsulated with epoxy resin, applied by molding.

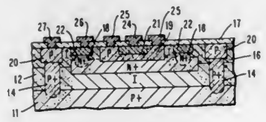
3,778,686
CARRIER FOR BEAM LEAD INTEGRATED CIRCUITS
Lee Robert Galvin, Lafayette, and Arthur J. Kline, Jr., Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 18, 1972, Ser. No. 281,641
Int. Cl. H01l *5/00*
U.S. Cl. 317—234 R **15 Claims**



A carrier for beam lead integrated circuits is disclosed wherein a pair of optically-clear, electrically-insulating base and cover members are disposed with major surfaces facing each other. A depression in the base member is adapted to accurately position the integrated circuit with its beam leads facing toward the depression. A fan-out circuit comprising a self-supporting film having metallic film circuits thereon is disposed between the major surfaces of the base and cover members with the inner terminals of the film circuits engaging the back surfaces of the beam leads. A hole in the fan-out circuit receives the body of the beam lead integrated circuit.

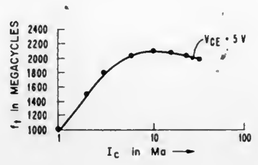
The outer terminals of the metallic film circuits extend beyond the edges of the base and cover members and are available for contacting during subsequent testing. A recess in the major surface of the cover member holds a soft rubber pressure member which urges the inner terminals of the metallic film circuits against the back surfaces of the beam leads. Frictional engagement between studs on the base member and holes on the cover member hold these two members, the fan-out circuit, and a beam lead integrated circuit in the depression assembled for carrying and testing.

3,778,687
SHALLOW JUNCTION SEMICONDUCTOR DEVICES
Joseph J. F. Chang, 19 Brookland Farm Rd., Poughkeepsie, N.Y., and Madhukar B. Vora, 4 Half Moon Rd., Beacon, N.Y.
Division of Ser. No. 765,328, Oct. 7, 1968, Pat. No. 3,603,468. This application Apr. 20, 1971, Ser. No. 135,680
Int. Cl. H01l *9/12, 11/08, 3/12*
U.S. Cl. 317—235 R **4 Claims**

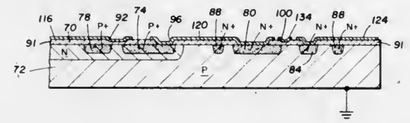


A high performance PN silicon semiconductor device having an arsenic or antimony doped N region which gives a substantial improvement over similar phosphorous doped regions.

Arsenic atoms in the N type emitter region of an NPN device tends to squeeze the P-type impurity, such as boron in the base into a narrow-base layer. For the same integrated base doping, a much narrower base can be obtained with arsenic-doped emitters than with phosphorous-doped emitters.



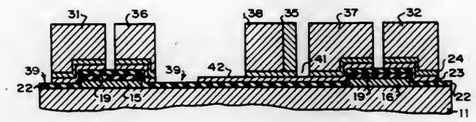
3,778,688
MOS-BIPOLAR HIGH VOLTAGE DRIVER CIRCUIT
Robert Hudson Crawford, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 758,253, Sept. 9, 1968, abandoned. This application Mar. 15, 1971, Ser. No. 124,436
Int. Cl. H01l *11/00*
U.S. Cl. 317—235 G **9 Claims**



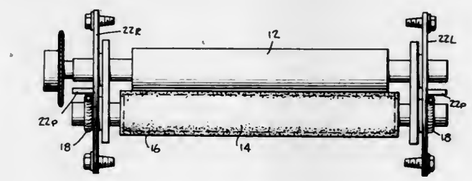
A monolithic circuit for driving a high voltage numerical readout device such as a NIXIE tube is described which has a driver circuit for each numerical output that includes an NPN bipolar transistor and a p-channel enhancement mode field effect transistor for controlling the emitter current of the bipolar transistor. A four bit binary-to-decimal decoder formed by p-channel MOSFETs control the gate voltages of the MOSFETs of each driver circuit. The MOSFETs of both the logic circuit and the driver circuits are formed by p-type diffusions in an n-type epitaxial region grown in a p-type substrate, while the bipolar transistors are formed by n-type diffusions in the p-type substrate. The bipolar transistors include an inversion preventing electrode over the base region and an n-type diffused guard ring. The integrated circuit also includes a voltage controllable multivibrator for duty cycle modulating the drive current to control the degree of illumination of the numerical readout.

3,778,689
THIN FILM CAPACITORS AND METHOD FOR MANUFACTURE
George E. Bodway, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 56,610, July 20, 1970, abandoned. This application May 22, 1972, Ser. No. 255,889
Int. Cl. H01g *1/01*
U.S. Cl. 317—258 **12 Claims**

A thin film capacitor and resistor circuit is disclosed, each capacitor being formed by a structure including a metallic film of an insulating substrate, the metallic film having an oxidized surface formed by anodizing, an oxide layer on the oxidized surface of the metallic film, and a pair of spaced-apart conductor layers over the oxide layer, each resistor being formed by a resistive film on the substrate and a pair of spaced-apart conductor layers connecting with the ends of the resistive film. In the manufacture of the circuit, a predeposited substrate is produced that may be utilized by circuit designers in the subsequent fabrication of custom microcircuits. A heat treating technique is employed in trimming the resistors of the circuit.



3,778,690
ELECTROSTATIC COPYING MACHINE
Francis N. Rothacker, Valhalla, N.Y., and David P. Bujese, Toms River, N.J., assignors to Copy Research Corporation, Elizabeth, N.J.
Filed Mar. 16, 1972, Ser. No. 235,346
Int. Cl. G03g *15/02*
U.S. Cl. 317—262 A **17 Claims**

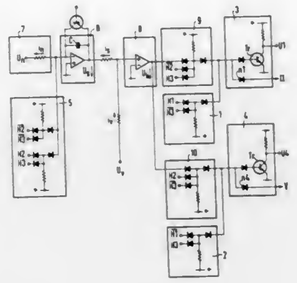


In a copying machine employing two conductive rollers to which zinc oxide coated copy paper is fed, the power source provides a DC voltage between the rollers that is derived from a frequency (of 25 kilocycles, for example) which is relatively high compared to line frequency. The relatively high frequency ripple that is on the DC output eliminates much of the problem with discernible lines on the end product. One of the two rollers has a rubber sleeve which is selected to provide a low capacitance such as 75 micro-microfarads. The resistance of the sleeve is such that a current flow of 50 microamperes is obtained with a 3,000 volt potential between the two rollers. The low capacitance means that when a sheet of copy paper is fed between the rollers, the change in the potential across the rubber sleeve and the change in current flow will occur very rapidly so that an even charge is applied on the copy paper. Because of the relatively high frequency employed, the ripple factor is kept low and the voltage magnitude applied is kept down to a point where the amount of ozone generated is minimized.

3,778,691
CONTROL CIRCUIT FOR AN ELECTRIC MACHINE HAVING AN ELECTRONIC COMMUTATOR
Herbert Poppinger, Erlangen-Sieglitzhof, and Klaus Huber, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 17, 1972, Ser. No. 281,493
Claims priority, application Germany, Aug. 20, 1971, P 21 41 622.8
Int. Cl. H02k *29/02*
U.S. Cl. 318—254 **9 Claims**

A control circuit is disclosed for a converter fed electric machine in which thyristors, arranged in separate channels,

are used as an electronic commutator. A rotor position transmitter in conjunction with three Hall effect generators produces pulsed signals mutually displaced 120 electrical degrees from each other. These signals, in combination with their inverse Hall signals, are used with logic circuitry to control the conduction period of the thyristors. The logic circuitry for each thyristor is composed of a first and second control circuit. The first control circuit comprising an addressing stage or NOR gate provides a pulse signal to control the con-



duction of the thyristor to insure maximum torque on starting. The second control circuit provides a thyristor control signal displaceable in time and the displacement of which is related to the desired displacement angle between the armature and the excitation field under the prevailing operating conditions. These two control signals are provided as input signals to a selective output circuit which controls the thyristor conduction period in response to the first occurring signal from either of the two control circuits.

3,778,692

ARRANGEMENT FOR SETTING THE SPEED OF AN ELECTRONIC MOTOR, PARTICULARLY THE MOTOR OF AN INDUSTRIAL SEWING MACHINE

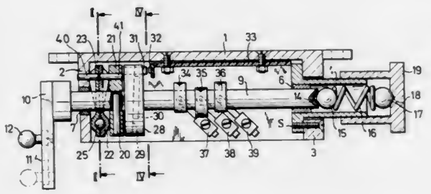
Wolfgang Angersbach, Darmstadt, and Karl-Heinz Meier, Zeilhard, Darmstadt, both of Germany, assignors to Quick-Rotan Becker & Notz KG, Darmstadt, Germany

Filed July 13, 1972, Ser. No. 271,531

Claims priority, application Germany, May 16, 1971, P 21 35 777.7

Int. Cl. G01r *33/06*

U.S. Cl. 318—305 **22 Claims**



A position-responsive electrical transducer comprises a magnetic member and a flux-responsive member adapted to produce an electrical signal indicative of magnetic flux strength. The members are mounted and spaced apart from each other in a first direction, and at least one of the members is movable relative to the other of the members in a second direction transverse to the first direction. A cam arrangement, or another arrangement which defines a path of motion, serves to effect relative movement between the members in said first direction as a predetermined function of relative movement between the members in said second direction. In this way, the distance between the members and thus the magnitude of the generated signal are varied as a predetermined function of relative movement between the members in said second direction.

3,778,693

PULSE-TO-REVOLUTION CONVERTER FOR CONVERTING A VARIABLE PULSE FREQUENCY INTO A PROPORTIONAL ROTATION SPEED OF A SHAFT

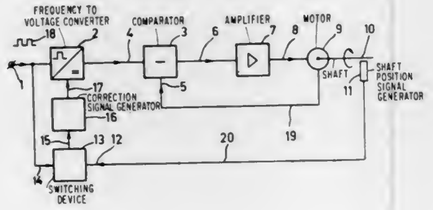
Aart Gerrit Korteling, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 30, 1972, Ser. No. 285,024

Claims priority, application Netherlands, Sept. 6, 1971, 7112272

Int. Cl. H02p *5/16*

U.S. Cl. 318—314 **5 Claims**



By providing a conventional pulse-to-revolution converter comprising a motor control circuit and a tacho signal negative-feedback loop with an additional negative-feedback loop an exact ratio is obtainable between the variable pulse repetition frequency of a pulse train and the rotation speed of a rotating shaft coupled to the motor. The shaft carries a shaft position pick-up which via a switching device operates a correction signal source.

3,778,694

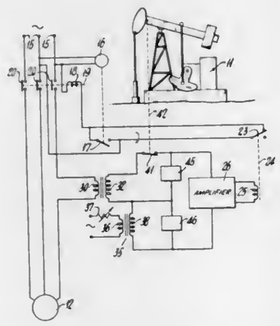
ELECTRIC MOTOR CONTROL SYSTEM FOR A BEAM-TYPE PUMPING LOAD

Laurence M. Hubby, Bellaire, and Herbert J. Mayer, Houston, both of Tex., assignors to Texaco, Inc., New York, N.Y.

Filed June 5, 1972, Ser. No. 259,890

Int. Cl. H02p *1/04*

U.S. Cl. 318—474 **3 Claims**



An electric motor-control system. The motor load is a beam-type pumping unit which has an upstroke and a downstroke in each cycle. Loss of normal load during the downstroke only is detected by comparison with a preset normal-load signal and the motor is shut down.

3,778,695

APPPARATUS AND METHOD FOR CONTROLLING A CENTRIFUGAL COMPRESSOR

Paul Bauer, Jr., Rawson, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 21, 1972, Ser. No. 246,478

Int. Cl. F04b *27/00*

U.S. Cl. 318—481 **17 Claims**



In an electric motor driven centrifugal compressor, apparatus and method for controlling the compressor to prevent "surge" and operation at a motor current above the maximum rated motor current and for automatically restarting the compressor after a short-term power failure. The current to the compressor motor is sensed as an indicator of impending "surge". When the current falls below a pre-selected minimum value, a blow-off valve in the compressor outlet line is gradually opened to allow excess volume to escape to the atmosphere, thus avoiding "surge". The current to the motor is also sensed as an indication of compressor operation above the maximum rated motor capacity. When the motor current rises above a pre-selected level, an inlet valve to the compressor is closed. This restricts the volume available for compression and prevents motor over-loaded operation. In the event of a short-term power failure or power dip, contact pairs controlled by time delay relays remain closed for a short period of time. These pairs provide parallel bypass circuits around the normal motor starting circuits and allow an automatic restart if the time period has not been exceeded. The compressor is powered by the flywheel effect of its main drive gear during these short-term power failures. If the power failure is of a long enough duration, the bypass contact pairs open, and the normal restarting procedures must be followed.

3,778,696

FEEDBACK FAULT INDICATE CIRCUIT

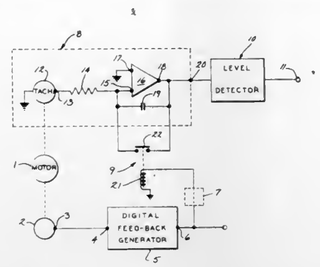
Ronnie G. Walters, Mayfield Heights; Theodore J. Markley, Mentor, and Richard E. Jennings, Wickliffe, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed June 23, 1972, Ser. No. 265,928

Int. Cl. G05b *23/02*

U.S. Cl. 318—565 **8 Claims**

In the servo system of a numerically controlled machine the position feedback signal is monitored by a fault indicate circuit. An absolute analog position signal is generated by an integrator circuit connected to receive a signal proportional to machine speed. Under normal operating conditions, the integrator circuit is repeatedly reset to zero by a reference reset switch and the magnitude of the absolute position signal is thus maintained below a preset limit. The reference reset switch is controlled by the position feedback signal being



monitored and when the feedback signal is lost due to a malfunction, the integrator circuit is not reset and the absolute analog position signal rises above the preset limit. This condition is sensed by a level detector which generates a fault indicate signal.

3,778,697

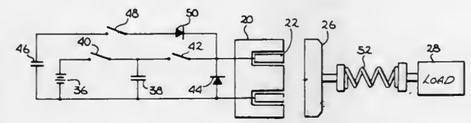
SOLENOID ACTUATORS AND GENERATORS AND METHOD OF USING SAME

William T. Link, and Peer M. Portner, both of Berkeley, Calif., assignors to Arkon Scientific Laboratories, Berkeley, Calif.

Filed Apr. 26, 1971, Ser. No. 137,230

Int. Cl. H02k *35/02*

U.S. Cl. 322—3 **19 Claims**



Solenoid actuators capable of high speed operation and high efficiencies are disclosed. The solenoids, in the most efficient embodiment, are coupled to the driven member (i.e., load) through a spring (i.e., decoupled) which spring is selected (i.e., matching) to allow high initial acceleration of the armature, followed by deceleration of the armature near the end of the stroke as a result of the spring force, thereby minimizing i^2R losses and minimizing loss in kinetic energy by armature impact at the end of the stroke. To effectively accomplish the decoupling and matching, various methods of latching the solenoid at the end of the stroke, while the energy stored in the spring is delivered to the load, are disclosed, as are methods for decreasing the solenoid current from a high initial value so as to minimize resistive power lost in the winding. Solenoid generators using the principles of the present invention are also disclosed.

3,778,698

INTEGRATED VOLTAGE STABILIZER WITH NEGATIVE INTERNAL RESISTANCE

Aldo Romano, Monza, Italy, assignor to Ates Componenti Elettronici, S.p.A., Milano, Italy

Filed Aug. 24, 1972, Ser. No. 283,423

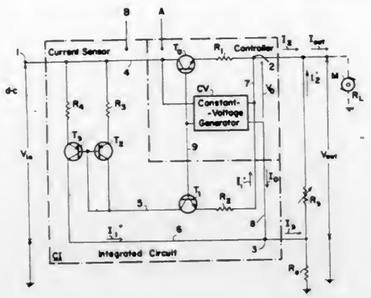
Claims priority, application Italy, Aug. 25, 1971, 27839 A/71

Int. Cl. G05f *1/56*

U.S. Cl. 323—4 **7 Claims**

An integrated voltage-stabilizing network with grounded substrate has an input terminal, an output terminal and a

reference terminal, the latter being held at a fixed potential relative to the output terminal by a regulator also delivering a constant current to that reference terminal which is connected to a tap on a voltage divider inserted between the output terminal and ground. The regulator is connected in the



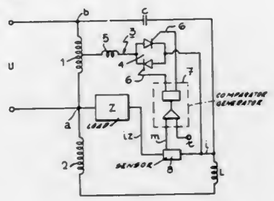
base/emitter circuits of two parallel transistors which lie between the input and output terminals and deliver respective components of an output current, one of these parallel transistors lying in series with a further transistor which is paired with a similar transistor supplying a like current components to the reference terminal.

3,778,699

RESONANT TYPE CURRENT REGULATOR PROVIDING A CONTINUOUS REGULATION

Marcel E. Hoffman, Lasne-Chapelle-Saint-Lambert, Belgium, assignor to Societe Anonyme des Etablissements Adrien De Backer, Leuvenbaan, Zaventem, Belgium

Filed Aug. 16, 1972, Ser. No. 281,256
Claims priority, application Belgium, May 19, 1972, 117683
Int. Cl. G05f 1/30; H05b 37/02
U.S. Cl. 323—6 **4 Claims**



A resonant type current regulator in which a controlled inductive impedance is provided in series or in shunt connection with the current path. A control is provided to vary the impedance value of the inductive impedance in response to the load current deviating from a reference value in a manner to stabilize the load current. An antiparallel arrangement of a pair of controlled semiconductor devices can be used for the controlled inductive impedance their control gates receiving control signals at times in each current half period which depend on the magnitude of the current deviation.

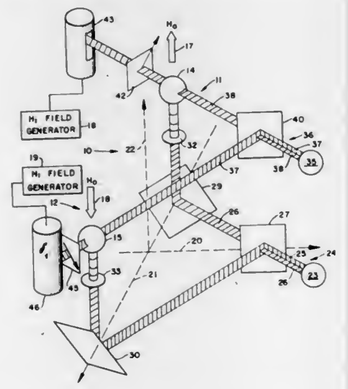
3,778,700

OPTICALLY PUMPED NUCLEAR MAGNETIC RESONANCE GYROSCOPE

Donald S. Bayley, Bedford, N.Y.; Ivan A. Greenwood, Jr, Stamford, Conn., and James H. Simpson, Jr, Katonah, N.Y., assignors to Singer-General Precision, Inc., Little Falls, N.J.

Filed June 7, 1971, Ser. No. 150,486
Int. Cl. G01r 33/08
U.S. Cl. 324—0.5 R **18 Claims**

A nuclear magnetic resonance gyroscope which obtains rotational information from the phases of precessing nuclear magnetic moments for determining the angle of rotation of the gyroscope about a sensitive axis. The gyroscope comprises a pair of spin generators each having a mercury absorption cell containing ^{199}Hg and ^{201}Hg. The cells are arranged so that each cell is subjected to a DC H_0 magnetic field and to an AC H_1 magnetic field in a direction perpendicular to the H_0 field. The respective H_0 fields are arranged in antiparallel directions. A common pumping lamp provides a beam of randomly polarized light at 2537 A. which is plane-polarized into orthogonal beams of light by a Brewster angle polarizer. The orthogonal beams of light are reflected to intersect the absorption cells in each of the spin generators after being circularly polarized by a quarter wave plate. A common readout lamp provides a source of randomly polarized light which is split into a pair of plane-polarized readout beams which respectively intersect the absorption cells of the spin generators. The readout beam passes through the absorption cell so that its



angle of polarization is oscillated by the Faraday effect at the Larmor frequency. The resultant polarization modulated readout beam is converted to an amplitude modulated beam in an analyzer which provides a periodic amplitude varying signal to a photomultiplier detector circuit. The H_1 field generator is in circuit with the photomultiplier for generating the H_1 field for the absorption cell in the associated spin generator. Readout and control circuit means are provided for comparing the phases of the two resonance signals produced by each absorption cell to produce an error signal for driving a motor to control the displacement of a shaft and to provide a control signal to the H_0 field generator to maintain the phase relationships of the respective resonance signals. The angular rotation of the shaft will be proportional to the rotation of the gyroscope about the sensitive axis, parallel to the H_0 direction, with respect to inertial space. One embodiment of the mechanical structure for housing a portion of the gyroscope is also disclosed.

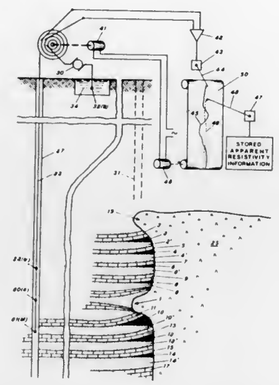
3,778,701

METHOD OF ULTRA LONG SPACED ELECTRIC LOGGING OF A WELL BORE TO DETECT HORIZONTALLY DISPOSED GEOLOGICALLY ANOMALOUS BODIES IN THE VICINITY OF MASSIVE VERTICALLY DISPOSED GEOLOGICALLY ANOMALOUS BODIES LATERAL TO AND NOT INTERCEPTED BY THE WELL BORE

Richard J. Runge, Anaheim, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 22,414, March 25, 1970, abandoned. This application Apr. 21, 1972, Ser. No. 246,289
Int. Cl. G01v 3/18
U.S. Cl. 324—10 **9 Claims**

An electrode array comprising a current source electrode, two potential electrodes and a sink electrode is used in a well bore to detect horizontally disposed electrically resistive geologically anomalous bodies that are not cut by the well bore when they lie in the vicinity of massive vertically disposed electrically resistive geologically anomalous bodies. Potential detecting electrodes in the array are spaced at nearly equal distances from said current source electrode; one is placed above and one is placed beneath said current source



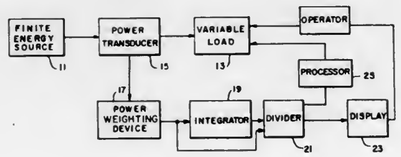
electrode. Resistivity data obtained from said electrode array is compared with short-spaced resistivity data obtained by other means. Differences in the compared data indicate the presence of horizontally disposed electrically resistive geological anomalies lateral to and uncut by the well bore since said electrode array is unresponsive to the presence of the massive vertically disposed electrically resistive geological anomaly.

3,778,702

OPERATING TIME REMAINING COMPUTER

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Inc., Mount Kisco, N.Y.

Filed July 13, 1971, Ser. No. 162,148
Int. Cl. G01n 27/42
U.S. Cl. 324—29.5 **12 Claims**



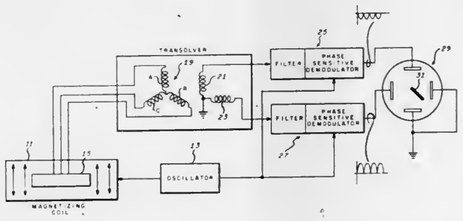
A computer for determining the time remaining at the present rate of energy dissipation before a finite energy source is completely drained of energy. The rate of energy consumption is sensed and then modified by a function generator in accordance with the effect that the rate of energy consumption has on the quantity of energy available from the source. The modified rate of dissipation, i.e., effective rate of energy dissipation, is fed to a coulometer having an output capacitance which is varied in accordance with the integral of the modified signal. The change in the output capacitance is measured by feeding a high frequency interrogation signal to the coulometer. This signal is developed across the output capacitance thereof and accordingly has an envelope which is proportional to the integral of the modified rate of energy dissipation. The developed signal is amplified by an AC amplifier and demodulated by an envelope detector. The demodulated signal is then subtracted from a predetermined value representative of the total rated energy in the system. This resulting value represents the energy remaining in the system. This energy remaining value is then divided by the modified rate of energy dissipation to provide the time remaining at the present rate of energy dissipation.

3,778,703

APPARATUS FOR DETECTING UNLEVELNESS OF A PENDULOUSLY SUPPORTED FLUX VALVE BY SUBJECTING THE VALVE TO A VERTICAL MAGNETIC FIELD

John R. Jackson, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,848
Int. Cl. G01r 33/02
U.S. Cl. 324—43 R **6 Claims**



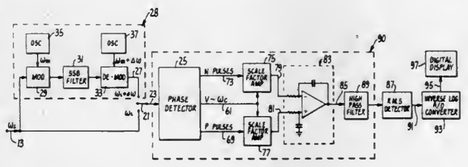
A pendulously mounted flux valve is tested for levelness by applying a vertically oriented alternating magnetic field across the flux valve. The pickup windings on the flux valve are connected to corresponding primary windings in a transolver. The rotor of the transolver is locked in alignment with the flux valve so as to produce quadrature voltages having relative magnitudes representative of any flux valve output voltages with respect to one axis of the valve. The voltages from the transolver are passed through individual signal processors each containing a filter that passes only those signals arising from the applied alternating magnetic field and a phase sensitive demodulator. The demodulator outputs are applied to the deflection plates of a cathode ray tube so as to produce a Lissajou figure consisting of a radial line having a magnitude indicative of the amount by which the plane of the flux valve is inclined with respect to the horizontal and an orientation indicative of the direction of the inclination.

3,778,704

TECHNIQUE FOR DIRECTLY MEASURING A SIGNAL-TO-NOISE RATIO OF A COMMUNICATION CIRCUIT

Andre Lubarsky, Jr., Sunnyvale, and Charles M. Volkland, Los Altos, both of Calif., assignors to Telecommunications Technology, Inc., Sunnyvale, Calif.

Filed Apr. 2, 1973, Ser. No. 346,778
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R **12 Claims**



A method and apparatus for determining the signal-to-noise characteristic of a communication circuit by first forming a

cumulative phase jitter function whose amplitude is proportional to a ratio between magnitudes of a dominant signal and all interfering signals. This phase jitter function is detected by a true r.m.s. detector and a DC output level of the detector is proportional to the signal-to-noise ratio of a communication circuit through which the test signal has been passed.

3,778,705

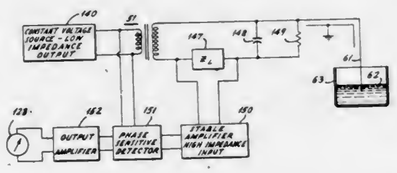
SUSCEPTANCE MEASURING SYSTEM FOR INDICATING CONDITION OF A MATERIAL

Frederick L. Maltby, Jenkintown, Pa., assignor to Drexelbrook Controls, Inc., Horsham, Pa.

Continuation-in-part of Ser. No. 144,554, May 18, 1971, abandoned. This application May 24, 1971, Ser. No. 146,269

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **10 Claims**



A system for measuring the condition of a material using a capacitive probe which is immersed in or placed in proximity to the material whose condition is to be measured, in which the probe exhibits both susceptive and conductive components, and in which means are provided for producing an indication representative of the susceptive component and substantially independent of the conductive component.

3,778,706

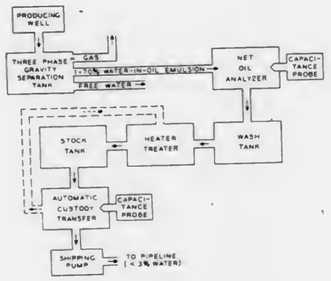
DIELECTRIC CONSTANT MEASUREMENT METHOD

Don D. Thompson, Corona Del Mar, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 50,022, June 26, 1970, Pat. No. 3,675,121. This application July 3, 1972, Ser. No. 268,286

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **8 Claims**



The real part of the complex dielectric constant of natural gas stream from a producing gas well can be accurately measured at the well head by avoiding even minute effects of dispersion and water absorption by driving the capacitance probe at a frequency in a range of 40 to 300 megahertz.

3,778,707

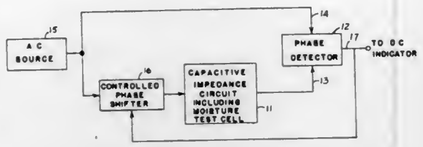
MEANS FOR MEASURING LOSS TANGENT OF MATERIAL FOR DETERMINING MOISTURE CONTENT

Ronald F. Vogel, Bettendorf, Iowa, assignor to Agridustrial Electronics, Inc., Bettendorf, Iowa

Filed Dec. 14, 1972, Ser. No. 315,149

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **4 Claims**



A-c voltage is applied through two branches to respective input circuits of a phase detector. One of the branches includes a controlled phase shifter and a capacitive impedance circuit; the capacitive impedance circuit includes a moisture test cell and in the usual manner provides phase shift dependent upon the permitivity and loss factor of material placed in the moisture test cell. The overall shift in phase of the voltage in this branch of the circuit is therefore determined by the sum of the phase shift in the controlled phase shifter and the phase shift in the capacitive impedance circuit dependent on the sample in the moisture tester. The output of the phase detector is applied to a d-c control circuit of the controlled phase shifter to control the phase shift such that the sum of the phase angles of the phase shifter and the capacitive impedance circuit is maintained at a predetermined constant. The voltage on the output circuit for controlling the phase shifter is also the voltage that is applied to an indicator to determine moisture content according to the loss tangent of the material being tested. The output readings are substantially independent of the densities of the materials placed in the test cell.

3,778,708

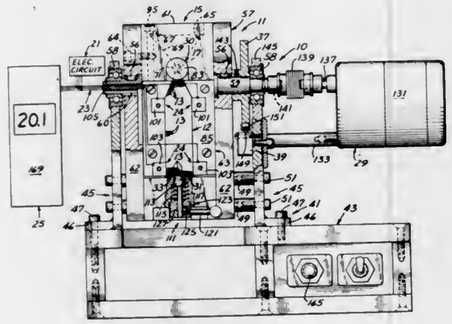
METHOD OF AND AN APPARATUS FOR MEASURING AN ELECTRICAL CHARACTERISTIC OF A GRANULAR MATERIAL

Raymond H. Anders, Madison, and Helmut G. Folgmann, Huntsville, both of Ala., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 30, 1973, Ser. No. 355,847

Int. Cl. G01r *27/02*

U.S. Cl. 324—62 **11 Claims**



A method of and an apparatus for measuring an electrical characteristic of a granular material such as carbon granules

comprises the step of turning a test cell containing the carbon granules to agitate and to pack the carbon granules automatically and uniformly within the test cell for each of a series of measurements of the electrical characteristic. In the preferred method and apparatus, the test cell is filled through an orifice and then a gate for the orifice is closed to enclose a predetermined volume of carbon granules; and means are shifted to provide additional space or volume within the test cell to allow the particles to redistribute and to repack with turning of the test cell. Means in the form of an electric motor and a circuit control the turning and automatic stopping of the test cell movement. A readout means in the form of a digital readout meter provides the electrical characteristic measurement value.

3,778,709

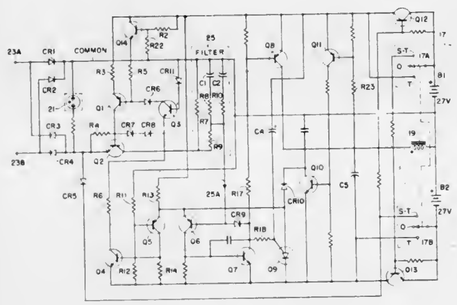
CURRIE FOLLOWING STRAY ENERGY TEST SYSTEM

Robert A. Williams, Fort Worth, Tex., and David M. Holt, Fremont, Calif., assignors to Williams Instruments, Inc., Fort Worth, Tex.

Filed Dec. 22, 1971, Ser. No. 210,794

Int. Cl. G01r *19/16, 31/02*

U.S. Cl. 324—72 **12 Claims**



The specification discloses a system for monitoring stray energy on a breech cap firing circuit on ejector racks, used in military aircraft weapons release systems to indicate on a GO/NO-GO basis whether the stray energy will prematurely fire the weapons. The system includes a pair of inputs coupled to an indicator by way of a series switch and a filter. The filter is calibrated to follow a predetermined voltage-time response curve which defines the threshold limits at which the stray energy will prematurely fire the release system. If the threshold limit at any point on the curve is reached, the filter produces a predetermined output which is sensed by threshold circuitry to actuate the indicator and turn off the series switch.

3,778,710

RANGING AMPLIFIER SYSTEMS

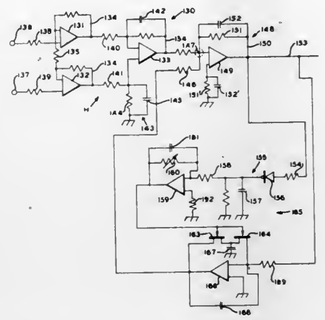
Richard K. Snook, Bridgeton, Mo., assignor to Diginetics Incorporated, Bridgeton, Mo.

Filed Oct. 20, 1971, Ser. No. 190,808

Int. Cl. G01r *1/30, 1/02*

U.S. Cl. 324—123 R **23 Claims**

An auto ranging amplifier with automatic zero suppression which automatically adds a D.C. potential to an amplified input signal to keep a data trace within preestablished channel boundaries. A special circuit integrates the data potential and compares the resultant average with the limits of these preestablished channel boundaries. If the average of the data potential traverses either set point of these preestablished limits, steps of zero suppression are introduced, thus returning the data to the center of the preestablished channel. The equivalent amount of offset is available as an analog step voltage and as a binary number, such as four bits plus sign, in either parallel or serial format. This serial format is directly compatible with a recorder input while the parallel data may be displayed on a lamp bank for continuous evaluation of zero suppression magnitude. An embodiment of the invention which tracks and suppresses electrical hum or noise is also disclosed.



3,778,711

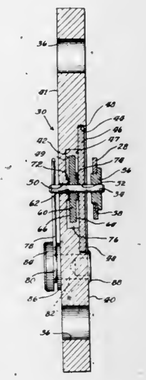
DAMPING CLUTCH FOR INDICATING METER

Trevor Samuel, Rochester, Ill., assignor to Sangamo Electric Company, Springfield, Ill.

Continuation of Ser. No. 853,152, Aug. 26, 1969, abandoned. This application Apr. 14, 1972, Ser. No. 243,979

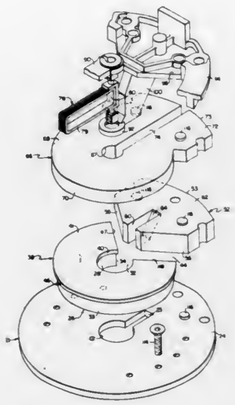
Int. Cl. G01r *1/14, 19/16*

U.S. Cl. 324—125 **3 Claims**



A maximum demand indicator for use with an electrical demand meter and the like including a damping clutch having a substantially closed chamber enclosing a clutch disc mounted on a rotatable pivot pin supporting a balanced indicating pointer movable in response to the maximum electrical load measured. A damping compound is disposed within the chamber which effects a low retarding force on the disc during slow movement of the pointer and effects a substantially greater retarding force on the clutch disc when the pointer is subjected to shock, vibration or other extraneous forces.

3,778,712
LINEAR SCALE MEASURING INSTRUMENT HAVING PREASSEMBLED COIL SUPPORT FRAME
Dennis F. Roerty, Bayonne, and Robert C. MacIndoe, Chatham, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 6, 1972, Ser. No. 269,352
Int. Cl. G01r 1/16
U.S. Cl. 324—151 **13 Claims**



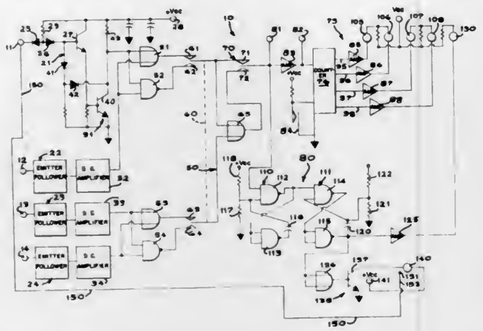
An improved DC electrical measuring instrument which is easily assembled and which has a linear scale.

3,778,713
TRANSISTOR AND DIODE TESTER
Wayne L. Jamison, 3302 Roaming Woods Ln., Spring, Tex.
Filed Apr. 6, 1972, Ser. No. 241,762
Int. Cl. G01r 31/22
U.S. Cl. 324—158 T **6 Claims**



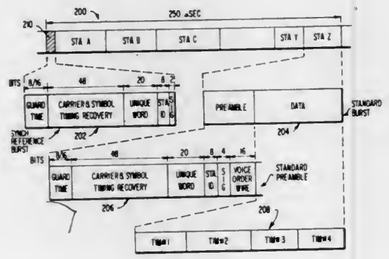
An illustrative embodiment of the invention includes transistor/diode test apparatus employing an A.C. power source. A metering circuit and the device to be tested are placed across the A.C. power source. Switching means for applying the device terminals to the A.C. power source in various configurations while metering the response of the device to the A.C. power is also provided. The test apparatus may be used for either "in circuit" or "out of circuit" component testing.

3,778,714
APPARATUS FOR DETECTING AND COUNTING COINCIDENCE OF INCOMING LOGIC SIGNALS
Norman McHenry, III, 3434 Cunard Ct., San Jose, Calif.
Filed May 30, 1972, Ser. No. 258,132
Int. Cl. G01r 15/12; G04f 9/00
U.S. Cl. 324—181 **15 Claims**



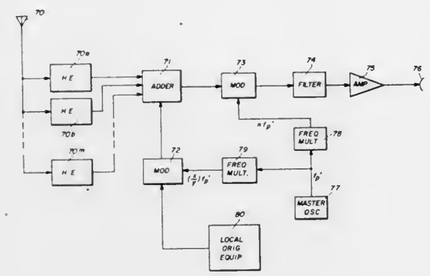
Apparatus for trouble shooting digital circuits in which the repetition rate of coincidence between compared logic signals is not sufficient for the operation of an oscilloscope. A comparator circuit for the apparatus produces signals representing the existence of coincidence of compared incoming signals. A light emitting diode connected to the comparator circuit is operated when all the compared incoming signals are coincident at least for a prescribed duration. In addition, a counter circuit is connected to the comparator circuit. Light emitting diodes for the counter circuit are operated for indicating the count of the compared signals that are coincident for at least a prescribed time duration.

3,778,715
TDMA SATELLITE COMMUNICATIONS SYSTEM WITH RAPID AUTOMATIC RE-ENTRY FOLLOWING BRIEF OUTAGES OF EARTH STATION EQUIPMENT
William G. Schmidt, Rockville; Ova G. Gabbard, Germantown, both of Md.; John M. Husted, Vienna, Va., and Wilfrid G. Maillet, Oxon Hill, Md., assignors to Communication Satellite Corporation, Washington, D.C.
Filed Aug. 11, 1971, Ser. No. 170,930
Int. Cl. H04b 7/20
U.S. Cl. 325—2 **5 Claims**



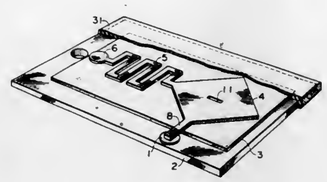
In a satellite transponder communications system operating in a time division multiple access mode, each earth station transmits data in a burst format. All bursts within a single transponder frame are synchronized to a special burst which contains no data communications. A single earth station sends out the reference burst as well as its normal burst and in the case of multi transponders and multi transponder frames, the single reference station sends out all of the reference bursts for the various transponder frames. Data to be transmitted may be received in many different forms and included within the same burst because of the modular arrangement of the earth stations. Individual terrestrial interface modules receive data in various forms, convert the data into bit form which is compatible with the TDMA system, store the converted bit stream and hold the block of data until a multiplexer requests the block of data for inclusion into the earth station's transmitted burst. The arrangement of blocks of data within a burst and the timing and duration of a burst is controlled by digital words stored in a memory. Complete reordering of burst times and the arrangement of blocks of data within a burst is accomplished by changing the words stored in the memory. A comparable system on the receive side of the earth station extracts blocks of data in selected bursts for conveyance to selected terrestrial interface modules. Loss of synchronization at an earth station due to short time transmission interruptions is compensated for by predicting the correct burst transmission time following the end of said interruption.

3,778,716
COHERENT CATV TRANSMISSION SYSTEM
Lyle S. Stokes, Hollywood, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation-in-part of Ser. No. 523,653, Jan. 28, 1966, Pat. No. 3,619,782. This application Aug. 25, 1971, Ser. No. 174,742
Int. Cl. H04b 1/68; H04h 1/00
U.S. Cl. 325—49 **9 Claims**



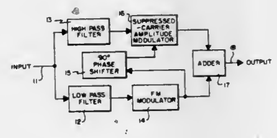
A community antenna television system wherein one or more microwave transmission links are used between the CATV receiving unit and the user's receivers. In accordance with the invention, the undesirable effects caused by slight frequency differences between the directly-transmitted television signals and the relayed television signals are eliminated. This is accomplished by providing at the microwave transmitter a pilot signal having a frequency which is an integral submultiple of the microwave carrier frequency. This pilot signal is transmitted, together with the television broadcast signals over the microwave transmission link or links. At the microwave receiver the pilot signal, together with an integral submultiple of the local oscillator, is utilized in a phase-locked loop to synchronize the local oscillator frequency with the microwave carrier frequency.

3,778,717
SOLID-STATE OSCILLATOR HAVING SUCH A STRUCTURE THAT AN OSCILLATING ELEMENT, A RESONATOR AND A RADIATOR OF ELECTROMAGNETIC WAVES ARE UNIFIED IN ONE BODY
Takanori Okoshi, Tokyo, and Masatoshi Migitaka, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 27, 1972, Ser. No. 248,163
Claims priority, application Japan, Apr. 30, 1971, 46/27975
Int. Cl. H04b 1/04
U.S. Cl. 325—105 **11 Claims**



A solid-state oscillator for radiating electromagnetic waves in the frequency range from microwave to millimeter wave including solid-state oscillating element, a planar resonator, a high frequency choke, a bias terminal and a substrate which are unified in one body, and including a small slit in the planar resonator for radiating electromagnetic waves.

3,778,718
MODULATION SYSTEM
Harland A. Bass, San Jose, and Yves C. Faroudja, Sunnyvale, both of Calif., assignors to Avco Corporation, San Jose, Calif.
Filed Apr. 28, 1972, Ser. No. 248,556
Int. Cl. H03c 5/00
U.S. Cl. 325—139 **25 Claims**



A system for modulating a wideband information signal, in which the information signal is separated into a multiplicity of frequency bands. The several frequency bands are used to modulate a carrier signal in two ways, i.e., frequency modulation and suppressed-carrier amplitude modulation, the modulated signals being added to provide a composite output signal. The composite signal has a maximum number of desirable characteristics and a minimum number of undesirable characteristics, in that the advantages of wide-deviation are partially utilized while the over-all band width is not excessive.

3,778,719

SINGLE BODY PROTECTIVE CASING FOR SOLENOID ASSEMBLY

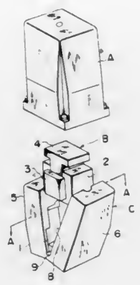
Haruo Kanawa, Fujisawa, Japan, assignor to Yuken Kogyo Company, Kanagawa-ken, Japan

Filed Dec. 21, 1971, Ser. No. 210,395

Claims priority, application Japan, Dec. 28, 1970, 45/132548

Int. Cl. H01f 7/00

U.S. Cl. 335—278 5 Claims



A solenoid assembly of which the electromagentic unit including an electrical coil, a magnetic core, a plunger and so forth are held by a protective casing made from resilient materials and housed in a cover. The protective casing is slit in a desired direction and has an inside space having a corresponding shape to that of the electromagnetic unit.

3,778,720

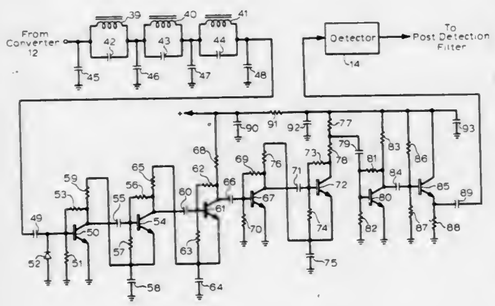
INTERMEDIATE FREQUENCY AMPLIFIER CIRCUIT

Joseph F. Yello, Wood Dale, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Mar. 8, 1972, Ser. No. 232,881

Int. Cl. H04b 1/24

U.S. Cl. 325—318 2 Claims



An intermediate-frequency amplifier circuit for an NBFM paging receiver or the like comprises a multi-section resonant filter section, and a multi-stage non-resonant amplifier section. For maximum interstage coupling efficiency, minimum battery drain and maximum portection against strong-signal overload, the five individual amplifier stages of the non-resonant amplifier section are DC powered in series-connected groups of two and three. A limiter is provided for suppressing undesired AM modulation in the received signal and an emitter follower output stage is provided for interfacing with the receiver detector stage.

3,778,721

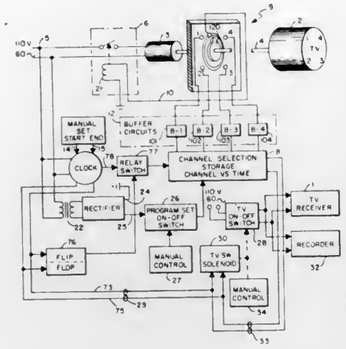
AUTOMATIC TELEVISION PROGRAMMER

Robert L. Moran, 4 Mackintosh St., Franklin, Mass.

Filed Sept. 8, 1972, Ser. No. 287,557

Int. Cl. H04b 1/06

U.S. Cl. 325—396 12 Claims



Television channel selection on a TV set is automatically performed according to a stored schedule by a motor which drives the TV set channel selection mechanism, as dictated by a stored schedule of available TV channels versus time. Sets of binary storage elements, each set corresponding to a time interval and each element in a set corresponding to one of the available TV channels are electrically energized to store the schedule. A timer produces sequential time signals at the initiation of each scheduled TV program. Each time signal initiates an output from one of the elements of the set of elements that corresponds to the time interval, represented by the time signal, and so the output from a particular binary storage element, called a channel selection signal, represents the given TV channel and the time interval that channel is programmed for. A timer steps through the stored program comparing the stored channel selection signal at each step with the position of the TV channel selection mechanism, producing a signal which initiates energization of the motor and so provides control for carrying out the program. The apparatus has use to select television programs for display or for recording over substantial periods when the television receiver is not attended.

3,778,722

RECEIVER FOR DATA SIGNALS, INCLUDING AN AUTOMATIC LINE CORRECTION CIRCUIT

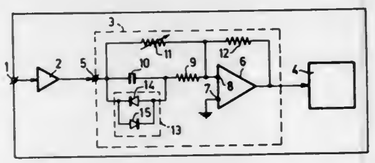
Michel Guy Pierre Stein, Yvelines, France, assignor to Telecommunications Radioelectriques et Telephoniques, Paris, France

Filed May 11, 1972, Ser. No. 252,362

Claims priority, application France, May 24, 1971, 7118643

Int. Cl. H04l 27/08

U.S. Cl. 325—414 4 Claims



A receiver in a system for baseband data transmission includes a correction circuit for correcting the distortions

caused by a transmission line. The correction circuit is provided with a number of correction cells constituted by active highpass filters. An automatic adaptation of the correction circuit to the slope of the line is obtained with the aid of a circuit element having a non-linear current-voltage characteristic without using a separate control circuit.

3,778,723

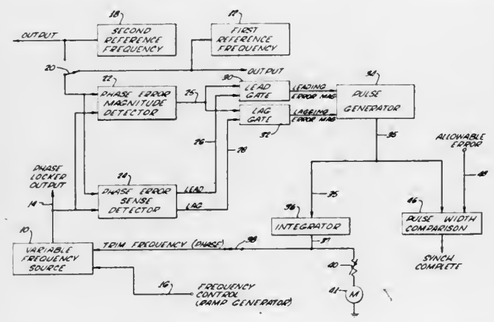
ZERO DEGREE PHASE COMPARATOR

Daniel F. Schaefer, Inglewood, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 28, 1972, Ser. No. 229,867

Int. Cl. H03b 3/04

U.S. Cl. 328—133 21 Claims



A variable frequency three-phase square wave signal is synchronized to a three-phase reference frequency signal at a substantially zero degree phase relation. Synchronization is accomplished in but a few cycles by comparing each component of the two signals to be compared and also comparing both positive and negative going half cycles of each component. Six phase error magnitude pulses are generated for each cycle and identified according to phase error sense to provide an output error signal having a magnitude proportional to the magnitude of the phase error and having a polarity indicating phase error sense. The output signal trims the frequency of one of the signals being compared to cause the phase error to approach zero degrees.

3,778,724

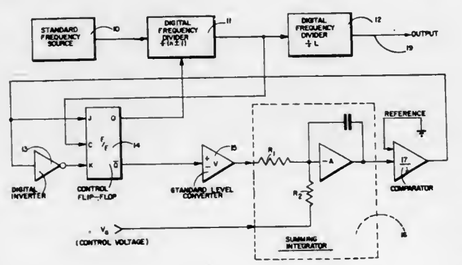
VOLTAGE CONTROLLED DIGITAL PULSE TRAIN GENERATOR

David Perlman, Irvine, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed May 1, 1972, Ser. No. 249,012

Int. Cl. H03k 17/00

U.S. Cl. 328—150 7 Claims



A precision voltage controlled digital pulse train generator wherein a summing integrator is used to keep the average count of a digital divider at a value such that the average frequency deviation from a nominal frequency f_o corresponding to a count of N is proportional to a control voltage input.

3,778,725

NON-DRIFTING HOLD-AMPLIFIER

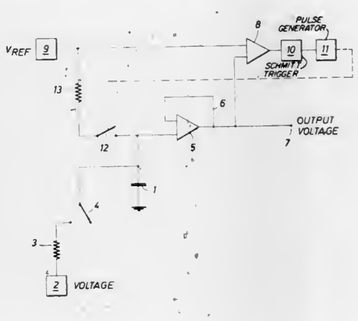
Klaas Spaargaren, and Jan Snoeks, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed July 6, 1972, Ser. No. 269,369

Claims priority, application Netherlands, July 6, 1971, 7109293

Int. Cl. H03b 3/02

U.S. Cl. 328—151 3 Claims



A method and apparatus for controlling a process wherein a hold amplifier is used to maintain the charge on a capacitor, the charge on the capacitor representing the desired position of a control element. The charge on the capacitor is maintained by periodically connecting it to a reference voltage.

3,778,726

METHOD OF AND APPARATUS FOR GENERATING SIGNALS

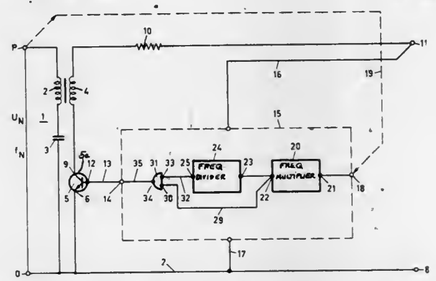
Jaromir Kucera, Hegnau, Switzerland, assignor to Zellweger AG, Uster, Switzerland

Filed June 2, 1972, Ser. No. 259,199

Claims priority, application Switzerland, July 1, 1971, 8913/71

Int. Cl. H03k 3/02

U.S. Cl. 328—223 10 Claims

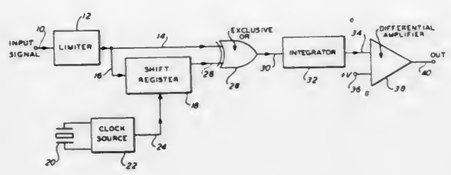


A method of and apparatus for generating in a power supply system a transmission signal with a frequency bearing a fixed relationship to the mains frequency of the power supply system. An impulse sequence whose repetition frequency bears the aforementioned fixed relationship to the mains frequency is formed by frequency multiplication and frequency division. A tank circuit connected to the power supply system and tuned at least approximately to the said repetition frequency is excited by it into oscillation in each cycle of the impulse sequence.

3,778,727
CRYSTAL CONTROLLED FREQUENCY DISCRIMINATOR

Arthur B. Williams, Smithtown, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed May 11, 1972, Ser. No. 252,369
Int. Cl. H04l 27/14
U.S. Cl. 329—104 6 Claims

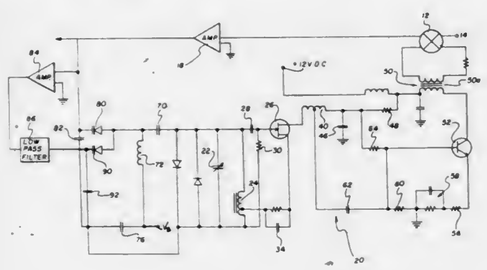


A frequency discriminator has an accurately controlled delay time for delaying a frequency modulated signal for a fixed time interval such that the frequency deviation of the input signal is converted into a related phase deviation. An EXCLUSIVE OR circuit compares the input signal with the delayed input signal to produce an output signal of constant amplitude and duration pulses having a pulse repetition rate double that of the carrier frequency of the input signal. The fixed delay is provided by a multistage shift register that is clocked by a crystal controlled oscillator.

3,778,728
PHASELOCKED-FM DETECTOR APPARATUS

Raymond W. Nupp, Rochester, N.Y., assignor to EDMAC Associates Inc., Rochester, N.Y.

Filed Apr. 11, 1972, Ser. No. 242,940
Int. Cl. H03d 3/24
U.S. Cl. 329—110 2 Claims

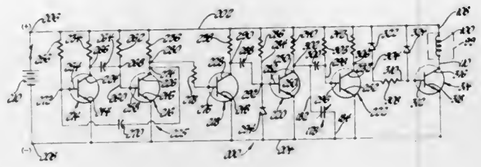


A phaselock loop FM detector for detecting an incoming FM signal includes a voltage controlled oscillator (VCO) which produces an output signal and two control circuits, the first of which includes a varactor and causes the oscillator output signal to be at the center frequency of the incoming signal, and the second control circuit includes a second varactor and causes the oscillator output signal to lock on the modulation of the input signal.

3,778,729
VARIABLE CAPACITANCE CONTROLLED TRANSISTOR MULTIVIBRATOR PULSE GENERATOR FOR ENGINE FUEL METERING SYSTEM

Michael F. Ciemochowski, Warren, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,539
Int. Cl. F02m 51/00; H03b 3/04
U.S. Cl. 331—65 1 Claim

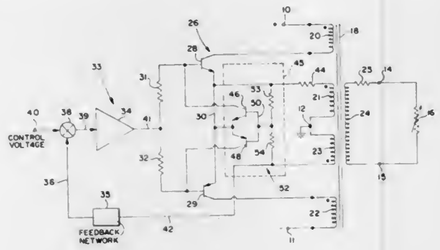


An internal combustion engine having an intake manifold has fuel supplied thereto by a fuel metering system which includes a variably positionable fuel metering valve positioned in accordance with an electrical field generated by a coil energized in accordance with parameters of engine operation; transducer means connected to the engine serves to modify and control the energization of the coil; the transducer means includes electrical circuitry having a pulse generating section, an amplifying section and an output section and further includes a pressure responsive member responsive to the pressure within the intake manifold and effective for varying the value of variable capacitance means which in turn modulates the circuit constants of the electrical circuitry in a way as to cause a corresponding variable output of the output section.

3,778,730
LOW HARMONIC TELEPHONE RINGING GENERATOR

Gordon W. Cromwell, and Walter G. Borland, both of Waterford, Pa., assignors to Elgin Electronics, Inc., Waterford, Pa.

Filed Nov. 18, 1971, Ser. No. 199,885
Int. Cl. H03b 3/02, 5/26
U.S. Cl. 331—109 18 Claims

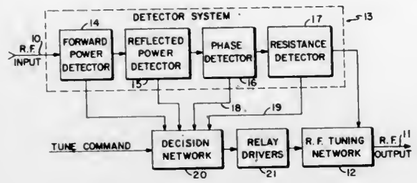


A ringing generator for telephone communication systems having output voltage and frequency regulation. A pair of transistor amplifiers in connection with a plural winding output transformer convert battery voltage to a sinusoidal ringing signal, a feedback signal being derived from a further winding of the output transformer providing output voltage regulation. A further pair of transistors provide variable shunting of the signal applied to the transistor amplifiers for current limiting control.

3,778,731
TUNING METHOD FOR T-NETWORK COUPLERS

Johannes A. F. Oomen, Rotterdam, Netherlands, assignor to Cincinnati Electronics Corporation, Evandale, Ohio

Filed June 5, 1972, Ser. No. 259,427
Int. Cl. H03h 7/40
U.S. Cl. 333—17 7 Claims

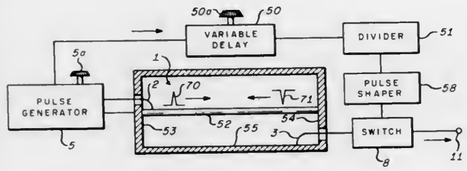


Disclosed herein is a method for tuning a T-network coupler and matching an antenna to a transmitter output. With both input and output inductances of the coupler at values such that the impedance is in a capacitive region of the Smith Chart and within a predetermined resistance circle (say 50 ohms) the value of the output inductance is first increased until said resistance circle is traversed (moving in the direction of less resistance), as sensed by a loading or resistance detector. The input inductance is then increased until the resistance value again traverses said resistance circle, going in the direction of greater resistance. The resistance detector senses this. Then the first and second steps are repeated. The process continues until the phase detector indicates that the phase angle is zero. In any case wherein the impedance is in an inductive region the output inductance is decreased only when the resistance is less than that of the load (50 ohms, for example) and the input inductance is decreased only if the resistance is greater than that of the load.

3,778,732
BASE BAND PULSE ENERGY STORAGE SYSTEM

Chao Chen Wang, West Concord, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 20, 1972, Ser. No. 308,081
Int. Cl. H03k 5/01
U.S. Cl. 333—20 14 Claims



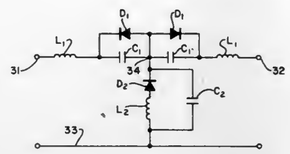
A short duration pulse circulating storage system utilizes a non-dispersive TEM-mode transmission line arrangement for amplifying pulsed electromagnetic fields by synchronous addition of the energy from low-level base band input pulses, producing high-amplitude undistorted base band output pulses.

3,778,733
FILTER-TYPE DIGITAL DIODE PHASE SHIFTER

Peter A. Rizzi, Dedham, Mass., assignor to Alpha Industries, Inc., Woburn, Mass.

Filed May 8, 1972, Ser. No. 251,116
Int. Cl. H01p 1/18
U.S. Cl. 333—31 R 1 Claim

Three PIN diodes form a T junction. When the series diodes are forward biased, the shunt diode is reverse-biased to effectively form a low pass circuit. When the series diodes are reverse-biased, the shunt diodes are forward-biased to form effectively a high pass circuit. The cut off frequency of the low

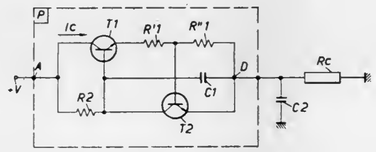


and high pass states are above and below, respectively, the operating band so that each T section selectively introduces a phase delay and advance in the low and high pass states, respectively.

3,778,734
CURRENT-LIMITED GYRATOR

Joel Serge Colardelle, Creteil; Claude Paul Henri Lerouge, Maurepas, and Marc Andre Regbuer, Aulnay-sous-bois, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,429
Int. Cl. H03h 11/00, 7/44
U.S. Cl. 333—80 T 1 Claim



There is described a current-limited gyrator having only two terminals. The gyrator includes a first transistor to supply a load, the base of the first transistor being coupled to its emitter circuit through a capacitor. A second transistor is coupled to the first transistor to limit the current supplied to the load by modifying the bias of the first transistor when the current to the load exceeds a predetermined value.

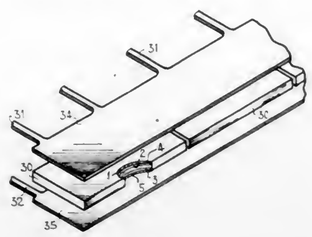
3,778,735
TRANSMISSION LINE OF LOW CHARACTERISTIC IMPEDANCE

Jean Louis Steenmetser, Paris, France, assignor to LCC CICE-Compagnie Europeenne des Composants Electroniques, Paris, France

Filed May 4, 1972, Ser. No. 250,245
Claims priority, application France, May 25, 1971, 7118870
Int. Cl. H01p 3/00, 3/08
U.S. Cl. 333—84 M 8 Claims

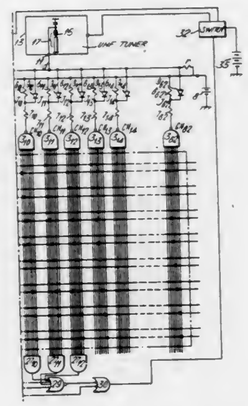
A transmission line for electrical signals of very low characteristic impedance, produced from a strip of chemically

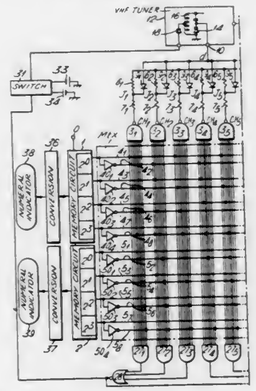
reduced ceramic in order to create a low-resistivity medium, then reaoxidized at the surface in order to produce two films of



high dielectric constant, covered with metallized coatings on the dielectric films, and fitted with distribution connections soldered to these coatings for the signals.

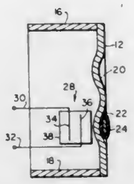
3,778,736
CHANNEL SELECTION SYSTEM
Yoichi Sakamoto, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Sept. 13, 1971, Ser. No. 179,860
Claims priority, application Japan, Sept. 12, 1970, 45/80273; Sept. 12, 1970, 45/80274; Sept. 12, 1970, 45/80275; Sept. 12, 1970, 45/80276
Int. Cl. H03j *5/04*
U.S. Cl. 334—15 **9 Claims**





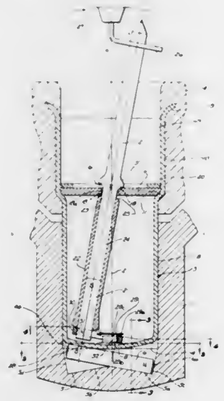
A pair of memory circuits, each comprising four binary memory units, are connected to a matrix network for applying binary coded digital outputs of the memory circuits to a set of logic gates, for instance NAND-gates, which, in response to said output signals of the memory circuits, connect a selected voltage-feeding network to variable-capacitance diodes of selected tuning circuits.

3,778,737
MAGNETIC CHIP SWITCH
William R. Bowerman, 1824 Mississippi St., Lawrence, Kans.
Filed Oct. 24, 1972, Ser. No. 300,124
Int. Cl. H01h *36/00, 15/00*
U.S. Cl. 335—205 **4 Claims**



A switch box is provided with a magnetically attractive face plate formed with two or more spaced indents. Within the box and adjacent only one of the indents is a magnetically responsive switch. A small magnetic button conforming to the shape of the indent is normally stored within the indent away from the switch and is held in place by magnetic attraction. When the switch is to be actuated, the magnetic button is moved from the storage indent to the indent adjacent the switch. This will open or close the switch depending upon its normal state.

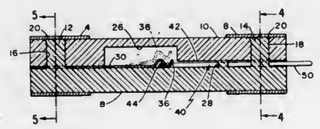
3,778,738
NUTATABLE SHAFT AND A ROTATABLE MEMBER WITH A MAGNETIC COUPLING THEREBETWEEN
William Grant Pontis, 303 Wendy Ln., Waverly, Ohio
Filed Oct. 25, 1972, Ser. No. 300,845
Int. Cl. H01f *7/02*
U.S. Cl. 335—306 **17 Claims**



A shaft mounted for nutation, a rotatable member rotatable about an axis passing through the apex point of nutation of the shaft and a magnetic coupling between the shaft and the rotatable member. A driven magnet is provided in association with the shaft and is capable of nutation therewith. A driving magnet is mounted on a primary rotatable driving member, and is rotatable therewith. Means are provided separating the driven and driving magnets. The driving and driven magnets are so oriented with respect to each other as to form a non-

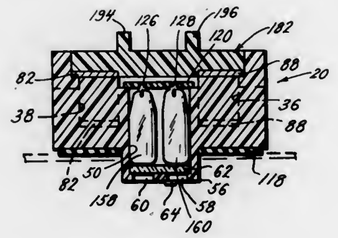
contacting magnetic coupling therebetween whereby rotation of the primary rotatable driving member and the driving magnet mounted thereon will result in nutation of the shaft and the driven magnet in association therewith. The shaft and its associated driven magnet may be located in a different medium or environment from the primary rotatable driving member and its driving magnet. Furthermore, the driving magnet may be protected from the medium or environment surrounding the primary rotatable driving member. Means may also be provided to control the orbit and axial rotation of the nutatable shaft.

3,778,739
CIRCUIT BREAKER
Lyndon W. Burch, Boston, Mass., assignor to B/K Electric Co., Inc., Highland Park, Ill.
Filed Nov. 2, 1972, Ser. No. 303,033
Int. Cl. H01h *71/16, 71/50*
U.S. Cl. 337—72 **15 Claims**



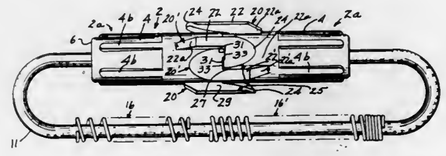
A cartridge-type thermostatically operated, manually resettable circuit breaker having a strip of thermostat metal which flexes when heated by the passage of current therethrough to release a V-shaped spring member having divergent arms. The latter, when engaged by the thermostat member, is held in a position such that the arms are forced toward each other, and when the spring member is released, the resilience of the arms urges the member away from the thermostat member. The circuit connections are made to the thermostat member, and to the spring-shaped member, and separation of the thermostat member and the spring member breaks the circuit, the thermostat member and the spring wire member each constituting the only contacts in the device.

3,778,740
PROTECTORS FOR ELECTRIC CIRCUITS
Aldino J. Gaia, and Angelo Urani, both of St. Louis, Mo., assignors to McGraw-Edison Company, Elgin, Ill.
Division of Ser. No. 116,819, Feb. 19, 1971, Pat. No. 3,739,313. This application Mar. 17, 1972, Ser. No. 235,810
Int. Cl. H01h *85/02*
U.S. Cl. 337—187 **11 Claims**



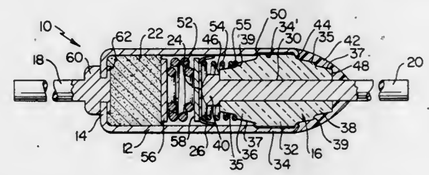
An electric fuse has a cup-like housing that is subdivided into two separate compartments by a partition; and each compartment has a fusible element therein which is embedded within arc-extinguishing material. A portion of the partition projects beyond the cup-like housing to enter a slot in a fuseholder to automatically align the terminals of the electric fuse with the fuse-receiving terminals of the fuseholder. An indicating lamp is connected in parallel with one of the fusible elements, and a second indicating lamp is connected in parallel with the other fusible element; and the conductors which connect those indicating lamps to the load terminals of the fuseholder are spaced far enough apart to prevent "arc over" but are close enough to each other to capacitively couple those lamps together in the event a transitory fault causes both of those fusible elements to blow and both of those lamps to become illuminated.

3,778,741
IN-LINE FUSE HOLDER ASSEMBLY
John Schmidt, Jr., Mount Prospect, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.
Filed Feb. 24, 1972, Ser. No. 228,888
Int. Cl. H01h *85/02*
U.S. Cl. 337—201 **12 Claims**



An in-line fuse holder assembly comprising a pair of hollow fuse holder parts having confronting open ends held in abutment by circumferentially spaced axially extending interlocking fingers at the confronting open ends of the fuse holder parts. The fingers have tapering outer ends so the confronting circumferentially facing edges of adjacent fingers of each fuse holder part define a flaring mouth or entryway for the fingers of the other fuse holder part when the fuse holder parts are separated and positioned so the fingers are out of alignment, to permit the open inner ends of the fuse holder parts readily to be brought into abutting relation prior to the interlocking of the fingers thereof. At least one of the fingers of at least one of the fuse holder parts has a narrow shank portion extending rearwardly beyond the end portions of the fingers of the other part when the fuse holder parts are in assembled relation, to form an anchoring rib insertable into a notch in a circular mounting opening of a panel in which the latter fuse holder part can be mounted.

3,778,742
ELECTRICAL SWITCH CONSTRUCTION AND END PLUG THEREFOR OR THE LIKE
Phillip Edward Merrill, Kettering, Ohio, assignor to Micro Devices Corp., Dayton, Ohio
Filed July 16, 1971, Ser. No. 163,170
Int. Cl. H01h *37/76*
U.S. Cl. 337—407 **12 Claims**



An end plug for a switch construction, the plug having two identical inward and outward extensions extending from a large central portion so as to be usable in a like manner regardless of which extension is the inward or outward thereof in its assembled relation with the switch casing whereby the inward extension is adapted to provide a locating means for a

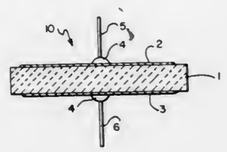
spring inside the switch casing and the outward extension is adapted to provide means for spacing an exposed part of one of the switch conductors from the casing a predetermined distance. Each of the extensions of the plug has an axial length at least substantially the same as the axial length of the central portion thereof. Each of the extensions of the plug of one embodiment has a locating means intermediate its ends whereby the locating means on the inward extension is adapted to provide locating means for positioning one end of the internal spring in the switch casing and the locating means on the outward extension is adapted to provide means for mechanically locking an adhesive thereto that secures the casing to the exposed portion of the conductor whereas in another embodiment each of the extensions of the plug has a smooth frustoconical configuration.

3,778,743

VOLTAGE-NONLINEAR RESISTORS

Michio Matsuoka, Hirakata-shi, Osaka-fu; Yoskikazu Kobayashi; Gen Itakura, Neyagawa-shi, Osaka-fu, and Takeshi Masuyama, Takatsuki-shi, Osaka-fu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 23, 1973, Ser. No. 335,422
Int. Cl. H01c *7/10*
U.S. Cl. 338—20 **6 Claims**



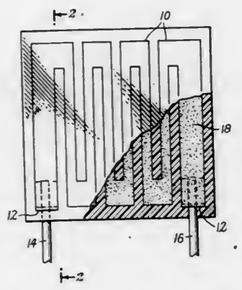
A voltage-nonlinear resistor has a sintered body of a composition comprising as a main constituent, zinc oxide (ZnO) and, as an additive, 0.1 to 3.0 mole percent of bismuth oxide (Bi_2O_3), 0.05 to 3.0 mole percent of antimony oxide (Sb_2O_3) and 0.1 to 3.0 mole percent of chromium fluoride (CrF_3). Electrodes are applied to opposite surfaces of the sintered body.

3,778,744

FILM RESISTORS

Henry W. Brandi, P.O. Box 4 - 2085 R, Morristown, N.J.

Filed Feb. 28, 1973, Ser. No. 336,518
Int. Cl. H01c *1/14*
U.S. Cl. 338—260 **7 Claims**



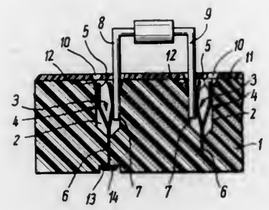
A metal film resistor adapted to be combined with like resistors to form a resistor network. The film is deposited on a dielectric as a nickel-chrome alloy being fused thereto as by means of a glass medium. Leads are connected to the back or front sides of the resistor by means of silverized terminals which are fused to the dielectric on two sides and the intervening edge of its dielectric thereby affording such option and allowing the film to be deposited over the entire surface of its front side when the leads are connected on the back side. The resistance path is formed in the film between slots cut through both the deposited film and the dielectric whereby the resistance of the film may be adjusted extremely accurately to the desired ohmage.

3,778,745

CIRCUIT BOARD AND METHOD OF MAKING THE SAME

Arthur Fischer, Altheimer Strasse 219, D-7241, Tumlingen, Germany

Filed Aug. 18, 1971, Ser. No. 172,725
Claims priority, application Germany, Aug. 27, 1970, P 20 42 423.1
Int. Cl. H01r *11/20, 29/00, 31/08*
U.S. Cl. 339—18 C **9 Claims**



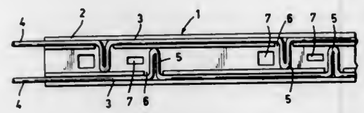
A member of electrically insulating material is provided with a plurality of recesses each of which is bounded by an interior surface. Electrically conductive contact assemblies are anchored in the material of the member and each have several resiliently deflectable clamping portions which bear against or towards the interior surface of one of the recesses, being connected by a base portion both mechanically and electrically with the base portion being embedded in the material of the member.

3,778,746

CONTACT RAIL UNIT

Rainer Ilkka Tapio Valtonen, Soukka, Finland, assignor to Oy Nokia Ab, Helsinki, Finland

Filed Jan. 31, 1972, Ser. No. 221,929
Claims priority, application Finland, Feb. 2, 1971, 281/71
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **12 Claims**



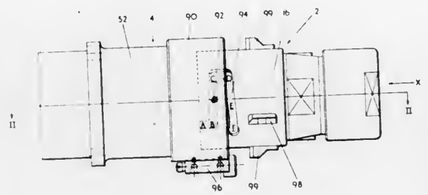
A contact rail unit comprising an elongated body and conductors arranged longitudinally within the body. The conductors are provided with mutually spaced lateral branches and the body is provided with openings for each branch, each opening being displaced in the longitudinal direction of the body with respect to the corresponding branch. The contact fingers of a current collecting devize may be inserted through said openings and brought in contact with said branches by a sliding movement in the longitudinal direction of the body.

3,778,747

ELECTRICAL CONNECTOR

Simo Curcic, Derby, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Apr. 13, 1971, Ser. No. 133,622
Claims priority, application Great Britain, Apr. 28, 1970, 20,283/70
Int. Cl. H01r *13/62*
U.S. Cl. 339—45 M **10 Claims**



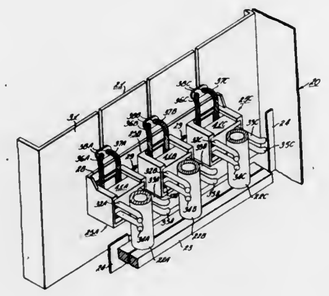
An electrical connector which has mating plug and socket parts which can be joined together by connecting means without causing relative rotation of the parts. Each part comprises main and auxiliary contacts and the connecting means includes a cam profile and cam follower which ensure that the auxiliary contacts of the two parts make after the main contacts make on assembly of the connector and break before the main contacts break on disassembly of the connector.

3,778,748

STAB CONNECTOR

Burdette M. Holman, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 5, 1972, Ser. No. 250,572
Int. Cl. H01r *13/62*
U.S. Cl. 339—64 M **8 Claims**



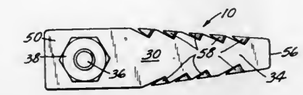
A stab connector comprising an insulated body portion with a convenient quick insert which carries a pair or a double pair of contacts. Biasing means within the insert operate on the contacts to resist forces which tend to move the contacts away from each other and as a result ensures positive electrical engagement of the contacts with the buses.

3,778,749

CONNECTOR

Henry K. Kapell, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 2, 1971, Ser. No. 194,879
Int. Cl. H01r *9/06*; **H02g** *15/08*
U.S. Cl. 339—97 R **4 Claims**



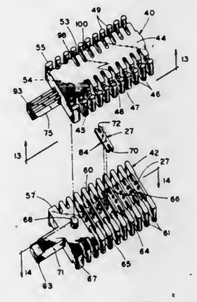
A connector for making electrical connection between an externally jacketed conductive shield on a communication cable and a conductor. The vise-like connector includes a pair of resilient opposed plate-like jaws formed with barbs along tapered projecting portions and adapted to be clamped in engagement with an end of the externally jacketed shield.

3,778,750

WIRE TERMINATION AND SPLICING SYSTEM

Jack Edward Caveney, Chicago; Roy Alleyne Moody, Flossmoor, and John Jean Bulanda, New Lenox, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Feb. 10, 1972, Ser. No. 225,089
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 R **9 Claims**

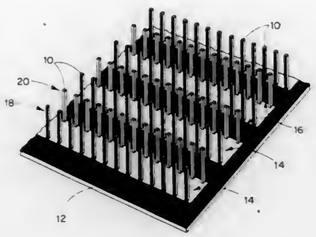


A wire termination and splicing system including a frame having a pair of upstanding frame members upon which two series of elongated, two-sided, multi-contact, connectors are mounted for rotation between pairs of rotational mounts having detent action for successively positioning the sides of the connectors in convenient wire installation orientation; each connector including an insulative connector block having a plurality of wire-receiving slots therein and carrying a plurality of recessed insulation-stripping contacts in the slots, each slot having a wire restraining structure for temporarily holdihg a wire to be forced onto the associated contact and retaining structure for holding a wire on the associated contact; the connector block being provided with a color coding adjacent to the slots, reaction surfaces for cooperating with a wire installation tool, and a cap for assisting in holding installed wires therein; wire guiding channels are provided, associated with the frame for bringing wires from cables to the connectors and for guiding cross-connect wires between the two series of connectors.

3,778,751
APPARATUS FOR PROVIDING IMPROVED IDENTIFICATION OF ELECTRICAL TERMINALS

John A. Walsh, Acton, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 23, 1971, Ser. No. 211,521
Int. Cl. H01r 3/00
U.S. Cl. 339—113 B 13 Claims

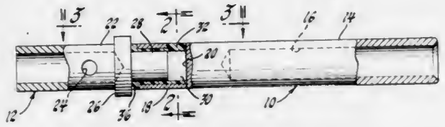


An electrical terminal field overlay having alternate light and dark background areas to alternately reflect light from and to silhouette the terminals to make them more distinguishable.

3,778,752
CONNECTOR CONTACT INCLUDING AN ISOLATION RESISTOR

LeRoy W. Noyes, Milwaukee, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1971, Ser. No. 202,320
Int. Cl. H01r 11/08
U.S. Cl. 339—147 R 1 Claim



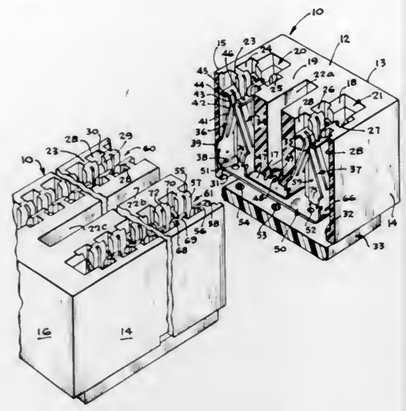
A connector contact having two portions which are mechanically connected and electrically isolated one from the other except for an electrical path provided through a resistor which acts as a buffer between an active circuit connected to one portion and a testing device connected to the other portion.

3,778,753
ELECTRICAL CONNECTOR

Carl Occhipinti, Melrose Park, and Irvin Richard Triner, Stickney, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 5, 1972, Ser. No. 250,547
Int. Cl. H05k 1/07
U.S. Cl. 339—156 R 9 Claims

An electrical connector for flat circuit bearing elements such as printed circuit boards as provided and includes an insulating housing with exterior surfaces including front and rear faces and a pair of elongated channels extending from the front face rearwardly into the housing for receiving the printed circuit boards, the rear face of the housing including a plurality of apertures extending into the housing for electrical access to the interior of the housing, and a plurality of metallic contacts including active portions spaced along and extending into the channels for engagement with conductive elements on the printed circuit boards and bridging portions interconnecting pairs of active portions in the housing, with at least one

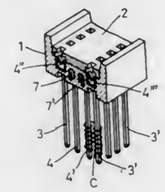


bridging portion overlying a second bridging portion with respect to the rear face and including an aperture aligned with one of the apertures from the rear face to provide electrical access to the underlying bridging portion.

3,778,754
SOCKET FOR INTEGRATED CIRCUIT

Toru Takahashi, and Kohei Kaneko, both of Yokohama, Japan, assignors to Yamaichi Denki Kogyo, K. K. (Yamaichi Electric Mfg. Co. Ltd.), Tokyo, Japan

Filed Dec. 8, 1971, Ser. No. 205,867
Claims priority, application Japan, June 26, 1971, 46/55455
Int. Cl. H01r 13/50
U.S. Cl. 339—176 M 5 Claims



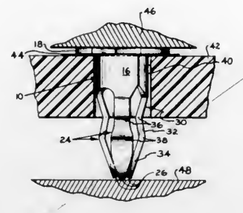
An insulated baseboard has a power bus line and a ground bus line molded therein. Extending downwardly through the baseboard from the bus lines are wiring terminals. A plurality of openings are molded into the baseboard. Fitted into the openings are a plurality of contactors, the top ends of which have means to engage terminals of the integrated circuits, and the lower ends of which extend downwardly through the baseboards. On opposite ends of the bus lines are formed terminals for attachment to power supply and ground conductors.

3,778,755
SELF-STAKING WIRE GRIP TERMINAL

Richard L. Marks, Mechanicsburg, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed Nov. 6, 1972, Ser. No. 304,090
Int. Cl. H01r 9/08
U.S. Cl. 339—220 R 6 Claims

A wire grip circuit board terminal having a cylindrical body, a circumferential flange on one end and collapsable fingers on the other end. The collapsable fingers permit staking of the terminals to circuit boards of different thicknesses. The ter-

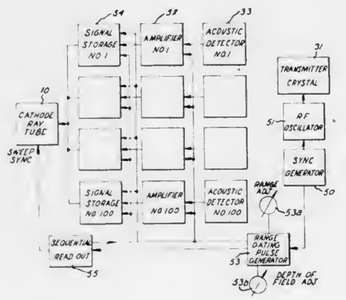


minals are staked to circuit boards without the necessity of special staking tooling for collapsing the fingers. The ends of the fingers grip wires inserted into the terminals.

3,778,756
METHOD AND APPARATUS FOR VISUAL IMAGING OF ULTRASONIC ECHO SIGNALS UTILIZING A SINGLE TRANSMITTER

John M. Houston, and Jack D. Kingsley, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,910
Int. Cl. G01s 9/66
U.S. Cl. 340—5 MP 28 Claims

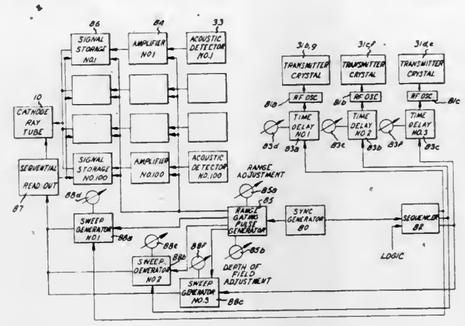


Visual image conversion of ultrasonic echo signals utilizes a single acoustic transmitter for generating pulsed ultrasonic signals directed at an object being examined. An acoustic lens or reflector images object-reflected ultrasonic signals (echoes) onto a single row of acoustic detectors and such echo signals resulting from each incident ultrasonic signal are stored in a memory component associated with the detectors. The memory is subsequently read out sequentially for visually displaying the ultrasonic echo signals stored in the memory component on a line-by-line basis on a conventional cathode ray tube or other serial input visual display device. Alternatively, no memory is required and the echo signals are displayed more rapidly on a multi-beam cathode ray tube or other parallel input visual display device. The sequence can be repeated many times a second permitting display of motion of the object.

3,778,757
METHOD AND APPARATUS FOR VISUAL IMAGING ULTRASONIC ECHO SIGNALS UTILIZING MULTIPLE TRANSMITTERS FOR REDUCED SPECULAR REFLECTION EFFECTS

John M. Houston, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,913
Int. Cl. G01s 9/66
U.S. Cl. 340—5 MP 39 Claims

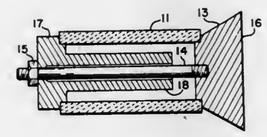


Visual image conversion of ultrasonic echo signals utilizes a plurality of acoustic transmitters oriented at different angles about an object being examined for reducing the effects of specular reflection. The transmitters are separately pulsed for sequentially generating ultrasonic signals directed at the object. An acoustic lens or reflector images object-reflected ultrasonic signals (echoes) onto a single row of acoustic detectors associated with the centrally-most oriented transmitter and such echo signals resulting from each sequentially incident ultrasonic signal are stored in a memory component associated with the detectors. Controls are provided for echo timing compensation due to unequal distances between the transmitters and center of the object, and also due to the particular angles of each off-axis transmitter from the centerline axis of the apparatus. The memory is subsequently read out sequentially for visually displaying the stored ultrasonic echo signals on a line-by-line basis on a conventional cathode ray tube or other serial input visual display device. Alternatively, no memory is required and the echo signals are displayed more rapidly on a multi-beam cathode ray tube or other parallel input visual display device. The sequence can be repeated many times a second permitting display of motion of the object.

3,778,758
TRANSDUCER

David L. Carson, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 25, 1972, Ser. No. 292,045
Int. Cl. H04b 13/00
U.S. Cl. 340—10 12 Claims

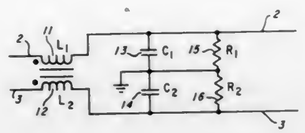


A high energy level acoustic transducer employs a reentrant tail mass structure. Dimensions and placement of the reentrant portion of the tail piece eliminate lateral or rocking vibration modes of the transducer in the operative bandpass.

3,778,759
STATIC FILTER FOR LONG LINE DATA SYSTEMS

Paul E. Carroll, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 27, 1971, Ser. No. 212,606
Int. Cl. H04b 3/28; G01v 1/22
U.S. Cl. 340—15.5 F 9 Claims

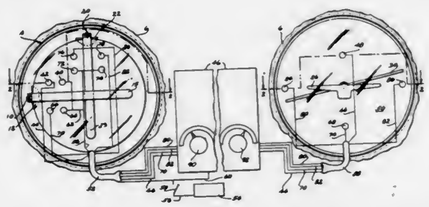


A data system having data communication over a pair of electrical conductors includes a filter for eliminating static noise of atmospheric origin. In a specific embodiment, a system for acquiring seismic data includes a static filter for attenuating a common mode signal and atmospheric noise while preserving desired difference mode data. A specific embodiment of the filter includes a pair of input inductors having a piar of series connected capacitors and a pair of series connected resistors in parallel and connected across the conductors, with the nodes between the two capacitors and two resistors being connected to a common reference potential. The inductors are wound on the same core to effectively cancel the inductance presented to the difference mode signal.

3,778,760
INTEGRATED FLIGHT INDICATORS

Murray L. Jayne, 8609 Lakeshore Dr., Kenosha, Wis.

Filed June 17, 1971, Ser. No. 154,120
Int. Cl. B64d 43/00
U.S. Cl. 340—27 NA 8 Claims



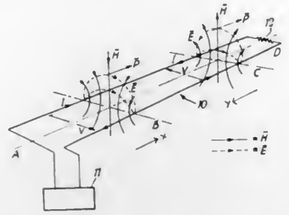
This disclosure relates to an arrangement to be used in conjunction with spaced instruments whereby the indications of one of the instruments may be in effect superposed on another instrument while all of the instruments remain unimpaired and entirely readable and usable at all times in their intended manner.

3,778,761
VEHICLE ORIENTATION DETERMINATION

Alan H. Cribbins, Derby, England, assignor to British Railways Board, London, England

Filed Feb. 10, 1972, Ser. No. 225,046
Claims priority, application Great Britain, Feb. 25, 1971, 5442/71
Int. Cl. G08g 1/01
U.S. Cl. 340—39 3 Claims

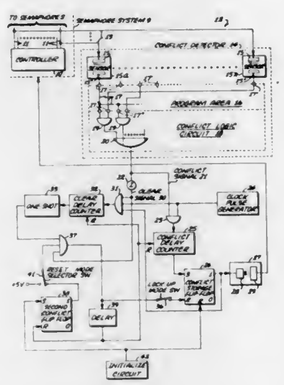
This invention relates to a device for determining the orientation of a vehicle so that this information can be used to correlate automatic vehicle control equipment to signalling information being received by the vehicle. The device operates by determining the direction of power flow in a terminated conductor loop laid in the path of the vehicle by effectively obtaining the vector product of the magnetic and electric fields associated with the power flow.



3,778,762
MONITOR FOR DETECTING CONFLICTING TRAFFIC CONTROL SIGNALS

Michael F. Jarko; Avery W. Powers, both of Scotsdale, and Reed A. Newmeyer, Glendale, all of Ariz., assignors to Solid State Devices, Inc., Tempe, Ariz.

Filed July 23, 1971, Ser. No. 165,528
Int. Cl. G08g 1/97
U.S. Cl. 340—46 10 Claims



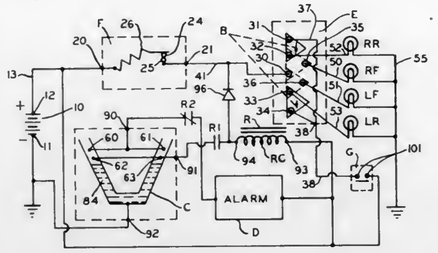
A monitoring device for use with a traffic control signal system in which the monitor is adapted to detect when a conflict of vehicle or pedestrian proceed signals occurs and switch the system to emergency operation. The monitor may also be employed to detect if the conflict clears and restore the system to normal operation.

3,778,763
TURN ACTUATED ALARM SYSTEM FOR AUTOMOTIVE VEHICLES

Raymond Johns, and David C. Kuhns, both of Canton, Ohio, assignors to Safety Research and Development Inc., Canton, Ohio

Filed May 18, 1971, Ser. No. 144,482
Int. Cl. B60q 5/00, 1/38
U.S. Cl. 340—55 2 Claims

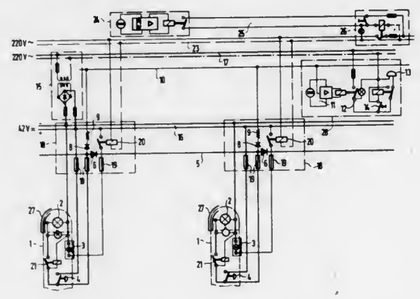
A centrifugally and/or tilt-actuated switch is provided on an automobile which is actuated when a vehicle travels around a curve at a speed in excess of the safe speed on the curve to operate an alarm and alert the driver that he is moving at an excessive rate of speed for that curve. The conventional turn signal mechanism on the automobile when actuated deactivates the alarm so that the alarm will not operate when the automobile is going around a sharp corner in a city and will remain deactivated until the car has returned to normal operation. If the turn indicator is not actuated prior to turning a corner, the alarm will sound to advise the driver that he has not properly actuated the turn signals.



3,778,764
ACCIDENT WARNING AND TRAFFIC GUIDE SYSTEM

Ludwig Kamb, 27-31 Altriper Strasse, Ludwigshafen (Rhine), Germany

Filed Nov. 24, 1971, Ser. No. 201,857
Claims priority, application Germany, Dec. 4, 1970, P 20 59 804.3
Int. Cl. G08g 1/100
U.S. Cl. 340—81 R 12 Claims



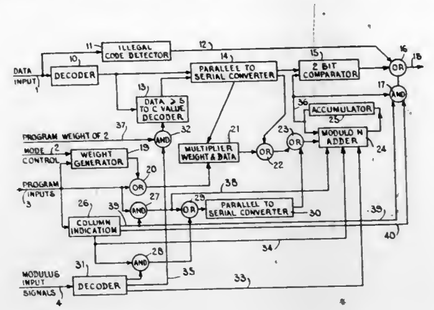
An accident warning and traffic guide system particularly useful during fog is installed along an edge of the road. It comprises guide posts spaced along the road edge and carrying a blinking warning light and a warning switch. A safety or cutout fuse is connected in the current supply circuit for each warning light, and the fuses are mechanically protected.

3,778,765
UNIVERSAL CHECK DIGIT VERIFIER/GENERATOR SYSTEMS

Michael Edward Kanter, Hitchin, England, assignor to International Computers Limited, London, England

Filed Feb. 14, 1972, Ser. No. 226,110
Claims priority, application Great Britain, Feb. 17, 1971, 4,803/71
Int. Cl. H03k 13/32; H04l 1/10
U.S. Cl. 340—146.1 AJ 5 Claims

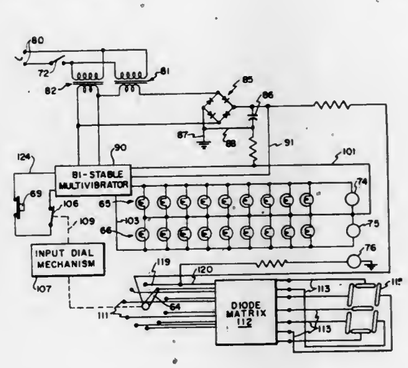
A check digit verifying/generating system is capable of operation in a simple verifying mode using a set of predetermined weighted values and modulus. An element of universal application is afforded by an extended mode of operation in which a selected one of a number of sets of weighting values and a selected modulus is provided for dealing with input signals.



3,778,766
CHECK DIGIT CALCULATOR

Lawrence F. Rapp, c/o Texaco Inc., 135 L. 42nd St., New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,461
Int. Cl. G06f 11/10
U.S. Cl. 340—146.1 AJ 9 Claims



A modulo ten type check digit calculator. It stores the 10 numerals zero through nine and displays only one of them at a time. After manipulation according to the modulo 10 formula with respect to a given number, the numeral displayed represents the check digit for that given number.

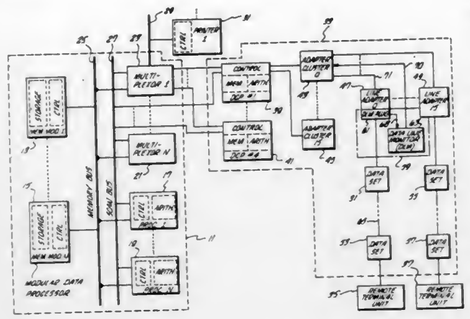
3,778,767
DYNAMIC DEBUG AID FOR COMPUTER DATA COMMUNICATION NETWORKS

Bert Edward Carlyle; Robert Louis Rawlings, both of South Pasadena, and Karl Erich Volk, Sierra Madre, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 30, 1972, Ser. No. 257,578
Int. Cl. G08c 25/00
U.S. Cl. 340—146.1 R 21 Claims

For trouble-shooting problems in synchronous, asynchronous, two-wire voltage, or two-wire current communication links between a terminal and a data processor, a line monitor observes the signals going to or coming from a terminal unit and sends them to the processor. The processor

translates them into hexadecimal and mnemonic code messages, and causes their print-out, completely or selective-



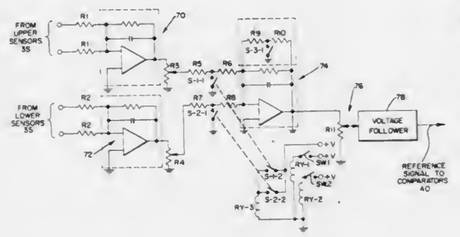
ly, along with an indication of the time of day the printed messages were received and the monitoring station (line monitor) they were received from.

3,778,768

CHARACTER DETECTION SYSTEM

Richard A. Brisk, Somerville; Guy L. Fougere, Lincoln; Lawrence D. Lorah, Concord, and Harvey L. Pastan, Chestnut Hill, all of Mass., assignors to Arthur D. Little Inc., Cambridge, Mass.

Filed Aug. 27, 1971, Ser. No. 175,656
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 AG **6 Claims**



An optical character detection system in which a plurality of digital signals are adaptively produced based upon actual characteristics of a character and its background being viewed and reliably representing the presence or absence of a scanned character. An elongated array of photosensors is disposed along a linear axis orthogonal to the path of character travel and arranged for relative motion with characters to be read. The array includes sensors which view the document background above and below the character field to provide a reference signal for comparison with the signals of the character sensors to produce the digital signals representing a character.

3,778,769

SOLID STATE TOUCH CONTROL HAND SET CIRCUIT

Jose Cheng Tsuen Hong, and Everett Wendell Werts, both of Normal, Ill., assignors to General Electric Company, New York, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,648
Int. Cl. H04q *3/00*; **G08c** *1/00*
U.S. Cl. 340—147 LP **8 Claims**

A solid state touch sensitive control circuit, adapted for embodiment in accordance with one form thereof in a control unit to selectively provide an output to a desired one of a plurality of loads, including oscillator means connectable to a direct current power supply for generating a continuous high frequency signal for transmission to each of a plurality of control channels, the number of control channels corresponding to at least the number of loads to be controlled, and each of the plurality of control channels including a first and a second transistor with the emitters of the first and second transistors being coupled together, the collector of the first transistor being connected through a diode to the base of the second



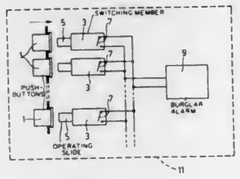
transistor, the high frequency signal from the oscillator means being applied to the base of the first transistor, a touch sensitive switch means also being connected to the base of the first transistor such that the second transistor which is normally non-conducting is caused to conduct when the touch sensitive switch means is operated thereby providing a power output only to the load associated therewith, and a set of diodes being connected to the collector of the first transistor whereby any channel being operated is detected thereby, preventing other channels from operating at the same time.

3,778,770

SWITCHING SYSTEM HAVING CODED PUSH-BUTTONS

Johan Gerard Hagendoorn, and Dick Schieving, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1971, Ser. No. 193,945
Claims priority, application Netherlands, Nov. 17, 1970, 7016330
Int. Cl. H04q *5/00*
U.S. Cl. 340—149 R **3 Claims**



An elective lock in the form of a set of pushbuttons which each have an alternately closing and opening contact. The contacts are connected in parallel with one another, so that switching off the lock is possible only by pushing solely the same buttons as are pushed in locking the device.

3,778,771

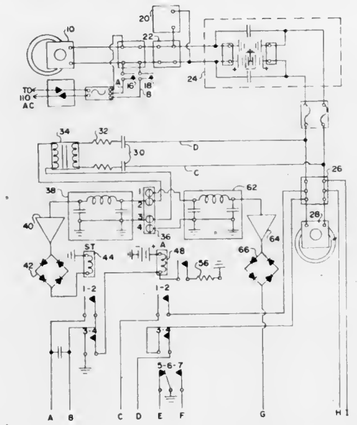
REMOTE METER READING APPARATUS

William T. Whitaker, 2115 Chestnut St., Wilmington, N.C.

Filed Nov. 22, 1971, Ser. No. 200,792
Int. Cl. H04q *9/00*
U.S. Cl. 340—150 **4 Claims**

At a central utility company station, a customer's telephone number is dialed either manually or automatically, whereupon a first or starting audio frequency tone is impressed upon the telephone trunk line which activates the meter reading ap-

paratus at the subscriber's end. Upon receipt of the starting tone frequency, a starting circuit activates a plurality of fixed frequency oscillators, which in turn are connected to a specially adapted dial face of the utility meter to electrically impart a distinctive frequency tone to each number position. The circuit is completed by means of a tone pickup arm attached each dial which transmits the frequency to the corresponding contact of a stepping switch. A second pulsing circuit receive a second or pulsing tone of differing frequency from the central station to sequentially connect the wiper of the stepping



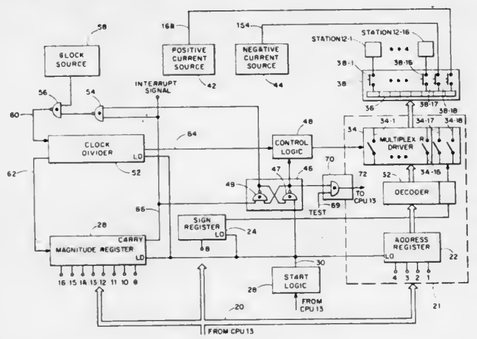
switch with the electrical path from each of the meter dials, so that each dial may be read. The tone frequency corresponding to the number position of each meter dial is transmitted back to a tone converter at the central station, which converts the frequencies into electrical information which is intelligible to a billing and information storing computer. The system may be adapted to operate several types of meters at a customer location, or by using certain commercially available stepping switches to read many meters of a certain type at such locations as apartments and office buildings.

3,778,772

STATION INTERFACE UNIT FOR PROCESS CONTROL OF A DIRECT DIGITAL CONTROL AND/OR SUPERVISORY CONTROL SYSTEM

Russell R. Rhodes, Marlboro, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 31, 1972, Ser. No. 258,304
Int. Cl. H04q *9/00*
U.S. Cl. 340—163 **13 Claims**



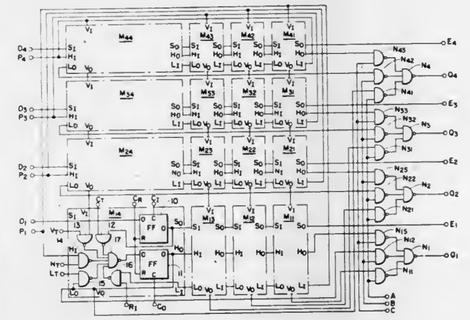
A station interface unit provides to any one of a plurality of remote stations a control signal for effectuating a change in that station's total charge. With a different charge the selected station's operation is altered. The control signal is a current having a fixed amplitude and a variable duration time period. A two polarity current source provides for either a positive or negative control signal. Upon completion of the control signal's variable duration time period, an interrupt signal is generated which indicates that another control signal may be provided to any one of the plurality of remote stations.

3,778,773

MATRIX OF SHIFT REGISTERS FOR MANIPULATING DATA

David Frederick Hood, Kanata, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Ltd., Ottawa, Ontario, Canada

Filed Oct. 20, 1972, Ser. No. 299,245
Int. Cl. H04g *3/00*
U.S. Cl. 340—166 R **6 Claims**



A matrix of shift registers under the control of a plurality of gates for manipulating data information. The various functions which may be performed by the manipulator include serial-to-parallel and parallel-to-serial conversion, serial-to-serial buffering and interleaving or separating streams of data information.

3,778,774

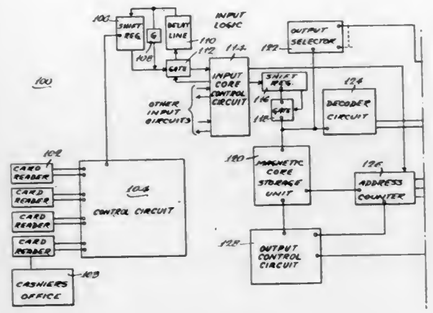
RECORDER CONTROL SYSTEM

Louis E. Philipps, Addison, and Eugene A. Stanis, Wheeling, both of Ill., assignors to Medelco, Incorporated, Wood Dale, Ill.

Division of Ser. No. 761,043, Sept. 20, 1968, Pat. No. 3,597,742. This application Mar. 8, 1971, Ser. No. 121,919
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **11 Claims**

A hospital data handling system transmits and receives the message information normally required in hospital operations and automatically withdraws from the transmitted messages all data necessary for establishing such items as bed status data, inventory records, patient charges, etc. The system input is derived from permanent punch cards containing message and control information and disposable punch cards containing variable data, such as patient identifying cards made, for instance, when a patient is admitted. A printer and a card reader are located at each message originating location or station in the hospital to provide messages which are placed in a delay line input storage shared by a group of card readers. As the delay line data is transferred to a core storage unit shared by all the readers, a printer selector checks each message for printer addresses, and a control decoder checks for the type of operation to be performed on the message. If only output recording is required and if all addressed printers are available, the message is cleared from the delay line storage and

read out from the core storage unit to the printers through buffer track message blocks on a drum in a central processor. A printer control automatically moves from block to block as

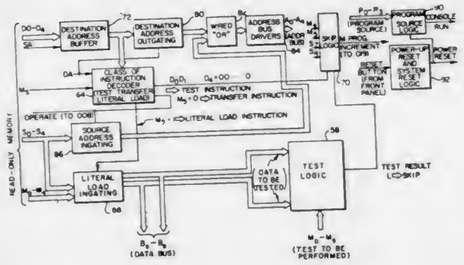


each message is printed and automatically adds a printer start and a printer stop to the beginning and end, respectively, of the transmitted data.

3,778,775
MICROPROGRAMMED TERMINAL

Donald R. Haring, Concord, and Paul A. King, Cambridge, both of Mass., assignors to Computek, Inc., Cambridge, Mass.

Filed May 10, 1971, Ser. No. 141,767
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **22 Claims**

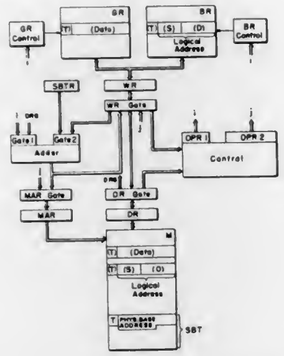


A microprogrammed alphanumeric, computer display terminal comprises a keyboard control, a display oriented single-bus computer, and a display. The single-bus computer includes a processor bus operator, a micro-instruction decoder, and a microprogrammed read-only-memory. Instruction code signals from the keyboard control or from peripheral equipment are applied to a source bus. The processor bus operator accepts data from the source bus and an auxiliary operator register; modified that data in accordance with a computationally complete instruction set; and returns the process data to a destination bus. The micro-instruction decoder includes logic cirucits to convert and decode the data stored in read-only memory into signals required by the bus operator in order to enable the processor to execute the selected instruction. The product of the executed instruction is presented on the display.

3,778,776
ELECTRONIC COMPUTER COMPRISING A PLURALITY OF GENERAL PURPOSE REGISTERS AND HAVING A DYNAMIC RELOCATION CAPABILITY

Katsuya Hakozaki, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Minato-ku, Tokyo, Japan

Filed June 10, 1971, Ser. No. 151,746
Claims priority, application Japan, June 11, 1970, 45/50879
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **2 Claims**

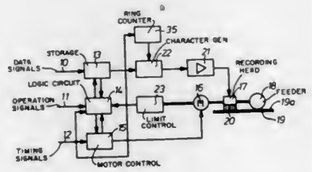


A computer memory is divided into segments with reference to the programs being executed. Each pointer to a physical storage address consists of a segment number and a displacement. A program segment base table is provided in the memory for giving the physical base address for each segment. A tag field of at least one bit is provided in each of the general purpose registers and the addresses in the memory, which carries a tag for indicating whether the data word contains address data or the other data. Back-up registers are provided in one-to-one correspondence to the general purpose registers capable of being loaded with the data words containing the physical addresses. On loading a general purpose register with a data word comprising an address as signalled by the tag, reference is had to the segment base table to load the corresponding back-up register with the pointer. On storing in a segment a data word comprising an address as similarly determined, reference is had to the segment base table to store the data word containing the pointer.

3,778,777
HIGH-SPEED PRINT-OUT ARRANGEMENT USING CONTINUOUSLY ROTATING STEP MOTOR

Peter Liermann, Moglingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 7, 1972, Ser. No. 216,133
Claims priority, application Germany, Jan. 12, 1971, P 21 01 212.4
Int. Cl. G06k *15/10*
U.S. Cl. 340—172.5 **23 Claims**

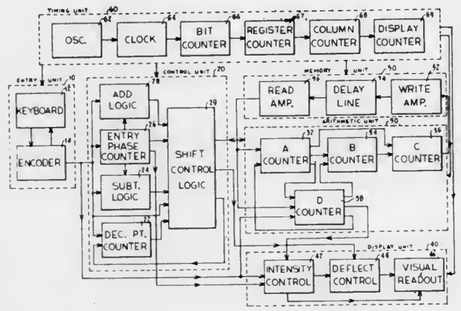


Step motor moves pring-out means across the print-out receiving surface. Motor is started at least one step before beginning of print-out. Timing for step motor and print-out control derives from a desk calculator whose input numbers, computed totals, etc., are to be printed out.

3,778,778
CALCULATOR WITH SELF-SYNCHRONOUS RECIRCULATING MEMORY

Robert A. Ragen, Hayward, Calif., assignor to The Singer Company, New York, N.Y.

Division of Ser. No. 779,666, Nov. 29, 1968, which is a division of Ser. No. 319,704, Oct. 29, 1963, Pat. No. 3,546,676. This application Dec. 22, 1970, Ser. No. 100,761
Int. Cl. G06f *13/02*
U.S. Cl. 340—172.5 **7 Claims**

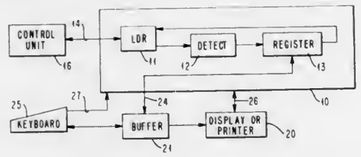


A self-synchronous recirculating memory for use in an electronic calculator. A serial data train having a special synchronizing pulse at the leading end is continuously recirculated through a recirculating memory comprising a dynamic storage device and portions of the calculator arithmetic unit. Each reappearance of the leading sync pulse at the output of the storage device starts the operation of the calculator timing unit. The timing unit is provided with circuitry for automatically stopping the timing unit once a predetermined count is reached. Special circuitry places a sync pulse in the recirculating memory when no data is present therein.

3,778,779
LOGIC AND STORAGE CIRCUIT FOR TERMINAL DEVICE

Victor E. Hake, Lake Katrine; Allen W. McDowell; Daniel R. Mersel, both of Kingston; Lawrence G. Mosher, Rhinebeck, and Stanley O. Stilwell, Staatsburg, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,686
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **9 Claims**

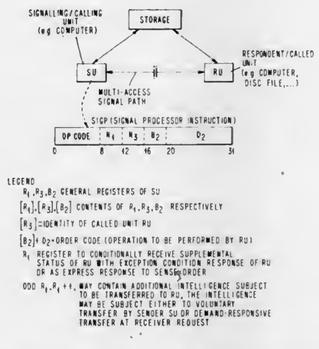


A new logic and storage circuit is provided for a terminal device such as a display or printer used in a data processing system. The circuit includes a shift register that is interconnected with a control unit by a coaxial cable or other two conductor system for transferring serial messages to the control unit and for receiving serial messages from the control unit. The register is connected in parallel with other components of the terminal device. The logic and storage circuit is provided with means for detecting data bits on the two conductor message line and for forming data bits on the line in response to the contents of the register. Means is also provided for decoding control word messages from the control unit and for receiving data messages or transmitting data or status word messages from the terminal device to the control unit.

3,778,780
OPERATION REQUEST BLOCK USAGE

Brian B. Moore, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 5, 1972, Ser. No. 268,959
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **11 Claims**



Instruction SIGNAL PROCESSOR, devoted to initiation of input/output control between an initiating data processor unit and a respondent unit, is used to implement dispatching operations by transferral of Operation Request Block (ORB) storage space addressing intelligence and interruption priority level intelligence from the initiating unit to the respondent unit. The priority level intelligence is prepared by the initiating unit in said space and thereby implicitly conveyed with the addressing intelligence. The ORB space is accessible to both units. After execution of the instruction the units disconnect and the respondent unit, when in suitable enabled status, independently performs the dispatched operation generally designated by order code intelligence transferred to it during the instruction execution sequence. Upon completing such operation the respondent unit signals request for priority interruption of the initiating unit at said priority level. When this request is accepted the units re-connect and the respondent unit revertively transfers the ORB space addressing intelligence to the initiating unit enabling the latter to examine messages placed in the ORB space by either unit (e.g. final status of respondent unit, storage address of I/O information transfer, address of program whose execution is contingent upon completion of the dispatched operation, etc.)

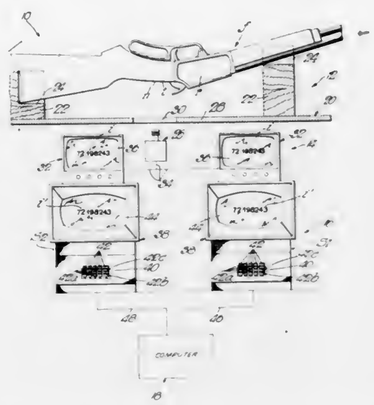
3,778,781
APPARATUS FOR AND METHOD OF REGISTERING FIREARM SERIAL NUMBERS

Miles I. Roth, Orange, Conn., assignor to The Marlin Firearms Co., North Haven, Conn.

Filed Aug. 10, 1972, Ser. No. 279,475
Int. Cl. G06f *3/00*; **H04n** *1/00*
U.S. Cl. 340—172.5 **3 Claims**

In an installation for registering the serial numbers of firearms in a computer, a plurality of stations, each having a television receiver displaying the image of the serial number of a firearm being registered, and a unit operatively associated with the computer and providing a keyboard and a display screen next to the television receiver, with an operator as-

signed to each station, and each operator instructed first to produce, by selective manipulation of keys of the keyboard, a duplicate of the televised serial number for appearance of an image of the operator-produced number on the display screen, then visually to compare the number images for their identity or non-identity, and finally to cause entry in the computer of the operator-produced serial number if found by the operator to be identical with the televised serial number. The computer is programmed for various processing of the entered serial numbers, including a test of the latter for their identity or non-



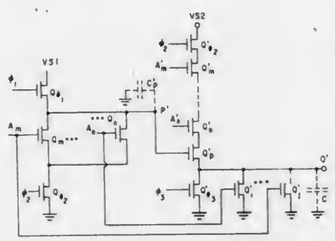
identity, and their clearance for further processing toward registration and storage if found identical, but cancellation of the entered serial numbers if found non-identical and signalling of the non-identity of the entered serial numbers to the operators. Further processing of a cleared serial number includes a test of the same for possible duplicity with a previously registered and stored serial number, and registration and storage of the cleared serial number if not a duplicate, but cancelation of the cleared serial number if a duplicate, and signalling the duplicity of the serial number to the operators.

3,778,782

IGFET DYNAMIC ADDRESS DECODE CIRCUIT

Norihisa Kitagawa, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 12, 1971, Ser. No. 161,816
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R **14 Claims**



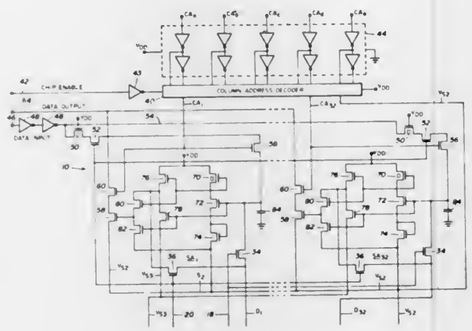
Disclosed is a high speed low power dynamic address decode circuit integrated on a monolithic chip. The circuit requires only two clocks for operation and utilizes only true data inputs, thereby eliminating the need for data complement input lines. The circuit exhibits zero static power loss and increased packing density as compared to conventional decode circuits requiring both true and complementary input signals. To provide generally faster dynamic operation, the circuit precharges line and inherent capacitance prior to application of the data pulses.

3,778,783

DYNAMIC RANDOM ACCESS MEMORY

Robert J. Proebsting, Richardson, and Vernon George McKenny, Garland, both of Tex., assignors to Mostek Company, Carrollton, Tex.

Filed Nov. 29, 1971, Ser. No. 202,987
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **26 Claims**



A dynamic random access memory utilitizing MOSFET transistors formed on a single semi-conductor chip is described. The random access memory utilizes 1024 binary storage cells arrayed in rows and columns. Each row of cells has a read line and a write line. Each column of cells has one data line used for both read and write functions. Each cell is comprised of a write transistor and a pair of read transistors. The write transistor couples a capacitive storage node to the data line and is controlled by the write line.

The read transistors are connected in series between the data line and V_{SS}, and one is controlled by the read line and the other is controlled by the voltage on the storage node. A sense amplifier is provided for each data line and is used to apply data through the write transistor to the storage node, and to sense the state of the second read transistor controlled by the data stored on the storage node. The chip includes row and column address means for selecting a particular cell for either read or write mode.

The chip also includes a number of features to prevent bipolar injection caused by forward biasing a PN junction as a result of capacitive coupling between various nodes in the circuit, and other features which prevent the loss of data from the storage node.

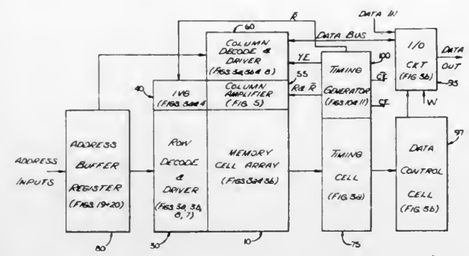
3,778,784

MEMORY SYSTEM INCORPORATING A MEMORY CELL AND TIMING MEANS ON A SINGLE SEMICONDUCTOR SUBSTRATE

Joel A. Karp, and William M. Regitz, both of Cupertino, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 14, 1972, Ser. No. 225,829
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **23 Claims**

A memory system is disclosed wherein the system may be controlled by providing a single clock signal to an array of memory cells on a monolithic semiconductor substrate. The substrate includes a timing generator means. The controlling of a memory array by a single clock contributes to the practical attainment of an ingrated circuit wherein a higher density of memory cells is formed. To accomplish this, in addition to



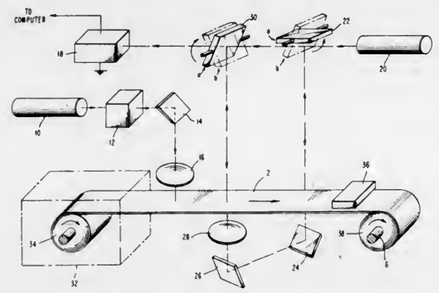
the timing generator means, a timing cell is formed on the same substrate wherein the memory cells are formed.

3,778,785

METHOD FOR WRITING INFORMATION AT NANOSECOND SPEEDS AND A MEMORY SYSTEM THEREFOR

Robert Jacob von Gutfeld, New York, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1972, Ser. No. 246,027
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 LS **8 Claims**



A method is provided in which information may be written at ultrahigh speed onto a memory material, limited only by the pulse time of a laser beam employed. A semiconductor memory material capable of changing from the crystalline to the amorphous state, each state being stable at ambient conditions, is utilized. Information may be written and stored by exposing discrete portions of the semiconductor material to a high speed pulsed laser wherein said exposed portions are converted from the crystalline to the amorphous state.

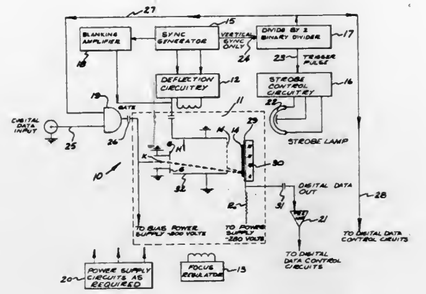
3,778,786

DATA STORAGE, IMAGE TUBE TYPE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Phillip C. Lipoma, Dickinson, Tex.

Filed June 28, 1972, Ser. No. 266,899
Int. Cl. G11c *11/30*
U.S. Cl. 340—173 CR **5 Claims**

Method and apparatus for the storage of digital or analog electrical signals are provided by a memory storage system employing a conventional vidicon tube. At the beginning of an operating cycle, the vidicon is conditioned to accept electrical data input by exposing its photosensitive target to a short, high intensity light flash. A first electron beam scan of the photosensitive surface by an electron beam modulated by the input data then sets up a charge pattern on the photosensitive target which is representative of the input data. A second electron beam scan of the photosensitive surface by an unmodulated electron beam then develops an output signal across an output resistor by means of capacitive currents. The conditioning and scanning steps are operated repetitively at high speed using conventional television camera scan, sync and power supply circuitry to provide a low cost data storage system.

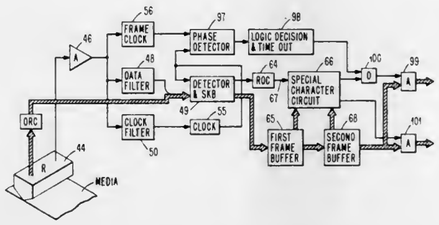


3,778,787

READBACK SYSTEMS FOR DIGITAL RECORDERS

Maxwell R. Cannon, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 229,214, Feb. 18, 1972. This application Apr. 9, 1973, Ser. No. 349,575
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 H **21 Claims**

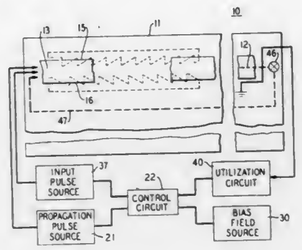


A digital magnetic recorder uses up to twice the Nyquist bandwidth of a data signal, plus a clock signal at a frequency exactly equal to the bit rate for reliably exchanging data signals with a magnetic media. The frequency response of the recording system is greater than twice the Nyquist bandwidth of the data signals to be recorded. Optionally, additional control signals at frequencies above or below the clock frequency but within the available recorder bandwidth may be recorded. Preferably, in a multitrack magnetic recording system, a signal component is added at a frequency near the clock frequency such that the difference between this signal and the clock has a wavelength on the magnetic media greater than the maximum skew of the multi-track system. Such signal component is usable as a resynchronization pattern. Additionally, write errors are detected during recording with special control indicia recorded on the media indicating such errors. Various forms of indicia are described including special data patterns, special signal components, and the like.

3,778,788
SINGLE WALL DOMAIN PROPAGATION ARRANGEMENT

Andrew Henry Bobeck, Chatham; John Alexander Copeland, III, Gillette, and Raymond Wolfe, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 24, 1972, Ser. No. 309,056
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF 6 Claims

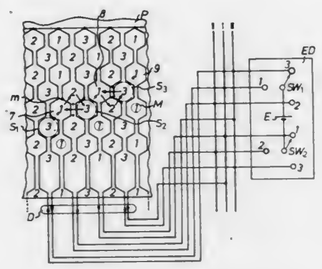


Domain propagation along a path defined by a straight line conductor is achieved by driving domains back and forth across the conductor against the edges of regions forbidden to the domains. By angling the edges of the regions with respect to the axis of the conductor and by offsetting those edges associated with one edge of the conductor with respect to those associated with the other, the back and forth motion is translated into movement along the axis.

3,778,789
HIGH-SPEED TRANSMISSION SYSTEM FOR MAGNETIC BUBBLES

Teruji Watanabe, Niza, and Hideo Ishihara, Kamakura, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 7, 1972, Ser. No. 278,472
Claims priority, application Japan, Aug. 10, 1971, 46/59961
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF 3 Claims

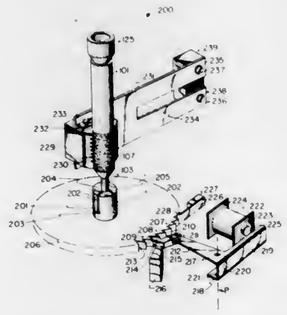


A transmission system for magnetic bubbles in a magnetic plate by use of a number of hold sections closely disposed on the magnetic plate, in which the hold sections are drive sections excited by three phase drive currents. The drive sections are formed into a cascade arrangement of a plurality of unit circulating loops, each of which comprises three drive sections excited respectively by the three-phase drive currents and disposed adjacently to one another, so that a magnetic bubble circulates in each of the unit circulating loops while a magnetic bubble held in a drive section (excited by a drive current of phase I by way of example) of a unit circulating loop can be shifted to a drive section (excited by a drive current of phase II succeeding to the phase I) of an immediately adjacent circulating loop. If an input magnetic bubble is applied to one of the unit circulating loops, an output magnetic bubble can be simultaneously obtained from another of the unit circulating loops by successive shift of magnetic bubbles from a preceding one to a succeeding one of the unit circulating loops. The drive sections may be formed into an alternate cascade arrangement of the unit circulating loops and auxiliary drive sections.

3,778,790
INCREMENTAL RECORDATION ON TEST TUBE

Jean-Louis Prost, Geneva, and Manuel C. Sanz, Grand-Lancy, both of Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Dec. 7, 1970, Ser. No. 95,644
Int. Cl. G11b *15/02*
U.S. Cl. 340—174.1 A 2 Claims



A method and apparatus for providing patient record information on a specimen tube containing a specimen taken from the patient and for reading the information therefrom when the analysis of the specimen has taken place. A typewriter is used in conjunction with encoding and writing circuits to cause a magnetic recording head to provide binary information on an annular magnetic band on the specimen tube. When the analysis of the tube contents have taken place, the tube is placed in a rotating reading device and a magnetic reading head picks up the coded information and through decoding circuitry either prints out the information and/or stores it in a computer along with the results of the specimen analysis.

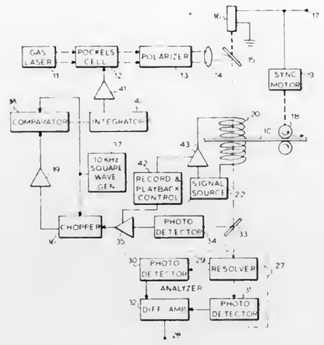
3,778,791
THERMOMAGNETIC RECORDING AND MAGNETO-OPTIC PLAYBACK SYSTEM HAVING CONSTANT INTENSITY LASER BEAM CONTROL

George W. Lewicki, Studio City, and John E. Guisinger, Altadena, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 34,989, May 6, 1970, abandoned. This application Oct. 6, 1971, Ser. No. 187,143
Int. Cl. G11b *11/10*; G02f *1/22*; G01j *1/32*
U.S. Cl. 340—174.1 M 9 Claims

Apparatus is disclosed for maintaining the intensity of a laser beam substantially constant in a thermomagnetic recording and magneto-optic playback system wherein an isotropic film is heated along a continuous path by the laser beam for recording. As each successive area of the path is heated locally to the vicinity of its Curie point in the presence of a controlled magnetic field, a magneto-optic density is produced proportional to the amplitude of the controlled magnetic field. To play back the recorded signal, the intensity of the laser beam is reduced and a Faraday or Kerr effect analyzer is employed, with a photodetector, as a transducer for producing an

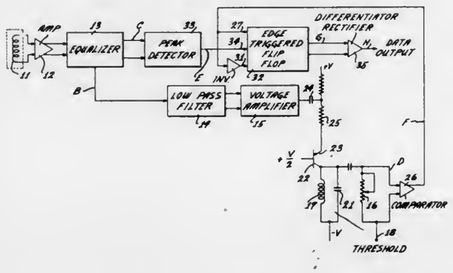
output signal. The light intensity of the laser beam is continuously detected close to the analyzer, particularly during playback operation, and compared with a reference to maintain intensity substantially constant.



3,778,792
BLANKING CIRCUIT FOR HIGH RESOLUTION DATA RECOVERY SYSTEMS

Gene Emmett Milligan; Henry Minglo Ho, both of Torrance, and Noboru Kimura, Gardena, all of Calif., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 10, 1972, Ser. No. 242,509
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 H 11 Claims



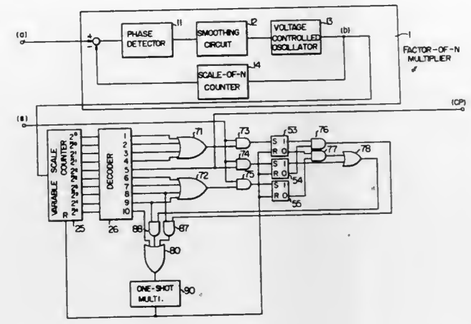
A circuit for blanking unwanted error-causing peaks in the waveform derived from the reading of high density magnetic recordings wherein the data waveform is filtered by a low pass filter and variable Q resonant filter to generate a rectangular wave blanking signal applied to a flip-flop together with the equalized signal, whereby false peaks in the equalized signal are prevented from triggering the flip-flop by the blanking signal.

3,778,793
CLOCKING SYSTEM FOR MAGNETIC MEMORY

Yukitaka Hayashi; Akira Osawa; Hakuichi Shimizu, and Nagaharu Hamada, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,639
Int. Cl. G11b *5/00*
U.S. Cl. 340—174.1 A 5 Claims

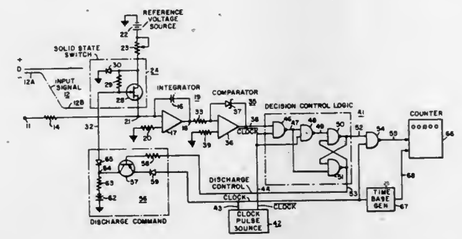
A clocking system for a magnetic memory in which a signal obtained by multiplying the frequency of a fixed clock signal by a factor of n is applied to a variable scale counter operating normally as a scale-of-n-counter, and an output appearing from a specific bit position of this counter is used as a synchronizing clock signal. The counter is operated as a scale-of-$(n-1)$ or scale-of-$(n+1)$ counter during the correction of the phase of the clock signal so that the phase of the clock signal can be satisfactorily corrected with suitable inertia regardless of whether the correction is carried out in a sector gap or in a sector.



3,778,794
ANALOG TO PULSE RATE CONVERTER

Andras I. Szabo, Export; William E. Zitelli, Pittsburgh, and Dan V. Tarli, North Versailles, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 18, 1972, Ser. No. 290,052
Int. Cl. H03k *1/10*; G11b *5/00*
U.S. Cl. 340—174.1 A 6 Claims



An analog to pulse rate converter includes an integrator circuit in which the integrator capacitor is charged at a rate corresponding to the level of an input signal. A logic control circuit causes the capacitor to discharge at a fixed rate during a fixed portion of the clock period whenever the capacitor charges above a predetermined charge level. Output pulses occur during each discharge cycle. The average frequency of the output pulses indicates the level of the input signal.

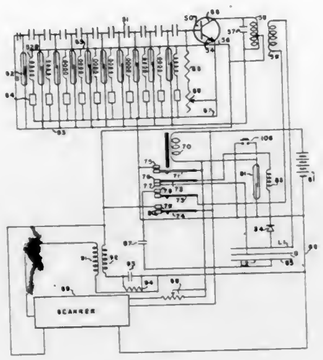
3,778,795
REMOTELY CONTROLLED AUTOMATIC UTILITY METER READER

James P. Campman, Silver Spring, and Jack H. Linscott, 7203 Fairfax Rd., Bethesda, both of Md., assignors to said Linscott, by said Campman, Bethesda and Vidar Laboratories, Inc., Kensington, Md., part interest to each

Filed Mar. 13, 1972, Ser. No. 233,885
Int. Cl. G01f *15/06*
U.S. Cl. 340—188 R 1 Claim

A remotely controlled apparatus for reading a plurality of dials of a totalling type meter in sequence, for producing a plu-

rality of signals, one signal for each dial read, with the character of the signal determined by the position of the indicator relative to its dial and which automatically terminates its activity when all of the dials have been read.



3,778,796

FIRE ALARMING SYSTEM

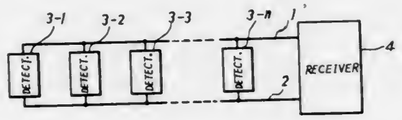
Yukio Honda, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan

Filed Mar. 2, 1971, Ser. No. 120,178

Claims priority, application Japan, Mar. 31, 1970, 45/26842

Int. Cl. G08b *17/10, 25/00*

U.S. Cl. 340—216 1 Claim



A fire alarm system having a plurality of detectors connected to a pair of conductors, a receiver and a power supply connected to said conductors and an alarm connected to the power supply and said conductors so that an alarm is sounded upon activation of a detector, each detector upon activation producing a preselected AC signal for transmission to the receiver and the receiver includes band pass filters activated by particular frequencies and having associated indicating means so that the activated detector and therefore the location of the fire or smoke can be immediately determined.

3,778,797

MULTI-STATION SAFETY MONITOR HAVING SHUNT SWITCH

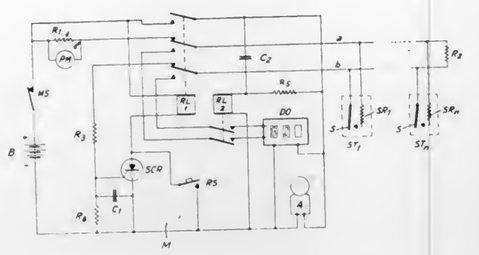
Gene W. Killen, Clintwood, Va., assignor to Pyott-Boone, Inc., Trazewell, Va.

Filed July 10, 1972, Ser. No. 270,307

Int. Cl. G08b *29/00*

U.S. Cl. 340—227 R 12 Claims

A device for monitoring a plurality of remote stations for disorders in which a high-impedance station line circuit is shunted by a disorder-responsive station switch with a distinctive lower resistance, whereupon a relay actuates an alarm and switches the station line circuit into an ohmmeter circuit. The storage-type digital ohmmeter indicates the location of the responding station; its readout is blocked after receipt of the first reading.



3,778,798

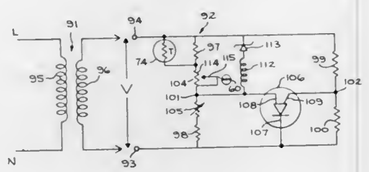
FOOD PREPARATION ELECTRIC THERMOMETER ALARM CIRCUIT

Henry J. Heit, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 1, 1972, Ser. No. 249,386

Int. Cl. F24c *15/00*

U.S. Cl. 340—228 R 9 Claims



Solid-state circuitry is provided for an electrical thermometer for monitoring the interior temperature of meat being cooked. A temperature sensing thermistor located in the tip of a probe, adapted to be partially inserted in meat being cooked so as to monitor the interior temperature, is combined in circuit with a programmable unijunction transistor (PUT), used as a bridge detector, and a signal buzzer such that upon the reaching of a preset temperature within the meat, the buzzer is actuated. The self-heat of the thermistor probe provides a latching effect ensuring the continued firing of the PUT with the resultant smooth operation of the buzzer. A zener diode is combined in circuit to allow a slight back current to flow through the buzzer, thereby allowing the use of a buzzer with a fairly non-critical air gap.

3,778,799

SAFETY DEVICE FOR PIPE LINES UNDER GAS PRESSURE

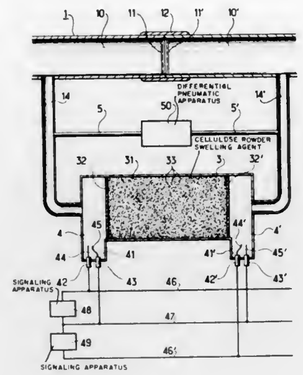
Jacques Bendayan, Lyon, France, assignor to Cables de Lyon-Alsacienne-Geoffroy. Delore, Lyon, France

Filed Mar. 28, 1972, Ser. No. 238,772

Int. Cl. G08b *21/00*

U.S. Cl. 340—235 11 Claims

A safety device for interrupting the communication between two pipe line sections, which are under the pressure of gas, in response to detection of propagation or infiltration of a liquid from one section toward the other one, characterized in that it comprises an enclosure including at each of the ends thereof a compartment respectively connected to one of said sections, and in the central portion thereof a chamber separated from each of said compartments by means of a filter retaining a swelling agent which becomes impermeable under the effect of moisture.



3,778,800

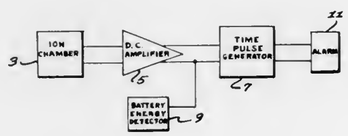
SELF-MONITORING BATTERY OPERATED CIRCUIT

Lyman L. Blackwell, and Paul A. Staby, both of Denver, Colo., assignors to Statitrol Corporation, Lakewood, Colo.

Continuation-in-part of Ser. No. 876,156, Dec. 4, 1969, Continuation of Ser. No. 546,663, May 2, 1966. This application Apr. 9, 1971, Ser. No. 132,690

Int. Cl. G08b *19/00*

U.S. Cl. 340—249 9 Claims



Time pulse generator having biasing means therefor including a control device, which may be a transistor and means interconnecting the biasing means to the battery being monitored. The output of the time pulse generator is utilized to drive a signaling device to indicate a low level of battery energy and/or an alarm condition as detected by an external condition sensor.

3,778,801

APPARATUS FOR INDICATING VOLTAGE PRESENCE, PHASE SEQUENCE, VOLTAGE MAGNITUDE, GROUND FAULTS, ETC. IN AN ELECTRICAL POWER DISTRIBUTION SYSTEM

Jean-Claude Nudelmont, 130 rue J. P. Timbaud, Courbevoie, Hauts-de-Seine, France

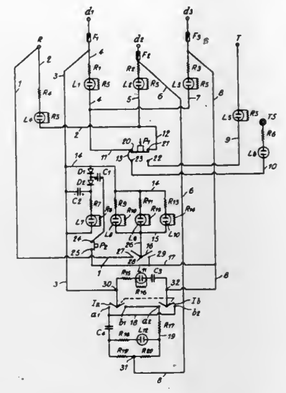
Filed Apr. 12, 1971, Ser. No. 133,049

Claims priority, application France, Apr. 10, 1970, 7013010; Mar. 24, 1971, 7110378

Int. Cl. G08b *19/00*

U.S. Cl. 340—253 R 12 Claims

An apparatus for monitoring circuit continuity, phase sequence, voltage magnitude, ground connection, etc. in a multi-phase electrical distribution network. A first series of indicator lamps monitor circuit continuity from phase to phase and from phase to ground. A second series of selectively thresholded lamps indicate voltage magnitude and additional indicator lamps are provided to indicate phase sequence and the presence of alternating current.



3,778,802

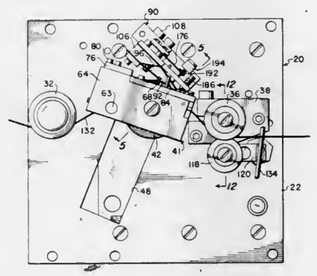
FILM INSPECTION APPARATUS

Richard R. Wallace, Wilmette, Ill., assignor to The Harwald Company, Evanston, Ill.

Filed Mar. 20, 1972, Ser. No. 236,368

Int. Cl. G08b *21/00*

U.S. Cl. 340—260 19 Claims



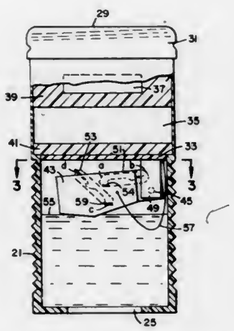
A film inspection apparatus is provided for detecting partial transverse breaks extending inwardly from an edge of the film, wherein the film is moved at extremely high speed over the periphery of a roller with an edge thereof overhanging the side of the roller to form a stiff arcuate portion which will withstand considerable outwardly directed radial force without substantial bending. A feeler element is biased into engagement with the concave side of said arcuate portion and moves radially outward when a generally transverse break in said edge is encountered. This radially outward movement of the feeler element deflects a cantilever beam piezoelectric element to produce a corresponding electrical signal.

Film splices are also detected and counted while eliminating low amplitude or short duration pulses which may be due to dirt or other contaminants on the film. Splices longer than a predetermined amount are also detected and the film stopped, while facilities are provided for preventing the machine from being stopped in response to a series of closely spaced good splices which individually have a length less than said predetermined amount. Compensation is also provided for changes in film speed as the film is brought up to full speed so that relatively short good splices are not falsely interpreted as longer bad splices and the machine stopped.

Elongated sprocket holes are detected by engagement of a feeler element with a straight line portion of the film so that vibration of the feeler element due to chord effect is eliminated and vibration is not transmitted to the edge break feeler elements. The response characteristic of the elongated sprocket hole feeler element is compensated by mechanical damping and by variation in the gain characteristic of the associated amplifier channel so that splices are not falsely interpreted as elongated sprocket holes.

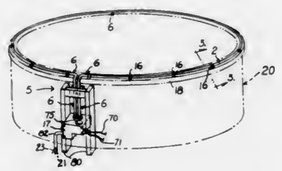
The splice detection channels, the elongated sprocket hole detection channel, and both edge break detector channels employ piezoelectric transducer elements, the signals from which are amplified without appreciable differentiation and transformed to low impedance levels prior to processing so that the desired movements of the respective feeler elements may be detected while the film is traveling at an extremely high rate of speed in the order of 1,600 feet per minute.

3,778,803
SWIMMING POOL GUARD ALARM UNIT
Darrel S. Jahn, 168 Palmer Ave., Mountain View, Calif.
Filed Sept. 27, 1971, Ser. No. 184,085
Int. Cl. G08b *13/00*
U.S. Cl. 340—261 **11 Claims**



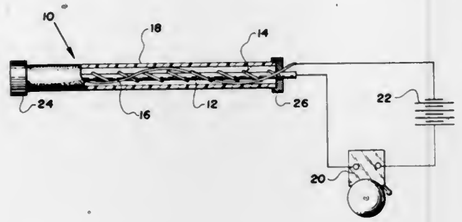
A device for monitoring wave action on the surface of water in a swimming pool in a manner to sound an alarm when someone either accidentally falls into a swimming pool or uses the pool without authorization. A buoy floats on the surface of the swimming pool for detecting excessive wave action. At least one position-sensitive switch is attached to a pivotably mounted float within the buoy for detecting such wave action. A signal from the switch in the buoy is transmitted to a remote alarm unit either by a direct wire connection or by a low power radio transmitter located within the buoy.

3,778,804
SWIMMING POOL USER WARNING SYSTEM
Leonard T. Adair, 425 W. Fairmount St., Pontiac, Mich.
Filed Dec. 6, 1971, Ser. No. 204,878
Int. Cl. G08b *13/10*
U.S. Cl. 340—272 **4 Claims**



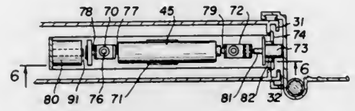
A swimming pool user warning system which warns as to the presence of a would-be unauthorized user of a swimming pool comprising, in combination, an electrical warning alarm, a normally open electrical switch and a compressible air-filled hose having both a normal undepressed condition and an actuated depressed condition. The hose is constructed in relation to the switch such that the latter is maintained open as long as the former is in its undepressed condition and such that the latter is closed upon any part of the former being actuated to its depressed condition. A mounting for the hose for an outdoor swimming pool is provided so that the hose is actuated to its depressed condition by the weight or force of such user, whereby to give off an alarm warning of his presence.

3,778,805
ALARM UTILIZING PRESSURE AND TEMPERATURE RESPONSIVE SWITCH
Robert W. Gould, Oakhurst, N.J., assignor to Cable Switch Corporation, Asbury Park, N.J.
Filed Feb. 11, 1972, Ser. No. 225,461
Int. Cl. H01k *3/02*; **G08b** *13/10*
U.S. Cl. 340—272 **7 Claims**



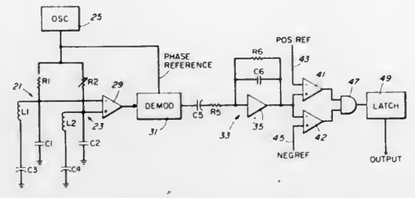
An electric switch in which an insulator wire and an outer conductive spring wire are wrapped about a central conductive spring wire core with the outer conductive spring wire separated at all points from the central core in its undeformed position. The three elements are normally covered by an insulator such as a tube of insulating material. The insulating winding separates the outer spring conductive wire from the central core wire in normal usage. If pressure is applied to the outer insulating covering, the outer spring conductive wire is forced into contact with the central core completing a circuit to an alarm. As soon as the pressure is removed, the spring characteristic returns the spring conductive wires to their initial position and the alarm circuit is broken. Further, the insulating winding is also temperature sensitive so that, in the case of fire, the outer spring conductive wire will make contact with the central conductive core and again close an alarm circuit.

3,778,806
DOOR POSITION SIGNALLING SYSTEM
George J. Williams, 10 Oak Ridge Ln., Albertson, N.Y.
Filed Aug. 5, 1971, Ser. No. 169,525
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **10 Claims**



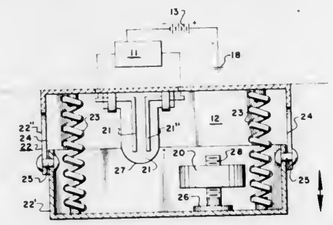
An audible signal unit powered by dry cells or the like is mounted within the hollow frame members of metallic storm or screen doors. The signal portion of the unit uses the frame as a housing and resonant cavity. The entire unit is mounted over an aperture formed in the hinge edge of the door.

3,778,807
CAPACITIVE INTRUSION DETECTION SYSTEM WITH BALANCED RESONANT CIRCUITS
William J. Ralston, Albuquerque, N. Mex., assignor to EG & G, Inc., Bedford, Mass.
Filed Dec. 13, 1972, Ser. No. 314,904
Int. Cl. G08b *13/26*
U.S. Cl. 340—258 C **10 Claims**



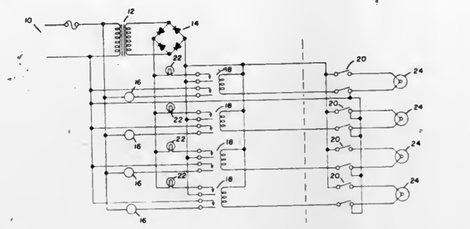
Each of a pair of detector wires is strung along a portion of a boundary to be protected so that both wires are exposed to similar general environmental conditions. The wires are interconnected in respective resonant circuits which are similarly driven at a common frequency so that each resonant circuit provides an a.c. signal having a phase and amplitude which are variable as a function of the capacitance of the respective detector wire. By synchronously demodulating the difference between the two signals, a difference amplitude signal is obtained which is relatively sensitive to differential changes in the capacitances. By employing the rate of change of this demodulating difference signal as an indication of intrusion, a system is obtained which is relatively insensitive to gradual and environmental changes.

3,778,808
ELECTRONIC WEIGHT MONITOR
George S. Stevens, 2106 Washington Way, Richland, Wash.
Filed Jan. 17, 1972, Ser. No. 218,092
Int. Cl. B60q *1/00*; **H01h** *35/02*
U.S. Cl. 340—282 **2 Claims**



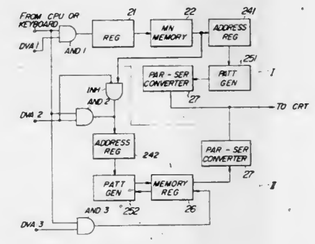
The electronic weight monitor of this invention comprises a control assembly including a switch operable to selectively control electric power to the weight monitor, a relay connected to an input contact to a switch, a lamp connected to a ground and to one of the output contacts of the relay, and a warning means connected to a ground and to the remaining output contact of the relay. A load cell housed in a container comprising a base having sidewalls and a lowermost terminal wall is provided. A platform having an uppermost terminal wall and sidewalls operable to slidably engage the sidewalls of the base, and an urging means operable to urge the base toward the platform are provided. The load cell includes a permanent magnetic field disposed in the base, and a reed-type switch which has one of its reeds connected to a ground and its opposing reed connected to the remaining input contact of the relay. The electronic weight monitor may include a magnetic field having adjusting means operable to selectively position the magnetic field relative to the base.

3,778,809
TIMER CONTROLLED ALARM SYSTEM
John W. Hawes, 513 Longwood Dr. N.E., Cedar Rapids, Iowa
Filed Apr. 5, 1971, Ser. No. 131,175
Int. Cl. G08b *29/00*
U.S. Cl. 340—309.5 R **3 Claims**



An alarm system for detecting and recording the time of arrival home of a young person who has a definite curfew for his or her return. The system allows the parents of the young person to reture for the evening with the assurance that they will be awakened if their son or daughter does not return on time, but will not be disturbed if he or she arrives home on or before the appointed time.

3,778,810
DISPLAY DEVICE
Yokitaka Hayashi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 9, 1971, Ser. No. 178,926
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 AD **4 Claims**

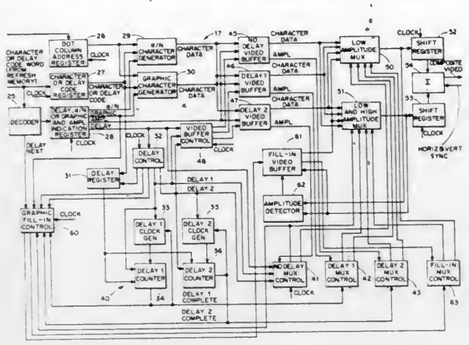


A display device comprising a computer processing unit, a controlling unit including a pattern generator, and a display tube. The pattern generator not only memorizes the predetermined patterns for displaying the normal figures, letters, etc. but also has a read-write function for displaying special figures, etc.

3,778,811
DISPLAY SYSTEM WITH GRAPHIC FILL-IN
Francis A. Gicca, Bedford; Francis C. Passavant, West Newton; William W. Stebbins, Framingham, and Allen J. Worters, Newton Highlands, all of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.
Filed June 21, 1972, Ser. No. 264,969
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD **11 Claims**

Television-type display system for displaying information in the form of bargraphs. Code words designating individual characters of bargraphs are read out of a random access memory and the characters are displayed at fixed normal loca-

tions on the display surface of the display device. Delay code words designating amounts of delay for fine positioning the top edges of the bars may be associated with the uppermost



character of each bar. The system provides for filling in certain portions of the bars in the display of overlapping bar-graphs to produce continuous, uniform bars.

3,778,812

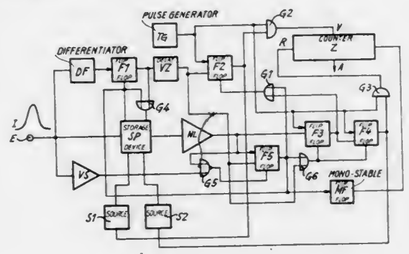
METHOD AND APPARATUS FOR ANALOG-DIGITAL CONVERSION

Abutorab Bayati, Neureut, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 730,067, May 17, 1968, abandoned. This application Mar. 17, 1971, Ser. No. 125,431

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 NT **9 Claims**



A process and apparatus for analog-to-digital conversion includes a storage circuit (SP) having a capacitor which is charged to a value corresponding to the voltage of an input analog signal (I). The change in charge of the capacitor is thereafter measured in terms of a time interval including at least two steps by counting pulses applied to a bidirectional counter during the discharge of the capacitor. The discharge rate employed in subsequent steps of the process is lower than the discharge rate used in the initial step. During the initial step, current from a source (S_1) is applied to the storage circuit (SP) at a higher rate than in the second subsequent step during which the storage circuit (SP) receives current from another current source (S_2). The pulses counted in the counter during the discharge occurring in the initial step of the process have a greater weight than the impulses counted in subsequent steps. To this end, the pulses are added directly to counting stages of higher significance.

An analog digital conversion system employing the concept of first coarsely coding a measured value of voltage corresponding to the amplitude of an analog input signal with the aid of a rapid build-up or slope velocity of a time-linearly increasing voltage and then proceeding with a fine coding operation in subsequent steps by means of lower slope velocities. In the first processing step, coarse coding is effected by measuring the number of stroke or timing pulses which are assigned a predetermined weighting factor and which are fed to a bidirectional counter during a first time interval. The weighting factor assigned the timing pulses in the first processing step is greater than that assigned in the second subsequent processing step during a second time interval in which the direction of change or variation of the time-linearly varying voltage is reversed. During the second processing step, the linearly varying voltage changes by an amount corresponding to the amount by which the measurable voltage was exceeded or overshot in the first processing step. To this end, the timing pulses fed to the counter during the second time interval are assigned the lower weighting factor and counted in the backward direction with the rate of variation of the linearly varying voltage being smaller than in the first processing step in proportion to the weighting factor assigned.

3,778,813

REMOTE CONTROL ARRANGEMENT

Ivor Henry Bull, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Continuation of Ser. No. 653,812, July 17, 1967. This application Sept. 10, 1971, Ser. No. 179,596

Claims priority, application Great Britain, Aug. 5, 1966, 35,121/66

Int. Cl. H03k *13/00*

U.S. Cl. 340—347 DD **1 Claim**

A digital code converter for use with a vehicle braking system of the type wherein a controller, by its movement, energizes selected ones of a set of ordered electrical conductors. The described conversion is of gray to binary type.

3,778,814

WAVEFORM SYNTHESIZER

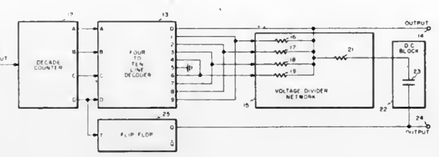
Clell A. Dildy, Jr., Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1972, Ser. No. 278,662

Int. Cl. H03k *13/00*; **H03b** *19/00*

U.S. Cl. 340—347 DA **8 Claims**

A signal waveform synthesizer system is disclosed as containing a digital input decade counter, a four to 10 line decoder and a flip-flop operatively connected to said decade counter. Said decoder has the 10 outputs thereof interconnected and grounded, respectively, and connected to a voltage divider network for producing consecutive output voltages in such manner as to generate a predetermined first half-cycle analog waveform. A direct current blocking capacitor allows the aforesaid flip-flop to timely reverse the polarity of the reference voltage supplied to said voltage divider network, to thereby effect a second half-cycle analog waveform that is equal and opposite to the aforesaid first half-cycle analog waveform, thereby effectively synthesizing a whole cycle, sinusoidal-like, output analog signal.



3,778,815

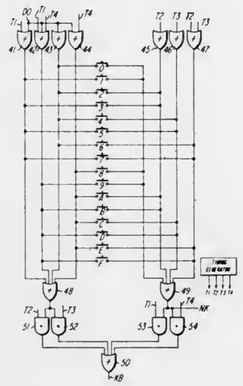
KEYBOARD ENCODER

Carl Macey Wright, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 17, 1971, Ser. No. 143,860

Int. Cl. G06f *3/02*

U.S. Cl. 340—365 S **4 Claims**



Circuit with reduced maximum number of signal terminals per logic gate (reduced "fan-in") for translating the selection of a key into an n bit binary code. It includes a plurality of logic gates receptive of q of n timing pulses for applying signals indicative of binary digits (bits) through a selected key in one direction and a plurality of logic gates receptive of the remaining p timing pulses for applying such signals through the selected key in the opposite direction. A signal, after passing through a key, is gated through one of two logic circuits under the control of the same timing pulse employed to produce the signal, to a common output terminal.

3,778,816

KEYBOARD DATA ENTRY DEVICE EMPLOYING REACTIVE COUPLING CIRCUITS

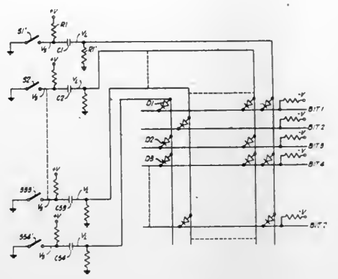
Allen B. J. Cuccio, Oklahoma City, Okla., assignor to General Electric Company

Continuation of Ser. No. 17,840, March 9, 1970, Division of Ser. No. 695,802, Jan. 4, 1968. This application May 3, 1972, Ser. No. 249,811

Int. Cl. G06f *3/02*

U.S. Cl. 340—365 S **7 Claims**

A keyboard device for entering data into a data processing system. Each selection key on a keyboard is coupled to a switch. Each switch is connected to an encoder through a reactive coupler which converts the switch output to pulse form. The device causes data to be delivered to the encoder in the order in which the selection keys are depressed regardless of how many keys are concurrently depressed.



3,778,817

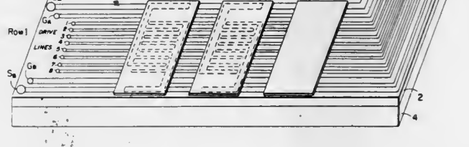
OUTPUT KEYBOARD APPARATUS AND SIGNAL TRANSLATING METHODS THEREFOR

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1972, Ser. No. 277,264

Int. Cl. G06f *3/02*

U.S. Cl. 340—365 C **44 Claims**



Output keyboard apparatus and signal translating methods therefor are provided in accordance with the teachings of the present invention wherein, in at least one exemplary embodiment, sense conductors and a plurality of drive lines are associated with a selected number of keys within an output keyboard arrangement. A conductor arrangement which acts as a coding and coupling device is provided in association with each of the selected number of keys to selectively couple, upon the actuation of the key associated therewith, signals from the plurality of drive lines to the sense conductors in a predetermined coding sequence representative of the key depressed.

3,778,818

KEYBOARD WITH ROLL-OVER FEATURE

Johannes Hermanus Maria Scholten, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,388

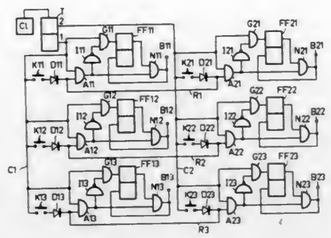
Claims priority, application Netherlands, Nov. 17, 1971, 15804

Int. Cl. G06f *3/02*

U.S. Cl. 340—365 E **2 Claims**

A keyboard has a roll-over feature in that a bistable element (flipflop) is associated with each key. The keys are successive-

ly interrogated. When a depressed key is interrogated, the code data thereof is passed on, and the flipflop is set. If the key is interrogated again, the flipflop blocks the passage of the code data. When the key is released, the flipflop is reset.



3,778,819

KEYBOARD WITH FOUR CHARACTER SET SHIFT

Venkatesha S. Bhagawan, Kingston; Richard A. Jones, Red Hook; Allen W. McDowell; George D. Mine, both of Kingston; Louis J. Remsburger, Pine Plains; Bruce A. Rupp, West Hurley, and Rodney R. Whittaker, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1972, Ser. No. 307,676
Int. Cl. G06f *3/02*
U.S. Cl. 340—365 S **8 Claims**

A circuit is provided for operating a keyboard in a selected one of four character sets: upper and lower case Latin and upper and lower case Katakana. The circuit responds to signals produced by the familiar Shift and Lock keys of a conventional keyboard. One of the shift keys is designated a Latin shift key and the other is designated a Katakana shift key. Depressing a shift key momentarily sets the keyboard to operate in the lower case of the character set identified by the shift key. For upper case, the operator either sets the shift Lock or holds the appropriate shift key while striking a character key. A specific logic circuit is disclosed.

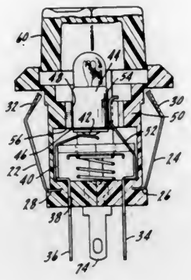
3,778,820

INDICATOR ASSEMBLY WITH INTERLOCKING CONTACT

Peter J. Van Benschoten, Rancho Santa Fe, and Jan Albert Kilsdonk, Corona, both of Calif., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed May 8, 1972, Ser. No. 251,462
Int. Cl. G08b *5/00*
U.S. Cl. 340—381 R **14 Claims**

An indicator assembly using a flanged lamp and having a housing which includes a pair of lamp contacts. The lamp is electrically connected to the contacts, with one of the contacts biasing the flange of the lamp into an interlocked position with the housing to thus hold the lamp in position, but yet permit easy removal of the lamp from the front of the indicator assembly.

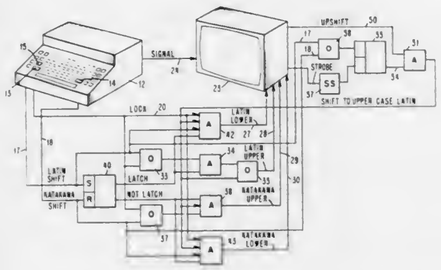


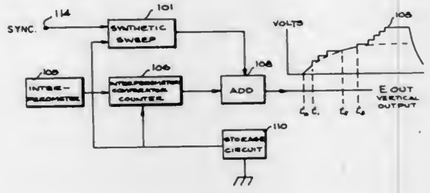
3,778,821

AIRCRAFT CONTAINED PERSPECTIVE RADAR/DISPLAY AND GUIDANCE FOR APPROACH AND LANDING

David W. Young, 23685 Schoenborn St., Canoga Park, Calif.

Filed Aug. 4, 1969, Ser. No. 847,121
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 R **3 Claims**





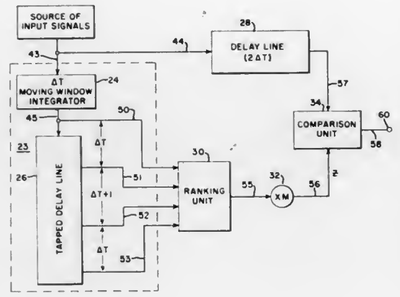
A radar system is disclosed as for providing the pilot of an aircraft with a perspective presentation that is sufficient, for example to land the aircraft under conditions of reduced visibility including zero-zero. The system incorporates a cathode ray tube utilizing B-scope scanning with a somewhat hyperbolic vertical range sweep which may be further varied as a function of the profile of the terrain under investigation where the terrain is not reasonably flat (perpendicular to the local vertical). The sweep signal is developed in a somewhat-basic, synthetic form, for depicting large flat areas (as generally presented by airports). Means are also disclosed for varying the standard in accordance with altitude. A form of the system is also disclosed to vary the display in accordance with roll and pitch of the aircraft. Furthermore, various registration systems are disclosed whereby the perspective display is registered or referenced with regard to the terrain under investigation, as to indicate when the terrain is irregular. Some forms of registration incorporate structure for obtaining accurate visual display of actual irregular terrain. Also means is disclosed for determining (by means of the radar/display) if the aircraft is above or below the predetermined glide slope angle with respect to the local vertical and the end of the runway or landing zone.

3,778,822

SUM-RANK NORMALIZED DETECTION APPARATUS

Lowell W. Bauer, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,059
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 R **7 Claims**



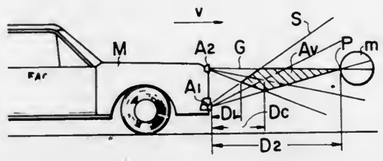
This disclosure is of a normalized detector for use with radar, sonar and other pulse-echo systems. The detector comprises a summing unit and a ranking unit which together provides a continuous estimate of the amplitude of interference and noise received in resolution cells near to that of the input signal sample. The summing unit in one embodiment comprises an integrator which provides a plurality of sum signals representative of the interference noise level during selected time periods, which signals then are ranked among one another in the ranking unit to generate an output deriving from the sum signals weighted as a function of their respective ranks. The signal output of this ranking unit is the normalizing or threshold signal against which the input signal sample is compared.

3,778,823

VEHICLE SAFETY DEVICE

Kazuo Sato; Tomio Hisatsune, and Minoru Izawa, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Apr. 15, 1971, Ser. No. 134,348
Claims priority, application Japan, Dec. 27, 1970, 45/126238
Int. Cl. G01s *9/02*
U.S. Cl. 343—7 ED **28 Claims**



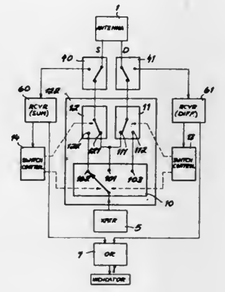
The disclosed apparatus detects an imminent collision between a vehicle and an object, by orienting respective receiver and transmitter antennas, mounted on the vehicle, so their patterns intersect and form a crash detecting zone just ahead of the vehicle, and by deriving the relative speed between the vehicle and the object in the crash zone from an undulatory signal radiated by the transmitter antenna and the reflected undulatory signal received from the object. A generator, a directional coupler, and a detector all associated with the antennas, derive the relative speed between the vehicle and the object on the basis of homodyne detection of the transmitted undulatory signals and the reflected undulatory signals. The presence of the objects within the crash zone is indicated by receipt of an undulatory signal above a given level. When both relative speed and level exceed their respective threshold values, threshold circuits issue signals. An AND circuit responds to the signals and actuates a safety device such as an air bag for protecting passengers. To prevent erroneous actuation of the safety device when the vehicle and the object are on course passing each other, antennas on the left and right sides of the vehicle receive reflected signals and form respective Doppler frequencies. A divider determines the relative angle between the vehicle and the object by calculating the ratio of these Doppler frequencies. When the ratio exceeds a predetermined value, comparators direct a signal to disable the AND circuit.

3,778,824

RADAR SYSTEM FOR DETECTING LOW-FLYING OBJECTS

Joseph Roger, Paris, France, assignor to Thomson CSF, Paris, France

Filed Aug. 23, 1971, Ser. No. 173,818
Claims priority, application France, Aug. 21, 1970, 7030702
Int. Cl. G01s *9/02, 9/22*
U.S. Cl. 343—7 A **4 Claims**



To eliminate gaps in the vertical radiation pattern of a radar antenna designed to detect low-flying objects, the outgoing microwave energy is transmitted simultaneously over a direct path and over a reflected path with the aid of two horn radiators also serving to discriminate between incoming wave energy received over these two paths. By alternating between cophasal and antiphasal transmission and/or between additive and subtractive reception over these two paths, the optimum mode of operation for a given angle of elevation can be determined.

3,778,825

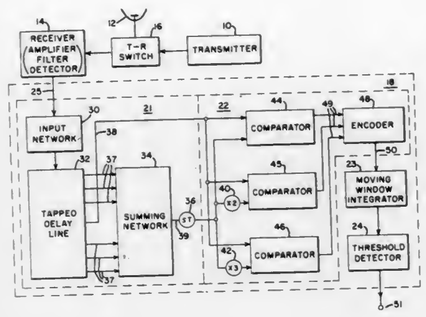
ADAPTIVE QUANTIZING AND INTEGRATING DETECTOR FOR PULSE-ECHO SYSTEMS

Manuel Ares, Manlius, and Lowell W. Bauer, Liverpool, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,426
Int. Cl. G01s *9/06*
U.S. Cl. 343—7 A **3 Claims**

This disclosure is of an adaptive quantizing and integrating detector for radar and other pulse-echo systems which pro-

vides a continuous estimate of local interference level by averaging the signal level over a time interval including the received signal sample of interest. The estimate of local interference level thus derived adjusts a variable quantizer which



typically provides two or more discrete levels of quantization, and the quantizer outputs then are combined in a non-coherent integrator. High detection efficiencies can thus be achieved even in environments where interference levels are unknown or changing.

3,778,826

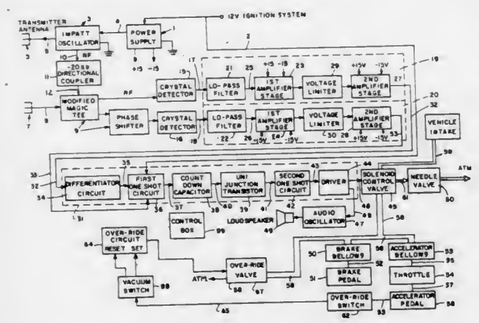
ANTI-COLLISION VEHICULAR RADAR SYSTEM

John B. Flannery, and Paul D. Flannery, both of Chelmsford, Mass., assignors to Merlin A. Pierson, Newton, Mass.

Continuation of Ser. No. 889,237, Dec. 30, 1969, abandoned. This application Sept. 25, 1972, Ser. No. 291,567

Int. Cl. G01s 9/02; B60t 7/12

U.S. Cl. 343—7 ED **9 Claims**



A simplified radar system mounted on a vehicle and having an unmodulated RF signal transmitter-receiver beamed along a path to reflect signals from any obstacle. A novel circuit including an assymmetrical magic tee; an opening and closing Doppler discriminator, a closing Doppler frequency sensing means, a transitory obstacle discriminator and an override means is arranged to control power means which pulses the brakes, when driver inattention, or fog, requires braking or turning in time to avoid collision. The system reacts only in emergency stop situations to avoid collision by substituting the relatively short reaction time of the Doppler sensing radar system for the relatively long reaction time of an operator and in being independent of all other parameters such as input from vehicle speedometer, distributor or the like.

3,778,827

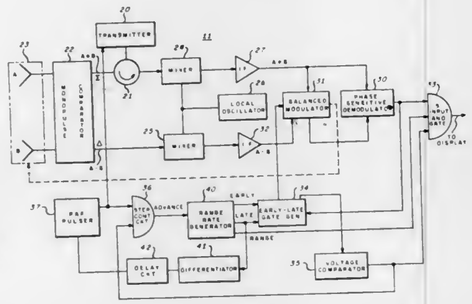
SHORT RANGE MONOPULSE MARINE SEARCH RADAR FOR SMALL OBJECT DETECTION

Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Jan. 27, 1972, Ser. No. 221,277

Int. Cl. G01s 9/16, 9/22

U.S. Cl. 343—7.3 **11 Claims**



The subject invention comprises a short range monopulse marine search radar for detecting small targets such as channel markers in the water. The radar has its antenna directed so that its monopulse null intersects the surface of the water at an initial minimum range proximate the radar over which sea clutter is below the boresight line. This initial range is investigated by very narrow transmitted rf pulses to determine the presence of targets therein. The antenna is subsequently controlled in elevation by a signal coupled through a balanced modulator to the antenna so that the intersection of the monopulse null and the water surface is positioned at successive increased ranges which are investigated by the very narrow transmitted pulses. At each successive range, the geometry provided by the position of the radar antenna and the position of the monopulse null-water surface interface is such that sea clutter is below the boresight line and each successive range segment is increased exponentially by a range gate. When the range gate and the elevation monopulse both interpret the same time as corresponding to the time interval between the firing of the transmitter and the time corresponding to the range to the surface of the water, above-boresight targets in the range segment preceding this interface are interpreted as being other than sea clutter and are displayed on a display device.

3,778,828

RANGE-GATED DIGITAL AMTI SYSTEM

Wilmer H. McFarland, Fullerton, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

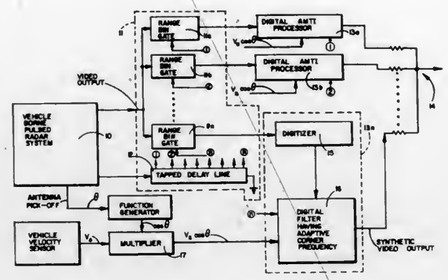
Filed Feb. 27, 1967, Ser. No. 618,823

Int. Cl. G01s 9/42

U.S. Cl. 343—7.7 **23 Claims**

A pulsed energy system for airborne use and having range-gated digital means for doppler processing of moving-target signals. A digitizer generator provides a first pulse train, indicative of the video output of the system receiver, as an up-

count input to an up-down counter. An adjustable pulse train, (corresponding to the function $V_m \cos\theta$) is applied as a down-



count input to the up-down counter. A synthetic video, or display, signal is gated-on in response to an overflow condition of the up-down counter.

3,778,829

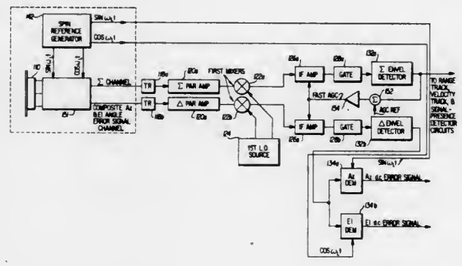
GUARDED MONOPULSE RADAR SYSTEM

R. Noel Longuemare, Jr., Ellicott City, and David H. Mooney, Jr., Arnold, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 18, 1972, Ser. No. 227,542

Int. Cl. G01s 9/22

U.S. Cl. 343—16 M **8 Claims**



A Guarded Monopulse Radar System is disclosed for generating azimuth and elevation difference (or error) signals proportional to the angular displacement of the detected radar target from the antenna boresight axis and for generating a sum signal indicative of the target range. The azimuth and elevation difference signals are modulated in quadrature with sine and cosine signals of a reference frequency. The modulated signals are then added to a portion of the sum signal to provide a composite signal. The aforementioned steps are performed at microwave frequencies and the resultant signals are subsequently converted to IF signals by "beating" with a signal derived from a local oscillator. IF signals corresponding to the sum signal and the composite signal are amplified in a circuitry including fast, automatic gain control (AGC). The amplified signals are then demodulated in accordance with the reference signal to provide signals indicative of azimuth and elevation errors.

3,778,830

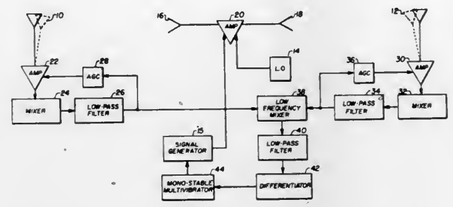
VIBRATION COMPENSATION FOR RANGE DIRECTION FINDER

Horace M. Joseph, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1972, Ser. No. 283,449

Int. Cl. G01s 3/10, 9/02

U.S. Cl. 343—17.7 **4 Claims**



Apparatus for compensating signal direction of arrival measurements used for direction finding and ranging for phase errors generated by changes in the relative positions of receiving antennas due to vibration or structural weaving. The apparatus can be used to advantage in monopulse radar systems wherein the relative phase between the signals induced in separated antennas is used to deduce target position. Local oscillator power and, when required, auxiliary signals are electromagnetically coupled to at least two identical receivers over portions of incoming signal path to produce a unique error signal. Auxiliary signals are coupled if vibrations are not symmetrical or are not sufficiently in synchronism. The auxiliary signals are coupled during "quiet" intervals when no received signals are present to provide reference signals over the same portions of incoming signal path.

3,778,831

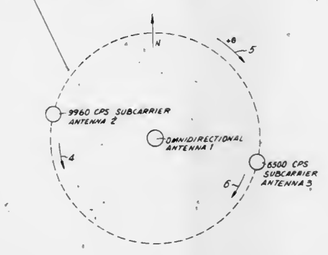
COMPATIBLE DOUBLE PRECISION DOPPLER OMNIDIRECTIONAL BEARING SYSTEM

Nathan Marchand, 311 Riversville Rd., Greenwich, Conn.

Filed Apr. 7, 1971, Ser. No. 132,100

Int. Cl. G01s 1/38

U.S. Cl. 343—106 D **10 Claims**



A circular antenna array has a first antenna and second and third antennas or a first antenna and two pairs of antennas arranged around the first antenna on a circular perimeter of which the first antenna is the center of the circular array. A frequency modulation is generated in the signals associated with the second and third antennas or the two pairs of antennas characteristic of a rotational condition of the second and third antennas or the two pairs of antennas on the perimeter at a low frequency in a manner whereby the second and third antennas or two pairs of antennas are rotated in opposite directions around the perimeter to provide a phase difference

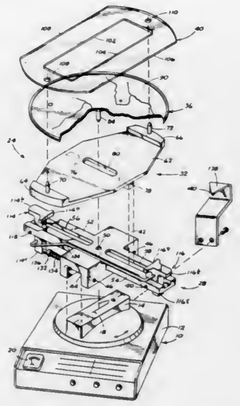
in electrical degrees in the modulation of the signals which are radiated which is double the actual displacement in azimuth degrees. A signal radiated from the center antenna is used as a reference to eliminate the 180° ambiguity.

3,778,832

POSITION PLOTTING APPARATUS

Eben H. Carruthers, 40 Warren, Warrenton, Oreg.

Filed June 22, 1972, Ser. No. 265,191
Int. Cl. G01s 5/08
U.S. Cl. 343—112 PT **9 Claims**



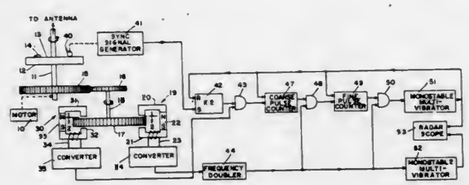
Position-plotting apparatus which may be mounted on and is rotatable with the directional antenna of a radio direction finder. The apparatus includes a mounting bracket which may be secured to the antenna, a chart platform mounted on the bracket for rotation independent of the antenna about an axis coinciding with the rotational axis of the antenna for supporting a chart of a given region, locking shoes for releasably locking the chart platform in a selected position relative to the antenna, and a parallel line overlay overlying the chart platform. The overlay has elongated, parallel straight edges, and is mounted for movement over the chart platform with the straight edges of the overlay being maintained parallel to the directional axis of the antenna, permitting lines paralleling the directional axis of the antenna to be drawn on any part of the chart.

3,778,833

MAGNETIC-ELECTRONIC POSITION ENCODER

Salvatore J. Castrovillo, Marlton, N.J., and Henry A. Smollin, Brooklyn, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 29, 1971, Ser. No. 167,408
Int. Cl. G01s 3/16
U.S. Cl. 343—118 **2 Claims**



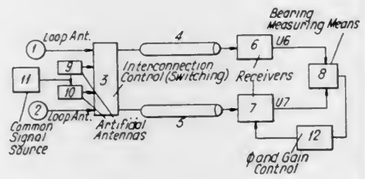
A radar antenna scanning in a horizontal plane is affixed to a rotating shaft. The shaft has in addition a cammed disc and gearwheel mounted to it. The cammed disc actuates a switch at the same azimuth on each revolution of the shaft. The gearwheel forms part of a mechanical coupling driving a magnetic wheel having a plurality of teeth at the outer circumference and a slot inward of the outer circumference. The magnetic wheel forms part of two magnetic circuits that generate separate electrical signals that are converted into pulses. The switch actuates a counting system that counts a predetermined number of known pulses formed from both generated signals to indicate the antenna is pointing in a predetermined direction. A signal is then generated to give such indication.

3,778,834

DIRECTION FINDER CALIBRATION SYSTEM

Dag Poppe, Gjettum, and Gunnar Viggo Odegaard, Simensbraten, both of Norway, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 4, 1972, Ser. No. 250,274
Claims priority, application Norway, May 7, 1971, 1732
Int. Cl. G01s 3/34
U.S. Cl. 343—119 **8 Claims**



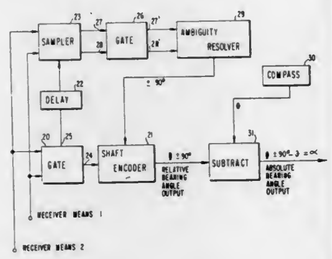
An updating (calibration) system for two channel direction finders comprising two loop antennas and a reference (sense) antenna. Individual receivers connect each of the two loop antennas to bearing measuring means and means are included for updating the gain and phase of the two receivers to equality. Apparatus is also included for interconnecting the input of the two receivers during the updating mode of operation to facilitate calibration (equalization) of the channels. A common signal source which is either the reference (sense) antenna or the one of the two loops having the greatest signal at the time, is applied to both signals through artificial antenna devices which are actually equalizers for calibration purposes.

3,778,835

BEARING DETECTION SYSTEM

Gerson Scharf, Fairfax, Va., assignor to Computer Sciences Corporation, Paramus, N.J.

Filed Apr. 20, 1971, Ser. No. 135,611
Int. Cl. G01s 3/46
U.S. Cl. 343—113 R **4 Claims**



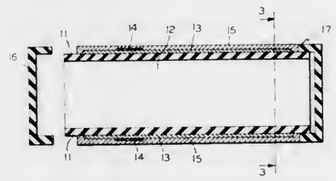
A system for determining the bearing of aircraft traveling in formation with respect to a master aircraft leading the formation. The master aircraft has a transmitter located thereon while each craft in formation has at least a pair of spaced-apart receiver means located thereon. If the craft are helicopters, each receiver means of a pair of receiver means is located at the respective end of a rotary blade of the helicopter. If the craft do not have rotary blades the receiver means are stationarily located and successive pairs of receiver means are successively sampled so that with respect to the spaced receiver means the equivalent apparent rotation is achieved. At the time when the signals from the transmitter arrive at both receiver means of a pair of receiver means at the same instant of time it is known that a line from the transmitter to the midpoint of a line connecting the pair of receiver means is perpendicular to the line connecting the pair of receiver means and the bearing is determined.

3,778,836

MAGNETIC ANTENNA HAVING A BLOCK OR CIRCUIT COMPONENTS THEREIN

Takashi Tanaka, 340 Oaza Kisaichi, Katano-cho, Kitakawachi-gun, Osaka-fu, Japan

Continuation-in-part of Ser. No. 679,351, Oct. 31, 1967, abandoned. This application Apr. 27, 1971, Ser. No. 137,998
Claims priority, application Japan, Dec. 27, 1966, 41/922; Dec. 28, 1966, 41/10
Int. Cl. H01q 7/08, 1/24
U.S. Cl. 343—702 **10 Claims**



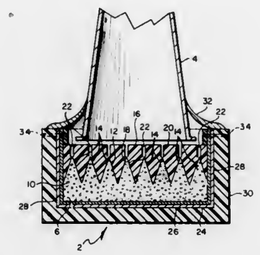
An antenna for a receiver comprising a magnetic core in the form of a thin layer having a thickness less than 50 microns superposed on a casing of a receiver or on a block of components of the receiver, and a winding wound on said magnetic core and connected electrically to the components in the casing or in the block, the winding serving as the antenna for the receiver. A receiver which comprises said antenna.

3,778,837

PRECISION CALIBRATION TARGET FOR RADIOMETERS

Walter N. Hardy, Vancouver, B. C., Canada, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 17, 1972, Ser. No. 281,583
Int. Cl. G01s 7/40
U.S. Cl. 343—703 **3 Claims**



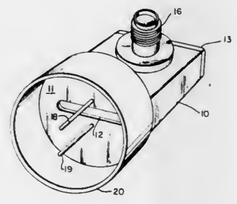
A radiometer reference target comprising a porous mass of microwave absorbing material having lateral dimensions substantially equal to those of the antenna horn of the radiometer to be calibrated having one surface facing said horn configured to minimize microwave radiation, a quantity of fluid whose temperature is accurately known saturating said porous mass, a cap of non-porous microwave transparent material covering said one surface of said porous mass and having one surface configured to mate with and disposed in contiguous relation with said one surface of said porous mass, and shield of microwave reflective material disposed about the other surfaces of said porous mass to retain said fluid within said porous mass. Both method and apparatus are disclosed.

3,778,838

CIRCULAR SYMMETRIC BEAM FORMING APPARATUS

Alvin Clavin, Calabasa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 1, 1972, Ser. No. 311,210
Int. Cl. H01q 21/00, 13/10
U.S. Cl. 343—727 **9 Claims**



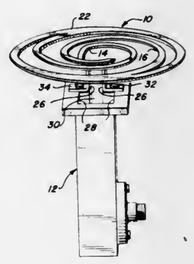
An antenna is disclosed having an X-section pattern that is circular symmetric, i.e., the antenna produces a beam having equal E and H plane patterns of the type required to achieve circular polarization over a large angular portion of the beam. In general, the antenna is implemented by no less than one slot in a ground plane across the bottom of a conductive cylindrical cup and mutually coupled to and straddled by two dipoles that are normal to the ground plane. In a circularly polarized version of the invention, crossed slots are excited by a rotating electric field.

3,778,839

DOUBLE RIDGED WAVE GUIDE FEED FOR SIGNAL ANTENNA

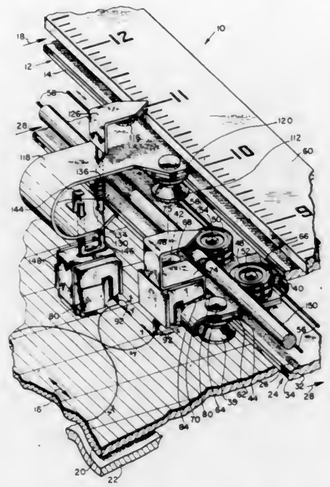
George F. Kovar, Berwyn, Ill., assignor to The Hallicrafters Co., Rolling Meadows, Ill.

Filed July 30, 1971, Ser. No. 167,782
Int. Cl. H01q 1/36
U.S. Cl. 343—772 **8 Claims**



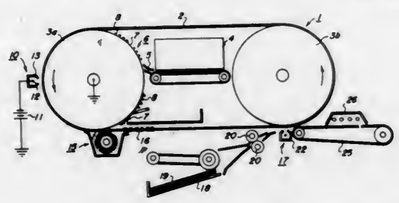
A microwave antenna system comprising a balanced two-arm spiral antenna or pyramidal antenna is directly fed at its center pole by a double ridged wave guide.

3,778,840
DISPOSABLE FIBER TIP MARKER
William R. Dahl, Lakewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 14, 1971, Ser. No. 180,403
Int. Cl. G01d *9/40, 9/30*
U.S. Cl. 346—30 **8 Claims**



Disposable fiber tip marker means for a flat bed plate type recorder includes first and second markers each comprising a fiber tip pen and cartridge, each cartridge having a flat base wall which is disposed at an angle of 17° with respect to the plane of a recorder chart. The fiber tip pen associated with each cartridge extends at substantially a right angle from the related base wall. Each cartridge also includes a second flat wall which extends at an obtuse angle from said base wall. The cartridges are arranged with each of said second walls disposed in adjacent and parallel planes and with the fiber tip pens thereof extending substantially to said planes whereby each fiber tip pen is capable of recording on substantially the same time line of said chart.

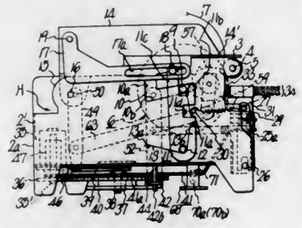
3,778,841
INDUCTION IMAGING SYSTEM
Robert W. Gundlach, Victor, and Richard C. Vock, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 50,763, June 29, 1970, abandoned, which is a continuation-in-part of Ser. No. 697,084, Jan. 11, 1968, abandoned. This application Aug. 9, 1972, Ser. No. 278,892
Int. Cl. G01d *15/06*; **G03g** *5/02, 15/22*
U.S. Cl. 346—74 ES **14 Claims**



The invention relates to an induction imaging system suitable to accomplish development of an electrostatic latent image at a point remote from the photosensitive surface on which the latent image is originally formed. In one embodiment, an image support member bearing an electrostatic latent image is presented to a self-supporting film in the form of a continuous induction web, an image being thereby induced in the web, developed thereon and subsequently transferred to a receiver material. The continuous induction web may be charged with a negative, positive, ground or alternating potential while in contact with the image support member depending on the polarity of the electrostatic latent image on the image support member; or the continuous web may not be externally charged where only line copy reproduction is desired.

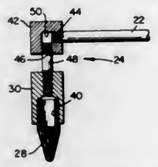
In another embodiment of the invention, an image support member carrying an electrostatic latent image is presented to a receiver material having a bulk resistivity in the range of from about 10^7 to 10^{14} ohm-cm. An electrostatic image is induced in the receiver material, developed thereon and fixed thereto or transferred to a secondary copy sheet material and fixed thereon.

3,778,842
PRINTER
Etsuro Saito, Yokosuka, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sept. 27, 1971, Ser. No. 184,124
Claims priority, application Japan, Sept. 29, 1970, 45/85450
Int. Cl. G01d *15/28, 15/24*
U.S. Cl. 346—136 **4 Claims**



A recording medium is wound on a roller shaft, a feed roller feeds the recording medium in a predetermined direction, a recording head assembly records information signals on the recording medium and a drive mechanism drives the recording head assembly to scan the recording medium. A spring is provided between the roller shaft and the feed roller to urge them to contact each other.

3,778,843
REPLACABLE PEN TIP MOUNTS
Aubrey R. Tullos, 1510 Haywood Ave., Odessa, Tex.
Filed Apr. 11, 1972, Ser. No. 243,004
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 **11 Claims**

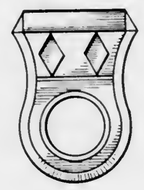


Several embodiments of replaceable mounting structures for the pen heads of recording pen systems are disclosed. A pen tip is secured in a mounting chamber which is attached to a capillary ink feed tube through a ink transfer mounting block having inserts for securing the pen tube and the pen tip mounting chamber thereto.

DESIGNS

DECEMBER 11, 1973

229,522
CANDY RING
Warren A. Parker, Metuchen, N.J., assignor to Ce-De Candy, Inc., Union, N.J.
Filed Sept. 24, 1971, Ser. No. 183,745
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—15



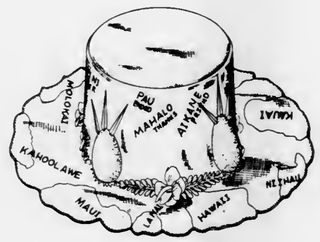
229,523
PANTS
Herman Browdy, 3906 38th St., Brentwood, Md. 20722
Filed May 26, 1972, Ser. No. 257,483
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28



229,524
SHOE SOLE OR SIMILAR ARTICLE
Aubrey Askew, Southport, England, assignor to Dunlop Limited, Erdington, Birmingham, England
Filed Sept. 27, 1971, Ser. No. 184,314
Claims priority, application Great Britain Mar. 29, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



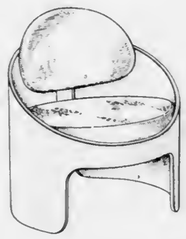
229,525
HAT
Gary Kiyoshi Kobashikawa, 3460 Maluhia St., Honolulu, Hawaii 96816
Continuation of abandoned design application Ser. No. 161,402, July 12, 1971. This application Nov. 30, 1972, Ser. No. 310,841
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—250



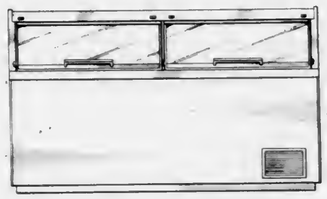
229,526
LOUDSPEAKER DISPLAY FIXTURE
William R. Saidel, Olympia Fields, Ill., assignor to Electronic Industries Incorporated, South Holland, Ill.
Filed Sept. 20, 1971, Ser. No. 182,292
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—20



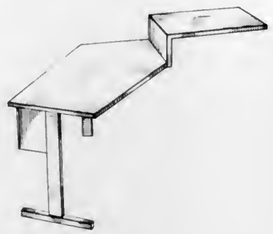
229,527
CHAIR
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed May 19, 1971, Ser. No. 145,093
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—69



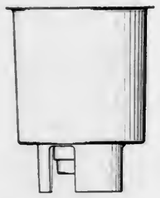
229,528
ICE CREAM DISPLAY CABINET
Bernard L. Rothbardt, Sherman Oaks, Calif., assignor to Baskins-Robbins Inc., Burbank, Calif.
Filed Sept. 3, 1971, Ser. No. 177,927
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—168



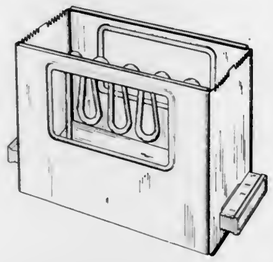
229,529
DESK
Frank Gallagher, Manhasset, and Gordon Perry, Bayside, N.Y., assignors to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Apr. 17, 1972, Ser. No. 245,015
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



229,530
COFFEE MAKER
Oscar Strother Simpson, Jr., Houston, Tex., assignor to Toddy Products Inc., Houston, Tex.
Filed Nov. 11, 1971, Ser. No. 198,034
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—41



229,531
ELECTRIC BARBECUE UNIT
Jean Mantelet, Paris, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France
Filed Nov. 3, 1972, Ser. No. 303,426
Claims priority, application France June 26, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110



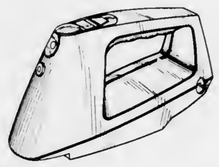
229,532
MICROWAVE OVEN BROILER RACK
Albert E. Colato, St. Paul, and Peter Newman Daly, Minneapolis, Minn., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Mar. 5, 1973, Ser. No. 337,809
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—136



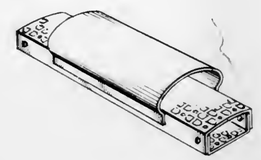
229,533
KNIFE
James F. Pugh, Sr., 917 Carpenter St., Azle, Tex. 76020
Filed Aug. 23, 1972, Ser. No. 283,073
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—144



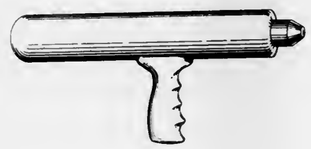
229,534
HOUSING FOR GRASS SHEARS OR THE LIKE
Stephen K. Lauderback, Elmhurst, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Oct. 11, 1972, Ser. No. 296,715
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



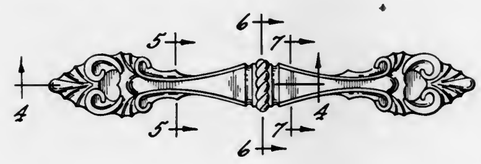
229,535
HALF-ROUND FLAT, HOLLOW FILE
Elwin Theobald, 4631 Solano Way, Fair Oaks, Calif. 95628
Filed Dec. 2, 1971, Ser. No. 204,392
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—90



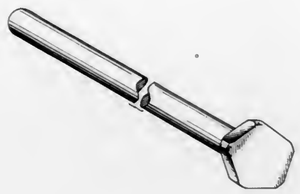
229,536
PORTABLE CUTTING TORCH
Donald C. Bonk, San Jose, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 15, 1971, Ser. No. 180,942
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—98



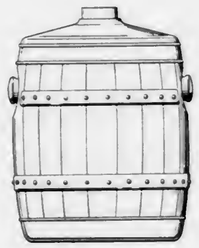
229,537
PULL
Laverne E. Clayton, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Aug. 1, 1972, Ser. No. 277,104
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166



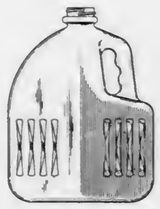
229,538
HEAD FOR CONCRETE FORM TIE RODS
William J. Steffan, Fremont, Calif., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.
Filed July 6, 1971, Ser. No. 160,270
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—228



229,539
BOTTLE
Peter L. Schweizer, Liberty Center, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 3, 1972, Ser. No. 268,483
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—28



229,540
JUG
Victor F. Anderson, 13 W. Mantua Ave., Wenonah, N.J. 08090
Filed Feb. 7, 1972, Ser. No. 224,407
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



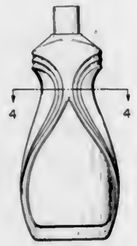
229,541
JUG
Victor F. Anderson, 13 W. Mantua Ave., Wenonah, N.J. 08090
Original design application Feb. 7, 1972, Ser. No. 224,407. Divided and this application Jan. 23, 1973, Ser. No. 326,229
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



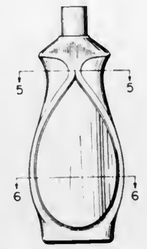
229,542
BOTTLE
Peter L. Schweizer, Liberty Center, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 7, 1972, Ser. No. 278,369
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—59



229,543
BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 14, 1972, Ser. No. 280,153
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115



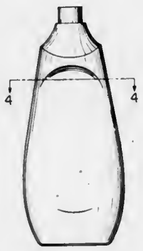
229,544
BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 15, 1972, Ser. No. 289,681
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115



229,545
BOTTLE
Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 15, 1971, Ser. No. 208,514
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—140



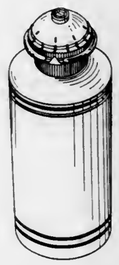
229,546
BOTTLE
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 28, 1972, Ser. No. 267,191
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—143



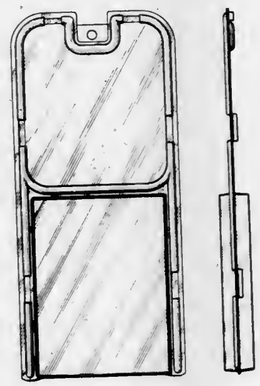
229,547
BOTTLE
Kenji Hanamura, Tokyo, Japan, assignor to Tancho Co., Ltd., Higashi-ku, Osaka, Japan
Original design application Dec. 31, 1970, Ser. No. 26,716. Divided and this application Oct. 14, 1971, Ser. No. 189,481
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—157



229,548
CONTAINER FOR LIQUIDS
Arnold H. Kranz, Chicago, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.
Filed Aug. 12, 1971, Ser. No. 171,414
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—169



229,549
CASSETTE DISPLAY PACKAGE OR THE LIKE
Joseph A. Mascetti, Jr., Geneva, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.
Filed Feb. 1, 1972, Ser. No. 222,712
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—182



229,550
BOX
Karen G. Heller, 162 Hamilton Road, Rockville Centre, N.Y. 11570
Filed Oct. 4, 1971, Ser. No. 186,592
Term of patent 3½ years
Int. Cl. D9—*03*
U.S. Cl. D9—198



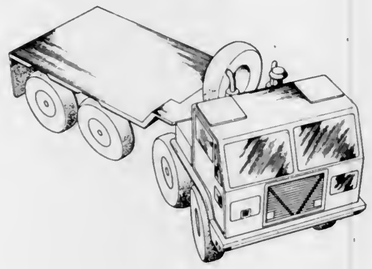
229,551
DOOR
William J. Horgan, Jr., 1299 Folkstone Drive, Pittsburgh, Pa. 15216
Original design application June 1, 1970, Ser. No. 23,254. Divided and this application June 17, 1971, Ser. No. 154,248
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



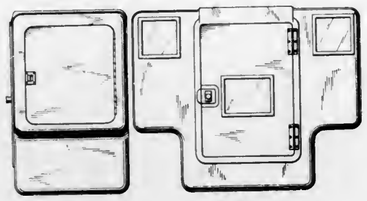
229,552
POST
William J. Horgan, Jr., 1299 Folkstone Drive, Pittsburgh, Pa. 15216
Original design application July 2, 1969, Ser. No. 18,032, now Patent No. 220,476. Divided and this application Oct. 13, 1970, Ser. No. 25,472
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—7



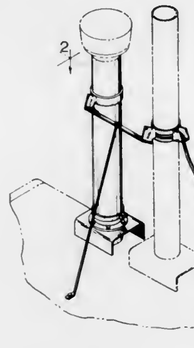
229,553
ARTICULATED ALL TERRAIN VEHICLE
Henry A. Ford, San Jose, and David R. Fleming and James F. King, Cupertino, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Aug. 11, 1971, Ser. No. 171,044
Term of patent 14 years
Int. Cl. D12—*09, 10*
U.S. Cl. D14—3 J



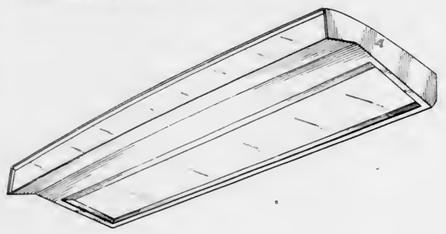
229,554
DEMOUNTABLE PERSONNEL CAB FOR PICKUP TRUCKS
Jack T. Bell, 16304 SE. 16th St., Vancouver, Wash. 98664
Filed Sept. 17, 1971, Ser. No. 181,648
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—3 J



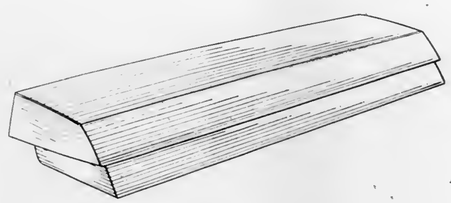
229,555
AIR CLEANER STACK ASSEMBLY AND MOUNT FOR TRACTORS
Andy M. Rustemeyer, Rte. 1, Box 18, Creston, Wash. 99117
Filed Nov. 19, 1971, Ser. No. 200,659
Term of patent 3½ years
Int. Cl. D12—*09*
U.S. Cl. D14—6 A



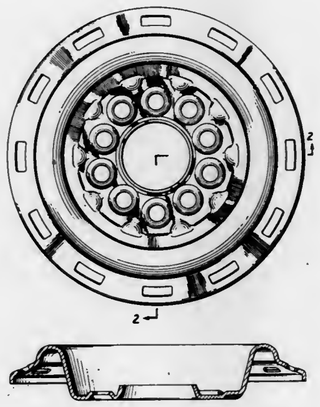
229,556
PERISCOPE-TYPE REARVIEW MIRROR
Lynn Harold Hodge, 841 McNichols W., Highland Park, Mich. 48203
Filed Apr. 6, 1970, Ser. No. 22,263
Term of patent 3½ years
Int. Cl. D12—*14*
U.S. Cl. D14—6 M



229,557
PERISCOPE-TYPE REARVIEW MIRROR
Lynn Harold Hodge, 841 McNichols W., Highland Park, Mich. 48203
Filed Apr. 6, 1970, Ser. No. 22,267
Term of patent 3½ years
Int. Cl. D12—*14*
U.S. Cl. D14—6 M



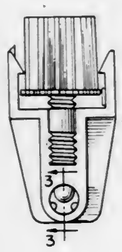
229,558
SPIDER FOR A WHEEL
James L. Brainard, 6237 Kauffman Ave., Temple City, Calif. 91780, and Robert J. Palm, 18297 Midbury, Brea, Calif. 92621
Continuation-in-part of abandoned design application Ser. No. 191,579, Oct. 21, 1971. This application June 15, 1972, Ser. No. 262,948
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—30 R

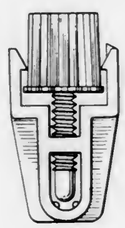


229,559
MOLTEN METAL SAMPLING TUBE
Rudolph J. Palme, Hamilton, Ontario, Canada, assignor to Evacuo Enterprises Limited, Hamilton, Ontario, Canada
Filed Mar. 12, 1971, Ser. No. 123,934
Term of patent 14 years
The portion of the term of the patent subsequent to May 5, 1984, has been disclaimed
Int. Cl. D24—*02*
U.S. Cl. D16—1

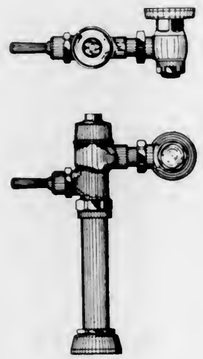


229,560
FLOW CONTROL CLAMP
George K. Burke and Kenneth Raines, Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.
Filed Dec. 6, 1972, Ser. No. 312,488
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—1 R

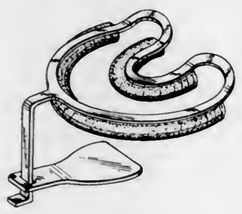




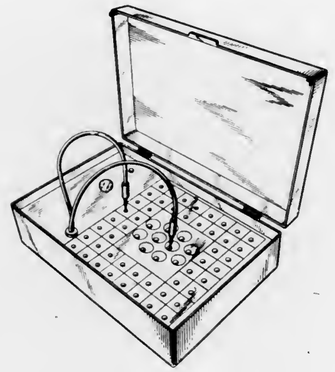
229,561
COMBINATION FLUSH VALVE AND CONTROL VALVE
James A. Sloan, River Forest, and Axel B. Nelson, Mount Prospect, Ill., assignors to Sloan Valve Company
Filed Mar. 8, 1971, Ser. No. 122,257
Term of patent 14 years
The portion of the term of the patent subsequent to July 14, 1984, has been disclaimed
Int. Cl. D23—*01*
U.S. Cl. D23—38



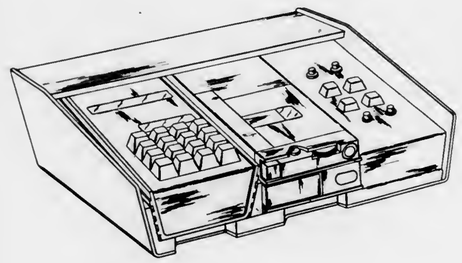
229,562
COTTON ROLL HOLDER
Jack E. Sturdivant, Oakwood Road, Rte. 4, Ames, Iowa 50010
Filed Dec. 21, 1972, Ser. No. 317,269
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D



229,563
EDUCATIONAL DEVICE
Harold C. Sirkin, Wayne, and Ernest Sirkin, Edison, N.J., assignors to Educational Progress, Inc., Wayne, N.J.
Filed Dec. 23, 1971, Ser. No. 211,489
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R



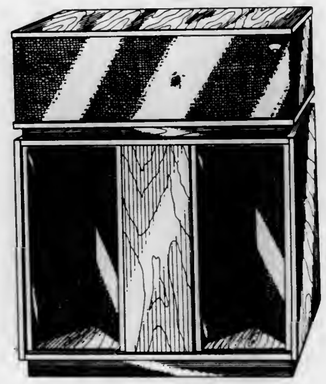
229,564
COMBINED DATA ENTRY AND DISTRIBUTION TERMINAL
George E. Chadima, Jr., 3624 Skylark Lane SE., Cedar Rapids, Iowa 52403
Filed Feb. 4, 1971, Ser. No. 112,836
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



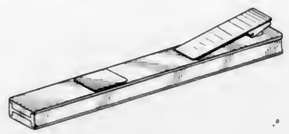
229,565
BAFFLED LOUD-SPEAKER
Charles Legorju, Montreuil, France, assignor to Societe Audax, Montreuil, France
Filed Mar. 10, 1972, Ser. No. 233,860
Claims priority, application France Sept. 14, 1971
Term of patent 7 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



229,566
LOUDSPEAKER CABINET
Paul W. Klipsch, Hope, Ark., assignor to Klipsch and Associates, Inc., Hope, Ark.
Filed Oct. 12, 1971, Ser. No. 188,660
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14 G

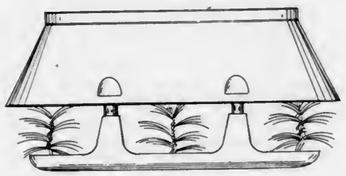


229,567
RADIO PAGER OR SIMILAR ARTICLE
Arnold S. Goldman and Donald K. Krumin, Fort Lauderdale, Fla., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 4, 1971, Ser. No. 169,157
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K

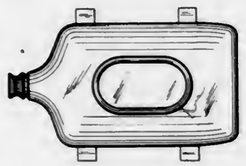




229,568
SAFETY ENCLOSURE FOR YOUNG FISH
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed Apr. 6, 1972, Ser. No. 241,881
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6



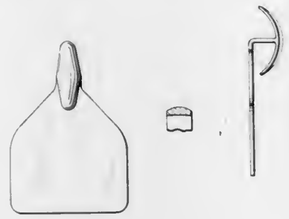
229,569
FISH AQUARIUM
Gary L. Anielak, 325 Buck St., Collinsville, Ill. 62234
Filed Apr. 10, 1972, Ser. No. 242,888
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—9



229,570
HORSE WALKER
Bennie J. Johnson, 16046 Maplegrove, La Puente, Calif. 91744
Filed Mar. 31, 1972, Ser. No. 240,330
Term of patent 14 years
Int. Cl. D30—*07*
U.S. Cl. D30—42



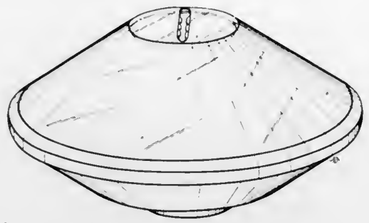
229,571
EAR TAG
Donald David Fearing, Mahtomedi, Minn., assignor to Fearing Manufacturing Company, St. Paul, Minn.
Filed Sept. 23, 1971, Ser. No. 183,294
Term of patent 14 years
Int. Cl. D30—*08*
U.S. Cl. D30—43



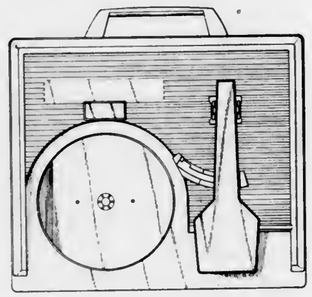
229,572
TOY DOG
Betty Jo Gonzalez, 5426 S. Wolcott, Chicago, Ill. 60609
Filed Sept. 14, 1971, Ser. No. 180,535
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



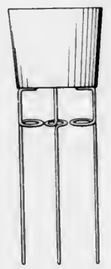
229,573
SAVINGS BOX
Heikki Travela, 12 Arinatie, 00370 Helsinki 37, Finland
Filed Dec. 28, 1971, Ser. No. 213,240
Claims priority, application Finland July 2, 1971
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—11 R



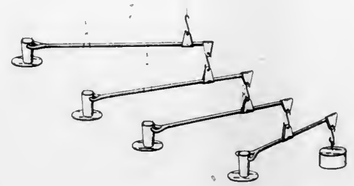
229,574
TOY RECORD PLAYER
Paul A. Martin, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 30, 1971, Ser. No. 214,532
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C



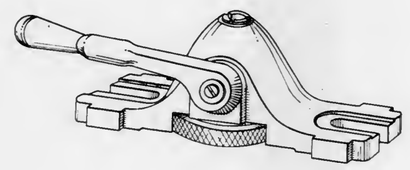
229,575
FLOWER POT HOLDER
Charles G. Dallas, 108 Broadway, Mantua Terrace, N.J. 08051
Filed June 21, 1971, Ser. No. 155,380
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 C



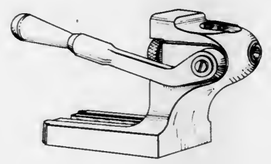
229,576
CANDLE CHANDELIER MOBILE
Edwin T. Blake, East Fishkill, N.Y. (Rte. 376, Hopewell Junction, N.Y. 12533)
Filed Feb. 14, 1972, Ser. No. 226,388
Term of patent 14 years
Int. Cl. D26—*01*; D11—*02*
U.S. Cl. D48—2



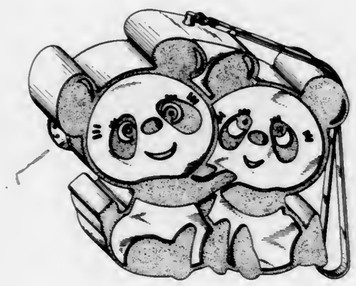
229,577
VERTICAL COLLET FIXTURE
Orlando Mileti, Four Mile Point Road, Athens, N.Y. 12015
Filed May 3, 1971, Ser. No. 140,022
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—4



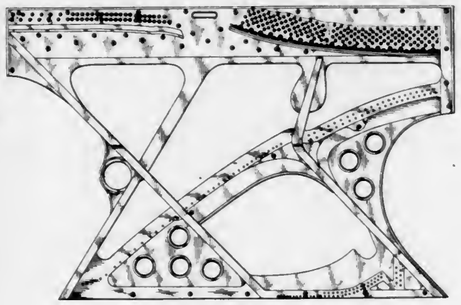
229,578
HORIZONTAL COLLET FIXTURE
Orlando Mileti, Four Mile Point Road, Athens, N.Y. 12015
Filed May 3, 1971, Ser. No. 140,023
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—4



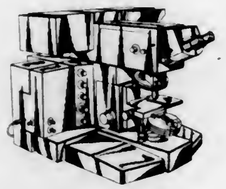
229,579
RADIO
Morris Fink, Great Neck, N.Y., assignor to Windsor Industries, Inc., Plainview, N.Y.
Filed Dec. 11, 1972, Ser. No. 313,830
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

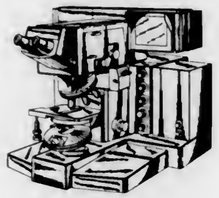


229,580
PIANO STRING PLATE OR SIMILAR ARTICLE
Salvatore Pagliaro, 21—16 21st Ave., Astoria, N.Y. 11105
Filed Oct. 26, 1971, Ser. No. 192,693
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

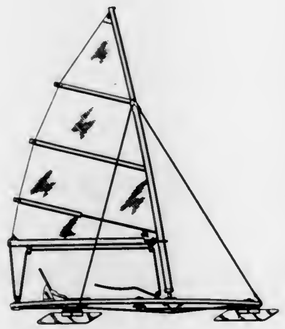


229,581
MICROSCOPE
John T. Armbruster, Niagara Falls, N.Y., and Adolf Kenzian, Vienna, Austria, assignors to American Optical Corporation, Southbridge, Mass.
Filed Mar. 26, 1973, Ser. No. 345,048
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D57—1 E

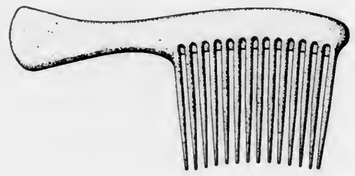




229,582
ICEBOAT
Robert D. Wotton, 28 Hering Road, Montvale, N.J. 07645
Filed May 3, 1972, Ser. No. 250,102
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1 BB



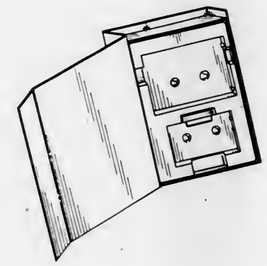
229,583
COMB
Franklin De Heart Harvey, 100 E. Broad St., Richmond, Va. 23219
Filed June 29, 1972, Ser. No. 267,687
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



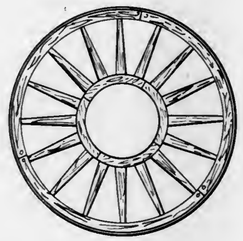
229,584
BOOTJACK
Elmer O. Billingslea, Jr., Salina, Okla. 74365
Filed July 18, 1972, Ser. No. 272,893
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D86—10 D



229,585
PACKAGING CONTAINER FOR AUDIO-VISUAL CASSETTES
Alan R. Singleton, Croton-on-Hudson, N.Y., assignor to North American Philips Corporation, New York, N.Y.
Filed June 24, 1971, Ser. No. 156,578
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



229,586
HOLDER FOR A TOKEN COIN
Donald J. Frost, 2506 W. Crescent, Racine, Wis. 53403
Filed June 7, 1971, Ser. No. 150,886
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—3 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF DECEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc., mesne: *See—*
Calhoun, Frederick L., 3,778,617.

A/S Ingeniorfiroiset Fornhart & Giertsen: *See—*
Graver, Odd, 3,777,446.

AB Bahco Ventilation: *See—*
Wikstrom, Gunnar Wilhelm, 3,778,593.

Abalo, Juan Manuel, to Noel y Compania Limitada Sociedad Anonima Argentina. Mold structure. 3,778,018, Cl. 249-120.000.

Abbott, Joseph L., to Victor Metal Products Corporation. Apparatus for making rolled collapsible container having plastic outsert. 3,778,321, Cl. 156-446.000.

Abbott Laboratories: *See—*
Flouret, George Rogelio, 3,778,427.

Abe, Eiji: *See—*
Aiko, Hideo; Okamoto, Takao; Abe, Eiji; Tsukihashi, Kazunobu; and Yamashita, Koichi, 3,777,661.

Abrac Corporation: *See—*
Kimura, Tomiaki; Ohniura, Yasuhiro; Yoshimura, Tamotsu; Kohyama, Katsuhisa; and Watanabe, Kenzo, 3,778,402.

Abramson, Harvey J., to Searle, G. D., & Co., mesne. Intrauterine contraceptive devices and inserters therefor. 3,777,748, Cl. 128-130.000.

A.C. Manufacturing Company: *See—*
Schade, John Alan; and Levy, Hans, 3,778,042.

ACF Industries, Incorporated: *See—*
Carney, John L., Jr.; and Duggi, Richard H., 3,778,114.

Acme Highway Products Corporation: *See—*
Shappe, James F., 3,777,353.

Adair, Leonard T. Swimming pool user warning system. 3,778,804, Cl. 340-272.000.

Adams, Bobby F.: *See—*
Pyne, William J.; Gullo, James M.; and Adams, Bobby F., 3,778,247.

Adams, Frederick John, to Cam Gears Limited. Mechanical drive transmission systems. 3,777,589, Cl. 74-498.000.

Adams, Larry D., to Metrologic Instruments Inc. Optical alignment target apparatus. 3,778,169, Cl. 356-172.000.

Adams, Michael L. Shrimp cleaning device. 3,777,333, Cl. 17-72.000.

Adams, Whitney R., to Scott Paper Company. Heat resistant and oxidation resistant structures. 3,778,336, Cl. 161-168.000.

Aerojet-General Corporation: *See—*
Luscher, Werner P.; and Schoenman, Leonard, 3,778,183.

Afga-Gevaert Aktiengesellschaft: *See—*
Wick, Richard; Brath, Alfred; and Wagensonner, Eduard, 3,778,558.

Agfa-Gevaert AG: *See—*
Winkler, Alfred; Lermann, Peter; and Fauth, Guenter, 3,777,641.
Winkler, Alfred; Lermann, Peter; and Fauth, Guenter, 3,777,642.

Agfa-Gevaert Aktiengesellschaft: *See—*
Gernert, Herbert; Glockner, Hans; Meier, Ernst; Ohlschlager, Hans; and Riester, Oskar, 3,778,273.
Gotze, Johannes; Bockly, Erich; and Riester, Oskar, 3,778,279.
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, 3,777,998.
Weinert, Volker; Frankiewicz, Gerhard; and Engelac, Gunter, 3,777,960.

Agridustrial Electronics, Inc.: *See—*
Voget, Ronald F., 3,778,707.

Ahlborn, George H.: *See—*
Roller, Kent G.; Ahlborn, George H.; and Brown, Richard E., 3,778,308.

Ahrendt & Birkendahl HG: *See—*
Ahrendt, Heinrich; and Birkendahl, Karl, 3,778,220.

Ahrendt, Heinrich; and Birkendahl, Karl, to Ahrendt & Birkendahl HG. Apparatus and method for shrinking plastic sheet material about stacked goods. 3,778,220, Cl. 432-5.000.

Aiko, Hideo; Okamoto, Takao; Abe, Eiji; Tsukihashi, Kazunobu; and Yamashita, Koichi, to Shinko Electric Co., Ltd. and Kobe Steel Ltd. Method and device for marking sheets through stencils. 3,777,661, Cl. 101-114.000.

Ainsworth, Sheldon E. Meat flavoring syringe. 3,777,655, Cl. 99-532.000.

Air Products and Chemicals, Inc.: *See—*
Birckhead, Lennox, 3,777,874.
Cornelius, Edward B.; and Koester, David W., 3,778,388.

Air-Industrie: *See—*
Marchal, Paul-Henri, 3,777,408.

Akatsu, Mitsuhiro: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.

Akerblom, Carl-Artur, to Allmanna Svenska Elektriska Aktiebolaget. Method of manufacturing a binder in a varnish for varnishing electroplates. 3,778,284, Cl. 106-162.000.

Akiyama, Naoki: *See—*
Mizuno, Hideaki; Konno, Toshio; and Akiyama, Naoki, 3,778,266.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Floessel, Dieter, 3,778,526.
Hohn, Alfred; and Novacek, Peter, 3,778,182.

Alamo Iron Works: *See—*
Lohman, John H., 3,777,527.

Albaugh, Arden A.: *See—*
Vornberger, George F.; and Albaugh, Arden A., 3,778,079.

Albert, William C.: *See—*
Hendler, Harvey S.; Albert, William C.; and Evans, John, 3,778,123.

Albright & Wilson Limited: *See—*
Holker, Kenneth Urmston, 3,778,358.

Albright & Wood Limited: *See—*
Hoye, Peter Albert Theodore; and Wood, Donald Albert, 3,778,456.

Albright, Charles Jere; Fitch, Clifford E., Sr.; and Fitch, Clifford E., Jr. Method for closing the opening of a food cooking receptacle. 3,778,524, Cl. 426-230.000.

Alderfer, Sterling W., to Steelastic Company, The. Reinforced tire fabric of helically formed, laterally spaced, single filament wires. 3,778,329, Cl. 161-47.000.

Alexander, Emmett L. Load sway control for trailers. 3,778,088, Cl. 280-406.00a.

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Alexandrov, Alexandr Sergeevich; Schegolevatykh, Vadim Dmitrievich; Saveliev, Vyacheslav Ivanovich; and Zakharov, Mikahil Fedorovich. Tool outfit for extruding hollow shapes. 3,777,544, Cl. 72-468.000.

Alfa-Laval AB: *See—*
Danielsson, Nils Harry, 3,777,714.
Kuellgren, Ove Allan Valentin, 3,777,972.

Ali, Syed Aejaz; and Doherty, Orval Austin, to General Electric Company. Incinerator. 3,777,677, Cl. 110-8.00r.

Alinari, Carlo. Instrument for indicating the length and number of decompression pauses in undersea diving. 3,777,573, Cl. 73-432.00r.

All-Steel Equipment, Inc.: *See—*
Driscoll, Richard P.; Lannert, James W.; and Beaver, Donald V., 3,778,014.

Allegheny Ludlum Industries, Inc.: *See—*
Bloom, William M., 3,778,221.
Kindlimann, Lynn E.; and Greene, Alexander B., 3,778,235.

Allen, Herbert, to Cameron Iron Works, Inc. Method of assembling valve. 3,777,342, Cl. 29-157.100.

Allen, James H.; and Polyzoes, Demetrois. Superposed sheet detector. 3,778,051, Cl. 271-57.000.

Allen, Philip, to Beck, Charles, Machines Corporation. Box lid removing apparatus. 3,777,455, Cl. 53-381.00a.

Allen-Bradley Company: *See—*
Walters, Ronnie G.; Markley, Theodore J.; and Jennings, Richard E., 3,778,696.

Alleweireldt, Fernand, to N.V. Bekaert S.A. Device for carrying coiled material such as a coil of barbed wire. 3,778,002, Cl. 242-129.000.

Alley, Lewis F.: *See—*
Long, Marshall; Alley, Lewis F.; and Reynolds, William A., 3,777,600.

Alley-Johnson Company: *See—*
Cortner, William C., Jr., 3,777,716.

Allied Chemical Corporation: *See—*
Morris, Paul S.; and Hutzler, Robert H., 3,778,391.
Pennington, James Ronald; and Gardiner, Errol Murray, 3,778,108.
Rosano, Henri L.; and Gerbacia, William E., 3,778,381.
Vermeer, Dick Charles; and Washington, James MacKnight, 3,777,338.
Weaver, Clarence W.; and Scroggins, Robert R., 3,777,820.

Alling, Richard L., to Torrington Company, The. Separator insert for thrust bearings. 3,778,124, Cl. 308-235.000.

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Allis-Chalmers Corporation: *See—*
Clark, Thomas F., 3,778,574.
Holman, Burdette M., 3,778,748.
Miller, Bernard G., 3,777,853.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Akerblom, Carl-Artur, 3,778,284.
Nilsson, Jan; and Brinkeborn, Bertram, 3,777,362.

Alloy Metals, Inc.: *See—*
Endsley, Richard A., 3,778,258.

Allport, Davies. Irrigation pitting. 3,777,980, Cl. 239-272.000.

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Allwood, Searle & Timney Limited: *See—*
Searle, John Gilbert; and Hunt, David John, 3,777,967.

Almich, Clarence L.: *See—*
Rennick, Lyle V.; Shore, John D.; Mitchael, William L.; Weiss, Ronald B.; and Almich, Clarence L., 3,777,559.

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Rizzi, Peter A., 3,778,733.

Altman, Gerald, to Norsid Industries, Inc. Low profile episcopic projector and opaque materials therefor. 3,778,142, Cl. 353-44.000.

Amchem Products, Inc.: *See—*
Weston, Warren E.; and Cooke, Anson R., 3,778,248.

Amemiya, Koitsuro: *See—*
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,778,325.

American Cyanamid Company: *See—*
Baker, Jesse Lee, 3,778,469.
Williams, Laurence Lyman; and Coscia, Anthony Thomas, 3,778,339.

American Optical Corporation: *See—*
Dianetti, Joseph C., 3,778,135.
Walker, Terence, 3,778,164.

American Thread Company, The, mesne: *See—*
Devine, Howard E., 3,778,004.

American Velcro, Inc.: *See—*
Perina, Joseph, 3,777,435.

Ameron, Inc.: *See—*
Hospert, John C., 3,778,107.

Ametek, Inc.: *See—*
Kalagidis, Memorial, 3,777,367.

AMF Incorporated: *See—*
Durdin, Peter Robert, 3,777,582.

Amoco Production Company: *See—*
Dendy, Jackie D.; Johnson, Robert D.; and Peevey, Robert M., 3,777,813.

AMP Incorporated: *See—*
Forney, Edgar Wilmot, Jr., 3,778,535.

Ampex Corporation: *See—*
Precin, Raymond J.; and Mottoon, Robert T., 3,778,560.

Amsted Industries Incorporated: *See—*
Takarada, Eiichi, 3,778,579.

Amtab Manufacturing Co.: *See—*
Hanusiak, Tadeusz J., 3,777,675.

Anaconda Company, The: *See—*
Otto, Joachim F., 3,777,660.

Anders, Raymond H.; and Folgmann, Helmut G., to GTE Automatic Electric Laboratories Incorporated. Method of and an apparatus for measuring an electrical characteristic of a granular material. 3,778,708, Cl. 324-62.000.

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Anderson, Hartley G. Safety support for pneumatic tires. 3,777,797, Cl. 152-158.000.

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Anderson, Richard F., to Grace, W. R., & Co. Method and apparatus for pricing case packed canned goods. 3,777,445, Cl. 53-14.000.

Anderson, Rodney H.; and Muntjanoff, John R., to Caterpillar Tractor Company. Mounting bracket for hydraulic cylinders. 3,777,824, Cl. 172-801.000.

Andow, Paul; Guillen, David; and Diaz, Raul G. Walker with adjustable crutch head supports. 3,778,052, Cl. 272-70.400.

Andreev, Valentin Efimovich; Pankovsky, Vyacheslav Ivanovich; Golub, Taras Fedorovich; and Buryabash, Alexei Nikolaevich; deceased (by Buryabash, Nelya Vasilievna; administrator). Method of erecting monolithic concrete and reinforced concrete constructions 3,778,491, Cl. 264-32.000.

Andres, Rudolf, to Daimler Benz Aktiengesellschaft. Pneumatic servomotor. 3,777,625, Cl. 92-48.000.

Andrews, Del; and Kuhlman, Ora Florentine. Method and apparatus for facilitating diver operations. 3,777,498, Cl. 61-69.00r.

Angersbach, Wolfgang; and Meier, Karl-Heinz, to Quick-Rotan Becker & Notz, KG. Arrangement for setting the speed of an electric motor, particularly the motor of an industrial sewing machine. 3,778,692, Cl. 318-305.000.

Anglo Paper Products, Limited: *See—*
Prochazka, Oldrich, 3,778,485.

Anglo-Transvaal Consolidated Investment Company, Limited: *See—*
Taylor, Richard F.; and Dimitriou, Christos, 3,778,106.
Taylor, Richard F., 3,778,113.

Anson Incorporated: *See—*
Anderson, Olof Verner, 3,777,336.

Ansonia Clock Company, Inc.: *See—*
Nofziger, Dale, 3,777,701.

Antemacraft Company: *See—*
Miller, Richard A., 3,778,537.

Antonini, Evandro, to Colgate-Palmolive Company. Soap formulations for polishing aluminum surfaces. 3,778,378, Cl. 252-91.000.

Applebaum, David C.: *See—*
Mallozzi, Philip J.; Epstein, Harold M.; Walters, Craig T.; Applebaum, David C.; and Gallagher, William J., 3,778,585.

Application des Gag: *See—*
Corlet, Gabriel, 3,777,789.

Aquatic Systems, Inc.: *See—*
Jahn, Darrel S., 3,778,803.

Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, to Kabushiki Kaisha Ricoh. Zinc oxide photoconductive element with starch reaction product interlayer. 3,778,263, Cl. 96-1.800.

Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, to Kabushiki Kaisha Ricoh. Zinc oxide photoconductive element with an epoxy group containing interlayer. 3,778,264, Cl. 96-1.800.

Arai, Ryoji: *See—*
Izumi, Takashi; and Arai, Ryoji, 3,777,547.

ARDAC/USA, Incorporated: *See—*
Novak, Frank A.; Schreiber, Kenneth T.; and Hydo, Steven J., 3,778,628.

Area, Manuel; and Bauer, Lowell W., to General Electric Company. Adaptive quantizing and integrating detector for pulse-echo systems. 3,778,825, Cl. 343-7.000.

Arff, Uwe F.; and Edwards, Gordon J., to Outboard Marine Corporation. Saw chain lubrication means. 3,777,401, Cl. 30-383.000.

Arikawa, Yoshijiro; Takeuchi, Seiji; and Sagusa, Hisayuki. Method of automatically analyzing amino acids by liquid chromatography and color-developing solution therefor. 3,778,230, Cl. 23-230.00m.

Arita, Koshei. Apparatus for supplying a predetermined quantity of electric power. 3,778,637, Cl. 307-140.000.

Arkon Scientific Laboratories: *See—*
Link, William T.; and Portner, Peer M., 3,778,697.

Armco Steel Corporation: *See—*
Baker, William J., 3,778,029.

Armstrong Cork Company: *See—*
Elliott, Charles G., and Mazzur, Richard P., 3,778,291.

Arnold, Thomas E.; and Plumer, Roy D., to General Motors Corporation. Flap opening inflator seal arrangement. 3,777,772, Cl. 137-68.000.

Arya, Vishwa Prakash, to Ciba-Geigy AG. 4-Tetrahydro pyridyl, hydroxy alkyl pyrazoles. 3,778,443, Cl. 260-294.80r.

Arya, Vishwa Prakash, to Ciba-Geigy AG. 1-Phenyl,4-alkanoyl pyrazoles. 3,778,444, Cl. 260-296.00r.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Hamasaki, Masafumi, 3,778,083.
Suzuki, Isamu, Ohmura, Jukichi; and Satoo, Yuukoo, 3,777,470.

Asano, Gyoichi: *See—*
Shichijo, Yuzo; Asano, Gyoichi, and Takama; Eizo, 3,778,374

Asano, Hiroaki. *See—*
Kurimoto, Mikishi; and Asano, Hiroaki, 3,777,441.

Asbelle, Charles C.; and Porter, Gerald K., to United States of America, Navy. Area source of collimated light and scanning mechanism. 3,777,643, Cl. 95-12.000.

Ashkin, Arthur. Neutral particle beam separator and velocity analyzer using radiation pressure. 3,778,612, Cl. 250-251.000.

Ashland Oil, Inc.: *See—*
Gannon, Charles R.; and Beddoe, George H., 3,778,397.
Kovach, Stephen M.; and Patrick, Ralph E., 3,778,484.

Ashley, James D. Low pollution food unit. 3,778,515, Cl. 426-108.000.

Ashworth, Denis Henry, to Simon Engineering Dudley Limited. Hydraulically operated access equipment. 3,777,845, Cl. 182-17.000.

Aspinwall, Robert H., to General Motors Corporation. Cooled turbine rotor and its manufacture. 3,778,188, Cl. 416-97.000.

Astberg, Ake: *See—*
Lundstrom, Jan-Horje; Nyberg, Ake; Hamlin, Roland; and Astberg, Ake, 3,777,723.

Aston, Keith. Printing of photographic colour negatives. 3,778,150, Cl. 355-38.000.

Astra Lakemedel Aktiebolag: *See—*
Gronowitz, Salo Schmul; Michael, Uri; and Sjoberg, Berndt Olof Harald, 3,778,463.

Atchison, George J.: *See—*
Mani, Inder; and Atchison, George J., 3,778,364.

Ateliers de Constructions: *See—*
Sartori, Rolland, 3,777,581.

Ates Componenti Elettronici S.p.A.: *See—*
Romano, Aldo, 3,778,698.

Aubin, Guy; and Manoussos, Georges, to Societe anonyme dite: L'Oreal. Method for combatting scaling of the scalp. 3,778,502, Cl. 424-266.000.

Audio-Optics Corporation, mesne: *See—*
Castellano, Peter J.; and Galuten, Jerry H., 3,778,137.

Aulor, Jerry T.: *See—*
Gant, Preston L.; Motes, Bill G.; and Aulor, Jerry T., 3,778,162.

Aumiller, Clyde F.; Morrison, Lowell D.; and Holinbeck, Dale G., to Barber-Colman Company. Tantalum insufflator. 3,777,742, Cl. 128-2.00a.

Auto-Place, Inc.: *See—*
Potter, Ronald, 3,777,902.

Automation Industries, Inc.: *See—*
Fairchild, Wayne K., 3,778,327.

Automobile Peugeot: *See—*
Piret, Jean, 3,777,849.

Automobiles Peugeot: *See—*
Regneault, Marcel; and Perez, Jean, 3,777,977.

Avco Corporation, mesne: *See—*
Bass, Harland A.; and Faroudja, Yves C., 3,778,718.

Axen, Udo F., to Upjohn Company, The. Certain bicyclic lactones. 3,778,450, Cl. 260-343.300.

Ayerst, McKenna and Harrison Limited: *See—*
Jirkovsky, Ivo; Humber, Leslie G.; Demerson, Christopher A.; and Dobson, Thomas A., 3,778,449.

B. & W. Manufacturing Co. Inc., mesne: *See—*
Boser, Ronald J., 3,777,314.

B/K Electric Co., Inc.: *See—*
Burch, Lyndon W., 3,778,739.

Babcock, David L.: *See—*
Metzger, Lenard M.; and Babcock, David L., 3,778,545.

Baccaglini, Russell C.; and Rogers, Kenneth J., to Ocean Recovery Systems, Inc. Latent buoyancy system. 3,777,692, Cl. 114-54.000.

Back, Paul: *See—*
Weatherly, Gilbert L.; and Back, Paul, 3,777,538.

Badische Anilin- & Soda-Fabrik Aktiengeselschaft: *See—*
Hild, Willi; Zahradnik, Franz; Zahn, Erwin; and Priebe, Edmund, 3,778,407.
Krauch, Carl Heinrich; and Sanner, Axel, 3,778,294.
Mueller, Herbert; and Goetz, Norbert, 3,778,477.
Sturm, Hans-Juergen; and Tritschler, Claus, 3,778,448.

Baer, Stephen C., to Operations Analysis Inc. Construction toy. 3,777,393, Cl. 46-25.000.

Baier, John P. Plug having independent axial and lateral compression means. 3,778,539, Cl. 174-152.00r.

Bain, James A., to General Electric Company. Strain-leaf burr height detector. 3,777,558, Cl. 73-105.000.

Bajars, Laimonis: *See—*
Croce, Louis J.; and Bajars, Laimonis, 3,778,488.

Baker, Dale A.; and McCarthy, John M., to Cutler-Hammer, Inc. Tape controlled order picking system. 3,777,910, Cl. 214-16.00b.

Baker, Jesse Lee, to American Cyanamid Company. Isolation of prostaglandins from plexaura homamalla. 3,778,469, Cl. 260-499.000.

Baker, Richard D.; Hayter, Sidney W.; and Lewis, Homer D., to United States of America, Atomic Energy Commission. Method for producing UO_2 loaded refractory metals. 3,778,380, Cl. 252-301.10r.

Baker, William J., to Armco Steel Corporation. Ball valve. 3,778,029, Cl. 251-315.000.

Ball Brothers Research Corporation: *See—*
Roller, Kent G.; Ahlborn, George H.; and Brown, Richard E., 3,778,308.

Balston, William J., to EG&G, Inc. Capacitive intrusion detection system with balanced resonant circuits. 3,778,807, Cl. 340-258.00c.

Bamberg, George. Pump for parenteral injections and the like. 3,778,195, Cl. 417-474.000.

Bamser, Frank G., Jr.: *See—*
Rohrbaugh, George W.; and Bamser, Frank G., Jr., 3,778,059.

Bandukwalla, Phiroze, to General Motors Corporation. Radial diffuser. 3,778,186, Cl. 415-181.000.

Banigan, Thomas F.: *See—*
Morrisroe, John J.; and Banigan, Thomas F., 3,778,479.
Morrisroe, John J.; and Banigan, Thomas F., 3,778,482.

Barber, Claude L., to Yaun Manufacturing Company, Inc. Material handling implement. 3,777,918, Cl. 214-138.00r.

Barber-Colman Company: *See—*
Aumiller, Clyde F.; Morrison, Lowell D.; and Holinbeck, Dale G., 3,777,742.

Barcus, Jack L.; Kilroy, Eugene J., Jr.; Morin, Marius J.; and Parker, John C., to Mattel, Inc. Simplified toy launcher. 3,777,391, Cl. 46-1.00k.

Bardot, Ernest Roger. Method of making skeletal tetrahedrons. 3,777,359, Cl. 29-463.000.

Barlow, Charles Brian; and Tomlin, Clive Dudley Spencer, to Imperial Chemical Industries Limited. Chemical compounds and compositions. 3,778,437, Cl. 260-256.40n.

Barnes Drill Co.: *See—*
Estabrook, Mark R., 3,777,788.

Barnes, John V., to Ford Motor Company. Rear suspension system for a motor vehicle. 3,777,838, Cl. 180-71.000.

Barnes, Ronald B., to Du Pont de Nemours, E. I., and Company, mesne. Terminal applicator. 3,777,349, Cl. 29-203.000.

Barnett, Erwin M.: *See—*
Esposito, Vincent J., Jr., 3,778,054.

Barnhart, James H.: *See—*
Gambs, Gerard C.; Nix, William H.; Barnhart, James H.; and Cathcart, John G., 3,778,239.

Barnstorf, Joachim, to Henkel & Cie G.m.b.H. Process for the production of hydroxy-fatty acid esters. 3,778,465, Cl. 260-409.000.

Barratt, William C. Apparatus for producing cement sheets. 3,778,206, Cl. 425-86.000.

Barron, Ellis. Flectrum operating means. 3,777,612, Cl. 84-258.000.

Barteck, Werner W., to Rehkopf Industries, Inc. Locking material-handling tray. 3,777,885, Cl. 206-72.000.

Baruffa, Olindo, to Mefina S.A. Sewing machine. 3,777,685, Cl. 112-220.000.

Bass, Harland A.; and Faroudja, Yves C., to Avco Corporation, mesne. Modulation system. 3,778,718, Cl. 325-139.000.

Battelle Memorial Institute: *See—*
Mallozzi, Philip J.; Epstein, Harold M.; Walters, Craig T.; Applebaum, David C.; and Gallagher, William J., 3,778,585.

Bauer Bros. Co., The: *See—*
Ginaven, Marvin E., 3,777,893.

Bauer, Lowell W.: *See—*
Area, Manuel; and Bauer, Lowell W., 3,778,825.

Bauer, Lowell W., to General Electric Company. Sum-rank normalized detection apparatus. 3,778,822, Cl. 343-5.00r.

Bauer, Paul, Jr., to Owens-Illinois, Inc. Apparatus and method for controlling a centrifugal compressor. 3,778,695, Cl. 318-481.000.

Baumann, Bernard: *See—*
Doucerain, Jacques; and Baumann, Bernard, 3,778,017.

Bausch & Lomb, Incorporated: *See—*
Welham, Brian H., 3,778,134.

Baxter Laboratories, Inc.: *See—*
Bishop, Robert C.; Fekete, Lajos F.; and Shanbrom, Edward, 3,778,352.
Woessner, Roger J., 3,777,697.

Bayati, Abutorab, to Siemens Aktiengesellschaft. Method and apparatus for analog-digital conversion. 3,778,812, Cl. 340-347.0nt.

Bayer Aktiengesellschaft: *See—*
Bockmann, August; Trenczek, Gerhard; Rudolph, Hans; Wiegreffe, Wolfgang; and Ritter, Wolfgang, 3,778,289.
Draber, Wilfried; Timmler, Helmut; Buchel, Karl Heinz; and Plempel, Manfred, 3,778,447.
Kuth, Robert; Hildebrand, Dietrich; and Bien, Hans-Samuel, 3,778,228.
Oertel, Harald; Roos, Ernst; and Ley, Kurt, 3,778,409.
Schubart, Rudiger; Eholzer, Ulrich; Kempermann, Theo; and Roos, Ernst, 3,778,419.
Wiechers, Herbert; and Heikaus, Reinhard, 3,778,362.

Bayley, Donald S.; Greenwood, Ivan A., Jr.; and Simpson, James H., Jr., to Singer-General Precision, Inc. Optically pumped nuclear magnetic resonance gyroscope. 3,778,700, Cl. 324-.50r.

Beall, William George. Marine elevator. 3,777,691, Cl. 114-48.000.

Beard, Hoyt S., to Reynolds, R. J., Tobacco Company. Method for manufacturing jet impingement type filters for smoking articles. 3,778,328, Cl. 156-215.000.

Beaston, Bud A. Device for locating sore spots on horse hooves. 3,777,741, Cl. 128-2.000.

Beaver, Donald V.: *See—*
Driscoll, Richard P.; Lannert, James W.; and Beaver, Donald V., 3,778,014.

Beck, Charles, Machines Corporation: *See—*
Allen, Philip, 3,777,455.

Beck, Maurice E., to Kunkle Valve Co., Inc. Valve and method of making the same. 3,777,783, Cl. 137-625.500.

Becker, Joseph J.; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, to Firmenich S.A., mesne. Methods for the manufacture of macrocyclic compounds. 3,778,483, Cl. 260-666.0py.

Becker, Otto Alfred. Resistance welding of sheet metal coated with layers. 3,778,583, Cl. 219-91.000.

Becker, Philipp: *See—*
Lindsay, Anthony; Imperati, Ronald Lee; and Becker, Philipp, 3,778,202.

Becker, Roger T.; Hatter, Stephen L.; and McMullin, Donald, Jr., to Kalamazoo Conveyor Company. Plow harpoon-type conveyor. 3,777,880, Cl. 198-221.000.

Beckman Instruments, Inc.: *See—*
Chervenka, Charles Henry, 3,778,171.

Beddoe, George H.: *See—*
Gannon, Charles R.; and Beddoe, George H., 3,778,397.

Beer, Henri Bernard, to Chemnor Corporation. Electrode and coating therefor. 3,778,307, Cl. 117-221.000.

Belitz, Fritz; and Bender, Karl-Richard, to Minox GmbH. Device for feeding exposure values to apparatus including photoelectric exposure meters and control devices. 3,777,635, Cl. 95-10.0ct.

Bell & Howell Company: *See—*
McClure, Richard J., 3,778,145.
Robbins, Harry, 3,778,373.

Bell Canada-Northern Electric Research Limited: *See—*
Hood, David Frederick, 3,778,773.
Reedyk, Cornelius Wilfred, 3,778,561.

Bell, Robert E.: *See—*
Huelsman, Gregory J.; Bell, Robert E.; and Rohe, Gerald Edward, 3,778,395.

Bell Telephone Laboratories, Incorporated: *See—*
Bobeck, Andrew Henry; Copeland, John Alexander, III; and Wolfe, Raymond, 3,778,788.
Courtney-Pratt, Jeofry Stuart, 3,778,361.
Montgomery, William Lloyd, 3,778,605.
Pinnow, Douglas Arthur; Van Uitert, Legrand Gerard; and Williams, John Charles, 3,778,132.
Weiner, David William, 3,778,554.

Bell-Northern Research, Ltd.: *See—*
Frame, Robert Michael Gray, 3,778,642.

Bellinger, James E.: *See—*

MacNeill, John H.; Bellinger, James E.; Lidkea, Harrison B.; and Seib, Kenneth L., 3,777,417.

Bendayan, Jacques, to Cables de Lyon-Alsacienne-Geoffroy. Safety device for pipe lines under gas pressure. 3,778,799, Cl. 340-235.000.

Bender, Emil A. Pumping and servicing rig. 3,777,491, Cl. 60-372.000.

Bender, Karl-Richard: *See—*
Belitz, Fritz; and Bender, Karl-Richard, 3,777,635.

Bendix Corporation, The: *See—*
Moore, Robert G., Jr., 3,777,478.
Needham, James M., 3,778,117.

Bendler, Hellmut: *See—*
Gawlick, Heinz; Bendler, Hellmut; and Jensen, Ernst, 3,777,664.

Benjamin, John Stanwood, to International Nickel Company, Inc., The. Dispersion strengthened electrical heating alloys by powder metallurgy. 3,778,249, Cl. 75-5.0bc.

Benziger, Theodore M., to United States of America, Atomic Energy Commission. High-energy plastic bonded explosive. 3,778,319, Cl. 149-92.000.

Berg Electronics, Inc.: *See—*
Marks, Richard L., 3,778,755.

Bergantzel, Richard P.: *See—*
Haley, David M.; and Bergantzel, Richard P., 3,777,326.

Berger, Abe; and Selin, Terry G., to General Electric Company. Sylyl maleates and polysiloxane maleates. 3,778,459, Cl. 260-448.20n.

Bergmeyer, Hans Ulrich; Bernt, Erich; Gruber, Wolfgang; Schmidt, Felix Helmut; and Stork, Harald, to Boehringer Mannheim Gesellschaft mit beschrankter Haftung. Diagnostic agent and method for determining glucose. 3,778,350, Cl. 195-103.50c.

Bergsten, Mary E.; and Bergsten, Ralph A. Sports pocket for wearing apparel. 3,777,313, Cl. 2-247.000.

Bergsten, Ralph A.: *See—*
Bergsten, Mary E.; and Bergsten, Ralph A., 3,777,313.

Bernard, Pierre James, to Esso Research and Engineering Company. Synthetic carboxylic acids of high molecular weight. 3,778,455, Cl. 260-413.000.

Bernasconi, Raymond, to Ciba-Geigy Corporation. α-(1,2,3,4-Tetrahydro-6-quinolyl)-carboxylic acids and derivatives thereof for treating inflammation. 3,778,511, Cl. 424-258.000.

Berndt, Hartmut: *See—*
Doll, Robert; and Berndt, Hartmut, 3,778,122.

Bernsmann, Gert P., to Jones & Laughlin Steel Corporation. Method for treating metallic melts. 3,778,250, Cl. 75-58.000.

Bernstein, Frank: *See—*
Hueschen, Robert E.; and Bernstein, Frank, 3,778,654.

Bernt, Erich: *See—*
Bergmeyer, Hans Ulrich; Bernt, Erich; Gruber, Wolfgang; Schmidt, Felix Helmut; and Stork, Harald, 3,778,350.

Bernu, John M., to Timesavers, Inc. Wide belt sanding machine with improved support for outboard end of cantilevered center bar. 3,777,442, Cl. 51-135.00r.

Berriman, Lester P.: *See—*
Eversole, James F.; and Berriman, Lester P., 3,778,038.

Bertozzi, Eugene R., to Thiokol Chemical Corporation. Process for preparing polythiodiglycol. 3,778,478, Cl. 260-608.000.

Best, Donald Edward, to Levellers, A. M., and I., Ltd. Automatic device for trimming vessels. 3,777,694, Cl. 114-126.000.

Betts, Max William; and Robinson, Frank, to Courtaulds Limited. Knitted garment panel. 3,777,511, Cl. 66-76.000.

Bhagawan, Venkatesha S.; Jones, Richard A.; McDowell, Allen W.; Mine, George D.; Remsburger, Louis J.; Rupp, Bruce A.; and Whittaker, Rodney R., to International Business Machines Corporation. Keyboard with four character set shift. 3,778,819, Cl. 340-365.0s.

Biblarz, Oscar, to United States of America, Navy. Electrogasdynamic spectral anemometer. 3,777,564, Cl. 73-194.00f.

Bien, Hans-Samuel: *See—*
Kuth, Robert; Hildebrand, Dietrich; and Bien, Hans-Samuel, 3,778,228.

Bierwith, Stanton F., to Great Canadian Oil Sands, Limited. Method of providing alloyed zones on a hard faced workpiece. 3,778,580, Cl. 219-73.000.

Bilbrey, Robert A., to West, Benjamin W.; d/b/a California Controls Company. 3,777,696, Cl. 116-114.500.

Bilco, Arthur, to Raymond Corporation, The. Lift truck load wheel arrangement. 3,778,080, Cl. 280-104.50r.

Biller, Efim; Goller, Roman; Pflugk, Hellmuth; and Schlegel, Richard, to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft. Process for the production of alkyl dihydroxy benzenes. 3,778,481, Cl. 260-629.000.

Billester, Henry R., to Sloan Valve Company. Operating arrangement for flush valves. 3,778,023, Cl. 251-30.000.

Billi, G., & C., S.p.A.: *See—*
Conti, Paolo, 3,777,513.

Billmann, Gerhard Leonhard Emil: *See—*
Stieler, Alfred Otto Hugo; and Billmann, Gerhard Leonhard Emil, 3,777,926.

Bilow, Norman, to United States of America, Air Force. Process for preparing a polyphenylene lacquer and laminates fabricated therewith. 3,778,405, Cl. 260-33.80r.

Binard, William J.; and Dye, John F., to Kendall Company, The. Endometrical sampler. 3,777,743, Cl. 128-2.00b.

Biondo, Nunzio, to Italsider, Societa per Azioni. Self-locking for loop chains. 3,777,477, Cl. 59-93.000.

Birch, Fernando Francis: *See—*
Poenisch, Richard Bruce; and Birch, Fernando Francis, 3,778,382.

Birckhead, Lennox, 1/2 to Air Products and Chemicals, Inc. and 1/2 to Scott Paper Company, mesne. Powder deposition system. 3,777,874, Cl. 198-56.000.

Birge, William T.: *See—*
Podlewski, Robert S.; and Birge, William T., 3,778,118.

Birkendahl, Karl: *See—*
Ahrendt, Heinrich; and Birkendahl, Karl, 3,778,220.

Birmingham Small Arms Company Limited, The: *See—*
Taylor, Richard Alan, 3,778,231.

Bise, Donald L.; and Surprenant, Ronald J., to Lear Siegler, Inc. Voice frequency repeater. 3,778,563, Cl. 179-170.00r.

Bishel, Robert Anthony, to International Nickel Company, Inc., The. Self-shielding cored wire to weld cast iron. 3,778,588, Cl. 219-146.000.

Bishop, Robert C.; Fekete, Lajos F.; and Shanbrom, Edward, to Baxter Laboratories, Inc. Plasminogen assay system. 3,778,352, Cl. 195-99.000.

Bisset, Douglas Chisholm; and Pugh, Kenneth Mervyn, to Imperial Chemical Industries Limited. Apparatus for the manufacture of eccentric core/shell conjugate filaments. 3,778,208, Cl. 425-131.000.

Bixby Box Toe Co., Inc.: *See—*
Trask, Blair D., 3,778,251.

Blackwell, Lyman L.; and Staby, Paul A., to Statitrol Corporation. Self-monitoring battery operated circuit. 3,778,800, Cl. 340-249.000.

Blanchet, Pierre: *See—*
Recasens, Joseph; Blanchet, Pierre; and Duchenoy, Jacques, 3,777,805.

Blaschek, Otto. Intermittent movement for feeding film. 3,777,961, Cl. 226-57.000.

Blazey, Lawrence; Silverstrom, David; and Rocker, Elmer, to Century Products, Inc. Security top or guard for infant's dressing table or the like. 3,777,673, Cl. 108-27.000.

Bleson, Eric John George; Furmidge, Kenneth Frederick; Stanyon, Horace Edward; and Speller, John Rueben Thomas, to Thorn Electrical Industries, Limited. Electric lamps and discharge devices. 3,778,663, Cl. 313-318.000.

Blitzer, Frank: *See—*
Pease, Richard R.; Blitzer, Frank; Giordano, Arthur A.; and Less, Frank L., 3,778,166.

Blochlinger, Ernst, to Schweizerische Industrie-Gesellschaft. Single-directional track-guided vehicle. 3,777,670, Cl. 104-246.000.

Blok, Petrus; and Viersma, Taco Jan. Double-acting servomotor 3,777,621, Cl. 91-431.000.

Blonde, Pierre. Process for the production of lyophilized liver extract. 3,778,510, Cl. 424-106.000.

Bloom, William M., to Allegheny Ludlum Industries, Inc. Annealing furnace and method for its operation. 3,778,221, Cl. 432-11.000.

Boardman, Charles R.; and Knutson, Carroll F., to CER Geonuclear Corporation. Explosive fracturing method. 3,777,815, Cl. 166-247.000.

Bobeck, Andrew Henry; Copeland, John Alexander, III; and Wolfe, Raymond, to Bell Telephone Laboratories, Incorporated. Single wall domain propagation arrangement. 3,778,788, Cl. 340-174.0tf.

Bockly, Erich: *See—*
Gotze, Johannes; Bockly, Erich; and Riester, Oskar, 3,778,279.

Bockmann, August; Trenczek, Gerhard; Rudolph, Hans; Wiegreffe, Wolfgang; and Ritter, Wolfgang, to Bayer Aktiengesellschaft. Rendering inorganic pigments dispersible by incorporation of hydroxy-substituted 1,3-dioxa-2-sila-cyclohexanes. 3,778,289, Cl. 106-38.00q.

Bode, Charles H., Jr., to United States Steel Corporation. Quick release mechanism for continuous casting mold support frame. 3,777,436, Cl. 52-758.000.

Bodenseewerk Perkin-Elmer & Co., G.m.b.H.: *See—*
Schmedes, Helga; Hansen, Paul; and Welz, Bernhard, 3,778,156.

Bodway, George E., to Hewlett-Packard Company. Thin film capacitors and method for manufacture. 3,778,689, Cl. 317-258.000.

Boehringer Mannheim Gesellschaft mit beschrankter Haftung: *See—*
Bergmeyer, Hans Ulrich; Bernt, Erich; Gruber, Wolfgang; Schmidt, Felix Helmut; and Stork, Harald, 3,778,350.

Boeing Company, The: *See—*
Hergenruther, Paul M., 3,778,412.

Bohumir, Brozek: *See—*
Stanislav, Kabele; Ctibor, Doudlebsky; Frantisek, Jaros; Zdenek, Svec; and Bohumir, Brozek, 3,777,466.

Boisserand, Monique. Fluid distributor. 3,777,776, Cl. 137-270.000.

Boisvert, Albert E. Apparatus for extracting crab meat. 3,777,332, Cl. 17-71.000.

Bolda Werka Photographische Gerate und Kunststoff R. Gruter Kommanditgesellschaft: *See—*
Lange, Karl Heinz, 3,777,639.

Bolden, Thomas O.: *See—*
Hines, Rubin H.; Hollinshead, William L.; and Bolden, Thomas O., 3,778,159.

Boles, Ralph C., Jr.: *See—*
Long, Raymond E.; and Boles, Ralph C., Jr., 3,778,578.

Bolton, Benjamin A.: *See—*
Serres, Carl, Jr.; and Bolton, Benjamin A., 3,778,417.

Bomba, Andrew J.: *See—*
Bomba, Joseph A.; and Bomba, Andrew J., 3,777,421.

Bomba, Joseph A.; and Bomba, Andrew J. Lawn border. 3,777,421, Cl. 47-33.000.

Bombardier Limited: *See—*
Talbot, Jean-Guy, 3,777,583.

Bond's Wear Pty. Limited: *See—*

Lee, Harold Barry, 3,777,683.

Booker, Philip P.; and Zeliznak, Richard, to Cominco Ltd. Coating process. 3,778,315, Cl. 148-6.300.

Boque, John C.: *See—*
Sarbacher, Robert I., 3,778,632.

Borden Inc.: *See—*
Huelsman, Gregory J.; Bell, Robert E.; and Rohe, Gerald Edward, 3,778,395.

Borg-Warner Corporation: *See—*
Muench, Paul W., 3,777,509.

Borland, Walter G.: *See—*
Cromwell, Gordon W.; and Borland, Walter G., 3,778,730.

Bornfleth, Ulrich, to Hauni-Werke Korber Co. KG. Apparatus for manipulating containers for cigarettes or the like. 3,777,911, Cl. 214-16.40c.

Bose, Henri J.; Colin, Jean-Marie H.; and Debuisser, Jean-Claude A., to International Standard Electric Corporation. Digital means for computing fourier transform of a series of samples. 3,778,604, Cl. 235-152.000.

Bosch, Paul: *See—*
Zellbeck, Gustav; Bosch, Paul; Veil, Karl; and Lutz, Gerhard, 3,777,888.

Bosch, Paul, to Bosch, Robert, G.m.b.H. Leakage reducing arrangement for an axial piston machine. 3,777,623, Cl. 91-487.000.

Bosch, Robert, G.m.b.H.: *See—*
Bosch, Paul, 3,777,623.
Duffner, Josef, 3,778,224.
Kinzel, Richard; and Mladek, Walter, 3,777,986.
Knapp, Heinrich; and Jaggle, Gunther, 3,777,726.
Liermann, Peter, 3,778,777.
Metzger, Hans; Brill, Klaus; and Hornung, Friedrich, 3,778,311.
Reber, Harald; Jahnke, Horst; and Steiner, Walter, 3,778,313.
Stumpp, Gerhard; and Schuster, Gregor, 3,777,725.
Zellbeck, Gustav; Bosch, Paul; Veil, Karl; and Lutz, Gerhard, 3,777,888.

Boser, Ronald J., to B. & W. Manufacturing Co. Inc., mesne. Garment or like article having a slide fastener attached thereto. 3,777,314, Cl. 2-265.000.

Bosley, Denis V.: *See—*
Staats, William A.; Bosley, Denis V.; Cook, John S.; and Yamasaki, Toshio, 3,777,394.

Bosley, Denis V.; and Chang, Richard S., to Mattel, Inc. Detachable power module for flying toy aircraft. 3,777,420, Cl. 46-243.0av.

Bossers, Pieter A.: *See—*
Van Der Waaij, Dirk; Erkelens, Hendrik J.; Bossers, Pieter A.; and Kruiswijk, Franciscus J., 3,777,736.

Botnick, Irlin H.: *See—*
Botnick, Irlin H.; and Polster, Lewis H. (said Polster assor. to said), 3,777,840.

Botnick, Irlin H.; and Polster, Lewis H., said Polster assor. to said Botnick, Irlin H. Door mounted seat belt locking retractor. 3,777,840, Cl. 180-82.00c.

Boulton, William, Limited: *See—*
Cunningham-Smith, David, 3,777,770.

Bourne, Richard Curtis. One-wheel vehicle. 3,777,835, Cl. 180-10.000.

Bowerman, William R. Magnetic chip switch. 3,778,737, Cl. 335-205.000.

Bowker, John Kent, to Itek Corporation. System for analyzing multicolored scenes. 3,778,541, Cl. 178-5.20r.

Bowman, Theodore. Erectable and disassemblable partition and panel therefor. 3,777,431, Cl. 52-562.000.

Boyd, David C., to Corning Glass Works. Sodium aluminosilicate glass article strengthened by a surface compressive stress layer. 3,778,335, Cl. 161-164.000.

Boyles Industries Limited: *See—*
Wolda, Tiete Okke, 3,777,826.

Braden, Denver, to Illinois Tool Works Inc. Electrical circuit component having solder preform connection means. 3,778,532, Cl. 174-74.00r.

Brady, Lynn J.: *See—*
Holmes, Curtis L.; and Brady, Lynn J., 3,778,305.

Braid, Milton; and Quinty, David B., to Mobil Oil Corporation. Phosphorus- and nitrogen-containing lubricant additives. 3,778,375, Cl. 252-49.900.

Brandi, Henry W. Film resistors. 3,778,744, Cl. 338-260.000.

Brantman, Leon L.: *See—*
Canale, Raymond P.; and Brantman, Leon L., 3,777,481.

Brath, Alfred: *See—*
Wick, Richard; Brath, Alfred; and Wagensonner, Eduard, 3,778,558.

Braune, Gerhard: *See—*
Kirchner, Willi; and Braune, Gerhard, 3,777,727.

Braunstein, Simeon, to United States of America, Air Force. Photographic developer. 3,778,267, Cl. 96-66.0hd.

Braverman, Maynard, mesne: *See—*
Fisher, William J., 3,777,351.

Breed, David S. Sharp edge orifice dashpot timer. 3,777,861, Cl. 188-317.000.

Brelot, Rene; and Tourret, Jean, to Compagnie des Compteurs. Optical distance converter. 3,778,157, Cl. 356-4.000.

Brems, John Henry. Motion and force transforming mechanism. 3,777,580, Cl. 74-110.000.

Breton, Ernest J.; and Worden, Dexter, to Composite Sciences, Inc. Process for coating metals using resistance heating of preformed layer. 3,778,586, Cl. 219-146.000.

Breuer, Hermann: *See—*
Treuner, Uwe; and Breuer, Hermann, 3,778,436.

Breuner, James H.; and Stumpf, Clarence E., Jr. Rotatable reel. 3,778,000, Cl. 242-77.200.

Brewer, Jack J., to Wallace, Sam P., Co., Inc. Building crane. 3,777,900, Cl. 212-58.00r.

Bridgestone Tire Company Limited: *See—*
Fujimoto, Kunihiko; Matsui, Masayuki; Kishinami, Shigeto; and Nishi, Toshio, 3,778,396.

Briggs & Stratton Corporation: *See—*
Rubner, Hugo G., 3,777,522.
Tharman, Paul A., 3,778,650.

Briggs, Gifford G., to United States of America, Atomic Energy Commission. Method of producing NaF $2UF_4$. 3,778,500, Cl. 423-253.000.

Bright, William L. Shielding apparatus for electrical equipment. 3,778,682, Cl. 317-119.000.

Brill, Klaus: *See—*
Metzger, Hans; Brill, Klaus; and Hornung, Friedrich, 3,778,311.

Brinkeborn, Bertram: *See—*
Nilsson, Jan; and Brinkeborn, Bertram, 3,777,362.

Brisk, Richard A.; Fougere, Guy L.; Lorah, Lawrence D.; and Pastan, Harvey L., to Little, Arthur D., Inc. Character detection system. 3,778,768, Cl. 340-146.3ag.

Bristol, William J. Water craft. 3,777,325, Cl. 9-310.00b.

British Insulated Callender's Cables Limited: *See—*
Higgins, Peter, 3,778,531.

British Leyland Truck and Bus Division Limited: *See—*
McGowan, Joseph; and Fowler, Gerald, 3,777,648.
Silverstone, Calvin Eric, 3,778,293.

British Railways Board: *See—*
Cribbens, Alan H., 3,778,761.

Britton, Anthony Sidney. Dispensing devices. 3,777,982, Cl. 239-315.000.

Brock, Larry D.; and Games, John E., to United Aircraft Corporation. Automatic track insertion and display. 3,778,601, Cl. 235-150.270.

Brockmann, Heinz, to Daimler-Benz Aktiengesellschaft. Blade mounting. 3,778,191, Cl. 416-215.000.

Brooks, Melvis. Fluid dispensing apparatus. 3,777,944, Cl. 222-394.000.

Brown & Sharpe Manufacturing Company: *See—*
Levesque, George N., 3,778,121.

Brown, Claude H., to Jet Research Center, Inc. Shaped charge enclosure apparatus. 3,777,663, Cl. 102-24.0hc.

Brown, Clayton R.; and Templer, Milton. Method and apparatus for recovery and refining of zinc. 3,778,044, Cl. 266-19.000.

Brown Company: *See—*
Buttery, Kenneth T., 3,777,957.

Brown, D. S., Company, The: *See—*
Pax, James H., 3,778,176.

Brown, Daniel M.; and Isaacs, John D., to University of California, The Regents of the. Specific gravity sensor and a system employing the sensor. 3,777,574, Cl. 73-453.000.

Brown, Edward Douglas; and Leeney, Timothy John, to Imperial Chemical Industrial Limited. Bicycloheptene derivatives. 3,778,461, Cl. 260-464.000.

Brown, Graham Maurice, to Machine Tool Divisional Services Limited. Tool for gear finish forming. 3,777,345, Cl. 72-102.000.

Brown, Graydon L.: *See—*
Fair, Delbert W.; Brown, Graydon L.; and Miller, J. H., Jr., 3,777,843.

Brown, James D.; and Uraneck, Carl A., to Phillips Petroleum Company. Copolymers of cyclic monoolefins and cyclic polyolefin compounds. 3,778,420, Cl. 260-80.700.

Brown, Patrick M.; Duecker, Heyman C.; and Devore, Dorothy C., to Grace, W. R., & Co. Fusion bonded vermiculite molding material. 3,778,281, Cl. 106-67.000.

Brown, Richard E.: *See—*
Roller, Kent G.; Ahlborn, George H.; and Brown, Richard E., 3,778,308.

Brown, Russell L. Ornamental protective rail. 3,777,438, Cl. 52-173.000.

Bruce, Peter. Anchors. 3,777,695, Cl. 114-207.000.

Bruck Tool Company: *See—*
Buck, James R., 3,778,071.

Bruderhaus Maschinen G.m.b.H.: *See—*
Muller, Gernot, 3,777,656.

Brunelle, Lawrence J., to Olin Corporation. Caseless pellet igniting mechanism. 3,777,382, Cl. 42-1.00r.

Bucalo, Louis, to Investors In Venture, Inc. Method and device for reversibly interrupting fluid flow in a living being. 3,777,737, Cl. 128-1.00r.

Buchel, Karl Heinz: *See—*
Draber, Wilfried; Timmler, Helmut; Buchel, Karl Heinz; and Plempel, Manfred, 3,778,447.

Buck, James R., to Bruck Tool Company. Floating tool holder. 3,778,071, Cl. 279-16.000.

Buck, Richard S. Proportional beverage dispensing apparatus. 3,777,937, Cl. 222-70.000.

Buddendeck, Gerald A.: *See—*
Reehil, Edward G.; and Buddendeck, Gerald A., 3,778,147.

Bug-Lok Corporation: *See—*
Meyers, Calvin E., 3,777,518.

Buice, Joel B.; and Schwenker, David G., to General Electric Company. Self-bonding capacitor case insulation. 3,778,683, Cl. 317-230.000.

Bujese, David P.: *See—*
Rothacker, Francis N.; and Bujese, David P., 3,778,690.

Bulanda, John Jean: *See—*
Caveney, Jack Edward; Moody, Roy Alleyne; and Bulanda, John Jean, 3,778,750.

Bull, Hans, to Hermann Hemscheidt Maschinenfabrik. Hydraulic pit prop. 3,777,619, Cl. 91-216.00r.

Bull, Ivor Henry, to Westinghouse Brake and Signal Company, Limited. Remote control arrangement. 3,778,813, Cl. 340-347.0dd.

Bulova Watch Company, Inc.: *See—*
Koehler, Dale R.; Zupfer, Jerrald A.; and Prak, Jan Willem L., 3,777,471.

Bunker Ramo Corporation: *See—*
Occhipinti, Carl; and Triner, Irvin Richard, 3,778,753.
Stieler, Alfred Otto Hugo; and Billmann, Gerhard Leonhard Emil, 3,777,926.

Burch, Lyndon W., to B/K Electric Co., Inc. Circuit breaker. 3,778,739, Cl. 337-72.000.

Burckhardt, Urs; and Zimmermann, Markus, to Ciba-Geigy Corporation. Iodoethynyl pyridine compounds. 3,778,441, Cl. 260-290.000.

Burkhardt, Joseph A.; Childers, Thomas W.; Koerner, Roger J.; Mason, John P.; and Tidwell, Danny R., to Esso Production Research Company. Subsea production system. 3,777,812, Cl. 166-.600.

Burlington Industries, Inc.: *See—*
Burnet, Arthur L.; and London, Joe F., Jr., 3,777,512.

Burn Treatment Skin Bank, Inc.: *See—*
Reichenbacher, Frank W.; Kraver, Theodore C.; and Hope, Edward F., 3,777,599.

Burnet, Arthur L.; and London, Joe F., Jr., to Burlington Industries, Inc. Creel assembly including stop motion devices for circular knitting machines. 3,777,512, Cl. 66-125.00r.

Burns, Joseph P.; Feltzin, Joseph; and Sanderson, Frank T., to ICI America Inc. Flame-retardant, polyurethan coating compositions. 3,778,408, Cl. 260-45.70p.

Burridge, Robert E.; and Everson, Peter O., to Craftings, Inc. Lampshade and method of assembly. 3,778,611, Cl. 240-108.00d.

Burroughs Corporation: *See—*
Carlyle, Bert Edward; Rawlings, Robert Louis; and Volk, Karl Erich, 3,778,767.
Eisenberg, Mark F.; and Holz, George E., 3,778,673.
Harvey, Edgar Lloyd, 3,778,675.

Burrows, Charles B.; and Vajda, Edward A. Foundation strip for concrete molding. 3,778,020, Cl. 249-219.00r.

Burton, John S. Modular counter carry circuit. 3,778,600, Cl. 235-92.00c.

Burton, Thomas A.; and Moberg, Allen W., to Waters Instruments, Inc. Renal preservation system. 3,777,507, Cl. 62-306.000.

Buryabash, Alexei Nikolaevich: *See—*
Andreev, Valentin Efimovich; Pankovsky, Vyacheslav Ivanovich; Golub, Taras Fedorovich; and Buryabash, Alexei Nikolaevich, 3,778,491.

Buryabash, Nelya Vasilievna: *See—*
Andreev, Valentin Efimovich; Pankovsky, Vyacheslav Ivanovich; Golub, Taras Fedorovich; and Buryabash, Alexei Nikolaevich, 3,778,491.

Busch, Theo; and Dienst, Rudolf, to Ludwig-Ofag-Indugas Industrieofenanlagen GmbH. Apparatus for the cooling of bodies under protective gas. 3,778,043, Cl. 266-2.00r.

Bussi, Ennio, to Fernando Fontana & C. S. a.s. Watchcase, in particular for a waterproof and subaqueous watch. 3,777,473, Cl. 58-90.00r.

Bustamante, Santiago J.; and Schell, Donald H., to United States of America, Atomic Energy Commission. Extrusion die. 3,778,217, Cl. 425-467.000.

Butler, Eugene B.; Fak, Ivan A.; and Line, Lawrence L., to General Tire and Rubber Company, The. Hydrophilic-porometric foam. 3,778,332, Cl. 161-159.000.

Butler, Gene R.; and Butler, Lee D., to Sperry Rand Corporation. Dampening system for the transfer table of a bale wagon. 3,777,904, Cl. 214-6.00b.

Butler, Lee D.: *See—*
Butler, Gene R.; and Butler, Lee D., 3,777,904.

Buttery, Kenneth T., to Brown Company. Dispensing carton. 3,777,957, Cl. 225-50.000.

Butts, Harlan: *See—*
Snyder, Robbie L.; Spencer, Ambrose; and Butts, Harlan, 3,778,102.

Buzano, Michel, to Societe Rhodiaceta. Process and apparatus for manufacture of a thermoplastic yarn with residual twist. 3,777,465, Cl. 57-34.0hs.

BWG Bergwerk- und Walzwerk-Maschinenbau G.m.b.H., Firma: *See—*
Noe, Oskar, 3,777,532.

Cabel: *See—*
Doucerain, Jacques; and Baumann, Bernard, 3,778,017.

Cable Switch Corporation: *See—*
Gould, Robert W., 3,778,805.

Cables de Lyon-Alsacienne-Geoffroy: *See—*
Bendayan, Jacques, 3,778,799.

Cadiou, Jean G., to Societe Anonyme Automobiles Citroen. Devices for raising and lowering a car door window. 3,777,579, Cl. 74-99.000.

Caffrey, Terence, to Davey Compressor Company, The. Compressor blade. 3,778,201, Cl. 418-152.000.

Caffrey, Terrence, to Davey Compressor Company, The. Method and apparatus unloading a rotary compressor. 3,778,192, Cl. 417-286.000.

Calgon Corporation: *See—*
Urbanic, John Emery; and Sutt, Robert Francis, 3,778,387.

Calhoun, Frederick L., to A-T-O Inc., mesne. Container inspection apparatus. 3,778,617, Cl. 250-223.00b.

California Car Wash Systems, Inc.: *See—*
Haley, David M.; and Bergantzel, Richard P., 3,777,326.

California Institute of Technology: *See—*
Rembaum, Alan; Landel, Robert F.; and Keyzer, Hendrik, 3,778,476.

California R & D Center: *See—*
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., 3,778,053.

California Weavers, Inc.: *See—*
Mand, Emery M.; and Shapiro, Henry C., 3,778,337.

Calvert, Richard C. M., III: *See—*
Michie, James C., III; and Calvert, Richard C. M., III, 3,777,502.

Cam Gears Limited: *See—*
Adams, Frederick John, 3,777,589.

Cameron Iron Works, Inc.: *See—*
Allen, Herbert, 3,777,342.

Campbell, Charles: *See—*
Clark, Willard; and Campbell, Charles, 3,778,245.

Campbell, James W., to Haltom City State Bank, mesne. Method and apparatus for cutting panels. 3,777,598, Cl. 83-29.00r.

Camper Comfort Corporation: *See—*
Hergatt, Robert N.; and Hazen, Alvy M., 3,777,506.

Campman, James P.; and Linscott, Jack H., to Linscott, Jack H. and said Campman assor. of 1/2 to said Vidar Laboratories, Inc. Remotely controlled automatic utility meter reader. 3,778,795, Cl. 340-188.00r.

Canale, Raymond P.; and Brantman, Leon L., to Colt Industries Operating Corporation. Ambiently compensated turbine engine fuel control. 3,777,481, Cl. 60-39.280.

Canale, Raymond P.; and Ross, Wesley J., to Colt Industries Operating Corporation. Turbine engine control system. 3,777,482, Cl. 60-39.28r.

Cannon, Corbitt Thomas. Helicopter cargo pod. 3,778,011, Cl. 244-137.00r.

Cannon, Maxwell R., to International Business Machines Corporation. Readback systems for digital recorders. 3,778,787, Cl. 340-174.10h.

Canon Kabushiki Kaisha: *See—*
Inoue, Eiichi; and Yamase, Toshihiro, 3,778,274

Cardinal Industries, Incorporated: *See—*
Staab, Donald C., 3,778,110.

Carle & Montanari S.p.A.: *See—*
Taralli, Claudio; and Stefani, Elio, 3,778,519.

Carlin, Bernard, 50% to Garrett, Billy J. Gate valve. 3,778,030, Cl. 251-327.000.

Carlyle, Bert Edward; Rawlings, Robert Louis; and Volk, Karl Erich, to Burroughs Corporation. Dynamic debug aid for computer data communication networks. 3,778,767, Cl. 340-146.10r.

Carnel, Alain, to Compteurs Schlumberger. Input connections for differential amplifiers. 3,778,619, Cl. 250-225.000.

Carney, John L., Jr.; and Duggi, Richard H., to ACF Industries, Incorporated. Hopper outlet structure for pneumatic unloading. 3,778,114, Cl. 302-52.000.

Carpenter, John M., to United States of America, Atomic Energy Commission. High intensity, pulsed thermal neutron source. 3,778,627, Cl. 250-499.000.

Carr, David William Bentley, to Spanset Inter AG. Slings. 3,778,095, Cl. 294-74.000.

Carrier Corporation: *See—*
Damratowski, Leonard P., 3,777,486.
Endress, James W., 3,778,652.
Miller, Arthur J.; and Miller, Robert A., 3,778,194.
Wood, Russell E., 3,777,803.

Carroll, Lee, to Smith, W. C., & Sons, Inc. Apparatus for tempering chocolate. 3,777,807, Cl. 165-26.000.

Carroll, Paul E., to Texas Instruments, Incorporated. Static filter for long line data systems. 3,778,759, Cl. 340-15.50f.

Carruth, Jack I. Cooking accessory. 3,777,653, Cl. 99-339.000.

Carruthers, Eben H. Position plotting apparatus. 3,778,832, Cl. 343-112.0pt.

Carson, David L., to United States of America, Navy. Transducer. 3,778,758, Cl. 340-10.000.

Carta, Guy R., to Research Corporation. Production of single cell protein material. 3,778,349, Cl. 195-33.000.

Castellano, Peter J.; and Galuten, Jerry H., to Audio-Optics Corporation, mesne. Cartridge-loaded sound motion picture projection. 3,778,137, Cl. 352-72.000.

Castrovillo, Salvatore J.; and Smollin, Henry A., to United States of America, Navy. Magnetic-electronic position encoder. 3,778,833, Cl. 343-118.000.

Caswell, John: *See—*
Gray, R. Flanagan; Caswell, John; and Muller, William G., 3,777,757.

Caterpillar Tractor Company: *See—*
Anderson, Rodney H.; and Muntjanoff, John R., 3,777,824.
Gates, Marvin A.; and Sommars, Mark P., 3,777,730.
Goade, James C., 3,777,627.
Stedman, Robert N.; Griffith, Bobby D.; and Sullivan, Robert J., 3,777,822.

Cathcart, John G.: *See—*
Gambs, Gerard C.; Nix, William H.; Barnhart, James H.; and Cathcart, John G., 3,778,239.

Caufield, Edward C. Observation signal device and components thereof. 3,777,428, Cl. 52-146.000.

Caveney, Jack Edward; Moody, Roy Alleyne; and Bulanda, John Jean, to Panduit Corporation. Wire termination and splicing system. 3,778,750, Cl. 339-97.00r.

CEFILAC: *See—*
Sirantoine, Albert, 3,777,528.

Celleor Corporation of Canada Ltd.: *See—*
Hughes, John F., 3,778,392.

Century Products, Inc.: *See—*
Blazey, Lawrence; Silverstrom, David; and Rocker, Elmer, 3,777,673.

CER Geonuclear Corporation: *See—*
Boardman, Charles R.; and Knutson, Carroll F., 3,777,815.

Ceskoslovenska akademie ved: *See—*
Hrdina, Jiri, 3,777,572.

Chaffee, William H.; Rubio, Alfred M.; and Lorenz, Richard L., to Columbia Broadcasting System, Inc. Guitar strings with enlarged end. 3,777,613, Cl. 84-297.00s.

Chambers, Milton W.: *See—*
Ingham, Robert W.; and Chambers, Milton W., 3,778,008.

Chana, Howard E., to General Motors Corporation. Hydrodynamic unit with friction clutch. 3,777,863, Cl. 192-3.330.

Chaney, Donal W.: *See—*
Herpich, William A.; Chaney, Donal W.; and Palmer, George W., 3,777,917.

Chang, Joseph J. F.; and Vora, Madhukar B. Shallow junction semiconductor devices. 3,778,687, Cl. 317-235.00r.

Chang, Richard S.: *See—*
Bosley, Denis V.; and Chang, Richard S., 3,777,420.

Chang, Richard S., to Mattel, Inc. Flyable toy aircraft with Jettisonable battery pack. 3,777,395, Cl. 46-243.0av.

Charbonneau, Fernand Armand, to JWI Ltd. Wear resistant outsert for a paper machine foil. 3,778,342, Cl. 162-352.000.

Charlesworth, Robert L., to Owens-Illinois, Inc. Photochromic material regeneration package. 3,777,390, Cl. 46-1.001.

Chase, Charles Elroy, Sr., to Tachisto Inc. Line-type generator having an active charging circuit. 3,778,636, Cl. 307-108.000.

Chase, Willis E.; and Plunkett, Bradley J., to Warwick Electronics, Inc. Electronicmusical instrument with phase shift tremulant system. 3,778,525, Cl. 84-1.250.

Cheek, Edward E.; and Sabin, Raymond H., to McDowell-Willman Engineering Company. Retractable railroad car clamp. 3,777,914, Cl. 214-55.000.

Chemische-Werke Albert: *See—*
Giller, Arnold; Hultzsch, Kurt; and Hesse, Wolfgang, 3,778,414.

Chemnor Corporation: *See—*
Beer, Henri Bernard, 3,778,307.

Chervenka, Charles Henry, to Beckman Instruments, Inc. Sample cell for ultracentrifuge utilizing multiple-beam interference optics. 3,778,171, Cl. 356-246.000.

Cheslik, Scott L.: *See—*
Schiller, Jacob D.; Cheslik, Scott L.; and Gonzales, J. Tim, 3,778,582.

Chevron Research Company: *See—*
Kennedy, Brian R.; and De Vries, Louis, 3,778,370.
Runge, Richard J., 3,778,701.
Thompson, Don D., 3,778,706.

Chicago Musical Instrument Co.: *See—*
Grodinsky, Robert M., 3,778,551.

Childers, Thomas W.: *See—*
Burkhardt, Joseph A.; Childers, Thomas W.; Koerner, Roger J.; Mason, John P.; and Tidwell, Danny R., 3,777,812.

Chipman, Jack R.; and McCombs, Donald, to Magnavox Company, The. Automatic beam current limiter. 3,778,668, Cl. 315-30.000.

Chipper Machines and Engineering Corporation: *See—*
Miller, Frederick L. B., 3,777,793.

Chiquiar-Arias, Marcelo. Single dose disposable container and accessories. 3,777,949, Cl. 222-541.000.

Christen, Andreas, to Knoll International, Inc. Panel and post assembly. 3,777,437, Cl. 52-758.00d.

Christensen, Frank G.; and Wolff, Rafael I., 1/3 interest to Lapin, Zeverly L. Stability-preserving steering suspension for snowmobiles. 3,777,830, Cl. 180-5.00r.

Christian Roosing A/S: *See—*
Nielsen, Lars Stig, 3,777,762.

Ciba-Geigy AG: *See—*
Arya, Vishwa Prakash, 3,778,443.
Arya, Vishwa Prakash, 3,778,444.
Hindermann, Peter; and Meindl, Hubert, 3,778,453.
Schibler, Luzius; and Harris, Melvin, 3,778,383.

Ciba-Geigy Corporation: *See—*
Bernasconi, Raymond, 3,778,511.
Burckhardt, Urs; and Zimmermann, Markus, 3,778,441.
Wilhelm, Max; and Riess, Walter, 3,778,467.

Ciemochowski, Michael F., to Colt Industries Operating Corporation. Variable capacitance controlled transistor multivibrator pulse generator for engine fuel metering system. 3,778,729, Cl. 331-65.000.

Cincinnati Electronics Corporation, mesne: *See—*
Oomen, Johannes A. F., 3,778,731.

Cincinnati Mine Machinery Co., The: *See—*
Krekeler, Claude B., 3,778,112.

Ciofant, Pio Antonio. Ripper tooth attachment for a backhoe. 3,778,111, Cl. 299-67.000.

Cities Service Company: *See—*
Roth, Shirley H., 3,778,303.

Citizen Watch Company Limited: *See—*
Iinume, Yoshio, 3,777,472.

Citron, Joel D., to Du Pont de Nemours, E. I., and Company. Silicon substituted azonitiles. 3,778,430, Cl. 260-192.000.

Claret, Rene; and Picard, Jean Francois, to Societe d'Applications Generales d'Electricite et de Mecanique SAGEM. Optical monitoring system. 3,778,167, Cl. 356-167.000.

Clark, Albert M.: *See—*
Johnston, Norris; and Latker, Mark, 3,777,887.

Clark Equipment Company: *See—*
Frost, Barry Lewis, 3,777,594.

Clark, Frank S., to Monsanto Company. Phenoxyphenylphosphinic acids and improved polyphenyl thioether lubricating compositions. 3,778,472, Cl. 260-502.40r.

Clark, Herbert D., to Universal Oil Products, Company. Protecting metal during acid contact. 3,778,377, Cl. 252-82.000.

Clark, Thomas F., to Allis-Chalmers Corporation. Ground-test switch. 3,778,574, Cl. 200-148.00b.

Clark, Willard; and Campbell, Charles, to Maul Bros., Inc. Method and apparatus for heat treating glassware. 3,778,245, Cl. 65-119.000.

Clavin, Alvin, to Hughes Aircraft Company. Circular symmetric beam forming apparatus. 3,778,838, Cl. 343-727.000.

Claxton, Gerald L., to Up-Right, Inc. Fruit-harvesting machine and conveyor therefor. 3,777,463, Cl. 56-330.000.

Clemence, Francois; and Le Martret, Odile, to Roussel-UCLAF. Certain benzimidazoles used as anti-inflammatory agents. 3,778,504, Cl. 424-263.000.

Clingman, William H., to Precision Machine Products, Inc. Methods of and means for determining the calorific value of combustible gases. 3,777,562, Cl. 73-190.00r.

Coal Industry (Patents) Limited: *See—*
Curcic, Simo, 3,778,747.

Cobb, Carolus. Process for growing crystals using an ozone enriched hydrogen-oxygen flame. 3,778,234, Cl. 252-301.40r.

Coetzee, Rudolf Gerhardus. Water cisterns. 3,777,316, Cl. 4-34.000.

Colardelle, Joel Serge; Lerouge, Claude Paul Henri; and Reghuer, Marc Andre, to International Standard Electric Corporation. Current-limited gyrator. 3,778,734, Cl. 333-80.00t.

Cole, Nancy C.; Gunkel, Ronald W.; and Houck, Clarence W., to United States of America, Atomic Energy Commission. Brazing filler metal for molybdenum. 3,778,254, Cl. 75-123.00r.

Colgate-Palmolive Company: *See—*
Antonini, Evandro, 3,778,378.

Colin, Jean-Marie H.: *See—*
Bosc, Henri J.; Colin, Jean-Marie H.; and Debuisser, Jean-Claude A., 3,778,604.

Collin, Heinrich. Device for plasticizing and homogenizing viscous masses. 3,778,036, Cl. 259-185.000.

Collins, Richard; and Denise, Donald, to Marotta Scientific Controls, Inc. Quick closing valve actuator. 3,778,027, Cl. 251-297.000.

Collins, Robert F., to Kendall Company, The. Folded surgical drape. 3,777,749, Cl. 128-132.00d.

Colman, William H., Jr., to Lenco, Inc. Sheet metal crimping attachment for impact gun. 3,777,687, Cl. 113-54.000.

Colt Industries Operating Corporation: *See—*
Canale, Raymond P.; and Brantman, Leon L., 3,777,481.
Canale, Raymond P.; and Ross, Wesley J., 3,777,482.
Ciemochowski, Michael F., 3,778,729.

Columbia Broadcasting System, Inc.: *See—*
Chaffee, William H.; Rubio, Alfred M.; and Lorenz, Richard L., 3,777,613.

Cominco Ltd.: *See—*
Booker, Philip P.; and Zeliznak, Richard, 3,778,315.

Commissariat a l'Energie Atomique: *See—*
Fremiot, Charles; and Grando, Jean, 3,778,656.
Savornin, Jacques, 3,777,750.

Commonwealth of Australia, The: *See—*
Jones, Neal K.; Faulkner, Douglas W.; Johnston, Robert T.; and Meharry, Murray R., 3,778,624.

Communications Satellite Corporation: *See—*
Schmidt, William G.; Gabbard, Ova G.; Hosted, John M.; and Maillet, Wilfrid G., 3,778,715.

Compagnie des Compteurs: *See—*
Brelot, Rene; and Tourret, Jean, 3,778,157.

Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
Montagne, Jean Bernard, 3,777,799.

Composite Sciences, Inc.: *See—*
Breton, Ernest J.; and Worden, Dexter, 3,778,586.

Compteurs Schlumberger: *See—*
Carnel, Alain, 3,778,619.

Computek, Inc.: *See—*

Haring, Donald R.; and King, Paul A., 3,778,775.
Computer Sciences Corporation: *See—*
Scharp, Gerson, 3,778,835.
Concord Fabrics Inc.: *See—*
Weinstein, Frank, 3,777,895.
Concord Laboratories, Inc.: *See—*
Raitto, Russell G., 3,777,739.
Cone, William H. Electrical generating device for use with engine clutch mechanism. 3,778,651, Cl. 310-74.000.
Conical Containers Company (Proprietary) Limited: *See—*
Van Manen, Jacob Teunis Teunissen, 3,777,454.
Container Corporation of America: *See—*
Starr, Anthony J.; Shindel, Gustave A.; and Keith, Harry G., Jr., 3,778,215.
Conti, Paolo, to Billi, G., & C., S.p.A. Yarn clamping and cutting attachment for circular knitting machines. 3,777,513, Cl. 66-140.00r.
Continental Conveyor and Equipment Company: *See—*
Morrison, Thomas E., 3,777,878.
Continental Oil Company: *See—*
Fair, Delbert W.; Brown, Graydon L.; and Miller, J. H., Jr., 3,777,843.
Gant, Preston L.; Motes, Bill G.; and Aulor, Jerry T., 3,778,162.
Continental Tapes, Incorporated: *See—*
Dahl, Rolf, 3,778,302.
Control Data Corporation, mesne: *See—*
Milligan, Gene Emmett; Ho, Henry Minglo; and Kimura, Noboru, 3,778,792.
Cook, John S.: *See—*
Staats, William A.; Bosley, Denis V.; Cook, John S.; and Yamasaki, Toshio, 3,777,394.
Cooke, Anson R.: *See—*
Weston, Warren E.; and Cooke, Anson R., 3,778,248.
Cooke, John R. Surgical wound clip applier with disposable clip magazine. 3,777,355, Cl. 29-243.560.
Coombs, Robert V., to Sandoz-Wander, Inc. 9Alpha, 11-dimethyl-substituted steroids. 3,778,434, Cl. 260-239.55c.
Cooper, George P.; and Moore, Thomas H., to North American Rockwell Corporation. Magnetic deflection system for depressed-center sector scan display. 3,778,669, Cl. 315-23.000.
Cooper, Leah H. Lunch boxes and similar devices adapted to accommodate graphic data. 3,777,418, Cl. 35-62.000.
Cooper Range Company: *See—*
Finlay, Walter L.; Fisher, Henry J.; and Hay, Donald A., 3,778,318.
Copeland, John Alexander, III. *See—*
Bobeck, Andrew Henry; Copeland, John Alexander, III; and Wolfe, Raymond, 3,778,788.
Copier, Harald; and Tonsbeek, Christiaan Herman Theodoor, to Lever Brothers Company. Flavoring with certain 2-acyl-2-thiazolines. 3,778,518, Cl. 426-175.000.
Coppi, Bruno, and Montgomery, Donald B., to United States of America, Atomic Energy Commission. Device for plasma confinement and heating by high currents and non-classical plasma transport properties. 3,778,343, Cl. 176-3.000.
Copy Research Corporation: *See—*
Rothacker, Francis N.; and Bujese, David P., 3,778,690.
Corco, Inc.: *See—*
Schieser, Warren J.; and Vickers, Stanley E., 3,777,913.
Corey, Robert W. Monorail switching device. 3,777,668, Cl. 104-105.000.
Corlet, Gabriel, to Application des Gag. Device for connecting a dispensing coupler to a container for fluid under pressure. 3,777,789, Cl. 141-329.000.
Cornelius, Edward B.; and Koester, David W., to Air Products and Chemicals, Inc. Chromia-alumina catalyst. 3,778,388, Cl. 252-465.000.
Cornelius, William J., to Keyes Fibre Company. Fruit container. 3,778,516, Cl. 426-119.000.
Corning Glass Works: *See—*
Boyd, David C., 3,778,335.
Cortner, William C., Jr., to Alley-Johnson Company. Livestock dusting bag. 3,777,716, Cl. 119-159.000.
Coscia, Anthony Thomas: *See—*
Williams, Laurence Lyman; and Coscia, Anthony Thomas, 3,778,339.
Cote, James D., to General Motors Corporation. Hydraulic engine governor. 3,777,729, Cl. 123-140.0fg.
Cotton, Incorporated: *See—*
Lewis, Harold Loyd, 3,778,509.
Coulter Chemistry, Inc., mesne: *See—*
Jones, Alan Richardson, 3,777,785.
Coulter, Gordon L.; and Pearsall, Duane D., to Rixson Inc. Condition responsive door holder-closer. 3,777,423, Cl. 49-31.000.
Countryman, Albert J., to Ty-Lok Assembly Systems, Inc. Ribbed strapping. 3,777,334, Cl. 24-169.00b.
Courtaulds Limited: *See—*
Betts, Max William; and Robinson, Frank, 3,777,511.
Courtney-Pratt, Jeofry Stuart, to Bell Telephone Laboratories, Incorporated. Process for rendering transparent media artificially opalescent and resulting product. 3,778,361, Cl. 204-157.0lr.
Craftings, Inc.: *See—*
Burridge, Robert E.; and Everson, Peter O., 3,778,611.
Crandall, Richard N. Method and apparatus for comminuting. 3,777,993, Cl. 241-15.000.
Crandlemire, Roger C. Stack packer. 3,777,657, Cl. 100-49.000.
Crawford Fitting Company: *See—*
Shendure, Ashok S., 3,777,782.
Crawford, Robert Hudson, to Texas Instruments, Incorporated. MOS-bipolar high voltage driver circuit. 3,778,688, Cl. 317-235.00g.
Crawford, Thomas B. Drilling mud reclaiming apparatus. 3,777,405, Cl. 34-57.00r.
Creative Polymer Products Corporation: *See—*
Posner, Richard, 3,778,323.
Crepinsek, Alois, to Security Technology Corporation. Lock assembly of the rotory cylinder type. 3,777,520, Cl. 70-358.000.
Crescent Toy Company Limited, The: *See—*
Eagles, Harry John William, 3,777,386.
Cribbens, Alan H., to British Railways Board. Vehicle orientation determination. 3,778,761, Cl. 340-39.000.
Croce, Louis J.; and Bajars, Laimonis, to Petro-Tex Chemical Corporation. Iron alloy catalyzed oxidative dehydrogenation. 3,778,488, Cl. 260-680.00e.
Cromwell, Gordon W.; and Borland, Walter G., to Elgin Electronics, Inc. Low harmonic telephone ringing generator. 3,778,730, Cl. 331-109.000.
Crosby, Edward K.: *See—*
Kightlinger, Adrian P.; Crosby, Edward K.; and Speakman, Edwin L., 3,778,431.
Crucible Steel Company of America: *See—*
Lyne, Cornelius M.; Kasak, August; and Stasko, William, 3,778,253.
Crucible Steel Corporation: *See—*
Pinnow, Kenneth E.; Mehta, Jayendra M.; and Moskowitz, Arthur, 3,778,316.
Cryer, Edward, to Lucas, Joseph, (Industries) Limited. Direction indicator switches for road vehicles. 3,778,571, Cl. 200-61.350.
Csaky, Thaddeus G.; and Lenger, Karl Werner. Free piston engine. 3,777,722, Cl. 123-46.00r.
Ctibor, Doudlebsky: *See—*
Stanislav, Kabele; Ctibor, Doudlebsky; Frantisek, Jaros; Zdenek, Svec; and Bohumir, Brozek, 3,777,466.
CTS Corporation: *See—*
Holmes, Curtis L.; and Brady, Lynn J., 3,778,305.
Cuccio, Allen B. J., to General Electric Company. Keyboard data entry device employing reactive coupling circuits. 3,778,816, Cl. 340-365.00s.
Cude, Arthur Leslie; and Simpson, Henry George, to Imperial Chemical Industries Limited. Dispersal of flammable materials. 3,777,821, Cl. 169-2.00r.
Cumberland Corporation. *See—*
Rhinehart, Vance, 3,777,710.
Cummingham, Herbert R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,777,942.
Cunningham-Smith, David, to Boulton, William, Limited. Apparatus for the treatment of paris. 3,777,770, Cl. 134-118.000.
Curcic, Simo, to Coal Industry (Patents) Limited. Electrical connector. 3,778,747, Cl. 339-45.00m.
Curtis Instruments, Inc.: *See—*
Finger, Eugene P., 3,778,702.
Custom Machine, Inc.: *See—*
Wloszek, Joseph T., 3,777,553.
Cutler, Norman W.; Pasieka, John F.; and Seider, Myron A., to Polaroid Corporation. Photographic apparatus. 3,777,645, Cl. 95-49.000.
Cutler-Hammer, Inc.: *See—*
Baker, Dale A.; and McCarthy, John M., 3,777,910.
Leavitt, Minard A., 3,778,155.
Lindemann, Robert W.; and Parmley, John W., 3,778,620.
Cuvelier, Georges; and Wattiez, Daniel, to Institut Textile de France. Reactive dyeing of epoxy alkyl quaternary ammonium cellulose or polyvinyl alcohol textiles. 3,778,225, Cl. 8-31.000.
Cuvelier, Georges; and Wattiez, Daniel, to Institut Textile de France. Reactive dyeing of epoxy alkyl quaternary ammonium cellulose or polyvinyl alcohol textiles. 13,778,225, Cl. 8-31.000.
Czaplinski, Thomas V., to Squibb, E. R., & Sons, Inc. Apparatus for evacuating liquid from a chamber. 3,777,780, Cl. 137-576.000.
Dahl, Rolf, to Continental Tapes, Incorporated. Certain permeable materials impregnated with a polyurethane polymer. 3,778,302, Cl. 117-122.0pb.
Dahl, William R., to Honeywell Inc. Disposable fiber tip marker. 3,778,840, Cl. 346-30.000.
Dahmen, Alexander: *See—*
Zoller, Robert; Fester, Walter; Jakob, Franz; and Dahmen, Alexander, 3,778,416.
Dahms, Wolfgang; and Todt, Hans-Gunther, to Schering AG. Electrolyte and method for electrodepositing copper. 3,778,357, Cl. 204-52.00r.
Daimler Benz Aktiengesellschaft: *See—*
Andres, Rudolf, 3,777,625.
Daimler-Benz Aktiengesellschaft: *See—*
Brockmann, Heinz, 3,778,191.
Forster, Hans-Joachim M.; and Hensel, Werner, 3,777,860.
Fricker, Ludwig, 3,777,927.
Pattas, Konstantin, 3,777,718.
Renner, Hermann, 3,778,093.
Dally, James W.: *See—*
Anderson, Philip J.; and Dally, James W., 3,778,109.

Damratowski, Leonard P., to Carrier Corporation. Apparatus for and a method of operating power recovery equipment. 3,777,486, Cl. 60-105.000.
Danehy, Robert P.; Kitchell, Bruce N.; and Silva, Antonio V., to Westinghouse Electric Corporation. Method and apparatus for cold rolling mill gauge deviation correction. 3,777,524, Cl. 72-8.000.
Danfoss A/S: *See—*
Giversen, Svend, 3,778,198.
Danielsson, Nils Harry, to Alfa-Laval AB. Animal watering device. 3,777,714, Cl. 119-75.000.
Davey Compressor Company, The: *See—*
Caffrey, Terence, 3,778,201.
Caffrey, Terrence, 3,778,192.
David, Guy Albert Jules; and Duquenne, Michel Guy Amedee, to U.S. Philips Corporation. System for synchronizing clock signals to incoming data. 3,778,550, Cl. 178-69.50r.
Davidson, Gene E.: *See—*
Fisher, Glen W.; Robbins, Dewey H.; Evans, Victor J.; and Davidson, Gene E., 3,778,521.
Davies, Brian W. Liquid container-tool or accessory box for bicycles. 3,777,955, Cl. 224-35.000.
Davies, Norman, to Westinghouse Electric Corporation. Circuit interrupter with interlocking mechanism. 3,778,567, Cl. 200-50.00a.
Davies, Terrence Ardern, to Square D Company. Light-duty electrical contacts of silver and ruthenium oxide. 3,778,257, Cl. 75-173.00a.
Davis, Dan Bryan: *See—*
Iyengar, Rama; and Davis, Dan Bryan, 3,777,371.
Davis, John C.: *See—*
Fromknecht, Charles Thomas; and Davis, John C., 3,778,577.
Davis, Richard A.: *See—*
Ruiten, Donald E.; and Davis, Richard A., 3,777,790.
Dayton Wright Associates Limited: *See—*
Wright, William Michael D., 3,778,562.
De Carlo, Joseph P. Window cleaning apparatus. 3,778,173, Cl. 401-10.000.
De Koning, Cornelis J., to Vissers, H., N.V. Spreader. 3,777,992, Cl. 239-689.000.
De Mino, Angelo. Fishing rod holder. 3,777,389, Cl. 43-15.000.
De Shazor, James C. Article handling and packaging machine. 3,777,450, Cl. 53-138.00r.
De Visscher, Patrick M. Joining of containers. 3,777,771, Cl. 137-1.000.
De Vries, Louis: *See—*
Kennedy, Brian R.; and De Vries, Louis, 3,778,370.
Deaton, Ronald L.; and Silver, Gary L., to United States of America, Atomic Energy Commission. Plutonium recovery from organic materials. 3,778,497, Cl. 423-2.000.
Deats, Richard A. Mobile hay feeder. 3,777,713, Cl. 119-60.000.
Debuisser, Jean-Claude A.: *See—*
Bosc, Henri J.; Colin, Jean-Marie H.; and Debuisser, Jean-Claude A., 3,778,604.
Deeks, Ronald G. Pressure flow discharge mechanism. 3,777,912, Cl. 214-152.000.
Degerman, Karl Johan Olov: *See—*
Samuelsson, Mokjas Erik Samuel; Samuelsson, Mokjas Jonas; and Degerman, Karl Johan Olov, 3,777,537.
Deguchi, Takashi: *See—*
Yamahara, Takeshi; and Deguchi, Takashi, 3,778,471.
Dehne, Clarence A., to Webb, Jervis B., Company. Control for a conveyor take-up. 3,777,879, Cl. 198-208.000.
Delano, Charles G., to Mustang Oil Tools, Inc. Cementing well bore casing. 3,777,819, Cl. 166-285.000.
Delbar Products, Inc.: *See—*
Holzman, James W., 3,778,015.
Delmoran AG: *See—*
Marti, Willi Hermann, 3,777,864.
Demerson, Christopher A.: *See—*
Jirkovsky, Ivo; Humber, Leslie G.; Demerson, Christopher A.; and Dobson, Thomas A., 3,778,449.
Dence, Geoffrey Roy. Air filters. 3,777,458, Cl. 55-287.000.
Dendy, Jackie D.; Johnson, Robert D.; and Peevey, Robert M., to Amoco Production Company. Check valve for hydraulic control system. 3,777,813, Cl. 166-72.000.
Denise, Donald: *See—*
Collins, Richard; and Denise, Donald, 3,778,027.
Denk, Edward G., to Polaroid Corporation. Sedimentation process for flocculated dispersions. 3,778,275, Cl. 96-94.000.
Denki Onkyo Company, Ltd.: *See—*
Kawada, Takehiko, 3,778,648.
Dennhardt, Werner; and Schroter, Herbert, to Kalle Aktiengesellschaft. Method of and apparatus for automatically controlling the speed at which an original and copying material pass through a copying machine. 3,778,154, Cl. 355-68.000.
Denny, Bradley J., to Hughes Aircraft Company. Time-at-temperature AC reflow soldering power supply. 3,778,581, Cl. 219-85.000.
Deskin Corporation, The: *See—*
Emerson, Christopher Plummer, 3,777,485.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Klotzer, Erhard; and Pochert, Johannes, 3,778,406.
Deutsche Texaco Aktiengesellschaft: *See—*
Meier, Albert, 3,777,816.
Devine, Howard E., to American Thread Company, The, mesne. Disposable sewing machine bobbin. 3,778,004, Cl. 242-169.000.
DeVisser, Christian; and Myers, Donald Orville, to General Electric Company. Automatic electric power source transfer apparatus. 3,778,633, Cl. 307-64.000.
Devore, Dorothy C.: *See—*
Brown, Patrick M.; Duecker, Heyman C.; and Devore, Dorothy C., 3,778,281.
Di Settembrini, Antoine. Apparatus for mass producing hollow objects. 3,778,213, Cl. 425-326.00b.
Diamond Shamrock Corporation: *See—*
Pyne, William J.; Gullo, James M.; and Adams, Bobby F., 3,778,247.
Dianetti, Joseph C., to American Optical Corporation. Ophthalmometer having alternative viewing and measuring systems and including an improved illumination system. 3,778,135, Cl. 351-13.000.
Diaz, Raul G.: *See—*
Andow, Paul; Guillen, David; and Diaz, Raul G., 3,778,052.
Dibelius, Norman R.; and Schiefer, Richard B., to General Electric Company. Shrouded combustion liner. 3,777,484, Cl. 60-39.650.
Diemakers, Inc.: *See—*
Spalding, Robert H.; and Spalding, James A., 3,777,943.
Dienst, Rudolf: *See—*
Busch, Theo; and Dienst, Rudolf, 3,778,043.
Diepers, Heinrich: *See—*
Pfister, Hans; and Diepers, Heinrich, 3,777,368.
Dierbeck, Robert F. Aerator with improved impeller action. 3,778,037, Cl. 261-28.000.
Diesel Kiki Kabushiki Kaisha: *See—*
Kobayashi, Masayoshi; and Uchino, Mitsuo, 3,777,731.
Dietemeyer, Stanley A., to Reliance Electric Company. Electronic weighing system with digital readout. 3,777,828, Cl. 177-165.000.
Diginetics Incorporated: *See—*
Snook, Richard K., 3,778,710.
Digital Telephone Systems, Inc.: *See—*
Nordling, K. Fredrik; and Huey, Samuel T., 3,778,555.
Dildy, Clell A., Jr., to United States of America, Navy. Waveform synthesizer. 3,778,814, Cl. 340-347.0da.
Dillard, Paul A. Expandable room for portable living quarters. 3,778,100, Cl. 296-23.00g.
Dimitriou, Christos: *See—*
Taylor, Richard F.; and Dimitriou, Christos, 3,778,106.
Dittrich, Werner, to Dynamit Nobel Aktiengesellschaft. Paints and coatings. 3,778,280, Cl. 106-1.000.
Dixon, Kenneth Raymond. Radial hydraulic motors and pumps. 3,777,624, Cl. 91-488.000.
Dmitriev, Efim Fedorovich: *See—*
Sherman, Vladimir Efimovich; Dubonosov, Georgy Viktorovich; Portnov, Sergei Fedorovich; Fedotov, Jury Alexeevich; Grinberg, Yakov Zeemanovich; Soloviev, Nikodim Nikiforovich; Pavlov, Viktor Grigorievich; and Dmitriev, Efim Fedorovich, 3,777,534.
Dobras, Bruce W.: *See—*
Vanderpool, James L.; and Dobras, Bruce W., 3,778,597.
Dobson, Thomas A.: *See—*
Jirkovsky, Ivo; Humber, Leslie G.; Demerson, Christopher A.; and Dobson, Thomas A., 3,778,449.
Doherty, Orval Austin: *See—*
Ali, Syed Aejaz; and Doherty, Orval Austin, 3,777,677.
Doll, Robert; and Berndt, Hartmut. System for contact-free, axially stabilized and radially centered positioning of a rotating shaft, particularly of an operating machine for low temperatures. 3,778,122, Cl. 308-10.000.
Domaas, Perry M., to Textron, Inc. Centrifugal clutch. 3,777,584, Cl. 74-230.17c.
Domestic Fabrics Corporation: *See—*
Traumuller, Martin; and Hunneke, Fred, 3,777,514.
Doner, Harvey E.: *See—*
Mortland, Max M.; and Doner, Harvey E., 3,778,457.
D'Onofrio, Mario L., to Spiral Tubing Corporation. Method for forming a helically corrugated concentric tubing unit. 3,777,343, Cl. 29-157.30r.
Dooley, Joseph Francis, to Pfizer Inc. Diagnostic composition for the quantitative determination of glucose. 3,778,384, Cl. 252-408.000.
Dore, Allen J. Water injection system. 3,778,039, Cl. 261-18.00a.
Dore, John L., Co.: *See—*
Graves, Gail W.; Pope, Gerald R.; Stewart, Joseph T., Jr.; and Petrosky, Willard L., 3,778,028.
Dorgebray, Gerard, to Elf Union. Pipe-leak detection method and device. 3,778,613, Cl. 250-303.000.
Doric Corporation: *See—*
Youra, Charles J., 3,777,602.
Dormanns, Stefanie, nee Furst: *See—*
Furst, Stefan, 3,777,468.
Dorzan, Peter A. Method and device for retrieving litter. 3,778,097, Cl. 294-118.000.
Doucerain, Jacques; and Baumann, Bernard, 50% to Cabel and 50% to Societe de Traitements Electrolytiques et Electrothermiques. Apparatus for joint manufacture. 3,778,017, Cl. 249-78.000.
Dove, Norman F. Steam supply apparatus. 3,777,781, Cl. 137-608.000.
Dow any, The: *See—*
Meeks, Merrtt R.; Monroe, Roger F.; and Weber, Richard M., 37,779,341.
Dow Chemical Company, The: *See—*

Meeks, Merritt R.; Monroe, Roger F.; and Weber, Richard M., 3,777,934.
Turner, Robert Burton; and Poli, Emilio Lawrence, 3,778,205.

Dow Chemical Corporation, The: *See—*
Mani, Inder; and Atchison, George J., 3,778,364.

Dowty Technical Developments Limited: *See—*
Doydell, Kenneth Haymond; and Flint, John Christopher Eglington, 3,777,492.

Doydell, Kenneth Haymond; and Flint, John Christopher Eglington, to Dowty Technical Developments Limited. Hydraulic apparatus including variable delivery pumps. 3,777,492, Cl. 60-462.000.

Draber, Wilfried; Timmler, Helmut; Buchel, Karl Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-[substituted] fluorene-,dibenzocycloheptane- and dibenzocycloheptene-imidazoles. 3,778,447, Cl. 260-309.000.

Dresser Industries, Inc.: *See—*
Eversole, James F.; and Berriman, Lester P., 3,778,038.

Drew, Richard E.: *See—*
Howell, Charles B.; and Drew, Richard E., 3,778,170.

Drexelbrook Controls Inc.: *See—*
Malby, Frederick L., 3,778,705.

Driscoll, Gary L.; Duling, Irl N.; and Gates, David S., to Sun Research and Development Co., mesne. Polyisobutylene oil having a high viscosity index. 3,778,487, Cl. 260-676.00r.

Driscoll, Richard P.; Lannert, James W.; and Beaver, Donald V., to All-Steel Equipment, Inc. Chair base swivel arrangement. 3,778,014, Cl. 248-406.000.

Drogi, Dieter, to Olympia Werke AG. Escapement controlling tabulating apparatus. 3,777,870, Cl. 197-94.000.

Droz, Francois; Petitpierre, Jean-Paul; and Tosalli, Joseph, to Reuge S.A. Ski binding. 3,778,075, Cl. 180-11.35t.

Du Pont de Nemours, E. I., and Company: *See—*
Citron, Joel D., 3,778,430.
Fuchs, Julius Jakob, 3,778,475.
Garth, Bruce Hollis, 3,778,310.
Josey, Alden D.; and Kirchner, Jack R., 3,778,452.
Kissa, Erik, 3,778,226.
Papannou, Plutarch Constantine, 3,778,379.
Rakoczy, Dohdan, 3,778,278.
Roos, Leo, 3,778,270.
Seney, John Seymour, 3,777,959.
Sturgeon, Donald L. G., 3,778,334.
Walus, Aloysius N., 3,778,403.
Weigert, Frank J., 3,778,446.
Wyeth, Nathaniel Convers; and Roseveare, Ronald Newman, 3,778,214.

Du Pont de Nemours, E. I., and Company, mesne: *See—*
Barnes, Ronald B., 3,777,349.

Dubonosov, Georgy Viktorovich: *See—*
Sherman, Vladimir Efimovich; Dubonosov, Georgy Viktorovich; Portnov, Sergei Fedorovich; Fedotov, Jury Alexeevich; Grinberg, Yakov Zeemanovich; Soloviev, Nikodim Nikiforovich; Pavlov, Viktor Grigorievich; and Dmitriev, Efim Fedorovich, 3,777,534.

Duchenoy, Jacques: *See—*
Recasens, Joseph; Blanchet, Pierre; and Duchenoy, Jacques, 3,777,805.

Duecker, Heyman C.: *See—*
Brown, Patrick M.; Duecker, Heyman C.; and Devore, Dorothy C., 3,778,281.

Duffner, Josef, to Bosch, Robert, G.m.b.H. Jig for firing of ceramic spark plug insulation. 3,778,224, Cl. 432-258.000.

Duggi, Richard H.: *See—*
Carney, John L., Jr.; and Duggi, Richard H., 3,778,114.

Duling, Irl N.: *See—*
Driscoll, Gary L.; Duling, Irl N.; and Gates, David S., 3,778,487.

Dunlap, Frederick A.; and Wilcox, Lyle C., to Greenwood Mills Corporation. Strand tester. 3,777,557, Cl. 73-95.000.

Dunn, Kirkley J. Sanding block and abrasive envelope therefor. 3,777,444, Cl. 51-391.000.

Duquenne, Michel Guy Amedee: *See—*
David, Guy Albert Jules; and Duquenne, Michel Guy Amedee, 3,778,550.

Durdin, Peter Robert, to AMF Incorporated. Time switches. 3,777,582, Cl. 74-112.000.

Durwald, Dierk. Roller trackway construction. 3,777,867, Cl. 193-35.00a.

Dusenberg, John, Company, Inc.: *See—*
Schofield, Edward F., 3,777,607.

Dyanmit Nobel Aktiengesellschaft: *See—*
Gawlick, Heinz; Bendler, Hellmut; and Jensen, Ernst, 3,777,664.

Dye, John F.: *See—*
Binard, William J.; and Dye, John F., 3,777,743.

Dynair Limited: *See—*
Elmer, Arthur Ernest Henry, 3,777,866.

Dynamit Nobel Aktiengesellschaft: *See—*
Dittrich, Werner, 3,778,280.
Junger, Hans; and Weissenfels, Franz, 3,778,413.
Lingens, Paul; and Martin, Gerhard, 3,777,662.

E. F. Industries, Inc.: *See—*
Hunter, Bryan J., 3,777,698.

Eagles, Harry John William, to Crescent Toy Company Limited, The. Toy pistols. 3,777,386, Cl. 42-58.000.

Eastman Kodak Company: *See—*
Allinger, Hubert B.; and Edwards, Harry L., 3,778,631.
Fields, Gary D., 3,778,149.
Kuhfuss, Herbert F.; and Jackson, Winston J., Jr., 3,778,410.
Larson, Lars M.; Feasey, Raymond J.; and Wheeler, Robert S., 3,777,451.
Luckey, George W., 3,778,615.
Metzger, Lenard M.; and Babcock, David L., 3,778,545.
Millet, Marcus J., 3,777,644.
Rosenburgh, Norman J., 3,778,599.
Spaller, Albert E., Jr., 3,777,610.

Eberly, David H., Jr.; and Hanke, Peter E., to United States Banknote Corporation. Document authentication method and apparatus. 3,778,598, Cl. 235-61.11d.

Eberspacher, J.: *See—*
Kofink, Siegfried, 3,777,975.

Echlin Manufacturing Corporation, The: *See—*
Anderson, Harold Francis; Shove, Gordon William; Morin, Louis George; and Gackstetter, Henry Clinton, 3,778,576.

Eckholm, Robert J. Disposable nursing device. 3,777,925, Cl. 215-11.00e.

Eckman, Richard S.: *See—*
Pacella, Gerald M.; and Eckman, Richard S., 3,777,989.

Ecodyne Corporation: *See—*
Henderson, Robert A., 3,777,889.

Edinborgh, Julius A., to Shell Oil Company. Personal sound monitor. 3,778,552, Cl. 179-1.00n.

EDMAC Associates, Inc.: *See—*
Nupp, Raymond W., 3,778,728.

Educational Sound Systems, Inc.: *See—*
MacNeill, John H.; Bellinger, James E.; Lidkea, Harrison B.; and Seib, Kenneth L., 3,777,417.

Edwards, Gordon J.: *See—*
Arff, Uwe F.; and Edwards, Gordon J., 3,777,401.

Edwards, Harry L.: *See—*
Allinger, Hubert B.; and Edwards, Harry L., 3,778,631.

Edwards, Norman W., to Pittsburgh-des Moines Steel Company. Storage tank for offshore storage of liquid and method of constructing and installing same. 3,777,497, Cl. 61-46.500.

Edwards, Robert L., to National Seating Company. Vehicle seat. 3,778,103, Cl. 297-331.000.

EG&G, Inc.: *See—*
Balston, William J., 3,778,807.

Ehemann, Walter: *See—*
Grebner, Fritz; Kolsch, Wilhelm; Spindler, Gerhard; and Ehemann, Walter, 3,777,433.

Eholzer, Ulrich: *See—*
Schubart, Rudiger; Eholzer, Ulrich; Kempermann, Theo; and Roos, Ernst, 3,778,419.

Ehrlich, Mary Roberta. Combined display and storage rack. 3,777,896, Cl. 211-49.000.

Eichner Organisation KG: *See—*
Spiroch, Franz; and Ostwald, Heinz G., 3,777,997.

Eisenberg, Mark F.; and Holz, George E., to Burroughs Corporation. Low power display driver having brightness control. 3,778,673, Cl. 315-169.000.

Eisenwerke Kaiserslautern GmbH: *See—*
Gehlen, Herman Walter; Hartmann, Karl; and Thieme, Gerhard, 3,777,503.

El-Tronics, Inc.: *See—*
Fajt, John; and Neal, James V., Jr., 3,778,584.

Electronor Corporation, mesne: *See—*
Kolb, James M.; and O'Leary, Kevin J., 3,778,363.

Elevators Pty. Limited: *See—*
Moyldew, Oraham Edward; and Shemack, John Lindsay, 3,777,855.

Elf Union: *See—*
Dorgebray, Gerard, 3,778,613.

Elgin Electronics, Inc.: *See—*
Cromwell, Gordon W.; and Borland, Walter G., 3,778,730.

Ellanin Investment, Ltd.: *See—*
Lowry, John D., 3,778,543.

Ellicott Machine Corporation: *See—*
Turner, Thomas M.; Keefe, Francis J.; and Little, Charles D., 3,777,376.

Elliott, Brantford G., to Harrington Manufacturing Co., Inc. Mowing device. 3,777,459, Cl. 56-15.300.

Elliott, Charles G.; and Mazzur, Richard P., to Armstrong Cork Company. Process for producing a decorative surface covering. 3,778,291, Cl. 117-21.000.

Ellis, Sloan E., 50% to San Saba Development Association. Litter pick-up machine. 3,777,327, Cl. 15-84.000.

Ellstrom, Johas Ragnar, to Junkers & Co., G.m.b.H. Control apparatus for a cooling device. 3,778,591, Cl. 219-279.000.

Elmer, Arthur Ernest Henry, to Dynair Limited. Fluid pressure released clutch for fans. 3,777,866, Cl. 192-91.00a.

Elmo Company, Limited: *See—*
Takahashi, Torataro, 3,778,136.

Emerick, Carl M.; and Pauze, Denis R., to General Electric Company. Polyamide acids and polyamideimides. 3,778,411, Cl. 260-65.000.

Emerson, Christopher Plummer, to Deskin Corporation, The. Vaporized fluid powered engine. 3,777,485, Cl. 60-95.000.

Emerson Electric Co.: *See—*
Williams, Michael, 3,778,592.
Wright, James A.; and Forrest, Robert L., 3,778,218.

Emerson Electric Company: *See—*

Schaefer, Langdon C.; and Thomas, Roland C., 3,777,848.

EMI Limited: *See—*
Hounsfield, Godfrey Newbold, 3,778,614.

Empire Products, Inc.: *See—*
Newman, Albert P.; and Haun, Clem Edward, 3,778,569.

Enander, Per Henry, to Skogsdon Aktiebolag. Tree felling guider. 3,778,031, Cl. 254-1.000.

Endo, Takaya: *See—*
Fujiwhara, Mitsuto; Kozima, Tamotsu; Imamura, Hiroyuki; and Endo, Takaya, 3,778,277.

Endress, James W., to Carrier Corporation. Rotor structure with squirrel cage winding. 3,778,652, Cl. 310-211.000.

Endsley, Richard A., to Alloy Metals, Inc. Titanium brazing alloy. 3,778,258, Cl. 75-173.00r.

Engel, Emil. Device for providing irish coffee. 3,777,652, Cl. 99-175.000.

Engel Industries, Inc.: *See—*
McClain, Lamont R., 3,777,531.

Engelae, Gunter: *See—*
Weinert, Volker; Frankiewicz, Gerhard; and Engelae, Gunter, 3,777,960.

Engelhardt, Helmut, to Krohne, Ludwig. Flow meter housing construction. 3,778,091, Cl. 285-238.000.

Enneking, Heinrich, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Apparatus for false-twisting multifilament threads and the like. 3,777,467, Cl. 57-77.400.

Entryown Patents Ltd.: *See—*
Parsons, Rodney, 3,777,674.

Epoch Company Ltd.: *See—*
Matsumoto, Teruo, 3,777,411.

Epstein, Harold M.: *See—*
Mallozzi, Philip J.; Epstein, Harold M.; Walters, Craig T.; Applebaum, David C.; and Gallagher, William J., 3,778,585.

E.R.E. Laboratory, Inc.: *See—*
Peterpaul, Joseph, 3,778,141.

Erickson, Fred William, to Litton Systems, Inc. Differential magnetic deflection amplifier. 3,778,671, Cl. 315-27.0td.

Erickson, Kent E., to Keuffel & Esser Company. Electro-optic displacement device. 3,778,158, Cl. 356-28.000.

Ericson, Alvin L.; Haettinger, George C.; and Pedersen, Ernest T., to Union Carbide Corporation. Shouldered wickets. 3,777,930, Cl. 221-26.000.

Erkelens, Hendrik J.: *See—*
Van Der Waaij, Dirk; Erkelens, Hendrik J.; Bossers, Pieter A.; and Kruiswijk, Franciscus J., 3,777,736.

Esposito, Vincent J., Jr., 50% to Barnett, Erwin M. Poolside swing having a seat with an ejection slide mechanism. 3,778,054, Cl. 272-85.000.

Essner, Howard. Surgical stick. 3,777,760, Cl. 128-269.000.

Esso Production Research Company: *See—*
Burkhardt, Joseph A.; Childers, Thomas W.; Koerner, Roger J.; Mason, John P.; and Tidwell, Danny R., 3,777,812.
Matthews, Jamie F., Jr., 3,777,499.

Esso Research and Engineering Company: *See—*
Bernard, Pierre James, 3,778,455.
Hamner, Glen P.; and Mason, Ralph B., 3,778,365.
Lang, Robert J.; Holt, Eugene L.; and Stoneback, David N., 3,778,501.
Parker, Paul T.; and Mayer, Ivan, 3,778,489.

Estabrook, Mark R., to Barnes Drill Co. Cyclone separator. 3,777,788, Cl. 141-279.000.

Ethyl Corporation: *See—*
Kleiman, Joseph P.; and Plonsker, Larry, 3,778,454.
Malec, Robert E., 3,778,371.
Wollensak, John C.; and Zaweski, Edward F., 3,778,460.

Ethyl Development Corporation: *See—*
Hafele, Robert X., 3,777,948.

Euchs, Hans: *See—*
Rix, Albert; Werner, Georg; and Euchs, Hans, 3,777,869.

Evans, John: *See—*
Hendler, Harvey S.; Albert, William C.; and Evans, John, 3,778,123.

Evans, Victor J.: *See—*
Fisher, Glen W.; Robbins, Dewey H.; Evans, Victor J.; and Davidson, Gene E., 3,778,521.

Eversole, James F.; and Berriman, Lester P., to Dresser Industries, Inc. Method and apparatus for mixing and modulating liquid fuel and intake air for an internal combustion engine. 3,778,038, Cl. 261-50.00r.

Everson, Peter O.: *See—*
Burridge, Robert E.; and Everson, Peter O., 3,778,611.

Faber, Kurt Heinrich Albert Erich, to Sandvik Aktiebolag. Cutting insert and cutting tool assembly. 3,777,341, Cl. 29-95.00r.

Fair, Delbert W.; Brown, Graydon L.; and Miller, J. H., Jr., to Continental Oil Company. Seismic vibratory system. 3,777,843, Cl. 181-5.0vm.

Fairchild Camera and Instrument Corporation: *See—*
Schinella, Richard D.; and Herndon, William H., 3,777,364.

Fairchild, Wayne K., to Automation Industries, Inc. Flexible tubing manufacturing machine. 3,778,327, Cl. 156-425.000.

Fairfield Engineering and Manufacruting Co.: *See—*
Slough, Ronald S.; and Jones, Robert D., 3,778,233.

Fajt, John; and Neal, James V., Jr., to El-Tronics, Inc. Apparatus for clamping and aligning parts for welding. 3,778,584, Cl. 219-101.000.

Fak, Ivan A.: *See—*
Butler, Eugene B.; Fak, Ivan A.; and Line, Lawrence L., 3,778,332.

Falborg, Helge Jorgen, to Maskinfabriken Hefa, Aabybro A/S. Apparatus to be used in connection with the filling of tubular films, so called synthetic casings. 3,777,331, Cl. 17-32.000.

Farber, Elliott; Rosen, Milton K.; and Shah, Ashok C., to Tenneco Chemicals, Inc. Process for the production of vinyl halide polymers. 3,778,422, Cl. 260-92.80w.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Zoller, Robert; Fester, Walter; Jakob, Franz; and Dahmen, Alexander, 3,778,416.

Faroudja, Yves C.: *See—*
Bass, Harland A.; and Faroudja, Yves C., 3,778,718.

Faulkner, Douglas W.: *See—*
Jones, Neal K.; Faulkner, Douglas W.; Johnston, Robert T.; and Meharry, Murray R., 3,778,624.

Fauth, Guenter: *See—*
Winkler, Alfred; Lermann, Peter; and Fauth, Guenter, 3,777,641.
Winkler, Alfred; Lermann, Peter; and Fauth, Guenter, 3,777,642.

Fazioli, Chris T.; Sirota, Julius; and Weidener, Richard A., to National Starch and Chemical Corporation. Novel emulsion adhesive compositions of vinyl acetate polymers. 3,778,399, Cl. 260-29.6me.

Feasey, Raymond J.: *See—*
Larson, Lars M.; Feasey, Raymond J.; and Wheeler, Robert S., 3,777,451.

Federal-Moqul Corporation: *See—*
Ostrom, Charles T., 3,778,180.

Fedotov, Jury Alexeevich: *See—*
Sherman, Vladimir Efimovich; Dubonosov, Georgy Viktorovich; Portnov, Sergei Fedorovich; Fedotov, Jury Alexeevich; Grinberg, Yakov Zeemanovich; Soloviev, Nikodim Nikiforovich; Pavlov, Viktor Grigorievich; and Dmitriev, Efim Fedorovich, 3,777,534.

Fekete, Lajos F.: *See—*
Bishop, Robert C.; Fekete, Lajos F.; and Shanbrom, Edward, 3,778,352.

Feltzin, Joseph: *See—*
Burns, Joseph P.; Feltzin, Joseph; and Sanderson, Frank T., 3,778,408.

Fernandez, Reuel, to Republic National Bank of Dallas, Irving Trust Company and Union Bank, mesne. Automatic pallet lock. 3,778,012, Cl. 248-119.00r.

Fernando Fontana & C. S. a.s: *See—*
Bussi, Ennio, 3,777,473.

Ferris, Donald L., to United Aircraft Corporation. Elastomeric helicopter rotor head with dynamic and static blade coning and droop stops. 3,778,189, Cl. 416-140.000.

Fester, Walter: *See—*
Zoller, Robert; Fester, Walter; Jakob, Franz; and Dahmen, Alexander, 3,778,416.

Feuerbacher, David George; and Smith, Mary Kay Hrncir, to Texaco Inc. Oil recovery process. 3,777,818, Cl. 166-274.000.

Feuerbacher, David George; and Smith, Mary Kay Hrncir, to Texico Inc. Oil recovery process. 3,777,817, Cl. 166-274.000.

Fields, Gary D., to Eastman Kodak Company. Method and apparatus for making multiple copies from an original. 3,778,149, Cl. 355-16.000.

Finger, Eugene P., to Curtis Instruments, Inc. Operating time remaining computer. 3,778,702, Cl. 324-29.500.

Fink, Peter; and Niemeyer, Ludwig, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Roller gap control. 3,777,526, Cl. 72-35.000.

Finlay, Walter L.; Fisher, Henry J.; and Hay, Donald A., to Cooper Range Company. Copper base composition. 3,778,318, Cl. 148-12.700.

Firmenich S.A., mesne: *See—*
Becker, Joseph J.; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, 3,778,483.

Fischer, Arthur. Circuit board and method of making the same. 3,778,745, Cl. 339-18.00c.

Fischer, Horst; and Justi, Eduard, to Licentia Patent Verwaltungs G.m.b.H. Semiconductor element and method of making it. 3,778,684, Cl. 317-234.00r.

Fischer, Rudolf, to Klockner-Humboldt Deutz Aktiengesellschaft. Recovery of lead from accumlator scrap. 3,777,994, Cl. 241-24.000.

Fisher Flouring Mills Co.: *See—*
Fisher, Glen W.; Robbins, Dewey H.; Evans, Victor J.; and Davidson, Gene E., 3,778,521.

Fisher, Glen W.; Robbins, Dewey H.; Evans, Victor J.; and Davidson, Gene E., to Fisher Flouring Mills Co. Process for the continuous production of bulgur. 3,778,521, Cl. 426-508.000.

Fisher, Henry J.: *See—*
Finlay, Walter L.; Fisher, Henry J.; and Hay, Donald A., 3,778,318.

Fisher, William J., 50% to Braverman, Maynard, mesne. Device for processing flexible metallic conduit. 3,777,351, Cl. 29-203.00h.

Fitch, Clifford E., Jr.: *See—*
Albright, Charles Jere; Fitch, Clifford E., Sr.; and Fitch, Clifford E., Jr., 3,778,524.

Fitch, Clifford E., Sr.: *See—*
Albright, Charles Jere; Fitch, Clifford E., Sr.; and Fitch, Clifford E., Jr., 3,778,524.

Fitzgerald, Carl E., to Indesco Corporation. Electrostatic painting system. 3,777,702, Cl. 118-2.000.

Fixtures Mfg. Corporation: *See—*

Snyder, Robbie L.; Spencer, Ambrose; and Butts, Harlan, 3,778,102.

Flannery, John B.; and Flannery, Paul D., to Pierson, Merlin A., mesne. Anti-collision vehicular radar system. 3,778,826, Cl. 343-7.0ed.

Flannery, Paul D.: *See—*
Flannery, John B.; and Flannery, Paul D., 3,778,826.

Fleischer, Svend Sigurd Christie; and Jeppsson, Kind Helge, to Titan Textile Machines A/S. Apparatus for individually separating heddles and like objects from a row preparatory to a drawing-in operation. 3,777,339, Cl. 28-46.000.

Fleissner, Heinz. Process for the wet-treatment of liquid permeable materials. 3,778,227, Cl. 8-151.000.

Fleming, Larry J., to Fort Howard Paper Company. Dispenser with spring-urged, automatic-stop pressure plate. 3,777,931, Cl. 221-57.000.

Flint, John Christopher Eglington: *See—*
Doydell, Kenneth Haymond; and Flint, John Christopher Eglington, 3,777,492.

Floessel, Dieter, to Aktiengesellschaft Brown, Boveri & Cie. Insulation gas-filled tubular casing structure for high-voltage conductor. 3,778,526, Cl. 174-13.000.

Flouret, George Rogelio, to Abbott Laboratories. Hexapeptide. 3,778,427, Cl. 260-112.500.

FMC Corporation: *See—*
Pepmeier, Carl R., 3,777,632.

Folgmann, Helmut G.: *See—*
Anders, Raymond H.; and Folgmann, Helmut G., 3,778,708.

Foodice Engineering Italiana S.p.A.: *See—*
Marchi, Antonio, 3,777,504.

Ford, Bacon & Davis Incorporated: *See—*
Gambs, Gerard C.; Nix, William H.; Barnhart, James H.; and Cathcart, John G., 3,778,239.

Ford Motor Company: *See—*
Barnes, John V., 3,777,838.
Parkes, Jeffrey George Ernest, 3,777,590.
Rogerson, Jerry B., 3,778,024.

Forney, Edgar Wilmot, Jr., to AMP Incorporated. Coaxial connector. 3,778,535, Cl. 174-88.00c.

Forrest Paschal Machinery Company: *See—*
Stuart, Gerald L., 3,777,873.

Forrest, Robert L.: *See—*
Wright, James A.; and Forrest, Robert L., 3,778,218.

Forster, Hans-Joachim M.; and Hensel, Werner, to Daimler-Benz Aktiengesellschaft. Hydrodynamic brake for vehicles especially for motor vehicles. 3,777,860, Cl. 188-291.000.

Fort Howard Paper Company: *See—*
Fleming, Larry J., 3,777,931.

Farward, Robert L., to Hughes Aircraft Company. Rotation-rate measuring apparatus. 3,778,163, Cl. 356-114.000.

Foshee, William H.; and Jones, Lester C. Tool for adjusting truck axle caster. 3,777,542, Cl. 72-457.000.

Fougere, Guy L.: *See—*
Brisk, Richard A.; Fougere, Guy L.; Lorah, Lawrence D.; and Pastan, Harvey L., 3,778,768.

Fountain, Gerald F., to Ponder & Best, Inc. Audible alert signal for an electronic flash unit. 3,778,672, Cl. 315-133.000.

Fowkes, Ivar G.: *See—*
Plowman, James S.; and Fowkes, Ivar G., 3,778,185.

Fowler, Gerald: *See—*
McGowan, Joseph; and Fowler, Gerald, 3,777,648.

Fox, Charles H.: *See—*
Ryburn, Kenneth D.; McClone, Robert J.; and Fox, Charles H., 3,778,115.

Foxboro Company, The: *See—*
Hanrihan, James P., 3,778,634.

Fr. Hesser Maschinenfabrik AG: *See—*
Zimmermann, Helmuth; and Kielwein, Helmut, 3,777,453.

Frame, Robert Michael Gray, to Bell-Northern Research, Ltd. Regenerative switching circuit. 3,778,642, Cl. 307-268.000.

France Neckwear Co., Inc.: *See—*
Narjarian, John, 3,777,312.

Francel, Josef; and Minneman, Lester C., to Owens-Illinois, Inc. Low temperature sealant glass for sealing integrated circuit package parts. 3,778,242, Cl. 65-43.000.

Franciscus, Leo C.: *See—*
Weber, Richard J.; and Franciscus, Leo C., 3,777,490.

Frangeco, a Societe Anonyme Francaise: *See—*
Widhoff, Andre, 3,778,105.

Frankiewicz, Gerhard: *See—*
Weinert, Volker; Frankiewicz, Gerhard; and Engelac, Gunter, 3,777,960.

Frantisek, Jaros: *See—*
Stanislav, Kabele; Ctibor, Doudlebsky; Frantisek, Jaros; Zdenek, Svec; and Bohumir, Brozek, 3,777,466.

Franzolini, Luciano: *See—*
Giacomello, Giacomo; Pedrazzini, Andrea; and Franzolini, Luciano, 3,777,577.

Fratelli Roda S.A.: *See—*
Roda, Emilio, 3,777,630.

Fredd, John V., to Otis Engineering Corporation. Pipe coupling. 3,778,089, Cl. 285-39.000.

Frederiksen, Jeffrey E., to Post Corporation. Encoder. 3,778,557, Cl. 179-90.00k.

Freixas, Antonio C. Method of manufacturing garment collars. 3,777,311, Cl. 2-143.000.

Fremiot, Charles; and Grando, Jean, to Commissariat a l'Energie Atomique. Ion source employing a microwave resonant cavity. 3,778,656, Cl. 313-63.000.

Fretwell, Richard D. Automatic electronic here is generator. 3,778,540, Cl. 178-4.10b.

Fricker, Ludwig, to Daimler-Benz Aktiengesellschaft. . 3,777,927, Cl. 220-85.00r.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Fink, Peter; and Niemeyer, Ludwig, 3,777,526.

Fried, Sidney, to Speedcheck Systems, Inc. Bag-opening dispenser and method. 3,777,439, Cl. 53-384.000.

Friedel, Murray, to Visual Graphics Corporation. Photographic composing device. 3,777,634, Cl. 95-4.500.

Friedman, Donald J. Universal shoe splint assembly. 3,777,747, Cl. 128-80.00a.

Friedman, Frank, & Sons: *See—*
Friedman, Raymond; Friedman, Sheldon; and Kalamaridis, Anthony, 3,777,684.

Friedman, Raymond; Friedman, Sheldon; and Kalamaridis, Anthony, to Friedman, Frank, & Sons. Folding mechanism. 3,777,684, Cl. 112-152.000.

Friedman, Sheldon: *See—*
Friedman, Raymond; Friedman, Sheldon; and Kalamaridis, Anthony, 3,777,684.

Frisch, Hans-Otto, to Marker, Hannes. Toe iron safety ski bindings. 3,778,076, Cl. 280-11.55t.

Fromknecht, Charles Thomas; and Davis, John C., to Singer Company, The. Moisture sealing device for toggle switches. 3,778,577, Cl. 200-168.00g.

Frost, Barry Lewis, to Clark Equipment Company. Multi-speed transmission. 3,777,594, Cl. 74-687.000.

Froster, John G.: *See—*
Johnston, Norris; and Latker, Mark, 3,777,887.

Fryfogle, James D.; and Garland, Carl C. Hand assist breather. 3,777,744, Cl. 128-28.000.

Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Method of producing clad wire. 3,777,361, Cl. 29-470.600.

Fuchs, Julius Jakob, to Du Pont de Nemours, E. I., and Company. Process for the preparation of hydroxamoyl chlorides. 3,778,475, Cl. 260-566.00a.

Fuji Denki Seizo Kabushiki Kaisha: *See—*
Wakui, Toshio, 3,777,370.

Fuji Photo Film Co., Ltd.: *See—*
Sato, Masamichi; Takimoto, Masaaki; Takahashi, Isoji; and Komaki, Takao, 3,778,623.

Fuji Shashin Koki Kabushiki Kaisha: *See—*
Iki, Noboru, 3,778,153.

Fuji Xerox Co., Ltd.: *See—*
Fujitsuka, Kaoru; and Honda, Ko, 3,778,148.

Fujii, Yoshifusa: *See—*
Imura, Toshinori; and Fujii, Yoshifusa, 3,777,636.

Fujimoto, Kunihiko; Matsui, Masayuki; Kishinami, Shigeto; and Nishi, Toshio, to Bridgestone Tire Company Limited. Reinforced elastomer compositions. 3,778,396, Cl. 260-27.0bb.

Fujitsuka, Kaoru; and Honda, Ko, to Fuji Xerox Co., Ltd. Apparatus and method for selectively discharging the photoconductive surface of an electrostatic drum copier to facilitate the cleaning thereof. 3,778,148, Cl. 355-15.000.

Fujiwhara, Mitsuto; Kozima, Tamotsu; Imamura, Hiroyuki; and Endo, Takaya, to Konishiroku Photo Industry Co., Ltd. Light-sensitive color photographic material with bis-type yellow color coupler. 3,778,277, Cl. 96-100.000.

Fukase, Shigeo: *See—*
Kawan, Oshio; Kudo, Mitsuhiro; Ishibashi, Masato; and Fukase, Shigeo, 3,778,260.

Fukui, Yutake: *See—*
Sasaki, Ryoichi; Hataya, Humio; Fukui, Yutake; and Kashimura, Tetsuo, 3,778,256.

Fukushima, Mitsuyoshi: *See—*
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,778,325.

Funaioli, Ettore; Landini, Piercarlo; and Marella, Giulio, to Societa Italiana Resine S.p.A. Thread winding device. 3,777,995, Cl. 242-18.0dd.

Furmidge, Kenneth Frederick: *See—*
Bleson, Eric John George; Furmidge, Kenneth Frederick; Stanyon, Horace Edward; and Speller, John Rueben Thomas, 3,778,663.

Furst, Hans Joachim: *See—*
Furst, Stefan, 3,777,468.

Furst, Stefan; deceased (by Dormanns, Stefanie, nee Furst; and Furst, Hans Joachim; heirs and legal representatives). Ring and traveler. 3,777,468, Cl. 57-120.000.

Gabbard, Ova G.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Hosted, John M.; and Maillet, Wilfrid G., 3,778,715.

Gabor, Eva, International, Ltd.: *See—*
Scigliano, Josef, 3,777,768.

Gackstetter, Henry Clinton: *See—*
Anderson, Harold Francis; Shove, Gordon William; Morin, Louis George; and Gackstetter, Henry Clinton, 3,778,576.

GAF Corporation: *See—*
Mestetsky, Thomas S., 3,778,398.

Gaia, Aldino; and Urani, Angelo, to McGraw-Edison Company. Protectors for electric circuits. 3,778,740, Cl. 337-187.000.

Gallagher, William J.: *See—*

Mallozzi, Philip J.; Epstein, Harold M.; Walters, Craig T.; Applebaum, David C.; and Gallagher, William J., 3,778,585.

Gallant, William E.: *See—*
Timmons, Richard J.; and Gallant, William E., 3,778,445.

Gallay, Maurice. Traction and steering device. 3,777,898, Cl. 212-38.000.

Galuten, Jerry H.: *See—*
Castellano, Peter J.; and Galuten, Jerry H., 3,778,137.

Galvin, Lee Robert; and Kline, Arthur J., Jr., to Motorola, Inc. Carrier for beam lead integrated circuits. 3,778,686, Cl. 317-234.00r.

Gambs, Gerard C.; Nix, William H.; Barnhart, James H.; and Cathcart, John G., to Ford, Bacon & Davis Incorporated. Production of gaseous and liquid fuel from crude oil. 3,778,239, Cl. 48-214.000.

Games, John E.: *See—*
Brock, Larry D.; and Games, John E., 3,778,601.

Gamon-Calmet Industries, Inc., mesne: *See—*
Munier, Ronald A.; and Ling, Charles Che, 3,777,565.

Gampp, Robert J. Wildlife station holder. 3,777,711, Cl. 119-23.000.

Gannon, Charles R.; and Beddoe, George H., to Ashland Oil, Inc. Process for preparing rubberized bituminous paving compositions. 3,778,397, Cl. 260-28.5as.

Gant, Preston L.; Motes, Bill G.; and Aulor, Jerry T., to Continental Oil Company. Apparatus for the collection and measurement of the amount of mercury vapors present in a volume of air or other gases. 3,778,162, Cl. 356-51.000.

Garber, William Wilson. Sailing outrigger for small watercraft. 3,777,690, Cl. 114-39.000.

Gardiner, Errol Murray: *See—*
Pennington, James Ronald; and Gardiner, Errol Murray, 3,778,108.

Gardner, Charles R.; and Goelz, David W., to Republic Corporation; d/b/a Glas-Craft of California, a division of Republic Corporation. Roving counter and brake. 3,777,856, Cl. 188-65.100.

Gardner, Gary A.: *See—*
Winter, Phillip M.; and Gardner, Gary A., 3,778,241.

Gardner, Hugh R.; Ricketts, Calvin I.; and Joosten, Wesley L., to Jeter Electronic Industries, Inc. Electric animal trainer. 3,777,712, Cl. 119-29.000.

Gariety, Harold L.; Maloney, Carol J.; and Maloney, George F. Game for learning correlated facts. 3,777,415, Cl. 35-31.00f.

Garland, Carl C.: *See—*
Fryfogle, James D.; and Garland, Carl C., 3,777,744.

Garratt, Philip M., to General Electric Company. Frequency-to-voltage converter having high noise immunity. 3,778,638, Cl. 307-233.000.

Garrett, Billy J.: *See—*
Carlin, Bernard, 3,778,030.

Garrett Corporation, The: *See—*
Gross, Robert A.; Hunter, Skillman C.; and Norman, Leslie W., 3,777,488.
Norman, Leslie W.; and Hunter, Skillman C., 3,777,487.

Garth, Bruce Hollis, to Du Pont de Nemours, E. I., and Company. High energy density battery having unsaturated heterocyclic solvent containing electrolyte. 3,778,310, Cl. 136-100.00r.

Gaston, Donald H.: *See—*
Whitney, Robert J.; Gaston, Donald H.; and Nickell, Joe A., 3,777,357.

Gates, David S.: *See—*
Driscoll, Gary L.; Duling, Irl N.; and Gates, David S., 3,778,487.

Gates, Marvin A.; and Sommars, Mark P., to Caterpillar Tractor Company. Fuel limiting device. 3,777,730, Cl. 123-140.00r.

Gawlick, Heinz; Bendler, Hellmut; and Jensen, Ernst, to Dyanmit Nobel Aktiengesellschaft. Anvil for percussion primer. 3,777,664, Cl. 102-45.000.

Gazuit, Georges. Tire-making drum. 3,778,326, Cl. 156-417.000.

Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Schreier, Josef; and Klimeck, Hugo, 3,777,876.

Gedanken, Aharon; Jortner, Joshua; Szoke, Abraham; and Raz, Baruch. Electrical gas discharge lamp. 3,778,661, Cl. 313-185.000.

Gehlen, Herman Walter; Hartmann, Karl; and Thieme, Gerhard, to Eisenwerke Kaiserslautern GmbH. Method of producing deep-frozen fillet blocks. 3,777,503, Cl. 62-62.000.

General Dynamics Corporation: *See—*
Poulsen, Peter D., 3,778,161.

General Electric Company: *See—*
Ali, Syed Aejaz; and Doherty, Orval Austin, 3,777,677.
Area, Manuel; and Bauer, Lowell W., 3,778,825.
Bain, James A., 3,777,558.
Bauer, Lowell W., 3,778,822.
Berger, Abe; and Selin, Terry G., 3,778,459.
Buice, Joel B.; and Schwenker, David G., 3,778,683.
Cuccio, Allen B. J., 3,778,816.
DeVisser, Christian; and Myers, Donald Orville, 3,778,633.
Dibelius, Norman R.; and Schiefer, Richard B., 3,777,484.
Emerick, Carl M.; and Pauze, Denis R., 3,778,411.
Garratt, Philip M., 3,778,638.
Harris, Lawrence A., 3,778,658.
Heit, Henry J., 3,778,798.
Hibbins, William A., 3,777,983.
Hong, Jose Cheng Tsuen; and Werts, Everett Wendell, 3,778,769.
Houston, John M., 3,778,659.
Houston, John M.; and Kingsley, Jack D., 3,778,756.
Houston, John M., 3,778,757.
Howell, Charles B.; and Drew, Richard E., 3,778,170.
Hueschen, Robert E.; and Bernstein, Frank, 3,778,654.
Johnson, Kenneth O.; Kepf, Peter F.; and St. George, Alfred, 3,777,489.
Johnson, Peter D., 3,778,662.
Nopanen, Esko J., 3,777,406.
Ouellette, Joseph H., 3,778,190.
Smearing, Robert W., 3,778,536.
Webster, Harold F.; and Harris, Lawrence A., 3,778,229.
Ziemba, Richard T., 3,777,665.

General Instrument Corporation: *See—*
Miner, Carroll R., 3,777,576.

General Mills Chemicals, Inc.: *See—*
Lovald, Roger A.; and Glaser, David W., 3,778,394.

General Mills, Inc.: *See—*
Reinhart, Richard D.; and Straughn, Robert O., 3,778,520.
Strommer, Palmer K., 3,778,522.

General Motors Corporation: *See—*
Arnold, Thomas E.; and Plumer, Roy D., 3,777,772.
Aspinwall, Robert H., 3,778,188.
Bandukwalla, Phiroze, 3,778,186.
Chana, Howard E., 3,777,863.
Cote, James D., 3,777,729.
Hause, Gilbert K.; and Kohler, William L., 3,777,622.
Jaffe, James M., 3,778,643.
Kelley, Oliver K., 3,777,615.
Mooney, James J., Jr.; and Polak, James C., 3,777,593.
Noyes, Leroy W., 3,778,752.
Paxton, Wayne E., 3,777,535.
Stoltman, Donald D., 3,777,480.
Tobin, Michael F., 3,778,090.
Welch, Eugene E., 3,777,360.

General Tire and Rubber Company, The: *See—*
Butler, Eugene B.; Fak, Ivan A.; and Line, Lawrence L., 3,778,332.

Gentiluomo, Joseph A. Automatic golf ball teeing apparatus. 3,778,067, Cl. 273-201.000.

Georgescu, Petre: *See—*
Manicatide, Radu Adrian M.; Olteanu, Ion; and Georgescu, Petre, 3,777,978.

Gerbacia, William E.: *See—*
Rosano, Henri L.; and Gerbacia, William E., 3,778,381.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heniz Joseph, 3,777,604.

Gerber, Heniz Joseph, to Gerber Garment Technology, Inc. Apparatus for supporting a stack of sheet material being cut or otherwise worked on. 3,777,604, Cl. 83-37.00a.

Germanton, Charles E. Cylindrical geometry pushbutton combination lock. 3,777,519, Cl. 70-220.000.

Gernert, Herbert; Glockner, Hans; Meier, Ernst; Ohlschlager, Hans; and Riester, Oskar, to Agfa-Gevaert Aktiengesellschaft. Photographic material. 3,778,273, Cl. 96-84.00r.

Gernhardt, Paul D.; and Slater, Charles A., Jr., to Peterson Manufacturing Company. Article mount. 3,778,016, Cl. 248-475.00a.

Gessner, Peter: *See—*
Reiche, Alfons, 3,777,728.

Giacomello, Giacomo; Pedrazzini, Andrea; and Franzolini, Luciano. System of mechanical coupling for piloting rotative transducers. 3,777,577, Cl. 74-89.220.

Gicca, Francis A.; Passavant, Francis C.; Stebbins, William W.; and Worters, Allen J., to GTE Sylvania Incorporated. Display system with graphic fill-in. 3,778,811, Cl. 340-324.0ad.

Giddings, David George: *See—*
Murphy, David Duncan; and Giddings, David George, 3,778,338.

Giebel, Walter C. Agitator assembly for recovery of minerals. 3,778,034, Cl. 259-107.000.

Gille, John P.: *See—*
Sharp, Richard A.; Gille, John P.; and McGrew, Jay L., 3,777,501.

Giller, Arnold; Hultzsch, Kurt; and Hesse, Wolfgang, to Chemische-Werke Albert. Rubber mixtures reinforced by phenol novolac resins and process for preparing phenol novolac resins suitable therefor. 3,778,414, Cl. 260-51.00r.

Gillet, Roger: *See—*
Lehuen, Christian; and Gillet, Roger, 3,778,649.

Gillette Company, The: *See—*
Woolley, Donald D., 3,778,495.

Gillie, Robert E., to Western Electric Company, Incorporated. Apparatus for supporting and rotating a workpiece. 3,777,703, Cl. 118-49.000.

Ginaven, Marvin E., to Bauer Bros. Co., The. Classifying and screening apparatus. 3,777,893, Cl. 210-499.000.

Giordano, Arthur A.: *See—*
Pease, Richard R.; Blitzer, Frank; Giordano, Arthur A.; and Less, Frank L., 3,778,166.

Giras, Theodore C.; and Podolsky, Leaman B. Method and system for operating a boiling water reactor-steam turbine plant preferably under digital computer control. 3,778,347, Cl. 176-24.000.

Giraud, David. Particle-collecting device. 3,777,461, Cl. 56-202.000.

Girling Limited: *See—*
Hughes, Michael James, 3,777,857.
Hughes, Michael James, 3,777,859.
Murphy, Peter, 3,777,858.

Giuliani, John F., to United States of America, Navy. Liquid parametric optical mixing device. 3,778,635, Cl. 307-88.300.

Giversen, Svend, to Danfoss A/S. Meshing rotary piston machine with an internal shaft. 3,778,198, Cl. 418-61.000.

Gjettum, Dag Poppe; and Odegaard, Gunnar Viggo, to International Standard Electric Corporation. Direction finder calibration system. 3,778,834, Cl. 343-119.000.

Glaser, David W.: *See*—
Lovald, Roger A.; and Glaser, David W., 3,778,394.

Glass Containers Corporation, mesne: *See*—
Sobran, Michael J., 3,777,875.

Glass, John P. Method of fabricating fluidic elements by assembling together a plurality of plastic strips. 3,777,344, Cl. 29-157.00r.

Gleason Works, The: *See*—
Hunkeler, Ernst J., 3,778,178.

Glockner, Hans: *See*—
Gernert, Herbert; Glockner, Hans; Meier, Ernst; Ohlschlager, Hans; and Riester, Oskar, 3,778,273.

Goade, James C., to Caterpillar Tractor Company. End cap locking means for hydraulic cylinders and method. 3,777,627, Cl. 92-168.000.

Godderidge, Jean. Spooling device for unwinding wire. 3,778,003, Cl. 242-156.000.

Goelz, David W.: *See*—
Gardner, Charles R.; and Goelz, David W., 3,777,856.

Goetz, Norbert: *See*—
Mueller, Herbert; and Goetz, Norbert, 3,778,477.

Goldberg, Morris: *See*—
Schwartz, Robert; and Goldberg, Morris, 3,778,625.

Golden Cycle Corporation, The: *See*—
Wilson, Harold W., 3,778,252.

Goldman, Alan J.; and Shapiro, Stanley, to Olin Corporation. Plated copper base alloy article. 3,778,236, Cl. 29-199.000.

Goldstein, Barry. Zipper cutting apparatus. 3,777,606, Cl. 83-460.000.

Golf-In Equipment Corporation: *See*—
Nutter, Gerald E., 3,778,064.

Goller, Roman: *See*—
Biller, Efim; Goller, Roman; Pflugk, Hellmuth; and Schlegel, Richard, 3,778,481.

Golub, Taras Fedorovich: *See*—
Andreev, Valentin Efimovich; Pankovsky, Vyacheslav Ivanovich; Golub, Taras Fedorovich; and Buryabash, Alexei Nikolaevich, 3,778,491.

Gonzales, J. Tim: *See*—
Schiller, Jacob D.; Cheslik, Scott L.; and Gonzales, J. Tim, 3,778,582.

Goodwin, Ray. Chick processing handling device. 3,777,752, Cl. 128-173.000.

Gordy, John. Process for the electrolytic recovery of copper from its ores. 3,778,360, Cl. 204-107.000.

Gorman-Rupp Company, The: *See*—
McFarlin, Stanley B., 3,778,181.

Gorschenin, Eduard Andreevich: *See*—
Tooming, Khugo Gustavovich; Kjulvya, Leopold Yakobovich; Gorschenin, Eduard Andreevich; and Nevalins, Arnold Yanovich, 3,777,682.

Gostavson, Carl A.; Shutes, Emmett B.; and Wuenschel, Paul C., to Gulf Research & Development Company. Clamped detector. 3,777,814, Cl. 166-212.000.

Gotow, Kuniaki: *See*—
Mukaiyama, Teruaki; Ueki, Massaaki; Maruyama, Hiroshi; Matsueda, Rei; and Gotow, Kuniaki, 3,778,428.

Gotsinger, John E.: *See*—
Lewicki, George W.; and Gotsinger, John E., 3,778,791.

Gotze, Johannes; Bockly, Erich; and Riester, Oskar, to Agfa-Gevaert Aktiengesellschaft. Sensitisation of photographic silver halide layers for the silver dye bleach process. 3,778,279, Cl. 96-140.000.

Gould, Robert W., to Cable Switch Corporation. Alarm utilizing pressure and temperature responsive switch. 3,778,805, Cl. 340-272.000.

Gowen, Inc.: *See*—
Gowen, Remi Harold, 3,778,216.

Gowen, Remi Harold, to Gowen, Inc. Molds for use in freezing food products together with means to eject the frozen blocks from the mold frames. 3,778,216, Cl. 425-444.000.

Grace, W. R., & Co.: *See*—
Anderson, Richard F., 3,777,445.
Brown, Patrick M.; Duecker, Heyman C.; and Devore, Dorothy C., 3,778,281.

Graetz, Herbert. Multi-pocket card holder and wallet structure. 3,777,795, Cl. 150-35.000.

Graham, Charles E. Drive transmitting mechanism. 3,777,493, Cl. 60-493.000.

Graham, Joseph P. Method of separating continuous form stationery. 3,777,958, Cl. 225-4.000.

Grainger, Robert B.: *See*—
Marco, Gino J.; and Grainger, Robert B., 3,778,508.

Grando, Jean: *See*—
Fremiot, Charles; and Grando, Jean, 3,778,656.

Grantham, Le Roy F.: *See*—
Yosim, Samuel J.; Grantham, Le Roy F.; and Huber, Donald A., 3,778,320.

Graver, Odd, to A/S Ingeniorfiroiset Fornhart & Giertsen. Method and apparatus for wrapping a load with heat-shrinkable film. 3,777,446, Cl. 53-30.000.

Graves, Gail W.; Pope, Gerald R.; Stewart, Joseph T., Jr.; and Petrosky, Willard L., to Dore, John L., Co. Lined butterfly valve. 3,778,028, Cl. 251-306.000.

Gravicast Patentverwertungsgesellschaft m.b.H.: *See*—
Tenner, Oskar, 3,777,801.

Gray, Ira M. Entrance structure for a liquid conduit. 3,777,786, Cl. 138-109.000.

Gray, John F. Continuous cascade shelving assembly of knockdown character. 3,777,897, Cl. 211-55.000.

Gray, R. Flanagan; Caswell, John; and Muller, William G. Sucking wound plug and chest aspirator. 3,777,757, Cl. 128-278.000.

Great Canadian Oil Sands, Limited: *See*—
Bierwith, Stanton F., 3,778,580.

Greathouse, Jack F., to Mack Trucks, Inc. Miniature fuel injection nozzle and holder assembly. 3,777,984, Cl. 239-533.000.

Greber, Gerd; and Schott, Herbert, to Papierwerke "Waldhof-Aschaffenburg" AG. Gels for use in gel chromatographic procedures and processes for producing the same. 3,778,393, Cl. 260-17.45g.

Grebner, Fritz; Kolsch, Wilhelm; Spindler, Gerhard; and Ehemann, Walter. Lattice girder. 3,777,433, Cl. 52-693.000.

Green, Victor J. Means for setting grommets in woven fabrics. 3,777,966, Cl. 227-61.000.

Greene, Alexander B.: *See*—
Kindlimann, Lynn E.; and Greene, Alexander B., 3,778,235.

Greenwood, Ivan A., Jr.: *See*—
Bayley, Donald S.; Greenwood, Ivan A., Jr.; and Simpson, James H., Jr., 3,778,700.

Greenwood Mills Corporation: *See*—
Dunlap, Frederick A.; and Wilcox, Lyle C., 3,777,557.

Griffin, Tommy K.: *See*—
Grove, Marvin H.; and Griffin, Tommy K., 3,777,545.

Griffith, Bobby D.: *See*—
Stedman, Robert N.; Griffith, Bobby D.; and Sullivan, Robert J., 3,777,822.

Grimm, Harold; and Zuckerman, Ira, to Panther Machine Corporation. Auxiliary fabric feed means for fabric spreading machine. 3,778,050, Cl. 270-31.000.

Grinberg, Yakov Zeemanovich: *See*—
Sherman, Vladimir Efimovich; Dubonosov, Georgy Viktorovich; Portnov, Sergei Fedorovich; Fedotov, Jury Alexeevich; Grinberg, Yakov Zeemanovich; Soloviev, Nikodim Nikiforovich; Pavlov, Viktor Grigorievich; and Dmitriev, Efim Fedorovich, 3,777,534.

Grodinsky, Robert M., to Chicago Musical Instrument Co. Air cooled audio amplifier assembly. 3,778,551, Cl. 179-1.000.

Grolet, Pierre: *See*—
Thiery, Jean; and Grolet, Pierre, 3,777,827.

Grolet, Pierre; and Thiery, Jean, to Institut Francais du Petrole, des Carburants et Lubrifiants. Gripping shoe for a traction device adapted for pulling an elongated member. 3,778,094, Cl. 294-1.000.

Gronowitz, Salo Schmul; Michael, Uri; and Sjoberg, Berndt Olof Harald, to Astra Lakemedel Aktiebolag. Aromatic alpha-amino acids. 3,778,463, Cl. 260-471.00a.

Gross, Alexander. Apparatus for the production of chenille. 3,777,464, Cl. 57-24.000.

Gross, Robert A.; Hunter, Skillman C.; and Norman, Leslie W., to Garrett Corporation, The. Method and apparatus for reaction propulsion. 3,777,488, Cl. 60-204.000.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Suspensions for vehicles. 3,778,082, Cl. 280-124.00b.

Grossmar, Murray. Watch mounted counter. 3,777,475, Cl. 58-126.00b.

Grove, Marvin H.; and Griffin, Tommy K., to M & J Valve Company. Meter prover apparatus and method. 3,777,545, Cl. 73-3.000.

Groves, Harvey H. Suppository. 3,777,755, Cl. 128-271.000.

Grubb, John J., and Tomei, Keichi, to Hamilton Company. Portable flow-through dispensing refractometer apparatus. 3,778,165, Cl. 356-128.000.

Gruber, Wolfgang: *See*—
Bergmeyer, Hans Ulrich; Bernt, Erich; Gruber, Wolfgang; Schmidt, Felix Helmut; and Stork, Harald, 3,778,350.

Gruniger, Fritz; Muller, Gunther; and Steiger, Klaus, to Loewe-Opta GmbH. Mechanism for handling magnetic tapes. 3,778,005, Cl. 242-186.000.

Grunwald, Gerhard: *See*—
Kruner, Rolf; Thillen, Hans; and Grunwald, Gerhard, 3,777,964.

GTE Automatic Electric Laboratories Incorporated: *See*—
Anders, Raymond H.; and Folgmann, Helmut G., 3,778,708.

GTE Sylvania Incorporated: *See*—
Gicca, Francis A.; Passavant, Francis C.; Stebbins, William W.; and Worters, Allen J., 3,778,811.
Pease, Richard R.; Blitzer, Frank; Giordano, Arthur A.; and Less, Frank L., 3,778,166.

Guignard, Jean-Hubert, to Schlumberger Technology Corporation. Methods and apparatus for measuring the rate of penetration in well drilling. 3,777,560, Cl. 73-151.500.

Guillen, David: *See*—
Andow, Paul; Guillen, David; and Diaz, Raul G., 3,778,052.

Gulf Research & Development Company: *See*—
Gostavson, Carl A.; Shutes, Emmett B.; and Wuenschel, Paul C., 3,777,814.
Ku, Daniel Y. C., 3,778,415.
Taylor, Brian W.; and Swift, Harold E., 3,778,462.

Gullich, Reinhold, to Impex-Essen Vertrieb von Werkzeugen GmbH, Firma. Hammer drilling machine. 3,777,825, Cl. 173-13.000.

Gullo, James M.: *See*—
Pyne, William J.; Gullo, James M.; and Adams, Bobby F., 3,778,247.

Gundlach, Robert W.; and Vock, Richard C., to Xerox Corporation. Induction imaging system. 3,778,841, Cl. 346-74.0e.

Gunkel, Ronald W.: *See*—
Cole, Nancy C.; Gunkel, Ronald W.; and Houck, Clarence W., 3,778,254.

Gusaras, Vladas, to Oak Industries Inc. Multisection rotary wafer type switch assembly with interlocking stator and rotor sections. 3,778,566, Cl. 200-14.000.

Gutmann, Karl, Jr.; and Meinherz, Joachim, to Gutmann, Karl, KG, Firma. Office machine worktable construction. 3,778,125, Cl. 312-272.500.

Gutmann, Karl, KG, Firma: *See*—
Gutmann, Karl, Jr.; and Meinherz, Joachim, 3,778,125.

Habermeier, Juergen; and Porret, Daniel. Binuclear N-heterocyclic polyglycidyl compounds. 3,778,439, Cl. 260-256.40c.

Hackenberg, Robert A., to Robertson Paper Box Co., Inc. Display carton and blank forming same. 3,777,883, Cl. 206-45.310.

Hackforth, Bernhard: *See*—
Walter, Jurgen; and Hackforth, Bernhard, 3,777,865.

Haettinger, George C.: *See*—
Ericson, Alvin L.; Haettinger, George C.; and Pedersen, Ernest T., 3,777,930.

Hafele, Robert X., to Ethyl Development Corporation. Plastic container with lockable dispensing closure. 3,777,948, Cl. 222-497.000.

Haga, Teruhide: *See*—
Ushiyama, Rintaro; Sugino, Osakazu; Haga, Teruhide; and Horigome, Koichi, 3,778,268.

Hagan, Edward A. Ball rifled barrel. 3,777,385, Cl. 42-76.00r.

Hagarman, Paul O.: *See*—
Johnson, Keith N.; and Hagarman, Paul O., 3,778,355.

Hage, Joseph C., to Singer Company, The. Linear action knee lifters. 3,777,686, Cl. 112-237.000.

Hagen, Herrmann, to Motoren- und Turbinen-Union Munich GmbH. Control system for gas turbine engines. 3,777,479, Cl. 60-39.250.

Hagen, Magnus F.; and Jordan, Fred H. Precision telescoping ball bearing drawer slide suspension for wood and metal furniture production. 3,778,120, Cl. 308-3.800.

Hagendoorn, Johan Gerard; and Schieving, Dick, to U.S. Philips Corporation. Switching system having coded push-button. 3,778,770, Cl. 340-149.00r.

Haines, David E.; and Troutman, James D., to Troutman, James D. Magazine capacity reducer kit for repeating shotguns. 3,777,383, Cl. 42-49.00a.

Hake, Victor E.; McDowell, Allen W.; Mersel, Daniel R.; Mosher, Lawrence G.; and Stilwell, Stanley O., to International Business Machines Corporation. Logic and storage circuit for terminal device. 3,778,779, Cl. 340-172.500.

Haker, Edwin J.; and Peterson, Norman L., to Rex Chainbelt Inc. Vibration meter system for vibratory compaction machines. 3,778,177, Cl. 404-117.000.

Hakozaki, Katsuya, to Nippon Electric Company, Limited. Electronic computer comprising a plurality of general purpose registers and having a dynamic relocation capability. 3,778,776, Cl. 340-172.500.

Halcon International, Inc.: *See*—
Kollar, John, 3,778,468.

Hale, Dean H. Dirigible system for snowmobiles. 3,777,831, Cl. 180-5.00r.

Hale, Norman L. Three-player chess game apparatus. 3,778,065, Cl. 273-131.0ab.

Haley, David M.; and Bergantzel, Richard P., to California Car Wash Systems, Inc. Vehicle washing apparatus. 3,777,326, Cl. 15-21.00d.

Hallicrafters Co., The: *See*—
Kovar, George F., 3,778,839.

Haltom City State Bank, mesne: *See*—
Campbell, James W., 3,777,598.

Hamada, Hisawaki: *See*—
Sugiura, Shotaro; Ueno, Haruo; Kono, Minoru; and Hamada, Hisawaki, 3,778,424.

Hamada, Nagaharu: *See*—
Hayashi, Yukitaka; Osawa, Akira; Shimizu, Hakuichi; and Hamada, Nagaharu, 3,778,793.

Hamasaki, Masafumi, to Asahi Kasei Kogyo Kabushiki Kaisha. Rider's body protecting device for high speed vehicle operable in a collision thereof. 3,778,083, Cl. 280-150.0ab.

Hamby, Clayton B., Jr., to SCM Corporation. Turpentine fraction purification. 3,778,486, Cl. 260-675.500.

Hamilton Company: *See*—
Grubb, John J.; and Tomei, Keichi, 3,778,165.

Hamlin, Roland: *See*—
Lundstrom, Jan-Horje; Nyberg, Ake; Hamlin, Roland; and Astberg, Ake, 3,777,723.

Hamner, Glen P.; and Mason, Ralph B., to Esso Research and Engineering Company. Hydrocracking and hydrodenitrogenation of shale oil. 3,778,365, Cl. 208-111.000.

Handleman, Avron R., to Monsanto Company. Portable system for the preparation of slurries and solutions. 3,777,775, Cl. 137-268.000.

Hanke, Peter E.: *See*—
Eberly, David H., Jr.; and Hanke, Peter E., 3,778,598.

Hannan, William James, to RCA Corporation. Gated holographic coding system for reducing alignment requirements. 3,778,128, Cl. 350-3.500.

Hannon, Charles N.: *See*—
Hannon, Warren W.; and Hannon, Charles N., 3,777,907.
Hannon, Warren W.; and Hannon, Charles N., 3,777,929.

Hannon, Warren W.: *See*—
Hannon, Warren W.; and Hannon, Charles N., 3,777,907.
Hannon, Warren W.; and Hannon, Charles N. (said Hannon, Charles N., assor. to said), 3,777,929.

Hannon, Warren W.; and Hannon, Charles N., to Hannon, Warren W. Method and apparatus for feeding newspapers. 3,777,907, Cl. 214-8.50f.

Hannon, Warren W.; and Hannon, Charles N., said Hannon, Charles N., assor. to said Hannon, Warren W. Newspaper vendor. 3,777,929, Cl. 221-17.000.

Hanrihan, James P., to Foxboro Company, The. Power supply with battery backup. 3,778,634, Cl. 307-64.000.

Hanseman, Leo C., to Technicolor Inc. Blue screen travelling matte system. 3,778,542, Cl. 178-5.40r.

Hansen, Paul: *See*—
Schmedes, Helga; Hansen, Paul; and Welz, Bernhard, 3,778,156.

Hansen, Paul J. Metal pouring apparatus including particle collecting mechanism. 3,777,651, Cl. 98-115.00r.

Hanusiak, Tadeusz J., to Amtab Manufacturing Co. Folding table leg brace construction. 3,777,675, Cl. 108-132.000.

Haralson, Hamilton S.: *See*—
United States of America, National Aeronautics and Space Administration, 3,777,552.

Hardenbicker, Herbert: *See*—
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, 3,777,998.

Hardy, Walter N., to Rockwell International Corporation. Precision calibration target for radiometers. 3,778,837, Cl. 343-703.000.

Hargett, Lawrence W. Portable collapsible playpen. 3,777,321, Cl. 5-99.00c.

Haring, Donald R.; and King, Paul A., to Computek, Inc. Microprogrammed terminal. 3,778,775, Cl. 340-172.500.

Harlan, Alfred R., to Motorola, Inc. Mode selector disengage mechanism. 3,778,069, Cl. 274-4.00c.

Harnessed Energies, Inc.: *See*—
Lewis, John R., 3,777,561.

Harnischfeger Corporation: *See*—
Johnston, Roger L.; and Wieneck, Daniel Charles, 3,777,629.

Harper, Murry D. Tractor. 3,777,837, Cl. 180-70.00r.

Harper, Robert; and Zavadil, David, to Raytheon Company. Slow wave delay line structure. 3,778,665, Cl. 315-3.500.

Harrington, Francis E.: *See*—
Sease, John D.; and Harrington, Francis E., 3,778,348.

Harrington Manufacturing Co., Inc.: *See*—
Elliott, Brantford G., 3,777,459.

Harris, Elmer E.: *See*—
Smith, Richard A.; and Harris, Elmer E., 3,777,886.

Harris, Lawrence A.: *See*—
Webster, Harold F.; and Harris, Lawrence A., 3,778,229.

Harris, Lawrence A., to General Electric Company. Multibeam cathode ray tube utilizing D.A.M. grid. 3,778,658, Cl. 313-69.00r.

Harris, Melvin: *See*—
Schibler, Luzius; and Harris, Melvin, 3,778,383.

Harris, Robert J.; and Lee, Irvin J., to Price, H. C., Co. Apparatus for coating pipe. 3,777,705, Cl. 118-313.000.

Harrischfeger Corporation: *See*—
Witwer, Wallace J., 3,777,899.

Harrold, Ronald T., to Westinghouse Electric Corporation. Vacuum circuit interrupter having improved contact structure. 3,778,573, Cl. 200-144.00b.

Hartley, Michael Augustine; and Rowley, Robert, to Simon-Hartley Limited. Rotary distributors. 3,777,890, Cl. 210-150.000.

Hartmann, Karl: *See*—
Gehlen, Herman Walter; Hartmann, Karl; and Thieme, Gerhard, 3,777,503.

Harvey, Edgar Lloyd, to Burroughs Corporation. Circuit for operating multiple position display tubes. 3,778,675, Cl. 315-169.00r.

Harwald Company, The: *See*—
Wallace, Richard R., 3,778,802.

Hatanaka, Yoshihiro; and Ueba, Akio, to Kabushiki Kaisha Kokuei Kikai Seisakusho. Automatic teller system. 3,778,595, Cl. 235-61.70b.

Hataya, Humio: *See*—
Sasaki, Ryoichi; Hataya, Humio; Fukui, Yutake; and Kashimura, Tetsuo, 3,778,256.

Hatter, Stephen L.: *See*—
Becker, Roger T.; Hatter, Stephen L.; and McMullin, Donald, Jr., 3,777,880.

Hattori, Soichiro. Synthetic resin bobbin. 3,777,515, Cl. 68-198.000.

Haun, Clem Edward: *See*—
Newman, Albert P.; and Haun, Clem Edward, 3,778,569.

Hauni-Werke Korber Co. KG: *See*—
Bornfleth, Ulrich, 3,777,911.

Hause, Gilbert K.; and Kohler, William L., to General Motors Corporation. Pumps and motors. 3,777,622, Cl. 91-479.000.

Hausermann, Elmer P.; and Hausermann, Marten C. Method of making a master die for use in an abrasion process. 3,777,595, Cl. 76-107.00r.

Hausermann, Marten C.: *See*—
Hausermann, Elmer P.; and Hausermann, Marten C., 3,777,595.

Hawes, John W. Timer controlled alarm system. 3,778,809, Cl. 340-309.50r.

Hawker Siddeley Aviation, Limited: *See*—
Jones, Peter Killcross, 3,778,009.

Potts, Frederick John; and Wickenden, Geoffrey Charles, 3,778,010.

Hawthorne, Millo Marion: *See—*
Newman, James L.; and Hawthorne, Millo Marion, 3,777,388.

Hay, Donald A.: *See—*
Finlay, Walter L.; Fisher, Henry J.; and Hay, Donald A., 3,778,318.

Hayakawa, Yoshikazu: *See—*
Matsui, Shunji; Hirashima, Kenzo; Hayakawa, Yoshikazu; and Marumo, Nagayuki, 3,778,572.

Hayashi, Hideo; Sato, Hisatake; and Oshima, Akio, to Nippon Oil Company, Limited. Process for producing resins of weather resistance. 3,778,421, Cl. 260-82.000.

Hayashi, Teru: *See—*
Takahashi, Takashi; and Hayashi, Teru, 3,777,588.

Hayashi, Yukitaka; Osawa, Akira; Shimizu, Hakuichi; and Hamada, Nagaharu, to Hitachi, Ltd. Clocking system for magnetic memory. 3,778,793, Cl. 340-174.10a.

Hayashi, Yukitaka, to Hitachi, Ltd. Display device. 3,778,810, Cl. 340-324.0ad.

Haynes, Johnny L.: *See—*
United States of America, National Aeronautics and Space Administration, 3,777,552.

Hayter, Sidney W.: *See—*
Baker, Richard D.; Hayter, Sidney W.; and Lewis, Homer D., 3,778,380.

Hayworth, Curtis Benjamin, to World Patent Development Corporation. Restoring and/or preserving papers or like materials. 3,778,401, Cl. 260-29.6me.

Hazard, Robert E., to Polytop Corporation. Safety dispensing closure. 3,777,936, Cl. 222-48.000.

Hazen, Alvy M.: *See—*
Hergatt, Robert N.; and Hazen, Alvy M., 3,777,506.

Heath, Harry Garett, Jr.; and Holzapfel, Carl, to Wheaton Industries. Injection blow molding machine. 3,778,210, Cl. 425-242.000.

Heath, Ronald Alfred: *See—*
Thomas, Alan; and Heath, Ronald Alfred, 3,777,570.

Heckler & Koch GmbH: *See—*
Moller, Tilo; and Ketterer, Dieter, 3,777,381.

Hedin, Milton W., to Minnesota Mining and Manufacturing Company. X-ray film. 3,777,884, Cl. 206-62.00r.

Heifetz, Saul; Mandelbaum, George; and Kushner, Irwin. Modular building unit and method for making same. 3,778,528, Cl. 174-48.000.

Heikaus, Reinhard: *See—*
Wiechers, Herbert; and Heikaus, Reinhard, 3,778,362.

Heinz, H. J., Company: *See—*
Smith, Richard A.; and Harris, Elmer E., 3,777,886.

Heinz, Jeffrey, Manufacturing Co., Inc.: *See—*
Vosskuhler, Heinz, 3,777,658.

Heit, Henry J., to General Electric Company. Food preparation electric thermometer alarm circuit. 3,778,798, Cl. 340-228.00r.

Hell, Rudolf, Dr. Ing., GmbH: *See—*
Richter, Friedrich, 3,778,544.

Helser, Jerry L., to Owens-Corning Fiberglas Corporation. Slaking quicklime in aqueous sodium/potassium silicate solution in manufacture of hydrous calcium silicate products. 3,778,494, Cl. 264-82.000.

Hemingway, Joseph M. Pipe nipple tool. 3,777,356, Cl. 29-428.000.

Henderson, Robert A., to Ecodyne Corporation. Cartridge filter unit. 3,777,889, Cl. 210-135.000.

Hendler, Harvey S.; Albert, William C.; and Evans, John, to Singer Company, The. Liquid bearing unit and seal. 3,778,123, Cl. 308-36.300.

Hendricks, Leslie. Pleasure shoe. 3,777,374, Cl. 36-38.000.

Henkel & Cie G.m.b.H.: *See—*
Barnstorf, Joachim, 3,778,465.
Von Freyhold, Helmut, 3,778,283.

Henkel, Robert N.; and Kruschinski, John H., to National Distillers and Chemical Corporation. Hot melt coating composition and method. 3,778,404, Cl. 260-33.20r.

Hensel, Werner: *See—*
Forster, Hans-Joachim M.; and Hensel, Werner, 3,777,860.

Hepher, Martin, to Norprint Limited. Photographic transfer materials. 3,778,272, Cl. 96-87.00r.

Herb, John R., to Pharmachem Corporation. Method of shaving employing an aqueous solution of dextran. 3,777,597, Cl. 83-22.000.

Herbener, Henry M. Undergarments. 3,777,764, Cl. 128-519.000.

Herber, John F., to Monsanto Company. Functional fluids. 3,778,376, Cl. 252-78.000.

Herbine, Richard H.; and Morrison, David J., to Schering Corporation. Method for packaging viscous vinyl plastic solutions. 3,777,447, Cl. 53-36.000.

Herbol-Werke Herbig-Haarhaus Aktiengesellschaft: *See—*
Kleinschmidt, Ernst, 3,777,550.

Hergatt, Robert N.; and Hazen, Alvy M., to Camper Comfort Corporation. Portable air conditioner apparatus. 3,777,506, Cl. 62-237.000.

Hergenruther, Paul M., to Boeing Company, The. Poly-AS-triazines. 3,778,412, Cl. 210-50.000.

Hermann Hemscheidt Maschinenfabrik: *See—*
Bull, Hans, 3,777,619.

Herndon, William H.: *See—*
Schinella, Richard D.; and Herndon, William H., 3,777,364.

Herpich, William A.; Chaney, Donal W.; and Palmer, George W., to Peabody Galion Corporation. Tailgate for a rear loader refuse vehicle. 3,777,917, Cl. 214-83.300.

Herzog, Kurt. Valved nozzle for an injection molding machine. 3,777,990, Cl. 239-571.000.

Hesse, Wolfgang: *See—*
Giller, Arnold; Hultzsch, Kurt; and Hesse, Wolfgang, 3,778,414.

Heterochemical Corporation: *See—*
Nooi, Jacobus, 3,778,435.

Hewlett-Packard Company: *See—*
Bodway, George E., 3,778,689.

Hibbins, William A., to General Electric Company. Gas cooked dual fuel air atomized fuel nozzle. 3,777,983, Cl. 239-422.000.

Higgins, Peter, to British Insulated Callender's Cables Limited. Distribution cable with coaxial connections permanently connected thereto and a method of manufacture thereof. 3,778,531, Cl. 174-72.00r

Higuchi, Hobart Atsushi; and Trubell, Lawrence Paul, to International Business Machines Corporation. Transistor switch using a current sharing pulse transformer. 3,778,639, Cl. 307-254.000.

Hikita, Yoshihiko: *See—*
Hiraoka, Michito; and Hikita, Yoshihiko, 3,777,834.

Hild, Willi; Zahradnik, Franz; Zahn, Erwin; and Priebe, Edmund, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Flame-proof glass-fiber-reinforced polyamide containing phosphorus. 3,778,407, Cl. 260-37.00n.

Hildebrand, Dietrich: *See—*
Kuth, Robert; Hildebrand, Dietrich; and Bien, Hans-Samuel, 3,778,228.

Hill, Fred A.: *See—*
Hill, Harold A.; and Hill, Fred A., 3,777,715.

Hill, Harold A.; and Hill, Fred A. Headholding assembly. 3,777,715, Cl. 119-99.000.

Hindermann, Peter; and Meindl, Hubert, to Ciba-Geigy AG. 1-Amino-4-(4',5'-dilower alkyl-3-sulphamoylphenylamino)anthraquinone-2-sulfonic acids. 3,778,453, Cl. 260-374.000.

Hines, Rubin H.; Hollinshead, William L., and Bolden, Thomas O., to Laser Systems & Electronics, Inc. Distance measuring apparatus and method utilizing phase comparison of modulated light beams. 3,778,159, Cl. 356-5.000.

Hiraoka, Michito; and Hikita, Yoshihiko, to Hitachi Metals Ltd. Magnet vehicle. 3,777,834, Cl. 180-9.440.

Hirashima, Kenzo: *See—*
Matsui, Shunji; Hirashima, Kenzo; Hayakawa, Yoshikazu; and Marumo, Nagayuki, 3,778,572.

Hirohashi, Toshiyuki: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.

Hisatsune, Tomio: *See—*
Sato, Kazuo; Hisatsune, Tomio; and Izawa, Minoru, 3,778,823.

Hitachi, Ltd.: *See—*
Hayashi, Yukitaka; Osawa, Akira; Shimizu, Hakuichi; and Hamada, Nagaharu, 3,778,793.
Hayashi, Yukitaka, 3,778,810.
Kawan, Oshio; Kudo, Mitsuhiro; Ishibashi, Masato; and Fukase, Shigeo, 3,778,260.
Masaki, Akira, 3,778,646.
Okoshi, Takanori; and Migitaka, Masatoshi, 3,778,717.
Sasaki, Ryoichi; Hataya, Humio; Fukui, Yutake; and Kashimura, Tetsuo, 3,778,256.
Watanabe, Shigeru; Yokozawa, Norio; Yabuuchi, Shigeru; and Terakado, Ituko, 3,778,607.

Hitachi Metals Ltd.: *See—*
Hiraoka, Michito; and Hikita, Yoshihiko, 3,777,834.

Hitachi Shipbuilding and Engineering Company Ltd.: *See—*
Yamanoto, Akira; Yoshida, Dan; Onaka, Tatsumi; and Shiraishi, Minoru, 3,777,440.

Ho, Henry Minglo: *See—*
Milligan, Gene Emmett; Ho, Henry Minglo; and Kimura, Noboru, 3,778,792.

Hoborn, Jan Ingvar. Device for defaecation and urination in throw-away bed-pans. 3,777,317, Cl. 4-112.000.

Hodges, Robert James, to International Standard Electric Corporation. Magnetic power handling arrangement. 3,777,707, Cl. 118-637.000.

Hoffacker, Franz: *See—*
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, 3,777,998.

Hoffmann, Marcel E., to Societe anonyme des Etablissements. Resonant type current regulator providing a continuous regulation. 3,778,699, Cl. 323-6.000.

Hogstrom, Edwin F.: *See—*
Rood, Alvin A.; Hogstrom, Edwin F.; and Stumphauzer, William C., 3,778,292.

Hohn, Alfred; and Novacek, Peter, to Aktiengesellschaft Brown, Boveri & Cie. Turbomachine structure. 3,778,182, Cl. 415-101.000.

Hokanson, David Eugene, to United States of America, Veterans Affairs. Method and apparatus for non-invasively visualizing blood vessels. 3,777,740, Cl. 128-2.00v.

Holderbaum, Karl-Heinz, to Schneider, Jos., & Co., Optische Werke. Remote indicator for diaphragm setting or the like. 3,777,640, Cl. 95-11.00r.

Holfeld, Armin E. Agricultural implement trailers. 3,777,823, Cl. 172-328.000.

Holinbeck, Dale G.: *See—*
Aumiller, Clyde F.; Morrison, Lowell D.; and Holinbeck, Dale G., 3,777,742.

Holker, Kenneth Urmston, to National Steel Corporation. Chromizing ferrous metal substrates. 3,778,297, Cl. 117-107.20p.

Holker, Kenneth Urmston, to Albright & Wilson Limited. Zinc plating solution. 3,778,358, Cl. 204-55.00r.

Holland, Harold. Key tag. 3,777,523, Cl. 70-456.00r.

Hollinshead, William L.: *See—*
Hines, Rubin H.; Hollinshead, William L.; and Bolden, Thomas O., 3,778,159.

Holloway, Donald P.; Payne, William H.; and Peeler, Donald H., to Metaltek, Inc. Device having coacting wheels for projecting tennis balls. 3,777,732, Cl. 124-1.000

Holman, Burdette M., to Allis-Chalmers Corporation. Stab connector. 3,778,748, Cl. 339-64.00m.

Holmes, Curtis L.; and Brady, Lynn J., to CTS Corporation. Electrically conductive element and method of making the same. 3,778,305, Cl. 117-212.000.

Holstein & Kappert Maschinenfabrik Phonix GmbH. *See—*
Sindermann, Siegmar, 3,777,449.

Holt, David M.: *See—*
Williams, Robert A.; and Holt, David M., 3,778,709.

Holt, Eugene L.: *See—*
Lang, Robert J.; Holt, Eugene L.; and Stoneback, David N., 3,778,501.

Holz, George E.: *See—*
Eisenberg, Mark F.; and Holz, George E., 3,778,673.

Holzapfel, Carl: *See—*
Heath, Harry Garett, Jr.; and Holzapfel, Carl, 3,778,210.

Holzman, James W., to Delbar Products, Inc. Method and apparatus for the mounting of vehicle-mirror assemblies. 3,778,015, Cl. 248-475.00r

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Takahashi, Noriyuki; Inoue, Hidehiko; and Toshimitsu, Yoshihiko, 3,778,081.

Honda, Ko: *See—*
Fujitsuka, Kaoru; and Honda, Ko, 3,778,148.

Honda, Yukio, to Nittan Company, Limited. Fire alarming system. 3,778,796, Cl. 340-216.000.

Honeywell Inc.: *See—*
Dahl, William R., 3,778,840.
Noecella, William F., 3,778,564.

Honeywell Information Systems, Inc.: *See—*
Rhodes, Russell R., 3,778,772.
Umbaugh, Charles Wayne, 3,777,365.
Walsh, John A., 3,778,751.

Hong, Jose Cheng Tsuen; and Werts, Everett Wendell, to General Electric Company. Solid state touch control hand set circuit. 3,778,769, Cl. 340-147.01p.

Hood, David Frederick, to Bell Canada-Northern Electric Research Limited. Matrix of shift registers for manipulating data. 3,778,773, Cl. 340-166.00r.

Hoover Ball and Bearing Company: *See—*
Wiese, Delmar R., 3,777,920.

Hope, Edward F.: *See—*
Reichenbacher, Frank W.; Kraver, Theodore C.; and Hope, Edward F., 3,777,599.

Horigome, Koichi: *See—*
Ushiyama, Rintaro; Sugino, Osakazu; Haga, Teruhide; and Horigome, Koichi, 3,778,268.

Horita, Teruyuki, to Takatori Machinery Works Ltd. Seaming method and apparatus for goreless panty-hoses. 3,777,681, Cl. 112-121.150.

Hornung, Friedrich: *See—*
Metzger, Hans; Brill, Klaus; and Hornung, Friedrich, 3,778,311.

Hoshina, Naomi; and Suzuki, Etzuki, to Tokyo Shibaura Electric Company Limited. Screw driving apparatus having magnet nut. 3,777,587, Cl. 74-424.80r.

Hoskins, Randel L.: *See—*
Sutherland, George S.; and Hoskins, Randel L., 3,778,084.

Hospert, John C., to Ameron, Inc. Remote controlled boring machine for boring horizontal tunnels. 3,778,107, Cl. 299-11.000.

Hosted, John M.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Hosted, John M.; and Maillet, Wilfrid G., 3,778,715.

Houck, Clarence W.: *See—*
Cole, Nancy C.; Gunkel, Ronald W.; and Houck, Clarence W., 3,778,254.

Houdaille Industries, Inc.: *See—*
Kauemann, Harold; and Lavoy, Edward S., 3,777,529.

Hounsfield, Godfrey Newbold, to EMI Limited. Method and apparatus for measuring X- or 8-radiation absorption or transmission at plural angles and analyzing the data. 3,778,614, Cl. 250-362.000.

Houston, John M., to General Electric Company. Inverted image multibeam cathode ray tube. 3,778,659, Cl. 313-69.00r.

Houston, John M.; and Kingsley, Jack D., to General Electric Company. Method and apparatus for visual imaging of ultrasonic echo signals utilizing a single transmitter. 3,778,756, Cl. 340-5.0mp.

Houston, John M., to General Electric Company. Method and apparatus for visual imaging ultrasonic echo signals utilizing multiple transmitters for reduced specular reflection effects. 3,778,757, Cl. 340-5.0mp.

Howe, William J. Method and apparatus for heat-sealing paperboard package closure flaps. 3,777,448, Cl. 53-47.000.

Howell, Charles B.; and Drew, Richard E., to General Electric Company. Borescope guide tube. 3,778,170, Cl. 356-241.000.

Hoye, Peter Albert Theodore; and Wood, Donald Albert, to Albright & Wood Limited. Organo distanathianes and the preparation thereof. 3,778,456, Cl. 260-429.700.

HRB-Singer, Inc.: *See—*
Rohrbaugh, George W.; and Bamser, Frank G., Jr., 3,778,059.

Hrdina, Jiri, to Ceskoslovenska akademie ved. Method and apparatus for automatic sample loading for chromatography columns. 3,777,572, Cl. 73-422.0gc.

Hsieh, Henry L., to Phillips Petroleum Company. Polar compound adjuvants for improved block polymers prepared with primary hydrocarbyllithium initiators. 3,778,490, Cl. 260-880.00b.

Hubby, Laurence M.; and Mayer, Herbert J., to Texaco Inc. Electric motor control system for a beam-type pumping load. 3,778,694, Cl. 318-474.000.

Huber, Donald A.: *See—*
Yosim, Samuel J.; Grantham, Le Roy F.; and Huber, Donald A., 3,778,320.

Huber, Klaus: *See—*
Poppinger, Herbert; and Huber, Klaus, 3,778,691.

Hudson, Frederick W., to Xerox Corporation. Xerographic development electrode apparatus. 3,778,144, Cl. 355-3.0dd.

Huelsman, Gregory J.; Bell, Robert E.; and Rohe, Gerald Edward, to Borden Inc. Printing inks comprising a uralkyd. 3,778,395, Cl. 260-22.0tn.

Hueschen, Robert E.; and Bernstein, Frank, to General Electric Company. Molybdenum alloy target for mammographic usage in X-ray tubes. 3,778,654, Cl. 313-60.000.

Huey, Samuel T.: *See—*
Nordling, K. Fredrik; and Huey, Samuel T., 3,778,555.

Hughes Aircraft Company: *See—*
Clavin, Alvin, 3,778,838.
Denny, Bradley J., 3,778,581.
Forward, Robert L., 3,778,163.
Stokes, Lyle S., 3,778,716.

Hughes, Gordon, to International Computers, Limited. Display control apparatus for drawing accurate lines. 3,778,667, Cl. 315-18.000.

Hughes, John F., to Cellcor Corporation of Canada Ltd. Polymeric starch composition. 3,778,392, Cl. 260-17.300.

Hughes, Michael James, to Girling Limited. Hydraulic braking system for vehicles. 3,777,857, Cl. 188-170.000.

Hughes, Michael James, to Girling Limited. Locking means for vehicle wheel brakes. 3,777,859, Cl. 188-265.000.

Hughes, Robert L.; and Rouse, John E., to Vaskor Industries, Inc. Water heater. 3,777,985, Cl. 239-555.000.

Hull, R. Dell. Spinning reel. 3,778,001, Cl. 242-84.50a.

Hultzsch, Kurt: *See—*
Giller, Arnold; Hultzsch, Kurt; and Hesse, Wolfgang, 3,778,414.

Humber, Leslie G.: *See—*
Jirkovsky, Ivo; Humber, Leslie G.; Demerson, Christopher A.; and Dobson, Thomas A., 3,778,449.

Hundal, Kjell. Device for junction boxes. 3,778,533, Cl. 174-65.00r.

Hunkeler, Ernst J., to Gleason Works, The. Apparatus for controlling blade positioning in a cutter head assembly. 3,778,178, Cl. 408-54.000.

Hunneke, Fred: *See—*
Traumuller, Martin; and Hunneke, Fred, 3,777,514.

Hunt, David John: *See—*
Searle, John Gilbert; and Hunt, David John, 3,777,967.

Hunter, Bryan J., to E. F. Industries, Inc. Condition sensing apparatus and valve therefor. 3,777,698, Cl. 116-118.00r.

Hunter, Skillman C.: *See—*
Gross, Robert A.; Hunter, Skillman C.; and Norman, Leslie W., 3,777,488.
Norman, Leslie W.; and Hunter, Skillman C., 3,777,487.

Huntoon, Richard T.: *See—*
Smith, Paul K.; Huntoon, Richard T.; and Mosley, Wilbur C., Jr., 3,778,295.

Hutni druhovgroba, generalni reditelstvi: *See—*
Mach, Jan; and Rybap, Vaclav, 3,777,717.

Hutzler, Robert H.: *See—*
Morris, Paul S.; and Hutzler, Robert H., 3,778,391.

Hydo, Steven J.: *See—*
Novak, Frank A.; Schreiber, Kenneth T.; and Hydo, Steven J., 3,778,628.

Hyperion Incorporated: *See—*
Viamonte, Manuel, Jr., 3,778,049.

I-T-E Imperial Corporation; *See—*
Wilson, George A., 3,778,568.

ICI America Inc.: *See—*
Burns, Joseph P.; Feltzin, Joseph; and Sanderson, Frank T., 3,778,408.

Iida, Yozo, to Nippon Kogaku K.K. Special photographing device for a cinecamera. 3,778,138, Cl. 352-91.000.

Iinume, Yoshio, to Citizen Watch Company Limited. Watch with electronic buzzer. 3,777,472, Cl. 58-57.500.

Iizuka, Toru; Ionooka, Katsuo; Saitoh, Torahiko; and Yasuda, Isao, to Kohkoku Chemical Industry Co., Ltd.. Suit for keeping warmth in water. 3,778,590, Cl. 219-211.000.

Iki, Noboru, to Fuji Shashin Koki Kabushiki Kaisha. Optical imaging system. 3,778,153, Cl. 355-66.000.

Illinois Tool Works Inc.: *See—*

Braden, Denver, 3,778,532.
Smith, Stuart Allen, 3,778,096.
Imabayashi, Satoshi; Yamaguchi, Koichiro; and Murase, Shiego. Heat pump type air conditioning systems. 3,777,508, Cl. 62-324.000.
Imamura, Hiroyuki: *See—*
Fujiwhara, Mitsuto; Kozima, Tamotsu; Imamura, Hiroyuki; and Endo, Takaya, 3,778,277.
Imperati, Ronald Lee: *See—*
Lindsay, Anthony; Imperati, Ronald Lee; and Becker, Philipp, 3,778,202.
Imperial Chemical Industrial Limited: *See—*
Brown, Edward Douglas; and Leeney, Timothy John, 3,778,461.
Imperial Chemical Industries Limited: *See—*
Barlow, Charles Brian; and Tomlin, Clive Dudley Spencer, 3,778,437.
Bisset, Douglas Chisholm; and Pugh, Kenneth Mervyn, 3,778,208.
Cude, Arthur Leslie; and Simpson, Henry George, 3,777,821.
Keith, Donald George; Morris, Douglas Barrett; Maack, Horst Egon Fred Ludwig; Mason, Ernest Arthur; and Woolgar, Robert John, 3,778,322.
Shearing, Herbert Jackson, 3,778,290.
Stansfield, James Frederick; and Topham, Arthur, 3,778,287.
Impex-Essen Vertrieb von Werkzeugen GmbH, Firma: *See—*
Gullich, Reinhold, 3,777,825.
Imura, Toshinori; and Fujii, Yoshifusa, to Minolta Camera Kabushiki Kaisha. Electronic shutter in camera. 3,777,636, Cl. 95-10.0ct.
Inaba, Shigeho: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.
Indesco Corporation: *See—*
Fitzgerald, Carl E., 3,777,702.
Industrial Science & Technology, Agency of: *See—*
Matsuda, Akio, 3,778,466.
Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See—*
Enneking, Heinrich, 3,777,467.
Ingham, Robert W.; and Chambers, Milton W., to Teledyne McCormick Selph. System for initiating ordnance devices mounted upon a rotating plate. 3,778,008, Cl. 244-17.110.
Ingram, Maxwell. Hand tool for crimping, cutting and stripping. 3,777,323, Cl. 7-5.400.
Inoue, Eiichi; and Yamase, Toshihiro, to Canon Kabushiki Kaisha. Spectrally sensitized diazo material. 3,778,274, Cl. 96-91.00r.
Inoue, Hidehiko: *See—*
Takahashi, Noriyuki; Inoue, Hidehiko; and Toshimitsu, Yoshihiko, 3,778,081.
Inoue, Naohiko: *See—*
Uchiyama, Hiromichi; and Inoue, Naohiko, 3,777,839.
Institut Dr. Ing. Rainhard Straumann AG: *See—*
Steinemann, Samuel G., 3,777,346.
Institut Francais du Petrole, des Carburants et Lubrifiants: *See—*
Grolet, Pierre; and Thiery, Jean, 3,778,094.
Thiery, Jean; and Grolet, Pierre, 3,777,827.
Institut Textile de France: *See—*
Cuvelier, Georges; and Wattiez, Daniel, 3,778,225.
Cuvelier, Georges; and Wattiez, Daniel, 13,778,225.
Institute of Gas Technology, The: *See—*
Anderson, Philip J.; and Dally, James W., 3,778,109.
Institutul de Mecanica Fluidelor Si Constructii Aerospatiale: *See—*
Manicatide, Radu Adrian M.; Olteanu, Ion; and Georgescu, Petre, 3,777,978.
Intel Corporation: *See—*
Karp, Joel A.; and Regitz, William M., 3,778,784.
International Business Machines Corporation: *See—*
Bhagawan, Venkatesha S.; Jones, Richard A.; McDowell, Allen W.; Mine, George D.; Remsburger, Louis J.; Rupp, Bruce A.; and Whittaker, Rodney R., 3,778,819.
Cannon, Maxwell R., 3,778,787.
Hake, Victor E.; McDowell, Allen W.; Mersel, Daniel R.; Mosher, Lawrence G.; and Stilwell, Stanley O., 3,778,779.
Higuchi, Hobart Atsushi; and Trubell, Lawrence Paul, 3,778,639.
Kirk, Joseph Pennell, 3,777,633.
Langston, Perry R., Jr.; Tummala, Rao R.; and Wilson, Donald M., 3,778,127.
Moore, Brian B., 3,778,780.
Platt, Steven; Pomeranz, Jehoshua N.; and Tewarson, Dinesh K., 3,778,640.
Queener, Carl A.; Ralston, William C.; Smith, Thomas C.; and Welsh, Joseph P., 3,778,262.
Von Gutfeld, Robert Jacob, 3,778,785.
Wilson, Donald Miller, 3,778,126.
International Computers, Limited: *See—*
Hughes, Gordon, 3,778,667.
Kanter, Michael Edward, 3,778,765.
International Nickel Company, Inc., The: *See—*
Benjamin, John Stanwood, 3,778,249.
Bishel, Robert Anthony, 3,778,588.
Jackson, Raymond Pennoyer, 3,778,309.
International Paper Company: *See—*
Nurre, Thomas C., 3,777,969.
International Standard Electric Corporation: *See—*
Bosc, Henri J.; Colin, Jean-Marie H.; and Debuisser, Jean-Claude A., 3,778,604.
Colardelle, Joel Serge; Lerouge, Claude Paul Henri; and Regbuer, Marc Andre, 3,778,734.
Gjettum, Dag Poppe; and Odegaard, Gunnar Viggo, 3,778,834.
Hodges, Robert James, 3,777,707.
Terryn, Raymond M. F., 3,778,629.
Investors In Venture, Inc.: *See—*
Bucalo, Louis, 3,777,737.
Ioffe, Felix Semenovich: *See—*
Rikman, Mikhail Abramovich; and Ioffe, Felix Semenovich, 3,777,872.
Ionooka, Katsuo: *See—*
Iizuka, Toru; Ionooka, Katsuo; Saitoh, Torahiko; and Yasuda, Isao, 3,778,590.
Irion & Vosseler: *See—*
Kundisch, Heinrich R.; and Pfundstein, Werner K., 3,777,973.
Irma Ungerer Pforzheim-Brotzingen: *See—*
Munchbach, Curt, 3,777,533.
Isaacs, John D.: *See—*
Brown, Daniel M.; and Isaacs, John D., 3,777,574.
Ishibashi, Masato: *See—*
Kawan, Oshio; Kudo, Mitsuhiro; Ishibashi, Masato; and Fukase, Shigeo, 3,778,260.
Ishida, Kengo: *See—*
Shiga, Akio; and Ishida, Kengo, 3,778,513.
Ishihara, Hideo: *See—*
Watanabe, Teruji; and Ishihara, Hideo, 3,778,789.
Ishikawa, Yoshikazu: *See—*
Otsubo, Kizuki; and Ishikawa, Yoshikazu, 3,777,719.
Ishizumi, Kikuo: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.
Itakura, Gen: *See—*
Matsuoka, Michio; Kobayashi, Yoshikazu; Itakura, Gen; and Masuyama, Takeshi, 3,778,743.
Italsider, Societa per Azioni: *See—*
Biondo, Nunzio, 3,777,477.
Itek Corporation: *See—*
Bowker, John Kent, 3,778,541.
Tatian, Berge, 3,778,133.
Ito, Ichizo: *See—*
Yamasaki, Hiroo; Kurita, Yoshio; and Ito, Ichizo, 3,777,563.
Ito, Takashi, 50% to Mitsui Shipbuilding & Engineering Co., Ltd. and 50% to Japan Ship's Machinery Development Association, mesne. Connecting rods of internal combustion engines. 3,777,592, Cl. 74-579.00e.
Iwai, Shigeru; and Kitamura, Yoshiaki. Actuator assembly for use with industrial robots. 3,777,618, Cl. 91-61.000.
Iwatsu Electric Co., Ltd.: *See—*
Kobayashi, Akira; Sugano, Tadashi; Koike, Toshio; and Sakata, Minehiro, 3,778,622.
Iyengar, Rama; and Davis, Dan Bryan, to Northern Electric Company, Limited. Method of controlling the characteristics impedance of coaxial cables. 3,777,371, Cl. 29-624.000.
Izawa, Minoru: *See—*
Sato, Kazuo; Hisatsune, Tomio; and Izawa, Minoru, 3,778,823.
Izumi, Masao, to Nissan Motor Company, Limited. Cooling arrangement mounted on a motor vehicle. 3,777,808, Cl. 165-39.000.
Izumi, Takahiro: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.
Izumi, Takashi; and Arai, Ryoji. Time rate measuring system for clocks and watches. 3,777,547, Cl. 75-6.000.
Jackson, John R., to Sperry Rand Corporation. Apparatus for detecting unlevelness of a pendulously supported flux valve by subjecting the valve to a vertical magnetic field. 3,778,703, Cl. 324-43.00r.
Jackson, Raymond Pennoyer, to International Nickel Company, Inc., The. Descaling process for alloys containing chromium. 3,778,309, Cl. 134-2.000.
Jackson, Winston J., Jr.: *See—*
Kuhfuss, Herbert F.; and Jackson, Winston J., Jr., 3,778,410.
Jaffe, James M., to General Motors Corporation. Solid state variable delay line using reversed biased PN junctions. 3,778,643, Cl. 307-293.000.
Jaggle, Gunther: *See—*
Knapp, Heinrich; and Jaggle, Gunther, 3,777,726.
Jahn, Darrel S., to Aquatic Systems, Inc. Swimming pool guard alarm unit. 3,778,803, Cl. 340-261.000.
Jahnke, Horst: *See—*
Reber, Harald; Jahnke, Horst; and Steiner, Walter, 3,778,313.
Jakob, Franz: *See—*
Zoller, Robert; Fester, Walter; Jakob, Franz; and Dahmen, Alexander, 3,778,416.
Jalger, Erich. Exhaled air collecting vessel. 3,777,571, Cl. 73-421.500.
Jameson, Paul. Automatic bed frame machine. 3,777,792, Cl. 144-82.000.
Jamison, Wayne L. Transistor and diode tester. 3,778,713, Cl. 324-158.00t.
Janssen, Leopold Mathieu Lambert. Skylight and safety device. 3,777,422, Cl. 49-7.000.

Jansson, Sixten Vincent. Method of weakening strip material in section rolling processes. 3,777,530, Cl. 72-129.000.
Janu, George J., to Johnson Service Company. Two-position liquid level controller. 3,777,778, Cl. 137-487.500.
Japan Ship's Machinery Development Association, mesne: *See—*
Ito, Takashi, 3,777,592.
Japan Storage Battery Co., Ltd.: *See—*
Kano, Seizo; Tanaka, Shinsaku; Mizoi, Yoshiaki; and Ojima, Kenji, 3,778,314.
Jarko, Michael F.; Powers, Avery W.; and Newmeyer, Reed A., to Solid State Devices, Inc. Monitor for detecting conflicting traffic control signals. 3,778,762, Cl. 340-46.000.
Jayne, Murray L. Integrated flight indicators. 3,778,760, Cl. 340-27.0na.
Jenkins, Larry E. All purpose shoe. 3,777,324, Cl. 9-310.00d.
Jenkins, William B., to Reynolds Metals Company. Coupling construction and method and apparatus for making the same. 3,778,534, Cl. 174-88.00c.
Jennings, Richard E.: *See—*
Walters, Ronnie G.; Markley, Theodore J.; and Jennings, Richard E., 3,778,696.
Jensen, Ernst: *See—*
Gawlick, Heinz; Bendler, Hellmut; and Jensen, Ernst, 3,777,664.
Jeppsson, Kind Helge: *See—*
Fleischer, Svend Sigurd Christie; and Jeppsson, Kind Helge, 3,777,339.
Jet Research Center, Inc.: *See—*
Brown, Claude H., 3,777,663.
Jeter Electronic Industries, Inc.: *See—*
Gardner, Hugh R.; Ricketts, Calvin I.; and Joosten, Wesley L., 3,777,712.
Jirkovsky, Ivo; Humber, Leslie G.; Demerson, Christopher A.; and Dobson, Thomas A., to Ayerst, McKenna and Harrison Limited. Indenopyran- and indenothiopyranalkylamines. 3,778,449, Cl. 260-327.0th.
Johns, Raymond; and Kuhns, David G., to Safety Research and Development Inc. Turn actuated alarm system for automotive vehicles. 3,778,763, Cl. 340-55.000.
Johnson & Johnson: *See—*
Plummer, Charles H.; and Skistimas, Donald V., 3,778,341.
Johnson, Gladys M. Anti-skid device for boots and shoes. 3,777,373, Cl. 36-7.700.
Johnson, Keith N.; and Hagarman, Paul O., to Texas Instruments, Incorporated. Metallic covering of continuous metallic core material. 3,778,355, Cl. 204-28.000.
Johnson, Kenneth O.; Kepf, Peter F.; and St. George, Alfred, to General Electric Company. Combustor casing and concentric air bleed structure. 3,777,489, Cl. 60-226.00r.
Johnson, Mark M. Ski with collapsible riding seat. 3,778,077, Cl. 280-12.00k.
Johnson, Peter D., to General Electric Company. High intensity fluorescent lamp radiating ionic radiation within the range of 1,600-2,300 A.U. 3,778,662, Cl. 313-109.000.
Johnson, Robert D.: *See—*
Dendy, Jackie D.; Johnson, Robert D.; and Peevey, Robert M., 3,777,813.
Johnson, Rubein V. Adjustable speaker cabinet. 3,777,844, Cl. 181-31.00b.
Johnson, S. C., & Son, Inc.: *See—*
Klema, Kenneth G., 3,777,947.
Johnson Service Company: *See—*
Janu, George J., 3,777,778.
Johnson Stamping and Fine-Blanking Company: *See—*
Rogers, Arthur L., 3,777,829.
Johnson, William K. Shielded cable stripper. 3,777,397, Cl. 30-90.600.
Johnston, Norris; and Latker, Mark, 1/5 each to Clark, Albert M., Manning, John C. and Froster, John G. Apparatus for separating dry granular material. 3,777,887, Cl. 209-474.000.
Johnston, Robert T.: *See—*
Jones, Neal K.; Faulkner, Douglas W.; Johnston, Robert T.; and Meharry, Murray R., 3,778,624.
Johnston, Roger L.; and Wieneck, Daniel Charles, to Harnischfeger Corporation. Hydraulic cylinder for telescopic boom. 3,777,629, Cl. 91-411.00r.
Johnston, William D., to Pittsburgh Corning Corporation. Metal oxide coated glass blocks. 3,778,243, Cl. 65-58.000.
Joliot, Adolphe. Golf ball holder. 3,777,933, Cl. 221-309.000.
Jonassen, Gaylord D., to Telecommunication Industries, Inc. Temperature sensitive electrical regulating device. 3,778,679, Cl. 317-40.00a.
Jones & Laughlin Steel Corporation: *See—*
Bernsmann, Gert P., 3,778,250.
Jones, Alan Richardson, to Coulter Chemistry, Inc., mesne. Fluid switch. 3,777,785, Cl. 137-806.000.
Jones, John B., Jr., to Paraho Corporation. Bottom fluid distributor for shaft vessels. 3,777,940, Cl. 222-193.000.
Jones, Lawrence T.: *See—*
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., 3,778,053.
Jones, Lester C.: *See—*
Foshee, William H.; and Jones, Lester C., 3,777,542.
Jones, Neal K.; Faulkner, Douglas W.; Johnston, Robert T.; and Meharry, Murray R., to Commonwealth of Australia, The. Thermal imaging device. 3,778,624, Cl. 250-333.000.
Jones, Peter Killcross, to Hawker Siddeley Aviation, Limited. Aerodynamic surfaces. 3,778,009, Cl. 244-42.0da.
Jones, Richard A.: *See—*
Bhagawan, Venkatesha S.; Jones, Richard A.; McDowell, Allen W.; Mine, George D.; Remsburger, Louis J.; Rupp, Bruce A.; and Whittaker, Rodney R., 3,778,819.
Jones, Robert D.: *See—*
Slough, Ronald S.; and Jones, Robert D., 3,778,233.
Joosten, Wesley L.: *See—*
Gardner, Hugh R.; Ricketts, Calvin I.; and Joosten, Wesley L., 3,777,712.
Jordan, Fred H.: *See—*
Hagen, Magnus F.; and Jordan, Fred H., 3,778,120.
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, to Agfa-Gevaert Aktiengesellschaft. Automatic band-winding machine, 3,777,998, Cl. 242-56.200.
Jorpes, Johan E.: *See—*
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,778,429.
Jortner, Joshua: *See—*
Gedanken, Aharon; Jortner, Joshua; Szoke, Abraham; and Raz, Baruch, 3,778,661.
Joseph, Horace M., to United States of America, Navy. Vibration compensation for range direction finder. 3,778,830, Cl. 343-17.700.
Josephson, Albert R.: *See—*
Josephson, Carl A.; and Josephson, Albert R., 3,777,846.
Josephson, Carl A.; and Josephson, Albert R. Fire escape. 3,777,846, Cl. 182-78.000.
Josey, Alden D.; and Kirchner, Jack R., to Du Pont de Nemours, E. I., and Company. 1-Alkenyl-9,10-anthraquinones. 3,778,452, Cl. 260-369.000.
J.S.J. Marquardt, Firma: *See—*
Prestel, Fritz, 3,778,575.
Jung, David H. Roller skate carrier. 3,777,956, Cl. 224-45.00s.
Junger, Hans; and Weissenfels, Franz, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of copolycondensates comprising reacting phenol, a furfural, a urea and an aliphatic aldehyde. 3,778,413, Cl. 260-51.500.
Junkers & Co., G.m.b.H.: *See—*
Ellstrom, Johas Ragnar, 3,778,591.
Just Design, Inc.: *See—*
Newsteder, Robert, 3,777,951.
Justi, Eduard: *See—*
Fischer, Horst; and Justi, Eduard, 3,778,684.
JWI Ltd.: *See—*
Charbonneau, Fernand Armand, 3,778,342.
Kabushiki Kaisha Kito: *See—*
Kanetake, Norio; and Shirai, Hiroshi, 3,778,298.
Kabushiki Kaisha Kokuei Kikai Seisakusho: *See—*
Hatanaka, Yoshihiro; and Ueba, Akio, 3,778,595.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Yamamoto, Akira, 3,777,963.
Kabushiki Kaisha Koparu: *See—*
Shimizu, Monetaka, 3,777,646.
Kabushiki Kaisha Ricoh: *See—*
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,263.
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,264.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Sugita, Kenichiro; Shimizu, Tetsuji; Ueno, Sinichi; and Muraoka, Tateki, 3,777,738.
Ueno, Shinichi, 3,777,769.
Kae-Tee Development Corporation: *See—*
Sherwood, Kenneth C., 3,778,062.
Kalagidis, Memorial, to Ametek, Inc. Method of fabricating a commutator. 3,777,367, Cl. 29-597.000.
Kalamaridis, Anthony: *See—*
Friedman, Raymond; Friedman, Sheldon; and Kalamaridis, Anthony, 3,777,684.
Kalamazoo Conveyor Company: *See—*
Becker, Roger T.; Hatter, Stephen L.; and McMullin, Donald, Jr., 3,777,880.
Kalle Aktiengesellschaft: *See—*
Dennhardt, Werner; and Schroter, Herbert, 3,778,154.
Kallenbach, Ralph M. Motorcycle towing apparatus. 3,778,087, Cl. 280-292.000.
Kamb, Ludwig. Accident warning and traffic guide system. 3,778,764, Cl. 340-81.00r.
Kamiya, Shigeru; and Shibata, Haruo, to Matsushita Electronics Corporation. Fluorescent lamp of high color rendering. 3,778,660, Cl. 313-109.000.
Kanady, Garland H. Pipe tamping means. 3,777,766, Cl. 131-243.000.
Kanawa, Haruo, to Yuken Kogyo Company Ltd. Single body protective casing for solenoid assembly. 3,778,719, Cl. 335-278.000.
Kandatsu, Makoto; and Yamaguchi, Michio, to Tokyo Daigaku. Process for the manufacture of granular or powdery purified whole egg protein. 3,778,425, Cl. 260-112.00r.
Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,778,325.
Kaneko, Kohei: *See—*
Takahashi, Toru; and Kaneko, Kohei, 3,778,754.
Kanetake, Norio; and Shirai, Hiroshi, to Kabushiki Kaisha Kito. Process of metallic cementation. 3,778,298, Cl. 117-107.20r.

Kanno, Tadao: *See—*
Maeda, Yoshinobu; Takamori, Kazumi; and Kanno, Tadao, 3,777,350.

Kano, Osamu: *See—*
Kasanami, Toru; and Kano, Osamu, 3,778,389.

Kano, Seizo; Tanaka, Shinsaku; Mizoi, Yoshiaki; and Ojima, Kenji, to Japan Storage Battery Co., Ltd. Method for joining cover and casing of a battery. 3,778,314, Cl. 136-176.000.

Kanter, Michael Edward, to International Computers Limited. Universal check digit verifier/generater systems. 3,778,765, Cl 340-146.1aj.

Kao Soap Co., Ltd.: *See—*
Matsuda, Kazuo; Tanaka, Yoshiaki; and Sakai, Takeyo, 3,778,480.

Kapell, Henry K., to Minnesota Mining and Manufacturing Company. Connector. 3,778,749, Cl. 339-97.00r.

Kaplan, Milton, to Sentinel Bag and Paper Co., Inc. Shoe polishing kit. 3,777,328, Cl. 15-14.940.

Karius, Siegfried, to Licentia Patent-Verwaltungs-GmbH. Solar cell generator for flight missions in the vicinity of the sun. 3,778,312, Cl. 136-89.000.

Karp, Joel A.; and Regitz, William M., to Intel Corporation. Memory system incorporating a memory cell and timing means on a single semiconductor substrate. 3,778,784, Cl. 340-173.00r.

Kasak, August: *See—*
Lyne, Cornelius M.; Kasak, August; and Stasko, William, 3,778,253.

Kasanami, Toru; and Kano, Osamu, to Murata Manufacturing Co., Ltd. Electro-conductive material containing PBO and RuO_2. 3,778,389, Cl. 252-520.000.

Kashimura, Tetsuo: *See—*
Sasaki, Ryoichi; Hataya, Humio; Fukui, Yutake; and Kashimura, Tetsuo, 3,778,256.

Kataura, Yasuzi: *See—*
Ototani, Tohei; Shimodaira, Saburo; and Kataura, Yasuzi, 3,778,255.

Katchka, Jay R., to Robershaw Controls Company. Flow control device. 3,777,777, Cl. 137-454.600.

Kauemann, Harold; and Lavoy, Edward S., to Houdaille Industries, Inc. Dual bend forming device and method. 3,777,529, Cl. 72-57.000.

Kaufman, William F. Spray booth and system. 3,777,706, Cl. 118-603.000.

Kawada, Takehiko, to Denki Onkyo Company, Ltd. Piezoelectric transformers. 3,778,648, Cl. 310-8.100.

Kawan, Oshio; Kudo, Mitsuhiro; Ishibashi, Masato; and Fukase, Shigeo, to Hitachi, Ltd. Superconducting materials. 3,778,260, Cl. 75-174.000.

Kayser, James H.; and Younker, Gregory A., to Minnesota Mining and Manufacturing Company. Safety closure. 3,777,924, Cl. 215-9.000.

Kearney, Stuart D., II; and Richardson, Walter, to United States of America, Navy. Rod television-guided drone to perform reconnaissance and ordnance delivery. 3,778,007, Cl. 244-3.140.

Keefe, Francis J.: *See—*
Turner, Thomas M.; Keefe, Francis J.; and Little, Charles D., 3,777,376.

Keith, Donald George; Morris, Douglas Barrett; Maack, Horst Egon Fred Ludwig; Mason, Ernest Arthur; and Woolgar, Robert John, to Imperial Chemical Industries Limited. Process of forming spirally wounds product. 3,778,322, Cl. 156-187.000.

Keith, Harry G., Jr.: *See—*
Starr, Anthony J.; Shindel, Gustave A.; and Keith, Harry G., Jr., 3,778,215.

Keller, Alex J. Mechanical hopper feeder. 3,777,908, Cl. 214-16.00r.

Keller, John M. Control apparatus for selectively illuminating a group of lamps. 3,778,676, Cl. 315-217.000.

Keller, Karl H.: *See—*
Petrisko, Edwin M.; and Keller, Karl H., 3,777,555.

Keller, Penny C.: *See—*
Petrisko, Edwin M.; and Keller, Karl H., 3,777,555.

Kelley, Leon O. Plow having a reciprocating blade attachment. 3,777,500, Cl. 61-72.600.

Kelley, Oliver K., to General Motors Corporation. Method of making compound pinion gear. 3,777,615, Cl. 90-10.000.

Kelly, Joseph. Film projection with cleaning attachment. 3,778,139, Cl. 352-130.000.

Kelsey-Hayes Company: *See—*
Podlewski, Robert S.; and Birge, William T., 3,778,118.

Kempermann, Theo: *See—*
Schubart, Rudiger; Eholzer, Ulrich; Kempermann, Theo; and Roos, Ernst, 3,778,419.

Kendall Company, The: *See—*
Binard, William J.; and Dye, John F., 3,777,743.
Collins, Robert F., 3,777,749.

Kennedy, Bobby W., to United States of America, National Aeronautics and Space Administration. Integrated circuit package with lead structure and method of preparing the same. 3,778,685, Cl. 317-234.00r.

Kennedy, Brian R.; and De Vries, Louis, to Chevron Research Company. Lubricating oil additives and compositions containing such additives. 3,778,370, Cl. 252-42.00f.

Kennedy, Leroy P. Safety device requiring periodic attention of vehicle operators. 3,778,116, Cl. 303-19.000.

Kepf, Peter F.: *See—*
Johnson, Kenneth O.; Kepf, Peter F.; and St. George, Alfred, 3,777,489.

Kersting, Raymond J., to Wagner Electric Corporation. Control valve. 3,778,119, Cl. 303-68.000.

Kesselring, Lutz; and Nagel, Hans-Joachim, to MAPA GmbH. Feeding bottle teats. 3,777,753, Cl. 128-252.000.

Ketterer, Dieter: *See—*
Moller, Tilo; and Ketterer, Dieter, 3,777,381.

Keuffel & Esser Company: *See—*
Erickson, Kent E., 3,778,158.

Keyes Fibre Company: *See—*
Cornelius, William J., 3,778,516.

Keyzer, Hendrik: *See—*
Rembaum, Alan; Landel, Robert F.; and Keyzer, Hendrik, 3,778,476.

Khegai, Anatoly Sergeevich: *See—*
Maslenok, Boris Arkadievich; Zlobin, Viktor Grigorievich, Khegai, Anatoly Sergeevich; Nikolaev, Vladimir Petrovich; and Kruuger, Evgeny Adolfovich, 3,778,345.

Kiddon, Daniel. Multi-purpose closure. 3,777,950, Cl. 222-554.000.

Kido, Yasuji: *See—*
Takenaka, Shigeo; Kido, Yasuji; Shimabara, Tatsutoshi; and Ogawa, Masanobu, 3,778,386.

Kiefer, Michael Edward, to Trienco, Inc. Chamber and filament method for flow through thermal conductivity micro size measuring chambers. 3,777,366, Cl. 29-592.000.

Kielwein, Helmut: *See—*
Zimmermann, Helmuth; and Kielwein, Helmut, 3,777,453.

Kightlinger, Adrian P.; Crosby, Edward K.; and Speakman, Edwin L., to Standard Brands Incorporated. Gelatinizable crosslinked cationic starch and method for its manufacture. 3,778,431, Cl. 260-233.30r.

Kihara, Nobutoshi; and Odagiri, Yoichi, to Sony Corporation. Rotary head magnetic recording and reproducing apparatus with pliant record disk in still reproduction of video signals. 3,778,559, Cl. 178-6.6fs.

Kiley, Leo R., to Teledyne Industries, Inc. Internal combustion engine having a variable volume precombustion chamber. 3,777,724, Cl. 123-78.00b.

Killen, Gene W., to Pyott-Boone, Inc. Multi-station safety monitor having shunt switch. 3,778,797, Cl. 340-227.00r.

Kilroy, Eugene J., Jr.: *See—*
Barcus, Jack L.; Kilroy, Eugene J., Jr.; Morin, Marius J.; and Parker, John C., 3,777,391.

Kilsdonk, Jan Albert: *See—*
Van Benschoten, Peter J.; and Kilsdonk, Jan Albert, 3,778,820

Kimura, Noboru: *See—*
Milligan, Gene Emmett; Ho, Henry Minglo; and Kimura, Noboru, 3,778,792.

Kimura, Tomiaki; Ohmura, Yasuhiro; Yoshimura, Tamotsu; Kohyama, Katsuhisa; and Watanabe, Kenzo, to Abrac Corporation and Mitsubishi Chemical Industries Limited. Polymerization of 2-pyrrolidone using a catalyst formed by reaction between 2-pyrrolidone and aueous KOH. 3,778,402, Cl. 260-78.00p.

Kincade, Claude Robert. Variable venturi carburetors. 3,778,041, Cl. 261-50.00a.

Kindlimann, Lynn E.; and Greene, Alexander B., to Allegheny Ludlum Industries, Inc. Nitride-strengthened stainless steel composite. 3,778,235, Cl. 29-196.100

King, Paul A.: *See—*
Haring, Donald R.; and King, Paul A., 3,778,775.

King Radio Corporation: *See—*
Schmitt, Jerry C., 3,778,602.

Kingsley, Jack D.: *See—*
Houston, John M.; and Kingsley, Jack D., 3,778,756.

Kinzel, Richard; and Mladek, Walter, to Bosch, Robert, G.m.b.H. Fuel injection nozzle. 3,777,986, Cl. 239-533.000.

Kirchmeyer, Paul A., to Riencell Boats, Inc. Loader for elevating a load onto an automotive vehicle top. 3,777,922, Cl. 214-450.000.

Kirchner, Jack R.: *See—*
Josey, Alden D.; and Kirchner, Jack R., 3,778,452.

Kirchner, Willi; and Braune, Gerhard, to Kugelfischer Georg Schafer & Co. Fuel feed regulating device. 3,777,727, Cl. 123-119.00r.

Kirk, Joseph Pennell, to International Business Machines Corporation. Structure for making phase filters. 3,777,633, Cl. 95-1.00r.

Kirton, Kenneth T., to Upjohn Company, The. Use of prostaglandins to induce medical abortion. 3,778,506, Cl. 424-318.000.

Kishi, Takao: *See—*
Nozawa, Takamitsu; and Kishi, Takao, 3,777,945.

Kishinami, Shigeto: *See—*
Fujimoto, Kunihiko; Matsui, Masayuki; Kishinami, Shigeto; and Nishi, Toshio, 3,778,396.

Kissa, Erik, to Du Pont de Nemours, E. I., and Company. Durable-press and soil-release compositions. 3,778,226, Cl. 8-115.500.

Kitagawa, Norihisa, to Texas Instruments, Incorporated. IGFET dynamic address decode circuit. 3,778,782, Cl. 340-173.00r.

Kitamura, Yoshiaki: *See—*
Iwai, Shigeru; and Kitamura, Yoshiaki, 3,777,618.

Kitchell, Bruce N.: *See—*
Danehy, Robert P.; Kitchell, Bruce N.; and Silva, Antonio V., 3,777,524.

Kjulvya, Leopold Yakobovich: *See—*
Tooming, Khugo Gustavovich; Kjulvya, Leopold Yakobovich; Gorschenin, Eduard Andreevich; and Nevalins, Arnold Yanovich, 3,777,682.

Kleiman, Joseph P.; and Plonsker, Larry, to Ethyl Corporation. Complex ester. 3,778,454, Cl. 260-404.800.

Kleinschmidt, Ernst, to Herbol-Werke Herbig-Haarhaus Aktiengesellschaft. Continuous measurement of viscosity. 3,777,550, Cl. 73-59.000.

Klema, Kenneth G., to Johnson, S. C., & Son, Inc. Reciprocating valve assembly for pressurized containers. 3,777,947, Cl. 222-402.230.

Klemchuk, Peter. Substituted hydroxylamine anti-oxidants 3,778,464, Cl. 260-482.00p.

Klenz, Karl A.; and Velarde, Clyde R., to Rheem Manufacturing Company. Clipping apparatus and clips therefor. 3,777,400, Cl. 206-56.0ab.

Klimeck, Hugo: *See—*
Schreier, Josef; and Klimeck, Hugo, 3,777,876.

Kline, Arthur J., Jr.: *See—*
Galvin, Lee Robert; and Kline, Arthur J., Jr., 3,778,686.

Klockner-Humboldt Deutz Aktiengesellschaft: *See—*
Fischer, Rudolf, 3,777,994.

Klotzer, Erhard; and Pochert, Johannes, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for improving adherence of rubber mixtures to textile fabrics. 3,778,406, Cl. 260-41.50a.

Knapp, Heinrich; and Jaggie, Gunther, to Bosch, Robert, G.m.b.H. Fuel injection apparatus. 3,777,726, Cl. 123-119.00r.

Knapp, Lowell W., to Xerox Corporation. Illuminating apparatus. 3,778,146, Cl. 355-3.000.

Knoll International, Inc.: *See—*
Christen, Andreas, 3,777,437.

Knutson, Carroll F.: *See—*
Boardman, Charles R.; and Knutson, Carroll F., 3,777,815.

Kobayashi, Akira; Sugano, Tadashi; Koike, Toshio; and Sakata, Minchiro, to Iwatsu Electric Co., Ltd. Charging apparatus for electro-photographic copying machines. 3,778,622, Cl. 250-324.000.

Kobayashi, Masayoshi; and Uchino, Mitsuo, to Diesel Kiki Kabushiki Kaisha. Fuel injection system in a distributor-type injection pump for internal combustion engine. 3,777,731, Cl. 123-140.0fg.

Kobayashi, Yoshikazu: *See—*
Matsuoka, Michio; Kobayashi, Yoshikazu; Itakura, Gen; and Masuyama, Takeshi, 3,778,743.

Kobe Steel Ltd.: *See—*
Aiko, Hideo; Okamoto, Takao, Abe, Eiji; Tsukihashi, Kazunobu; and Yamashita, Koichi, 3,777,661.

Kober, Drago, to Liquid Gas Anlagen Union GmbH. Process and apparatus for purging gas-containing storage tanks in vessels. 3,777,928, Cl. 220-88.00b.

Koch, Karl E., to Sperry Rand Corporation. Steering mechanism for hydrostatically driven agriculture machines. 3,777,833, Cl. 180-6.480.

Koehler, Dale R.; Zupfer, Jerrald A.; and Prak, Jan Willem L., to Bulova Watch Company, Inc. Presettable frequency divider for electronic timepiece. 3,777,471, Cl. 58-23.00r.

Koehring Company: *See—*
Nicholson, Robert D., 3,777,784.
Tolbert, William N., 3,777,773.

Koenders, Elisabeth. Packing machine. 3,777,452, Cl. 53-206.000.

Koerner, Roger J.: *See—*
Burkhardt, Joseph A.; Childers, Thomas W.; Koerner, Roger J.; Mason, John P.; and Tidwell, Danny R., 3,777,812.

Koester, David W.: *See—*
Cornelius, Edward B.; and Koester, David W., 3,778,388.

Kofink, Siegfried, to Eberspacher, J. Space heater having a heating air flow duct with a heat exchanger for engine cooling water and one for combustion gases. 3,777,975, Cl. 237-12.30a.

Kohkoku Chemical Industry Co., Ltd.: *See—*
Iizuka, Toru; Ionooka, Katsuo; Saitoh, Torahiko; and Yasuda, Isao, 3,778,590.

Kohler, William L.: *See—*
Hause, Gilbert K.; and Kohler, William L., 3,777,622.

Kohlhammer, Bernd, to Licentia Patent-Verwaltungs-G.m.b.H. Filter circuit. 3,778,644, Cl. 307-295.000.

Kohyama, Katsuhisa: *See—*
Kimura, Tomiaki; Ohmura, Yasuhiro; Yoshimura, Tamotsu; Kohyama, Katsuhisa; and Watanabe, Kenzo, 3,778,402.

Koike, Toshio: *See—*
Kobayashi, Akira; Sugano, Tadashi; Koike, Toshio; and Sakata, Minchiro, 3,778,622.

Kokkola, Seppo J.; and Lassila, Veikko A. Forging machine. 3,777,543, Cl. 72-465.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Watanabe, Teruji; and Ishihara, Hideo, 3,778,789.

Kolb, James M.; and O'Leary, Kevin J., to Electronor Corporation, mesne. Cobalt metatitanate-modified solid solution. 3,778,363, Cl. 204-290.00f.

Kollar, John, to Halcon International, Inc. Process for preparing ethylene glycol esters. 3,778,468, Cl. 260-497.00r.

Kolsch, Wilhelm: *See—*
Grebner, Fritz; Kolsch, Wilhelm; Spindler, Gerhard; and Ehemann, Walter, 3,777,433.

Komaki, Takao: *See—*
Sato, Masamichi; Takimoto, Masaaki; Takahashi, Isoji; and Komaki, Takao, 3,778,623.

Konijn Machine Bouer: *See—*
Konijn, Nicolaas Gerardus, 3,777,919.

Konijn, Nicolaas Gerardus, to Konijn Machine Bouer. Mobile excavator. 3,777,919, Cl. 214-147.00g.

Konishiroku Photo Industry Co., Ltd.: *See—*
Fujiwhara, Mitsuto; Kozima, Tamotsu; Imamura, Hiroyuki; and Endo, Takaya, 3,778,277.
Ushiyama, Rintaro; Sugino, Osakazu; Haga, Teruhide; and Horigome, Koichi, 3,778,268.

Konno, Toshio: *See—*
Mizuno, Hideaki; Konno, Toshio; and Akiyama, Naoki, 3,778,266.

Kono, Minoru: *See—*
Sugiura, Shotaro; Ueno, Haruo; Kono, Minoru; and Hamada, Hisawaki, 3,778,424.

Konyaev, Jury Sergeevich: *See—*
Vereschagin, Leonid Fedorovich; Konyaev, Jury Sergeevich; Polyakov, Evgeny Valentinovich; and Surkov, Ivan Efimovich, 3,778,196.

Kopf, Gerhard; and Muller, Adolf, to Siemag Siegener Maschinenbau GmbH. Shear for metal plate. 3,777,608, Cl. 83-517.000.

Kornis, Gabriel; and Nidy, Eldon G., to Upjohn Company, The. Organic compounds and process. 3,778,473, Cl. 260-553.00a.

Korteling, Aart Gerrit, to U.S. Philips Corporation. Pulse-to-revolution converter for converting a variable pulse frequency into a proportional rotation speed of a shaft. 3,778,693, Cl. 318-314.000.

Koser, Robert F. Silo door construction. 3,777,429, Cl. 52-196.000.

Kovach, Stephen M.; and Patrick, Ralph E., to Ashland Oil, Inc. Method and recovery of benzene and toluene. 3,778,484, Cl. 260-674.00r.

Kovar, George F., to Hallicrafters Co., The. Double ridged wave guide feed for signal antenna. 3,778,839, Cl. 343-772.000.

Kozima, Tamotsu: *See—*
Fujiwhara, Mitsuto; Kozima, Tamotsu; Imamura, Hiroyuki; and Endo, Takaya, 3,778,277.

Kozlow, Woodruff J. Snowmobile ski 280/028.000. 3,778,074, Cl. .

Krauch, Carl Heinrich; and Sanner, Axel, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of polymers with a fibrous structure. 3,778,294, Cl. 117-93.310.

Kraus, Kurt A., to United States of America, Atomic Energy Commission. Process for treatment of aqueous suspensions. 3,778,366, Cl. 210-23.000.

Kraver, Theodore C.: *See—*
Reichenbacher, Frank W.; Kraver, Theodore C.; and Hope, Edward F., 3,777,599.

Kreis, Philipp. Handle for fast action valve. 3,778,026, Cl. 251-255.000.

Kreit, Bernhardt: *See—*
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, 3,777,998.

Krekeler, Claude B., to Cincinnati Mine Machinery Co., The. Anti-coring device for use with bit mounting means on mining, earth working and digging machines. 3,778,112, Cl. 299-86.000.

Krenzer, John; and Richter, Sidney B., to Velsicol Chemical Corporation. Fungicidal method utilizing furancarboxamides. 3,778,512, Cl. 424-285.000.

Kriege, Richard P., to Lowrance Electronics Mfg. Corporation. Inverter ballast circuit. 3,778,677, Cl. 315-219.000.

Krohne, Ludwig: *See—*
Engelhardt, Helmut, 3,778,091.

Kruiswijk, Franciscus J.: *See—*
Van Der Waaij, Dirk; Erkelens, Hendrik J.; Bossers, Pieter A.; and Kruiswijk, Franciscus J., 3,777,736.

Krulee, Alfred W., to Norris Industries, Inc. Combined charging and pressure indicating device. 3,777,569, Cl. 73-389.000.

Kruner, Rolf; Thillen, Hans; and Grunwald, Gerhard. Rod entry guide. 3,777,964, Cl. 226-183.000.

Kruschinski, John H.: *See—*
Henkel, Robert N.; and Kruschinski, John H., 3,778,404.

Kruuger, Evgeny Adolfovich: *See—*
Maslenok, Boris Arkadievich; Zlobin, Viktor Grigorievich; Khegai, Anatoly Sergeevich; Nikolaev, Vladimir Petrovich; and Kruuger, Evgeny Adolfovich, 3,778,345.

Ku, Daniel Y. C., to Gulf Research & Development Company. Process for preparing a monoalkyl aromatic. 3,778,415, Cl. 260-67.20t.

Kubli, Robert A.; Sasse, Frederick H.; Uttrachi, Gerald D.; Van Dyke, Le Roy L.; and Nakabayashi, Masahiro, to Union Carbide Corporation. Cored wire electrode having 200 to 2000 ppmO_2. 3,778,587, Cl. 219-146.000.

Kubo, Shuji; and Naito, Hiroshi, to Matsushita Electric Industrial Company. Target having a mosaic made up of a plurality of P-N junction elements. 3,778,657, Cl. 313-65.00a.

Kucera, Jaromir, to Zellweger AG. Method of and apparatus for generating signals. 3,778,726, Cl. 328-223.000.

Kuck, Ewald D. Apparatus for erecting concrete structures. 3,778,204, Cl. 425-63.000.

Kudo, Mitsuhiro: *See—*
Kawan, Oshio; Kudo, Mitsuhiro; Ishibashi, Masato; and Fukase, Shigeo, 3,778,260.

Kuellgren, Ove Allan Valentin, to Alfa-Laval AB. Sludge centrifuge. 3,777,972, Cl. 233-20.00a.

Kugelfischer Georg Schafer & Co.: *See—*
Kirchner, Willi; and Braune, Gerhard, 3,777,727.

Kuhfuss, Herbert F.; and Jackson, Winston J., Jr., to Eastman Kodak Company. Process for preparing a final copolyester by reacting a starting polyester with an acyloxy aromatic carboxylic acid. 3,778,410, Cl. 260-47.00c.

Kuhlman, Ora Florentine: *See—*
Andrews, Del; and Kuhlman, Ora Florentine, 3,777,498.

Kuhlmann, Wayne: *See—*
Manier, Francis Rene Daniel, 3,778,282.
Kuhns, David G.: *See—*
Johns, Raymond; and Kuhns, David G., 3,778,763.
Kukhermann, Gustav, to Windmoller & Holscher. Apparatus for forming and conveying stacks of flat articles, especially sheet articles. 3,777,903, Cl. 214-6.00h.
Kume, Yoshiharu: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.
Kundisch, Heinrich R.; and Pfundstein, Werner K., to Irion & Vosseler. Zero setting roller counting mechanism. 3,777,973, Cl. 235-144.0hc.
Kunkle Valve Co., Inc.: *See—*
Beck, Maurice E., 3,777,783.
Kuramato, Yoshio; Tjujimoto, Kayoshi; and Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Automatic exposure control device for a photographic camera. 3,777,637, Cl. 95-10.0cd.
Kuraray Co., Ltd.: *See—*
Yano, Masayuki; Yamamoto, Iwao; and Yasuhira, Nobuo, 3,778,498.
Kurimoto, Mikishi; and Asano, Hiroaki, to Toyoda Koki Kabushiki Kaisha. Grinding machine. 3,777,441, Cl. 51-105.0sp.
Kurita, Yoshio: *See—*
Yamasaki, Hiroo; Kurita, Yoshio; and Ito, Ichizo, 3,777,563.
Kurokawa, Junji: *See—*
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,263.
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,264.
Kushner, Irwin: *See—*
Heifetz, Saul; Mandelbaum, George; and Kushner, Irwin, 3,778,528.
Kusters, Heinz Peter, to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Seat consisting of seat portion and backrest, especially driver seat for motor vehicles. 3,778,104, Cl. 297-458.000.
Kuth, Robert; Hildebrand, Dietrich; and Bien, Hans-Samuel, to Bayer Aktiengesellschaft. Process for the continuous dyeing and printing of fibre materials of synthetic polyamides. 3,778,228, Cl. 8-174.000.
Kuze, Yoshikazu. Thermal responsive power element. 3,777,495, Cl. 60-530.000.
Kwok, Clyde Chi Kai, to Rippingille, Edward V., Jr. Pulsating dental syringe. 3,777,746, Cl. 128-66.000.
Kyowa Hakko Kogyo Co. Ltd.: *See—*
Shiga, Akio; and Ishida, Kengo, 3,778,513.
Kyriakides, Stavros A. Protection of rubber surfaces from oxidation effects. 3,778,286, Cl. 106-287.00r.
Laarman, Johannes Bertus, to N.V. Industrieele Handelscombinatie Holland. Cutter suction dredge having parallelogram linkage wave compensator. 3,777,372, Cl. 37-64.000.
Ladd, Floyd R., to Townsend Engineering Company. Method of embedding thin wall tubular material in plastic under high pressure conditions. 3,778,496, Cl. 264-162.000.
Lagen, William S. Apparatus and technique for incinerating solid fuels containing carbonizable material. 3,777,676, Cl. 110-8.00r.
Lakeman, Thomas Ashley. Target for use on water or land. 3,778,060, Cl. 273-102.00s.
Lamb, Gilbert C., Jr.: *See—*
Samalon, Eugene J.; Lamb, Gilbert C., Jr.; and Lentz, Ervin C., 3,777,852.
Lamp, William F.: *See—*
Weisselberg, Edward B.; Worden, George M., Sr.; Lamp, William F.; and Lane, Alexander M., 3,777,409.
Land, Edwin H., to Polaroid Corporation. Photographic apparatus and method for treating photographic materials with a liquid. 3,777,647, Cl. 95-89.001.
Land, Edwin H., to Polaroid Corporation. Photographic system comprising film cassette including self-contained processing apparatus and film drive and projection system controlled thereby. 3,778,140, Cl. 352-130.000.
Land, Edwin H., to Polaroid Corporation. Photographic products and processes. 3,778,265, Cl. 96-3.000.
Land, Edwin H., to Polaroid Corporation. Photographic products comprising an opacifying agent in association with a reflecting agent. 3,778,271, Cl. 96-77.000.
Landel, Robert F.: *See—*
Rembaum, Alan; Landel, Robert F.; and Keyzer, Hendrik, 3,778,476.
Lander, James E.: *See—*
Lutes, Kenneth V.; Lander, James E.; Shanahan, Vincent J.; and Mills, Richard G., 3,777,678.
Landini, Piercarlo: *See—*
Funaioli, Ettore; Landini, Piercarlo; and Marella, Giulio, 3,777,995.
Lane, Alexander M.: *See—*
Weisselberg, Edward B.; Worden, George M., Sr.; Lamp, William F.; and Lane, Alexander M., 3,777,409.
Lane, Donald W.; and Pemberton, Troy J., to Phillips Petroleum Company. Modified on-off control. 3,778,025, Cl. 251-129.000.
Lane, Robert, to Platt International Limited. Open-end textile spinning machines. 3,777,329, Cl. 15-301.000.
Lang, Robert J.; Holt, Eugene L.; and Stoneback, David N., to Esso Research and Engineering Company. Regeneration of flue gas desulfurization sorbents. 3,778,501, Cl. 423-244.000.
Lange, Karl Heinz, to Bolda Werka Photographische Gerate und Kunstsloff R. Gruter Kommanditgesellschaft. Camera casing assembly. 3,777,639, Cl. 95-11.00r.
Langlois, Christian, to Regie Nationale des Usines Renault. Device for pre-balancing unbalanced masses on crankshafts. 3,777,340, Cl. 29-1.00d.
Langston, Perry R., Jr.; Tummala, Rao R.; and Wilson, Donald M., to International Business Machines Corporation. Sealing technique for gas panel. 3,778,127, Cl. 316-20.000.
Lannert, James W.: *See—*
Driscoll, Richard P.; Lannert, James W.; and Beaver, Donald V., 3,778,014.
Lapin, Zeverly L.: *See—*
Christensen, Frank G.; and Wolff, Rafael I., 3,777,830.
Larkin, Sam, to Spring Associates, Inc. Spring base and method of forming same. 3,777,322, Cl. 5-267.000.
Larson, Lars M.; Feasey, Raymond J.; and Wheeler, Robert S., to Eastman Kodak Company. Apparatus for making and filling liquid containing pods. 3,777,451, Cl. 53-180.000.
Larson, Lawrence L.: *See—*
Ruger, William B.; and Larson, Lawrence L., 3,777,384.
Laser Systems & Electronics, Inc.: *See—*
Hines, Rubin H.; Hollinshead, William L.; and Bolden, Thomas O., 3,778,159.
Laskowski, Kenneth W., to Xerox Corporation. Photodetection of non-opaque objects transported along a conveyor by use of a light blocking opaque flap. 3,778,618, Cl. 250-223.000.
Lassila, Veikko A.: *See—*
Kokkola, Seppo J.; and Lassila, Veikko A., 3,777,543.
Latker, Mark: *See—*
Johnston, Norris; and Latker, Mark, 3,777,887.
Laube, Max, to Swiss Aluminium Ltd. Apparatus for cleaning the exhaust air from workshops. 3,777,457, Cl. 55-223.000.
Laubman, Harry A. Aircar. 3,777,842, Cl. 180-117.000.
Lavigne, Jean. Pad of stacked detachable sheets, a method and elements for manufacturing the same. 3,778,324, Cl. 156-257.000.
Lavoy, Edward S.: *See—*
Kauemann, Harold; and Lavoy, Edward S., 3,777,529.
Law, William J. H. Beverage container having a frangible closure. 3,777,968, Cl. 229-7.00r.
Lawless, Thomas R. Coupling plate. 3,777,847, Cl. 184-1.00r.
Lawlor, John E.; and Sgombick, John, to Xerox Corporation. Educational device. 3,777,412, Cl. 35-19.00r.
Lazzery, Angelo Gino, to RCA Corporation. Damping means for ultrasonic transmitters. 3,777,700, Cl. 116-137.00a.
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Clemence, Francois; and Le Martret, Odile, 3,778,504.
Le Tourneau, R. G., Inc.: *See—*
Molby, Lloyd A., 3,778,174.
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Lear Siegler, Inc.: *See—*
Bise, Donald L.; and Surprenant, Ronald J., 3,778,563.
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Harris, Robert J.; and Lee, Irvin J., 3,777,705.
Lee, Raymond, Organization, Inc., The: *See—*
Miller, Clifford J., 3,777,735.
Leeney, Timothy John: *See—*
Brown, Edward Douglas; and Leeney, Timothy John, 3,778,461.
Leevers, Jack E., to National Building Industries. Interior marine door and frame. 3,777,693, Cl. 114-117.000.
Lehmann, Helmut: *See—*
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, 3,777,998.
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Recasens, Joseph; Blanchet, Pierre; and Duchenoy, Jacques, 3,777,805.
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Lenco, Inc.: *See—*
Colman, William H., Jr., 3,777,687.
Lenger, Karl Werner: *See—*
Csaky, Thaddeus G.; and Lenger, Karl Werner, 3,777,722.
Lentz, Ervin C.: *See—*

Samalon, Eugene J.; Lamb, Gilbert C., Jr.; and Lentz, Ervin C., 3,777,852.
Lermann, Peter: *See—*
Winkler, Alfred; Lermann, Peter; and Fauth, Guenter, 3,777,641.
Winkler, Alfred; Lermann, Peter; and Fauth, Guenter, 3,777,642.
Lerouge, Claude Paul Henri: *See—*
Colardelle, Joel Serge; Lerouge, Claude Paul Henri; and Regbuer, Marc Andre, 3,778,734.
Less, Frank L.: *See—*
Pease, Richard R.; Blitzer, Frank; Giordano, Arthur A.; and Less, Frank L., 3,778,166.
Levellers, A. M., and I., Ltd.: *See—*
Best, Donald Edward, 3,777,694.
Lever Brothers Company: *See—*
Anderson, James Iain Walker; Marr, Donald Henry Albert; and Phillips, Graham Chesterton, 3,777,709.
Copier, Harald; and Tonsbeck, Christiaan Herman Theodoor, 3,778,518.
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Levy, Hans: *See—*
Schade, John Alan; and Levy, Hans, 3,778,042.
Lewandowski, Raymond F.; and Markison, William C., to Oak Industries Inc. Power rated pushbutton switch with slide bar and washer type blockout interlock structure. 3,778,565, Cl. 200-5.00e.
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Lewis, Homer D.: *See—*
Baker, Richard D.; Hayter, Sidney W.; and Lewis, Homer D., 3,778,380.
Lewis, John R., to Harnessed Energies, Inc. Faraday effect speedometer. 3,777,561, Cl. 73-181.000.
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Ley, Kurt: *See—*
Oertel, Harald; Roos, Ernst; and Ley, Kurt, 3,778,409.
Liberman, Milton. Recessed lighting fixture. 3,778,609, Cl. 240-73.0ha.
Licentia Patent Verwaltungs G.m.b.H.: *See—*
Fischer, Horst; and Justi, Eduard, 3,778,684.
Licentia Patent-Verwaltungs-GmbH: *See—*
Karius, Siegfried, 3,778,312.
Kohlhammer, Bernd, 3,778,644.
Lidkea, Harrison B.: *See—*
MacNeill, John H.; Bellinger, James E.; Lidkea, Harrison B.; and Seib, Kenneth L., 3,777,417.
Liermann, Peter, to Bosch, Robert, G.m.b.H. High-speed print-out arrangement using continuously rotating step motor. 3,778,777, Cl. 340-172.500.
Lightolier Incorporated: *See—*
Wyles, Walter E., 3,777,432.
Liloia, Gerald J.: *See—*
Mesek, Frederick K.; Shepherd, Robert C.; Strickel, William R.; Liloia, Gerald J.; May, Louis F., Jr.; and Schiff, Norman, 3,777,758.
Lindemann, Robert W.; and Parmley, John W., to Cutler-Hammer, Inc. Square wave rotary pulse transducer. 3,778,620, Cl. 250-232.000.
Lindsay, Anthony; Imperati, Ronald Lee; and Becker, Philipp, to Sperry Rand Corporation. Power transmission. 3,778,202, Cl. 418-206.000.
Line, Lawrence L.: *See—*
Butler, Eugene B.; Fak, Ivan A.; and Line, Lawrence L., 3,778,332.
Ling, Charles Che: *See—*
Munier, Ronald A.; and Ling, Charles Che, 3,777,565.
Lingens, Paul; and Martin, Gerhard, to Dynamit Nobel Aktiengesellschaft. Effect of the shock pressure of explosive charges. 3,777,662, Cl. 102-23.000.
Link, William T.; and Portner, Peer M., to Arkon Scientific Laboratories. Solendid actuators and generators and method of using same. 3,778,697, Cl. 322-3.000.
Linscott, Jack H.: *See—*
Campman, James P.; and Linscott, Jack H., 3,778,795.
Lipkin, Martin. Concealed pneumatic safety system. 3,778,085, Cl. 280-150.0ab.
Lipoma, Phillip C.: *See—*
United States of America, National Aeronautics and Space Administration, 3,778,786.
Lipschutz, Paul, to Societe d'Exploitation des Brevets Neiman. Tumbler plate lock. 3,777,521, Cl. 70-364.00r.
Liquid Gas Anlagen Union GmbH: *See—*
Kober, Drago, 3,777,928.
Littelfuse, Inc.: *See—*
Schmidt, John, Jr., 3,778,741.
Little, Arthur D., Inc.: *See—*
Brisk, Richard A.; Fougere, Guy L.; Lorah, Lawrence D.; and Pastan, Harvey L., 3,778,768.
Little, Charles D.: *See—*
Turner, Thomas M.; Keefe, Francis J.; and Little, Charles D., 3,777,376.
Little, Francis H.: *See—*
Lott, George T.; and Little, Francis H., 3,777,669.
Litton Systems, Inc.: *See—*
Erickson, Fred William, 3,778,671.
Wilson, Randy Eugene, 3,778,681.
Livingstone, Alexander, to Warner-Lambert Company. Aerosol metering button. 3,777,946, Cl. 222-402.200.
Lockwood Corporation: *See—*
Ririe, Max H.; Roland, Murray C.; and Olson, Rich, 3,777,979.
Lodge, Arthur Scott, to Wisconsin Alumni Research Foundation. Measurement of hole pressure differentials and protuberance pressure differentials in non-newtonian liquids or the like. 3,777,549, Cl. 73-53.000.
Loewe-Opta GmbH: *See—*
Gruniger, Fritz; Muller, Gunther; and Steiger, Klaus, 3,778,005.
Lohman, John H., to Alamo Iron Works. Jig for setting resistance stops in a rotary bending machine. 3,777,527, Cl. 72-36.000.
Lohr, Torbjorn, to Scania Dental AB. Saliva ejector. 3,777,756, Cl. 128-276.000.
London, Joe F., Jr.: *See—*
Burnet, Arthur L.; and London, Joe F., Jr., 3,777,512.
Long, Marshall; Alley, Lewis F.; and Reynolds, William A., to Marlen Research Corporation. Machine for and method of severing meat slabs. 3,777,600, Cl. 83-39.000.
Long, Raymond E.; and Boles, Ralph C., Jr. Apparatus for producing super heated fluids. 3,778,578, Cl. 219-10.550.
Longuemare, R. Noel, Jr.; and Mooney, David H., Jr., to Westinghouse Electric Corporation. Guarded monopulse radar system. 3,778,829, Cl. 343-16.00r.
Lonza Limited: *See—*
Thalmann, Eduard; and Staub, Hans-Rudolf, 3,778,296.
Lonza Ltd.: *See—*
Stocker, August, 3,778,474.
Lorah, Lawrence D.: *See—*
Brisk, Richard A.; Fougere, Guy L.; Lorah, Lawrence D.; and Pastan, Harvey L., 3,778,768.
Lorenz, Richard L.: *See—*
Chaffee, William H.; Rubio, Alfred M.; and Lorenz, Richard L., 3,777,613.
Lott, George T.; and Little, Francis H., to Lott Tool Company. Parts conveyor pallet and means for supporting same on an initial pair of rails and switching same to a second pair of rails. 3,777,669, Cl. 104-130.000.
Lott Tool Company: *See—*
Lott, George T.; and Little, Francis H., 3,777,669.
Lovald, Roger A.; and Glaser, David W., to General Mills Chemicals, Inc. Fatty acid polyamide modified with a rosin adduct. 3,778,394, Cl. 260-18.00n.
Lowell Corporation: *See—*
Thomasian, Harvey A., 3,777,591.
Lowrance Electronics Mfg. Corporation: *See—*
Kriege, Richard P., 3,778,677.
Lowry, John D., to Ellanin Investment, Ltd. Predictive-retrospective method for bandwidth improvement. 3,778,543, Cl. 178-5.40r.
Lubarsky, Andre, Jr.: *See—*
Mees, James G.; Lubarsky, Andre, Jr.; and Tahara, Goro R., 3,778,556.
Lubarsky, Andre, Jr.; and Volkland, Charles M., to Telecommunications Technology, Inc. Technique for directly measuring a signal-to-noise ratio of a communication circuit. 3,778,704, Cl. 324-57.00r.
Lubrizol Corporation, The: *See—*
Murphy, John P., 3,778,372.
Lucas, Joseph, (Industries) Limited: *See—*
Cryer, Edward, 3,778,571.
Lewis, Geoffrey, 3,777,483.
Thomas, Alan; and Heath, Ronald Alfred, 3,777,570.
Lucc, George A. High velocity atomic particle beam exit window. 3,778,655, Cl. 313-63.000.
Luckey, George W., to Eastman Kodak Company. Mixed alkaline earth sulfate phosphor fluorescent screens and radiographic elements. 3,778,615, Cl. 250-475.000.
Luckey, William A. Frieze vent. 3,777,649, Cl. 98-37.000.
Ludwig-Ofag-Indugas Industrieofenanlagen GmbH: *See—*
Busch, Theo; and Dienst, Rudolf, 3,778,043.
Lund, Basil Gilbert Alfred. Extracting water from the atmosphere. 3,777,456, Cl. 55-32.000.
Lundstrom, Jan-Horje; Nyberg, Ake; Hamlin, Roland; and Astberg, Ake, to Svenska Rotor Maskiner Aktiebolag. Rotary internal combustion engine. 3,777,723, Cl. 123-8.470.
Luraschi, Marisa. Apparatus for molding thermoplastic laminate, shoving strip variegations. 3,778,207, Cl. 425-131.000.
Luscher, Werner P.; and Schoenman, Leonard, to Aerojet-General Corporation. Cooling passages wafer blade assemblies for turbine engines, compressors and the like. 3,778,183, Cl. 415-115.000.
Lustig, Claude D., to Sperry Rand Corporation. D.C. gas discharge display apparatus with pulse train memory sustaining potential. 3,778,674, Cl. 315-169.00r.

Lutes, Kenneth V.; Lander, James E.; Shanahan, Vincent J.; and Mills, Richard G., to Macmillan Bloedel Ltd., mesne. Cyclonic type fuel burner. 3,777,678, Cl. 110-8.00r.
Lutz, David E. Article handling system. 3,777,916, Cl. 214-519.000.
Lutz, Gerhard: *See—*
Zellbeck, Gustav; Bosch, Paul; Veil, Karl; and Lutz, Gerhard, 3,777,888.
Lyne, Cornelius M.; Kasak, August; and Stasko, William, to Crucible Steel Company of America. Ultra-high strength steel. 3,778,253, Cl. 75-123.00r.
M & J Valve Company: *See—*
Grove, Marvin H.; and Griffin, Tommy K., 3,777,545.
Maack, Horst Egon Fred Ludwig: *See—*
Keith, Donald George; Morris, Douglas Barrett; Maack, Horst Egon Fred Ludwig; Mason, Ernest Arthur; and Woolgar, Robert John, 3,778,322.
Mach, Jan; and Rybap, Vaclav, to Hutni druhovgroba, generalni reditelstvi. Method of and apparatus for heating of liquids. 3,777,717, Cl. 122-156.000.
Machine Tool Divisional Services Limited: *See—*
Brown, Graham Maurice, 3,777,345.
MacIndoe, Robert C.: *See—*
Roerty, Dennis F.; and MacIndoe, Robert C., 3,778,712.
Mack Trucks, Inc.: *See—*
Greathouse, Jack F., 3,777,984.
MacKinney, Paul W. Moisture compensating system. 3,778,035, Cl. 259-154.000.
Macmillan Bloedel Ltd., mesne: *See—*
Lutes, Kenneth V.; Lander, James E.; Shanahan, Vincent J.; and Mills, Richard G., 3,777,678.
MacMillan, Kenneth T. Matrix assembly with segmented matrices. 3,778,203, Cl. 425-20.000.
MacNeill, John H.; Bellinger, James E.; Lidkea, Harrison B.; and Seib, Kenneth L., to Educational Sound Systems, Inc. Sound teacher. 3,777,417, Cl. 35-35.00c.
MacPhain, Iain: *See—*
Nicholas, Michael George; and MacPhain, Iain, 3,778,261.
Madonna, Oronzo. Apparatus for the micrometric tuning of the keyboards and similar instruments with elimination of the wooden support of the pegs and the pegs same. 3,777,611, Cl. 84-204.000.
Maeda, Yoshinobu; Takamori, Kazumi; and Kanno, Tadao, to Matsushita Electric Industrial Co., Ltd. Component mounting apparatus. 3,777,350, Cl. 29-203.00b.
Magakuni, Masahiko: *See—*
Miyala, Akira; Tomita, Chikayoshi; Suzuki, Akio; Okubo, Hideyo; and Magakuni, Masahiko, 3,778,356.
Magnavox Company, The: *See—*
Chipman, Jack R.; and McCombs, Donald, 3,778,668.
Magorien, Vincent G., to Seaton-Wilson, Incorporated. Front end loading-self locking female coupling. 3,778,092, Cl. 285-316.000.
Maiershofer, Helmut C.; and Noble, Walter J., to Motorola, Inc. Tape drive mechanism. 3,777,965, Cl. 226-183.000.
Maillet, Wilfrid G.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Hosted, John M.; and Maillet, Wilfrid G., 3,778,715.
Maine Safety Appliances Company: *See—*
Marinaccio, Lawrence Francisco, 3,777,566.
Malby, Frederick L., to Drexelbrook Controls Inc. Susceptance measuring system for indicating condition of a material. 3,778,705, Cl. 324-61.00r.
Malec, Robert E., to Ethyl Corporation. Lubricant and fuel compositions. 3,778,371, Cl. 252-34.000.
Mallory, P. R., & Co., Inc.: *See—*
Schiller, Jacob D.; Cheslik, Scott L.; and Gonzales, J. Tim, 3,778,582.
Mallozzi, Philip J.; Epstein, Harold M.; Walters, Craig T.; Applebaum, David C.; and Gallagher, William J., to Battelle Memorial Institute. Protection device for preventing damage to radiation source from backscatter. 3,778,585, Cl. 219-121.01m.
Maloney, Carol J.: *See—*
Gariety, Harold L.; Maloney, Carol J.; and Maloney, George F., 3,777,415.
Maloney, George F.: *See—*
Gariety, Harold L.; Maloney, Carol J.; and Maloney, George F., 3,777,415.
Mand, Emery M.; and Shapiro, Henry C., to California Weavers, Inc. Decorative wall covering. 3,778,337, Cl. 161-95.000.
Mandelbaum, George: *See—*
Heifetz, Saul; Mandelbaum, George; and Kushner, Irwin, 3,778,528.
Mani, Inder; and Atchison, George J., to Dow Chemical Corporation, The. Radiation process for making plastic paper containing expandable, thermoplastic microspheres, 3,778,364, Cl. 204-159.150.
Manicatide, Radu Adrian M.; Olteanu, Ion; and Georgescu, Petre, to Institutul de Mecanica Fluidelor SI Constructii Aerospatiale. Aerial distributor for particulate materials. 3,777,978, Cl. 239-171.000.
Manier, Francis Rene Daniel, to Kuhlmann, Wayne. Pigmentary compositions, their preparation and their applications to the colouration in bulk of cellulosic esters. 3,778,282, Cl. 106-187.000.
Manning, John C.: *See—*
Johnston, Norris; and Latker, Mark, 3,777,887.
Manoussos, Georges: *See—*
Aubin, Guy; and Manoussos, Georges, 3,778,502.
MAPA GmbH: *See—*
Kesselring, Lutz; and Nagel, Hans-Joachim, 3,777,753.
Marchal, Paul-Henri, to Air-Industrie. Installations for the treatment, in gaseous medium, of a strip product. 3,777,408, Cl. 34-156.000.
Marchand, Nathan. Compatible double precision doppler omnidirectional bearing system. 3,778,831, Cl. 343-106.00d.
Marchi, Antonio, to Foodice Engineering Italiana S.p.A. Process and apparatus for the manufacture of frozen desserts. 3,777,504, Cl. 62-73.000.
Marco, Gino J.; and Grainger, Robert B., to Monsanto Company. Feed compositions and methods. 3,778,508, Cl. 424-300.000.
Marconi Company Limited, The: *See—*
Pay, Donald Alexander, 3,778,547.
Marella, Giulio: *See—*
Funaioli, Ettore; Landini, Piercarlo; and Marella, Giulio, 3,777,995.
Marforio, Nerino, to S.p.A. Virginio Rimoldi & C. Sewing machine lubricating system. 3,777,850, Cl. 184-6.150.
Marinaccio, Lawrence Francisco, to Maine Safety Appliances Company. Temperature compensated liquid metal level indicator. 3,777,566, Cl. 73-290.00r.
Marker, Hannes: *See—*
Frisch, Hans-Otto, 3,778,076.
Markison, William C.: *See—*
Lewandowski, Raymond F.; and Markison, William C., 3,778,565.
Markley, Finley W., to United States of America, Atomic Energy Commission. Hemodialyzer with tapered slit blood ports and baffles. 3,778,369, Cl. 210-321.000.
Markley, Theodore J.: *See—*
Walters, Ronnie G.; Markley, Theodore J.; and Jennings, Richard E., 3,778,696.
Marks, Richard L., to Berg Electronics, Inc. Self-staking wire grip terminal. 3,778,755, Cl. 339-220.00r.
Marlen Research Corporation: *See—*
Long, Marshall; Alley, Lewis F.; and Reynolds, William A., 3,777,600.
Marlin Firearms Co., The: *See—*
Roth, Miles I., 3,778,781.
Marotta Scientific Controls, Inc.: *See—*
Collins, Richard; and Denise, Donald, 3,778,027.
Marquis, Olan E. Safety wheel. 3,777,798, Cl. 152-158.000.
Marr, Donald Henry Albert: *See—*
Anderson, James Iain Walker; Marr, Donald Henry Albert; and Phillips, Graham Chesterton, 3,777,709.
Marsh, Ronald W.: *See—*
Nagy, Ernest J.; and Marsh, Ronald W., 3,777,424.
Marti, Willi Hermann, to Delmoran AG. Air cooled magnetic clutch and brake. 3,777,864, Cl. 192-18.00b.
Martin, Alfred Leonard. Novel gas bar structure. 3,777,774, Cl. 137-234.600.
Martin, Gerhard: *See—*
Lingens, Paul; and Martin, Gerhard, 3,777,662.
Martin Marietta Corporation: *See—*
Sharp, Richard A.; Gille, John P.; and McGrew, Jay L., 3,777,501.
Wolcott, John R., 3,778,160.
Martin, Rene Jean, to Societe Francaise des Tubes Pneumatiques. Conveying installations using pneumatic tubes. 3,778,006, Cl. 243-19.000.
Marumo, Nagayuki: *See—*
Matsui, Shunji; Hirashima, Kenzo; Hayakawa, Yoshikazu; and Marumo, Nagayuki, 3,778,572.
Maruoka, Hiroyuki, to Nissan Motor Company, Limited. Fuel supply control device. 3,778,040, Cl. 261-36.00a.
Maruyama, Hiroshi: *See—*
Mukaiyama, Teruaki; Ueki, Massaaki; Maruyama, Hiroshi; Matsueda, Rei; and Gotow, Kuniaki, 3,778,428.
Maruyama, Isamu: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.
Masaki, Akira, to Hitachi, Ltd. Semiconductor logic circuit. 3,778,646, Cl. 307-215.000.
Maskinfabriken Hefa, Aabybro A/S: *See—*
Falborg, Helge Jorgen, 3,777,331.
Maslenok, Boris Arkadievich; Zlobin, Viktor Grigorievich; Khegai, Anatoly Sergeevich; Nikolaev, Vladimir Petrovich; and Kruuger, Evgeny Adolfovich. Device for engaging and disengaging pinion and rack in drive of nuclear reactor regulating element. 3,778,34, Cl. 176-36.00r.
Mason, Daniel W., to Owens-Illinois, Inc. High K dielectric printing pastes. 3,778,285, Cl. 106-179.000.
Mason, Ernest Arthur: *See—*
Keith, Donald George; Morris, Douglas Barrett; Maack, Horst Egon Fred Ludwig; Mason, Ernest Arthur; and Woolgar, Robert John, 3,778,322.
Mason, John P.: *See—*
Burkhardt, Joseph A.; Childers, Thomas W.; Koerner, Roger J.; Mason, John P.; and Tidwell, Danny R., 3,777,812.
Mason, Ralph B.: *See—*
Hamner, Glen P.; and Mason, Ralph B., 3,778,365.
Masters, Philip C., to McNeil Corporation. Portable hose mending apparatus. 3,777,354, Cl. 29-237.000.
Masuda, Senichi. Apparatus for electric field curtain of contact type. 3,778,678, Cl. 317-3.000.
Masuyama, Takeshi: *See—*

Matsuoka, Michio; Kobayashi, Yoshikazu; Itakura, Gen; and Masuyama, Takeshi, 3,778,743.
Matievich, William; and Theakston, Harry A., to Standard Pressed Steel Co. Method of assembling a retained fastener assembly. 3,777,358, Cl. 29-450.000.
Matsuda, Akio, to Industrial Science & Technology, Agency of. Method for manufacture of 3-pentenoic acid ester. 3,778,466, Cl. 260-486.0ac.
Matsuda, Kazuo; Tanaka, Yoshiaki; and Sakai, Takeyo, to Kao Soap Co., Ltd. Process for polymerization of terrahydrofuran. 3,778,480, Cl. 260-615.00b.
Matsueda, Rei: *See—*
Mukaiyama, Teruaki; Ueki, Massaaki; Maruyama, Hiroshi; Matsueda, Rei; and Gotow, Kuniaki, 3,778,428.
Matsui, Isamo; Sakai, Shozi; and Nishiyama, Masanobu, to Murate Machinery, Ltd. Automatic cop feeder. 3,777,932, Cl. 221-204.000.
Matsui, Masayuki: *See—*
Fujimoto, Kunihiko; Matsui, Masayuki; Kishinami, Shigeto; and Nishi, Toshio, 3,778,396.
Matsui, Shunji; Hirashima, Kenzo; Hayakawa, Yoshikazu; and Marumo, Nagayuki, to Nissan Motor Company, Limited. Inertia sensor switch assemblies with magnetic holding means or the like. 3,778,572, Cl. 200-61.45m.
Matsumoto, Teruo, to Epoch Company Ltd. Educational device. 3,777,411, Cl. 35-9.00r.
Matsuoka, Michio; Kobayashi, Yoshikazu; Itakura, Gen; and Masuyama, Takeshi, to Matsushita Electric Industrial Co., Ltd. Voltage-nonlinear resistors. 3,778,743, Cl. 338-20.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Maeda, Yoshinobu; Takamori, Kazumi; and Kanno, Tadao, 3,777,350.
Matsuoka, Michio; Kobayashi, Yoshikazu; Itakura, Gen; and Masuyama, Takeshi, 3,778,743.
Ochida, Hajime, 3,777,791.
Sakamoto, Yoichi, 3,778,736.
Teruuchi, Yoshifumi; Namiki, Masayuki; and Nishii, Tomio, 3,778,066.
Matsushita Electric Industrial Company: *See—*
Kubo, Shuji; and Naito, Hiroshi, 3,778,657.
Matsushita Electronics Corporation: *See—*
Kamiya, Shigeru; and Shibata, Haruo, 3,778,660.
Mattauch, Robert J.; and Viola, Thomas J., Jr., to University of Virginia, The Rector and Visitors of the. Solid-state switching capacitor. 3,778,645, Cl. 307-318.000.
Mattel, Inc.: *See—*
Barcus, Jack L.; Kilroy, Eugene J., Jr.; Morin, Marius J.; and Parker, John C., 3,777,391.
Bosley, Denis V.; and Chang, Richard S., 3,777,420.
Chang, Richard S., 3,777,395.
Staats, William A.; Bosley, Denis V.; Cook, John S.; and Yamasaki, Toshio, 3,777,394.
Matthews, Jamie F., Jr., to Esso Production Research Company. Offshore pipeline recovery. 3,777,499, Cl. 61-72.300.
Maul Bros., Inc.: *See—*
Clark, Willard; and Campbell, Charles, 3,778,245.
May, Louis F., Jr.: *See—*
Mesek, Frederick K.; Shepherd, Robert C.; Strickel, William R.; Liloia, Gerald J.; May, Louis F., Jr.; and Schiff, Norman, 3,777,758.
Mayer, Herbert J.: *See—*
Hubby, Laurence M.; and Mayer, Herbert J., 3,778,694.
Mayer, Ivan: *See—*
Parker, Paul T.; and Mayer, Ivan, 3,778,489.
Mayer, Oscar, & Co., Inc.: *See—*
Olson, Floyd C., 3,778,514.
Mazzur, Richard P.: *See—*
Elliott, Charles G.; and Mazzur, Richard P., 3,778,291.
McCarten, Hugh V. Can crusher. 3,777,659, Cl. 100-233.000.
McCarthy, John M.: *See—*
Baker, Dale A.; and McCarthy, John M., 3,777,910.
McClain, Lamont R., to Engel Industries, Inc. Double-spindler elevating multi-station roll former machine and power drive therefor. 3,777,531, Cl. 72-181.000.
McClone, Robert J.: *See—*
Ryburn, Kenneth D.; McClone, Robert J.; and Fox, Charles H., 3,778,115.
McClure, Richard J., to Bell & Howell Company. Magnetic imaging. 3,778,145, Cl. 355-3.000.
McCombs, Donald: *See—*
Chipman, Jack R.; and McCombs, Donald, 3,778,668.
McCoy, Lyle E. Rotary fluid treatment apparatus. 3,777,804, Cl. 165-8.000.
McCurvey, Raymond S. Panel forming machine. 3,777,347, Cl. 29-200.00a.
McDonald, Gordon D., to SCM (Canada) Ltd. Liquid cooled saw. 3,777,794, Cl. 144-324.000.
McDonnell Douglas Corporation: *See—*
Lemons, Carl Robert, 3,778,492.
McDowell, Allen W.: *See—*
Bhagawan, Venkatesha S.; Jones, Richard A.; McDowell, Allen W.; Mine, George D.; Remsburger, Louis J.; Rupp, Bruce A.; and Whittaker, Rodney R., 3,778,819.
Hake, Victor E.; McDowell, Allen W.; Mersel, Daniel R.; Mosher, Lawrence G.; and Stilwell, Stanley O., 3,778,779.
McDowell-Willman Engineering Company: *See—*
Cheek, Edward E.; and Sabin, Raymond H., 3,777,914.
McElwain, John C., to Rockwell International Corporation. Power transmitting joint arrangement. 3,777,510, Cl. 64-17.00a.
McEnroy, Joseph H.: *See—*
White, Eugene T.; and McEnroy, Joseph H., 3,778,630.
McFarland, Wilmer H., to North American Rockwell Corporation. Range-gated digital AMTI system. 3,778,828, Cl. 343-7.700.
McFarlin, Stanley B., to Gorman-Rupp Company, The. Centrifugal pump. 3,778,181, Cl. 415-53.000.
McGowan, Joseph; and Fowler, Gerald, to British Leyland Truck and Bus Division Limited. Motor vehicle ventilating system. 3,777,648, Cl. 98-2.040.
McGraw-Edison Company: *See—*
Gaia, Aldino; and Urani, Angelo, 3,778,740.
McGrew, Jay L.: *See—*
Sharp, Richard A.; Gille, John P.; and McGrew, Jay L., 3,777,501.
McIntyre, David J. Multi-tray instrument case. 3,777,882, Cl. 206-16.00s.
McKenny, Vernon George: *See—*
Proebsting, Robert J.; and McKenny, Vernon George, 3,778,783.
McMorrow, John J., Jr. Blood typing system. 3,778,232, Cl. 23-253.00r.
McMullin, Donald, Jr.: *See—*
Becker, Roger T.; Hatter, Stephen L.; and McMullin, Donald, Jr., 3,777,880.
McNeil Corporation: *See—*
Masters, Philip C., 3,777,354.
McNiff, William H. Insulating devices and methods of making and using the same. 3,778,340, Cl. 161-39.000.
Meacham, George W. Rotary engine. 3,778,199, Cl. 418-104.000.
Medelco, Incorporated: *See—*
Philipps, Louis E.; and Stanis, Eugene A., 3,778,774.
Meeks, Merritt R.; Monroe, Roger F.; and Weber, Richard M., to Dow Chemical Company, The. Suspension polymerized polyvinyl chloride beads as vapor pressure depressants. 3,777,934, Cl. 222-3.000.
Meeks, Merrtt R.; Monroe, Roger F.; and Weber, Richard M., to Dow any, The. Suspensonolyred pl chloride beads as vapor pressure depressants. 37,779,341, Cl. 222-3.000.
Mees, James G.; Lubarsky, Andre, Jr.; and Tahara, Goro R., to Telecommunication Technology, Inc. Telephone signaling and testing apparatus for either pulse or multifrequency dialing. 3,778,556, Cl. 179-90.00k.
Mefina S.A.: *See—*
Baruffa, Olindo, 3,777,685.
Morel, Rene, 3,777,666.
Meharry, Murray R.: *See—*
Jones, Neal K.; Faulkner, Douglas W.; Johnston, Robert T.; and Meharry, Murray R., 3,778,624.
Mehta, Jayendra M.: *See—*
Pinnow, Kenneth E.; Mehta, Jayendra M.; and Moskowitz, Arthur, 3,778,316.
Meier, Albert, to Deutsche Texaco Aktiengesellschaft. Method for the ignition of in-situ combustion for the recovery of petroleum. 3,777,816, Cl. 166-260.000.
Meier, Ernst: *See—*
Gernert, Herbert; Glockner, Hans; Meier, Ernst; Ohlschlager, Hans; and Riester, Oskar, 3,778,273.
Meier, Karl-Heinz: *See—*
Angersbach, Wolfgang; and Meier, Karl-Heinz, 3,778,692.
Meindl, Hubert: *See—*
Hindermann, Peter; and Meindl, Hubert, 3,778,453.
Meinherz, Joachim: *See—*
Gutmann, Karl, Jr.; and Meinherz, Joachim, 3,778,125.
Melhose, Alfred E., to United States of America, Navy, mesne. Method and apparatus for emplacement of long beams in rugged sea bottom areas (U). 3,777,688, Cl. 114-.500.
Merck & Co., Inc.: *See—*
Pines, Seemon H., 3,778,432.
Merenheimo, Markku; Ruuska, Manuno; and Saivisalmi, Risio, to Valmet Oy. Chassis structure for a motor sleigh or equivalent vehicle. 3,777,832, Cl. 180-5.00r.
Merrill, Phillip Edward, to Micro Devices Corporation. Electrical switch construction and end plug therefor or the like. 3,778,742, Cl. 337-407.000.
Mersel, Daniel R.: *See—*
Hake, Victor E.; McDowell, Allen W.; Mersel, Daniel R.; Mosher, Lawrence G.; and Stilwell, Stanley O., 3,778,779.
Mesek, Frederick K.; Shepherd, Robert C.; Strickel, William R.; Liloia, Gerald J.; May, Louis F., Jr.; and Schiff, Norman. Disposable diaper. 3,777,758, Cl. 128-284.000.
Mestetsky, Thomas S., to GAF Corporation. Paraffin wax coating compositions. 3,778,398, Cl. 260-28.50r.
Metalogics Corporation, mesne: *See—*
Warner, Joseph S., 3,778,596.
Metaltek, Inc.: *See—*
Holloway, Donald P.; Payne, William H.; and Peeler, Donald H., 3,777,732.
Metrologic Instruments Inc.: *See—*
Adams, Larry D., 3,778,169.
Metzger, Hans; Brill, Klaus; and Hornung, Friedrich, to Bosch, Robert, G.m.b.H. Foil for gas diffusion electrodes for electrochemical cells and process of making the same. 3,778,311, Cl. 136-120.0fc.

Metzger, Lenard M.; and Babcock, David L., to Eastman Kodak Company. Film scanning for television reproduction. 3,778,545, Cl. 178-7.200.

Meyers, Calvin E., to Bug-Lok Corporation. Apparatus for locking gear shift stick and handbrake lever of a motor vehicle. 3,777,518, Cl. 70-200.000.

Michael, Uri: *See—*
Gronowitz, Salo Schmul; Michael, Uri; and Sjoberg, Berndt Olof Harald, 3,778,463.

Michel, Edmond; and Minsart, Maurice, to Solvay & Cie. Device for trimming the bottom of hollow plastic bodies produced by blow molding. 3,777,609, Cl. 83-635.000.

Michell, Joseph H. Spring type ball projecting device with ball throwing time delay mechanism. 3,777,733, Cl. 124-7.000.

Michie, James C., III; and Calvert, Richard C. M., III, to Newport News Shipbuilding and Dry Dock Company. Method of transporting liquid and gas. 3,777,502, Cl. 62-55.000.

Michigan State University, The Board of Trustees of: *See—*
Mortland, Max M.; and Doner, Harvey E., 3,778,457.

Micro Devices Corporation: *See—*
Merrill, Phillip Edward, 3,778,742.

Micromedic Systems, Inc.: *See—*
Prost, Jean-Louis; and Sanz, Manuel C., 3,778,790.

Midle, Karl F., Jr. Heating and cooling device and method. 3,777,809, Cl. 165-54.000.

Migitaka, Masatoshi: *See—*
Okoshi, Takanori; and Migitaka, Masatoshi, 3,778,717.

Mikajiri, Akio, to Nihon Denshi Kabushiki Kaisha. Specimen tilting device for an electron optical device. 3,778,621, Cl. 250-442.000.

Miller, Arthur J.; and Miller, Robert A., to Carrier Corporation. Turbocharger structure. 3,778,194, Cl. 417-407.000.

Miller, Bernard G., to Allis-Chalmers Corporation. Rose guide for lift truck. 3,777,853, Cl. 187-9.000.

Miller, Clifford J., 20% to Lee, Raymond, Organization, Inc., The. Decorative fireplace. 3,777,735, Cl. 126-120.000.

Miller, Frederick L. B., to Chipper Machines and Engineering Corporation. Knife holder in log slabbing chipper. 3,777,793, Cl. 144-225.000.

Miller, Imrich M., to Universal Manufacturing Corporation. Moisture-resistant housing for electrical components and method and apparatus for making the same. 3,778,529, Cl. 174-52.0pe.

Miller, J. H., Jr.: *See—*
Fair, Delbert W.; Brown, Graydon L.; and Miller, J. H., Jr., 3,777,843.

Miller, Richard A., to Antemacraft Company. Clip device for mounting accessory on an antenna boom. 3,778,537, Cl. 174-138.00r.

Miller, Robert A.: *See—*
Miller, Arthur J.; and Miller, Robert A., 3,778,194.

Miller, Roy W.; Stark, Marvin; and Shaver, William R., to Pullman Incorporated. Railroad flat car. 3,777,671, Cl. 105-420.000.

Millet, Marcus J., to Eastman Kodak Company. Camera cocking mechanism. 3,777,644, Cl. 95-31.0ac.

Milligan, Gene Emmett; Ho, Henry Minglo; and Kimura, Noboru, to Control Data Corporation, mesne. Blanking circuit for high resolution data recovery systems. 3,778,792, Cl. 340-174.10h.

Milligan, James Paul; and Milligan, Judy Anne. Symbol recognition teaching device. 3,777,416, Cl. 35-31.00c.

Milligan, Judy Anne: *See—*
Milligan, James Paul; and Milligan, Judy Anne, 3,777,416.

Milling, Thomas E., to Quaker Oats Company, The. Candy mixer. 3,778,032, Cl. 259-6.000.

Mills, Richard G.: *See—*
Lutes, Kenneth V.; Lander, James E.; Shanahan, Vincent J.; and Mills, Richard G., 3,777,678.

Milovancevic, Slavko. Electronically controlled watering. 3,777,976, Cl. 239-64.000.

Mimura, Hiroshi: *See—*
Yano, Seinosuke; Sakurai, Hiroshi; Wakita, Nobuo; and Mimura, Hiroshi, 3,778,317.

Mine, George D.: *See—*
Bhagawan, Venkatesha S.; Jones, Richard A.; McDowell, Allen W.; Mine, George D.; Remsburger, Louis J.; Rupp, Bruce A.; and Whittaker, Rodney R., 3,778,819.

Miner, Carroll R., to General Instrument Corporation. Compact TV tuner. 3,777,576, Cl. 74-10.290.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. Preservatives for aqueous compositions which contain addition polymers. 3,778,400, Cl. 260-29.6mn.

Minneman, Lester C.: *See—*
Francel, Josef; and Minneman, Lester C., 3,778,242.

Minnesota Mining and Manufacturing Company: *See—*
Hedin, Milton W., 3,777,884.
Kapell, Henry K., 3,778,749.
Kayser, James H.; and Younker, Gregory A., 3,777,924.
Obhmke, Richard W.; and Opstead, Ronald F., 3,777,759.
Stow, Robert H., 3,778,306.

Minolta Camera Kabushiki Kaisha: *See—*
Imura, Toshinori; and Fujii, Yoshifusa, 3,777,636.
Kuramato, Yoshio; Tjujimoto, Kayoshi; and Ueda, Hiroshi, 3,777,637.
Yata, Kotaro; Nanba, Yasuhiro; and Sahara, Masayoshi, 3,777,638.

Minox GmbH: *See—*
Belitz, Fritz; and Bender, Karl-Richard, 3,777,635.

Minsart, Maurice: *See—*
Michel, Edmond; and Minsart, Maurice, 3,777,609.

Mitchael, William L.: *See—*
Rennick, Lyle V.; Shore, John D.; Mitchael, William L.; Weiss, Ronald B.; and Almich, Clarence L., 3,777,559.

Mitchell, Paul T.; and Pagan, Peter A. Shaft lubricator operable at low speed. 3,777,851, Cl. 184-63.000.

Mitsubishi Chemical Industries Limited: *See—*
Kimura, Tomiaki; Ohmura, Yasuhiro; Yoshimura, Tamotsu; Kohyama, Katsuhisa; and Watanabe, Kenzo, 3,778,402.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ozawa, Yasuriko, 3,777,854.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Otaki, Takashi, 3,777,505.

Mitsui Shipbuilding & Engineering Co., Ltd.: *See—*
Ito, Takashi, 3,777,592.

Miyala, Akira; Tomita, Chikayoshi; Suzuki, Akio; Okubo, Hideyo; and Magakuni, Masahiko, to Nippon Kokan Kabushiki Kaisha. Process for the electrolytic formation of aluminum coating on metallic surfaces in molten salt bath. 3,778,356, Cl. 204-29.000.

Miyaoka, Senri; and Morio, Minoru, to Sony Corporation. Convergence deflecting device for single-gun, plural-beam color picture tube. 3,778,666, Cl. 315-13.00c.

Mizoi, Yoshiaki: *See—*
Kano, Seizo; Tanaka, Shinsaku; Mizoi, Yoshiaki; and Ojima, Kenji, 3,778,314.

Mizuno, Hideaki; Konno, Toshio; and Akiyama, Naoki, to Victor Company of Japan, Limited. Method of forming a black patterned portion on a phosphor screen of a cathode-ray tube for color television sets. 3,778,266, Cl. 96-361.000.

Mizusawa, Mitutoyo; and Takeuchi, Hiroo, to Nisshin Kogyo Kabushiki Kaisha. Vacuum type servo device. 3,777,496, Cl. 60-593.000.

Mladek, Walter: *See—*
Kinzel, Richard; and Mladek, Walter, 3,777,986.

Moberg, Allen W.: *See—*
Burton, Thomas A.; and Moberg, Allen W., 3,777,507.

Mobil Oil Corporation: *See—*
Braid, Milton; and Quinty, David B., 3,778,375.

Moen, Raymond S.; and Sanelli, Edward T., to Redmer Plastics, Inc. Plastic injection mold apparatus. 3,778,211, Cl. 425-245.000.

Mokros, Frank. Lawn conditioning machine. 3,777,460, Cl. 56-16.700.

Molby, Lloyd A., to Le Tourneau, R. G., Inc. Adjustable self-aligning pivot bearing, and ball pin and socket employing same. 3,778,174, Cl. 403-143.000.

Moller, Tilo; and Ketterer, Dieter, to Heckler & Koch GmbH. Firearm carrying handle and sight protector. 3,777,381, Cl. 42-1.00s.

Monarch Marking Systems Company, The: *See—*
Vanderpool, James L.; and Dobras, Bruce W., 3,778,597.

Monroe, Roger F.: *See—*
Meeks, Merritt R.; Monroe, Roger F.; and Weber, Richard M., 3,777,934.
Meeks, Merrtt R.; Monroe, Roger F.; and Weber, Richard M., 37,779,341.

Monsanto Company: *See—*
Clark, Frank S., 3,778,472.
Handleman, Avron R., 3,777,775.
Herber, John F., 3,778,376.
Marco, Gino J.; and Grainger, Robert B., 3,778,508.

Montagne, Jean Bernard, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Pneumatic tires. 3,777,799, Cl. 152-362.00r.

Montgomery, Donald B.: *See—*
Coppi, Bruno; and Montgomery, Donald B., 3,778,343.

Montgomery, William Lloyd, to Bell Telephone Laboratories, Incorporated. Digital expandor for PCM code words. 3,778,605, Cl. 235-154.000.

Moody, Roy Alleyne: *See—*
Caveney, Jack Edward; Moody, Roy Alleyne; and Bulanda, John Jean, 3,778,750.

Mooney, David H., Jr.: *See—*
Longuemare, R. Noel, Jr.; and Mooney, David H., Jr., 3,778,829.

Mooney, James J., Jr.; and Polak, James C., to General Motors Corporation. Multi-range coaxial hydromechanical transmission. 3,777,593, Cl. 74-687.000.

Moore, Brian B., to International Business Machines Corporation. Operation request block usage. 3,778,780, Cl. 340-172.500.

Moore, Glen T. Phonograph record interlocking means. 3,778,068, Cl. 274-42.004.

Moore, Hugh K. Paint tube dispensing cap. 3,777,939, Cl. 222-189.000.

Moore, Peter N.; and Pierce, Leo F. Mud flap mounting means. 3,778,086, Cl. 280-154.50r.

Moore, Robert G., Jr., to Bendix Corporation, The. Method of and apparatus for control of helicopter gas turbine engine during auto-rotation. 3,777,478, Cl. 60-39.16r.

Moore, Thomas H.: *See—*
Cooper, George P.; and Moore, Thomas H., 3,778,669.

Moran, Robert L. Automatic television programmer. 3,778,721, Cl. 325-396.000.

Morehouse, Edward Lewis, to Union Carbide Corporation. Lactone-silicone compositions. 3,778,458, Cl. 260-448.20b.

Morel, Rene, to Mefina S.A. Safety device for a gyratory rocket missile. 3,777,666, Cl. 102-80.000.

Mori, Kazuo: *See—*

Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.

Morin, Louis George: *See—*
Anderson, Harold Francis; Shove, Gordon William; Morin, Louis George; and Gackstetter, Henry Clinton, 3,778,576.

Morin, Marius J.: *See—*
Barcus, Jack L.; Kilroy, Eugene J., Jr.; Morin, Marius J.; and Parker, John C., 3,777,391.

Morio, Minoru: *See—*
Miyaoka, Senri; and Morio, Minoru, 3,778,666.

Morris, Douglas Barrett: *See—*
Keith, Donald George; Morris, Douglas Barrett; Maack, Horst Egon Fred Ludwig; Mason, Ernest Arthur; and Woolgar, Robert John, 3,778,322.

Morris, Edward O., to N.V. Beakeart S.A. Pile of coils combined to a handleable unit. 3,777,905, Cl. 214-10.50r.

Morris, Paul S.; and Hutzler, Robert H., to Allied Chemical Corporation. Process for concentrating aqueous colloidal dispersions of polytetrafluorethylene. 3,778,391, Cl. 260-17.4st.

Morrison, Dan, Meat Pies, Inc.: *See—*
Wallace, Paul K.; and Wallace, Benjamin K., 3,778,209.

Morrison, David J.: *See—*
Herbine, Richard H.; and Morrison, David J., 3,777,447.

Morrison, Lowell D.: *See—*
Aumiller, Clyde F.; Morrison, Lowell D.; and Holinbeck, Dale G., 3,777,742.

Morrison, Robert, to Speedcraines Limited. Derrick cranes. 3,777,901, Cl. 212-58.000.

Morrison, Thomas E., to Continental Conveyor and Equipment Company. Self-aligning apparatus for idler roll assembly. 3,777,878, Cl. 198-202.000.

Morrisroe, John J.; and Banigan, Thomas F., to Pilot Chemical Company. Unsaturated alcohols and derivatives thereof. 3,778,479, Cl. 260-615.00b.

Morrisroe, John J.; and Banigan, Thomas F., to Pilot Chemical Company. 1,3,4 Triols and derivatives thereof. 3,778,482, Cl. 260-635.00r.

Mortland, Max M.; and Doner, Harvey E., to Michigan State University, The Board of Trustees of. Clay-arene complexes and process of producing same. 3,778,457, Cl. 260-430.000.

Mosher, Lawrence G.: *See—*
Hake, Victor E.; McDowell, Allen W.; Mersel, Daniel R.; Mosher, Lawrence G.; and Stilwell, Stanley O., 3,778,779.

Moshinsky, Robert W.: *See—*
Wheaton, Theodore C.; Tamagni, Albert J.; and Moshinsky, Robert W., 3,778,223.

Moskowitz, Arthur: *See—*
Pinnow, Kenneth E.; Mehta, Jayendra M.; and Moskowitz, Arthur, 3,778,316.

Mosley, Wilbur C., Jr.: *See—*
Smith, Paul K.; Huntoon, Richard T.; and Mosley, Wilbur C., Jr., 3,778,295.

Mostek Company: *See—*
Proebsting, Robert J.; and McKenny, Vernon George, 3,778,783.

Motes, Bill G.: *See—*
Gant, Preston L.; Motes, Bill G.; and Aulor, Jerry T., 3,778,162.

Motoren- und Turbinen-Union Munich GmbH: *See—*
Hagen, Herrmann, 3,777,479.

Motorola, Inc.: *See—*
Galvin, Lee Robert; and Kline, Arthur J., Jr., 3,778,686.
Harlan, Alfred R., 3,778,069.
Maiershofer, Helmut C.; and Noble, Walter J., 3,777,965.

Mottoon, Robert T.: *See—*
Precin, Raymond J.; and Mottoon, Robert T., 3,778,560.

Moyldew, Oraham Edward; and Shemack, John Lindsay, to Elevators Pty. Limited. Pattern generator for the control of motion of a body movable over a predetermined path. 3,777,855, Cl. 187-29.00r.

MTD Products Inc.: *See—*
Plamper, Gunter F., 3,777,585.

Mueller, Herbert; and Goetz, Norbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of α,β-unsaturated carbonyl compounds. 3,778,477, Cl. 260-599.000.

Mueller, Joseph F. Controlled cutting. 3,777,616, Cl. 90-13.200.

Muench, Paul W., to Borg-Warner Corporation. Oil return system for refrigeration apparatus. 3,777,509, Cl. 62-470.000.

Mukaiyama, Teruaki; Ueki, Massaaki; Maruyama, Hiroshi; Matsueda, Rei; and Gotow, Kuniaki. Process for the production of peptides. 3,778,428, Cl. 260-112.500.

Muller, Adolf: *See—*
Kopf, Gerhard; and Muller, Adolf, 3,777,608.

Muller, Gernot, to Bruderhaus Maschinen G.m.b.H. Calender and method of operating the same. 3,777,656, Cl. 100-47.000.

Muller, Gunther: *See—*
Gruniger, Fritz; Muller, Gunther; and Steiger, Klaus, 3,778,005.

Muller, Hans. Removing a cell culture from a carrier. 3,778,353, Cl. 195-105.000.

Muller, William G.: *See—*
Gray, R. Flanagan; Caswell, John; and Muller, William G., 3,777,757.

Munchbach, Curt, to Irma Ungerer Pforzheim-Brotzingen. Apparatus for straightening metal by stretching. 3,777,533, Cl. 72-205.000.

Munier, Ronald A.; and Ling, Charles Che, to Gamon-Calmet Industries, Inc., mesne. Magnetic converter for water meters. 3,777,565, Cl. 73-258.000.

Muntjanoff, John R.: *See—*
Anderson, Rodney H.; and Muntjanoff, John R., 3,777,824.

Muraoka, Tateki: *See—*
Sugita, Kenichiro; Shimizu, Tetsuji; Ueno, Sinichi; and Muraoka, Tateki, 3,777,738.

Murase, Shiego: *See—*
Imabayashi, Satoshi; Yamaguchi, Koichiro; and Murase, Shiego, 3,777,508.

Murata Manufacturing Co., Ltd.: *See—*
Kasanami, Toru; and Kano, Osamu, 3,778,389.

Murate Machinery, Ltd.: *See—*
Matsui, Isamo; Sakai, Shozi; and Nishiyama, Masanobu, 3,777,932.

Murphy, David Duncan; and Giddings, David George, to Pilkington Brothers Limited. Toughened glass. 3,778,338, Cl. 161-192.000.

Murphy, John P., to Lubrizol Corporation, The. Lubricants and fuels containing nitrogen-bearing compositions. 3,778,372, Cl. 252-51.50a.

Murphy, Peter, to Girling Limited. Railway vehicle braking systems. 3,777,858, Cl. 188-181.00r.

Mustang Oil Tools, Inc.: *See—*
Delano, Charles G., 3,777,819.

Mutt, Viktor: *See—*
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,778,429.

Myers, Donald Orville: *See—*
DeVisser, Christian; and Myers, Donald Orville, 3,778,633.

Myles, J. E., Inc.: *See—*
Myles, J. Edgar, 3,777,319.

Myles, J. Edgar, to Myles, J. E., Inc. Swimming pool cover. 3,777,319, Cl. 4-172.140.

Myren, Darrell P. Body scrubbing articles. 3,778,172, Cl. 401-7.000.

Nagai, Tamiji, to Sony Corporation. Horizontal deflection circuit. 3,778,670, Cl. 315-27.0td.

Nagata, Shuji: *See—*
Takahashi, Nobuyuki; Nagata, Shuji; Nishimara, Toshiro; and Yoshinari, Kazuhiko, 3,777,536.

Nagayama, Kazuo, to Seiken Kogyo Kabushiki Kaisha. Apparatus for automatically removing the covering from covered wire and winding the uncovered wire on a rod member. 3,777,352, Cl. 29-203.00d.

Nagel, Hans-Joachim: *See—*
Kesselring, Lutz; and Nagel, Hans-Joachim, 3,777,753.

Nagy, Ernest J.; and Marsh, Ronald W., to Pullman Incorporated. Weather seal for railway car door. 3,777,424, Cl. 49-485.000.

Nagy, Gabor: *See—*
Sciola, Joseph; and Nagy, Gabor, 3,777,999.

Naiman, Robert. Coking prevention system. 3,778,240, Cl. 48-105.000.

Naito, Hiroshi: *See—*
Kubo, Shuji; and Naito, Hiroshi, 3,778,657.

Najjar, Victor A., to Research Corporation. Therapeutically useful polypeptides. 3,778,426, Cl. 260-112.500.

Nakabayashi, Masahiro: *See—*
Kubli, Robert A.; Sasse, Frederick H.; Uttrachi, Gerald D.; Van Dyke, Le Roy L.; and Nakabayashi, Masahiro, 3,778,587.

Nakabayashi, Masahiro, to Union Carbide Corporation. Air operating cored wire. 3,778,589, Cl. 219-146.000.

Nakamura, Yoshiro; Umehara, Akira; and Yanaba, Itsuyo, to Sankyo Kasei Company, Limited. Disposal of metal-containing waste water. 3,778,368, Cl. 210-54.000.

Nakayama, Yasuharu. Maleinization process. 3,778,418, Cl. 260-78.40d.

Nalick, Albert L. Adjustable shoe insert to reduce heel spur pain. 3,777,419, Cl. 36-71.000.

Namiki, Masayuki: *See—*
Teruuchi, Yoshifumi; Namiki, Masayuki; and Nishii, Tomio, 3,778,066.

Nanba, Yasuhiro: *See—*
Yata, Kotaro; Nanba, Yasuhiro; and Sahara, Masayoshi, 3,777,638.

NAPHTHACHIMIE: *See—*
Poite, Michel, 3,778,451.

Narjarian, John, to France Neckwear Co., Inc. Pre-formed clip bow ties. 3,777,312, Cl. 2-154.000.

National Building Industries: *See—*
Leevers, Jack E., 3,777,693.

National Distillers and Chemical Corporation: *See—*
Henkel, Robert N.; and Kruschinski, John H., 3,778,404.

National Seating Company: *See—*
Edwards, Robert L., 3,778,103.

National Starch and Chemical Corporation: *See—*
Fazioli, Chris T.; Sirota, Julius; and Weidener, Richard A., 3,778,399.

National Steel Corporation: *See—*
Holker, Kenneth Urmston, 3,778,297.

Neal, James V., Jr.: *See—*
Fajt, John; and Neal, James V., Jr., 3,778,584.

Nedelec, Maruice; and Petitcollin, Jean-Marc, to Saint-Gobain Industries. Bending of flat glass on a mold with vacuum. 3,778,244, Cl. 65-106.000.

Nederlandse Organisatie voor Toegepast Natuurwetenschapplijk Orderzoek ten behoeve van de Volksgezondheid: *See—*
Van Der Waaij, Dirk; Erkelens, Hendrik J.; Bossers, Pieter A.; and Kruiswijk, Franciscus J., 3,777,736.
Needham, James M., to Bendix Corporation, The. Simplified adaptive braking logic. 3,778,117, Cl. 303-21.0cg.
Neely, James S., to Procter & Gamble Company, The. Compositions of matter containing heliotropyl nitrile as a flavoring agent and sweetener. 3,778,517, Cl. 426-175.000.
Nelson, Bernard J. Carriers attachable to automobiles and for use in carrying vehicles. 3,777,921, Cl. 214-450.000.
Nevalins, Arnold Yanovich: *See—*
Tooming, Khugo Gustavovich; Kjulvya, Leopold Yakobovich; Gorschenin, Eduard Andreevich; and Nevalins, Arnold Yanovich, 3,777,682.
New Britain Maching Company, The: *See—*
Smyers, William H., Jr.; and Russo, Ronald D., 3,777,596.
Newman, Albert P.; and Haun, Clem Edward, to Empire Products, Inc. Electrical connector with safety switch. 3,778,569, Cl. 200-31.090.
Newman, James L.; and Hawthorne, Millo Marion. Shrimp fishing apparatus. 3,777,388, Cl. 43-9.000.
Newmeyer, Reed A.: *See—*
Jarko, Michael F.; Powers, Avery W.; and Newmeyer, Reed A., 3,778,762.
Newport News Shipbuilding and Dry Dock Company: *See—*
Michie, James C., III; and Calvert, Richard C. M., III, 3,777,502.
Newsteder, Robert, to Just Design, Inc. Inflatable wig stand. 3,777,951, Cl. 223-67.000.
Nicholas, Michael George; and MacPhain, Iain, to United Kingdom Atomic Energy Authority. Manufacturing composite articles. 3,778,261, Cl. 75-204.000.
Nicholson, Robert D., to Koehring Company. Fluidic feedback servo valve. 3,777,784, Cl. 137-625.620.
Nickell, Joe A.: *See—*
Whitney, Robert J.; Gaston, Donald H.; and Nickell, Joe A., 3,777,357.
Nickum, Robert H. Quad staying machine. 3,777,628, Cl. 93-41.100.
Nicolaides, John D. Golf ball testing and demonstrating apparatus. 3,777,548, Cl. 73-12.000.
Nidy, Eldon G.: *See—*
Kornis, Gabriel; and Nidy, Eldon G., 3,778,473.
Nielsen, Lars Stig, to Christian Roosing A/S. Pacemaker with continuously adjustable output amplitude. 3,777,762, Cl. 128-419.00p.
Niemeyer, Ludwig: *See—*
Fink, Peter; and Niemeyer, Ludwig, 3,777,526.
Nigol, Olaf. Means for preventing or inhibiting galloping vibrations in overhead transmission lines. 3,778,527, Cl. 174-42.000.
Nihon Denshi Kabushiki Kaisha: *See—*
Mikajiri, Akio, 3,778,621.
Nikolaev, Vladimir Petrovich: *See—*
Maslenok, Boris Arkadievich; Zlobin, Viktor Grigorievich; Khegai, Anatoly Sergeevich; Nikolaev, Vladimir Petrovich; and Kruuger, Evgeny Adolfovich, 3,778,345.
Nikowitz, Johann; and Schwarz, Michael, to Waagner-Biro Aktiengesellschaft. Device for transporting pourable goods. 3,777,938, Cl. 222-185.000.
Nilsson, Jan; and Brinkeborn, Bertram, to Allmanna Svenska Elektriska Aktiebolaget. Method of manufacturing rods or wire of compound material. 3,777,362, Cl. 29-474.300.
Nippon Electric Company, Limited: *See—*
Hakozaki, Katsuya, 3,778,776.
Nippon Kayaku Co., Ltd.: *See—*
Takenaka, Shigeo; Kido, Yasuji; Shimabara, Tatsutoshi; and Ogawa, Masanobu, 3,778,386.
Nippon Kogaku K.K.: *See—*
Iida, Yozo, 3,778,138.
Nippon Kokan Kabushiki Kaisha: *See—*
Miyala, Akira; Tomita, Chikayoshi; Suzuki, Akio; Okubo, Hideyo; and Magakuni, Masahiko, 3,778,356.
Nippon Oil Company, Limited: *See—*
Hayashi, Hideo; Sato, Hisatake; and Oshima, Akio, 3,778,421.
Nippon Piston Ring Kabushiki Kaisha: *See—*
Sugahara, Eisuke, 3,777,868.
Nippon Steel Corporation: *See—*
Takahashi, Nobuyuki; Nagata, Shuji; Nishimara, Toshiro; and Yoshinari, Kazuhiko, 3,777,536.
Yano, Seinosuke; Sakurai, Hiroshi; Wakita, Nobuo; and Mimura, Hiroshi, 3,778,317.
Nippon Toki Kabushiki Kaisha: *See—*
Takahashi, Koji, 3,778,212.
Nishi, Toshio: *See—*
Fujimoto, Kunihiko; Matsui, Masayuki; Kishinami, Shigeto; and Nishi, Toshio, 3,778,396.
Nishii, Tomio: *See—*
Teruuchi, Yoshifumi; Namiki, Masayuki; and Nishii, Tomio, 3,778,066.
Nishijima, Yasushi: *See—*
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,778,325.
Nishimara, Toshiro: *See—*
Takahashi, Nobuyuki; Nagata, Shuji; Nishimara, Toshiro; and Yoshinari, Kazuhiko, 3,777,536.
Nishiyama, Masanobu: *See—*
Matsui, Isamo; Sakai, Shozi; and Nishiyama, Masanobu, 3,777,932.
Nissan Motor Company, Limited: *See—*
Izumi, Masao, 3,777,808.
Maruoka, Hiroyuki, 3,778,040.
Matsui, Shunji; Hirashima, Kenzo; Hayakawa, Yoshikazu; and Marumo, Nagayuki, 3,778,572.
Otsubo, Kizuki; and Ishikawa, Yoshikazu, 3,777,719.
Sawada, Hiraki, 3,777,721.
Tsuda, Yasuhisa, 3,778,101.
Uchiyama, Hiromichi; and Inoue, Naohiko, 3,777,839.
Nisshin Kogyo Kabushiki Kaisha: *See—*
Mizusawa, Mitutoyo; and Takeuchi, Hiroo, 3,777,496.
Nistri, Raffaello, to Otlico Meccanica Italiana-OMI-S.p.A. Optical apparatus for collimation to infinity of two luminous images whose frequencies fall within different spectral bands. 3,778,548, Cl. 178-7.880.
Nittan Company, Limited: *See—*
Honda, Yukio, 3,778,796.
Nix, William H.: *See—*
Gambs, Gerard C.; Nix, William H.; Barnhart, James H.; and Cathcart, John G., 3,778,239.
Noble, Walter J.: *See—*
Maiershofer, Helmut C.; and Noble, Walter J., 3,777,965.
Nocella, William F., to Honeywell Inc. Switch resetting apparatus for multi-bank push button switches. 3,778,564, Cl. 200-5.00r.
Noe, Oskar, to BWG Bergwerk- und Walzwerk-Maschinenbau G.m.b.H., Firma. Method of and apparatus for extending and reducing thickness of a metallic band. 3,777,532, Cl. 72-205.000.
Noel y Compania Limitada Sociedad Anonima Argentina: *See—*
Abalo, Juan Manuel, 3,778,018.
Nofziger, Dale, to Ansonia Clock Company, Inc. Clock chime intensity control. 3,777,701, Cl. 116-149.000.
Nooi, Jacobus, to Heterochemical Corporation. Molecular complexes of a bis-(5-nitrofurfurylidene)-acetonequanylhydrazone compound and an amine. 3,778,435, Cl. 260-240.00a.
Nopanen, Esko J., to General Electric Company. Hair dryer. 3,777,406, Cl. 34-99.000.
Nordling, K. Fredrik; and Huey, Samuel T., to Digital Telephone Systems, Inc. Telephone subscriber line system intra call apparatus and method. 3,778,555, Cl. 179-18.0fc.
Nordson Corporation: *See—*
Rood, Alvin A.; Hogstrom, Edwin F.; and Stumphauzer, William C., 3,778,292.
Norfolk, David E. Belt and buckle assembly. 3,777,315, Cl. 2-321.000.
Norman, Leslie W.: *See—*
Gross, Robert A.; Hunter, Skillman C.; and Norman, Leslie W., 3,777,488.
Norman, Leslie W.; and Hunter, Skillman C., to Garrett Corporation, The. Method and apparatus for reaction propulsion. 3,777,487, Cl. 60-204.000.
Norman, McHenry, III. Apparatus for detecting and counting coincidence of incoming logic signals. 3,778,714, Cl. 324-181.000.
Norprint Limited: *See—*
Hepher, Martin, 3,778,272.
Norris Industries, Inc.: *See—*
Krulee, Alfred W., 3,777,569.
Norsid Industries, Inc.: *See—*
Altman, Gerald, 3,778,142.
North American Rockwell Corporation: *See—*
Cooper, George P.; and Moore, Thomas H., 3,778,669.
McFarland, Wilmer H., 3,778,828.
Perlman, David, 3,778,724.
Northern Electric Company, Limited: *See—*
Iyengar, Rama; and Davis, Dan Bryan, 3,777,371.
Northrop Corporation: *See—*
Rennick, Lyle V.; Shore, John D.; Mitchael, William L.; Weiss, Ronald B.; and Almich, Clarence L., 3,777,559.
Novacek, Peter: *See—*
Hohn, Alfred; and Novacek, Peter, 3,778,182.
Novak, Frank A.; Schreiber, Kenneth T.; and Hydo, Steven J., to ARDAC/USA, Incorporated. Secondary detection circuit with sharp cutoff for security validating. 3,778,628, Cl. 250-556.000.
Noyes, Leroy W., to General Motors Corporation. Connector contact including an isolation resistor. 3,778,752, Cl. 339-147.00r.
Nozawa, Takamitsu; and Kishi, Takao, to Yoshino Kogyosho Co., Ltd. Spraying device. 3,777,945, Cl. 222-394.000.
Nudelmont, Jean-Claude. Apparatus for indicating voltage presence phase sequence voltage magnitude ground faults, etc., in an electrical power distribution system. 3,778,801, Cl. 340-253.00r.
Nupp, Raymond W., to EDMAC Associates, Inc. Phase locked-FM detector. 3,778,728, Cl. 329-110.000.
Nurre, Thomas C., to International Paper Company. Bulk container reinforcements. 3,777,969, Cl. 229-37.00e.
Nutter, Gerald E., to Golf-In Equipment Corporation. Simulated golf game device. 3,778,064, Cl. 273-176.0fa.
N.V. Beakeart S.A.: *See—*
Morris, Edward O., 3,777,905.
N.V. Bekaert S.A.: *See—*
Alleweireldt, Fernand, 3,778,002.
Van Roucke, L., 3,777,704.
N.V. Industrieele Handelscombinatic Holland: *See—*
Laarman, Johannes Bertus, 3,777,372.
Nyberg, Ake: *See—*

Lundstrom, Jan-Horje; Nyberg, Ake; Hamlin, Roland; and Astberg, Ake, 3,777,723.
Oak Industries Inc.: *See—*
Gusaras, Vladas, 3,778,566.
Lewandowski, Raymond F.; and Markison, William C., 3,778,565.
Van Benschoten, Peter J.; and Kilsdonk, Jan Albert, 3,778,820.
Obhmke, Richard W.; and Opstead, Ronald F., to Minnesota Mining and Manufacturing Company. Enzyme-dispersible bandage. 3,777,759, Cl. 128-287.000.
Occhipinti, Carl; and Triner, Irvin Richard, to Bunker Ramo Corporation. Electrical connector. 3,778,753, Cl. 339-156.00r.
Ocean Recovery Systems, Inc.: *See—*
Baccaglini, Russell C.; and Rogers, Kenneth J., 3,777,692.
Ochel, Gunter: *See—*
Schroder, Jurgen; Ochel, Gunter; and Von Horsten, Hans-Joachim, 3,778,549.
Ochida, Hajime, to Matsushita Electric Industrial Co., Ltd. Electric pencil sharpener. 3,777,791, Cl. 144-28.720.
Odagiri, Yoichi: *See—*
Kihara, Nobutoshi; and Odagiri, Yoichi, 3,778,559.
Odegaard, Gunnar Viggo: *See—*
Gjettum, Dag Poppe; and Odegaard, Gunnar Viggo, 3,778,834.
Oertel, Harald; Roos, Ernst; and Ley, Kurt, to Bayer Aktiengesellschaft. Alpha, alpha-bis-(2-hydroxyphenyl)-diisopropyl benzenes as stabilisers for polyurethanes. 3,778,409, Cl. 260-45.80n.
Ogawa, Masanobu: *See—*
Takenaka, Shigeo; Kido, Yasuji; Shimabara, Tatsutoshi; and Ogawa, Masanobu, 3,778,386.
Ohloff, Gunther: *See—*
Becker, Joseph J.; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, 3,778,483.
Ohlschlager, Hans: *See—*
Gernert, Herbert; Glockner, Hans; Meier, Ernst; Ohlschlager, Hans; and Riester, Oskar, 3,778,273.
Ohmura, Jukichi: *See—*
Suzuki, Isamu; Ohmura, Jukichi; and Satoo, Yuukoo, 3,777,470.
Ohmura, Yasuhiro: *See—*
Kimura, Tomiaki; Ohmura, Yasuhiro; Yoshimura, Tamotsu; Kohyama, Katsuhisa; and Watanabe, Kenzo, 3,778,402.
Ohta, Wasaburo: *See—*
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,263.
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,264.
Ohto, Kunio, to Teijin Limited. Temperature measuring apparatus for rotating rollers. 3,777,567, Cl. 73-351.000.
Ojima, Kenji: *See—*
Kano, Seizo; Tanaka, Shinsaku; Mizoi, Yoshiaki; and Ojima, Kenji, 3,778,314.
Okamoto, Takao: *See—*
Aiko, Hideo; Okamoto, Takao; Abe, Eiji; Tsukihashi, Kazunobu; and Yamashita, Koichi, 3,777,661.
Okiyama, Masaharu. Automatic braking device for hydraulic pressure chair, 3,777,617, Cl. 91-44.000.
Okoshi, Takanori; and Migitaka, Masatoshi, to Hitachi, Ltd. Solid-state oscillator having such a structure that an oscillating element, a resonator and a radiator of electromagnetic waves are unified in one body. 3,778,717, Cl. 325-105.000.
Okubo, Hideyo: *See—*
Miyala, Akira; Tomita, Chikayoshi; Suzuki, Akio; Okubo, Hideyo; and Magakuni, Masahiko, 3,778,356.
O'Leary, Kevin J.: *See—*
Kolb, James M.; and O'Leary, Kevin J., 3,778,363.
Olin Corporation: *See—*
Brunelle, Lawrence J., 3,777,382.
Goldman, Alan J.; and Shapiro, Stanley, 3,778,236.
Shapiro, Stanley; Tyler, Derek E.; and Pryor, Michael J., 3,778,237.
Olsen, John O.; and Visser, Gerrit A., to Reid, Middleton & Associates, Inc. and Poly Sinterino, Inc. Floating breakwater pontoon. 3,777,689, Cl. 114-.50f.
Olson, Floyd C., to Mayer, Oscar, & Co., Inc. Nutritional product of whey protein and collagen hydrolysate. 3,778,514, Cl. 426-61.000.
Olson, Rich: *See—*
Ririe, Max H.; Roland, Murray C.; and Olson, Rich, 3,777,979.
Olteanu, Ion: *See—*
Manicatide, Radu Adrian M.; Olteanu, Ion; and Georgescu, Petre, 3,777,978.
Olympia Werke AG: *See—*
Drogi, Dieter, 3,777,870.
Rix, Albert; Werner, Georg; and Euchs, Hans, 3,777,869.
Onaka, Tatsumi: *See—*
Yamanoto, Akira; Yoshida, Dan; Onaka, Tatsumi; and Shiraishi, Minoru, 3,777,440.
Onder, Thomas. Wheel assembly device. 3,778,078, Cl. 280-43.000.
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, to Squibb, E. R., & Sons, Inc. Method of sulfating a tyrosine moiety. 3,778,429, Cl. 260-112.500.
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, to Kanegafuchi Boseki Kabushiki Kaisha. Method of manufacturing artificial leather. 3,778,325, Cl. 156-278.000.
Oomen, Johannes A. F., to Cincinnati Electronics Corporation, mesne. Tuning method for T-network couplers. 3,778,731, Cl. 333-17.000.
Operations Analysis Inc.: *See—*
Baer, Stephen C., 3,777,393.
Opstead, Ronald F.: *See—*
Obhmke, Richard W.; and Opstead, Ronald F., 3,777,759.
Oreck, Richard A. Gunsight alignment apparatus. 3,777,404, Cl. 33-245.000.
Oregon Research Institute: *See—*
Rosov, Robert J., 3,778,351.
Osawa, Akira: *See—*
Hayashi, Yukitaka; Osawa, Akira; Shimizu, Hakuichi; and Hamada, Nagaharu, 3,778,793.
Oshima, Akio: *See—*
Hayashi, Hideo; Sato, Hisatake; and Oshima, Akio, 3,778,421.
Ostrom, Charles T., to Federal-Moqul Corporation. Circuit board drill and method. 3,778,180, Cl. 408-226.000.
Ostwald, Heinz G.: *See—*
Spiroch, Franz; and Ostwald, Heinz G., 3,777,997.
Osui, Noriyuki: *See—*
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,263.
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,264.
Otaki, Takashi, to Mitsubishi Jukogyo Kabushiki Kaisha. Defrosting method and apparatus. 3,777,505, Cl. 62-81.000.
Otis Engineering Corporation: *See—*
Fredd, John V., 3,778,089.
Otlico Meccanica Italiana-OMI-S.p.A.: *See—*
Nistri, Raffaello, 3,778,548.
Ototani, Tohei; Shimodaira, Saburo; and Kataura, Yasuzi, to Research Institute for Iron, Steel and Other Metals of the Tohoku University, The. Corrosion resistant low carbon chromium alloy steel. 3,778,255, Cl. 75-126.00c.
Otsubo, Kizuki; and Ishikawa, Yoshikazu, to Nissan Motor Company Limited. Exhaust system for multi-rotor type rotary internal combustion engine. 3,777,719, Cl. 123-8.070.
Otto, Joachim F., to Anaconda Company, The. Rotary printer for numbering including Geneva wheel drive means. 3,777,660, Cl. 101-77.000.
Ouellette, Joseph H., to General Electric Company. Bucket cover attachment. 3,778,190, Cl. 416-196.000.
Outboard Marine Corporation: *See—*
Arff, Uwe F.; and Edwards, Gordon J., 3,777,401.
Owens, Thomas M. Sealed lighter. 3,778,219, Cl. 437-152.000.
Owens-Corning Fiberglas Corporation: *See—*
Helser, Jerry L., 3,778,494.
Owens-Illinois, Inc.: *See—*
Bauer, Paul, Jr., 3,778,695.
Charlesworth, Robert L., 3,777,390.
Francel, Josef; and Minneman, Lester C., 3,778,242.
Mason, Daniel W., 3,778,285.
Oxirane Corporation: *See—*
Poenisch, Richard Bruce; and Birch, Fernando Francis, 3,778,382.
Oy Nokia Ab: *See—*
Valtonen, Rainer Ilkka Tapio, 3,778,746.
Ozawa, Yasuriko, to Mitsubishi Denki Kabushiki Kaisha. Elevator floor selector. 3,777,854, Cl. 187-29.00r.
P&D Mfg. Co., Inc.: *See—*
Ruiten, Donald E.; and Davis, Richard A., 3,777,790.
Pacella, Gerald M.; and Eckman, Richard S. Dishwasher with cycle timing system. 3,777,989, Cl. 239-567.000.
Padgett, Freeman, 50% to Padgett, Ronnie Freeman. Pallet removing truck. 3,777,923, Cl. 214-506.000.
Padgett, Ronnie Freeman: *See—*
Padgett, Freeman, 3,777,923.
Pagan, Peter A.: *See—*
Mitchell, Paul T.; and Pagan, Peter A., 3,777,851.
Palmer, George W.: *See—*
Herpich, William A.; Chaney, Donal W.; and Palmer, George W., 3,777,917.
Palmer Paint Products, Inc.: *See—*
Robinson, Edgar A., 3,777,414.
Panduit Corporation: *See—*
Caveney, Jack Edward; Moody, Roy Alleyne; and Bulanda, John Jean, 3,778,750.
Pankovsky, Vyacheslav Ivanovich: *See—*
Andreev, Valentin Efimovich; Pankovsky, Vyacheslav Ivanovich; Golub, Taras Fedorovich; and Buryabash, Alexei Nikolaevich, 3,778,491.
Panther Machine Corporation: *See—*
Grimm, Harold; and Zuckerman, Ira, 3,778,050.
Papannou, Plutarch Constantine, to Du Pont de Nemours, E. I., and Company. Fluorocarbon dry cleaning compositions. 3,778,379, Cl. 252-171.000.
Papay, Charles J.; and Settle, Ralph A., to United States Steel Corporation. Ultrasonic testing apparatus. 3,777,554, Cl. 73-71.50u.
Papierwerke "Waldhof-Aschaffenburg" AG: *See—*
Greber, Gerd; and Schott, Herbert, 3,778,393.
Paraho Corporation: *See—*
Jones, John B., Jr., 3,777,940.
Park, Davis & Company: *See—*
Prout, Wesley C., 3,777,335.
Parker, John C.: *See—*
Barcus, Jack L.; Kilroy, Eugene J., Jr.; Morin, Marius J.; and Parker, John C., 3,777,391.

Parker, Paul T.; and Mayer, Ivan, to Esso Research and Engineering Company. Alkylation with separate olefin streams including isobutylene. 3,778,489, Cl. 260-683.430.
Parkes, Jeffrey George Ernest, to Ford Motor Company. Rack and pinion steering gear. 3,777,590, Cl. 74-498.000.
Parmley, John W.: *See—*
Lindemann, Robert W.; and Parmley, John W., 3,778,620.
Parsons, Rodney, to Entryown Patents Ltd. Foldable articles. 3,777,674, Cl. 108-113.000.
Pasieka, John F.: *See—*
Cutler, Norman W.; Pasieka, John F.; and Seider, Myron A., 3,777,645.
Passavant, Francis C.: *See—*
Gicca, Francis A.; Passavant, Francis C.; Stebbins, William W.; and Worters, Allen J., 3,778,811.
Pastan, Harvey L.: *See—*
Brisk, Richard A.; Fougere, Guy L.; Lorah, Lawrence D.; and Pastan, Harvey L., 3,778,768.
Patrick, Ralph E.: *See—*
Kovach, Stephen M.; and Patrick, Ralph E., 3,778,484.
Pattas, Konstantin, to Daimler-Benz Aktiengesellschaft. Thermal engine, especially piston engine. 3,777,718, Cl. 123-8.010.
Pauze, Denis R.: *See—*
Emerick, Carl M.; and Pauze, Denis R., 3,778,411.
Pavlov, Viktor Grigorievich: *See—*
Sherman, Vladimir Efimovich; Dubonosov, Georgy Viktorovich; Portnov, Sergei Fedorovich; Fedotov, Jury Alexeevich; Grinberg, Yakov Zeemanovich; Soloviev, Nikodim Nikiforovich; Pavlov, Viktor Grigorievich; and Dmitriev, Efim Fedorovich, 3,777,534.
Pax, James H., to Brown, D. S., Company, The. Hexagonal hollow elastomer sealing strips. 3,778,176, Cl. 404-65.000.
Paxton, Wayne E., to General Motors Corporation. Spark plug pin gapping tool. 3,777,535, Cl. 72-293.000.
Pay, Donald Alexander, to Marconi Company Limited, The. Telecine equipment. 3,778,547, Cl. 178-7.880.
Payne, William H.: *See—*
Holloway, Donald P.; Payne, William H.; and Peeler, Donald H., 3,777,732.
Peabody Galion Corporation: *See—*
Herpich, William A.; Chaney, Donal W.; and Palmer, George W., 3,777,917.
Pearsall, Duane D.: *See—*
Coulter, Gordon L.; and Pearsall, Duane D., 3,777,423.
Pease, Richard R.; Blitzer, Frank; Giordano, Arthur A.; and Less, Frank L., to GTE Sylvania, Incorporated. Bipolar area correlator. 3,778,166, Cl. 356-71.000.
Peck, John C., to Wilputte Corporation. Furnace for combined incineration of rubbish, garbage, and sewage sludge. 3,777,680, Cl. 110-12.000.
Peddinghaus, Carl Ullrich. Machine for bending concrete-reinforcing bars. 3,777,525, Cl. 72-22.000.
Pedersen, Ernest T.: *See—*
Ericson, Alvin L.; Haettinger, George C.; and Pedersen, Ernest T., 3,777,930.
Pedrazzini, Andrea: *See—*
Giacomello, Giacomo; Pedrazzini, Andrea; and Franzolini, Luciano, 3,777,577.
Peeler, Donald H.: *See—*
Holloway, Donald P.; Payne, William H.; and Peeler, Donald H., 3,777,732.
Peevey, Robert M.: *See—*
Dendy, Jackie D.; Johnson, Robert D.; and Peevey, Robert M., 3,777,813.
Pemberton, Troy J.: *See—*
Lane, Donald W.; and Pemberton, Troy J., 3,778,025.
Pennington, James Ronald; and Gardiner, Errol Murray, to Allied Chemical Corporation. Trona mining method. 3,778,108, Cl. 299-11.000.
Pepmeier, Carl R., to FMC Corporation. Sleeve making apparatus and method. 3,777,632, Cl. 93-94.000.
Perez, Jean: *See—*
Regneault, Marcel; and Perez, Jean, 3,777,977.
Perina, Joseph, to American Velcro, Inc. Attachment assembly. 3,777,435, Cl. 52-754.000.
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Peterson Manufacturing Company: *See—*
Gernhardt, Paul D.; and Slater, Charles A., Jr., 3,778,016.
Peterson, Norman L.: *See—*
Haker, Edwin J.; and Peterson, Norman L., 3,778,177.
Petitcollin, Jean-Marc: *See—*
Nedelec, Maruice; and Petitcollin, Jean-Marc, 3,778,244.
Petitpierre, Jean-Paul: *See—*
Droz, Francois; Petitpierre, Jean-Paul; and Tosalli, Joseph, 3,778,075.
Petrisko, Edwin M.; and Keller, Karl H.; deceased (by Keller, Penny C.; administrator), to United States of America, Navy. Cumulative fatigue life indicator. 3,777,555, Cl. 73-91.000.
Petro, James; and Rively, Clair M., to Westinghouse Electric Corporation. Beaded coils for electric lamps and similar devices. 3,778,664, Cl. 313-344.000.
Petro-Tex Chemical Corporation: *See—*
Croce, Louis J.; and Bajars, Laimonis, 3,778,488.
Pruessner, Robert D., 3,778,367.
Petrosky, Willard L.: *See—*
Graves, Gail W.; Pope, Gerald R.; Stewart, Joseph T., Jr.; and Petrosky, Willard L., 3,778,028.
Pfister, Hans; and Diepers, Heinrich, to Siemens Aktiengesellschaft. Method of producing a composite tubular superconductor. 3,777,368, Cl. 29-599.000.
Pfister, Rudolf: *See—*
Sallman, Alfred; and Pfister, Rudolf, 3,778,470.
Pfizer Inc.: *See—*
Dooley, Joseph Francis, 3,778,384.
Pfleger, Frederick W. Tennis scoring device. 3,777,699, Cl. 116-120.000.
Pflugk, Hellmuth: *See—*
Biller, Efim; Goller, Roman; Pflugk, Hellmuth; and Schlegel, Richard, 3,778,481.
Pfundstein, Werner K.: *See—*
Kundisch, Heinrich R.; and Pfundstein, Werner K., 3,777,973.
Pharmachem Corporation: *See—*
Herb, John R., 3,777,597.
Philipps, Louis E.; and Stanis, Eugene A., to Medelco, Incorporated. Recorder control system. 3,778,774, Cl. 340-172.500.
Phillips, David L., to Strong-Scott Mfg. Co., The. Dryer. 3,777,810, Cl. 165-92.000.
Phillips, Graham Chesterton: *See—*
Anderson, James Iain Walker; Marr, Donald Henry Albert; and Phillips, Graham Chesterton, 3,777,709.
Phillips Petroleum Company: *See—*
Brown, James D.; and Uraneck, Carl A., 3,778,420.
Hsieh, Henry L., 3,778,490.
Lane, Donald W.; and Pemberton, Troy J., 3,778,025.
Zuech, Ernest A., 3,778,385.
Picard, Jean Francois: *See—*
Claret, Rene; and Picard, Jean Francois, 3,778,167.
Picardat, Robert. Lawn treating machine. 3,777,991, Cl. 239-656.000.
Pierce, Leo F.: *See—*
Moore, Peter N.; and Pierce, Leo F., 3,778,086.
Pierson, Merlin A., mesne: *See—*
Flannery, John B.; and Flannery, Paul D., 3,778,826.
Pilkington Brothers Limited: *See—*
Murphy, David Duncan; and Giddings, David George, 3,778,338.
Pilot Chemical Company: *See—*
Morrisroe, John J.; and Banigan, Thomas F., 3,778,479.
Morrisroe, John J.; and Banigan, Thomas F., 3,778,482.
Pines, Seemon H., to Merck & Co., Inc. Isocyanates and carbamates of penicillins and 3-cephem-4-carboxylic acids. 3,778,432, Cl. 260-243.00c.
Pinnow, Douglas Arthur; Van Uitert, Legrand Gerard; and Williams, John Charles, to Bell Telephone Laboratories, Incorporated. Optical transmission line. 3,778,132, Cl. 350-96.0wg.
Pinnow, Kenneth E.; Mehta, Jayendra M.; and Moskowitz, Arthur, to Crucible Steel Corporation. Method for producing stainless steel. 3,778,316, Cl. 148-12.000.
Piper, Robert J., to Stearns Manufacturing Co. Inc. Conveyor assembly. 3,777,877, Cl. 198-189.000.
Piquerez, Ervin, S. A.: *See—*
Piquerez, Pierre-Michel, 3,777,474.
Piquerez, Pierre-Michel, to Piquerez, Ervin, S. A. Fluid-tight control mechanism, for example for watches. 3,777,474, Cl. 58-90.00b.
Piret, Jean, to Automobile Peugeot and Regie Nationale des Usines Renault. Automatic transmission casing unit for an automobile vehicle. 3,777,849, Cl. 184-6.120.
Pittsburgh Corning Corporation: *See—*
Johnston, William D., 3,778,243.
Pittsburgh-des Moines Steel Company: *See—*
Edwards, Norman W., 3,777,497.
Plachy, William. Medicated disposable pad. 3,777,754, Cl. 128-268.000.
Plamper, Gunter F., to MTD Products Inc. Variable speed drive having speed limiting means. 3,777,585, Cl. 74-230.17d.
Platt International Limited: *See—*
Lane, Robert, 3,777,329.
Platt, Steven; Pomeranz, Jehoshua N.; and Tewarson, Dinesh K., to International Business Machines Corporation. Signal voltage level translating circuit. 3,778,640, Cl. 307-254.000.
Plempel, Manfred: *See—*
Draher, Wilfried; Timmler, Helmut; Buchel, Karl Heinz; and Plempel, Manfred, 3,778,447.
Plonsker, Larry: *See—*
Kleiman, Joseph P.; and Plonsker, Larry, 3,778,454.
Plowman, James S.; and Fowkes, Ivar G., to United Aircraft Corporation. Composite strut joint construction. 3,778,185, Cl. 415-217.000.
Plumer, Roy D.: *See—*
Arnold, Thomas E.; and Plumer, Roy D., 3,777,772.

Plummer, Charles H.; and Skistimas, Donald V., to Johnson & Johnson. Nonwoven textile fabrics and method of making the same. 3,778,341, Cl. 162-125.000.
Plunkett, Bradley J.: *See—*
Chase, Willis E.; and Plunkett, Bradley J., 3,778,525.
Pluscec, Josip: *See—*
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,778,429.
Pochert, Johannes: *See—*
Klotzer, Erhard; and Pochert, Johannes, 3,778,406.
Podlewski, Robert S.; and Birge, William T., to Kelsey-Hayes Company. Wheel slip control system for vehicles with electric brakes. 3,778,118, Cl. 303-21.0eb.
Podolsky, Leaman B.: *See—*
Giras, Theodore C.; and Podolsky, Leaman B., 3,778,347.
Poenisch, Richard Bruce; and Birch, Fernando Francis, to Oxirane Corporation. Hydroperoxide treatment. 3,778,382, Cl. 252-326.000.
Poite, Michel, to NAPHTHACHIMIE. Process for the manufacture of propylene oxide. 3,778,451, Cl. 260-348.501.
Polak, James C.: *See—*
Mooney, James J., Jr.; and Polak, James C., 3,777,593.
Polaroid Corporation: *See—*
Cutler, Norman W.; Pasieka, John F.; and Seider, Myron A., 3,777,645.
Denk, Edward G., 3,778,275.
Land, Edwin H., 3,777,647.
Land, Edwin H., 3,778,140.
Land, Edwin H., 3,778,265.
Land, Edwin H., 3,778,271.
Shaw, Elliott N., 3,778,276.
Polchet, Jack Marquis: *See—*
Ridge, Alvin Arthur; and Polchet, Jack Marquis, 3,778,288.
Poli, Emilio Lawrence: *See—*
Turner, Robert Burton; and Poli, Emilio Lawrence, 3,778,205.
Politz, William E., to Young, Stephen A. Drain control means. 3,777,320, Cl. 4-287.000.
Pollard, Kenneth R.: *See—*
Probst, Richard O.; Pollard, Kenneth R.; and Stockton, Frank R., 3,777,981.
Polster, Lewis H.: *See—*
Botnick, Irlin H.; and Polster, Lewis H., 3,777,840.
Poly Sinterino, Inc.: *See—*
Olsen, John O.; and Visser, Gerrit A., 3,777,689.
Polyakov, Evgeny Valentinovich: *See—*
Vereschagin, Leonid Fedorovich; Konyaev, Jury Sergeevich; Polyakov, Evgeny Valentinovich; and Surkov, Ivan Efimovich, 3,778,196.
Polytop Corporation: *See—*
Hazard, Robert E., 3,777,936.
Polyzoes, Demetrois: *See—*
Allen, James H.; and Polyzoes, Demetrois, 3,778,051.
Pomeranz, Jehoshua N.: *See—*
Platt, Steven; Pomeranz, Jehoshua N.; and Tewarson, Dinesh K., 3,778,640.
Ponder & Best, Inc.: *See—*
Fountain, Gerald F., 3,778,672.
Pontis, William Grant. Rotatable shaft and a rotatable member with a magnetic coupling therebetween. 3,778,738, Cl. 335-306.000.
Pope, Gerald R.: *See—*
Graves, Gail W.; Pope, Gerald R.; Stewart, Joseph T., Jr.; and Petrosky, Willard L., 3,778,028.
Poppinger, Herbert; and Huber, Klaus, to Siemens Aktiengesellschaft. Control circuit for an electric machine having an electronic commutator. 3,778,691, Cl. 318-254.000.
Porret, Daniel: *See—*
Habermeier, Juergen; and Porret, Daniel, 3,778,439.
Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See—*
Kusters, Heinz Peter, 3,778,104.
Porter, Gerald K.: *See—*
Asbelle, Charles C.; and Porter, Gerald K., 3,777,643.
Portner, Peer M.: *See—*
Link, William T.; and Portner, Peer M., 3,778,697.
Portnov, Sergei Fedorovich: *See—*
Sherman, Vladimir Efimovich; Dubonosov, Georgy Viktorovich; Portnov, Sergei Fedorovich; Fedotov, Jury Alexeevich; Grinberg, Yakov Zeemanovich; Soloviev, Nikodim Nikiforovich; Pavlov, Viktor Grigorievich; and Dmitriev, Efim Fedorovich, 3,777,534.
Posner, Richard, to Creative Polymer Products Corporation. Method of making a mold section. 3,778,323, Cl. 156-212.000.
Post Corporation: *See—*
Frederiksen, Jeffrey E., 3,778,557.
Potter, Ronald, to Auto-Place, Inc. Workpiece-gripping reach and turnover attachment. 3,777,902, Cl. 214-1.0bb.
Potts, Frederick John; and Wickenden, Geoffrey Charles, to Hawker Siddeley Aviation, Limited. Aircrew escape systems. 3,778,010, Cl. 244-121.000.
Poulsen, Peter D., to General Dynamics Corporation. Extended-range spectroscope for intense radiation sources. 3,778,161, Cl. 356-51.000.
Powers, Avery W.: *See—*
Jarko, Michael F.; Powers, Avery W.; and Newmeyer, Reed A., 3,778,762.
PPG Industries, Inc.: *See—*
Young, Elgin E., 3,777,802.
Prak, Jan Willem L.: *See—*
Koehler, Dale R.; Zupfer, Jerrald A.; and Prak, Jan Willem L., 3,777,471.
Precin, Raymond J.; and Mottoon, Robert T., to Ampex Corporation. Magnetic transducing head and drum assembly with head insertable radially into a slot in drum for alignment. 3,778,560, Cl. 179-100.20t.
Precision Machine Products, Inc.: *See—*
Clingman, William H., 3,777,562.
Prestel, Fritz, to J.S.J. Marquardt, Firma. Circuit control switch with contact bridge spring biased towards fixed contact. 3,778,575, Cl. 200-153.01a.
Price, H. C., Co.: *See—*
Harris, Robert J.; and Lee, Irvin J., 3,777,705.
Priebe, Edmund: *See—*
Hild, Willi; Zahradnik, Franz; Zahn, Erwin; and Priebe, Edmund, 3,778,407.
Priebe, Fritz, to Schloemann Aktiengesellschaft. Forging press. 3,777,539, Cl. 72-453.000.
Probst, Richard O.; Pollard, Kenneth R.; and Stockton, Frank R., to Ransburg Electro Coating Corporation. Spray apparatus and method. 3,777,981, Cl. 239-1.000.
Prochazka, Oldrich, to Anglo Paper Products, Limited. Turpentine purification process. 3,778,485, Cl. 260-675.500.
Procter & Gamble Company, The: *See—*
Neely, James S., 3,778,517.
Ulrich, Donald Aloysious, Jr., 3,778,390.
Proebsting, Robert J.; and McKenny, Vernon George, to Mostek Company. Dynamic random access memory. 3,778,783, Cl. 340-173.00r.
Proescu, Francine, nee Micsunescu. Zinc electroplating baths and process. 3,778,359, Cl. 205-55.00r.
Profos, Oskar, to Sulzer Brothers Limited. Nuclear power station. 3,778,346, Cl. 176-60.000.
Propulsion Systems, Inc.: *See—*
Wennberg, Peder K., 3,778,187.
Prost, Jean-Louis; and Sanz, Manuel C., to Micromedic Systems, Inc. Incremental recordation on test tube. 3,778,790, Cl. 340-174.01a.
Prout, Wesley C., to Park, Davis & Company. Strap and cable coupling and interconnecting system employing such coupling. 3,777,335, Cl. 24-79.000.
Pruessner, Robert D., to Petro-Tex Chemical Corporation. Treatment of process water. 3,778,367, Cl. 210-51.000.
Pryor, Michael J.: *See—*
Shapiro, Stanley; Tyler, Derek E.; and Pryor, Michael J., 3,778,237.
Przewalski, Zygmunt J. Incinerating process. 3,777,679, Cl. 110-8.00a.
Pugh, Kenneth Mervyn: *See—*
Bisset, Douglas Chisholm; and Pugh, Kenneth Mervyn, 3,778,208.
Pullman, Burke Cole, to Techno-Med, Limited. Mixing process and apparatus. 3,778,033, Cl. 259-72.000.
Pullman Incorporated: *See—*
Miller, Roy W.; Stark, Marvin; and Shaver, William R., 3,777,671.
Nagy, Ernest J.; and Marsh, Ronald W., 3,777,424.
Vornberger, George F.; and Albaugh, Arden A., 3,778,079.
Pyne, William J.; Gullo, James M.; and Adams, Bobby F., to Diamond Shamrock Corporation. Method for regulating plant growth. 3,778,247, Cl. 71-95.000.
Pyott-Boone, Inc.: *See—*
Killen, Gene W., 3,778,797.
Quaker Oats Company, The: *See—*
Milling, Thomas E., 3,778,032.
Quecner, Carl A.; Ralston, William C.; Smith, Thomas C.; and Welsh, Joseph P., to International Business Machines Corporation. Electrophotographic process. 3,778,262, Cl. 96-1.00r.
Quick-Rotan Becker & Notz, KG: *See—*
Angersbach, Wolfgang; and Meier, Karl-Heinz, 3,778,692.
Quinty, David B.: *See—*
Braid, Milton; and Quinty, David B., 3,778,375.
Rackman, Michael I. Attachment for facilitating use of a push-button telephone set as a data terminal. 3,778,553, Cl. 179-2.0dp.
Ragen, Robert A., to Singer Company, The. Calculator with self-synchronous recirculating memory. 3,778,778, Cl. 340-172.500.
Raitto, Russell G., to Concord Laboratories, Inc. Method and apparatus for collecting urine. 3,777,739, Cl. 128-2.00f.
Rakoczy, Dohdan, to Du Pont de Nemours, E. I., and Company. Photographic gelatino-silver halide emulsions containing hydrolyzed modified gelatin, and a process for their manufacture. 3,778,278, Cl. 96-114.800.
Ralston, William C.: *See—*
Quecner, Carl A.; Ralston, William C.; Smith, Thomas C.; and Welsh, Joseph P., 3,778,262.
Ranel, Josef, to Vereinigte Farbenglasereke Aktiengesellschaft. Multipart mold with means for aligning mold parts. 3,778,246, Cl. 65-360.000.
Ranniger, Don E. Optical path alignment instrument. 3,778,616, Cl. 250-199.000.
Ransburg Electro Coating Corporation: *See—*
Probst, Richard O.; Pollard, Kenneth R.; and Stockton, Frank R., 3,777,981.
Rapp, Lawrence F. Check digit calculator. 3,778,766, Cl. 340-146.1aj.
Rasmussen, Ole-Bendt. Micropleated composite fibrous product. 3,778,333, Cl. 161-169.000.

Rausch, John J.; and Van Thyne, Ray J., to Surfalloy Corporation. Rotary barrel diffusion coating in molten lead. 3,778,299, Cl. 117-109.000.

Rausch, William T. Method of employing a television receiver for active participation. 3,778,058, Cl. 273-85.00r.

Rawlings, Robert Louis: *See—*
Carlyle, Bert Edward; Rawlings, Robert Louis; and Volk, Karl Erich, 3,778,767.

Raymond Corporation, The: *See—*
Bilco, Arthur, 3,778,080.

Raymond, Gary E. Mobile camera assembly. 3,778,152, Cl. 355-56.000.

Raytheon Company: *See—*
Harper, Robert; and Zavadil, David, 3,778,665.

Raz, Baruch: *See—*
Gedanken, Aharon; Jortner, Joshua; Szoke, Abraham; and Raz, Baruch, 3,778,661.

RCA Corporation: *See—*
Hannan, William James, 3,778,128.
Lazzery, Angelo Gino, 3,777,700.
Shahbender, Rabah A., 3,777,369.
Wright, Carl Macey, 3,778,815.

Reber, Harald; Jahnke, Horst; and Steiner, Walter, to Bosch, Robert, G.m.b.H. Method of making an oxygen electrode for fuel cells. 3,778,313, Cl. 136-120.0fc.

Recasens, Joseph; Blanchet, Pierre; and Duchenoy, Jacques, to L'Electro-Refractaire. Refractory members for use in terminal regenerators or recuperators. 3,777,805, Cl. 165-9.100.

Redmer Plastics, Inc.: *See—*
Moen, Raymond S.; and Sanelli, Edward T., 3,778,211.

Reed, D. M. Open bucket ejector. 3,777,915, Cl. 214-82.000.

Reedyk, Cornelius Wilfred, to Bell Canada-Northern Electric Research Limited. Electret microphone. 3,778,561, Cl. 179-111.00e.

Rechil, Edward G.; and Buddendeck, Gerald A., to Xerox Corporation. Electrostatic reproduction machine having selectable magnification ratios. 3,778,147, Cl. 355-8.000.

Regbuer, Marc Andre: *See—*
Colardelle, Joel Serge; Lerouge, Claude Paul Henri; and Regbuer, Marc Andre, 3,778,734.

Regie Nationale des Usines Renault: *See—*
Langlois, Christian, 3,777,340.
Piret, Jean, 3,777,849.

Regitz, William M.: *See—*
Karp, Joel A.; and Regitz, William M., 3,778,784.

Regneault, Marcel; and Perez, Jean, to Automobiles Peugeot. Injection device. 3,777,977, Cl. 239-96.000.

Rehkopf Industries, Inc.: *See—*
Barteck, Werner W., 3,777,885.

Reiche, Alfons, to Gessner, Peter. Process and apparatus for assisting in starting internal combustion engines. 3,777,728; Cl. 123-122.00d.

Reichenbacher, Frank W.; Kraver, Theodore C.; and Hope, Edward F., to Burn Treatment Skin Bank, Inc. Process for producing split-thickness animal skin for protecting flayed human tissue. 3,777,599, Cl. 83-39.000.

Reid, Middleton & Associates, Inc.: *See—*
Olsen, John O.; and Visser, Gerrit A., 3,777,689.

Reimann, William George. Flatpack lead positioning device. 3,778,530, Cl. 174-68.500.

Reinert, Gerald H. Slave system for a pair of hydraulic cylinders. 3,778,193, Cl. 417-342.000.

Reinhart, Richard D.; and Straughn, Robert O., to General Mills, Inc. Process for extruding tubular, corrugated products. 3,778,520, Cl. 426-446.000.

Reiter, William M., to Universal PVC Resins Inc., mesne. Method for reducing polymer deposit in polymerization of vinyl chloride. 3,778,423, Cl. 260-92.80w.

Reliance Electric Company: *See—*
Dietemeyer, Stanley A., 3,777,828.

Rembaum, Alan; Landel, Robert F.; and Keyzer, Hendrik, to California Institute of Technology. Polymeric organic halogen salts. 3,778,476, Cl. 260-567.60p.

Remember When Sweet Shoppe, Inc.: *See—*
Rogove, Harry; and Rogove, Roslyn, 3,778,099.

Remington Arms Company, Inc.: *See—*
Scanlan, John J., 3,777,614.

Remsburger, Louis J.: *See—*
Bhagawan, Venkatesha S.; Jones, Richard A.; McDowell, Allen W.; Mine, George D.; Remsburger, Louis J.; Rupp, Bruce A.; and Whittaker, Rodney R., 3,778,819.

Renner, Hermann, to Daimler-Benz Aktiengesellschaft. Bumper for motor vehicles. 3,778,093, Cl. 293-71.00r.

Rennick, Lyle V.; Shore, John D.; Mitchael, William L.; Weiss, Ronald B.; and Almich, Clarence L., to Northrop Corporation. System for analyzing engine performance. 3,777,559, Cl. 73-117.003.

Republic Corporation; d/b/a Glas-Craft of California, a division of Republic Corporation: *See—*
Gardner, Charles R.; and Goelz, David W., 3,777,856.

Republic National Bank of Dallas, Irving Trust Company and Union Bank, mesne: *See—*
Fernandez, Reuel, 3,778,012.

Research Corporation: *See—*
Carta, Guy R., 3,778,349.
Najjar, Victor A., 3,778,426.

Research Institute for Iron, Steel and Other Metals of the Tohoku University, The: *See—*
Ototani, Tohei; Shimodaira, Saburo; and Kataura, Yasuzi, 3,778,255.

Reuge S.A.: *See—*
Droz, Francois; Petitpierre, Jean-Paul; and Tosalli, Joseph, 3,778,075.

Rex Chainbelt Inc.: *See—*
Haker, Edwin J.; and Peterson, Norman L., 3,778,177.

Reynolds Metals Company: *See—*
Jenkins, William B., 3,778,534.

Reynolds, R. J., Tobacco Company: *See—*
Beard, Hoyt S., 3,778,328.

Reynolds, William A.: *See—*
Long, Marshall; Alley, Lewis F.; and Reynolds, William A., 3,777,600.

Rheem Manufacturing Company: *See—*
Klenz, Karl A.; and Velarde, Clyde R., 3,777,400.

Rheinfrank, Lamson, Jr., to Standard Havens Systems Inc. Apparatus for loading hotmix in a surge bin. 3,777,909, Cl. 214-17.00c.

Rheinstahl AG: *See—*
Schneider, Felix, 3,777,672.

Rhinehart, Vance, to Cumberland Corporation. Automated systems for raising and transporting broilers. 3,777,710, Cl. 119-17.000.

Rhodes, Russell R., to Honeywell Information Systems, Inc. Station interface unit for process control of a direct digital control and/or supervisory control system. 3,778,772, Cl. 340-163.000.

Richardson, Walter: *See—*
Kearney, Stuart D., II; and Richardson, Walter, 3,778,007.

Richman, Peter L. Electrical measuring systems using a quarter-square multiplier. 3,778,608, Cl. 235-194.000.

Richter, Friedrich, to Hell, Rudolf, Dr. Ing., GmbH. Apparatus for the electro-mechanical production of printing matrices on variable scale of reproduction. 3,778,544, Cl. 178-6.60b.

Richter, Sidney B.: *See—*
Krenzer, John; and Richter, Sidney B., 3,778,512.

Ricketts, Calvin I.: *See—*
Gardner, Hugh R.; Ricketts, Calvin I.; and Joosten, Wesley L., 3,777,712.

Riddle, Hugh W. Fluid dispensing cover. 3,777,941, Cl. 222-207.000.

Ridge, Alvin Arthur; and Polchet, Jack Marquis, to South African Coal, Oil and Gas Corporation Limited. Methods for preparing master batches of additive concentrates. 3,778,288, Cl. 106-308.00q.

Riencell Boats, Inc.: *See—*
Kirchmeyer, Paul A., 3,777,922.

Riess, Walter: *See—*
Wilhelm, Max; and Riess, Walter, 3,778,467.

Riester, Oskar: *See—*
Gernert, Herbert; Glockner, Hans; Meier, Ernst; Ohlschlager, Hans; and Riester, Oskar, 3,778,273.
Gotze, Johannes; Bockly, Erich; and Riester, Oskar, 3,778,279.

Rigaku Denki Company, Limited: *See—*
Shimura, Yoshihiro, 3,778,070.

Rikman, Mikhail Abramovich; and Ioffe, Felix Semenovich. Device for the transportation of loads between operations. 3,777,872, Cl. 198-20.00r.

Rippingille, Edward V., Jr.: *See—*
Kwok, Clyde Chi Kai, 3,777,746.

Rippy, Dorian F.: *See—*
Siebol, George; and Rippy, Dorian F., 3,777,540.

Ririe, Max H.; Roland, Murray C.; and Olson, Rich, to Lockwood Corporation. Mobile irrigation system and pipe coupling. 3,777,979, Cl. 239-177.000.

Risgin, Ojars; and Szeles, Donald M., to Sensors, Inc. D.C. electronic apparatus for IR radiation temperature measurement. 3,777,568, Cl. 73-355.0em.

Ritchey, Harold W., to Thiokol Chemical Corporation. Firearm and cartridge therefor. 3,777,387, Cl. 42-84.000.

Ritchie, John K. Dental silver retrieval apparatus. 3,777,403, Cl. 32-33.000.

Ritter, Wolfgang: *See—*
Bockmann, August; Trenczek, Gerhard; Rudolph, Hans; Wiegreffe, Wolfgang; and Ritter, Wolfgang, 3,778,289.

Rivas, Dayton F. Dual replaceable holesaw bit. 3,778,179, Cl. 408-206.000.

Rively, Clair M.: *See—*
Petro, James; and Rively, Clair M., 3,778,664.

Rix, Albert; Werner, Georg; and Euchs, Hans, to Olympia Werke AG. Type action drive. 3,777,869, Cl. 197-17.000.

Rixson Inc.: *See—*
Coulter, Gordon L.; and Pearsall, Duane D., 3,777,423.

Riza, Warren D. Motor driven golf cart. 3,777,836, Cl. 180-260.000.

Rizzi, Peter A., to Alpha Industries, Inc. Filter-type digital diode phase shifter. 3,778,733, Cl. 333-31.00r.

Robbins, Dewey H.: *See—*
Fisher, Glen W.; Robbins, Dewey H.; Evans, Victor J.; and Davidson, Gene E., 3,778,521.

Robbins, Harry, to Bell & Howell Company. Iron containing ferromagnetic chromium oxide. 3,778,373, Cl. 252-62.560.

Robershaw Controls Company: *See—*
Katchka, Jay R., 3,777,777.

Roberts, Harold Devere. Denture support frame with ramus implant for molar area of lower jaw. 3,777,402, Cl. 32-10.00a.

Robertson, Gordon Ian, to Western Electric Company, Incorporated. Mechanical scan system for ion implantation. 3,778,626, Cl. 250-492.000.

Robertson, H. H., Company: *See—*
Tischuk, Walter, 3,777,430.

Robertson Paper Box Co., Inc.: *See—*
Hackenberg, Robert A., 3,777,883.

Robinson, Edgar A., to Palmer Paint Products, Inc. Water color set and teaching aid. 3,777,414, Cl. 35-28.500.

Robinson, Frank: *See—*
Betts, Max William; and Robinson, Frank, 3,777,511.

Robinson, John Wesley, to Telattach, Inc. Interactive display and viewer response apparatus and method. 3,777,410, Cl. 35-9.00b.

Rockel, Lee A. Punch unit. 3,777,399, Cl. 30-361.000.

Rocker, Elmer: *See—*
Blazey, Lawrence; Silverstrom, David; and Rocker, Elmer, 3,777,673.

Rocket Research Corporation: *See—*
Sutherland, George S.; and Hoskins, Randel L., 3,778,084.

Rockwell International Corporation: *See—*
Anderson, Douglas W., 3,777,787.
Hardy, Walter N., 3,778,837.
McElwain, John C., 3,777,510.
Schaefer, Daniel F., 3,778,723.
Yosim, Samuel J.; Grantham, Le Roy F.; and Huber, Donald A., 3,778,320.

Roda, Emilio, to Fratelli Roda S.A. Panel inserting apparatus for beehive partition assembly. 3,777,630, Cl. 93-37.00r.

Roerty, Dennis F.; and MacIndoe, Robert C., to Westinghouse Electric Corporation. Linear scale measuring instrument having preassembled coil support frame. 3,778,712, Cl. 324-151.000.

Roger, Joseph, to Thomson-CSF. Radar system for detecting low-flying objects. 3,778,824, Cl. 343-7.00a.

Rogers, Arthur L., to Johnson Stamping and Fine-Blanking Company. Snowmobile wheel support combination. 3,777,829, Cl. 180-5.00r.

Rogers, Kenneth J.: *See—*
Baccaglini, Russell C.; and Rogers, Kenneth J., 3,777,692.

Rogerson, Jerry B., to Ford Motor Company. Fuel vapor-loss control valve. 3,778,024, Cl. 251-63.000.

Rogove, Harry; and Rogove, Roslyn, to Remember When Sweet Shoppe, Inc. Cart. 3,778,099, Cl. 296-21.000.

Rogove, Roslyn: *See—*
Rogove, Harry; and Rogove, Roslyn, 3,778,099.

Rohe, Gerald Edward: *See—*
Huelsman, Gregory J.; Bell, Robert E.; and Rohe, Gerald Edward, 3,778,395.

Rohrbaugh, George W.; and Bamser, Frank G., Jr., to HRB-Singer, Inc. Automatic gunnery shock wave scoring apparatus using metallic conductors as shock wave sensors. 3,778,059, Cl. 273-102.20s.

Roland, Murray C.: *See—*
Ririe, Max H.; Roland, Murray C.; and Olson, Rich, 3,777,979.

Roller, Kent G.; Ahlborn, George H.; and Brown, Richard E., to Ball Brothers Research Corporation. Magnetic storage device coating and process. 3,778,308, Cl. 117-234.000.

Rollins, Garland N., to United States of America, National Aeronautics and Space Administration. System for calibrating pressure transducer. 3,777,546, Cl. 73-4.00r.

Romano, Aldo, to Ates Componenti Elettronici S.p.A. Integrated voltage stabilizer with negative internal resistance. 3,778,698, Cl. 323-4.000.

Rood, Alvin A.; Hogstrom, Edwin F.; and Stumphauzer, William C., to Nordson Corporation. Method of striping the inside seams of cans. 3,778,292, Cl. 117-43.000.

Roos, Ernst: *See—*
Oertel, Harald; Roos, Ernst; and Ley, Kurt, 3,778,409.
Schubart, Rudiger; Eholzer, Ulrich; Kempermann, Theo; and Roos, Ernst, 3,778,419.

Roos, Leo, to Du Pont de Nemours, E. I., and Company. Photosensitive bis-diazonium salts compositions and elements. 3,778,270, Cl. 96-75.000.

Rosano, Henri L.; and Gerbacia, William E., to Allied Chemical Corporation. Fluorocarbon microemulsions. 3,778,381, Cl. 252-311.000.

Rose, Harry J. Archery bow and quiver. 3,777,734, Cl. 124-24.00a.

Rosen, Milton K.: *See—*
Farber, Elliott; Rosen, Milton K.; and Shah, Ashok C., 3,778,422.

Rosenburgh, Norman J., to Eastman Kodak Company. Information carrier selection system. 3,778,599, Cl. 235-61.12r.

Roseveare, Ronald Newman: *See—*
Wyeth, Nathaniel Convers; and Roseveare, Ronald Newman, 3,778,214.

Rosov, Robert J., to Oregon Research Institute. Automatic bacterial specimen streaker. 3,778,351, Cl. 195-127.000.

Ross, Wesley J.: *See—*
Canale, Raymond P.; and Ross, Wesley J., 3,777,482.

Roth, Miles I., to Marlin Firearms Co., The. Apparatus for and method of registering firearm serial numbers. 3,778,781, Cl. 340-172.500.

Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an arylsulfonamidopyridine intumescent agent. 3,778,303, Cl. 117-136.000.

Rothacker, Francis N.; and Bujese, David P., to Copy Research Corporation. Electrostatic copying machine. 3,778,690, Cl. 317-262.00a.

Rouchy, Maurice Georges. Sodium tetracycline-methylene-sulfomethoxy pyridazine propane-sulfonate as an antibacterial agent. 3,778,503, Cl. 424-227.000.

Rouse, John E.: *See—*
Hughes, Robert L.; and Rouse, John E., 3,777,985.

Roussel-UCLAF: *See—*
Clemence, Francois; and Le Martret, Odile, 3,778,504.

Routh, Esse Edgar, Jr. Wire cutting tool. 3,777,398, Cl. 30-124.000.

Rowley, Robert: *See—*
Hartley, Michael Augustine; and Rowley, Robert, 3,777,890.

Rubio, Alfred M.: *See—*
Chaffee, William H.; Rubio, Alfred M.; and Lorenz, Richard L., 3,777,613.

Rubner, Hugo G., to Briggs & Stratton Corporation. Closure for cylinder lock mechanism. 3,777,522, Cl. 70-455.000.

Rudolph, Hans: *See—*
Bockmann, August; Trenczek, Gerhard; Rudolph, Hans; Wiegreffe, Wolfgang; and Ritter, Wolfgang, 3,778,289.

Ruger, William B.; and Larson, Lawrence L., to Sturm, Ruger & Co., Inc. Mechanism for single action firearm. 3,777,384, Cl. 42-66.000.

Ruiten, Donald E.; and Davis, Richard A., to P&D Mfg. Co., Inc. Silage guide. 3,777,790, Cl. 141-392.000.

Runge, Richard J., to Chevron Research Company. Method of ultra long spaced electric logging of a well bore to detect horizontally disposed geologically anomalous bodies in the vicinity of massive vertically disposed geologically anomalous bodies lateral t and not intercepted by the well bore. 3,778,701, Cl. 324-10.000.

Rupp, Bruce A.: *See—*
Bhagawan, Venkatesha S.; Jones, Richard A.; McDowell, Allen W.; Mine, George D.; Remsburger, Louis J.; Rupp, Bruce A.; and Whittaker, Rodney R., 3,778,819.

Russo, Ronald D.: *See—*
Smyers, William H., Jr.; and Russo, Ronald D., 3,777,596.

Ruuska, Manuno: *See—*
Merenheimo, Markku; Ruuska, Manuno; and Saivisalmi, Risio, 3,777,832.

Rybap, Vaclav: *See—*
Mach, Jan; and Rybap, Vaclav, 3,777,717.

Ryburn, Kenneth D.; McClone, Robert J.; and Fox, Charles H., to Westinghouse Air Brake Company. Pneumatic brake system. 3,778,115, Cl. 303-3.000.

S. & S. Industries, Inc.: *See—*
Schwartz, Herbert L., 3,777,763.

SA Francois Salomon & Fils: *See—*
Salomon, Georges Pierre Joseph, 3,778,072.

Saab-Scania Aktiebolag: *See—*
Samuelsson, Mokjas Erik Samuel; Samuelsson, Mokjas Jonas; and Degerman, Karl Johan Olov, 3,777,537.

Sabin, Raymond H.: *See—*
Cheek, Edward E.; and Sabin, Raymond H., 3,777,914.

Safety Research and Development Inc.: *See—*
Johns, Raymond; and Kuhns, David G., 3,778,763.

Sagusa, Hisayuki: *See—*
Arikawa, Yoshijiro; Takeuchi, Seiji; and Sagusa, Hisayuki, 3,778,230.

Sahara, Masayoshi: *See—*
Yata, Kotaro; Nanba, Yasuhiro; and Sahara, Masayoshi, 3,777,638.

Saint-Gobain Industries: *See—*
Nedelec, Maruice; and Petitcollin, Jean-Marc, 3,778,244.

Saint-Martin, Liliane, to Societe Civile de Recherches et d'Etudes Therapeutiques. Lithium salt based pharmaceutical composition and methods of use. 3,778,505, Cl. 424-317.000.

Saito, Eisuro, to Sony Corporation. Printer. 3,778,842, Cl. 346-136.000.

Saitoh, Torahiko: *See—*
Iizuka, Toru; Ionooka, Katsuo; Saitoh, Torahiko; and Yasuda, Isao, 3,778,590.

Saivisalmi, Risio: *See—*
Merenheimo, Markku; Ruuska, Manuno; and Saivisalmi, Risio, 3,777,832.

Sakai, Shozi: *See—*
Matsui, Isamo; Sakai, Shozi; and Nishiyama, Masanobu, 3,777,932.

Sakai, Takeyo: *See—*
Matsuda, Kazuo; Tanaka, Yoshiaki; and Sakai, Takeyo, 3,778,480.

Sakamoto, Yoichi, to Matsushita Electric Industrial Co., Ltd. Channel selection system. 3,778,736, Cl. 334-15.000.

Sakata, Minehiro: *See—*
Kobayashi, Akira; Sugano, Tadashi; Koike, Toshio; and Sakata, Minehiro, 3,778,622.

Sakurai, Hiroshi: *See—*
Yano, Seinosuke; Sakurai, Hiroshi; Wakita, Nobuo; and Mimura, Hiroshi, 3,778,317.

Salco, Inc.: *See—*
Thompson, Ralph F., 3,777,988.

Sallman, Alfred; and Pfister, Rudolf. Chemical intermediates for the production of substituted-anilinophenylacetic acids and esters. 3,778,470, Cl. 260-518.00r.

Salomon, Georges Pierre Joseph, to SA Francois Salomon & Fils. Security bindings for skis. 3,778,072, Cl. 280-11.35n.

Salomon, Georges Pierre Joseph. Ski binding. 3,778,073, Cl. 280-11.35t.

Samalon, Eugene J.; Lamb, Gilbert C., Jr.; and Lentz, Ervin C., to Tenneco Inc. Automatic oil level regulator. 3,777,852, Cl. 184-103.00r.
Samuel, Thevor, to Sangamo Electric Company. Damping clutch for indicating meter. 3,778,711, Cl. 324-125.000.
Samuelsson, Mokjas Erik Samuel; Samuelsson, Mokjas Jonas; and Degerman, Karl Johan Olov, to Saab-Scania Aktiebolag. Vehicle frame and body straightening devices. 3,777,537, Cl. 72-404.000.
Samuelsson, Mokjas Jonas: *See—*
Samuelsson, Mokjas Erik Samuel; Samuelsson, Mokjas Jonas; and Degerman, Karl Johan Olov, 3,777,537.
San Saba Development Association: *See—*
Ellis, Sloan E., 3,777,327.
Sanders Associates, Inc.: *See—*
Schmitt, Joseph W.; and Starkey, Donald L., 3,778,606.
Sanderson, Frank T.: *See—*
Burns, Joseph P.; Feltzin, Joseph; and Sanderson, Frank T., 3,778,408.
Sandoz-Wander, Inc.: *See—*
Coombs, Robert V., 3,778,434.
Simpson, William R. J., 3,778,438.
Simpson, William R. J., 3,778,440.
Sandvik Aktiebolag: *See—*
Faber, Kurt Heinrich Albert Erich, 3,777,341.
Sanelli, Edward T.: *See—*
Moen, Raymond S.; and Sanelli, Edward T., 3,778,211.
Sangamo Electric Company: *See—*
Samuel, Thevor, 3,778,711.
Sankyo Kasei Company, Limited: *See—*
Nakamura, Yoshiro; Umehara, Akira; and Yanaba, Itsuyo, 3,778,368.
Sanner, Axel: *See—*
Krauch, Carl Heinrich; and Sanner, Axel, 3,778,294.
Sant'Anselmo, Robert. Reinforcing patch. 3,777,378, Cl. 40-27.000.
Sanz, Manuel C.: *See—*
Prost, Jean-Louis; and Sanz, Manuel C., 3,778,790.
Sarbacher, Robert I., to Boque, John C. Emergency starting power for engines. 3,778,632, Cl. 290-50.000.
Sargent, Walter W. Convertible horseshoe pit. 3,778,061, Cl. 273-104.000.
Sartori, Rolland, to Ateliers de Constructions. Yarn guide reciprocating apparatus. 3,777,581, Cl. 74-110.000.
Sasaki, Ryoichi; Hataya, Humio; Fukui, Yutake; and Kashimura, Tetsuo, to Hitachi, Ltd. Heat-resistant alloy for a combustion liner of a gas turbine. 3,778,256, Cl. 75-134.00f.
Sasse, Frederick H.: *See—*
Kubli, Robert A.; Sasse, Frederick H.; Uttrachi, Gerald D.; Van Dyke, Le Roy L.; and Nakabayashi, Masahiro, 3,778,587.
Sato, Hisatake: *See—*
Hayashi, Hideo; Sato, Hisatake; and Oshima, Akio, 3,778,421.
Sato, Kazuo; Hisatsune, Tomio; and Izawa, Minoru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle safety device. 3,778,823, Cl. 343-7.0e.
Sato, Masamichi; Takimoto, Masaaki; Takahashi, Isoji; and Komaki, Takao, to Fuji Photo Film Co., Ltd. Charging method of electrophotographic materials. 3,778,623, Cl. 250-325.000.
Satoo, Yuukoo: *See—*
Suzuki, Isamu; Ohmura, Jukichi; and Satoo, Yuukoo, 3,777,470.
Saveliev, Vyacheslav Ivanovich: *See—*
Alexandrov, Alexandr Sergeevich; Schegolevatykh, Vadim Dmitrievich; Saveliev, Vyacheslav Ivanovich; and Zakharov, Mikahil Fedorovich, 3,777,544.
Savornin, Jacques, to Commissariat a l'Energie Atomique. Protective clothing unit for conducting work in a deleterious atmosphere. 3,777,750, Cl. 128-147.500.
Sawada, Hiraki, to Nissan Motor Company, Limited. Rotary internal combustion engine of the trochoidal type. 3,777,721, Cl. 123-8.450.
Scania Dental AB: *See—*
Lohr, Torbjorn, 3,777,756.
Scanlan, John J., to Remington Arms Company, Inc. Obturator for firearm adapted to fire caseless or expendable ammunition. 3,777,614, Cl. 89-26.000.
Schade, John Alan; and Levy, Hans, to A.C. Manufacturing Company. Humidifier for environmental control system. 3,778,042, Cl. 261-105.000.
Schaefer, Daniel F., to Rockwell International Corporation. Zero degree phase comparator. 3,778,723, Cl. 328-133.000.
Schaefer, Langdon C.; and Thomas, Roland C., to Emerson Electric Company. Air breather fitting for reservoirs. 3,777,848, Cl. 184-1.00c.
Schapf, Walter G. Static-charge resistant synthetic yarns. 3,778,331, Cl. 161-67.000.
Scharp, Gerson, to Computer Sciences Corporation. Bearing detection system. 3,778,835, Cl. 343-113.000.
Schegolevatykh, Vadim Dmitrievich: *See—*
Alexandrov, Alexandr Sergeevich; Schegolevatykh, Vadim Dmitrievich; Saveliev, Vyacheslav Ivanovich; and Zakharov, Mikahil Fedorovich, 3,777,544.
Schein, Edward W.: *See—*
Selden, Robert W.; and Schein, Edward W., 3,777,434.
Schell, Donald H.: *See—*
Bustamante, Santiago J.; and Schell, Donald H., 3,778,217.
Scherber, Werner. Method of manufacturing a field effect transistor. 3,777,363, Cl. 29-571.000.
Schering AG: *See—*
Dahms, Wolfgang; and Todt, Hans-Gunther, 3,778,357.
Schering Corporation: *See—*
Herbine, Richard H.; and Morrison, David J., 3,777,447.
Schibler, Luzius; and Harris, Melvin, to Ciba-Geigy AG. Process for the encapsulation of substances which are finely distributed in a liquid, and capsule compositions produced thereby. 3,778,383, Cl. 252-316.000.
Schiefer, Richard B.: *See—*
Dibelius, Norman R.; and Schiefer, Richard B., 3,777,484.
Schieser, Warren J.; and Vickers, Stanley E., to Corco, Inc. Machine for removal of bottles from shipper bags and placement thereof on a conveyor. 3,777,913, Cl. 214-8.50d.
Schieving, Dick: *See—*
Hagendoorn, Johan Gerard; and Schieving, Dick, 3,778,770.
Schiff, Norman: *See—*
Mesek, Frederick K.; Shepherd, Robert C.; Strickel, William R.; Liloia, Gerald J.; May, Louis F., Jr.; and Schiff, Norman, 3,777,758.
Schiller, Jacob D.; Cheslik, Scott L.; and Gonzales, J. Tim, to Mallory, P. R., & Co., Inc. Material working machine. 3,778,582, Cl. 219-87.000.
Schinella, Richard D.; and Herndon, William H., to Fairchild Camera and Instrument Corporation. Methods for forming metal/metal silicide semiconductor device interconnect system. 3,777,364, Cl. 29-578.000.
Schlegel, Richard: *See—*
Biller, Efim; Goller, Roman; Pflugk, Hellmuth; and Schlegel, Richard, 3,778,481.
Schloemann Aktiengesellschaft: *See—*
Priebe, Fritz, 3,777,539.
Schlumberger Technology Corporation: *See—*
Guignard, Jean-Hubert, 3,777,560.
Schmedes, Helga; Hansen, Paul; and Welz, Bernhard, to Bodenseewerk Perkin-Elmer & Co., G.m.b.H. Heated sample cell. 3,778,156, Cl. 356-244.000.
Schmidt, Felix Helmut: *See—*
Bergmeyer, Hans Ulrich; Bernt, Erich; Gruber, Wolfgang; Schmidt, Felix Helmut; and Stork, Harald, 3,778,350.
Schmidt, Gerald W.: *See—*
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., 3,778,053.
Schmidt, John, Jr., to Littelfuse, Inc. In-line fuse holder assembly. 3,778,741, Cl. 337-201.000.
Schmidt, William G.; Gabbard, Ova G.; Hosted, John M.; and Maillet, Wilfrid G., to Communications Satellite Corporation. TDMA satellite communications system with rapid automatic re-entry following brief outages of earth station equipment. 3,778,715, Cl. 35-2.000.
Schmitt, Jerry C., to King Radio Corporation. Area navigation computer and solid state filter. 3,778,602, Cl. 235-150.260.
Schmitt, Joseph W.; and Starkey, Donald L., to Sanders Associates, Inc. Continuously updating fourier coefficients every sampling interval. 3,778,606, Cl. 235-156.000.
Schneider, Felix, to Rheinstahl AG. Railway car suspension. 3,777,672, Cl. 105-453.000.
Schneider, Jos., & Co., Optische Werke: *See—*
Holderbaum, Karl-Heinz, 3,777,640.
Schoenman, Leonard: *See—*
Luscher, Werner P.; and Schoenman, Leonard, 3,778,183.
Schofield, Edward F., to Dusenberg, John, Company, Inc. Cutting wheel for slitting machines. 3,777,607, Cl. 83-482.000.
Scholten, Johannes Hermanus Maria, to U.S. Philips Corporation. Keyboard with roll-over feature. 3,778,818, Cl. 340-365.00e.
Schott, Herbert: *See—*
Greber, Gerd; and Schott, Herbert, 3,778,393.
Schreiber, Kenneth T.: *See—*
Novak, Frank A.; Schreiber, Kenneth T.; and Hydo, Steven J., 3,778,628.
Schreier, Josef; and Klimeck, Hugo, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H. Scraper flight conveyor. 3,777,876, Cl. 198-171.000.
Schroder, Jurgen; Ochel, Gunter; and Von Horsten, Hans-Joachim, to U.S. Philips Corporation. Transmission arrangement. 3,778,549, Cl. 178-68.000.
Schroter, Herbert: *See—*
Dennhardt, Werner; and Schroter, Herbert, 3,778,154.
Schubart, Rudiger; Eholzer, Ulrich; Kempermann, Theo; and Roos, Ernst, to Bayer Aktiengesellschaft. Vulcanization process with S,S'-carbonyl-bis-dialkydithio-phosphate. 3,778,419, Cl. 260-79.50b.
Schulte-Elte, Karl-Heinrich: *See—*
Becker, Joseph J.; Schulte-Elte, Karl-Heinrich; and Ohloff, Gunther, 3,778,483.
Schultheiss, Paul C., to Stanley Works, The. In-header hydraulic operator. 3,777,620, Cl. 91-394.000.
Schurenberg, Rudi; and Wenzel, Heinz-Eckard, to Torkret GmbH. Pump construction. 3,777,626, Cl. 92-137.000.
Schuster, Gregor: *See—*
Stumpp, Gerhard; and Schuster, Gregor, 3,777,725.
Schwaller, Bernard L. Compressor valve assembly. 3,777,779, Cl. 137-512.300.
Schwartz, Herbert L., to S. & S. Industries, Inc. Angled breast supporting frames. 3,777,763, Cl. 128-476.000.
Schwartz, Louis E. Tape cassette holder. 3,777,881, Cl. 206-1.00r.
Schwartz, Robert; and Goldberg, Morris. Cephalometric device. 3,778,625, Cl. 250-444.000.
Schwarz, Michael: *See—*
Nikowitz, Johann; and Schwarz, Michael, 3,777,938.

Schwarzkoff, August, to Windmoller & Holscher. Handle-type carrying bag made of plastics material sheeting. 3,777,970, Cl. 229-54.00r.
Schweizerische Industrie-Gesellschaft: *See—*
Blochlinger, Ernst, 3,777,670.
Schwenker, David G.: *See—*
Buice, Joel B.; and Schwenker, David G., 3,778,683.
Scigliano, Josef, to Gabor, Eva, International, Ltd. Wefted hair structure and method of construction. 3,777,768, Cl. 132-53.000.
Sciola, Joseph; and Nagy, Gabor, to Super Chuck Company, Inc. Safety drive chuck. 3,777,999, Cl. 242-68.400.
SCM (Canada) Ltd.: *See—*
McDonald, Gordon D., 3,777,794.
SCM Corporation: *See—*
Hamby, Clayton B., Jr., 3,778,486.
Zeamer, Aaron C., 3,777,871.
Scott, Harold C. Alternating current machine armature. 3,778,653, Cl. 310-144.000.
Scott, O. M., & Sons Company, The: *See—*
Timmons, Richard J.; and Gallant, William E., 3,778,445.
Scott Paper Company: *See—*
Adams, Whitney R., 3,778,336.
Scott Paper Company, mesne: *See—*
Birckhead, Lennox, 3,777,874.
Scroggins, Robert R.: *See—*
Weaver, Clarence W.; and Scroggins, Robert R., 3,777,820.
Sear, Baruch: *See—*
Shwayder, Warren M.; and Sear, Baruch, 3,777,517.
Searle, G. D., & Co., mesne: *See—*
Abramson, Harvey J., 3,777,748.
Searle, John Gilbert; and Hunt, David John, to Allwood, Searle & Timney Limited. Friction welding apparatus. 3,777,967, Cl. 228-2.000.
Sease, John D.; and Harrington, Francis E., to United States of America, Atomic Energy Commission. Nuclear fuel element with axially aligned fuel pellets and fuel microspheres therein. 3,778,348, Cl. 176-67.000.
Seaton-Wilson, Incorporated: *See—*
Magorien, Vincent G., 3,778,092.
Security Technology Corporation: *See—*
Crepinsek, Alois, 3,777,520.
Seib, Kenneth L.: *See—*
MacNeill, John H.; Bellinger, James E.; Lidkea, Harrison B.; and Seib, Kenneth L., 3,777,417.
Seider, Myron A.: *See—*
Cutler, Norman W.; Pasieka, John F.; and Seider, Myron A., 3,777,645.
Seiken Kogyo Kabushiki Kaisha: *See—*
Nagayama, Kazuo, 3,777,352.
Selden, Robert W.; and Schein, Edward W., to Weyerhaeuser Company. Connector. 3,777,434, Cl. 52-753.000.
Selenke, Albert A. Adjustable support. 3,778,013, Cl. 248-221.000.
Selin, Terry G.: *See—*
Berger, Abe; and Selin, Terry G., 3,778,459.
Seney, John Seymour, to Du Pont de Nemours, E. I., and Company. Apparatus for monitoring and controlling tension in an advancing flexible elongate material. 3,777,959, Cl. 226-25.000.
Sensors, Inc.: *See—*
Risgin, Ojars; and Szeles, Donald M., 3,777,568.
Sentinel Bag and Paper Co., Inc.: *See—*
Kaplan, Milton, 3,777,328.
Serres, Carl, Jr.; and Bolton, Benjamin A., to Standard Oil Company. Polyamide-imide composition containing p-toluene sulfonic acid as stripping agent. 3,778,417, Cl. 260-978.9tf.
Settle, Ralph A.: *See—*
Papay, Charles J.; and Settle, Ralph A., 3,777,554.
Seventrees, Ltd.: *See—*
Theodore, Paris, 3,777,952.
Theodore, Paris, 3,777,954.
Sgombick, John: *See—*
Lawlor, John E.; and Sgombick, John, 3,777,412.
Shah, Ashok C.: *See—*
Farber, Elliott; Rosen, Milton K.; and Shah, Ashok C., 3,778,422.
Shahbender, Rabah A., to RCA Corporation. Method of making a magnetic recording head. 3,777,369, Cl. 29-603.000.
Shanahan, Vincent J.: *See—*
Lutes, Kenneth V.; Lander, James E.; Shanahan, Vincent J.; and Mills, Richard G., 3,777,678.
Shanbrom, Edward: *See—*
Bishop, Robert C.; Fekete, Lajos F.; and Shanbrom, Edward, 3,778,352.
Shapiro, Henry C.: *See—*
Mand, Emery M.; and Shapiro, Henry C., 3,778,337.
Shapiro, Stanley: *See—*
Goldman, Alan J.; and Shapiro, Stanley, 3,778,236.
Tyler, Derek E.; and Shapiro, Stanley, 3,778,238.
Shapiro, Stanley; Tyler, Derek E.; and Pryor, Michael J., to Olin Corporation. Plated copper base alloy article. 3,778,237, Cl. 29-199.000.
Shappe, James F., to Acme Highway Products Corporation. Strip inserting apparatus. 3,777,353, Cl. 29-235.000.
Sharp, David E.: *See—*
Sharp, James G.; and Sharp, David E., 3,777,462.
Sharp, James G.; and Sharp, David E. Fruit harvester. 3,777,462, Cl. 56-328.000.
Sharp, Richard A.; Gille, John P.; and McGrew, Jay L., to Martin Marietta Corporation. Capillary insulation. 3,777,501, Cl. 62-45.000.
Shaver, William R.: *See—*
Miller, Roy W.; Stark, Marvin; and Shaver, William R., 3,777,671.
Shaw, Elliott N., to Polaroid Corporation. Photographic element comprising a gelatin aqueous composition containing a halomethyl ketone of benzyloxycarbonylphenylalanine. 3,778,276, Cl. 96-94.00r.
Shaw, Milton C. Segmented griding wheel. 3,777,443, Cl. 51-206.500.
Shaw, Richard Dudley. Compacting refractory particles having a surface coating of gelled silica. 3,778,493, Cl. 264-63.000.
Shearing, Herbert Jackson, to Imperial Chemical Industries Limited. Decorative flooring surfaces. 3,778,290, Cl. 117-8.000.
Sheehan, John T.: *See—*
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,778,429.
Shell Oil Company: *See—*
Edinborgh, Julius A., 3,778,552.
Spaargaren, Klaas; and Snoeks, Jan, 3,778,725.
Shemack, John Lindsay: *See—*
Moyldew, Oraham Edward; and Shemack, John Lindsay, 3,777,855.
Shendure, Ashok S., to Crawford Fitting Company. Double ended shut off coupling. 3,777,782, Cl. 137-614.020.
Shepherd, Robert C.: *See—*
Mesek, Frederick K.; Shepherd, Robert C.; Strickel, William R.; Liloia, Gerald J.; May, Louis F., Jr.; and Schiff, Norman, 3,777,758.
Sheridan, David S. Post operative drainage tubes with suture strip and method of use. 3,777,761, Cl. 128-350.00r.
Sherman, Vladimir Efimovich; Dubonosov, Georgy Viktorovich; Portnov, Sergei Fedorovich; Fedotov, Jury Alexeevich; Grinberg, Yakov Zeemanovich; Soloviev, Nikodim Nikiforovich; Pavlov, Viktor Grigorievich; and Dmitriev, Efim Fedorovich. Working stand of multstrand roller cold-tube and pipe rolling mill. 3,777,534, Cl. 72-208.000.
Sherwood, Kenneth C., to Kae-Tee Development Corporation. Game apparatus. 3,778,062, Cl. 273-121.00a.
Shibata, Haruo: *See—*
Kamiya, Shigeru; and Shibata, Haruo, 3,778,660.
Shichijo, Yuzo; Asano, Gyoichi; and Takama, Eizo. Process for producing ferrites. 3,778,374, Cl. 252-62.620.
Shiga, Akio; and Ishida, Kengo, to Kyowa Hakko Kogyo Co. Ltd. Process for preparing meat extract-like seasoning. 3,778,513, Cl. 426-7.000.
Shimabara, Tatsutoshi: *See—*
Takenaka, Shigeo; Kido, Yasuji; Shimabara, Tatsutoshi; and Ogawa, Masanobu, 3,778,386.
Shimizu, Hakuichi: *See—*
Hayashi, Yukitaka; Osawa, Akira; Shimizu, Hakuichi; and Hamada, Nagaharu, 3,778,793.
Shimizu, Kunio: *See—*
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,778,325.
Shimizu, Monetaka, to Kabushiki Kaisha Koparu. Electronic shutter for photographic camera. 3,777,646, Cl. 95-53.0eb.
Shimizu, Sakae: *See—*
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,263.
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,264.
Shimizu, Tetsuji: *See—*
Sugita, Kenichiro; Shimizu, Tetsuji; Ueno, Sinichi; and Muraoka, Tateki, 3,777,738.
Shimodaira, Saburo: *See—*
Ototani, Tohei; Shimodaira, Saburo; and Kataura, Yasuzi, 3,778,255.
Shimura, Yoshihiro, to Rigaku Denki Company, Limited. Rotary shaft air-tightly fitting device. 3,778,070, Cl. 277-58.000.
Shindel, Gustave A.: *See—*
Starr, Anthony J.; Shindel, Gustave A.; and Keith, Harry G., Jr., 3,778,215.
Shinko Electric Co., Ltd.: *See—*
Aiko, Hideo; Okamoto, Takao; Abe, Eiji; Tsukihashi, Kazunobu; and Yamashita, Koichi, 3,777,661.
Shirai, Hiroshi: *See—*
Kanetake, Norio; and Shirai, Hiroshi, 3,778,298.
Shiraishi, Minoru: *See—*
Yamanoto, Akira; Yoshida, Dan; Onaka, Tatsumi; and Shiraishi, Minoru, 3,777,440.
Shlosinger, Arnold P., to TRW Inc. Heat pipe with dual working fluids. 3,777,811, Cl. 165-105.000.
Shore, John D.: *See—*
Rennick, Lyle V.; Shore, John D.; Mitchael, William L.; Weiss, Ronald B.; and Almich, Clarence L., 3,777,559.
Shorrock, Shanley. Process for making tufted carpet. 3,778,330, Cl. 161-67.000.
Shove, Gordon William: *See—*
Anderson, Harold Francis; Shove, Gordon William; Morin, Louis George; and Gackstetter, Henry Clinton, 3,778,576.
Shuman, Joseph G. Enuresis bed pad. 3,778,570, Cl. 200-61.050.
Shutes, Emmett B.: *See—*

Gostavson, Carl A.; Shutes, Emmett B.; and Wuenschel, Paul C., 3,777,814.
Shwayder, Warren M.: *See—*
Shwayder, Warren M.; and Sear, Baruch, 3,777,517.
Shwayder, Warren M.; and Sear, Baruch, to Shwayder, Warren M. Saw and impact resistant lock shackle. 3,777,517, Cl. 70-53.000.
Siebol, George; and Rippy, Dorian F. Hydraulic-operated lockbolt fastener setting tool. 3,777,540, Cl. 72-391.000.
Siemag Siegener Maschinenbau GmbH: *See—*
Kopf, Gerhard; and Muller, Adolf, 3,777,608.
Siemens Aktiengesellschaft: *See—*
Bayati, Abutorab, 3,778,812.
Leistner, Werner, 3,778,647.
Pfister, Hans; and Diepers, Heinrich, 3,777,368.
Poppinger, Herbert; and Huber, Klaus, 3,778,691.
Silva, Antonio V.: *See—*
Danehy, Robert P.; Kitchell, Bruce N.; and Silva, Antonio V., 3,777,524.
Silver, Gary L.: *See—*
Deaton, Ronald L.; and Silver, Gary L., 3,778,497.
Silverberg, Norton, to Xerox Corporation. Output keyboard apparatus and signal translating methods therefor. 3,778,817, Cl. 340-365.00c.
Silverstone, Calvin Eric, to British Leyland Truck and Bus Division Limited. Method of making regenerative heat-exchanger seals. 3,778,293, Cl. 117-93.1pf.
Silverstrom, David: *See—*
Blazey, Lawrence; Silverstrom, David; and Rocker, Elmer, 3,777,673.
Simjian, Luther G. Exercise and massaging apparatus. 3,777,745, Cl. 128-57.000.
Simon Engineering Dudley Limited: *See—*
Ashworth, Denis Henry, 3,777,845.
Simon-Hartley Limited: *See—*
Hartley, Michael Augustine; and Rowley, Robert, 3,777,890.
Simonetti, Sergio, to Warner-Lambert Company. Cartridges having tandemly mounted cutting edges on two sides thereof. 3,777,396, Cl. 30-32.000.
Simpson, Henry George: *See—*
Cude, Arthur Leslie; and Simpson, Henry George, 3,777,821.
Simpson, James H., Jr.: *See—*
Bayley, Donald S.; Greenwood, Ivan A., Jr.; and Simpson, James H., Jr., 3,778,700.
Simpson, William R. J., to Sandoz-Wander Inc. 4-Amino-isoxazolo(5,4-d)pyrimidines and nitrates thereof. 3,778,438, Cl. 260-256.40f.
Simpson, William R. J., to Sandoz-Wander, Inc. 1-Substituted amino-isoquinolines and nitrates thereof. 3,778,440, Cl. 260-288.00r.
Sindermann, Siegmar, to Holstein & Kappert Maschinenfabrik Phonix GmbH. Method and apparatus for applying closures to containers. 3,777,449, Cl. 53-43.000.
Singer Company, The: *See—*
Fromknecht, Charles Thomas; and Davis, John C., 3,778,577.
Hage, Joseph C., 3,777,686.
Hendler, Harvey S.; Albert, William C.; and Evans, John, 3,778,123.
Ragen, Robert A., 3,778,778.
Trzeciak, John R., 3,778,546.
Williams, Arthur B., 3,778,727.
Singer-General Precision, Inc.: *See—*
Bayley, Donald S.; Greenwood, Ivan A., Jr.; and Simpson, James H., Jr., 3,778,700.
Sirantoine, Albert, to CEFILAC. Method of hot piercing metal billets. 3,777,528, Cl. 72-41.000.
Sirota, Julius: *See—*
Fazioli, Chris T.; Sirota, Julius; and Weidener, Richard A., 3,778,399.
Sjoberg, Berndt Olof Harald: *See—*
Gronowitz, Salo Schmul; Michael, Uri; and Sjoberg, Berndt Olof Harald, 3,778,463.
Skistimas, Donald V.: *See—*
Plummer, Charles H.; and Skistimas, Donald V., 3,778,341.
Skogsdon Aktiebolag: *See—*
Ehander, Per Henry, 3,778,031.
Slater, Charles A., Jr.: *See—*
Gernhardt, Paul D.; and Slater, Charles A., Jr., 3,778,016.
Sloan Valve Company: *See—*
Billester, Henry R., 3,778,023.
Slough, Ronald S.; and Jones, Robert D., to Fairfield Engineering and Manufacruting Co. Apparatus for liquid composing. 3,778,233, Cl. 23-259.100.
Smearing, Robert W., to General Electric Company. Electrical insulation. 3,778,536, Cl. 174-121.0sr.
Smith, Jay, III; Schmidt, Gerald W.; and Jones, Lawrence T., to California R & D Center. Musical jump rope. 3,778,053, Cl. 272-75.000.
Smith, Leward N. Suction dredge with brush cutting attachment. 3,777,375, Cl. 37-67.000.
Smith, Mary Kay Hrneir: *See—*
Feuberbacher, David George; and Smith, Mary Kay Hrneir, 3,777,818.
Feuerbacher, David George; and Smith, Mary Kay Hrneir, 3,777,817.
Smith, Paul K.; Huntoon, Richard T.; and Mosley, Wilbur C., Jr., to United States of America, Atomic Energy Commission. Chemical plating method of preparing radiation source material. 3,778,295, Cl. 117-100.00b.
Smith, Richard A.; and Harris, Elmer E., to Heinz, H. J., Company. Apparatus for inspecting bodies for the presence of hard particles. 3,777,886, Cl. 209-109.000.
Smith, Stuart Allen, to Illinois Tool Works, Inc. Container carrier and package. 3,778,096, Cl. 294-87.200.
Smith, Thomas C.: *See—*
Queener, Carl A.; Ralston, William C.; Smith, Thomas C.; and Welsh, Joseph P., 3,778,262.
Smith, W. C., & Sons, Inc.: *See—*
Carroll, Lee, 3,777,807.
Smithmeyer, Louis P. C. Static balancer for automotive and other similar wheels. 3,777,575, Cl. 73-483.000.
Smollin, Henry A.: *See—*
Castrovillo, Salvatore J.; and Smollin, Henry A., 3,778,833.
Smyers, William H., Jr.; and Russo, Ronald D., to New Britain Machine Company, The. Resilient quick release for socket wrench. 3,777,596, Cl. 81-177.00g.
Snoeks, Jan: *See—*
Spaargaren, Klaas; and Snoeks, Jan, 3,778,725.
Snook, Richard K., to Diginetics Incorporated. Ranging amplifier systems. 3,778,710, Cl. 324-123.00r.
Snyder, Robbie L.; Spencer, Ambrose; and Butts, Harlan, to Fixtures Mfg. Corporation. Table and chair structure and means for pivotally mounting chairs. 3,778,102, Cl. 297-170.000.
Sobran, Michael J., to Glass Containers Corporation, mesne. Support means for releasably suspending container. 3,777,875, Cl. 198-131.000.
Societa Italiana Resine S.p.A.: *See—*
Funaioli, Ettore; Landini, Piercarlo; and Marella, Giulio, 3,777,995.
Societe Anonyme Automobiles Citroen: *See—*
Cadiou, Jean G., 3,777,579.
Grosseau, Albert, 3,778,082.
Societe anonyme des Etablissements: *See—*
Hoffmann, Marcel E., 3,778,699.
Societe anonyme dite: L'Oreal: *See—*
Aubin, Guy; and Manoussos, Georges, 3,778,502.
Societe anonyme dite: ORSYMONDE: *See—*
Vaille, Madeleine, born Penciolelli, 3,778,507.
Societe Civile de Recherches et d'Etudes Therapeutiques: *See—*
Saint-Martin, Liliane, 3,778,505.
Societe d'Applications Generales d'Electricite et de Mecanique SAGEM: *See—*
Claret, Rene; and Picard, Jean Francois, 3,778,167.
Societe de Traitements Electrolytiques et Electrothermiques: *See—*
Doucerain, Jacques; and Baumann, Bernard, 3,778,017.
Societe d'Exploitation des Brevets Neiman: *See—*
Lipschutz, Paul, 3,777,521.
Societe Francaise des Tubes Pneumatiques: *See—*
Martin, Rene Jean, 3,778,006.
Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
Lehuen, Christian; and Gillet, Roger, 3,778,649.
Societe Rhodiaceta: *See—*
Buzano, Michel, 3,777,465.
Soderlund, Alfred. Wave energy motors. 3,777,494, Cl. 60-507.000.
Solid State Devices, Inc.: *See—*
Jarko, Michael F.; Powers, Avery W.; and Newmeyer, Reed A., 3,778,762.
Soloviev, Nikodim Nikiforovich: *See—*
Sherman, Vladimir Efimovich; Dubonosov, Georgy Viktorovich; Portnov, Sergei Fedorovich; Fedotov, Jury Alexeevich; Grinberg, Yakov Zeemanovich; Soloviev, Nikodim Nikiforovich; Pavlov, Viktor Grigorievich; and Dmitriev, Efim Fedorovich, 3,777,534.
Solvay & Cie: *See—*
Michel, Edmond; and Minsart, Maurice, 3,777,609.
Sommars, Mark P.: *See—*
Gates, Marvin A.; and Sommars, Mark P., 3,777,730.
Sony Corporation: *See—*
Kihara, Nobutoshi; and Odagiri, Yoichi, 3,778,559.
Miyaoka, Senri; and Morio, Minoru, 3,778,666.
Nagai, Tamiji, 3,778,670.
Saito, Eisuro, 3,778,842.
South African Coal, Oil and Gas Corporation Limited: *See—*
Ridge, Alvin Arthur; and Polchet, Jack Marquis, 3,778,288.
S.p.A. Virginio Rimoldi & C.: *See—*
Marforio, Nerino, 3,777,850.
Spaargaren, Klaas; and Snoeks, Jan, to Shell Oil Company. Non-drifting hold-amplifier. 3,778,725, Cl. 328-151.000.
Spalding, James A.: *See—*
Spalding, Robert H.; and Spalding, James A., 3,777,943.
Spalding, Robert H.; and Spalding, James A., to Diemakers, Inc. Gooseneck valve arrangement for diecasting machine. 3,777,943, Cl. 222-395.000.
Spaller, Albert E., Jr., to Eastman Kodak Company. Apparatus for supporting and clamping knives on a rotary cutter. 3,777,610, Cl. 83-678.000.
Span, Samuel; and Thum, Walter. Toy. 3,777,392, Cl. 46-17.000.
Spanset Inter AG: *See—*

Carr, David William Bentley, 3,778,095.
Sparks, Albert. Damper control mechanism. 3,777,974, Cl. 236-49.000.
Speakman, Edwin L.: *See—*
Kightlinger, Adrian P.; Crosby, Edward K.; and Speakman, Edwin L., 3,778,431.
Speedcheck Systems, Inc.: *See—*
Fried, Sidney, 3,777,439.
Speedcraines Limited: *See—*
Morrison, Robert, 3,777,901.
Speller, John Rueben Thomas: *See—*
Bleson, Eric John George; Furmidge, Kenneth Frederick; Stanyon, Horace Edward; and Speller, John Rueben Thomas, 3,778,663.
Spencer, Ambrose: *See—*
Snyder, Robbie L.; Spencer, Ambrose; and Butts, Harlan, 3,778,102.
Sperry Rand Corporation: *See—*
Butler, Gene R.; and Butler, Lee D., 3,777,904.
Jackson, John R., 3,778,703.
Koch, Karl E., 3,777,833.
Lindsay, Anthony; Imperati, Ronald Lee; and Becker, Philipp, 3,778,202.
Lustig, Claude D., 3,778,674.
Strenglein, Harry F., 3,778,827.
Wang, Chao Chen, 3,778,732.
Spier, Raymond A., to United States of America, National Aeronautics and Space Administration. Vee-notching device. 3,777,605, Cl. 83-452.000.
Spindler, Gerhard: *See—*
Grebner, Fritz; Kolsch, Wilhelm; Spindler, Gerhard; and Ehemann, Walter, 3,777,433.
Spiral Tubing Corporation: *See—*
D'Onofrio, Mario L., 3,777,343.
Spiroch, Franz; and Ostwald, Heinz G., to Eichner Organisation KG. Apparatus for applying filmed images to punched cards and components for such apparatus. 3,777,997, Cl. 242-55.530.
Spolair Engineering Systems AG: *See—*
Tailor, Framodkumar Chhaganlal, 3,777,806.
Spring Associates, Inc.: *See—*
Larkin, Sam, 3,777,322.
Spurgeon, Richard C. Texturing yarns by false twisting. 3,777,469, Cl. 57-140.00r.
Square D Company: *See—*
Davies, Terrence Ardern, 3,778,257.
Squibb, E. R., & Sons, Inc.: *See—*
Czaplinski, Thomas V., 3,777,780.
Ondetti, Miguel A.; Pluscec, Josip; Sheehan, John T.; Jorpes, Johan E.; and Mutt, Viktor, 3,778,429.
Treuner, Uwe; and Breuer, Hermann, 3,778,436.
St. George, Alfred: *See—*
Johnson, Kenneth O.; Kepf, Peter F.; and St. George, Alfred, 3,777,489.
Staab, Donald C., to Cardinal Industries, Incorporated. Supporting cutter assemblies for multiple grooving of pavement. 3,778,110, Cl. 299-39.000.
Staats, William A.; Bosley, Denis V.; Cook, John S.; and Yamasaki, Toshio, to Mattel, Inc. Toy vehicle with adjustable lap counter activator removably mounted thereon. 3,777,394, Cl. 46-202.000.
Staby, Paul A.: *See—*
Blackwell, Lyman L.; and Staby, Paul A., 3,778,800.
Standard Brands Incorporated: *See—*
Kightlinger, Adrian P.; Crosby, Edward K.; and Speakman, Edwin L., 3,778,431.
Standard Havens Systems Inc.: *See—*
Rheinfrank, Lamson, Jr., 3,777,909.
Standard Oil Company: *See—*
Serres, Carl, Jr.; and Bolton, Benjamin A., 3,778,417.
Standard Pressed Steel Co.: *See—*
Matievich, William; and Theakston, Harry A., 3,777,358.
Stanis, Eugene A.: *See—*
Philipps, Louis E.; and Stanis, Eugene A., 3,778,774.
Stanislav, Kabele; Ctibor, Doudlebsky; Frantisek, Jaros; Zdenek, Svec; and Bohumir, Brozek, to Vyzkumny ustav bavlnarsky. Method of removing impurities and similar matter from staple fibres in ringless spinning and device for performing said method. 3,777,66, Cl. 57-58.890.
Stanley Works, The: *See—*
Schultheiss, Paul C., 3,777,620.
Stansfield, James Frederick; and Topham, Arthur, to Imperial Chemical Industries Limited. Pigment dispersions. 3,778,287, Cl. 106-308.00q.
Stanyon, Horace Edward: *See—*
Bleson, Eric John George; Furmidge, Kenneth Frederick; Stanyon, Horace Edward; and Speller, John Rueben Thomas, 3,778,663.
Stark, Marvin: *See—*
Miller, Roy W.; Stark, Marvin; and Shaver, William R., 3,777,671.
Starkey, Donald L.: *See—*
Schmitt, Joseph W.; and Starkey, Donald L., 3,778,606.
Starr, Anthony J.; Shindel, Gustave A.; and Keith, Harry G., Jr., to Container Corporation of America. Rotational moulding machine with inner and outer mold edges rotating about intersecting axes. 3,778,215, Cl. 425-435.000.
Stasko, William: *See—*
Lyne, Cornelius M.; Kasak, August; and Stasko, William, 3,778,253.
Statitrol Corporation: *See—*
Blackwell, Lyman L.; and Staby, Paul A., 3,778,800.
Staub, Hans-Rudolf: *See—*
Thalmann, Eduard; and Staub, Hans-Rudolf, 3,778,296.
Stearns Manufacturing Co. Inc.: *See—*
Piper, Robert J., 3,777,877.
Stebbins, William W.: *See—*
Gicca, Francis A.; Passavant, Francis C.; Stebbins, William W.; and Worters, Allen J., 3,778,811.
Stedman, Robert N.; Griffith, Bobby D.; and Sullivan, Robert J., to Caterpillar Tractor Company. Conveyorized motor grader blade with retractable end bits. 3,777,822, Cl. 172-33.000.
Steelastic Company, The: *See—*
Alderfer, Sterling W., 3,778,329.
Steenmetser, Jean Louis, to LCC CICE-Compagnie Europeene des Composants Electronique. Transmission line of low characteristic impedance. 3,778,735, Cl. 333-84.00m.
Stefani, Elio: *See—*
Taralli, Claudio; and Stefani, Elio, 3,778,519.
Stegmeier, William J. Form structure. 3,778,019, Cl. 249-189.000.
Steidinger, Donald J., to Wallace Business Forms, Inc. Stuffed sealed envelope assembly and method. 3,777,971, Cl. 229-68.00r.
Steiger, Klaus: *See—*
Gruniger, Fritz; Muller, Gunther; and Steiger, Klaus, 3,778,005.
Stein, Lawrence, to United States of America, Atomic Energy Commission. Atmosphere purification of radon and radon daughter element. 3,778,499, Cl. 423-210.000.
Stein, Michel Guy Pierre, to Telecommunications Radioelectriques et Telephoniques. Receiver for data signals, including an automatic line correction circuit. 3,778,722, Cl. 325-414.000.
Steinberg, Adalberto Sussman. Buckle for shoes and the like. 3,777,337, Cl. 24-191.000.
Steinemann, Samuel G., to Institut Dr. Ing. Rainhard Straumann AG. Tension band. 3,777,346, Cl. 29-180.000.
Steiner, Walter: *See—*
Reber, Harald; Jahnke, Horst; and Steiner, Walter, 3,778,313.
Stengelin, Johann Conrad. Trickling filter plant. 3,777,891, Cl. 210-150.000.
Stevens, George S. Electronic weight monitor. 3,778,808, Cl. 340-282.000.
Stevens, John H., to United States Steel Corporation. Gas turbo-blower apparatus for generating and delivering combustion gases and reduction gases to a blast furnace. 3,778,045, Cl. 266-29.000.
Stevens, John H., to United States Steel Corporation. Jet engine powered blower for supplying combustion blast gas and reducing gas to a blast furnace. 3,778,046, Cl. 266-29.000.
Stevens, John H., to United States Steel Corporation. Apparatus for generating and delivering combustion gases and reduction gases to a blast furnace. 3,778,047, Cl. 266-29.000.
Stewart, Joseph T., Jr.: *See—*
Graves, Gail W.; Pope, Gerald R.; Stewart, Joseph T., Jr.; and Petrosky, Willard L., 3,778,028.
Stewart-Warner Corporation: *See—*
Yello, Joseph F., 3,778,720.
Stieler, Alfred Otto Hugo; and Billmann, Gerhard Leonhard Emil, to Bunker Ramo Corporation. Closure for a connector box. 3,777,926, Cl. 220-29.000.
Stillman, Albert H., Jr. Swimming pool coping. 3,777,318, Cl. 4-172.210.
Stilwell, Stanley O.: *See—*
Hake, Victor E.; McDowell, Allen W.; Mersel, Daniel R.; Mosher, Lawrence G.; and Stilwell, Stanley O., 3,778,779.
Stirton, Alfred L. Locking belt. 3,777,586, Cl. 74-231.00j.
Stocker, August, to Lonza Ltd. Production of acetoacetyl amides. 3,778,474, Cl. 260-561.00k.
Stockton, Frank R.: *See—*
Probst, Richard O.; Pollard, Kenneth R.; and Stockton, Frank R., 3,777,981.
Stokes, Lyle S., to Hughes Aircraft Company. Coherent CATV transmission system. 3,778,716, Cl. 325-49.000.
Stoltman, Donald D., to General Motors Corporation. Gas turbine fuel control. 3,777,480, Cl. 60-39.28r.
Stolzmann, Hans; and Stolzmann, Hans-Joachim. Device for removing packaging bags in stacks from a collector located downstream of the delivery drum of a packaging bag machine. 3,777,906, Cl. 214-1.0bd.
Stolzmann, Hans-Joachim: *See—*
Stolzmann, Hans; and Stolzmann, Hans-Joachim, 3,777,906.
Stone, Kenneth F., to United States of America, Atomic Energy Commission. High current cable engagement tool. 3,777,348, Cl. 29-203.00p.
Stoneback, David N.: *See—*
Lang, Robert J.; Holt, Eugene L.; and Stoneback, David N., 3,778,501.
Storey, William Arthur. Pulse capture unit and apparatus for controlling the blending of two flowable substances. 3,777,935, Cl. 222-16.000.
Stork, Harald: *See—*
Bergmeyer, Hans Ulrich; Bernt, Erich; Gruber, Wolfgang; Schmidt, Felix Helmut; and Stork, Harald, 3,778,350.
Stow, Robert H., to Minnesota Mining and Manufacturing Company. Tape. 3,778,306, Cl. 117-226.000.
Strand, Jack W. Tick-tack-toc-like light game with color changeable squares. 3,778,063, Cl. 273-130.0ab.
Strandell, Per-Olof. Punching apparatus. 3,777,601, Cl. 83-160.000.

Strathaus, John. Roasting pan. 3,777,654, Cl. 99-419.000.
Straughn, Robert O.: *See—*
Reinhart, Richard D.; and Straughn, Robert O., 3,778,520.
Strenglein, Harry F., to Sperry Rand Corporation. Short range monopulse marine search radar for small object detection. 3,778,827, Cl. 343-7.300.
Strickel, William R.: *See—*
Mesek, Frederick K.; Shepherd, Robert C.; Strickel, William R.; Liloia, Gerald J.; May, Louis F., Jr.; and Schiff, Norman, 3,777,758.
Strommer, Palmer K., to General Mills, Inc. Method of texturizing protein. 3,778,522, Cl. 426-511.000.
Strong-Scott Mfg. Co., The: *See—*
Phillips, David L., 3,777,810.
Stuart, Gerald L., to Forrest Paschal Machinery Company. Brick conveyor. 3,777,873, Cl. 198-35.000.
Stumpf, Clarence E., Jr.: *See—*
Breuner, James H.; and Stumpf, Clarence E., Jr., 3,778,000.
Stumphauzer, William C.: *See—*
Rood, Alvin A.; Hogstrom, Edwin F.; and Stumphauzer, William C., 3,778,292.
Stumpp, Gerhard; and Schuster, Gregor, to Bosch, Robert, G.m.b.H. Means for varying the air-fuel ratio in a fuel injection system for internal combustion engines. 3,777,725, Cl. 123-119.00r.
Sturgeon, Donald L. G., to Du Pont de Nemours, E. I., and Company. High modulus organic fiber layers alternating with inorganic fiber layers in a resin matrix. 3,778,334, Cl. 161-156.000.
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Sturm, Ruger & Co., Inc.: *See—*
Ruger, William B.; and Larson, Lawrence L., 3,777,384.
Sugahara, Eisuke, to Nippon Piston Ring Kabushiki Kaisha. Fluid operated coupling device. 3,777,868, Cl. 192-88.00b.
Sugano, Tadashi: *See—*
Kobayashi, Akira; Sugano, Tadashi; Koike, Toshio; and Sakata, Minehiro, 3,778,622.
Sugino, Osakazu: *See—*
Ushiyama, Rintaro; Sugino, Osakazu; Haga, Teruhide; and Horigome, Koichi, 3,778,268.
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Sullivan, Robert J.: *See—*
Stedman, Robert N.; Griffith, Bobby D.; and Sullivan, Robert J., 3,777,822.
Sulzer Brothers Limited: *See—*
Profos, Oskar, 3,778,346.
Sumitomo Chemical Co., Ltd.: *See—*
Yamahara, Takeshi; and Deguchi, Takashi, 3,778,471.
Sumitomo Chemical Company, Ltd.: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.
Sun Research and Development Co., mesne: *See—*
Driscoll, Gary L.; Duling, Irl N.; and Gates, David S., 3,778,487.
Super Chuck Company, Inc.: *See—*
Sciola, Joseph; and Nagy, Gabor, 3,777,999.
Surfalloy Corporation: *See—*
Rausch, John J.; and Van Thyne, Ray J., 3,778,299.
Surkov, Ivan Efimovich: *See—*
Vereschagin, Leonid Fedorovich; Konyaev, Jury Sergeevich; Polyakov, Evgeny Valentinovich; and Surkov, Ivan Efimovich, 3,778,196.
Surprenant, Ronald J.: *See—*
Bise, Donald L.; and Surprenant, Ronald J., 3,778,563.
Susoev, Yasha A. Roman shade and method of fabrication. 3,777,800, Cl. 160-84.00r.
Sutherland, George S.; and Hoskins, Randel L., to Rocket Research Corporation. Crash restraint matrix inflation system. 3,778,084, Cl 280-150.00ab.
Sutt, Robert Francis: *See—*
Urbanic, John Emery; and Sutt, Robert Francis, 3,778,387.
Suzuki, Akio: *See—*
Miyala, Akira; Tomita, Chikayoshi; Suzuki, Akio; Okubo, Hideyo; and Magakuni, Masahiko, 3,778,356.
Suzuki, Etzuki: *See—*
Hoshina, Naomi; and Suzuki, Etzuki, 3,777,587.
Suzuki, Isamu; Ohmura, Jukichi; and Satoo, Yuukoo, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of forming a yarn package. 3,777,470, Cl. 57-157.00r.
Suzuki, Katsuo, to Xerox Corporation. Fire prevention apparatus. 3,778,222, Cl. 432-35.000.
Svenska Rotor Maskiner Aktieholag: *See—*
Lundstrom, Jan-Horje; Nyberg, Ake; Hamlin, Roland; and Astberg, Ake, 3,777,723.
Swanberg, Melvin E., to Xerox Corporation. Linear actuator. 3,777,578, Cl. 74-89.000.
Sweeney, Donald E., Jr., to Texaco Inc. Means and method for achieving an optimum operating condition for an alkylation unit. 3,778,603, Cl. 235-151.120.
Swenson, Robert W. Tie rack device. 3,777,894, Cl. 211-13.000.
Swift, Harold E.: *See—*
Taylor, Brian W.; and Swift, Harold E., 3,778,462.
Swiss Aluminium Ltd.: *See—*
Laube, Max, 3,777,457.
Szabo, Andras I.; Zitelli, William E.; and Tarli, Dan V., to Westinghouse Electric Corporation. Analog to pulse rate converter. 3,778,794, Cl. 340-174.10a.
Szeles, Donald M.: *See—*
Risgin, Ojars; and Szeles, Donald M., 3,777,568.
Szohatsky, Zoltan L. Ski binding mounting apparatus. 3,778,048, Cl. 269-10.000.
Szoke, Abraham: *See—*
Gedanken, Aharon; Jortner, Joshua; Szoke, Abraham; and Raz, Baruch, 3,778,661.
Tachisto Inc.: *See—*
Chase, Charles Elroy, Sr., 3,778,636.
Tahara, Goro R.: *See—*
Mees, James G.; Lubarsky, Andre, Jr.; and Tahara, Goro R., 3,778,556.
Tailor, Framodkumar Chhaganlal, to Spolair Engineering Systems AG. Climatization plant. 3,777,806, Cl. 165-19.000.
Takagi, Moriyuki. Fluid pressure device. 3,778,197, Cl. 418-61.000.
Takahashi, Isoji: *See—*
Sato, Masamichi; Takimoto, Masaaki; Takahashi, Isoji; and Komaki, Takao, 3,778,623.
Takahashi, Koji, to Nippon Toki Kabushiki Kaisha. Apparatus for forming and finishing ceramic ware foot. 3,778,212, Cl. 425-264.000.
Takahashi, Nobuyuki; Nagata, Shuji; Nishimara, Toshiro; and Yoshinari, Kazuhiko, to Nippon Steel Corporation. Steel sheet and strip for use in the manufacture of easy-to-open cans. 3,777,536, Cl. 72-365.000.
Takahashi, Noriyuki; Inoue, Hidehiko; and Toshimitsu, Yoshihiko, to Honda Giken Kogyo Kabushiki Kaisha. Automatic control system for stability of a vehicle. 3,778,081, Cl. 280-112.00a.
Takahashi, Takashi; and Hayashi, Teru. Intermediate gear. 3,777,588, Cl. 74-440.000.
Takahashi, Torataro, to Elmo Company, Limited. Pulse synchronizing system for motion picture apparatuses. 3,778,136, Cl. 352-17.000.
Takahashi, Toru; and Kaneko, Kohei, to Yamaichi Denki Kogyo K.K. (Yamaichi Electric Mfg. Co., Ltd.). Socket for integrated circuit. 3,778,754, Cl. 339-176.000.
Takama, Eizo: *See—*
Shichijo, Yuzo; Asano, Gyoichi; and Takama, Eizo, 3,778,374.
Takamori, Kazumi: *See—*
Maeda, Yoshinobu; Takamori, Kazumi; and Kanno, Tadao, 3,777,350.
Takano Seimitsu Kogyo Co., Ltd.: *See—*
Takano, Tetsuo, 3,777,796.
Takano, Tetsuo, to Takano Seimitsu Kogyo Co., Ltd. Screw rod with washer. 3,777,796, Cl. 151-38.000.
Takarada, Eiichi, to Amsted Industries Incorporated. Arc control. 3,778,579, Cl. 219-69.00s.
Takatori Machinery Works Ltd.: *See—*
Horita, Teruyuki, 3,777,681.
Takenaka, Shigeo; Kido, Yasuji; Shimabara, Tatsutoshi; and Ogawa, Masanobu, to Nippon Kayaku Co., Ltd. Oxidation catalyst for oxidation of olefins to unsaturated aldehydes. 3,778,386, Cl. 252-432.000.
Takeuchi, Hiroo: *See—*
Mizusawa, Mitutoyo; and Takeuchi, Hiroo, 3,777,496.
Takeuchi, Seiji: *See—*
Arikawa, Yoshijiro; Takeuchi, Seiji; and Sagusa, Hisayuki, 3,778,230.
Takimoto, Masaaki: *See—*
Sato, Masamichi; Takimoto, Masaaki; Takahashi, Isoji; and Komaki, Takao, 3,778,623.
Talbot, Jean-Guy, to Bombardier Limited. Clutch. 3,777,583, Cl. 74-230.17e.
Tamagni, Albert J.: *See—*
Wheaton, Theodore C.; Tamagni, Albert J.; and Moshinsky, Robert W., 3,778,223.
Tanaka, Shinsaku: *See—*
Kano, Seizo; Tanaka, Shinsaku; Mizoi, Yoshiaki; and Ojima, Kenji, 3,778,314.
Tanaka, Takashi. Magnetic antenna having a block or circuit components therein. 3,778,836, Cl. 343-702.000.
Tanaka, Tetsuo: *See—*
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,263.
Arai, Fumiaki; Ohta, Wasaburo; Kurokawa, Junji; Osui, Noriyuki; Shimizu, Sakae; and Tanaka, Tetsuo, 3,778,264.
Tanaka, Yoshiaki: *See—*
Matsuda, Kazuo; Tanaka, Yoshiaki; and Sakai, Takeyo, 3,778,480.
Tange, Fumiko; and Tsuda, Kiichi. Apparatus drawing-out for winding tape. 3,777,962, Cl. 226-129.000.
Taralli, Claudio; and Stefani, Elio, to Carle & Montanari S.p.A. Process for the impregnation treatment and eventual sterilization of cocoa seeds or beans with water or alkaline solutions. 3,778,519, Cl. 426-352.000.
Tarli, Dan V.: *See—*
Szabo, Andras I.; Zitelli, William E.; and Tarli, Dan V., 3,778,794.

Tatian, Berge, to Itek Corporation. Lens system having at least one thin, highly deformed plate with aspherical surfaces. 3,778,133, Cl. 350-2.000.
Tawara, Victor. Tree carrying vehicle. 3,778,098, Cl. 296-3.000.
Taylor, Brian W.; and Swift, Harold E., to Gulf Research & Development Company. Olefin hydrocyanation reaction. 3,778,462, Cl. 260-465.300.
Taylor, Richard Alan, to Birmingham Small Arms Company Limited, The. Method of producing silicon nitride articles. 3,778,231, Cl. 423-290.000.
Taylor, Richard F.; and Dimitriou, Christos, to Anglo-Transvaal Consolidated Investment Company, Limited. Control mechanism for rock cutting equipment. 3,778,106, Cl. 299-1.000.
Taylor, Richard F., to Anglo-Transvaal Consolidated Investment Company, Limited. Rock breaking equipment. 3,778,113, Cl. 299-86.000.
Technicolor Inc.: *See—*
Hanseman, Leo C., 3,778,542.
Techno-Med, Limited: *See—*
Pullman, Burke Cole, 3,778,033.
Teijin Limited: *See—*
Ohto, Kunio, 3,777,567.
Telattach, Inc.: *See—*
Robinson, John Wesley, 3,777,410.
Telecommunication Industries, Inc.: *See—*
Jonassen, Gaylord D., 3,778,679.
Telecommunication Technology, Inc.: *See—*
Mees, James G.; Lubarsky, Andre, Jr.; and Tahara, Goro R., 3,778,556.
Telecommunications Radioelectriques et Telephoniques: *See—*
Stein, Michel Guy Pierre, 3,778,722.
Telecommunications Technology, Inc.: *See—*
Lubarsky, Andre, Jr.; and Volkland, Charles M., 3,778,704.
Teledyne Industries, Inc.: *See—*
Kiley, Leo R., 3,777,724.
Teledyne McCormick Selph: *See—*
Ingham, Robert W.; and Chambers, Milton W., 3,778,008.
Telefonaktiebolaget L M Ericsson: *See—*
Persson, Sven-Eric Gote, 3,778,641.
Templer, Milton: *See—*
Brown, Clayton R.; and Templer, Milton, 3,778,044.
Tenneco Chemicals, Inc.: *See—*
Farber, Elliott; Rosen, Milton K.; and Shah, Ashok C., 3,778,422.
Minieri, Pasquale P., 3,778,400.
Tenneco Inc.: *See—*
Samalon, Eugene J.; Lamb, Gilbert C., Jr.; and Lentz, Ervin C., 3,777,852.
Tenner, Oskar, to Graviceast Patentverwertungsgesellschaft m.b.H. Casting apparatus. 3,777,801, Cl. 164-337.000.
Terakado, Ituko: *See—*
Watanabe, Shigeru; Yokozawa, Norio; Yabuuchi, Shigeru; and Terakado, Ituko, 3,778,607.
Terryn, Raymond M. F., to International Standard Electric Corporation. Jamming detection. 3,778,629, Cl. 250-557.000.
Teruuchi, Yoshifumi; Namiki, Masayuki; and Nishii, Tomio, to Matsushita Electric Industrial Co., Ltd. Automatic player for tape cassettes. 3,778,066, Cl. 274-4.00f.
Tewarson, Dinesh K.: *See—*
Platt, Steven; Pomeranz, Jehoshua N.; and Tewarson, Dinesh K., 3,778,640.
Texaco Inc.: *See—*
Feuerbacher, David George; and Smith, Mary Kay Hrncir, 3,777,818.
Hubby, Laurence M.; and Mayer, Herbert J., 3,778,694.
Sweeney, Donald E., Jr., 3,778,603.
Weiss, Walter J., 3,777,551.
Texas Instruments, Incorporated: *See—*
Carroll, Paul E., 3,778,759.
Crawford, Robert Hudson, 3,778,688.
Johnson, Keith N.; and Hagarman, Paul O., 3,778,355.
Kitagawa, Norihisa, 3,778,782.
Texico Inc.: *See—*
Feuerbacher, David George; and Smith, Mary Kay Hrncir, 3,777,817.
Textron, Inc.: *See—*
Domaas, Perry M., 3,777,584.
Thalmann, Eduard; and Staub, Hans-Rudolf, to Lonza Limited. Process for the production of silicon carbide whiskers. 3,778,296, Cl. 117-106.00e.
Tharman, Paul A., to Briggs & Stratton Corporation. Battery charging regulator-rectifier module. 3,778,650, Cl. 310-68.00d.
Theakston, Harry A.: *See—*
Matievich, William; and Theakston, Harry A., 3,777,358.
Theodore, Paris. Gunsight. 3,777,380, Cl. 42-1.008.
Theodore, Paris, to Seventrees, Ltd. Secure holster for revolvers. 3,777,952, Cl. 224-2.00b.
Theodore, Paris, to Seventrees, Ltd. Cartridge pouch. 3,777,954, Cl. 224-19.000.
Thieme, Gerhard: *See—*
Gehlen, Herman Walter; Hartmann, Karl; and Thieme, Gerhard, 3,777,503.
Thiery, Jean: *See—*
Grolet, Pierre; and Thiery, Jean, 3,778,094.
Thiery, Jean; and Grolet, Pierre, to Institut Francais du Petrole, des Carburants et Lubrifiants. Drilling apparatus. 3,777,827, Cl. 175-103.000.
Thijssen, Henricus A. O. Apparatus for the separation and treatment of solid particles from a liquid suspension. 3,777,892, Cl. 210-178.000.
Thillen, Hans: *See—*
Kruner, Rolf; Thillen, Hans; and Grunwald, Gerhard, 3,777,964.
Thiokol Chemical Corporation: *See—*
Bertozzi, Eugene R., 3,778,478.
Ritchey, Harold W., 3,777,387.
Thomas, Alan; and Heath, Ronald Alfred, to Lucas, Joseph, (Industries) Limited. Fluid pressure transducers. 3,777,570, Cl. 73-398.00c.
Thomas, Roland C.: *See—*
Schaefer, Langdon C.; and Thomas, Roland C., 3,777,848.
Thomasian, Harvey A., to Lowell Corporation. Rotation limiting device. 3,777,591, Cl. 74-576.000.
Thompson Chemicals, Inc.: *See—*
Thompson, Henry C., 3,778,304.
Thompson, Don D., to Chevron Research Company. Dielectric constant measurement method. 3,778,706, Cl. 324-61.00r.
Thompson, Henry C., to Thompson Chemicals, Inc. Magnesium oxychloride fireproofing. 3,778,304, Cl. 117-138.000.
Thompson, Ralph F., to Salco, Inc. Liquid distributing system for sprinkler pans. 3,777,988, Cl. 239-553.300.
Thomson-CSF: *See—*
Roger, Joseph, 3,778,824.
Thorn Electrical Industries, Limited: *See—*
Bleson, Eric John George; Furmidge, Kenneth Frederick; Stanyon, Horace Edward; and Speller, John Rueben Thomas, 3,778,663.
Thorner, Robert H. Automotive speed control system. 3,777,841, Cl. 180-108.000.
Thum, Walter: *See—*
Span, Samuel; and Thum, Walter, 3,777,392.
Tidwell, Danny R.: *See—*
Burkhardt, Joseph A.; Childers, Thomas W.; Koerner, Roger J.; Mason, John P.; and Tidwell, Danny R., 3,777,812.
Tigges, Gerhard, to Tigges, Lebrecht, K.G., Firma. Closing device in particular for dyeing spindles. 3,777,516, Cl. 68-198.000.
Tigges, Lebrecht, K.G., Firma: *See—*
Tigges, Gerhard, 3,777,516.
Timesavers, Inc.: *See—*
Bernu, John M., 3,777,442.
Timmler, Helmut: *See—*
Draber, Wilfried; Timmler, Helmut; Buchel, Karl Heinz; and Plempel, Manfred, 3,778,447.
Timmons, Richard J.; and Gallant, William E., to Scott, O. M., & Sons Company, The. Phenoxyalkyloxazolines. 3,778,445, Cl. 260-307.00f.
Tischuk, Walter, to Robertson, H. H., Company. Complementary mating elements for double-skin foam cure panel. 3,777,430, Cl. 52-309.000.
Titan Textile Machines A/S: *See—*
Fleischer, Svend Sigurd Christie; and Jeppsson, Kind Helge, 3,777,339.
Tjujimoto, Kayoshi: *See—*
Kuramato, Yoshio; Tjujimoto, Kayoshi; and Ueda, Hiroshi, 3,777,637.
Tobin, Michael F., to General Motors Corporation. Beaded tube with D-ring. 3,778,090, Cl. 285-222.000.
Todt, Hans-Gunther: *See—*
Dahms, Wolfgang; and Todt, Hans-Gunther, 3,778,357.
Tokyo Daigaku: *See—*
Kandatsu, Makoto; and Yamaguchi, Michio, 3,778,425.
Tokyo Shibaura Electric Company Limited: *See—*
Hoshina, Naomi; and Suzuki, Etzuki, 3,777,587.
Tolbert, William N., to Koehring Company. Pressure compensating valve mechanism. 3,777,773, Cl. 137-117.000.
Toledo, Emil, to United States of America, Navy. Use of cobalt in a nonorganic copper sulfate electroplating bath. 3,778,354, Cl. 204-44.000.
Tomei, Keichi: *See—*
Grubb, John J.; and Tomei, Keichi, 3,778,165.
Tomita, Chikayoshi: *See—*
Miyala, Akira; Tomita, Chikayoshi; Suzuki, Akio; Okubo, Hideyo; and Magakuni, Masahiko, 3,778,356.
Tomlin, Clive Dudley Spencer: *See—*
Barlow, Charles Brian; and Tomlin, Clive Dudley Spencer, 3,778,437.
Tonsbeck, Christiaan Herman Theodoor: *See—*
Copier, Harald; and Tonsbeck, Christiaan Herman Theodoor, 3,778,518.
Tooming, Khugo Gustavovich; Kjulvya, Leopold Yakobovich; Gorschenin, Eduard Andreevich; and Nevalins, Arnold Yanovich. Machine for sewing up netting webs. 3,777,682, Cl. 112-121.150.
Topham, Arthur: *See—*
Stansfield, James Frederick; and Topham, Arthur, 3,778,287.
Torii, Suichi. Bobbin exchange mechanism of a yarn winder. 3,777,996, Cl. 242-18.00r.
Toritani, Masatoshi. Method of collecting submarine resources. 3,777,377, Cl. 37-195.000.
Torkret GmbH: *See—*
Schurenberg, Rudi; and Wenzel, Heinz-Eckard, 3,777,626.
Torrington Company, The: *See—*

Alling, Richard L., 3,778,124.

Tosalli, Joseph: *See—*
Droz, Francois; Petitpierre, Jean-Paul; and Tosalli, Joseph, 3,778,075.

Toshimitsu, Yoshihiko: *See—*
Takahashi, Noriyuki; Inoue, Hidehiko; and Toshimitsu, Yoshihiko, 3,778,081.

Tourret, Jean: *See—*
Brelot, Rene; and Tourret, Jean, 3,778,157.

Townsend Engineering Company: *See—*
Ladd, Floyd R., 3,778,496.

Toyoda Koki Kabushiki Kaisha: *See—*
Kurimoto, Mikishi; and Asano, Hiroaki, 3,777,441.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Sato, Kazuo; Hisatsune, Tomio; and Izawa, Minoru, 3,778,823.

Tracy, John William Franklin. Hollow vane shear. 3,777,603, Cl. 83-212.000.

Transformatoren Union Aktiengesellschaft: *See—*
Widmann, Werner, 3,778,538.

Trask, Blair D., to Bixby Box Toe Co., Inc. Shoe stiffener materials. 3,778,251, Cl. 117-68.000.

Trask, Donald R., to Union Carbide Corporation. Apparatus for forming a cylinder. 3,777,631, Cl. 93-81.00r.

Traumuller, Martin; and Hunneke, Fred, to Domestic Fabrics Corporation. Knitted fabric. 3,777,514, Cl. 66-196.000.

Treher, James E. Remote controlled slide changer for overhead projector. 3,778,143, Cl. 353-111.000.

Trenczek, Gerhard: *See—*
Bockmann, August; Trenczek, Gerhard; Rudolph, Hans; Wiegreffe, Wolfgang; and Ritter, Wolfgang, 3,778,289.

Treuner, Uwe; and Breuer, Hermann, to Squibb, E. R., & Sons, Inc. Acylthioacetyl cephalosporins. 3,778,436, Cl. 260-243.00c.

Trienco, Inc.: *See—*
Kiefer, Michael Edward, 3,777,366.

Triner, Irvin Richard: *See—*
Occhipinti, Carl; and Triner, Irvin Richard, 3,778,753.

Tritschler, Claus: *See—*
Sturm, Hans-Juergen; and Tritschler, Claus, 3,778,448.

Troutman, James D.: *See—*
Haines, David E.; and Troutman, James D., 3,777,383.

Trubell, Lawrence Paul: *See—*
Higuchi, Hobart Atsushi; and Trubell, Lawrence Paul, 3,778,639.

TRW Inc.: *See—*
Shlosinger, Arnold P., 3,777,811.

Trzeciak, John R., to Singer Company, The. CRT display of a motion picture film. 3,778,546, Cl. 178-7.200.

Tsuda, Kiichi: *See—*
Tange, Fumiko; and Tsuda, Kiichi, 3,777,962.

Tsuda, Yasuhisa, to Nissan Motor Company, Limited. Sealing arrangement for vehicle body construction. 3,778,101, Cl. 296-154.000.

Tsukihashi, Kazunobu: *See—*
Aiko, Hideo; Okamoto, Takao; Abe, Eiji; Tsukihashi, Kazunobu; and Yamashita, Koichi, 3,777,661.

Tulloa, Aubrey R. Replaceable pen tips mounts. 3,778,843, Cl. 346-140.000.

Tummala, Rao R.: *See—*
Langston, Perry R., Jr.; Tummala, Rao R.; and Wilson, Donald M., 3,778,127.

Tupalski, Alexander. Connecting links for chains. 3,777,476, Cl. 59-85.000.

Turbanti, Luigi. Heterocyclic amine esters of 2-phenol-cyclohexen-3-carboxylic acid. 3,778,442, Cl. 260-247.20b.

Turner, Robert Burton; and Poli, Emilio Lawrence, to Dow Chemical Company, The. Apparatus for cooling blown polymer films. 3,778,205, Cl. 425-71.000.

Turner, Thomas M.; Keefe, Francis J.; and Little, Charles D., to Ellicott Machine Corporation. Articulated ladder construction for cutterhead dredge. 3,777,376, Cl. 37-67.000.

Ty-Lok Assembly Systems, Inc.: *See—*
Countryman, Albert J., 3,777,334.

Tyler, Derek E.: *See—*
Shapiro, Stanley; Tyler, Derek E.; and Pryor, Michael J., 3,778,237.

Tyler, Derek E.; and Shapiro, Stanley. Composite metal article. 3,778,238, Cl. 29-196.000.

Ube Industries Ltd.: *See—*
Sugiura, Shotaro; Ueno, Haruo; Kono, Minoru; and Hamada, Hisawaki, 3,778,424.

Uchino, Mitsuo: *See—*
Kobayashi, Masayoshi; and Uchino, Mitsuo, 3,777,731.

Uchiyama, Hiromichi; and Inoue, Naohiko, to Nissan Motor Company, Limited. Hydraulic-power control device for power-assisted steering system. 3,777,839, Cl. 180-79.200.

Ueba, Akio: *See—*
Hatanaka, Yoshihiro; and Ueba, Akio, 3,778,595.

Ueda, Hiroshi: *See—*
Kuramato, Yoshio; Tujimoto, Kayoshi; and Ueda, Hiroshi, 3,777,637.

Ueki, Massaaki: *See—*
Mukaiyama, Teruaki; Ueki, Massaaki; Maruyama, Hiroshi; Matsueda, Rei; and Gotow, Kuniaki, 3,778,428.

Ueno, Haruo: *See—*
Sugiura, Shotaro; Ueno, Haruo; Kono, Minoru; and Hamada, Hisawaki, 3,778,424.

Ueno, Shinichi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Counting device having memory-readout and logic circuits. 3,777,769, Cl. 133-8.00r.

Ueno, Sinichi: *See—*
Sugita, Kenichiro; Shimizu, Tetsuji; Ueno, Sinichi; and Muraoka, Tateki, 3,777,738.

Ulrich, Donald Aloysious, Jr., to Procter & Gamble Company, The. Hydrolytically unstable polyurethane foams. 3,778,390, Cl. 260-2.5an.

Umbaugh, Charles Wayne, to Honeywell Information Systems, Inc. Circuit chips having beam leads attached by film strip process. 3,777,365, Cl. 29-591.000.

Umehara, Akira: *See—*
Nakamura, Yoshiro; Umehara, Akira; and Yanaba, Itsuyo, 3,778,368.

Union Carbide Corporation: *See—*
Ericson, Alvin L.; Haettinger, George C.; and Pedersen, Ernest T., 3,777,930.
Kubli, Robert A.; Sasse, Frederick H.; Uttrachi, Gerald D.; Van Dyke, Le Roy L.; and Nakabayashi, Masahiro, 3,778,587.
Morehouse, Edward Lewis, 3,778,458.
Nakabayashi, Masahiro, 3,778,589.
Trask, Donald R., 3,777,631.

Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft: *See—*
Biller, Efim; Goller, Roman; Pflugk, Hellmuth; and Schlegel, Richard, 3,778,481.

United Aircraft Corporation: *See—*
Brock, Larry D.; and Games, John E., 3,778,601.
Ferris, Donald L., 3,778,189.
Plowman, James S.; and Fowkes, Ivar G., 3,778,185.
Waters, James P., 3,778,130.
Wood, Donald H., 3,778,184.

United Kingdom Atomic Energy Authority: *See—*
Nicholas, Michael George; and MacPhain, Iain, 3,778,261.

United States Banknote Corporation: *See—*
Eberly, David H., Jr.; and Hanke, Peter E., 3,778,598.

United States of America
Air Force: *See—*
Bilow, Norman, 3,778,405.
Braunstein, Simeon, 3,778,267.
Army: *See—*
Wiegand, Donald A., 3,778,269.
Atomic Energy Commission: *See—*
Baker, Richard D.; Hayter, Sidney W.; and Lewis, Homer D., 3,778,380.
Benziger, Theodore M., 3,778,319.
Briggs, Gifford G., 3,778,500.
Bustamante, Santiago J.; and Schell, Donald H., 3,778,217.
Carpenter, John M., 3,778,627.
Cole, Nancy C.; Gunkel, Ronald W.; and Houck, Clarence W., 3,778,254.
Coppi, Bruno; and Montgomery, Donald B., 3,778,343.
Deaton, Ronald L.; and Silver, Gary L., 3,778,497.
Kraus, Kurt A., 3,778,366.
Markley, Finley W., 3,778,369.
Sease, John D.; and Harrington, Francis E., 3,778,348.
Smith, Paul K.; Huntoon, Richard T.; and Mosley, Wilbur C., Jr., 3,778,295.
Stein, Lawrence, 3,778,499.
Stone, Kenneth F., 3,777,348.
Wohlberg, Cornel, 3,778,300.
Wohlberg, Cornel, 3,778,301.

Atomic Energy Commission, mesne: *See—*
Walsh, Joseph M., 3,778,344.

National Aeronautics and Space Administration: *See—*
Kennedy, Bobby W., 3,778,685.
Lewicki, George W.; and Gotsinger, John E., 3,778,791.
Rollins, Garland N., 3,777,546.
Spier, Raymond A., 3,777,605.
Weber, Richard J.; and Franciscus, Leo C., 3,777,490.

National Aeronautics and Space Administration; administrator; with respect to an invention of:
Cummingham, Herbert R. Potable water dispenser. 3,777,942, Cl. 222-309.000.
Haynes, Johnny L.; Wages, Charles G.; and Haralson, Hamilton S. Ultrasonic scanning system for in-place inspection of brazed tube joints. 3,777,552, Cl. 73-67.80s.
Lipoma, Phillip C. Data storage, image tube type. 3,778,786, Cl. 340-173.0cr.

Navy: *See—*
Asbelle, Charles C.; and Porter, Gerald K., 3,777,643.
Biblarz, Oscar, 3,777,564.
Carson, David L., 3,778,758.
Castrovillo, Salvatore J.; and Smollin, Henry A., 3,778,833.
Dildy, Clell A., Jr., 3,778,814.
Giuliani, John F., 3,778,635.
Joseph, Horace M., 3,778,830.
Kearney, Stuart D., II; and Richardson, Walter, 3,778,007.
Petrisko, Edwin M.; and Keller, Karl H., 3,777,555.
Toledo, Emil, 3,778,354.

Navy, mesne: *See—*
Melhose, Alfred E., 3,777,688.

Veterans Affairs: *See—*
Hokanson, David Eugene, 3,777,740.

United States Steel Corporation: *See—*
Bode, Charles H., Jr., 3,777,436.
Papay, Charles J.; and Settle, Ralph A., 3,777,554.
Stevens, John H., 3,778,045.
Stevens, John H., 3,778,046.
Stevens, John H., 3,778,047.

Universal Manufacturing Corporation: *See—*
Miller, Imrich M., 3,778,529.

Universal Oil Products, Company: *See—*
Clark, Herbert D., 3,778,377.

Universal PVC Resins Inc., mesne: *See—*
Reiter, William M., 3,778,423.

University of California, The Regents of the: *See—*
Brown, Daniel M.; and Isaacs, John D., 3,777,574.

University of Virginia, The Rector and Visitors of the: *See—*
Mattauch, Robert J.; and Viola, Thomas J., Jr., 3,778,645.

Up-Right, Inc.: *See—*
Claxton, Gerald L., 3,777,463.

Upjohn Company, The: *See—*
Axen, Udo F., 3,778,450.
Kirton, Kenneth T., 3,778,506.
Kornis, Gabriel; and Nidy, Eldon G., 3,778,473.

Uraneck, Carl A.: *See—*
Brown, James D.; and Uraneck, Carl A., 3,778,420.

Urani, Angelo: *See—*
Gaia, Aldino; and Urani, Angelo, 3,778,740.

Urbanic, John Emery; and Sutt, Robert Francis, to Calgon Corporation. Activated carbon with antioxidant properties and a method of preparing the same. 3,778,387, Cl. 252-428.000.

U.S. Philips Corporation: *See—*
David, Guy Albert Jules; and Duquenne, Michel Guy Amedee, 3,778,550.
Hagendoorn, Johan Gerard; and Schieving, Dick, 3,778,770.
Korteling, Aart Gerrit, 3,778,693.
Scholten, Johannes Hermanus Maria, 3,778,818.
Schroder, Jurgen; Ochel, Gunter; and Von Horsten, Hans-Joachim, 3,778,549.

Ushiyama, Rintaro; Sugino, Osakazu; Haga, Teruhide; and Horigome, Koichi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material. 3,778,268, Cl. 96-74.000.

Uttrachi, Gerald D.: *See—*
Kubli, Robert A.; Sasse, Frederick H.; Uttrachi, Gerald D.; Van Dyke, Le Roy L.; and Nakabayashi, Masahiro, 3,778,587.

Vaille, Madeleine, born Penciolelli, to Societe anonyme dite: ORSYMONDE. Derivatives of phloroglucinol for causing an antispasmatic effect. 3,778,507, Cl. 424-340.000.

Vajda, Edward A.: *See—*
Burrows, Charles B.; and Vajda, Edward A., 3,778,020.

Valmet Oy: *See—*
Merenheimo, Markku; Ruuska, Manuno; and Saivisalmi, Risio, 3,777,832.

Valtonen, Rainer Ilkka Tapio, to Oy Nokia Ab. Contact rail unit. 3,778,746, Cl. 339-21.00r.

Van Benschoten, Peter J.; and Kilsdonk, Jan Albert, to Oak Industries Inc. Indicator assembly with interlocking contact. 3,778,820, Cl. 340-381.00r.

Van Der Waaij, Dirk; Erkelens, Hendrik J.; Bossers, Pieter A.; and Kruiswijk, Franciscus J., to Nederlandse Organisatie voor Toegepast Natuurwetenschapplijk Orderzoek ten behoeve van de Volksgezondheid. Transporter for substantially germfree transport of bg living organisms. 3,777,736, Cl. 128-1.00r.

Van Dyke, Le Roy L.: *See—*
Kubli, Robert A.; Sasse, Frederick H.; Uttrachi, Gerald D.; Van Dyke, Le Roy L.; and Nakabayashi, Masahiro, 3,778,587.

Van Huffel, Isadore E. Maintenance means for tape player cabinets. 3,777,330, Cl. 15-421.000.

Van Manen, Jacob Teunis Teunissen, to Conical Containers Company (Proprietary) Limited. Apparatus for sealing plastic containers. 3,777,454, Cl. 53-373.000.

Van Roucke, L., to N.V. Bekaert S.A. Apparatus for vaporizing metal on a substratum. 3,777,704, Cl. 118-49.100.

Van Thyne, Ray J.: *See—*
Rausch, John J.; and Van Thyne, Ray J., 3,778,299.

Van Uitert, Legrand Gerard: *See—*
Pinnow, Douglas Arthur; Van Uitert, Legrand Gerard; and Williams, John Charles, 3,778,132.

Vanderpool, James L.; and Dohras, Bruce W., to Monarch Marking Systems Company, The. Record reading system. 3,778,597, Cl. 235-61.11e.

Vaneerden, Dick. High amperage switch apparatus with resiliently mounted fluid cooled terminals. 3,778,680, Cl. 317-100.000.

Vaskor Industries, Inc.: *See—*
Hughes, Robert L.; and Rouse, John E., 3,777,985.

VEB Pentacon Dresden Kamera- und Kinowerke: *See—*
Zimmet, Hans, 3,778,151.

Veil, Karl: *See—*
Zellbeck, Gustav; Bosch, Paul; Veil, Karl; and Lutz, Gerhard, 3,777,888.

Velarde, Clyde R.: *See—*
Klenz, Karl A.; and Velarde, Clyde R., 3,777,400.

Velsicol Chemical Corporation: *See—*
Krenzer, John; and Richter, Sidney B., 3,778,512.

Vereinigte Farbenglasereke Aktiengesellschaft: *See—*
Ranel, Josef, 3,778,246.

Vereschagin, Leonid Fedorovich; Konyaev, Jury Sergeevich; Polyakov, Evgeny Valentinovich; and Surkov, Ivan Efimovich. High-pressure plunger compressor. 3,778,196, Cl. 417-501.000.

Vermeer, Dick Charles; and Washington, James MacKnight, to Allied Chemical Corporation. Electronic-pneumatic yarn plug control for yarn texturing device. 3,777,338, Cl. 28-1.700.

Viamonte, Manuel, Jr., to Hyperion Incorporated. Angiographic cradle. 3,778,049, Cl. 269-323.000.

Vickers, Stanley E.: *See—*
Schieser, Warren J.; and Vickers, Stanley E., 3,777,913.

Victor Company of Japan, Limited: *See—*
Mizuno, Hideaki; Konno, Toshio; and Akiyama, Naoki, 3,778,266.

Victor Metal Products Corporation: *See—*
Abbott, Joseph L., 3,778,321.

Vidar Laboratories, Inc.: *See—*
Campman, James P.; and Linscott, Jack H. (said Campman assor. of 1/2 to said), 3,778,795.

Viersma, Taco Jan: *See—*
Blok, Petrus; and Viersma, Taco Jan, 3,777,621.

Viglione, Gaetano Thomas. Alloy of tin, silver and nickel. 3,778,259, Cl. 75-134.00b.

Viola, Thomas J., Jr.: *See—*
Mattauch, Robert J.; and Viola, Thomas J., Jr., 3,778,645.

Visser, Gerrit A.: *See—*
Olsen, John O.; and Visser, Gerrit A., 3,777,689.

Vissers, H., N.V.: *See—*
De Koning, Cornelis J., 3,777,992.

Visual Graphics Corporation: *See—*
Friedel, Murray, 3,777,634.

Vock, Richard C.: *See—*
Gundlach, Robert W.; and Vock, Richard C., 3,778,841.

Voget, Ronald F., to Agridustrial Electronics, Inc. Means for measuring loss tangent of material for determining moisture content. 3,778,707, Cl. 324-61.00r.

Vogt, Kuno J. Canine feces disposal mechanism. 3,777,708, Cl. 119-1.000.

Volk, Karl Erich: *See—*
Carlyle, Bert Edward; Rawlings, Robert Louis; and Volk, Karl Erich, 3,778,767.

Volkland, Charles M.: *See—*
Lubarsky, Andre, Jr.; and Volkland, Charles M., 3,778,704.

Von Freyhold, Helmut, to Henkel & Cie G.m.b.H. Binders based on alkali metal silicates. 3,778,283, Cl. 106-84.000.

Von Gutfeld, Robert Jacob, to International Business Machines Corporation. Method for writing information at nanosecond speeds and a memory system therefor. 3,778,785, Cl. 340-173.01s.

Von Horsten, Hans-Joachim: *See—*
Schroder, Jurgen; Ochel, Gunter; and Von Horsten, Hans-Joachim, 3,778,549.

Vora, Madhukar B.: *See—*
Chang, Joseph J. F.; and Vora, Madhukar B., 3,778,687.

Vornberger, George F.; and Albaugh, Arden A., to Pullman Incorporated. Apparatus for positioning of vehicle suspension. 3,778,079, Cl. 280-80.00b.

Vosskuhler, Heinz, to Heinz, Jeffrey, Manufacturing Co., Inc. Apparatus for compressing material. 3,777,658, Cl. 100-98.000.

Vyzkumny ustav bavlnarsky: *See—*
Stanislav, Kabele; Ctibor, Doudlebsky; Frantisek, Jaros; Zdenek, Svec; and Bohumir, Brozek, 3,777,466.

Waagner-Biro Aktiengesellschaft: *See—*
Nikowitz, Johann; and Schwarz, Michael, 3,777,938.

Wagensonner, Eduard: *See—*
Wick, Richard; Brath, Alfred; and Wagensonner, Eduard, 3,778,558.

Wages, Charles G.: *See—*
United States of America, National Aeronautics and Space Administration, 3,777,552.

Wagner Electric Corporation: *See—*
Kersting, Raymond J., 3,778,119.

Wakita, Nobuo: *See—*
Yano, Seinosuke; Sakurai, Hiroshi; Wakita, Nobuo; and Mimura, Hiroshi, 3,778,317.

Wakui, Toshio, to Fuji Denki Seizo Kabushiki Kaisha. Method of making cylindrical fuse. 3,777,370, Cl. 29-623.000.

Walker, Terence, to American Optical Corporation. Ophthalmometer having alternative viewing measuring systems and including improved contact lens holding means. 3,778,164, Cl. 356-124.000.

Wallace, Benjamin K.: *See—*
Wallace, Paul K.; and Wallace, Benjamin K., 3,778,209.

Wallace Business Forms, Inc.: *See—*
Steidinger, Donald J., 3,777,971.

Wallace, Paul K.; and Wallace, Benjamin K., to Morrison, Dan, Meat Pies, Inc. Extruder for food products such as tamales. 3,778,209, Cl. 425-133.000.

Wallace, Richard R., to Harwald Company, The. Film inspection apparatus. 3,778,802, Cl. 340-260.000.

Wallace, Sam P., Co., Inc.: *See—*
Brewer, Jack J., 3,777,900.

Walsh, John A., to Honeywell Information Systems, Inc. Apparatus for providing improved identification of electrical terminals. 3,778,751, Cl. 339-113.00r.

Walsh, Joseph M., to United States of America, Atomic Energy Commission, mesne. Nuclear engine flow reactivity shim control. 3,778,344, Cl. 176-22.000.
Walter, Jurgen; and Hackforth, Bernhard. Combined clutch and flexible coupling. 3,777,865, Cl. 192-70.000.
Walters, Craig T.: *See*—
Mallozzi, Philip J.; Epstein, Harold M.; Walters, Craig T.; Applebaum, David C.; and Gallagher, William J., 3,778,585.
Walters, Ronnie G.; Markley, Theodore J.; and Jennings, Richard E., to Allen-Bradley Company. Feedback fault indicate circuit. 3,778,696, Cl. 318-565.000.
Walus, Aloysius N., to Du Pont de Nemours, E. I., and Company. Organosols of aziridinyl alkyl acrylate or methacrylate acrylic graft polymers. 3,778,403, Cl. 260-31.40r.
Wanesky, William R., to Western Electric Company, Incorporated. Apparatus for microscopically inspecting opposite sides of objects. 3,778,131, Cl. 350-81.000.
Wang, Chao Chen, to Sperry Rand Corporation. Base band pulse energy storage system. 3,778,732, Cl. 333-20.000.
Warner, Joseph S., to Metalogics Corporation, mesne. Automatic banking deposit machine. 3,778,596, Cl. 235-61.90r.
Warner-Lambert Company: *See*—
Livingstone, Alexander, 3,777,946.
Simonetti, Sergio, 3,777,396.
Warwick Electronics, Inc.: *See*—
Chase, Willis E.; and Plunkett, Bradley J., 3,778,525.
Washington, James MacKnight: *See*—
Vermeer, Dick Charles; and Washington, James MacKnight, 3,777,338.
Watanabe, Kenzo: *See*—
Kimura, Tomiaki; Ohmura, Yasuhiro; Yoshimura, Tamotsu; Kohyama, Katsuhisa; and Watanabe, Kenzo, 3,778,402.
Watanabe, Shigeru; Yokozawa, Norio; Yabuuchi, Shigeru; and Terakado, Ituko, to Hitachi, Ltd. Automatic scaling system. 3,778,607, Cl. 235-193.000.
Watanabe, Teruji; and Ishihara, Hideo, to Kokusai Denshin Denwa Kabushiki Kaisha. High-speed transmission system for magnetic bubbles. 3,778,789, Cl. 340-174.0tf.
Waters Instruments, Inc.: *See*—
Burton, Thomas A.; and Moberg, Allen W., 3,777,507.
Waters, James P., to United Aircraft Corporation. Hologram formation with a sparkle reference point source. 3,778,130, Cl. 350-3.500.
Wattiez, Daniel: *See*—
Cuvelier, Georges; and Wattiez, Daniel, 3,778,225.
Cuvelier, Georges; and Wattiez, Daniel, 13,778,225.
Weatherhead Company, The: *See*—
Wellman, Ellis M., 3,778,200.
Weatherly, Gilbert L.; and Back, Paul, to Weck, Edward, & Company, Inc. Surgical clip applicator. 3,777,538, Cl. 72-410.000.
Weaver, Clarence W.; and Scroggins, Robert R., to Allied Chemical Corporation. LPG injection with surfactant for relieving permeability blocking. 3,777,820, Cl. 166-35.00r.
Webb, Jervis B., Company: *See*—
Dehne, Clarence A., 3,777,879.
Weber, Richard J.; and Franciscus, Leo C., to United States of America, National Aeronautics and Space Administration. Supersonic-combustion rocket. 3,777,490, Cl. 60-258.000.
Weber, Richard M.: *See*—
Meeks, Merritt R.; Monroe, Roger F.; and Weber, Richard M., 3,777,934.
Meeks, Merrtt R.; Monroe, Roger F.; and Weber, Richard M., 37,779,341.
Webster, Harold F.; and Harris, Lawrence A., to General Electric Company. Odone gas detector. 3,778,229, Cl. 23-254.00e.
Weck, Edward, & Company, Inc.: *See*—
Weatherly, Gilbert L.; and Back, Paul, 3,777,538.
Weidener, Richard A.: *See*—
Fazioli, Chris T.; Sirota, Julius; and Weidener, Richard A., 3,778,399.
Weigert, Frank J., to Du Pont de Nemours, E. I., and Company. 2-Substituted-4,5-dicyanoimidazoles and their preparation from diaminomaleonitrile. 3,778,446, Cl. 260-309.000.
Weiner, David William, to Bell Telephone Laboratories, Incorporated. Single three-wire-port PBX intercom trunk circuit arrangement. 3,778,554, Cl. 179-18.0ad.
Weiner, Gershen. Building. 3,777,426, Cl. 52-92.000.
Weinert, Volker; Frankiewicz, Gerhard; and Engelac, Gunter, to Agfa-Gevaert Aktiengesellschaft. Apparatus for transporting and intermittently braking webs of paper or the like. 3,777,960, Cl. 226-33.000.
Weinstein, Frank, to Concord Fabrics Inc. Display stand for yard goods. 3,777,895, Cl. 211-44.000.
Weiss, Ronald B.: *See*—
Rennick, Lyle V.; Shore, John D.; Mitchael, William L.; Weiss, Ronald B.; and Almich, Clarence L., 3,777,559.
Weiss, Walter J., to Texaco Inc. Continuous recording viscometer. 3,777,551, Cl. 73-59.000.
Weisselberg, Edward B.; Worden, George M., Sr.; Lamp, William F.; and Lane, Alexander M., to Wyssmont Company, Inc. Nondusting, high temperature dryer. 3,777,409, Cl. 34-173.000.
Weissenfels, Franz: *See*—
Junger, Hans; and Weissenfels, Franz, 3,778,413.
Welch, Eugene E., to General Motors Corporation. Friction welding process. 3,777,360, Cl. 29-470.300.
Welham, Brian H., to Bausch & Lomb, Incorporated. Reflective half-lens rectifier. 3,778,134, Cl. 353-5.000.
Wellman, Ellis M., to Weatherhead Company, The. Rotary fluid pump or motor. 3,778,200, Cl. 418-132.000.
Welsh, Joseph P.: *See*—
Queener, Carl A.; Ralston, William C.; Smith, Thomas C.; and Welsh, Joseph P., 3,778,262.
Welz, Bernhard: *See*—
Schmedes, Helga; Hansen, Paul; and Welz, Bernhard, 3,778,156.
Wenig, Norman B. Air distributor. 3,777,650, Cl. 98-40.00v.
Wennberg, Peder K., to Propulsion Systems, Inc. Controllable pitch propellers for marine vessels. 3,778,187, Cl. 416-95.000.
Wenzel, Heinz-Eckard: *See*—
Schurenberg, Rudi; and Wenzel, Heinz-Eckard, 3,777,626.
Werner, Georg: *See*—
Rix, Albert; Werner, Georg; and Euchs, Hans, 3,777,869.
Werts, Everett Wendell: *See*—
Hong, Jose Cheng Tsuen; and Werts, Everett Wendell, 3,778,769.
West, Benjamin W.: d/b/a California Controls Company: *See*—
Bilbrey, Robert A., 3,777,696.
Western Electric Company, Incorporated: *See*—
Fuchs, Francis Joseph, Jr., 3,777,361.
Gillie, Robert E., 3,777,703.
Robertson, Gordon Ian, 3,778,626.
Wanesky, William R., 3,778,131.
Westinghouse Air Brake Company: *See*—
Ryburn, Kenneth D.; McClone, Robert J.; and Fox, Charles H., 3,778,115.
Westinghouse Brake and Signal Company, Limited: *See*—
Bull, Ivor Henry, 3,778,813.
Westinghouse Electric Corporation: *See*—
Danehy, Robert P.; Kitchell, Bruce N.; and Silva, Antonio V., 3,777,524.
Davies, Norman, 3,778,567.
Harrold, Ronald T., 3,778,573.
Longuemare, R. Noel, Jr.; and Mooney, David H., Jr., 3,778,829.
Petro, James; and Rively, Clair M., 3,778,664
Roerty, Dennis F.; and MacIndoe, Robert C., 3,778,712.
Szabo, Andras I.; Zitelli, William E.; and Tarli, Dan V., 3,778,794.
Weston, Warren E.; and Cooke, Anson R., to Amchem Products, Inc. Chloramben products and processes for use with rice. 3,778,248, Cl. 71-115.000.
Weyerhaeuser Company: *See*—
Selden, Robert W.; and Schein, Edward W., 3,777,434.
Wheaton Industries: *See*—
Heath, Harry Garett, Jr.; and Holzapfel, Carl, 3,778,210.
Wheaton, Theodore C.; Tamagni, Albert J.; and Moshinsky, Robert W., 3,778,223.
Wheaton, Theodore C.; Tamagni, Albert J.; and Moshinsky, Robert W., to Wheaton Industries. Device for injection blow molding PVC bottles. 3,778,223, Cl. 432-227.000.
Wheeler, Robert S.: *See*—
Larson, Lars M.; Feasey, Raymond J.; and Wheeler, Robert S., 3,777,451.
Whitaker, William T. Remote meter reading apparatus. 3,778,771, Cl. 340-150.000.
White, Eugene T.; and McEnroy, Joseph H. Microfilm searching system. 3,778,630, Cl. 250-557.000.
Whitney, Robert J.; Gaston, Donald H.; and Nickell, Joe A. Machine and method for simultaneously forming a plurality of building sections. 3,777,357, Cl. 29-429.000.
Whitney, Walter D. Straightening apparatus for vehicle bodies. 3,777,541, Cl. 72-457.000.
Whittaker, Rodney R.: *See*—
Bhagawan, Venkatesha S.; Jones, Richard A.; McDowell, Allen W.; Mine, George D.; Remsburger, Louis J.; Rupp, Bruce A.; and Whittaker, Rodney R., 3,778,819.
Wick, Richard; Brath, Alfred; and Wagensonner, Eduard, to Afga-Gevaert Aktiengesellschaft. Method and arrangement for sound track recording in which background music is damped during speech signals. 3,778,558, Cl. 179-100.2md.
Wickenden, Geoffrey Charles: *See*—
Potts, Frederick John; and Wickenden, Geoffrey Charles, 3,778,010.
Widhoff, Andre, to Frangeco, a Societe Anonyme Francaise. Device for stabilizing rear-tipping vehicles. 3,778,105, Cl. 298-17.00s.
Widmann, Werner, to Transformatoren Union Aktiengesellschaft. Insulating arrangement for increasing breaking voltage stability of high voltage instrumentalities. 3,778,538, Cl. 174-140.00r.
Wiechers, Herbert; and Heikaus, Reinhard, to Bayer Aktiengesellschaft. Electrolytic apparatus including bipolar electrodes defining an enclosed volume and held in a non-conductive frame. 3,778,362, Cl. 204-254.000.
Wiedhaber, Ernest. Optical scanner. 3,778,129, Cl. 350-6.000.
Wiegand, Donald A., to United States of America, Army. Method for use of inorganic azides as photosensitive materials at low temperatures. 3,778,269, Cl. 96-27.00r.
Wiegreffe, Wolfgang: *See*—
Bockmann, August; Trenczek, Gerhard; Rudolph, Hans; Wiegreffe, Wolfgang; and Ritter, Wolfgang, 3,778,289.
Wieneck, Daniel Charles: *See*—
Johnston, Roger L.; and Wieneck, Daniel Charles, 3,777,629.
Wiese, Delmar R., to Hoover Ball and Bearing Company. Apparatus for discharging top discharge bins. 3,777,920, Cl. 214-314.000.

Wightman, John W. Positive liquid temperature controlling device. 3,778,594, Cl. 219-430.000.
Wikstrom, Gunnar Wilhelm, to AB Bahco Ventilation. Electrical heating units. 3,778,593, Cl. 219-362.000.
Wilcox, Lyle C.: *See*—
Dunlap, Frederick A.; and Wilcox, Lyle C., 3,777,557.
Wilhelm, Max; and Riess, Walter, to Ciba-Geigy Corporation. Aminoalkyl-ethanonthracenes. 3,778,467, Cl. 260-490.000.
Williams, Arthur B., to Singer Company, The. Crystal controlled frequency discriminator. 3,778,727, Cl. 329-104.000.
Williams, Donald D.: *See*—
Alexander, Joe K.; and Williams, Donald D., 3,778,021.
Williams, George J. Door position signalling system. 3,778,806, Cl. 340-274.000.
Williams Instruments, Inc.: *See*—
Williams, Robert A.; and Holt, David M., 3,778,709.
Williams, John Charles: *See*—
Pinnow, Douglas Arthur; Van Uitert, Legrand Gerard; and Williams, John Charles, 3,778,132.
Williams, Laurence Lyman; and Coscia, Anthony Thomas, to American Cyanamid Company. Paper containing a polyamidepolyamine-epichlorophydrin wet strength resin. 3,778,339, Cl. 162-164.000.
Williams, Michael, to Emerson Electric Co. Electric heating assemblies. 3,778,592, Cl. 219-336.000.
Williams, Robert A.; and Holt, David M., to Williams Instruments, Inc. Curve following stray energy test system. 3,778,709, Cl. 324-72.000.
Williams, Robert H. Rotary internal combustion engine. 3,777,720, Cl. 123-8.090.
Willner, Kurt. Apparatus for the control of traveling constructional implements. 3,778,168, Cl. 356-152.000.
Wilputte Corporation: *See*—
Peck, John C., 3,777,680.
Wilson, Donald M.: *See*—
Langston, Perry R., Jr.; Tummala, Rao R.; and Wilson, Donald M., 3,778,127.
Wilson, Donald Miller, to International Business Machines Corporation. Gas display panel without exhaust tube structure. 3,778,126, Cl. 316-20.000.
Wilson, George A., to I-T-E Imperial Corporation. Draw out switchgear-compartment shutter. 3,778,568, Cl. 200-50.0aa.
Wilson, Harold W., to Golden Cycle Corporation, The. Process for separation and recovery of gold. 3,778,252, Cl. 75-101.00r.
Wilson, Randy Eugene, to Litton Systems, Inc. Modular printed circuit board assembly. 3,778,681, Cl. 317-101.0dh.
Windmoller & Holscher: *See*—
Kukhermann, Gustav, 3,777,903.
Schwarzkoff, August, 3,777,970.
Winkler, Alfred; Lermann, Peter; and Fauth, Guenter, to Agfa-Gevaert AG. Photographic apparatus for use with percussively ignitable flash lamps. 3,777,641, Cl. 95-11.001.
Winkler, Alfred; Lermann, Peter; and Fauth, Guenter, to Agfa-Gevaert AG. Camera for use with percussively ignitable flash lamps. 3,777,642, Cl. 95-11.001.
Winter, Phillip M.; and Gardner, Gary A. Spheroidel peening particles adhesively bonded to a woven cloth. 3,778,241, Cl. 161-87.000.
Wisconsin Alumni Research Foundation: *See*—
Lodge, Arthur Scott, 3,777,549.
Wise, Elmo E. Ankle supports. 3,777,751, Cl. 128-166.000.
Witkowski, Henry J. Ball game. 3,778,055, Cl. 273-1.00r.
Witkowski, Henry J. Hat game. 3,778,056, Cl. 273-1.00r.
Witwer, Wallace J., to Harrischfeger Corporation. Bounce-preventing control for hydraulic cylinder. 3,777,899, Cl. 212-55.000.
Wloszek, Joseph T., to Custom Machine, Inc. Support for test head. 3,777,553, Cl. 73-71.500.
Woessner, Roger J., to Baxter Laboratories, Inc. Indicator device for collapsible fluid container. 3,777,697, Cl. 116-118.00r.
Wohlberg, Cornel, to United States of America, Atomic Energy Commission. Method of forming impermeable carbide coats on graphite. 3,778,300, Cl. 117-118.000.
Wohlberg, Cornel, to United States of America, Atomic Energy Commission. Method of coating graphite tubes with refractory metal carbides. 3,778,301, Cl. 117-118.000.
Wolcott, John R., to Martin Marietta Corporation. Electronic distance measuring device and method. 3,778,160, Cl. 356-5.000.
Wolda, Tiete Okke, to Boyles Industries Limited. Fluid responsive core barrel system. 3,777,826, Cl. 175-46.000.
Wolf, Leo. Adjustable joint for electrical fixtures. 3,778,610, Cl. 240-73.0bj.
Wolfe, Raymond: *See*—
Bobeck, Andrew Henry; Copeland, John Alexander, III; and Wolfe, Raymond, 3,778,738.
Wolff, Rafael L.: *See*—
Christensen, Frank G.; and Wolff, Rafael L., 3,777,830.
Wollensak, John C.; and Zaweski, Edward F., to Ethyl Corporation. Hydrocarbyl-hydroxyphenyl dithiocarbamates and their use as antioxidants. 3,778,460, Cl. 260-455.00a.
Wood, Donald Albert: *See*—
Hoye, Peter Albert Theodore; and Wood, Donald Albert, 3,778,456.
Wood, Donald H., to United Aircraft Corporation. Vane damping. 3,778,184, Cl. 415-174.000.
Wood, Russell E., to Carrier Corporation. Control for air conditioning apparatus. 3,777,803, Cl. 165-2.000.
Woolgar, Robert John: *See*—
Keith, Donald George; Morris, Douglas Barrett; Maack, Horst Egon Fred Ludwig; Mason, Ernest Arthur; and Woolgar, Robert John, 3,778,322.
Woolley, Donald D., to Gillette Company, The. Continuous process of manufacturing polymeric composition writing points and devices. 3,778,495, Cl. 264-177.00f.
Worden, Dexter: *See*—
Breton, Ernest J.; and Worden, Dexter, 3,778,586.
Worden, George M., Sr.: *See*—
Weisselberg, Edward B.; Worden, George M., Sr.; Lamp, William F.; and Lane, Alexander M., 3,777,409.
World Patent Development Corporation: *See*—
Hayworth, Curtis Benjamin, 3,778,401.
Worley, Raymond Arnold. Wall construction device. 3,777,427, Cl. 52-127.000.
Worters, Allen J.: *See*—
Gicca, Francis A.; Passavant, Francis C.; Stebbins, William W.; and Worters, Allen J., 3,778,811.
Wright, Carl Macey, to RCA Corporation. Keyboard encoder. 3,778,815, Cl. 340-365.00s.
Wright, James A.; and Forrest, Robert L., to Emerson Electric Co. Ignition and control systems for gas burners. 3,778,218, Cl. 431-67.000.
Wright, William Michael D., to Dayton Wright Associates Limited. Electrastatic loudspeaker having acoustic wavefront modifying device. 3,778,562, Cl. 179-111.00r.
Wuenschel, Paul C.: *See*—
Gostavson, Carl A.; Shutes, Emmett B.; and Wuenschel, Paul C., 3,777,814.
Wunsch, William K. Cigarette holder for ash receptacle. 3,777,767, Cl. 131-257.000.
Wyeth, Nathaniel Convers; and Roseveare, Ronald Newman, to Du Pont de Nemours, E. I., and Company. Apparatus for preparing a biaxially oriented thermoplastic article. 3,778,214, Cl. 425-326.000.
Wyles, Walter E., to Lightolier Incorporated. Collapsibly joined louver grid. 3,777,432, Cl. 52-668.000.
Wyssmont Company, Inc.: *See*—
Weisselberg, Edward B.; Worden, George M., Sr.; Lamp, William F.; and Lane, Alexander M., 3,777,409.
Xerox Corporation: *See*—
Gundlach, Robert W.; and Vock, Richard C., 3,778,841.
Hudson, Frederick W., 3,778,144.
Knapp, Lowell W., 3,778,146.
Laskowski, Kenneth W., 3,778,618.
Lawlor, John E.; and Sgombick, John, 3,777,412.
Reehil, Edward G.; and Buddendeck, Gerald A., 3,778,147.
Silverberg, Norton, 3,778,817.
Suzuki, Katsuo, 3,778,222.
Swanberg, Melvin E., 3,777,578.
Yabuuchi, Shigeru: *See*—
Watanabe, Shigeru; Yokozawa, Norio; Yabuuchi, Shigeru; and Terakado, Ituko, 3,778,607.
Yamaguchi, Koichiro: *See*—
Imabayashi, Satoshi; Yamaguchi, Koichiro; and Murase, Shiego, 3,777,508.
Yamaguchi, Michio: *See*—
Kandatsu, Makoto; and Yamaguchi, Michio, 3,778,425.
Yamahara, Takeshi; and Deguchi, Takashi, to Sumitomo Chemical Co., Ltd. Process for producing aliphatic carboxylic acids and aromatic carboxylic acids. 3,778,471, Cl. 260-524.00r.
Yamaichi Denki Kogyo K.K. (Yamaichi Electric Mfg. Co., Ltd.): *See*—
Takahashi, Toru; and Kaneko, Kohei, 3,778,754.
Yamamoto, Akira, to Kabushiki Kaisha Komatsu Seisakusho. Carry-out carriage device of peeling machine. 3,777,963, Cl. 226-175.000.
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, to Sumitomo Chemical Company, Ltd. Process for producing benzodiazepine deriatives. 3,778,433, Cl. 260-239.30d.
Yamamoto, Iwao: *See*—
Yano, Masayuki; Yamamoto, Iwao; and Yasuhira, Nobuo, 3,778,498.
Yamamoto, Michihiro: *See*—
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,778,433.
Yamanoto, Akira; Yoshida, Dan; Onaka, Tatsumi; and Shiraishi, Minoru, to Hitachi Shipbuilding and Engineering Company Ltd. Abrasive slinging apparatus. 3,777,440, Cl. 51-9.000.
Yamasaki, Hiroo; Kurita, Yoshio; and Ito, Ichizo, to Yokogawa Electric Works, Ltd. Flow-velocity detecting device. 3,777,563, Cl. 73-194.00b.
Yamasaki, Toshio: *See*—
Staats, William A.; Bosley, Denis V.; Cook, John S.; and Yamasaki, Toshio, 3,777,394.
Yamase, Toshihiro: *See*—
Inoue, Eiichi; and Yamase, Toshihiro, 3,778,274.
Yamashita, Koichi: *See*—
Aiko, Hideo; Okamoto, Takao; Abe, Eiji; Tsukihashi, Kazunobu; and Yamashita, Koichi, 3,777,661.
Yanaba, Itsuyo: *See*—
Nakamura, Yoshiro; Umehara, Akira; and Yanaba, Itsuyo, 3,778,368.

Yang, John F. Y. Decorative applique having air-actuated noisemaker. 3,777,310, Cl. 2-48.000.
Yano, Masayuki; Yamamoto, Iwao; and Yasuhira, Nobuo, to Kuraray Co., Ltd. Process for recovering uranium. 3,778,498, Cl. 423-7.000.
Yano, Seinosuke; Sakurai, Hiroshi; Wakita, Nobuo; and Mimura, Hiroshi, to Nippon Steel Corporation. Method for heat treatment of a thick steel plate. 3,778,317, Cl. 148-12.000.
Yasuda, Isao: *See—*
Iizuka, Toru; Ionooka, Katsuo; Saitoh, Torahiko; and Yasuda, Isao, 3,778,590.
Yasuhira, Nobuo: *See—*
Yano, Masayuki; Yamamoto, Iwao; and Yasuhira, Nobuo, 3,778,498.
Yata, Kotaro; Nanba, Yasuhiro; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Exposure control circuitry compensated for temperature and voltage fluctuations. 3,777,638, Cl. 95-10.0ct.
Yaun Manufacturing Company, Inc.: *See—*
Barber, Claude L., 3,777,918.
Yauneridge, Raymond. Valve. 3,778,022, Cl. 251-14.000.
Yeager, Weldon O. Safety garment structure. 3,777,309, Cl. 2-2.500.
Yello, Joseph F., to Stewart-Warner Corporation. Intermediate frequency amplifier circuit. 3,778,720, Cl. 325-318.000.
Yokogawa Electric Works, Ltd.: *See—*
Yamasaki, Hiroo; Kurita, Yoshio; and Ito, Ichizo, 3,777,563.
Yokozawa, Norio: *See—*
Watanabe, Shigeru; Yokozawa, Norio; Yabuuchi, Shigeru; and Terakado, Ituko, 3,778,607.
Yoshida, Dan: *See—*
Yamanoto, Akira; Yoshida, Dan; Onaka, Tatsumi; and Shiraishi, Minoru, 3,777,440.
Yoshimura, Tamotsu: *See—*
Kimura, Tomiaki; Ohmura, Yasuhiro; Yoshimura, Tamotsu; Kohyama, Katsuhisa; and Watanabe, Kenzo, 3,778,402.
Yoshinaga Prince Co., Ltd.: *See—*
Yoshinaga, Sadao, 3,777,765.
Yoshinaga, Sadao, to Yoshinaga Prince Co., Ltd. Filter apparatus for removing tar and other delcterious substances from tobacco smoke. 3,777,765, Cl. 131-187.000.
Yoshinari, Kazuhiko: *See—*
Takahashi, Nobuyuki; Nagata, Shuji; Nishimara, Toshiro; and Yoshinari, Kazuhiko, 3,777,536.
Yoshino Kogyosho Co., Ltd.: *See—*
Nozawa, Takamitsu; and Kishi, Takao, 3,777,945.
Yosim, Samuel J.; Grantham, Le Roy F.; and Huber, Donald A., to Rockwell International Corporation. Non-polluting disposal of explosives and propellants. 3,778,320, Cl. 149-109.000.
Young, David W. Aircraft contained perspective radar display and guidance for approach and landing. 3,778,821, Cl. 343-5.00r.
Young, Elgin E., to PPG Industries, Inc. Method and apparatus for temperature control of a rotating metal oxide scraper element. 3,777,802, Cl. 161-1.000.
Young, Stephen A.: *See—*
Politz, William E., 3,777,320.
Younker, Gregory A.: *See—*
Kayser, James H.; and Younker, Gregory A., 3,777,924.
Youra, Charles J., to Doric Corporation. Die fixture and control apparatus. 3,777,602, Cl. 83-204.000.
Yuken Kogyo Company Ltd.: *See—*
Kanawa, Haruo, 3,778,719.
Zaccheo, John T. Personal sensitivity test method and apparatus therefor. 3,777,413, Cl. 35-22.00r.
Zahn, Erwin: *See—*
Hild, Willi; Zahradnik, Franz; Zahn, Erwin; and Priebe, Edmund, 3,778,407.
Zahradnik, Franz: *See—*
Hild, Willi; Zahradnik, Franz; Zahn, Erwin; and Priebe, Edmund, 3,778,407.
Zakharov, Mikahil Fedorovich: *See—*
Alexandrov, Alexandr Sergeevich; Schegolevatykh, Vadim Dmitrievich; Saveliev, Vyacheslav Ivanovich; and Zakharov, Mikahil Fedorovich, 3,777,544.
Zappia, Anthony T. Air squeeze ware tester. 3,777,556, Cl. 73-94.000.
Zavadil, David: *See—*
Harper, Robert; and Zavadil, David, 3,778,665.
Zaweski, Edward F.: *See—*
Wollensak, John C.; and Zaweski, Edward F., 3,778,460.
Zdenek, Svec: *See—*
Stanislav, Kabele; Ctibor, Doudlebsky; Frantisek, Jaros; Zdenek, Svec; and Bohumir, Brozek, 3,777,466.
Zeamer, Aaron C., to SCM Corporation. Ribbon guide for typewriter ribbon cartridge. 3,777,871, Cl. 197-151.000.
Zeliznak, Richard: *See—*
Booker, Philip P.; and Zeliznak, Richard, 3,778,315.
Zellbeck, Gustav; Bosch, Paul; Veil, Karl; and Lutz, Gerhard, to Bosch, Robert, G.m.b.H. Arrangement for pumping a filtered fluid. 3,777,888, Cl. 210-130.000.
Zellweger AG: *See—*
Kucera, Jaromir, 3,778,726.
Ziemba, Richard T., to General Electric Company. Fuze actuating system. 3,777,665, Cl. 102-70.20p.
Zimmer, Ernest C. Snap locking structural joint assembly. 3,778,175, Cl. 403-187.000.
Zimmermann, Helmuth; and Kielwein, Helmut, to Fr. Hesser Maschinenfabrik AG. Intermediate conveyor system for use with bagging and cartoning machines. 3,777,453, Cl. 53-251.000.
Zimmermann, Markus: *See—*
Burckhardt, Urs; and Zimmermann, Markus, 3,778,441.
Zimmet, Hans, to VEB Pentacon Dresden Kamera- und Kinowerke. Microfilm camera with longitudinal and cross slides movable in steps. 3,778,151, Cl. 355-53.000.
Zipper, Walter J. Traveler's bag. 3,777,862, Cl. 190-43.000.
Zitelli, William E.: *See—*
Szabo, Andras I.; Zitelli, William E.; and Tarli, Dan V., 3,778,794.
Zlobin, Viktor Grigorievich: *See—*
Maslenok, Boris Arkadievich; Zlobin, Viktor Grigorievich; Khegai, Anatoly Sergeevich; Nikolaev, Vladimir Petrovich; and Kruuger, Evgeny Adolfovich, 3,778,345.
Zoller, Robert; Fester, Walter; Jakob, Franz; and Dahmen, Alexander, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of filaments and fibers from acrylonitrile copolymers. 3,778,416, Cl. 260-78.0ua.
Zuckerman, Ira: *See—*
Grimm, Harold; and Zuckerman, Ira, 3,778,050.
Zuech, Ernest A., to Phillips Petroleum Company. Compounds of Mo or W with organometals as olefin reaction catalysts. 3,778,385, Cl. 252-431.00c.
Zupfer, Jerrald A.: *See—*
Koehler, Dale R.; Zupfer, Jerrald A.; and Prak, Jan Willem L., 3,777,471.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF DECEMBER, 1973

NOTE. Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AGFA-Gevaert Aktiengesellschaft: *See—*
Winkler, Friedrich, and Thate. Re. 27,839.
American Cyanamid Co.: *See—*
Maricle, Donald L., and Hoffmann. Re. 27,835.
Andrews, John D.: *See—*
Leasure, William C., and Andrews. Re. 27,838.
Carmichael, Thomas, and D. C. Howard, to Sherwood Products Corp. Vehicle flush toilet. Re. 27,833, 12–11–73, Cl. 4—115.
Dahms, Francis A., to Emhart Corp. Triple gob settle blowhead and baffle construction. Re. 27,834, 12–11–73, Cl. 65—261.
Emhart Corp.: *See—*
Dahms, Francis A. Re. 27,834.
Globe-Union Inc.: *See—*
Hansen, Eric G. Re. 27,836.
Hansen, Eric G., to Globe-Union Inc. Multistation pushbutton switch assembly with master control means for alternative push-push or only one switch operable at a time modes of actuation. Re. 27,836, 12–11–73, Cl. 200—5.
Hoffmann, Arthur K.: *See—*
Maricle, Donald L., and Hoffmann. Re. 27,835.
Howard, Durrell U.: *See—*
Carmichael, Thomas, and Howard. Re. 27,833.
Hyster Co.: *See—*
Kronholm, Donald D. Re. 27,840.
Kronholm, Donald D., to Hyster Co. Tandem roller. Re. 27,840, 12–11–73, Cl. 404—122.
Leasure, William C., and J. D. Andrews, to Mira-Pak, Inc. Package. Re. 27,838, 12–11–73, Cl. 229—17.
Mack-Wayne Plastics Co.: *See—*
McIntosh, James A. Re. 27,837.
Maricle, Donald L., and A. K. Hoffmann, to American Cynamid Co. Nonaqueous electro-chemical current producing cell having soluble cathode depolarizer. Re. 27,835, 12–11–73, Cl. 136—6.
McIntosh, James A., to Mack-Wayne Plastics Co. Plastic safety closure. Re. 27,837, 12–11–73, Cl. 215—9.
Mira-Pak, Inc.: *See—*
Leasure, William C., and Andrews. Re. 27,838.
Sherwood Products Corp.: *See—*
Carmichael, Thomas and Howard. Re. 27,833.
Thate, Kurt: *See—*
Winkler, Friedrich, and Thate. Re. 27,839.
Winkler, Friederich, and K. Thate, to AGFA-Gevaert Aktiengesellschaft. Motion picture camera. Re. 27,839, 12–11–73, Cl. 242—205.

LIST OF DESIGN PATENTEES

American Optical Corp.: *See—*
Armbruster, John T., and Kenzian. 229,581.
Amerock Corp.: *See—*
Clayton, LaVerne E. 229,537.
Anderson, Victor F. Jug. 229,540, 12–11–73, Cl. D9—40.
Anderson, Victor F. Jug. 229,541, 12–11–73, Cl. D9—40.
Anielak, Gary L. Fish aquarium. 229,569, 12–11–73, Cl. D30—9.
Armbruster, John T., and A. Kenzian, to American Optical Corp. Microscope. 229,581, 12–11–73, Cl. D57—1.
Askew, Aubrey, to Dunlop Ltd. Shoe sole. 229,524, 12–11–73, D2—320.
Baskin-Robbins Inc.: *See—*
Rothbardt, Bernard L. 229,528.
Bell, Jack T. Demountable personnel cab for pickup trucks. 229,554, 12–11–73, Cl. D14—3.
Billingslea, Elmer O., Jr. Boot jack. 229,584, 12–11–73, Cl. D86—10.
Blake, Edwin T. Candle chandelier mobile. 229,576, 12–11–73, Cl. D48—2.
Bonk, Donald C., to United Aircraft Corp. Portable cutting torch. 229,536, 12–11–73, Cl. D8—98.
Brainard, James L., and R. J. Palm. Spider for a wheel. 229,558, 12–11–73, Cl. D14—30.
Browdy, Herman. Pants. 229,523, 12–11–73, Cl. D2—28.
Burke Concrete Accessories, Inc.: *See—*
Steffan, William J. 229,538.
Burke, George K., and K. Raines, to Burron Medical Products. Flow control clamp. 229,560, 12–11–73, Cl. D16—1.
Burron Medical Products: *See—*
Burke, George K., and Raines. 229,560.
Ce-De Candy, Inc.: *See—*
Parker, Warren A. 229,522.
Chadima, George E., Jr. Combined data entry and distribution terminal. 229,564, 12–11–73, Cl. D26—5.
Clayton, LaVerne E., to Amerock Corp. Pull. 229,537, 12–11–73, Cl. D8—166.
Colato, Albert E. and P. N. Daly, to Litton Systems, Inc. Microwave oven broiler rack. 229,532, 12–11–73, Cl. D7—136.
Curtis, Helene, Industries, Inc.: *See—*
Kranz, Arnold H. 229,548.
Dallas, Charles G. Flower pot holder. 229,575, 12–11–73, Cl. D35—3.
Daly, Peter N.: *See—*
Colato, Albert E., and Daly. 229,532.
Duern, Gordon L. and D. S. Griffin, to Electrohome Ltd. Chair. 229,527, 12–11–73, Cl. D6—69.
Dunlop Ltd.: *See—*
Askew, Aubrey. 229,524.
Educational Progress, Inc.: *See—*
Sirkin, Harold C., and E. 229,563.
Electrohome Ltd.: *See—*
Duern, Gordon L., and Griffin. 229,527.
Electronic Industries Inc.: *See—*
Saidel, William R. 229,526.
Evacuo-Enterprises Ltd.: *See—*
Palme, Rudolph J. 229,559.
Fearing, Donald D., to Fearing Mfg. Co. Ear tag. 229,571, 12–11–73, Cl. D30—43.
Fearing Mfg. Co.: *See—*
Fearing, Donald D. 229,571.
Fink, Morris, to Windsor Industries, Inc. Radio. 229,579, 12–11–73, Cl. D56—4.
Fleming, David R.: *See—*
Ford, Henry A., Fleming, and King. 229,553.
Ford, Henry A., D. R. Fleming, and J. F. King, to Lockheed Aircraft Corp. Articulated all terrain vehicle. 229,553, 12–11–73, Cl. D14—3.
Frost, Donald J. Holder for a token coin. 29,586, 12–11–73, Cl. D87—3.
Gallagher, Frank, and G. Perry, to Oxford Pendaflex Corp. Desk. 229,529, 12–11–73, Cl. D6—177.
Goldman, Arnold S., and D. K. Krumin, to Motorola, Inc. Radio pager or similar article. 229,567, 12–11–73, Cl. D26—14.
Gonzalez, Betty Jo. Toy dog. 229,572, 12–11–73, Cl. D34—2.
Griffin, Donald S.: *See—*
Duern, Gordon L., and Griffin. 229,527.
Hanamura, Kenji, Tancho Co., Ltd. Bottle. 229,547, 12–11–73, Cl. D9—157.
Harvey, Franklin D. Comb. 229,583, 12–11–73, Cl. D86—8.
Heller, Karen G. Box. 229,550, 12–11–73, Cl. D9—198.
Hodge, Lynn H. Periscope-type rear view mirror. 229,556, 12–11–73, Cl. D14—6.
Hodge, Lynn H., Periscope-type rear view mirror. 229,557, 12–11–73, Cl. D14—6.
Horgan, William J., Jr. Door. 229,551, 12–11–73, Cl. D13—1.
Horgan, William J., Jr. Post. 229,552, 12–11–73, Cl. D13—7.
Johnson, Bennie J. Horse walker. 229,570, 12–11–73, Cl. D30—42.
Kenzian, Adolf: *See—*
Armbruster, John T., and Kenzian. 229,581.
King, James F.: *See—*
Ford, Henry A., Fleming, and King. 229,553.
Klipsch and Associates, Inc.: *See—*
Klipsch, Paul W. 229,566.
Klipsch, Paul W., to Klipsch and Associates, Inc. Loudspeaker cabinet. 229,566, 12–11–73, Cl. D26—14.
Kobashikawa, Gary K. Hat. 229,525, 12–11–73, Cl. D2—250.
Kranz, Arnold H., to Curtis, Helene, Industries, Inc. Container for liquids. 229,548, 12–11–73, Cl. D9—169.
Krumin, Donald K.: *See—*
Goldman, Arnold S., and Krumin. 229,567.
Lauderback, Stephen K., to Sunbeam Corp. Housing for grass shears or the like. 229,534, 12–11–73, Cl. D8—8.
Legorju, Charles, to Societe Audax. Baffled loud-speaker. 229,565, 12–11–73, Cl. D26—14.
Litton Systems, Inc.: *See—*
Colato, Albert E., and Daly. 229,532.
Lockheed Aircraft Corp.: *See—*
Ford, Henry A., Fleming, and King. 229,553.
Mantelet, Jean, to Moulinex, Societe Anonyme. Electric barbecue unit. 229,531, 12–11–73, Cl. D7—110.
Martin, Paul A., to The Quaker Oats Co. Toy record player. 229,574, 12–11–73, Cl. D34—15.
Mascetti, Joseph A., Jr., to Plastofilm Industries, Inc. Cassette display package or the like. 229,549, 12–11–73, Cl. D9—182.
Metaframe Corp.: *See—*
Willinger, Allan H. 229,568.

Mileti, Orlando. Vertical collet fixture. 229,577, 12–11–73, Cl. D54—4.

Mileti, Orlando. Horizontal collet fixture. 229,578, 12–11–73, Cl. D54—4.

Motorola, Inc.: *See*—
Goldman, Arnold S., and Krumin. 229,567.

Moulinex, Societe Anonyme: *See*—
Mantelet, Jean. 229,531.

Nelson, Axel B.: *See*—
Sloan, James A., and Nelson. 229,561.

North American Philips Corp.: *See*—
Singleton, Alan R. 229,585.

Owens-Illinois, Inc.: *See*—
Plummer, James E. 229,546.
Schweizer, Peter L. 229,539.
Schwelzer, Peter L. 229,542.
Uhllg, Albert R. 229,545.
Weckman, Richard L. 229,543.
Weckman, Richard L. 229,544.

Oxford Pendaflex Corp.: *See*—
Gallagher, Frank, and G. Perry. 229,529.

Pagliaro, Salvatore, Piano string plate or similar article. 229,580, 12–11–73, Cl. D56—9.

Palm, Robert J.: *See*—
Brainard, James L., and Palm. 229,558.

Palme, Rudolph J., to Evacuo-Enterprises Ltd. Molten metal sampling tube. 229,559, 12–11–73, Cl. D16—1.

Parker, Warren A., Ce-De Candy, Inc. Candy ring. 229,522, 12–11–73, Cl. D1—15.

Perry, Gordon: *See*—
Gallagher, Frank, and Perry. 229,529.

Plastoflim Industries, Inc.: *See*—
Mascetti, Joseph A., Jr. 229,549.

Plummer, James E., to Owens-Illinois, Inc. Bottle 229,546, 12–11–73, Cl. D9—143.

Pugh, James F., Sr. Knife. 229,533, 12–11–73, Cl. D7—144.

Quaker Oats Co., The: *See*—
Martin, Paul A. 229,574.

Raines, Kenneth: *See*—
Burke, George K., and Raines. 229,560.

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Rustemeyer, Andy M. Air cleaner stack assembly and mount for tractors. 229,555, 12–11–73, Cl. D14—6.

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Sirkin, Harold C., and E. 229,563.

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Societe Audax: *See*—
Legorju, Charles. 229,565.

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Sunbeam Corp.: *See*—
Landerback, Stephen K. 229,534.

Tancho Co., Ltd.: *See*—
Hanamura, Kenji. 229,547.

Theobald, Elwin. Half-round flat, hollow file. 229,535, 12–11–73, Cl. D8—90.

Toddy Products Inc.: *See*
Simpson, Oscar S., Jr. 229,530.

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CLASSIFICATION OF PATENTS

ISSUED DECEMBER 11, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2.5 3,777,309
48 3,777,310
143 3,777,311
154 3,777,312
247 3,777,313
265 3,777,314
321 3,777,315

CLASS 4
34 3,777,316
112 3,777,317
115 Re.27,833
172.14 3,777,319
172.21 3,777,318
287 3,777,320

CLASS 5
99C 3,777,321
267 3,777,322

CLASS 7
5.4 3,777,323

CLASS 8
31 3,778,225
115.5 3,778,226
151 3,778,227
174 3,778,228

CLASS 9
310B 3,777,325
310D 3,777,324

CLASS 15
21D 3,777,326
84 3,777,327
104.94 3,777,328
301 3,777,329
421 3,777,330

CLASS 17
32 3,777,331
71 3,777,332
72 3,777,333

CLASS 23
230M 3,778,230
253R 3,778,232
254E 3,778,229
259.1 3,778,233

CLASS 24
16PB 3,777,334
79 3,777,335
113MP 3,777,336
191 3,777,337

CLASS 28
1.7 3,777,338
46 3,777,339

CLASS 29
1D 3,777,340
95R 3,777,341
157R 3,777,344
157.1 3,777,342
157.3R 3,777,343
180 3,777,346
196.1 3,778,235
196.3 3,778,238
199 3,778,236
3,778,237
200A 3,777,347
203B 3,777,349
3,777,350
203D 3,777,352
203H 3,777,351
203P 3,777,348
235 3,777,353
237 3,777,354
243.56 3,777,355
428 3,777,356
429 3,777,357
450 3,777,358
463 3,777,359
470.3 3,777,360
470.6 3,777,361
474.3 3,777,362
571 3,777,363
578 3,777,364
591 3,777,365
592 3,777,366
597 3,777,367
599 3,777,368
603 3,777,369
623 3,777,370
624 3,777,371

CLASS 30
32 3,777,396
90.6 3,777,397
124 3,777,398
361 3,777,399
383 3,777,401

CLASS 32
10A 3,777,402
33 3,777,403

CLASS 33
245 3,777,404

CLASS 34
57R 3,777,405
99 3,777,406
105 3,777,407
156 3,777,408
173 3,777,409

CLASS 35
9B 3,777,410
9R 3,777,411
19R 3,777,412
22R 3,777,413
28.5 3,777,414
31C 3,777,416
31F 3,777,415
35C 3,777,417
62 3,777,418

CLASS 36
7.7 3,777,373
38 3,777,374
71 3,777,419

CLASS 37
64 3,777,372
67 3,777,375
3,777,376
195 3,777,377

CLASS 40
27 3,777,378
106.21 3,777,379

CLASS 42
1R 3,777,382
1S 3,777,380
3,777,381
49A 3,777,383
58 3,777,386
66 3,777,384
76R 3,777,385
84 3,777,387

CLASS 43
9 3,777,388
15 3,777,389
422GC 3,777,572

CLASS 46
1K 3,777,391
1L 3,777,390
17 3,777,392
25 3,777,393
202 3,777,394
243AV 3,777,395
3,777,420

CLASS 47
33 3,777,421

CLASS 48
105 3,778,240
214 3,778,239

CLASS 49
7 3,777,422
31 3,777,423
485 3,777,424

CLASS 51
9 3,777,440
105SP 3,777,441
135R 3,777,442
206.5 3,777,443
391 3,777,444

CLASS 52
2 3,777,425
92 3,777,426
127 3,777,427
146 3,777,428
173 3,777,438
196 3,777,429
309 3,777,430
562 3,777,431
668 3,777,432
693 3,777,433
753C 3,777,434
754 3,777,435
758C 3,777,436
758D 3,777,437

CLASS 53
3 3,777,439
14 3,777,445
30 3,777,446
36 3,777,447
43 3,777,449
47 3,777,448
138R 3,777,450
180 3,777,451
206 3,777,452
251 3,777,453
373 3,777,454
381A 3,777,455

CLASS 55
32 3,777,456
223 3,777,457
287 3,777,458

CLASS 56
15.3 3,777,459
16.7 3,777,460
202 3,777,461
328 3,777,462
330 3,777,463

CLASS 57
24 3,777,464
34HS 3,777,465
58.89 3,777,466
77.4 3,777,467
120 3,777,468
140R 3,777,469
157R 3,777,470

CLASS 58
23R 3,777,471
57.5 3,777,472
90B 3,777,474
90R 3,777,473
126B 3,777,475

CLASS 59
85 3,777,476
93 3,777,477

CLASS 60
39.16R 3,777,478
39.25 3,777,479
39.28R 3,777,480
3,777,482
3,777,483
39.28 3,777,481
39.65 3,777,484
95 3,777,485
105 3,777,486
204 3,777,487
3,777,488
226R 3,777,489
258 3,777,490
372 3,777,491
462 3,777,492
493 3,777,493
507 3,777,494
530 3,777,495
593 3,777,496

CLASS 61
46.5 3,777,497
69R 3,777,498
72.3 3,777,499
72.6 3,777,500

CLASS 62
45 3,777,501
55 3,777,502
62 3,777,503
73 3,777,504
81 3,777,505
237 3,777,506
306 3,777,507
324 3,777,508
470 3,777,509

CLASS 64
17A 3,777,510

CLASS 65
43 3,778,242
58 3,778,243
106 3,778,244
119 3,778,245
261 Re.27,834
360 3,778,246

CLASS 66
76 3,777,511
125R 3,777,512
140R 3,777,513
196 3,777,514

CLASS 68
198 3,777,515
3,777,516

CLASS 70
35B 3,777,520
53 3,777,517
200 3,777,518
220 3,777,519
364R 3,777,521
455 3,777,522
456R 3,777,523

CLASS 71
95 3,778,247
115 3,778,248

CLASS 72
8 3,777,524
22 3,777,525
35 3,777,526
36 3,777,527
41 3,777,528
57 3,777,529
102 3,777,345
129 3,777,530
181 3,777,531
205 3,777,532
3,777,533
208 3,777,534
293 3,777,535
365 3,777,536
391 3,777,540
404 3,777,537
410 3,777,538
453 3,777,539
457 3,777,541
3,777,542
465 3,777,543
468 3,777,544

CLASS 73
3 3,777,545
4R 3,777,546
6 3,777,547
12 3,777,548
53 3,777,549
59 3,777,550
3,777,551
67.8S 3,777,552
71.5 3,777,553
74.5U 3,777,554
91 3,777,555
94 3,777,556
95 3,777,557
105 3,777,558
117.3 3,777,559
151.5 3,777,560
181 3,777,561
190R 3,777,562
194B 3,777,563
194F 3,777,564
258 3,777,565
290R 3,777,566
351 3,777,567
355EM 3,777,568
389 3,777,569
398C 3,777,570
421.5 3,777,571
432R 3,777,573
453 3,777,574
483 3,777,575

CLASS 74
10.29 3,777,576
89 3,777,578
89.22 3,777,577
99 3,777,579
110 3,777,580
3,777,581
112 3,777,582
230.17D 3,777,585
230.17E 3,777,583
3,777,584
231J 3,777,586
424.8R 3,777,587
440 3,777,588
498 3,777,589
3,777,590
576 3,777,591
579E 3,777,592
687 3,777,593
3,777,594

CLASS 75
.5BC 3,778,249
58 3,778,250
101R 3,778,252
123R 3,778,253
3,778,254
126C 3,778,255
134B 3,778,259
134F 3,778,256
173A 3,778,257
173R 3,778,258
174 3,778,260
204 3,778,261

CLASS 76
107R 3,777,595

CLASS 81
177G 3,777,596

CLASS 83
22 3,777,597
29R 3,777,598
39 3,777,599
3,777,600
160 3,777,601
204 3,777,602
212 3,777,603
374 3,777,604
452 3,777,605
460 3,777,606
482 3,777,607
517 3,777,608
635 3,777,609
678 3,777,610

CLASS 84
1.25 3,778,525
204 3,777,611
258 3,777,612
297S 3,777,613

CLASS 89
26 3,777,614

CLASS 90
10 3,777,615
13.2 3,777,616

CLASS 91
44 3,777,617
61 3,777,618
216R 3,777,619
394 3,777,620
411R 3,777,629
431 3,777,621
479 3,777,622
487 3,777,623
488 3,777,624

CLASS 92
48 3,777,625
137 3,777,626
168 3,777,627

CLASS 93
37R 3,777,630
41.1 3,777,628
81R 3,777,631
94 3,777,632

CLASS 95
1R 3,777,633
4.5 3,777,634
10CD 3,777,637
10CT 3,777,635
3,777,636
3,777,638
11L 3,777,641
3,777,642
11R 3,777,639
3,777,640
12 3,777,643
31AC 3,777,644
49 3,777,645
53EB 3,777,646
89L 3,777,647

CLASS 96
1R 3,778,262
1.8 3,778,263
3,778,264
3 3,778,265
27R 3,778,269
36.1 3,778,266
66HD 3,778,267
74 3,778,268
75 3,778,270
77 3,778,271
84R 3,778,273
87R 3,778,272
91R 3,778,274
94R 3,778,276
94 3,778,275
100 3,778,277
114.8 3,778,278
140 3,778,279

CLASS 98
2.04 3,777,648
37 3,777,649
40V 3,777,650
115R 3,777,651

CLASS 99
275 3,777,652
339 3,777,653
419 3,777,654
532 3,777,655

CLASS 100
47 3,777,656
49 3,777,657
98 3,777,658
233 3,777,659

CLASS 101
77 3,777,660
114 3,777,661

CLASS 102
23 3,777,662
24HC 3,777,663
45 3,777,664
70.2P 3,777,665
80 3,777,666

CLASS 104
88 3,777,667
105 3,777,668
130 3,777,669
246 3,777,670

CLASS 105
420 3,777,671
453 3,777,672

CLASS 106
1 3,778,280
67 3,778,281
84 3,778,283
162 3,778,284
179 3,778,285
187 3,778,282
287R 3,778,286
308Q 3,778,287
3,778,288
3,778,289

CLASS 108
27 3,777,673
113 3,777,674
132 3,777,675

CLASS 110
8A 3,777,679
8R 3,777,676
3,777,677
3,777,678
12 3,777,680

CLASS 112
121.15 3,777,681
3,777,682
121.27 3,777,683
152 3,777,684
220 3,777,685
237 3,777,686

CLASS 113
54 3,777,687

CLASS 114
.5F 3,777,689

.5 3,777,688
39 3,777,690
48 3,777,691
54 3,777,692
117 3,777,693
126 3,777,694
207 3,777,695

CLASS 116

114.5 3,777,696
118R 3,777,697
3,777,698
120 3,777,699
137A 3,777,700
149 3,777,701

CLASS 117

8 3,778,290
21 3,778,291
43 3,778,292
68 3,778,251
93.1PF 3,778,293
93.31 3,778,294
99 3,777,715
100B 3,778,295
106C 3,778,296
107.2P 3,778,297
107.2R 3,778,298
109 3,778,299
118 3,778,300
3,778,301
122PB 3,778,302
136 3,778,303
138 3,778,304
212 3,778,305
221 3,778,307
226 3,778,306
234 3,778,308

CLASS 118

2 3,777,702
49 3,777,703
49.1 3,777,704
313 3,777,705
603 3,777,706
637 3,777,707

CLASS 119

1 3,777,708
3 3,777,709
17 3,777,710
23 3,777,711
29 3,777,712
60 3,777,713
75 3,777,714
159 3,777,716

CLASS 122

156 3,777,717

CLASS 123

8.01 3,777,718
8.07 3,777,719
8.09 3,777,720
8.45 3,777,721
8.47 3,777,723
46R 3,777,722
78B 3,777,724
119R 3,777,725
3,777,726
3,777,727
122D 3,777,728
140FG 3,777,729
3,777,731
140R 3,777,730

CLASS 124

1 3,777,732
7 3,777,733
24A 3,777,734

CLASS 126

120 3,777,735
510 3,778,523

CLASS 128

1R 3,777,736
3,777,737
2A 3,777,742
2B 3,777,743
2F 3,777,739
2T 3,777,738
2V 3,777,740
2 3,777,741
28 3,777,744
57 3,777,745
66 3,777,746
80A 3,777,747
130 3,777,748
132D 3,777,749
142.5 3,777,750
166 3,777,751
173 3,777,752
252 3,777,753
268 3,777,754
269 3,777,760
271 3,777,755
276 3,777,756
278 3,777,757
284 3,777,758
287 3,777,759
350R 3,777,761
419P 3,777,762
476 3,777,763
519 3,777,764

CLASS 131

187 3,777,765
243 3,777,766
257 3,777,767

CLASS 132

53 3,777,768

CLASS 133

8R 3,777,769

CLASS 134

2 3,778,309
118 3,777,770

CLASS 136

6LN Re.27,835
89 3,778,312
100R 3,778,310
120FC 3,778,311
3,778,313
176 3,778,314

CLASS 137

1 3,777,771
68 3,777,772
117 3,777,773
234.6 3,777,774
268 3,777,775
270 3,777,776
454.6 3,777,777
487.5 3,777,778
512.3 3,777,779
576 3,777,780
608 3,777,781
614.02 3,777,782
625.5 3,777,783
625.62 3,777,784
806 3,777,785

CLASS 138

109 3,777,786

CLASS 139

127R 3,777,787

CLASS 141

279 3,777,788
329 3,777,789
392 3,777,790

CLASS 144

28.72 3,777,791
82 3,777,792
220 3,777,793
324 3,777,794

CLASS 148

6.3 3,778,315
12 3,778,316
3,778,317
12.7 3,778,318

CLASS 149

92 3,778,319
109 3,778,320

CLASS 150

35 3,777,795

CLASS 151

38 3,777,796

CLASS 152

158 3,777,797
3,777,798
362R 3,777,799

CLASS 156

187 3,778,322
212 3,778,323
215 3,778,328
257 3,778,324
278 3,778,325
417 3,778,326
425 3,778,327
446 3,778,321

CLASS 160

84R 3,777,800

CLASS 161

39 3,778,340
47 3,778,329
67 3,778,330
3,778,331
87 3,778,241
95 3,778,337
156 3,778,334
159 3,778,332
164 3,778,335
168 3,778,336
169 3,778,333
192 3,778,338

CLASS 162

125 3,778,341
164 3,778,339
352 3,778,342

CLASS 164

337 3,777,801

CLASS 165

1 3,777,802
2 3,777,803
8 3,777,804
9.1 3,777,805
19 3,777,806
26 3,777,807
39 3,777,808
54 3,777,809
92 3,777,810
105 3,777,811

CLASS 166

6 3,777,812
72 3,777,813
212 3,777,814
247 3,777,815
260 3,777,816
274 3,777,817
3,777,818
285 3,777,819
305R 3,777,820

CLASS 169

2R 3,777,821

CLASS 172

33 3,777,822
328 3,777,823
801 3,777,824

CLASS 173

13 3,777,825

CLASS 174

3,778,526
3,778,527
42 3,778,528
48 3,778,529
52PE 3,778,533
65R 3,778,530
68.5 3,778,531
72R 3,778,532
74R 3,778,534
88C 3,778,535
3,778,536
121SR 3,778,537
138R 3,778,538
140R 3,778,539
152R

CLASS 175

46 3,777,826
103 3,777,827
140R 3,778,518

CLASS 176

3 3,778,343
22 3,778,344
24 3,778,347
36R 3,778,345
60 3,778,346
67 3,778,348

CLASS 177

165 3,777,828

CLASS 178

4.1B 3,778,540
5.2R 3,778,541
5.4R 3,778,542
3,778,543
6.6FS 3,778,559
6.6B 3,778,544
7.2 3,778,545
3,778,546
7.88 3,778,547
3,778,548
68 3,778,549
69.5R 3,778,550

CLASS 179

1E 3,778,551
1N 3,778,552
2DP 3,778,553
18AD 3,778,554
18FC 3,778,555
90K 3,778,556
3,778,557
100.2MD 3,778,558
100.2T 3,778,560
111E 3,778,561
111R 3,778,562
170R 3,778,563

CLASS 180

5R 3,777,829
3,777,830
3,777,831
3,777,832
6.48 3,777,833
9.44 3,777,834
10 3,777,835
26 3,777,836
70R 3,777,837
71 3,777,838
79.2R 3,777,839
82C 3,777,840
108 3,777,841
117 3,777,842

CLASS 181

.5VM 3,777,843
31B 3,777,844

CLASS 182

17 3,777,845
78 3,777,846

CLASS 184

1C 3,777,848
1R 3,777,847
6.12 3,777,849
6.15 3,777,850
63 3,777,851
103R 3,777,852

CLASS 187

9 3,777,853
29R 3,777,854
3,777,855

CLASS 188

65.1 3,777,856
170 3,777,857
181R 3,777,858
265 3,777,859
291 3,777,860
317 3,777,861

CLASS 190

43 3,777,862

CLASS 192

3.33 3,777,863
18B 3,777,864
70 3,777,865
88B 3,777,868
91A 3,777,866

CLASS 193

35A 3,777,867

CLASS 195

33 3,778,349
99 3,778,352
103.5C 3,778,350
105 3,778,353
127 3,778,351

CLASS 197

17 3,777,869
94 3,777,870
151 3,777,871

CLASS 198

20R 3,777,872
35 3,777,873
56 3,777,874
131 3,777,875
171 3,777,876
189 3,777,877
202 3,777,878
208 3,777,879
221 3,777,880

CLASS 200

5EB Re.27,836
5E 3,778,565
5R 3,778,564
14 3,778,566
50AA 3,778,568
50A 3,778,567
51.09 3,778,569
61.05 3,778,570
61.35 3,778,571
61.45M 3,778,572
144B 3,778,573
148B 3,778,574
153LA 3,778,575
166C 3,778,576
168G 3,778,577

CLASS 204

28 3,778,355
29 3,778,356
44 3,778,354
52R 3,778,357
55R 3,778,358
3,778,359
107 3,778,360
157.1R 3,778,361
159.15 3,778,364
254 3,778,362
290F 3,778,363

CLASS 206

1R 3,777,881
16S 3,777,882
45.31 3,777,883
56AB 3,777,400
62R 3,777,884
72 3,777,885

CLASS 208

111 3,778,365

CLASS 209

109 3,777,886
474 3,777,887

CLASS 210

23 3,778,366
51 3,778,367
54 3,778,368
130 3,777,888
135 3,777,889
150 3,777,890
3,777,891
178 3,777,892
321 3,778,369
499 3,777,893

CLASS 211

13 3,777,894
44 3,777,895
49D 3,777,896
55 3,777,897

CLASS 212

38 3,777,898
55 3,777,899
58R 3,777,900
58 3,777,901

CLASS 214

1BB 3,777,902
1BD 3,777,906
6B 3,777,904
6H 3,777,903
8.5D 3,777,913
8.5F 3,777,907
10.5R 3,777,905
16B 3,777,910
16R 3,777,908
16.4C 3,777,911
17C 3,777,909
55 3,777,914
82 3,777,915
83.3 3,777,917
138R 3,777,918
147G 3,777,919
152 3,777,912
314 3,777,920
450 3,777,921
3,777,922
506 3,777,923
519 3,777,916

CLASS 215

9 Re.27,837
3,777,924
11E 3,777,925

CLASS 219

10.55 3,778,578
69S 3,778,579
73 3,778,580
76 3,778,586
85 3,778,581
87 3,778,582
91 3,778,583
101 3,778,584
121LM 3,778,585
146 3,778,587
3,778,588
3,778,589
211 3,778,590
279 3,778,591
336 3,778,592
362 3,778,593
430 3,778,594

CLASS 220

29 3,777,926
85R 3,777,927
88B 3,777,928

CLASS 221

17 3,777,929
26 3,777,930
57 3,777,931
3,777,932
204 3,777,933
309

CLASS 222

3 3,777,934
16 3,777,935
48 3,777,936
70 3,777,937
185 3,777,938
189 3,777,939
193 3,777,940
207 3,777,941
309 3,777,942
385 3,777,943
394 3,777,944
3,777,945
402.2 3,777,946
402.23 3,777,947
497 3,777,948
541 3,777,949
554 3,777,950

CLASS 223

67 3,777,951

CLASS 224

2B 3,777,952
4C 3,777,953
19 3,777,954
35 3,777,955
45S 3,777,956

CLASS 225

4 3,777,958
50 3,777,957

CLASS 226

25 3,777,959
33 3,777,960
57 3,777,961
129 3,777,962
145 3,777,963
183 3,777,964
3,777,965

CLASS 227

61 3,777,966

CLASS 228

2 3,777,967

CLASS 229

7R 3,777,968
17R Re.27,838
37E 3,777,969
54R 3,777,970
68R 3,777,971

CLASS 233

20A 3,777,972

CLASS 235

61.11D 3,778,598
61.11E 3,778,597
61.12R 3,778,599
61.7B 3,778,595
61.9R 3,778,596
92C 3,778,600
144HC 3,777,973
150.26 3,778,602
150.27 3,778,601
151.12 3,778,603
152 3,778,604
154 3,778,605
156 3,778,606
193 3,778,607
194 3,778,608

CLASS 236

49 3,777,974

CLASS 237

12.3A 3,777,975

CLASS 239

1 3,777,981
64 3,777,976
96 3,777,977
171 3,777,978
177 3,777,979
272 3,777,980
315 3,777,982
422 3,777,983
533 3,777,984
3,777,986
542 3,777,987
553.3 3,777,988
555 3,777,985
567 3,777,989
571 3,777,990
656 3,777,991
689 3,777,992

CLASS 240

73BJ 3,778,610
73HA 3,778,609
108D 3,778,611

CLASS 241

15 3,777,993
24 3,777,994

CLASS 242

18DD 3,777,995
18R 3,777,996
55.53 3,777,997
56.2 3,777,998
68.4 3,777,999
77.2 3,778,000
84.5A 3,778,001
129 3,778,002
156 3,778,003
169 3,778,004
186 3,778,005
205 Re.27,839

CLASS 243

19 3,778,006

CLASS 244

3.14 3,778,007
17.11 3,778,008
42DA 3,778,009
121 3,778,010
137R 3,778,011

CLASS 248

119R 3,778,012
221 3,778,013
406 3,778,014
475R 3,778,015
3,778,016

CLASS 249

78 3,778,017
120 3,778,018
189 3,778,019
219R 3,778,020

CLASS 250

199 3,778,616
223B 3,778,617
223 3,778,618
225 3,778,619
232 3,778,620
251 3,778,612
303 3,778,613
324 3,778,622
325 3,778,623
333 3,778,624
362 3,778,614

442 3,778,621
444 3,778,625
475 3,778,615
492 3,778,626
499 3,778,627
556 3,778,628
557 3,778,629
3,778,630
572 3,778,631

CLASS 251

11 3,778,021
14 3,778,022
30 3,778,023
63 3,778,024
129 3,778,025
255 3,778,026
297 3,778,027
306 3,778,028
315 3,778,029
327 3,778,030

CLASS 252

34 3,778,371
42F 3,778,370
49.9 3,778,375
51.5A 3,778,372
62.56 3,778,373
62.62 3,778,374
78 3,778,376
82 3,778,377
91 3,778,378
171 3,778,379
301.1R 3,778,380
301.4R 3,778,234
311 3,778,381
316 3,778,383
326 3,778,382
408 3,778,384
428 3,778,387
431C 3,778,385
432 3,778,386
465 3,778,388
520 3,778,389

CLASS 254

1 3,778,031

CLASS 259

6 3,778,032
72 3,778,033
107 3,778,034
154 3,778,035
185 3,778,036

CLASS 260

2.5AN 3,778,390
17.3 3,778,392
17.4SG 3,778,393
17.4ST 3,778,391
18N 3,778,394
22TN 3,778,395
27BB 3,778,396
28.5AS 3,778,397
28.5R 3,778,398
29.6ME 3,778,399
3,778,401
29.6MN 3,778,400
31.4R 3,778,403
33.2R 3,778,404
33.8R 3,778,405
37N 3,778,407
41.5A 3,778,406
45.7P 3,778,408
45.8N 3,778,409
47C 3,778,410
50 3,778,412
51R 3,778,414
51.5 3,778,413
65 3,778,411
78TF 3,778,417
78UA 3,778,416
78P 3,778,402
78.4D 3,778,418
79.5B 3,778,419
80.7 3,778,420
82 3,778,421
92.8W 3,778,422
3,778,423
94.3 3,778,424
112R 3,778,425
112.5 3,778,426
3,778,427
3,778,428
3,778,429
192 3,778,430
233.3R 3,778,431
239.3D 3,778,433
239.55C 3,778,434
240A 3,778,435
243C 3,778,432
3,778,436
247.2B 3,778,442
256.4C 3,778,439
256.4F 3,778,438
256.4N 3,778,437
288R 3,778,440
290V 3,778,441
294.8R 3,778,443
296R 3,778,444
307F 3,778,445
309 3,778,446
3,778,447
315 3,778,448
327TH 3,778,449
343.3 3,778,450
348.5L 3,778,451
369 3,778,452
374 3,778,453
404.8 3,778,454
409 3,778,465
413 3,778,455
429.7 3,778,456
430 3,778,457
448.2B 3,778,458
448.2N 3,778,459
455A 3,778,460
464 3,778,461
465.3 3,778,462
471A 3,778,463
482P 3,778,464
486AC 3,778,466
490 3,778,467
497R 3,778,468
499 3,778,469
502.4R 3,778,472
518R 3,778,470
524R 3,778,471
553A 3,778,473
561K 3,778,474
566A 3,778,475
567.6P 3,778,476
599 3,778,477
608 3,778,478
615B 3,778,479
3,778,480
629 3,778,481
635R 3,778,482
666PY 3,778,483
672T 3,778,415
674R 3,778,484
675.5 3,778,485
3,778,486
676R 3,778,487
680E 3,778,488
683.43 3,778,489
880B 3,778,490

CLASS 261

18A 3,778,039
28 3,778,037
36A 3,778,040
50A 3,778,041
50R 3,778,038
105 3,778,042

CLASS 264

32 3,778,491
45 3,778,492
63 3,778,493
82 3,778,494
162 3,778,496
177F 3,778,495

CLASS 266

2R 3,778,043
19 3,778,044
29 3,778,045
3,778,046
3,778,047

CLASS 269

43 3,778,048
323 3,778,049

CLASS 270

31 3,778,050

CLASS 271

57 3,778,051

CLASS 272

70.4 3,778,052
75 3,778,053
85 3,778,054

CLASS 273

1R 3,778,055
3,778,056
44 3,778,057
85R 3,778,058
102S 3,778,060
102.2S 3,778,059
104 3,778,061
121A 3,778,062
130AB 3,778,063
176FA 3,778,064
201 3,778,067

CLASS 274

4C 3,778,069
4F 3,778,066
42R 3,778,068

CLASS 277

58 3,778,070

CLASS 279

16 3,778,071

CLASS 280

11.35N 3,778,072
11.35T 3,778,073
3,778,075
3,778,076
12K 3,778,077
28 3,778,074
43 3,778,078
80B 3,778,079
104.5R 3,778,080
112A 3,778,081
124B 3,778,082
150AB 3,778,083
3,778,084
3,778,085
154.5R 3,778,086
292 3,778,087
406A 3,778,088

CLASS 285

39 3,778,089
222 3,778,090
238 3,778,091
316 3,778,092

CLASS 289

96 3,778,174

CLASS 290

50 3,778,632

CLASS 293

71R 3,778,093
131AB 3,778,065
154 3,778,101

CLASS 294

1 3,778,094
74 3,778,095
87.2 3,778,096
118 3,778,097

CLASS 296

3 3,778,098
21 3,778,099
23G 3,778,100

CLASS 297

170 3,778,102
331 3,778,103
458 3,778,104

CLASS 298

17S 3,778,105

CLASS 299

1 3,778,106
11 3,778,107
3,778,108
14 3,778,109
39 3,778,110
67 3,778,111
86 3,778,112
3,778,113

CLASS 302

52 3,778,114

CLASS 303

3 3,778,115
19 3,778,116
21CG 3,778,117
21EB 3,778,118
68 3,778,119

CLASS 307

64 3,778,633
3,778,634
88.3 3,778,635
108 3,778,636
140 3,778,637
215 3,778,646
233 3,778,638
254 3,778,639
3,778,640
255 3,778,641
268 3,778,642
293 3,778,643
295 3,778,644
318 3,778,645

CLASS 308

3.8 3,778,120
6R 3,778,121
10 3,778,122
36.3 3,778,123
235 3,778,124

CLASS 310

8.1 3,778,648
54 3,778,647
61 3,778,649
68D 3,778,650
74 3,778,651
144 3,778,653
211 3,778,652

CLASS 312

272.5 3,778,125

CLASS 313

60 3,778,654
63 3,778,655
3,778,656
65A 3,778,657
69R 3,778,658
3,778,659
109 3,778,660
3,778,662
185 3,778,661
318 3,778,663
344 3,778,664

CLASS 315

3.5 3,778,665
13C 3,778,666
18 3,778,667
23 3,778,669
27TD 3,778,670
3,778,671
30 3,778,668
133 3,778,672
169R 3,778,674
3,778,675
169 3,778,673
217 3,778,676
219 3,778,677

CLASS 316

20 3,778,126
3,778,127

CLASS 317

3 3,778,678
40A 3,778,679
100 3,778,680
101DH 3,778,681
119 3,778,682
230 3,778,683
234R 3,778,684
3,778,685
3,778,686
235G 3,778,688
235R 3,778,687
258 3,778,689
262A 3,778,690

CLASS 318

254 3,778,691
305 3,778,692
314 3,778,693
474 3,778,694
481 3,778,695
565 3,778,696

CLASS 322

3 3,778,697

CLASS 323

4 3,778,698
6 3,778,699

CLASS 324

.5R 3,778,700
10 3,778,701
29.5 3,778,702
43R 3,778,703
57R 3,778,704
61R 3,778,705
3,778,706
61T 3,778,707
62 3,778,708
72 3,778,709
123R 3,778,710
125 3,778,711
151 3,778,712
158T 3,778,713
181 3,778,714

CLASS 325

2 3,778,715
49 3,778,716
105 3,778,717
139 3,778,718
318 3,778,720
396 3,778,721
414 3,778,722

CLASS 328

133 3,778,723
150 3,778,724
151 3,778,725
223 3,778,726

CLASS 329

104 3,778,727
110 3,778,728

CLASS 331

65 3,778,729
109 3,778,730

CLASS 333

17 3,778,731
20 3,778,732
31R 3,778,733
80T 3,778,734
84M 3,778,735

CLASS 334

15 3,778,736

CLASS 335

205 3,778,737
278 3,778,719
306 3,778,738

CLASS 337

72 3,778,739
187 3,778,740
201 3,778,741
407 3,778,742

CLASS 338

20 3,778,743
260 3,778,744

CLASS 339

18C 3,778,745
21R 3,778,746
45M 3,778,747
64M 3,778,748
97R 3,778,749
3,778,750
113B 3,778,751
147R 3,778,752
156R 3,778,753
176M 3,778,754
220R 3,778,755

CLASS 340

5MP 3,778,756
3,778,757
10 3,778,758
15.5F 3,778,759
27NA 3,778,760
39 3,778,761
46 3,778,762
55 3,778,763
81R 3,778,764
146.1AJ 3,778,765
3,778,766
146.1R 3,778,767
146.3AG 3,778,768
147LP 3,778,769
149R 3,778,770
150 3,778,771
163 3,778,772
166R 3,778,773
172.5 3,778,774
3,778,775
3,778,776
3,778,777
3,778,778
3,778,779
3,778,780
3,778,781
173CR 3,778,786
173LS 3,778,785
173R 3,778,782
3,778,783
3,778,784
174TF 3,778,788
3,778,789
174.1A 3,778,790
3,778,793
3,778,794
174.1H 3,778,787
3,778,792
174.1M 3,778,791
188R 3,778,795
216 3,778,796
227R 3,778,797
228R 3,778,798
235 3,778,799
249 3,778,800
253R 3,778,801
258C 3,778,807
260 3,778,802
261 3,778,803
272 3,778,804
3,778,805
274 3,778,806
282 3,778,808
309.5R 3,778,809
324AD 3,778,810
3,778,811
347DA 3,778,814
347DD 3,778,813
347NT 3,778,812
365C 3,778,817
365E 3,778,818
365S 3,778,815
3,778,816
3,778,819
381R 3,778,820

CLASS 343

5R 3,778,821
3,778,822
7ED 3,778,823
3,778,826
7A 3,778,824
3,778,825
7.3 3,778,827
7.7 3,778,828
16M 3,778,829
17.7 3,778,830
106D 3,778,831
112PT 3,778,832
113R 3,778,835
118 3,778,833
119 3,778,834
702 3,778,836
703 3,778,837
727 3,778,838
772 3,778,839

CLASS 346

30 3,778,840
74ES 3,778,841
136 3,778,842
140 3,778,843

CLASS 350

2 3,778,133
3.5 3,778,128
3,778,130
6 3,778,129
81 3,778,131
96WG 3,778,132

CLASS 351

13 3,778,135

CLASS 352

17 3,778,136
72 3,778,137
91 3,778,138
130 3,778,139
3,778,140

CLASS 353

5 3,778,134
15 3,778,141
44 3,778,142
111 3,778,143

CLASS 355

3DD 3,778,144
3 3,778,145
3,778,146
8 3,778,147
15 3,778,148
16 3,778,149
38 3,778,150
53 3,778,151
56 3,778,152
66 3,778,153
68 3,778,154
91 3,778,155

CLASS 356

4 3,778,157
5 3,778,159
3,778,160
28 3,778,158
51 3,778,161
3,778,162
71 3,778,166
114 3,778,163
124 3,778,164
128 3,778,165
152 3,778,168
167 3,778,167
172 3,778,169
241 3,778,170
244 3,778,156
246 3,778,171

CLASS 401

7 3,778,172
10 3,778,173

CLASS 403

187 3,778,175

CLASS 404

65 3,778,176
117 3,778,177
122 Re.27,840

CLASS 408

54 3,778,178
206 3,778,179
226 3,778,180

CLASS 415

53 3,778,181
101 3,778,182
115 3,778,183
174 3,778,184
181 3,778,186
217 3,778,185

CLASS 416

95 3,778,187
97 3,778,188
140 3,778,189
196 3,778,190
215 3,778,191

CLASS 417

286 3,778,192
342 3,778,193
407 3,778,194
474 3,778,195
501 3,778,196

CLASS 418

61 3,778,197
3,778,198
104 3,778,199
132 3,778,200
152 3,778,201
206 3,778,202

CLASS 423

2 3,778,497
7 3,778,498
210 3,778,499
244 3,778,501
253 3,778,500
290 3,778,231

CLASS 424

106 3,778,510
227 3,778,503
258 3,778,511
263 3,778,504
266 3,778,502
285 3,778,512
300 3,778,508
317 3,778,505

318	3,778,506	86	3,778,206	264	3,778,212	CLASS 426		352	3,778,519	152	3,778,219
340	3,778,507	131	3,778,207	326B	3,778,213	7	3,778,513	446	3,778,520	CLASS 432	
343	3,778,509		3,778,208	326	3,778,214	61	3,778,514	508	3,778,521	5	3,778,220
CLASS 425		133	3,778,209	435	3,778,215	108	3,778,515	511	3,778,522	11	3,778,221
20	3,778,203	242	3,778,210	444	3,778,216	119	3,778,516	CLASS 431		35	3,778,222
63	3,778,204	245	3,778,211	467	3,778,217	175	3,778,517	67	3,778,218	227	3,778,223
71	3,778,205					230	3,778,524			258	3,778,224

CLASSIFICATION OF DESIGNS

D01—	15 229,522		144 229,533		229,544		6A 229,555		229,566	D54—	4 229,577
D02—	28 229,523	D08—	8 229,534		140 229,545		M 229,556		K 229,567		229,578
	250 229,525		90 229,535		143 229,546		229,557	D30—	6 229,568	D56—	B 229,579
	320 229,524		98 229,536		157 229,547		30R 229,558		9 229,569		9 229,580
D06—	20 229,526		166 229,537		169 229,548	D16—	1 229,560		42 229,570	D57—	1E 229,581
	69 229,527		228 229,538		182 229,549		229,559		43 229,571	D71—	BB 229,582
	168 229,528	D09—	28 229,539		198 229,550	D23—	38 229,561	D34—	2R 229,572	D86—	8 229,583
	177 229,529		40 229,540	D13—	1M 229,551	D24—	1D 229,562		11 229,573		10D 229,584
D07—	41 229,530		229,541		7 229,552	D25—	R 229,563		15C 229,574	D87—	1 229,585
	110 229,531		59 229,542	D14—	3J 229,553	D26—	5C 229,564	D35—	3 229,575		3B 229,586
	136 229,532		115 229,543		229,554		14G 229,565	D48—	2 229,576		

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,777,552	3,777,643	3,778,373	3,777,940	3,778,430	3,777,897
3,777,605	3,777,654	3,778,377	3,778,013	3,778,446	3,777,930
3,777,878	3,777,678	3,778,405	3,778,098	3,778,452	3,777,937
3,778,685	3,777,693	3,778,476	3,778,100	3,778,475	3,777,969
3,778,708	3,777,696	3,778,479	3,778,149	3,778,586	3,777,971
4 : 3,777,313	3,777,708	3,778,482	3,778,308	12 : 3,777,325	3,778,014
3,777,365	3,777,772	3,778,492	3,778,554	3,777,417	3,778,023
3,777,379	3,777,777	3,778,495	3,778,616	3,777,634	3,778,032
3,777,385	3,777,800	3,778,525	3,778,787	3,777,785	3,778,035
3,777,487	3,777,811	3,778,530	3,778,800	3,777,923	3,778,063
3,777,599	3,777,812	3,778,532	3,778,840	3,777,985	3,778,069
3,777,965	3,777,842	3,778,542	9 : Re.27,834	3,778,049	3,778,087
3,778,020	3,777,846	3,778,555	Re.27,835	3,778,077	3,778,096
3,778,686	3,777,851	3,778,556	3,777,343	3,778,160	3,778,109
3,778,703	3,777,856	3,778,563	3,777,382	3,778,199	3,778,115
3,778,762	3,777,862	3,778,580	3,777,396	3,778,486	3,778,211
6 : 3,777,315	3,777,887	3,778,581	3,777,439	3,778,814	3,778,299
3,777,324	3,777,904	3,778,600	3,777,596	3,778,827	3,778,369
3,777,326	3,777,942	3,778,617	3,777,604	13 : 3,777,733	3,778,399
3,777,348	3,777,956	3,778,632	3,777,614	3,777,764	3,778,404
3,777,357	3,777,976	3,778,639	3,777,620	3,777,905	3,778,417
3,777,364	3,777,980	3,778,669	3,777,679	3,778,203	3,778,427
3,777,378	3,777,987	3,778,671	3,777,745	16 : 3,777,404	3,778,499
3,777,389	3,777,993	3,778,672	3,777,755	3,777,715	3,778,512
3,777,391	3,778,000	3,778,689	3,777,874	3,777,792	3,778,515
3,777,394	3,778,008	3,778,697	3,777,875	17 : 3,777,333	3,778,524
3,777,395	3,778,012	3,778,701	3,777,883	3,777,335	3,778,551
3,777,397	3,778,019	3,778,704	3,778,124	3,777,351	3,778,560
3,777,400	3,778,029	3,778,706	3,778,130	3,777,356	3,778,565
3,777,403	3,778,044	3,778,714	3,778,184	3,777,413	3,778,579
3,777,419	3,778,053	3,778,716	3,778,185	3,777,423	3,778,610
3,777,420	3,778,078	3,778,718	3,778,189	3,777,427	3,778,633
3,777,444	3,778,092	3,778,723	3,778,236	3,777,494	3,778,711
3,777,445	3,778,107	3,778,724	3,778,237	3,777,554	3,778,720
3,777,448	3,778,120	3,778,758	3,778,238	3,777,595	3,778,741
3,777,450	3,778,145	3,778,767	3,778,331	3,777,613	3,778,750
3,777,463	3,778,155	3,778,778	3,778,339	3,777,627	3,778,753
3,777,475	3,778,161	3,778,784	3,778,384	3,777,675	3,778,769
3,777,491	3,778,163	3,778,791	3,778,576	3,777,697	3,778,774
3,777,498	3,778,165	3,778,792	3,778,601	3,777,702	3,778,802
3,777,520	3,778,171	3,778,803	3,778,700	3,777,703	3,778,839
3,777,540	3,778,172	3,778,820	3,778,781	3,777,730	18 : 3,777,320
3,777,541	3,778,180	3,778,821	3,778,831	3,777,742	3,777,360
3,777,555	3,778,183	3,778,828	10 : 3,777,959	3,777,743	3,777,424
3,777,559	3,778,258	3,778,830	3,778,215	3,777,749	3,777,430
3,777,564	3,778,304	3,778,838	3,778,226	3,777,788	3,777,478
3,777,574	3,778,320	8 : 3,777,355	3,778,310	3,777,790	3,777,548
3,777,578	3,778,327	3,777,415	3,778,334	3,777,795	3,777,556
3,777,586	3,778,337	3,777,501	3,778,336	3,777,822	3,777,593
3,777,602	3,778,352	3,777,698	3,778,347	3,777,824	3,777,671
3,777,612	3,778,370	3,777,767	3,778,408	3,777,853	3,777,677

3,777,783
3,777,981
3,778,117
3,778,186
3,778,188
3,778,245
3,778,305
3,778,582
3,778,668
19 : 3,777,399
3,777,485
3,777,629
3,777,899
3,778,233
3,778,431
3,778,496
3,778,537
3,778,651
3,778,707
3,778,809
20 : 3,777,716
3,777,768
3,777,907
3,777,929
3,777,948
3,778,602
3,778,737
21 : 3,777,374
3,777,786
3,777,915
3,778,193
3,778,262
3,778,397
3,778,484
3,778,798
22 : 3,777,705
3,777,813
3,777,918
3,778,041
3,778,365
23 : 3,777,921
3,778,216
24 : 3,777,376
3,777,410
3,777,600
3,777,950
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3,778,007
3,778,114
3,778,119
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3,778,635
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3,778,829
25 : 3,777,561
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3,777,616
3,777,645
3,777,647
3,777,657
3,777,711
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3,778,064
3,778,133
3,778,140
3,778,142
3,778,166
3,778,234
3,778,240
3,778,251
3,778,259
3,778,265
3,778,267
3,778,271
3,778,275
3,778,281
3,778,285
3,778,343
3,778,354
3,778,391
3,778,426
3,778,541
3,778,574
3,778,608
3,778,634
3,778,636
3,778,665
3,778,674
3,778,721
3,778,732
3,778,733
3,778,739
3,778,751
3,778,768
3,778,772
3,778,775
3,778,811
3,778,826
26 : 3,777,309
3,777,319
3,777,375
3,777,414
3,777,461
3,777,481

3,777,482
3,777,510
3,777,517
3,777,535
3,777,568
3,777,580
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3,777,729
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3,777,841
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3,777,957
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3,778,074
3,778,090
3,778,118
3,778,202
3,778,364
3,778,371
3,778,403
3,778,450
3,778,454
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3,778,473
3,778,506
3,778,627
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3,778,729
3,778,804
27 : 3,777,442
3,777,507
3,777,529
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3,777,884
3,777,889
3,777,894
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3,778,749
29 : 3,777,531
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3,778,740
31 : 3,777,835
3,777,920
3,777,979
32 : 3,777,815
33 : 3,777,739
3,778,058
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34 : Re.27,837
3,777,312
3,777,321
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3,778,158
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3,778,210
3,778,223
3,778,269
3,778,270
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3,778,401
3,778,422
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35 : 3,777,393
3,777,655
3,777,712
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3,778,380
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36 : 3,777,314
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3,778,038
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3,778,126
3,778,127
3,778,129
3,778,134
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3,778,147
3,778,164
3,778,173
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3,778,232
3,778,239
3,778,249
3,778,276
3,778,286
3,778,309
3,778,318
3,778,323
3,778,335
3,778,400
3,778,411
3,778,458
3,778,459
3,778,464
3,778,501
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3,778,638
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3,778,658
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3,778,702
3,778,727
3,778,728
3,778,756
3,778,757
3,778,766
3,778,779
3,778,780
3,778,785
3,778,806
3,778,817
3,778,819
3,778,822
3,778,825
3,778,841
37 : 3,777,366
3,777,406
3,777,512
3,777,732
3,777,752
3,777,873
3,777,908
3,778,328
3,778,509
3,778,516
3,778,771

39 : 3,777,330
3,777,354
3,777,367
3,777,390
3,777,489
3,777,490
3,777,506
3,777,553
3,777,585
3,777,628
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3,777,669
3,777,673
3,777,802
3,777,828
3,777,840
3,777,847
3,777,893
3,777,913
3,777,914
3,777,941
3,777,955
3,778,048
3,778,061
3,778,079
3,778,103
3,778,111
3,778,112
3,778,170
3,778,176
3,778,181
3,778,192
3,778,200
3,778,201
3,778,204
3,778,242
3,778,292
3,778,321
3,778,329
3,778,332
3,778,363
3,778,372
3,778,390
3,778,395
3,778,423
3,778,445
3,778,494
3,778,497
3,778,500
3,778,517
3,778,540
3,778,569
3,778,585
3,778,592
3,778,597
3,778,628
3,778,680
3,778,695
3,778,696
3,778,738
3,778,742
3,778,763
40 : 3,777,438
3,777,741
3,777,766
3,777,843
3,777,844
3,777,917
3,778,001
3,778,086
3,778,088
3,778,162
3,778,385
3,778,420
3,778,490
3,778,584
3,778,677
3,778,816
41 : Re.27,840
3,777,402
3,777,493
3,777,793
3,778,351
3,778,682
3,778,832
42 : 3,777,344
3,777,349
3,777,358
3,777,387
3,777,421
3,777,426
3,777,431
3,777,436
3,777,443
3,777,447
3,777,455
3,777,464
3,777,469
3,777,486
3,777,497
3,777,558
3,777,566
3,777,597
3,777,651
3,777,747
3,777,757

3,777,804
3,777,807
3,777,814
3,777,833
3,777,886
3,777,916
3,777,958
3,777,989
3,778,015
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3,778,025
3,778,045
3,778,046
3,778,047
3,778,055
3,778,056
3,778,059
3,778,110
3,778,131
3,778,143
3,778,194
3,778,195
3,778,214
3,778,221
3,778,235
3,778,243
3,778,248
3,778,250
3,778,253
3,778,291
3,778,301
3,778,316
3,778,344
3,778,387
3,778,388
3,778,398
3,778,415
3,778,462
3,778,478
3,778,487
3,778,535
3,778,564
3,778,567
3,778,568
3,778,573
3,778,596
3,778,676
3,778,705
3,778,730
3,778,755
3,778,794
44 : 3,777,332
3,777,336
3,777,523
3,777,936
3,778,004
3,778,121
3,778,355
45 : 3,777,557
3,778,295
3,778,302
3,778,577
3,778,683
47 : 3,777,459
3,777,610
3,777,710
3,778,159
3,778,254
3,778,348
3,778,366
3,778,410
48 : Re.27,833
Re.27,838
3,777,327
3,777,342
3,777,347
3,777,388
3,777,405
3,777,499
3,777,500
3,777,527
3,777,542
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3,777,598
3,777,649
3,777,653
3,777,663
3,777,668
3,777,720
3,777,779
3,777,817
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3,777,819
3,777,820
3,777,836
3,777,900
3,777,939
3,777,944
3,777,966
3,778,021
3,778,028
3,778,030
3,778,052
3,778,089

3,778,174
3,778,205
3,778,247
3,778,252
3,778,367
3,778,382
3,778,488
3,778,552
3,778,603
3,778,653
3,778,655
3,778,688
3,778,694

3,778,709
3,778,713
3,778,759
3,778,782
3,778,783
3,778,786
3,778,843
49 : 3,777,428
3,777,831
3,778,209
50 : 3,777,665
3,778,531
51 : 3,777,338

3,777,502
3,777,546
3,777,632
3,777,690
3,777,991
3,778,116
3,778,349
3,778,534
3,778,645
3,778,797
3,778,835
53 : 3,777,434
3,777,575

3,777,676
3,777,689
3,777,701
3,777,740
3,777,751
3,777,882
3,777,922
3,778,084
3,778,412
3,778,521
3,778,808
54 : 3,777,383
3,777,837

3,778,588
55 : Re.27,836
3,777,373
3,777,429
3,777,522
3,777,549
3,777,659
3,777,706
3,777,734
3,777,759
3,777,773
3,777,778
3,777,852

3,777,910
3,777,931
3,777,947
3,778,037
3,778,177
3,778,514
3,778,557
3,778,566
3,778,620
3,778,650
3,778,654
3,778,748
3,778,752
3,778,760

Design Patents

5 : 229,566
6 : 229,528
229,535
229,536
229,538
229,553
229,558
229,570
12 : 229,545
229,567

15 : 229,525
17 : 229,526
229,534
229,537
229,548
229,549
229,561
229,569
229,572
19 : 229,562

229,564
24 : 229,523
26 : 229,556
229,557
27 : 229,532
229,571
34 : 229,522
229,540
229,541
229,563

229,575
229,582
36 : 229,529
229,550
229,568
229,574
229,576
229,577
229,578
229,579

229,580
229,581
229,585
39 : 229,539
229,542
229,543
229,544
229,546
40 : 229,584

42 : 229,551
229,552
229,560
48 : 229,530
229,533
51 : 229,583
53 : 229,554
229,555
55 : 229,586

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 18, 1973 Volume 917 Number 3

CONTENTS

	Page
Patent and Trademark Notices	
Classification of U.S. Patents	808
Patent Suits	808
Patent Notices	
Certificates of Correction for the Week of December 18, 1973	810
National Technical Information Service	810
Patents Available for Licensing or Sale	813
Condition of Patent Applications	816
Reissue Patents Granted (27,841)	817
Patents Granted	
General and Mechanical (3,778,844)	819
Chemical (3,779,700)	1045
Electrical (3,780,200)	1134
Design Patents Granted (229,587)	1182
Index of Patentees	PI 1
Indices of Reissues and Designs	PI 46
Classification of	
Patents (Including Reissues)	PI 49
Designs	PI 52
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 53
Designs	PI 55

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PATENT OFFICE NOTICES

Classification of U.S. Patents

The National Technical Information Service of the U.S. Department of Commerce has announced the availability of a new publication in microfilm format entitled "Classification of U.S. Patents" (Patent Office publication PAT 001.1–7306–M). This publication consists of a listing of all U.S. patents and related items in ascending numeric sequence together with the official U.S. classification of each patent, including both the original and all cross-reference classifications. It is offered for sale in the form of a 16mm negative reel microfilm in plain reels or reels packed in any of three types of cartridges.

The current edition lists all patents issued through June 30, 1973 and all reclassifications through December 1972 and includes "Additional Improvement" (AI), design patents (D), reissue design patents (RD), plant patents (PP), reissue patents (RE), patents issued prior to 1836 (X), reissue X patents (RX), defensive publications (T) and patents. It can be purchased in (1) individual reels ($6.00) or cartridges (three types, all $8.00), (2) a complete set of 18 reels ($74.00) or cartridges ($110) or (3) a partial set of the last 7 reels (12–18) in reels ($30.00) or cartridges ($44.00). See the detailed price table which follows:

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(PAT 001.1–7306–M)
June 1973 Edition

Reel No(s).	NTIS accession No.	Beginning patent number	Ending patent number	Price*
Complete set of 18.	COM–73–11470.			{P=$74.00 M, R, T=$110.00
Partial set of last 7.	COM–73–11471.	2,244,100	3,742,516	{P=$30.00 M, R, T=$44.00
Individual reels.				{P=$6.00 M, R, T=$8.00
1	COM–73–11472	{A12–A1318 D1–D227,517 PP1–PP119	PP119	
2	COM–73–11473	{PP120–PP3,369 RD301–RD25,414 RE2–RE27,689 RX35–RX1,217M T628,881–T910,010 X1–X9741M I–192,199	192,199	
3	COM–73–11474	192,200	420,199	
4	COM–73–11475	420,200	648,199	
5	COM–73–11476	648,200	876,199	
6	COM–73–11477	876,200	1,104,199	
7	COM–73–11478	1,104,200	1,332,199	
8	COM–73–11479	1,332,200	1,560,199	
9	COM–73–11480	1,560,200	1,788,199	
10	COM–73–11481	1,788,200	2,016,099	
11	COM–73–11482	2,016,100	2,244,099	
12	COM–73–11483	2,244,100	2,472,099	
13	COM–73–11484	2,472,100	2,700,099	
14	COM–73–11485	2,700,100	2,927,999	
15	COM–73–11486	2,928,000	3,155,199	
16	COM–73–11487	3,155,200	3,375,699	
17	COM–73–11488	3,375,700	3,597,399	
18	COM–73–11489	3,597,400	3,742,516	

*Prices quoted depend on how film is supplied. The code letters represent the types of service available, as follows:
P = Plain reels in cardboard boxes.
M = Reels in 3M cartridges.
R = Reels in Recordak cartridges.
T = Reels in "Thread Easy" Magazines.
NOTE.—When ordering, the appropriate code letter should be appended to the NTIS accession number, e.g., COM–73–11470–M.

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WILLIAM I. MERKIN,
Nov. 21, 1973. *Assistant Commissioner for Administration.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,794,417, Ransburg and Starkey, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; **2,893,893,** W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING; **2,893,894,** E. M. Ransburg, METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING, **filed** Mar. 1, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73–473, *Ransburg Corp.* v. *Bruce Industries, Inc.*

2,854,991, M. E. Webster, PRESSURE REGULATOR VALVE, **filed** May 14, 1973, D.C., S.D.N.Y., Doc. 73–2126, *Bernzomatic Corp.* v. *Olin Corporation.*

2,873,639, C. O. Musser, TOY PIANO HAVING KEY MOUNTED TONE BARS, **filed** May 4, 1973, D.C., S.D.N.Y., Doc. 73–2006, *George Lerner and Julius Ellman* v. *Child Guidance Products Inc.*

2,893,893. (See 2,794,417.)

2,893,894. (See 2,794,417.)

2,919,200, Dubin and White, BACTERIOSTATIC PLASTIC, **filed** Apr. 6, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73–C–203 (4), *Maurice T. Dubin and James S. White* v. *American Air Filter Co. Inc. and Walgreen Drug Stores.* **Same, filed** Apr. 11, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73–C–214 (1), *Maurice T. Dubin and James S. White* v. *Owens-Corning Fiberglas Corp. and Schnarr's True Value Hardware.* **Same, filed** Apr. 13, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73–C–221 (3), *Maurice T. Dubin and James S. White* v. *United States Gypsum Co. and Central Hardware.*

3,025,774, H. G. Bush, ACCESS AND PROTECTIVE COVER FOR VALVES, METERS, MANHOLES AND THE LIKE, **filed** Apr. 12, 1973, D.C., S.D. Calif. (San Diego), Doc. 73–142–S, *Brooks Products, Inc.* v. *Peterson Concrete, Inc. and South Bay Foundry Incorporated.*

3,029,291, A. J. Dietzler, METHOD FOR MAKING ALKYLIDENEBIS (DIBROMOPHENOLS), **filed** Oct. 16, 1972, D.C. Del. (Wilmington), Doc. 4486, *The Dow Chemical Corporation* v. *Great Lakes Chemical Corporation.* Apr. 30, 1973, consolidated with and continues as Civil Action 4614; Apr. 30, 1973, Civil Action 4486 was consolidated with and continues as Civil Action 4618.

3,048,485, C. G. Bieber, HIGH STRENGTH CREEP RESISTING ALLOY, **filed** in the Ct. of Cl. (District of Columbia), Doc. 330–68, *The International Nickel Company, Inc.* v. *The United States and Cameron Iron Works, Inc.* Ordered: on stipulation of parties, judgment in favor of plaintiff; claims 5 and 6 are valid and infringed. Jan. 12, 1973.

3,175,256, R. C. Horton, WEATHER STRIP, **filed** May 8, 1973, D.C.S.C. (Rock Hill), Doc. 73–544, *USM Corporation* v. *The Schlegel Manufacturing Company.*

3,388,236, J. J. McLeod, PADDED CLAVICLE SPLINT, **filed** May 9, 1973, D.C., S.D. Fla. (Miami), Doc. 73–797–C–JLK, *John J. McLeod, Jr.* v. *All Orthopedic Appliances, Inc.*

3,343,978, T. J. Engelbach, ADHESIVE TRANSFERS, **filed** July 11, 1968, D.C., N.D. Ohio (Toledo), Doc. C68–526, *Avery Products Corporation* v. *Morgan Adhesives Company.* Action dismissed on the merits, May 15, 1973.

3,346,447, W. T. Wright, COMPOSITIONS AND METHODS FOR PROTECTING PLANTS WITH METAL DERIVATIVES OF HEXACHLOROPHENE; **3,420,936,** same, COMBATING BACTERIAL AND FUNGAL PLANT DISEASES WITH HEXACHLOROPHENE, 2, 2–METHYLENE BIS-(3,4,6-TRICHLOROPHENOL), **filed** May 9, 1973, D.C., M.D. Fla. (Tampa), Doc. 73–9–C, Ft. M.K., *Nationwide Chemical Corporation* v. *Wilburn T. Wright and Webb Corp.*

3,420,926. (See 3,346,447.)

3,488,617, J. Krampe, TOOL FOR CUTTING AND STRIPPING CABLE, **filed** Jan. 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c47, *Josef Krampe* v. *Ideal Industries, Inc.* Defendant's motion for summary judgment granted and cause dismissed, Sept. 6, 1972.

3,504,907, Barber and Scrymegeour. FILING SYSTEM INDEX INDICATORS AND METHOD OF PRODUCING SAME, **filed** May 14, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1232, *Donald Barber and Thomas Scrymegeour and Datafile Limited* v. *Tab. Prod. Co. and Tab Service Co.*

3,631,847, J. C. Hobbs II, METHOD AND APPARATUS FOR INJECTING FLUID INTO THE VASCULAR SYSTEM, **filed** Sept. 6, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2207, *James C. Hobbs II and Barber Colman Co.* v. *Medrad, Inc.* By agreement suit dismissed with prejudice Mar. 16, 1973, order vacating order dismissal with prejudice and substituting order of dismissal without prejudice, Mar. 23, 1973.

3,640,304, Fox and Parry, INSERTABLE VALVE ASSEMBLY, **filed** May 10, 1973, D.C. Oreg. (Portland), Doc. C–73–372, *Marco Dental Products, Incorporated* v. *Mark W. Whitman and Kathleen F. Whitman, doing business as Beaver State Dental.*

3,668,324, J. Firestone, TELEPHONE ADAPTER, **filed** May 4, 1973, D.C., S.D.N.Y., Doc. 73–C–1998, *Saxton Products, Inc.* v. *United States Telephone Company.*

3,669,499, Semplonius and Kolk, CHAIR, **filed** May 10, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1207, *Steelcase, Inc.* v. *All-Steel Equipment Inc.*

3,728,180, Messerschmidt, Heyman and Johnsen, POWDERLESS ETCHING BATH COMPOSITIONS; **3,730,899,** same, POWDERLESS ETCHING BATH ADDITIVE, **filed** May 10, 1973, D.C.N J. (Newark), Doc. 657–73–C, *Philip A. Hunt Chemical Corporation* v. *Mona Industries, Inc.*

3,730,899. (See 3,728,180.)

D. 226,510, Benty and Friedman, COMBINED HAIR DRYER AND STYLING ATTACHMENT THEREFOR, **filed** May 15, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1089–RJK, *Clairol Incorporated* v. *Pacific American Industries, Inc.*

Erratum

In the OFFICIAL GAZETTE of Feb. 27, 1973, vol. 907, page 856, under "Patent Suits," paragraph 7 reading "3,107,703" should be *3,103,073.*

Certificates of Correction for the Week of Dec. 18, 1973

P.P. 3,349	3,725,006	3,746,674	3,754,287
Re. 27,686	3,725,322	3,746,705	3,754,425
Re. 27,745	3,726,204	3,746,882	3,754,544
3,366,496	3,726,680	3,746,896	3,754,648
3,380,964	3,727,097	3,746,964	3,754,700
3,466,184	3,727,159	3,747,067	3,754,814
3,509,088	3,727,281	3,747,225	3,754,907
3,599,357	3,727,304	3,747,398	3,754,934
3,601,576	3,727,474	3,747,615	3,754,979
3,615,525	3,727,537	3,747,805	3,754,981
3,617,546	3,727,606	3,748,128	3,755,002
3,623,484	3,727,687	3,748,145	3,755,011
3,625,848	3,727,704	3,748,304	3,755,115
3,625,859	3,727,714	3,748,486	3,755,260
3,629,273	3,728,063	3,748,498	3,755,361
3,630,993	3,728,149	3,748,581	3,755,389
3,635,734	3,728,213	3,748,955	3,755,400
3,642,197	3,728,269	3,749,088	3,755,479
3,644,978	3,729,655	3,749,162	3,755,530
3,647,136	3,730,951	3,749,277	3,755,700
3,659,002	3,731,442	3,749,386	3,755,712
3,663,544	3,733,534	3,749,438	3,755,835
3,679,791	3,733,663	3,749,444	3,755,919
3,681,459	3,733,752	3,749,519	3,755,998
3,684,458	3,734,579	3,749,529	3,756,005
3,684,911	3,735,395	3,749,980	3,756,016
3,686,149	3,735,881	3,749,981	3,756,103
3,689,857	3,735,944	3,750,461	3,756,169
3,692,792	3,736,685	3,750,820	3,756,192
3,694,432	3,736,933	3,750,836	3,756,314
3,694,441	3,736,953	3,750,842	3,756,315
3,697,398	3,737,332	3,751,148	3,756,472
3,697,659	3,737,758	3,751,168	3,756,575
3,699,134	3,737,825	3,751,325	3,756,607
3,699,151	3,738,925	3,751,362	3,756,609
3,700,755	3,738,962	3,751,393	3,756,617
3,703,555	3,739,125	3,751,518	3,756,753
3,704,164	3,739,240	3,751,523	3,756,883
3,708,895	3,739,503	3,751,524	3,756,919
3,709,904	3,739,721	3,751,804	3,756,939
3,709,907	3,739,799	3,751,861	3,757,022
3,711,503	3,739,834	3,751,897	3,757,068
3,714,124	3,740,258	3,751,910	3,757,251
3,715,394	3,740,444	3,752,227	3,757,316
3,715,727	3,740,522	3,752,274	3,757,463
3,715,834	3,740,704	3,752,490	3,757,486
3,718,410	3,740,733	3,752,527	3,757,521
3,718,772	3,741,182	3,752,592	3,757,830
3,719,028	3,741,723	3,752,717	3,758,113
3,719,269	3,741,898	3,752,786	3,758,208
3,719,426	3,741,917	3,752,846	3,758,265
3,719,495	3,741,966	3,752,878	3,758,372
3,720,242	3,742,438	3,752,883	3,758,414
3,720,363	3,742,783	3,752,887	3,758,513
3,721,058	3,743,525	3,752,923	3,758,514
3,721,640	3,743,655	3,753,120	3,758,624
3,721,657	3,743,665	3,753,585	3,758,705
3,721,915	3,745,027	3,753,649	3,759,744
3,722,780	3,746,185	3,753,835	3,759,809
3,723,254	3,746,267	3,754,042	3,759,835
3,723,395	3,746,422	3,754,082	3,759,878
3,723,449	3,746,434	3,754,183	3,760,098
3,723,459	3,746,503	3,754,214	3,760,117
3,724,916	3,746,556	3,754,219	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE ARMY

Chief; Patents Division; Office of Judge Advocate General; Patent Division Room 2C-455; Pentagon; Washington, D.C. 20310

Patent 3,692,566. Method of Depositing Isotropic Boron Nitride. Filed Nov. 24, 1970. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,694,321. Portable Distillation Unit. Filed Nov. 3, 1970. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,694,677. VHF-UHF Piezoelectric Resonators. Filed Mar. 3, 1971. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,695,766. Photosensitive Surface Shaping for Optical Heterodyning. Filed Jan. 14, 1970. Patented Oct. 3, 1972. Not available NTIS.

Patent 3,696,474. Lacing Lock for Hood. Filed Dec. 17, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,696,561. Biological Door Seal. Filed Apr. 1, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,645. Purification of Antibodies. Filed Apr. 28, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,698,240. Electronic Circuit for Prevention of Receiver Paralysis in Ultrasonic Echo Ranging. Filed Sept. 29, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,319. High Temperature-Resistant Waterproof Caseless Primer. Filed June 8, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,331. Apparatus and Method for the Disposal of Liquid Waste Material. Filed July 19, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,651. Tape Wrapping Arrangement. Filed Mar. 1, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,360. One-Shot Monostable Multivibrator. Filed Aug. 15, 1969. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,509. Seismic System for Real-Time Reporting. Filed Oct. 21, 1969. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,584. Insertion Phase Correction of Phase Shifters by Presetting Binary Counters. Filed Dec. 30, 1970. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,700,010. Wire Tying Apparatus Including Demountable Typing Mechanism. Filed June 17, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,338. Light Scattering Cell. Filed June 9, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,397. Camouflaged Article and Method of Producing same. Filed May 6, 1969. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,517. Method for Arresting Propagating Fractures in Stressed Skin Monocoque Type of Construction. Filed Nov. 24, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,547. Bonding Process for Polyphenylene Oxide-dielectric Microwave Circuits and Bonded Assembly. Filed Oct. 20, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,999. Automatic Battery Polarizing Circuit. Filed Jan. 11, 1972. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,004. Circuit for Generating a Repeatable Voltage as a Function of Temperature. Filed May 13, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,026. Median Frequency Generator. Filed May 13, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,048. Multi-Rod Single Pump Source Laser. Filed Sept. 15, 1967. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,498. Fiberoptic Clearance Light System. Filed June 3, 1971. Patented Oct. 31, 1972. Not available NTIS.

Patent 3,705,474. Method to Prevent Toxic Gas Emission. Filed Jan. 21, 1971. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,705,523. Hybrid Routing Technique for Switching Communication Network. Filed Sept. 21, 1970. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,705,549. Ammunition. Filed Nov. 25, 1970. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,705,814. Directly Edible, Compacted and Dehydrated Fruit Bar. Filed Aug. 20, 1970. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,705,998. Negative Ion Generator. Filed Jan. 27, 1972. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,706,001. Thermionic Electron Emitter Containing Thorium Carbide, Thorium Oxide and Zirconium Carbide. Filed Mar. 12, 1971. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,706,050. Magnetohydrodynamic Gas Dynamic Laser. Filed Nov. 2, 1971. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,706,227. Pneumatic Thermometer. Filed Mar. 27, 1963. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,228. Temperature and Velocity Apparatus for Moving Fluids. Filed Jan. 5, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,279. Combustible Cartridge Case. Filed Jan. 20, 1971. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,706,280. Novel Combustible Cartridge Case and Process Therefor. Filed Dec. 29, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,487. Photochromic Projection System. Filed May 4, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,496. Cinetheodolite. Filed Jan. 13, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,498. Automatic Beam Scanning Apparatus for Evaluating Optical Beacons. Filed Apr. 23, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,609. TNT Composition Containing a Cellulosic Resin Which is Free From Oily Exudation Upon Storage. Filed Dec. 29, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,865. Elapsed Time Indicator. Filed Dec. 7, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,867. Electronic Anti-Intrusion Device. Filed Feb. 18, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,938. Directional Ion Anemometer. Filed Mar. 10, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,711,769. Spurious Signals and Intermodulation Products Detection Enhancement Circuit. Filed Mar. 9, 1971. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,721,899. Continuity Test and Indicating Circuit. Filed Oct. 6, 1971. Patented Mar. 20, 1973. Not available NTIS.

Patent 3,722,553. Wire Tying Apparatus Including Timing and Stopping Mechanism. Filed June 17, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,723,513. Organic Disulfide Sulfinic Acid Compounds. Filed Nov. 6, 1969. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,725,729. Electrical Crowbar System with Novel Triggered Spark Gap Devices. Filed Oct. 29, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,728,647. Waveguide Phase Shift Actuator. Filed Nov. 4, 1971. Patented Apr. 17, 1973. Not available NTIS.

Patent 3,733,319. Nitrothiophenes. Filed Jan. 7, 1970. Patented May 15, 1973. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents; Washington, D.C. 20545

Patent application 148,132. Improved Process for Treatment of Aqueous Suspensions. Filed May 29, 1971. PC $3/MF $1.45.

Patent application 295,780. Compact Dynamic Multistation Photometer Utilizing Disposable Cuvette Rotor. Filed Oct. 6, 1972. PC $3/MF $1.45.

Patent application 687,594. Noble Metals Having a High Emittance Coating of Iron Titanate. Filed Dec. 4, 1967. PC $3/MF $1.45.

Patent 3,480,793. Logarithmic Function Generator. Filed Aug. 2, 1966. Patented Nov. 25, 1969. Not available NTIS.

Patent 3,725,293. Conversion of Fuel-Metal Nitrate Solutions to Oxides. Filed Jan. 11, 1972. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,295. Technetium Labeling. Filed July 20, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,728,217. Bumpy Torus Plasma Confinement Device. Filed June 5, 1972. Patented Apr. 17, 1973. Not available NTIS.

Patent 3,733,248. Plasma Control by Feedback. Filed Feb. 15, 1972. Patented May 15, 1973. Not available NTIS.

Patent 3,733,249. Method for Detecting and Monitoring a Fuel Element Failure in a Nuclear Reactor. Filed Nov. 2, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,736,539. Moment Free Toroidal Magnet Design. Filed Apr. 18, 1972. Patented May 29, 1973. Not available NTIS.

Patent 3,738,873. Self Generating Thermoelectric Converter. Filed Dec. 23, 1964. Patented June 12, 1973. Not available NTIS.

Patent 3,740,314. Fuel Pin for a Liquid-Metal-Cooled Fast Breeder Nuclear Reactor. Filed Jan. 28, 1972. Patented June 19, 1973. Not available NTIS.

Patent 3,740,340. Composite Insulators for Use in Hot Hydrogen Environments. Filed Mar. 3, 1971. Patented June 19, 1973. Not available NTIS.

Patent 3,740,760. Reaction End-Point Recorder for Use With a Rotary Analytical Photometer. Filed Nov. 9, 1971. Patented June 19, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters; NASA—Code GP-2. Washington, D.C.

Patent application 311,234. Single Reflector Interference Spectrometer and Drive System Therefor. Filed Dec. 1, 1972. PC $3.50/MF $1.45.

Patent application 327,969. Hall Effect Magnetometer. Filed Jan. 30, 1973. PC $3/MF $1.45.

Patent application 370,271. Modulator for Tone and Binary Signals. Filed June 15, 1973. PC $3/MF $1.45.

Patent application 374,421. Flame Retardant Elastometer Compositions. Filed June 28, 1973. PC $4.50/MF $1.45.

Patent application 374,422. System for Interference Signal Nulling by Polarization Adjustment. Filed June 28, 1973. PC $3/MF $1.45.

Patent 3,741,001. Apparatus for Sampling Particulates in Gases. Filed Mar. 20, 1972. Patented June 26, 1973. Not available NTIS.

Patent 3,744,247. Single Grid Accelerator for an Ion Thrustor. Filed Sept. 14, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,744,294. Acoustical Transducer Calibrating System and Apparatus. Filed Oct. 14, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,744,738. Zero Gravity Liquid Transfer Screen. Filed Sept. 16, 1971. Patented July 10, 1973. Not available NTIS.

[FR Doc.73-24760; Filed 11-20-73; 8:45 am]

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DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

DEPARTMENT OF THE ARMY

Chief; Patents Division; Pentagon; Office of the Judge Advocate General; Patent Division; Rm 2C-455. Washington, D.C. 20310

Patent 3,726,820. 1,3-Bis (4-Chlorophenyl)-2-Propen-1-One Guanylhydrazone Hydrochloride and Analogs Thereof Useful as Antimalarials. Filed Jan. 6, 1970. Patented Apr. 10, 1973. Not available NTIS.

Patent 3,732,305. S-Substituted Thiosulfuric Acid Derivatives and Preparation Thereof. Filed Mar. 3, 1970. Patented May 8, 1973. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents Washington, D.C. 20545

Patent application 226,472. Filament Support Structure for Large Electron Guns. Filed Feb. 15, 1972. PC $3/MF $1.45.

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DEPARTMENT OF THE AIR FORCE

AF/JACP; Washington, D.C. 20314

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DEPARTMENT OF THE NAVY

Assistant Chief for Patents: Office of Naval Research Code 302, Arlington, Va. 22217

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Patent 3,723,214. Method of Making a Steel, Graphite, Phenolic Asbestos Laminate. Filed Mar. 1, 1971. Patented Mar. 27, 1973. Not available NTIS.

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Assistant General Counsel for Patent Matters, NASA—Code GP–2. Washington, D.C. 20546

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[FR Doc. 73-24759; Filed 11-20-73; 8:45 am]

Patents Available for Licensing or Sale

D. 220,231. DESIGN FOR BOOT SCRAPER. Don J. McDonald et al. % Burd, Braddock & Bartz, Attn: W. A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,194,609. SPROCKET AND CHAIN DRIVE. Lloyd Thurlow, % William A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,237,885. SPACE CRAFT. Jack L. Mohar, 41 W. Arbor St., Long Beach, Calif., 90805.

3,295,265. CIRCULAR MULTI-PURPOSE BUILDING AND ITS ASSEMBLING METHOD. Naoto Hida. Correspondence to: Watanabe Patent Law Office, Koenji Minami 1–29–16, Suginami, Tokyo 166, Japan.

3,474,799. TOOTH SPACE CLEANER USING DENTAL FLOSS LINKS ON HOLDER. Vito P. Cappello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,648,291. PROTECTIVE GARMENT FOR BEDRIDDEN PEOPLE. Alva L. Pankers. % William A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,648,649. BAKER'S SPRINKLING APPARATUS. Arthur Wasserman. % Burd, Braddock & Bartz, Attn: W. A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,501,072. COLLAPSIBLE SUPPORT FOR WIGS. Ronald R. Kovener, % W. A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,657,828. SCRAPER SNOWPLOW WITH PIVOTAL DOZER BLADES. Percy D. Anderson. % W. A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,658,588. PREPARATION OF STARCH FROM CELLULOSE TREATED WITH PHOSPHORIC ACID. James R. Harvey, 1337 Cavitt Road, Monroeville, Pa., 15146.

3,688,787. LONGITUDINALLY COLLAPSIBLE CANOPY FOR PICKUP TRUCKS AND ANALOGOUS FRAMES. Clark B. Feather, 5602 N. 68th St., Omaha, Nebr., 68104.

3,698,512. COLLAPSIBLE LADDER DEVICE. John V. Cebular, 2126 Shallcross St., Philadelphia, Pa.

3,706,319. SANITARY ANTI-POLLUTION VACUUM SEWAGE EVACUATOR. James E. Gaylor, 6742–D E. Calle La Paz, Tucson, Ariz., 85715.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2–5 Kasumigaseki, 3-chome, Chiyoda-ku, Tokyo 100, Japan.

3,740,874. SNOW CLEARERS. Bovard & Cie, Optingenstrasse 16, CH–3000 Bern 25, Switzerland.

3,747,955. TRAILER FOR BICYCLE. Alexander D. MacAlpine, 50 N. Main St., Natick, Mass., 01760.

3,749,348. GUN BUTT HOLDER. Curry M. Bartlett, 29 Arlington St., Newton, Mass., 02158.

3,750,385. CALENDAR WATCH SETTING MECHANISM FOR VARIOUS MONTH LENGTHS. Hans Kocher, Erlenweg 24, 3294 Buren a/Aare, Berne, Switzerland.

3,752,209. WEBBING CLIP. David A. Swanson, 1217 W. 4th St., Tempe, Ariz., 85281.

3,754,227. HOTEL SIGNALLING SYSTEM. Sven Gote Anderson, Correspondence to: Werner W. Kleeman, Suite 501, Crystal Plaza 1, 2001 Jefferson Davis Highway, Arlington, Va., 22202.

3,756,000. CLEAN TIP SICKLE FIN. Ralph W. Kerr. Correspondence to: Sherman Levy, Washington Bldg., 15th St. and New York Ave. N.W., Washington, D.C. 20005.

3,757,469. PLANT WATERING AND FERTILIZING DEVICE. Charles T. Smith et al., 23 E. Chesapeake Ave. Towson, Md., 21204.

Philco-Ford Corporation is prepared to grant non-exclusive licenses on reasonable terms and conditions under the following patent.

Applications for license may be addressed to: Patent Counsel, Philco-Ford Corporation, Union Meeting Road, Blue Bell, Pa., 19422.

3,747,199. ALUMINUM BRAZING.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 21 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

Re. 27,755. SURFACE STRIP TRANSMISSION LINE AND MICROWAVE DEVICES USING SAME.

3,756,684. COARSE PINHOLE ARRAY FOR RECORDING IMPROVED REDUNDANT HOLOGRAMS.

3,756,847. METHOD FOR CONTROLLING THE COMPOSITION OF A DEPOSITED FILM.

3,756,891. MULTILAYER CIRCUIT BOARD TECHNIQUES.

3,757,033. SHADOWING SYSTEM FOR COLOR ENCODING CAMERA.

3,757,041. TELEVISION SPECIAL EFFECTS CONTROL PULSE GENERATING APPARATUS.

3,757,098. CARRY GENERATION MEANS FOR MULTIPLE CHARACTER ADDER.

3,757,137. LOW VOLTAGE REFERENCE CIRCUIT.

3,757,262. TOROIDAL DEFLECTION YOKE HAVING CONDUCTORS WOUND IN FLYBACK MANNER.

3,757,349. LABEL WRITING APPARATUS.

3,757,570. SIMULATED LOAD FOR INTERNAL COMBUSTION ENGINES.

3,757,571. SIMULATED LOAD FOR INTERNAL COMBUSTION ENGINES.

3,758,649. METHOD OF MANUFACTURING HOLOGRAPHIC REPLICAS.

3,758,792. PEAK DETECTOR CIRCUIT.

3,758,794. CHARGE COUPLED SHIFT REGISTERS.

3,758,814. WIDE ANGLE DEFLECTION SYSTEM.

3,760,202. INPUT CIRCUITS FOR CHARGED-COUPLED CIRCUITS.

3,760,222. PINCUSHION CORRECTED VERTICAL DEFLECTION CIRCUIT.

3,760,296. INTERNALLY-MODULATED GAS LASER.

3,760,305. DIELECTRICALLY LOADED WAVEGUIDE ASSEMBLY.

3,760,378. SEMICONDUCTOR MEMORY USING VARIABLE THRESHOLD TRANSISTORS.

3,761,264. METHOD OF DEFINING A DETAILED PATTERN ON A SURFACE OF A BODY.

3,761,645. APPARATUS AND PROCESS FOR THERMOMAGNETICALLY REPLICATING MAGNETIC RECORDINGS USING A SCANNING BEAM OF RADANT ENERGY.

3,761,762. IMAGE INTENSIFIER CAMERA TUBE HAVING AN IMPROVED ELECTRON BOMBARDMENT INDUCED CONDUCTIVITY CAMERA TUBE TARGET COMPRISING A CHROMIUM BUFFER LAYER.

3,761,800. INTEGRAL CYCLE THYRISTOR POWER CONTROLLER.

3,761,801. MICROPOWER, LOW-VOLTAGE, REGULATOR CIRCUITS.

3,761,933. LOOP ANTENNA WITH DISTRIBUTED IMPEDANCE NEAR THE TERMINATING GAP.

General Electric Company is prepared to grant non-exclusive licenses under the following 105 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 5 patents may be addressed to: Patent Counsel, LSTG Divisions, General Electric Company, 1 River Rd., Bldg. #43, Schenectady, N.Y., 12305.

3,744,459. CONDENSATE DRAIN SUBCOOLER FOR MOISTURE SEPARATOR AND REHEATER.

3,747,336. STEAM INJECTION FOR A GAS TURBINE.

3,748,491. VARIABLE RATE LOAD SETBACK CIRCUIT.

3,748,540. TESTING AND MONITORING SYSTEM FOR REDUNDANT TRIP DEVICES.

3,752,597. FLOW PATH DEFLECTOR FOR AXIAL FLOW REVERSING GAS TURBINE.

Applications for license under the following 9 patents may be addressed to: Patent Counsel, Ordnance Systems Department, General Electric Co., 100 Plastics Ave., Pittsfield, Mass., 01201.

3,203,309. SINGLE PHOTOTUBE STABILIZED CONDENSATION NUCLEI METER.

3,455,265. AIR FILM DRAG REDUCTION STABILIZATION.

3,455,266. AIR FILM DRAG REDUCTION VISCOELASTIC ADDITIVES.

3,483,132. BUBBLE DISSOLUTION CONTROL BY FILM FORMATION.

3,522,425. APPARATUS FOR SELECTIVE SEPARATION OF IONS OF DIFFERENT MOBILITIES IN A GAS STREAM.

3,562,524. APPARATUS FOR MEASURING THE CONCENTRATION OF ALCOHOL VAPOR IN ALVEOLAR AIR.

3,581,503. METHOD OF INCREASING THE LIFE OF GAS BUBBLES.

3,588,496. RADIATION ANALYSIS APPARATUS HAVING AN ABSORPTION CHAMBER WITH PARTIALLY REFLECTIVE MIRROR SURFACES.

3,654,521. ELECTRONIC CARD MODULE THERMAL CLIP.

Applications for license under the following 10 patents may be addressed to: General Electric Company, Appliance Components Business Div., 1635 Broadway, Fort Wayne, Ind., 46804. Attn: Patent Counsel.

3,361,496. LUBRICANT RETENTION SYSTEM FOR DYNAMOELECTRIC MACHINE.

3,407,469. APPARATUS FOR DEVELOPING ELECTRICAL COILS IN INDUCTIVE DEVICES.

3,407,488. METHODS FOR ALTERING THE CONFIGURATION OF ELECTRICALLY CONDUCTIVE TURNS OF INDUCTIVE DEVICES.

3,407,493. PROCESS OF DEVELOPING ELECTRICAL COILS IN INDUCTIVE DEVICES.

3,420,335. LUBRICATION SYSTEM FOR ELECTRIC MACHINES.

3,432,907. APPARATUS FOR ALTERING THE CONFIGURATION OF ELECTRICALLY CONDUCTIVE TURNS OF INDUCTIVE DEVICES.

3,439,244. SINGLE-PHASE ALTERNATING CURRENT MULTIVOLTAGE INDUCTION MOTOR STATOR.

3,457,445. LAMINATED ROTORS AND STATORS WITH FLUX BARRIERS FOR SYNCHRONOUS INDUCTION MOTORS AND METHOD OF MAKING THE SAME.

3,524,089. DYNAMOELECTRIC MACHINE WITH EASY ACCESS TO CIRCUIT CONTROL TERMINALS.

3,541,365. LEAD CHANGING TERMINAL ASSEMBLY FOR A DYNAMOELECTRIC MACHINE.

Applications for license under the following 11 patents may be addressed to: General Electric Company, Construction Materials Division, 4755 Kingsway Drive, Suite 416, Indianapolis, Ind., 46205. Attention: Division Patent Counsel.

2,916,594. ELECTRIC HEATING.

2,941,632. PANEL CONSTRUCTION.

3,286,076. ELECTRIC HEATING DEVICE WITH ADJUSTABLE HEATING UNIT.

3,296,496. ELECTRIC HEATING DEVICES.

3,373,262. TEMPERATURE CONTROL CIRCUIT.

3,577,940. INCINERATOR.

3,578,948. SOLDERING AND DESOLDERING HAND TOOL EMPLOYING AIR BLAST OR SUCTION.

3,606,281. ROLLER HEARTH FURNACE WITH ROLL OSCILLATION CONTROLLER.

3,639,782. MAGNETIC SLAVE GATING CIRCUIT FOR FULL WAVE PHASE-CONTROLLED THYRISTOR CIRCUITS.

3,658,017. INCINERATOR.

3,672,839. BURNER-COOLER SYSTEM FOR GENERATING EXOTHERMIC GAS.

Applications for license under the following 17 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,590,911. COMBINATION REFRIGERATOR INCLUDING CONVERTIBLE COMPARTMENT.

3,599,872. SEALING MEANS IN A ROTATING SPRAY DEVICE.

3,600,111. HERMETIC COMPRESSOR.

3,622,755. TUBULAR HEATING ELEMENTS AND MAGNESIA INSULATION THEREFOR AND METHOD OF PRODUCTION.

3,694,626. ELECTRICAL RESISTANCE HEATER.

3,697,716. INDUCTION COOKING POWER CONVERTER WITH IMPROVED COIL POSITION.

3,697,717. INDUCTION COOKING APPLIANCE WITH MULTICYLINDER POWER CIRCUITS.

3,715,550. INDUCTION COOKING/WARMING APPLIANCE INCLUDING VESSEL SUPPORTING MEANS HAVING AN UNDULANT SURFACE AND TEMPERATURE SENSING MEANS ASSOCIATED WITH SAID SURFACE.

3,719,789. INDUCTION COOKING APPLIANCE INCLUDING TEMPERATURE SENSING OF INDUCTIVELY HEATED COOKING VESSEL BY "MODULATED" LIGHT.

3,739,596. REFRIGERATION SYSTEM INCLUDING HEAD PRESSURE CONTROL MEANS.

3,739,936. POUR HOLE CLOSURE FOR FOAM MOLD.

3,742,397. ELECTRONIC OVEN WITH FERRITE RF REJECTION FILTERS.

3,747,363. REFRIGERATOR INCLUDING THROUGH-THE-DOOR ICE SERVICE.

3,747,520. TRASH COMPACTOR HAVING MEANS FACILITATING TRASH REMOVAL THEREFROM.

3,749,081. WINDOWED OVEN DOOR WITH ROTATABLE INNER PANEL.

3,750,420. REFRIGERATOR INCLUDING AUTOMATIC ICEMAKER AND WATER PUMP DRIVEN THEREBY.

3,750,643. MULTIPLE POSITION DOOR LATCH MECHANISM.

Applications for license under the following 53 patents may be addressed to: General Electric Company, Construction Materials Division, 4755 Kingsway Drive, Suite 416,, Indianapolis, Ind., 46205. Attention: Division Patent Counsel.

2,825,024. VOLTAGE STABILIZING SYSTEM.

2,835,875. THEE-PHASE TRANSFORMER CONSTRUCTION.

2,845,235. ELECTROMAGNETIC WIRE TENSION DEVICE.

2,850,708. TRANSFORMER CORE CONSTRUCTION.

2,866,955. TAP STRUCTURE FOR REACTIVE DEVICE.

2,872,344. PROCESS OF IMPREGNATING A POROUS ARTICLE.

2,897,463. MOUNTING STRUCTURE FOR STATIONARY INDUCTIVE DEVICE.

2,902,661. COIL INSULATING AND LEAD ANCHORING MEANS FOR TRANSFORMER.

2,938,313. PROCESS OF POTTING ELECTRICAL APPARATUS.

2,960,647. SELF-SATURATING MAGNETIC AMPLIFIER.

3,007,125. INDUCTIVE DEVICE.

3,011,139. INDUCTIVE DEVICE AND FRAME THEREFOR.

3,011,140. COIL INSULATING AND LEAD ANCHORING MEANS FOR TRANSFORMERS.

3,023,493. APPARATUS AND METHOD FOR ASSEMBLING STACKED MAGNETIC CORES.

3,028,539. CURRENT TRANSFORMER.

3,028,567. STATIONARY INDUCTION APPARATUS.

3,037,177. STATIONARY INDUCTION APPARATUS.

D. 202,045. ELECTRICAL TRANSFORMER OR SIMILAR ARTICLE.

3,102,206. SATURABLE CURRENT TRANSFORMER-TRANSISTOR CIRCUIT.

3,114,196. METHOD FOR PRODUCING MAGNETIC CORE AND COIL ASSEMBLIES WITH GAPS IN THE MAGNETIC CORE.

3,135,930. STATIONARY INDUCTION APPARATUS.

3,155,894. VOLTAGE STABILIZING SYSTEMS.

3,161,843. RESIN-COATED SAND FILLED INDUCTIVE DEVICE.

3,212,041. ADJUSTABLE SLIDING BRUSH TRANSFORMER.

3,222,592. VOLTAGE STABILIZING CIRCUITS.

3,251,208. MACHINE AND METHOD FOR FORMING LAMINATIONS FOR MAGNETIC CORES.

3,263,099. POWER AMPLIFIER CIRCUIT.

3,270,308. PREFORMED MAGNETIC CORE STRUCTURE.

3,319,204. ADJUSTABLE SHUNT CORE.

3,329,908. A TRANSISTOR INVERTER WITH AN IMPROVED BASE CURRENT CONTROLLING CIRCUIT.

3,353,032. FLYBACK POWER AMPLIFIER CIRCUIT.

D. 210,130. ELECTRICAL TRANSFORMER OR SIMILAR ARTICLE.

3,371,876. COIL WINDING MACHINE.

3,374,452. TOROIDAL TRANSFORMER CONSTRUCTION AND METHOD OF CONSTRUCTING SAME.

3,413,541. APPARATUS FOR DETECTING INSULATION FAULTS IN MAGNET WIRE UTILIZING FIELD EFFECT TRANSISTOR.

3,436,707. ELECTRICAL INDUCTIVE APPARATUS WITH CLAMPING AND AIR-GAP ADJUSTING FRAME.

3,450,190. LOW PRESSURE CASTING APPARATUS.

3,456,223. VOLTAGE STABILIZING TRANSFORMER WITH VARIABLE AIR GAP CHARACTERISTICS.

3,458,843. BROADBAND SHIELDED TRANSFORMERS.

3,465,237. ALTERNATING CURRENT REGULATING APPARATUS WITH CLOSED LOOP FEEDBACK CONTROL.

3,466,583. ADJUSTABLE SLIDING BRUSH TRANSFORMER.

3,476,977. IMPULSE STARTING AND OPERATING CIRCUIT FOR GAS DISCHARGE LAMPS.

3,478,290. ADJUSTABLE SLIDING BRUSH TRANSFORMER AND METHOD OF PRODUCING A BRSUH TRACK THEREFOR.

3,480,897. ADJUSTABLE SLIDING BRUSH TRANSFORMER AND METHOD OF PRODUCING SAME.

3,488,839. METHOD OF MAKING A TAP CONNECTION TO A WINDING OF A VARIABLE TRANSFORMER.

3,501,771. ROOT MEAN SQUARE VOLTAGE REGULATOR.

3,522,569. MAGNETIC CORE AND COIL ASSEMBLY HAVING A GAP WHICH IS FIXED BY A REINFORCED ADHESIVE LAYER SPANNING THE GAP.

3,537,051. ADJUSTABLE SLIDING BRUSH TRANSFORMER.

3,600,664. OVERCURRENT PROTECTION FOR SOLID-STATE VOLTAGE REGULATOR.

3,623,279. METHOD OF PRODUCING A BRUSH TRACK FOR AN ADJUSTABLE SLIDING BRUSH TRANSFORMER.

3,646,439. REGULATOR WITH OPTICAL FEEDBACK ARRANGEMENT WHEREIN BOTH INPUT AND OUTPUT VOLTAGE ARE SENSED.

3,693,127. MAGNETIC SHUNT.

3,721,865. PLASTIC CASE POWER SUPPLY.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 24, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-03-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-11-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-08-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-28-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-17-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-18-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-08-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-07-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-18-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-17-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-10-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-05-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-21-72

Expiration of patents: The patents within the range of numbers indicated below expire during November 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,772,415 to 2,775,761, inclusive
Plant Patents ..... Numbers 1,532 to 1,542, inclusive

REISSUES

DECEMBER 18, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,841

METHOD OF PROCESSING COFFEE

William W. Niven, Jr., late of Prairie Village, Kans., by Jack M. Campbell, administrator, Kansas City, Mo., assignor to The Folger Coffee Company, Cincinnati, Ohio

Original No. 3,458,320, dated July 29, 1969, Ser. No. 701,012, Jan. 26, 1968, which is a continuation of abandoned application Ser. No. 356,593, Apr. 1, 1964. Application for reissue July 9, 1971, Ser. No. 161,030

Int. Cl. A35f *1/08*

U.S. Cl. 99—71 **10 Claims**

Instant coffee is produced by a dual extraction process in which the two coffee extracts are ultimately combined to provide the final product. In the first extraction water at a temperature of 210° F. is added to ground coffee in the ratio of 2.5 to 4.5 parts by weight of water to each part of ground coffee. The mixture is permitted to reach equilibrium conditions, resulting in the production of a coffee extract having approximately 7% by weight of the water soluble components of the ground coffee therein. The remaining grounds are then subjected to the second extraction process.

27,842

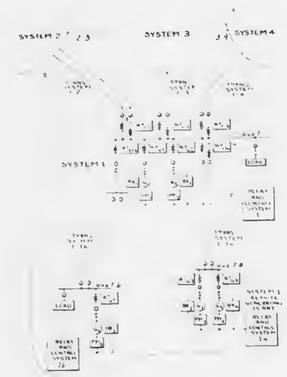
METHODS OF IMPROVING THE STABILITY OF INTERCONNECTED POWER SYSTEMS

Robert H. Park, Brewster, Mass., assignor to Fast Load Control, Inc., Brewster, Mass.

Original No. 3,515,893, dated June 2, 1970, Ser. No. 525,615, Feb. 7, 1966. Application for reissue June 2, 1972, Ser. No. 259,337

Int. Cl. H02j *3/38*

U.S. Cl. 307—52 **23 Claims**



Control systems *and methods of control* for changing *the amount of power generated and the magnitude of connected load and for influencing* the distribution of power flow within [an interconnected] a power system *or an interconnection of systems* through the execution of changes in the driving power of prime movers, and changes in connected electrical loads, wherein initiation of control action is responsive to suddenly occurring events adapted to cause, or which could cause, system instability, and the power flow changes take place in such a way and with sufficient speed as to prevent or oppose development of instability.

27,843

PROCESS FOR PREPARING PEROXYACETALS AND PEROXYKETALS

Giuliano Ballini, Ferrara, and Carlo Bujtar, Bologna, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Original No. 3,468,962, dated Sept. 23, 1969, Ser. No. 550,643, May 17, 1966. Application for reissue Sept. 14, 1971, Ser. No. 180,484

Claims priority, application Italy, May 21, 1965, 11,441/65

Int. Cl. C07c *41/00, 43/30, 73/00*

U.S. Cl. 260—610 R **18 Claims**

Preparing *peroxyethers* [peroxyacetals and peroxyketals] by reacting alkylidene diperoxide with divalent alcohol, desirably in the presence of an acid catalyst.

27,844

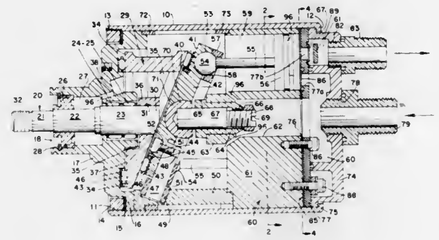
COMPRESSOR UNIT WITH SELF-CONTAINED DRIVE MEANS

John W. Olson, Jr., Oklahoma City, Okla., assignor to John E. Mitchell Company, Dallas, Tex.

Original No. 3,552,886, dated Jan. 5, 1971, Ser. No. 775,334, Nov. 13, 1968. Application for reissue Sept. 18, 1972, Ser. No. 290,004

Int. Cl. F04b *1/14*

U.S. Cl. 417—269 **7 Claims**



A multiple piston compressor unit and drive means therefor for use in mobilized air conditioning systems such as used with automotive vehicles characterized by compact size, smooth performance, economy, minimum performance, weight, whereby high volumetric compressor efficiency is attained at low speeds as well as high speeds without adverse torque peak loads on the driving means; and including piston actuating means of such simple form and of such low consumption of power by friction and slight generation of heat that lubrication by oil mist circulating therethrough with suitable refrigerant through the refrigeration circuit provides sufficient lubri-

cation and the usual oil sump is eliminated, thereby providing a compressor unit of cylindrical form with the axis of the cylinder coinciding with the axes of all components of the piston actuating means.

27,845

PREPARATION OF WHITE OILS WITH ORGANO-ALUMINUM ACTIVATED IRON GROUP METAL CATALYSTS

John B. Gilbert and Robert Kartzmark, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

No Drawing. Original No. 3,658,692, dated Apr. 25, 1972, Ser. No. 871,943, Oct. 28, 1969. Application for reissue Sept. 18, 1972, Ser. No. 290,063

Int. Cl. C10g *23/02*

U.S. Cl. 208—89 **35 Claims**

A process for upgrading and improving the color, odor and stability of petroleum oils to render the latter suitable for use in specialty applications. Raw distillates and semi-refined oils of suitable boiling range and viscosity are refined, or further refined, in a hydrogenation process, at suitable conditions, in the presence of a catalyst which comprises a support and a transition metal complexed with an organometallic compound, to yield colorless mineral oils, i.e., white oils. These highly refined oils are used in pharmaceuticals and cosmetics and similar compositions requiring oil components that meet certain high quality standards.

27,846

MEANS IN ELECTRIC INSULATORS FOR KEEPING THE UPPER SIDE OF THE INSULATOR PLATE FREE FROM DEPOSITS REDUCING THE FLASH-OVER STRENGTH

Lars-Goran Virsberg, Vasteras, Sweden, assignee by Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

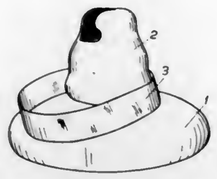
Original No. 3,532,804, dated Oct. 6, 1970, Ser. No. 810,988, Mar. 27, 1969. Application for reissue Apr. 19, 1973, Ser. No. 352,719

Claims priority, application Sweden, Apr. 10, 1968, 4,806/68

Int. Cl. H01b *17/52*

U.S. Cl. 174—139 **7 Claims**

In order to keep the upper side of an electrical insulator plate free of deposits which reduce the flash-over strength, one or more easily movable elements such as a flexible ring of electrically insulating material are arranged above the upper side of the plate, the element being capable of being kept in movement by the wind and



being at least periodically in movable contact with the upper side of the insulator plate.

27,847

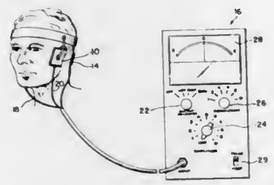
METHOD OF PRODUCING A MUSCULARLY BALANCED CLOSURE OF THE HUMAN MANDIBLE

Bernard Jankelson, 1451 Medical Dental Bldg., Seattle, Wash. 98101

Original No. 3,593,422, dated July 20, 1971, Ser. No. 855,480, Sept. 5, 1969. Application for reissue Feb. 14, 1972, Ser. No. 225,722

Int. Cl. A61c *9/00*

U.S. Cl. 32—21 **17 Claims**



Mandibular closure is produced by simultaneous and even electrical programmed stimulation of the motor nerves controlling the masticatory and facial muscles. The resultant involuntary closure of the mandible is independent of the volition of the patient or the manual guidance of the dentist. The method and techniques associated therewith are useful in a number of clinical and diagnostic techniques.

PATENTS

GRANTED DECEMBER 18, 1973

GENERAL AND MECHANICAL

3,778,844

APPARATUS FOR PREVENTING WHISTLING AT HEARING OPENINGS IN HELMETS

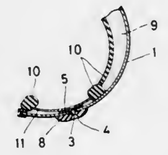
Makoro Hori, Wako, and Takenori Yamamoto, Fukuoka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1972, Ser. No. 256,916

Claims priority, application Japan, May 31, 1971, 46/44224

Int. Cl. A42b *3/00*

U.S. Cl. 2—3 R **3 Claims**



A helmet is provided including a tab portion in which there are two hearing openings or ear holes. These ear holes are surrounded at least in part by an inclined surface which is located on the exterior of the helmet. The inclined surfaces are each of conical form. According to one embodiment, the inclined surfaces completely encircle the associated ear holes. According to another embodiment of the invention, the inclined surfaces merely extend forwardly and rearwardly of the ear holes. Each side of the helmet may be provided with a plurality of ear holes and related surfaces. Each ear hole is covered internally with a thin porous film, which is covered by a fabric.

3,778,845

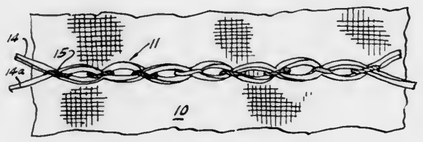
WAISTBAND WITH FRICTIONAL MEANS

Samuel E. Miller, Winnetka, Ill., assignor to QST Industries, Inc., Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 314,223

Int. Cl. A41f *9/00*

U.S. Cl. 2—236 **6 Claims**



Textile fabric provided with an outstanding continuous ridge comprising lays of rubber thread which are superimposed on one another, the respective lays each being disposed as a sine wave of the same frequency to assume a mutually intersecting relation and the lays being anchored to the fabric by stitches of conventional, relatively non-elastic yarn.

3,778,846

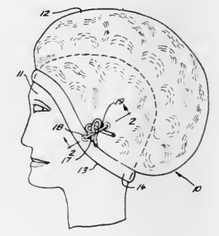
BATHING CAP

Susan Grace Norie, P.O. Box 217, Campbell River, British Columbia, Canada

Filed Nov. 27, 1972, Ser. No. 309,626

Int. Cl. A42b *1/12*

U.S. Cl. 2—68 **1 Claim**



A bathing cap, a crown portion of which has a loose fit on the wearer's head and a marginal portion of which has a stretch fit around the wearer's head. An air seal is effected between the marginal edge portion and the wearer's head by an elastic inflatable tube which extends around inside the cap adjacent to the marginal edge portion. The inflatable tube and the crown portion are inflated by air filler tubes which are long enough to reach the wearer's mouth when the cap is being worn and which can thereafter be tied in a decorative knot.

3,778,847

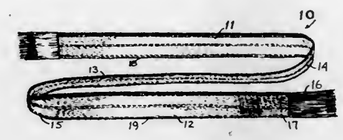
NECK BAND

Eva Lundin, Haggsjovik 12, Ostersund, Sweden

Filed Dec. 19, 1972, Ser. No. 316,533

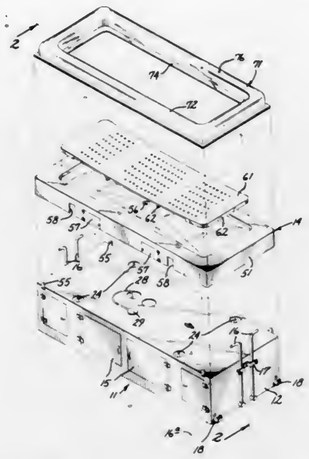
Int. Cl. A41d *25/06*

U.S. Cl. 2—146 **9 Claims**



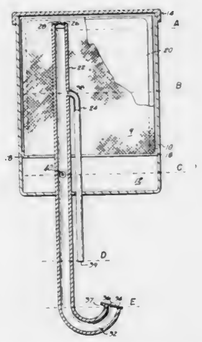
This is a length of ribbon textile, for example about 3 cms. wide which includes a mid-length neckband portion passing around the neck and having its end portions joined along their adjacent side margins to form a body section extending from the throat downwardly along the shirt front. The fabric is folded over on itself with the fold lines making angles of about 45° at the junction of the neckband with the body section, to dispose the loop in a horizontal plane. A slide fastener secured to the underside of the side margins permits opening or closing the upper end of the body section for putting on or taking off the article. The width of the neckband is preferably abruptly reduced adjacent the flat folds to about 2 cms. Woven, knitted or braided fabric ribbon may be used, although woven material having relatively taut weft threads and loose warp threads is preferred to minimize transverse stretch.

3,778,848
MOBILE HOSPITAL BATHING UNIT
Timothy J. W. Lyytinen, P.O. Box 23, Marcell, Minn.
Filed Aug. 17, 1971, Ser. No. 172,525
Int. Cl. A47k *3/00*
U.S. Cl. 4—173 15 Claims



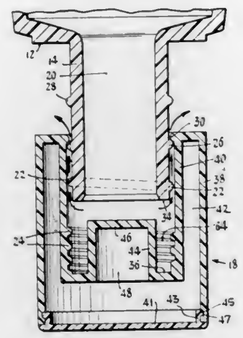
A mobile hospital bath unit having a shallow bathing assembly consisting of a perforated stainless steel bed for the patient which is surrounded by an inflatable member to contain the bathing water. The bathing assembly is mounted for both vertical and lateral movement with respect to a wheeled housing for easy accessibility to the patient. The housing includes lifting apparatus, supply and drainage water tanks, and means for pumping water to the bathing assembly.

3,778,849
AUTOMATIC DISPENSING APPARATUS
Lary L. Foley, San Francisco, Calif., assignor to The Clorox Company, Oakland, Calif.
Filed Mar. 8, 1972, Ser. No. 232,758
Int. Cl. E03d *9/03*
U.S. Cl. 4—228 11 Claims



An automatic dispensing apparatus for dispensing a solution formed from a solid material into a process stream when the liquid level of the process stream reaches a designated level. The apparatus is particularly adaptable to use in a toilet flush tank and comprises a siphon arrangement operative to dispense a metered amount of the solution into the flush tank only toward the end of the flush cycle.

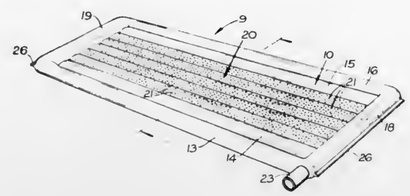
3,778,850
AUTOMATIC LIQUID DISPENSER FOR FLUSH TANKS AND THE LIKE
James W. Bryan, 15 Madison Springs Dr., Madison, Conn.
Filed May 19, 1972, Ser. No. 255,056
Int. Cl. A47k *13/30*
U.S. Cl. 4—227 22 Claims



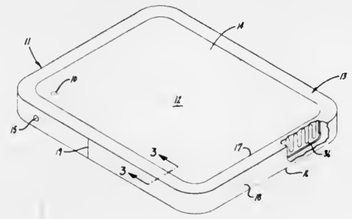
A liquid dispenser for discharging metered amounts of liquid into a flush tank in response to the rise and fall of the tank liquid level. The dispenser comprises a container having a discharging neck portion provided with external screw threads, and having a captive screw cap which has internal cooperable screw threads and additionally has an internal annular captivating bead spaced from its threads. The open end of the container neck includes a resilient sealing lip which is engageable by a sealing ring portion of the cap when the latter is fully threaded in or down whereby the cap constitutes a sealed closure for the container. As the cap is unscrewed, its captivating bead is forced past the first of two spaced-apart annular beads on the container neck, which now operate to restrict axial movement of the cap between extended and retracted positions. For both of these positions the cooperable screw threads of the assemblage are free of each other. The cap has annular walls which define an air chamber providing buoyancy when the cap is immersed in a liquid. With the container inverted and the cap assembled thereto, the latter is urged between extended and retracted positions in response to changes in the level of the liquid in the tank. Responding to a fall in the liquid level, the cap moves by gravity to its extended position and a recess therein receives a predetermined quantity of liquid from the container. As the tank level rises, the cap is slowly urged by buoyant force to its retracted position whereby liquid contained in the recess is displaced therefrom, thus effecting a dispensing of the liquid into the tank. In the retracted position of the cap, the bead thereof is held in abutment with one of the spaced-apart neck beads to form a seal and thus prevent leakage of the container contents into the tank until the occurrence of the next change in tank liquid level.

3,778,851
MATTRESS
Frederick Hugh Howorth, Nr. Chorley, Lancashire, England, assignor to Haworth Air Conditioning Limited, Bolton, Lancashire, England
Filed Feb. 24, 1972, Ser. No. 228,924
Claims priority, application Great Britain, Mar. 2, 1971, 5,838/71
Int. Cl. A47c *27/08, 27/18*
U.S. Cl. 5—347 5 Claims

A mattress, for use in treating a patient who has undergone extensive surgery or who has been severely burned, comprises an upper panel a lower panel and means for supplying air to the space between said panels, said lower panel being of air-impermeable material and at least a part of said upper panel being perforate to allow conditioned air to issue therefrom to impinge on and pass around said patient to substantially isolate said patient from ambient air and to reduce strain on his heart and promote healing.

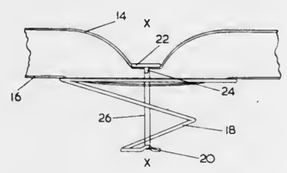


3,778,852
WATER BED
Russell C. Penn; Wayne P. Penn, and Thomas H. Roughly, all of Fairfax, Calif., assignors to Penn International Industries, Inc., San Anselmo, Calif.
Filed Mar. 29, 1971, Ser. No. 128,957
Int. Cl. A67c *27/08*
U.S. Cl. 5—348 WB 8 Claims



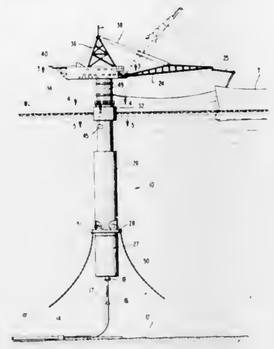
A water bed including a surrounding pneumatic chamber.

3,778,853
METHOD AND APPARATUS FOR BUTTONING UPHOLSTERY
John Cooper, West Bridgford, England, assignor to Matramatic Company Limited, Basford, Nottingham, England
Filed Dec. 17, 1971, Ser. No. 209,313
Int. Cl. A47c *27/00*
U.S. Cl. 5—356 4 Claims



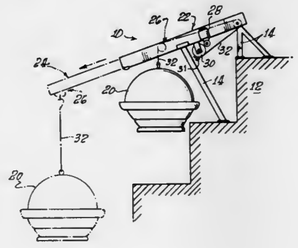
A method of buttoning upholstery comprises attaching a button to a support bearing against the undersurface of the upholstery so that the underside of the button is urged against the wearing surface of the upholstery.

3,778,854
MOORING AND OIL TRANSFER APPARATUS
Philip Y. Chow, Orinda, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.
Filed Mar. 16, 1971, Ser. No. 124,738
Int. Cl. B63b *35/44*; B65d *87/08*; E02d *17/00*
U.S. Cl. 9—8 P 13 Claims



The apparatus includes a spar buoy comprised of an elongated column mounting a platform at its upper end, the platform carrying a helicopter pad and a movable boom for assisting the mooring of tankers to the buoy and off-loading oil to the tanker. The platform includes a ballast system providing an adjustable counterweight to the movement of the boom. The buoy is anchored and oil lines from production or control platforms or underwater oil storage tanks extend upwardly through the buoy to the boom for delivering oil to an awaiting tanker. The buoy has an anchoring collar located therealong in a manner to limit the tilt angle of the buoy within a predetermined angle and to limit the lateral excursion of the lower end of the buoy through which the oil receiving lines pass to within a specified range. The buoy is constructed to obtain a long natural period whereby the amplitude of vertical movement due to excitation forces caused by wave action is reduced.

3,778,855
TELESCOPING GRAVITY DAVIT
Nikolai Kariagin, Chatsworth; Jerry Laibson; Eric Ralph Hooper, both of San Diego; Jim Cowden Keogh, Jr., Cardiff, and Augustine Joseph Ragan, El Cajon, all of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.
Filed Dec. 15, 1972, Ser. No. 315,514
Int. Cl. B63b *23/02*
U.S. Cl. 9—41 13 Claims



A davit for use in lowering and raising life crafts such as life boats and survival capsules with respect to decking upon which the davit is supported. The davit comprises a fixed hollow beam which slidably receives a travelling boom which, in

turn, houses a dump-hook assembly. The latter is capable of movement along the travelling boom. A cable extends from a power source through the davit and over the dump-hook to suspend the life craft beneath the davit. The fixed beam is canted so that its outboard end extends downwardly at an angle which permits outboard-directed movement, under the influence of gravity, of the travelling boom and dump-lock assembly once the holding brake or mechanism is released. Retraction of the dump-hook assembly and travelling boom into the fixed beam is provided by the powered cable.

The outboard-directed movements of the travelling boom and dump-hook assembly are coordinated so that termination of such movement of the travelling boom initiates the outboard-directed movement of the dump-hook assembly. The inboard-directed movements of these components are coordinated in a similar but in reverse manner. A cut-out is provided in the top of the outboard end of the travelling boom which cooperates with certain stops to limit the outboard movement of the dump-hook assembly and to cause it to rotate about a transverse axis to permit lowering of the life craft. The davit also includes components which ensure that the dump-hook assembly is retracted before the travelling boom commences to retract into the fixed beam.

3,778,856

STRING LASTING

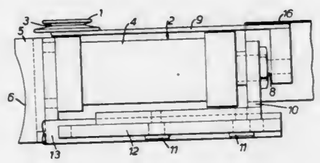
Gerald Anthony Christie, Bath, and Edwin Thomas Bressington, Bristol, both of England, assignors to Salient Engineering Limited, Bristol, England

Filed Nov. 6, 1972, Ser. No. 303,819

Claims priority, application Great Britain, Nov. 5, 1971, 51,464/71

Int. Cl. A43d *15/00*

U.S. Cl. 12—7.9 **14 Claims**



Apparatus for string lasting the uppers of shoes or boots has a power operated device for pulling the string. Clamping means, conveniently one or more bollards, are provided for holding the string and are mounted on a linear actuator such as pneumatic piston and cylinder device. The actuator is either carried by the base on which the last is mounted or is independent thereof and movable into a position where it reacts against the last.

3,778,857

FEED BUNK CLEANER

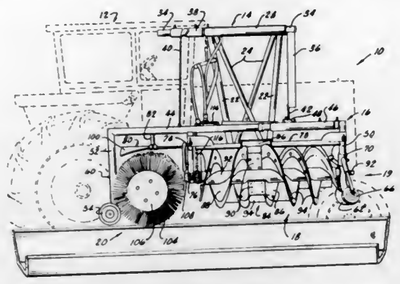
Robert D. Hughes, 1008 Russell St., Scott City, Kans.

Filed Nov. 22, 1971, Ser. No. 201,068

Int. Cl. B08b *7/04*; **A46b** *13/02*; **B08b** *1/04*

U.S. Cl. 15—4 **9 Claims**

A cleaning apparatus having an auger to remove material from and to move material in a trough to a collection point with a brush apparatus behind the auger to move material in the trough, a powering device to drive the auger, and a frame mounting the auger and brush apparatus to support same. This invention is a cleaning apparatus adapted to remove material



from a trough, move it through the trough and remove it completely from the trough.

3,778,858

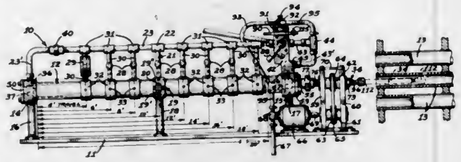
HEAT EXCHANGER TUBE REAMER AND CLEANING APPARATUS

Joseph C. Fuller, 1640 E. Greenway St., Mesa, Ariz.

Filed Dec. 15, 1972, Ser. No. 315,666

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.1 R **9 Claims**



This invention relates to tube cleaning apparatus for removing deposits such as scale or other foreign matter from the interior surfaces of the tubes of various sizes of boilers, condensers and other heat exchangers, and more particularly to improvements in such apparatus limiting whipping action of the cleaning shafts and utilizing fluid under pressure for controlling the cleaning shafts for cleaning purposes in a new and improved manner.

3,778,859

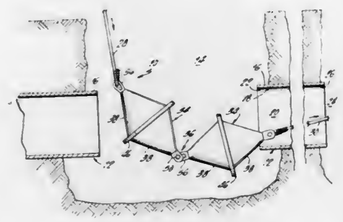
PIPELINE SQUEEGEE APPARATUS

Frank R. Donnelly, Rockaway, N.J., assignor to Spin Company, Newfoundland, N.J.

Filed Oct. 2, 1972, Ser. No. 294,013

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.3 R **9 Claims**



A pipeline squeegee is provided for removing excess water and debris from the interior of a pipeline. The squeegee apparatus is in the form of a plurality of dual cone units which traverse the interior of the pipeline.

3,778,860

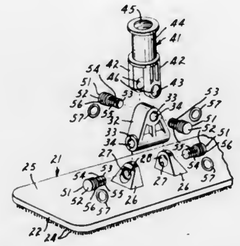
MOP FRAME ASSEMBLY

James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 79,212, Oct. 8, 1970, abandoned. This application July 6, 1972, Ser. No. 269,415

Int. Cl. A47l *13/254*; **B25g** *3/38*

U.S. Cl. 15—147 A **4 Claims**



A mop frame assembly having an improved universal joint which permits universal positioning of the handle and frame. The universal joint is formed of a pair of bifurcate holding members and a connecting member that are held together by locking plugs. Each locking plug has a resilient friction ring adapted to provide resistance to pivotal movement of the holding members and the connecting member.

3,778,861

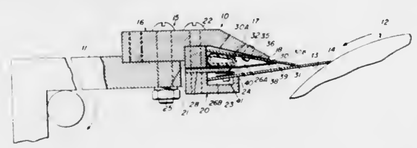
BLADEHOLDERS FOR DOCTORS AND SCRAPERS

Ronald F. Goodnow, Leicester, Mass., assignor to Lodding Engineering Corporation, Auburn, Mass.

Filed June 26, 1972, Ser. No. 266,492

Int. Cl. D21g *3/00*

U.S. Cl. 15—256.51 **23 Claims**



A bladeholder for doctors, scrapers and the like has separate regions for a blade and a pressure or rocker plate. The blade can be removed, installed, or adjusted in one region without disturbing the rocker plate and associated parts in the other region. The rocker plate has constant "stick-out," and can be fitted with resilient profiling devices. An improved profiling device is shown having armor cladding to prevent damage due to pressure.

3,778,862

APPARATUS FOR REMOVING TREATING LIQUIDS FROM TREATED METAL STRIP PRODUCTS

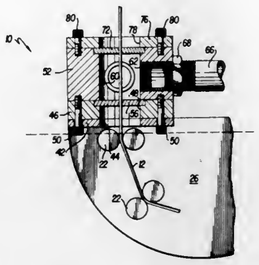
Sidney B. Kesler, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Oct. 20, 1971, Ser. No. 190,832

Int. Cl. A47l *5/38*

U.S. Cl. 15—306 A **8 Claims**

A method of and apparatus for removing treating liquids from treated metal strip products employing air or gas under pressure. The treating liquid is removed by the wiper apparatus substantially immediately after its exit from the treating liquid. An air or gas chamber is provided intermediate a pair of inlet and outlet orifices and the metal strip product is passed therethrough in order to remove the treating liquid. While both the outlet and inlet orifices conform substantially to the cross section of the metal strip product, the outlet orifice is made slightly smaller than the inlet orifice whereby an



air or gas flow is established counter to the direction of feed of the metal strip product, or, in other words, toward the inlet orifice.

3,778,863

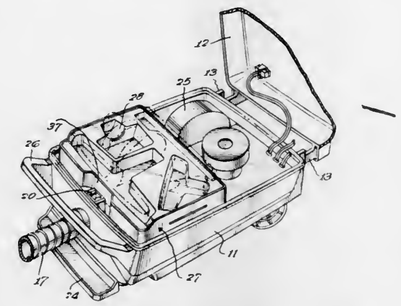
VACUUM CLEANER IMPLEMENT TRAY

George A. Westergren, White Bear Lake; David G. Koland, Sandstone, and Stanley R. Crooks, Shakopee, all of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 2, 1972, Ser. No. 277,321

Int. Cl. A47l *5/00*

U.S. Cl. 15—323 **17 Claims**



A vacuum cleaner having a canister including a base and a hood cooperatively defining an internal storage space in which is removably received a tray for holding implements, such as tools adapted for use with the vacuum cleaner. The tray is supported above the filter bag space and is readily removable therefrom when the hoood is moved to an open position. The hood and tray are provided with cooperating releasable locking means for locking the tray in a closed position to the top surface of the hood, in which position the implements are accessible for use by the operator. The tray includes a depending wall which rests on the hood surface in the implement-exposing arrangement and which is adapted to cooperate with suitable supports for retaining the tray above the filter bag space in the storage position.

3,778,864

TURBINE POWERED SURFACE VACUUM CLEANING DEVICE

William S. Scherer, 11438 N. 70th St., Scottsdale, Ariz.

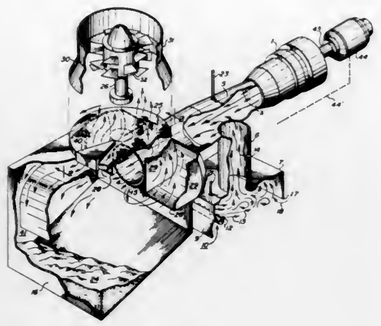
Filed Apr. 10, 1972, Ser. No. 242,571

Int. Cl. A47l *5/18*, *9/20*

U.S. Cl. 15—339 **12 Claims**

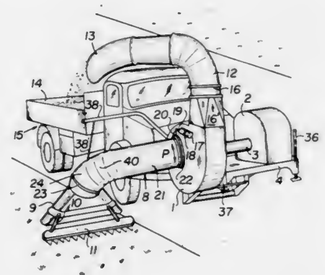
A self-propelled surface vacuum cleaning device which employs a turbine engine to provide for suction pickup of dirt and

debris from a surface and also employs the turbine engine exhaust to assist in burning combustibles contained in the debris



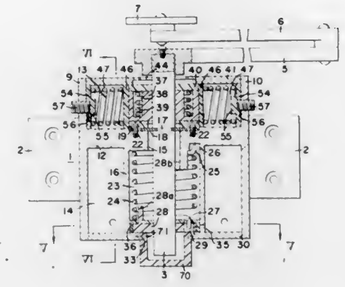
prior to the depositing of the non-combustible debris in a holding receptacle.

3,778,865
ATTACHMENT FOR A UTILITY VEHICLE OR FOR A TRAILER OF SUCH VEHICLE
Alfred Schmidt, Jr., Friedrichstrasse 17, and Guenter Pastari, Im Frongarten 20, both of St. Blasien, Germany
Continuation-in-part of Ser. No. 88,000, Nov. 9, 1970, abandoned. This application Feb. 18, 1972, Ser. No. 227,517
Claims priority, application Germany, June 20, 1970, P 20 30 579.7
Int. Cl. A47l 9/00
U.S. Cl. 15—340 **26 Claims**



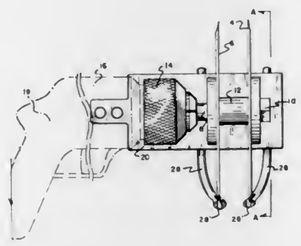
The invention relates to an attachment for a utility vehicle or trailer pulled by the utility vehicle. The attachment picks up items such as mowed grass or dirt, on or adjacent to a road for loading into the vehicle. A suction fan with inlet and outlet conduits forms part of the attachment. The inlet or suction conduit has a horizontal leg and a trailing leg. A suction nozzle is secured to the free end of the trailing leg. Rotating means are provided between a fan housing and said horizontal leg and/or between said nozzle and said trailing leg for rotating the suction conduit about a horizontal axis and/or the nozzle about the sloping axis of said trailing leg, whereby the nozzle is maintained in a trailing position and enabled to follow automatically the shape of the ground.

3,778,866
DOOR CLOSER
Yoshitaka Nakanishi, 12-9, 5-chome Yawata, Ichikawa, Japan
Filed Nov. 15, 1971, Ser. No. 198,709
Claims priority, application Japan, Nov. 20, 1970, 45/102100
Int. Cl. A22c 21/00
U.S. Cl. 16—49 **6 Claims**



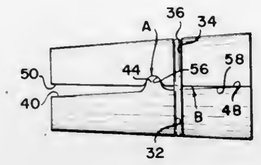
A door closer comprises a torsion spring effecting to rotate a door in the closing direction, a brake drum rotating together with rotation of the door, and at least two relative brake shoe units provided at the position of inserting the brake drum for preventing rotation of the brake drum and reducing a closing speed of the door and for frictionally and resiliently pressing brake surfaces of the brake drum, respectively.

3,778,867
METHOD AND APPARATUS FOR EVISCERATING ANIMALS AND FOWL
Milard S. Sindler, 3701 Twin Lakes Ct., Baltimore, Md., and Russell Sindler, 2413 Hol Cir., Baltimore, Md.
Filed Apr. 10, 1972, Ser. No. 242,341
Int. Cl. A22c 25/18
U.S. Cl. 17—11 **3 Claims**



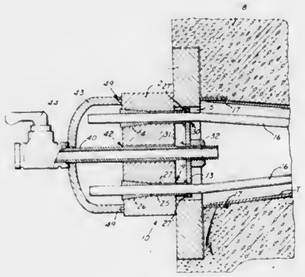
A method and apparatus for eviscerating animals and fowl, the apparatus having a pair of double circular rotatable cutter blades of substantially the same diameter and operating in spaced relationship in respect to each other and in parallel planes, rotatably supported on a supporting means, including guides fixedly secured to the support extending outwardly from the support in close proximity to a portion of the cutting blades for guiding the cutting blades in a predetermined line over the outer surface of the animal or fowl and along each side of the vertebrae for separating the same along with the viscera from the remainder of the carcass.

3,778,868
CHUCK ASSEMBLY
William F. Kelly, 100 Bellaire Dr., New Orleans, La.
Filed July 30, 1971, Ser. No. 167,682
Int. Cl. F16g 11/04
U.S. Cl. 24—115 R **8 Claims**



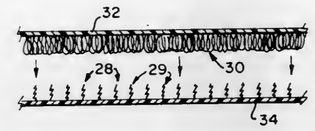
A chuck assembly for retaining a tendon or the like within an anchor or case. The chuck assembly includes at least two longitudinally tapered jaw elements which are held by a resilient member in facing engagement, a portion of the opposing faces thereof being beveled to effect biasing of the smaller end of the chuck to an open position. The opposed jaws are provided with lugs and complemental recesses for preventing relative longitudinal and transverse movement of the jaw elements during use.

3,778,869
APPARATUS FOR DETENSIONING STRANDED CABLE
James S. Andrews, Westminster, Colo., assignor to American Stress Wire Corporation, Englewood, Colo.
Filed Mar. 15, 1971, Ser. No. 124,159
Int. Cl. F16g 11/04
U.S. Cl. 24—115 R **11 Claims**



A detensioning method and apparatus has been devised for detensioning one or more stranded cables which are anchored or set under tension in cable passageways by wedges seated at the ends of the passageways. The detensioning device which is made up of push tubes, a push plate and a detensioning screw is installed within the cable assembly so that the anchored cables may be detensioned, for instance, to replace a defective cable, by retensioning the cables, unseating the wedges and operating the detensioning screw to retract the push tubes against the wedges thereby retaining the wedges clear of the cables to permit detensioning and replacement. After the defective cable has been replaced, the cables are retensioned and anchored under tension by reseating the wedges.

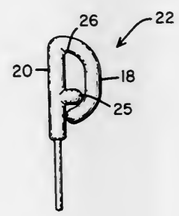
3,778,870
STATISTICAL HOOK AND LOOP AREA FASTENERS
Robert A. Bennett, Shelton, Conn., assignor to Mattern, Ware and Dairs, Bridgeport, Conn.: a part interest
Filed Dec. 29, 1971, Ser. No. 213,464
Int. Cl. A44b 17/00, 13/00
U.S. Cl. 24—204 R **4 Claims**



A separable hook-and-loop area fastener incorporates a loop pile sheet and a facing hook sheet presenting multiple-sawtooth hooks.

The hook sheet of the fastener is formed by weaving, looping or otherwise engaging with a backing sheet a continuous plastic filament, preferably of nylon or the like, which has been permanently crimped into a zig-zagged sawtooth configuration by passing the same between a pair of oppositely sawtoothed forming rolls. The continuous plastic filament loops are preferably formed in a plurality of aligned rows so that a plurality of loops may be engaged by a common elongated knife edge and simultaneously cut. The loops preferably are large enough and the sawtooth formations small enough so that a plurality of sawteeth are provided in each loop. When cut, the zig-zag sawtooth monofilaments stand up perpendicular to the sheet support, and are provided with a plurality of hook-like formations. The loop pile sheet for engagement with the hook sheet may be conventional.

3,778,871
CONNECTORS
Wilfred L. Ratte, Jr., White Bear Lake, Minn., assignor to Water Gremlin Company, White Bear Lake, Minn.
Continuation of Ser. No. 830,447, June 4, 1973, abandoned. This application July 15, 1971, Ser. No. 163,033
Int. Cl. A44b 13/02; A01k 95/00
U.S. Cl. 24—236 **2 Claims**



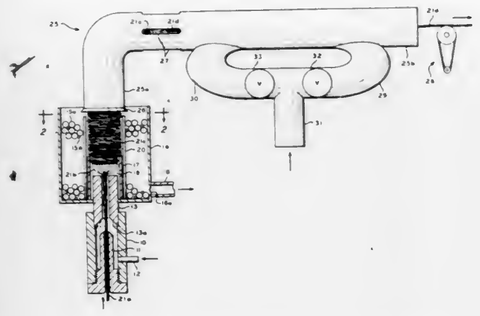
A connecting element molded from a plastic such as nylon with a straight portion at one end and a looped portion at the other end for attachment to fishing lines and the like. The straight portion is inserted through a hole in the object being connected and melted so as to enlarge it and prevent its withdrawal from the hole.

3,778,872

METHOD AND APPARATUS FOR TEXTURING YARN

Richard C. Newton, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 12, 1971, Ser. No. 133,164
Int. Cl. D02g 1/12
U.S. Cl. 28—1.6 9 Claims



A wad of textured yarn is removed from the texturing apparatus by passing the wad into the inlet of an elongated tube having one or more openings intermediate the ends. A fluid is passed through the tube toward the inlet end, with a substantial quantity of the fluid being vented through the opening. This cools the yarn and assists in breaking up the wad.

3,778,873

PROCESS FOR THE PRODUCTION OF COMPOSITE FIBERS, APPARATUS SUITABLE TO REALIZE THE SAME AND FIBERS OBTAINED THEREBY

Walter Conti, and Pasquale Corsini, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato, Milanese, Italy

Filed June 10, 1971, Ser. No. 151,860
Claims priority, application Italy, June 10, 1970, 25751 A/70
Int. Cl. D02j 1/22; D02g 1/18
U.S. Cl. 28—72.3 3 Claims



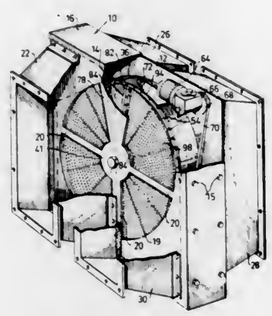
A synthetic composite fiber is produced by a novel process and apparatus which includes drawing the yarn by air-suction and subjecting the yarn to a high temperature thermal shock to obtain a rigid wave or crimp in the fiber and thereafter applying a continuously high but decreasing temperature to obtain uniform crystallization of the fiber.

3,778,874

METHOD OF FABRICATING A LAMINATED WHEEL-LIKE BODY FOR THE TRANSFER OF THERMODYNAMIC CHARACTERISTICS BETWEEN TWO FLUID STREAMS

Per Gunnar Norback, 33, Askrikevagen, Lidingo, Sweden

Division of Ser. No. 745,431, July 17, 1968, Pat. No. 3,587,723. This application Feb. 19, 1971, Ser. No. 116,926
Int. Cl. B21d 53/02; B23p 15/26
U.S. Cl. 29—157.3 R 2 Claims



Method of producing a wheel-like transferrer body for a rotary transferrer of thermodynamic characteristics between a plurality of fluid streams from rectangular blocks of corrugated sheet material forming a mass of open-ended passageways through which the streams are passed in thermodynamic exchange relationship with one another.

3,778,875

METHOD FOR PRODUCING ORNAMENTAL ARTICLES

Pascal Pierre Morabito, 13, Avenue Jean Medecin, Nice, France

Filed June 16, 1972, Ser. No. 263,613
Claims priority, application France, July 8, 1971, 7125801
Int. Cl. B21f 43/00; B23p 13/00
U.S. Cl. 29—160.6 5 Claims

Ornamental objects such as jewelry are produced, each of which is unique and different from all the others, by compressing a mass of old jewelry and silverware and the like into a block, and then slicing the block into plaques. Either before or after slicing the block, the compressed material may be treated with borax and then heated to 400°–600° C. to impart various colors to the various metals. The compression is in the range 2 to 18 metric tons per square centimeter.

3,778,876

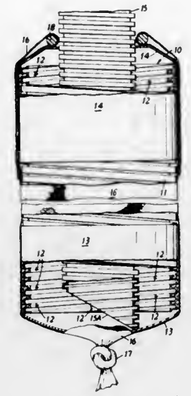
METHOD OF MAKING WELL-POINTS FOR DE-WATERING GROUND

Ronald Noel Allen, and Ernest William Potter, both of London, England, assignors to Henry Sykes Limited, Charlton, London, England

Division of Ser. No. 144,836, May 19, 1971. This application Jan. 3, 1973, Ser. No. 320,805
Claims priority, application Great Britain, June 1, 1970, 26388/70
Int. Cl. B23p 15/16
U.S. Cl. 29—163.5 F 4 Claims

A disposable wellpoint for dewatering ground comprises a body of spirally-corrugated perforated tubing formed of plastics material and covered by a filter sleeve of nylon fabric, and a suction pipe of spirally corrugated tubing enters the top

end of the body. The body, the sleeve, and the suction pipe can be severed as lengths from supply reels on site, and the assembled wellpoints can be introduced into the ground in a tubular casing provided with water lances.

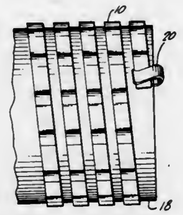


3,778,877

METHOD OF MAKING PISTON RING EXPANDER

James V. Walker, Redondo Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Division of Ser. No. 76,134, Sept. 28, 1970, Pat. No. 3,714,113. This application Sept. 21, 1972, Ser. No. 290,947
Int. Cl. B21f 35/00; B23p 13/00
U.S. Cl. 29—173 3 Claims



A helical piston ring expander for us with plastic or plastic-like piston rings is constructed by crimping a strip of metal, spirally winding the crimped strip around a cylindrical mandrel into a helix, heat treating the resultant assembly and cutting portions therefrom at predetermined points therealong to form the desired expander.

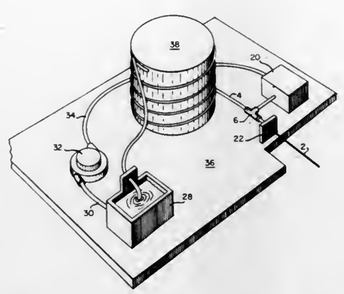
3,778,878

APPARATUS FOR INSERTING RODS INTO COILED TUBES

Ahmend El Bindari, Cambridge, Mass., assignor to Clad Metals Corporation, Boston, Mass.

Filed Jan. 10, 1972, Ser. No. 216,499
Int. Cl. B23p 19/00
U.S. Cl. 29—200 R 14 Claims

A flexible rod is attached to a spherical piston and inserted into a coiled hollow conduit through a sealed junction at one end of the conduit. The outside diameter of the rod is less than the inside diameter of the conduit and a slight clearance exists between the piston and the conduit. Pressurized fluid is introduced into the conduit at the sealed junction behind the piston. The fluid presses against the piston, thereby exerting force on the rod and the rod is simultaneously pushed from outside the junction. The fluid also acts as a lubricant between the rod and the conduit and the piston and the conduit. Because the fluid is flowing through the conduit it provides dynamic lubrication of the rod. In this manner the rod can be inserted many angular turns past the total angular distance normally computed using the equation for the "capstan effect" for the case of simply pushing a rod into a coiled hollow conduit. It is thus practical, from a manufacturing standpoint, to insert long lengths of rods into coiled tubular members.

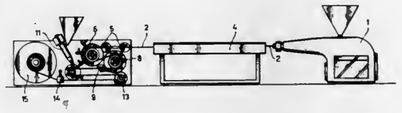


3,778,879

METHOD AND DEVICE FOR MANUFACTURING A FLAT CABLE AS WELL AS A CABLE ACQUIRED BY MEANS OF THE SAME

Leendert Den Ottolander, Rotterdam, Netherlands, assignor to Walpro Plastics N.V., Nijverheidsweg, Hendrik Ido Ambacht, Netherlands

Filed Aug. 1, 1972, Ser. No. 277,009
Claims priority, application Netherlands, Aug. 13, 1971, 7111170
Int. Cl. H01b 13/00
U.S. Cl. 29—203 C 2 Claims



A method for manufacturing a flat cable comprising a grooved tape-like body which is guided along a curved surface such that the grooves are lying on the convex side; a conductor is feeded into each groove under some tension and a strip is applied to the grooved face of the tape.

3,778,880

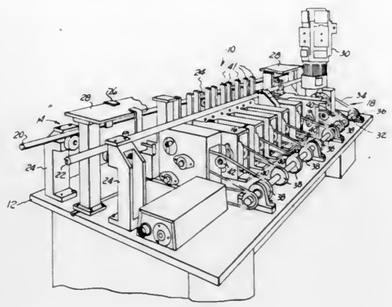
TOOLING POSITIONING DRIVE SYSTEM FOR AUTOMATIC GAGING AND ASSEMBLY MACHINES

Robert E. Esch, Bloomfield Hills, Mich.; William C. Arnold, Dayton, Ohio; Billy K. Skelton, Dayton, Ohio; Michael D. Saxon, Dayton, Ohio; Jerome A. Murphy, Kettering, Ohio, and Roy S. Saques, Englewood, Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed Sept. 25, 1972, Ser. No. 292,049
Int. Cl. B23p 19/04, 19/00
U.S. Cl. 29—208 C 10 Claims

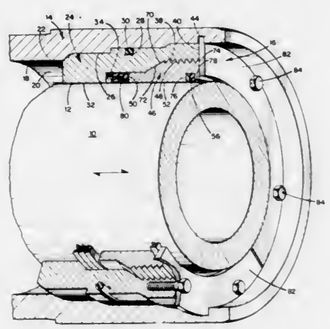
A drive system for positioning the tooling of linear transfer automatic gaging and/or assembly machines is disclosed which allows the use of standardized modular components for greatly varying machine applications. The drive system includes a power take-off shaft extending along the machine workpiece transfer system and a series of motion mechanisms located at each tooling station, each motion mechanism in-

cluding a rotary cam driven by a flexible drive element in turn driven by the power take-off shaft, a pivoted lever oscillated by the rotary cam, and a tooling mounting slide translated by oscillation of the pivoted lever. Variations in the position of



the tooling relative the power take-off shaft and the transfer system required for various applications are taken up in the flexible drive element to allow the use of standardized cam-lever-slide modules for the varying machine configurations.

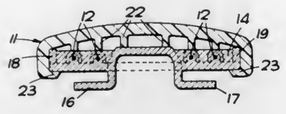
3,778,881
CYLINDER END ASSEMBLY
Peter A. Knapp, 17 Albany St., Wollaston, Mass.
Filed Nov. 29, 1972, Ser. No. 310,479
Int. Cl. B23p 7/00; F16j 15/18
U.S. Cl. 29—401 **10 Claims**



A method of repairing or reworking a cylinder end assembly used in a prior art hydraulic or pneumatic cylinder and the resulting improved cylinder end assembly. A conventional Leach 2R–1006 type cylinder which has been damaged (or which has been deemed ready for replacement) is repaired or reworked primarily by modifying its packing gland. The packing gland flange is cut off, the wiper ring groove is relocated, the wire, screws and nuts which were used to prevent packing gland rotation are discarded, the snap ring is discarded, and the V-packing is dug out and discarded.

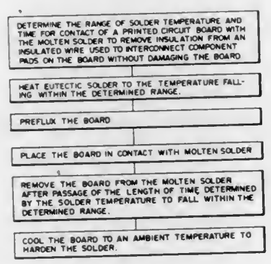
Then, a new O-ring and fluid sealing ring are installed on the top head, a new wiper ring is installed on the packing gland, and the packing gland is screwed tightly into the top head. This assembly is then slidably inserted into the cylinder weldment and new curved locking segments are inserted into the cylinder weldment circular groove and bolted against the outer faces of the top head-packing gland assembly to prevent longitudinal movement thereof.

3,778,882
METHOD OF MAKING HANDRAILS
James Brisbane Cameron; Bernard Piet Walton-Knight, both of London, England; Otto Floris Bartoo, and Joannes Cornelis Molijn, both of Delft, Netherlands, assignors to BTR Industries Limited, London, England
Filed June 10, 1971, Ser. No. 151,712
Claims priority, application Great Britain, June 12, 1970, 28,634/70
Int. Cl. B23p 11/02
U.S. Cl. 29—450 **7 Claims**



A method of making a handrail for an escalator or a passenger conveyor, which includes the steps of forming a body by moulding successive lengths of rigid plastics material onto a continuous reinforcing material, and then applying a continuous cover layer over the body. The cover layer is flexible. The moulded lengths may be spaced apart or abut the next adjacent length. Flanges may be formed on the underside of the body to define opposed slots parallel to the body, and which slots are engageable by guide means to support the handrail when in use.

3,778,883
PROCESS OF MASS SOLDERING ELECTRICAL COMPONENTS TO CIRCUIT BOARDS HAVING RUNS FORMED FROM INSULATED MAGNET WIRE
Karl R. Bethsold, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed June 2, 1972, Ser. No. 260,337
Int. Cl. B23k 31/02, 35/36
U.S. Cl. 29—495 **3 Claims**



The soldering process uses eutectic solder raised to a higher than normal temperature for printed circuit board soldering. The higher temperature is used to remove the insulation from the wire to allow the solder to electrically fasten the wire and the components to the circuit boards. The process immerses the circuit board into the molten solder for a specific dwell time according to the temperature of the solder, the circuit board material and the insulation to be removed from the wire. The dwell time and solder bath temperature must fall within a determined operating range to remove the insulation from the wire and perform the soldering while preventing damage to the board.

3,778,884
METHOD OF MANUFACTURING A SINK COMPRISING A BENCH AND A BASIN
Pierre Yves Bene, 30 Route de chazieres 69, Lyon, France
Filed May 1, 1972, Ser. No. 249,372
Int. Cl. B21d 39/00; B23p 11/00
U.S. Cl. 29—512 **1 Claim**



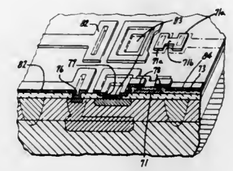
According to the disclosure a sink formed of sheet metal or including sheet metal in its manufacture comprises a connecting flange joining a bench and a basin. The method of manufacturing the sink includes the steps of fitting the flange onto the bench and then subsequently onto the basin.

3,778,885
METHOD FOR THE MANUFACTURE OF PLUTONIUM-CONTAINING NUCLEAR FUEL RODS
Wolfgang Stoll, Hanau, Germany, assignor to ALKEM GmbH, Hanau, Germany
Filed July 24, 1972, Ser. No. 274,654
Claims priority, application Germany, July 24, 1971, P 21 37 133.5
Int. Cl. B23p 17/00, 25/00
U.S. Cl. 29—527.2 **12 Claims**



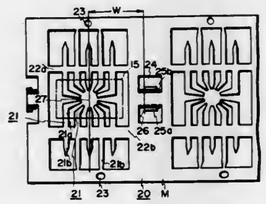
Nuclear fuel rods are manufactured by coating the inner wall of the tubular casing of the fuel rod with a layer of plutonium-containing matrix so that the plutonium is disposed only in the cylindrical outer zone of the uranium-containing nuclear fuel charge. This is done by preparing a suspension of plutonium-containing particles in a lacquer which can be decomposed into carbon by a heat treatment, passing the suspension through the tubular casing and heating the dried coating of the suspension in a protective inert atmosphere until the lacquer is cabonized.

3,778,886
SEMICONDUCTOR STRUCTURE WITH FUSIBLE LINK AND METHOD
Michael A. Shields, Sunnyvale, and Robert W. Andrews, San Jose, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.
Division of Ser. No. 33,802, May 1, 1970. This application Jan. 20, 1972, Ser. No. 219,579
Int. Cl. B01j 17/00
U.S. Cl. 29—577 **4 Claims**



A semiconductor structure with a fusible link having a semiconductor body with semiconductor devices formed in the semiconductor body and a lead structure carried by the body making contact with the devices formed in the body to form an array in which the lead structure includes at least one fusible link which lies in a single plane and which has a relatively precise thickness and length throughout.

3,778,887
ELECTRONIC DEVICES AND METHOD FOR MANUFACTURING THE SAME
Jinichiro Suzuki; Kenzi Takezawa, and Takanori Takeda, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 15, 1971, Ser. No. 208,092
Claims priority, application Japan, Dec. 23, 1970, 45/115658; Jan. 22, 1971, 46/1580
Int. Cl. B01j 17/00
U.S. Cl. 29—588 **7 Claims**



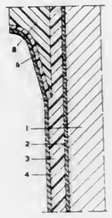
Manufacturing of power semiconductor devices utilizing a metal strip and a lead frame. The metal strip has a plurality of portions on which semiconductor chips are mounted, and fastening means constituted by indents at the longer sides of the strip and metal pieces protruding along the indents. The lead frame has a plurality of lead units and tab portions corresponding to the indents. The lead frame is locked over the metal strip by inserting the tab portions into the corresponding indents and bending the metal pieces toward the tab portions. After encapsulating the combinations of the lead units and the portions having the chips thereon with plastic material, respectively, the metal strip and the lead frame are cut along the portions of the tab-metal piece combinations, thereby to obtain a plurality of individual power semiconductor devices.

3,778,888

METHOD OF APPLYING A FIELD CONTROL DEVICE TO AN INSULATED CONDUCTOR OF A CABLE AND AN APPARATUS FOR CARRYING OUT THE METHOD

Jan C. Clason, Engelo, Netherlands, assignor to N. V. Fabriek Van Electrische Apparaten Voorheen F. Hazemeijer & Co., Hengelo, Netherlands

Filed May 3, 1971, Ser. No. 139,803
Claims priority, application Netherlands, May 1, 1970, 7006483
Int. Cl. H01s 4/00
U.S. Cl. 29—592 3 Claims



Method of applying a field control device to an insulated conductor of a cable, the insulation of which is surrounded by an adhering layer of semi-conductive material including the steps of cutting an annular groove in said insulation in an axial direction and bending the sleeve formed thereby outwardly of said cable.

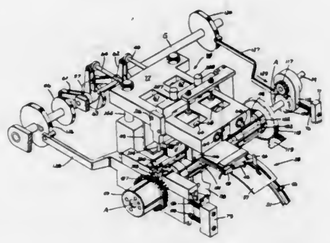
An apparatus for cutting an annular groove in the insulation of the cable is also provided.

3,778,889

APPARATUS AND METHOD FOR PERFORMING MANUFACTURING OPERATIONS ON AN ARTICLE OF MANUFACTURE

Lowell M. Mason, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 144,426, May 19, 1971, Pat. No. 3,702,498. This application Aug. 30, 1972, Ser. No. 284,905
Int. Cl. H02k 15/00
U.S. Cl. 29—596 8 Claims



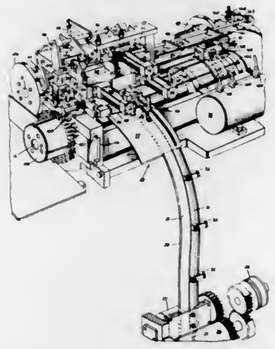
Apparatus and method for performing manufacturing operations on an article of manufacture, e.g., for producing and placing formed pieces of insulation into nonradially aligned or otherwise irregularly oriented slots of a magnetic core. Preferred form of apparatus includes compensating means for selectively positioning an article support relative to a datum plane of the apparatus. This means, in one form, includes a first drive member that tends to drive a driven member through a fixed angular increment. The driven member is movable about a preselected movable reference point which in turn is movable differential amounts relative to the pitch or drive line of the first drive member so that the driven member is selectively movable through a preselected net differential increment of travel relative to a fixed increment of travel of the first drive member.

3,778,890

APPARATUS AND METHOD FOR PRECISELY FORMING AND PLACING INSULATION IN THE SLOTS OF MAGNETIC CORES

Leo M. Schlaudroff, Fort Wayne, Ind., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

Division of Ser. No. 144,425, May 18, 1971, Pat. No. 3,703,854. This application Sept. 7, 1972, Ser. No. 286,934
Int. Cl. H02k 15/00
U.S. Cl. 29—596 10 Claims



Apparatus and method for accurately sizing pieces of insulation and for placing formed pieces of insulation into slots of a magnetic core. Dielectric strip material is fed to a sizing and forming station by a strip accumulating and urging device, and dielectric material pieces of preselected sizes are precisely formed. The core is precisely aligned relative to the forming member so that the insulation pieces may be inserted into a core slot which the insulation piece has been particularly formed to fit. Preferred formed of apparatus includes constant force mechanisms for accurately returnign strip material length determining, severing, and forming mechanisms to respective dwell positions; positive acting cams, e.g., conjugate and face cams, in selected mechanism drive trains; and positively controlled compensating means for selectively positioning a core support relative to a datum plane of the apparatus. Means in the form of relatively movable pressure bars are urged, by constant force mechanisms, toward forming devices having different sizes and shapes to form insulators thereagainst. In another embodiment, a modified guide ring for forming and inserting devices is provided.

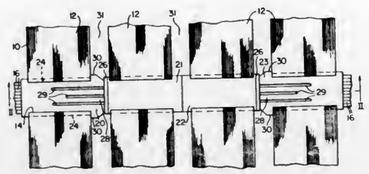
3,778,891

METHOD OF SECURING DYNAMOELECTRIC MACHINE COILS BY SLOT WEDGE AND FILLER LOCKING MEANS

Richard L. Amasino, Trafford, and Paul S. Johrde, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 137,466, April 26, 1971. This application Oct. 30, 1972, Ser. No. 302,328
Int. Cl. H02k 15/00
U.S. Cl. 29—596 6 Claims

For retention of a coil in dynamoelectric machine core slots, a slot wedge is provided with a compressible end that is normally oversized in relation to the slot width. The wedge is compressed when driven through the slot. The oversized portion then expands when it reaches the first vent duct and locks the wedge in the slot. Another feature is to use a flexible insulating tape between the coil and the slot filler strips with ends extending from the slot so that they can be wrapped around the ends of the filler strips and be secured by a locking type wedge, which may be as described above, at each end of the stack.

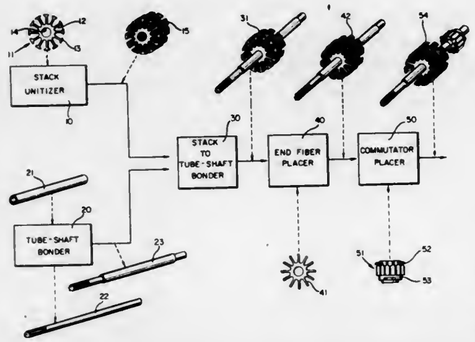


3,778,892

METHOD OF PRODUCING DOUBLE-INSULATED ARMATURE SUB-ASSEMBLIES

Richard J. Ostroski, Glen Arm, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 4, 1972, Ser. No. 278,053
Int. Cl. H02k 15/02
U.S. Cl. 29—598 7 Claims



An improved method of producing armature sub-assemblies for electric motors is described. The completed sub-assembly includes a shaft, a stack of laminations and a commutator and an insulating tube disposed between at least the shaft and the stack of laminations. The method includes the steps of applying adhesive material to the various parts to cause bonding thereof.

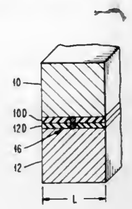
3,778,893

METHOD OF FABRICATING A COHERENT SUPERCONDUCTING OSCILLATOR

William A. Thompson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 21,640, March 23, 1970, Pat. No. 3,628,184. This application June 10, 1971, Ser. No. 151,885
Int. Cl. H01v 11/00; H01l 7/18
U.S. Cl. 29—599 13 Claims

A superconducting oscillator for generating millimeter and infrared radiation and a method for fabricating these oscillators. A Josephson junction (weak link or tunneling juntion) is located between electrodes which furnish DC current to the junction and also define a resonant cavity for electromagnetic radiation from the junction. Thus, an internal cavity is provided and increased power outputs over a wide frequency range are possible. The oscillator is produced by spark erosion between the electrodes at liquid helium temperatures, which forms a very small junction and cavity resonator.

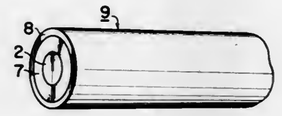


3,778,894

PROCESS FOR MAKING A V GA SUPERCONDUCTIVE COMPOSITE STRUCTURE

Akiro Kono, Tokyo, and Yoshiharu Nozawa, Yokohama, both of Japan, assignors to Ulvac Corporation, Kanagawa-ken and The Research Development Corporation of Japan, Tokyo, Japan

Filed Dec. 6, 1971, Ser. No. 205,057
Claims priority, application Japan, Dec. 15, 1970, 45/111127
Int. Cl. H01v 11/00
U.S. Cl. 29—599 9 Claims



A process for making a V_3Ga superconductive composite structure wherein a composite structure is formed by sheathing one or more elements, of vanadium metal or vanadium base alloy containing one or more of Ti, Zr or Hf in an amount of less than 10 atom %, with a pure metal selected from the group consisting of Cu, Au and Ag, said composite structure is subjected to a plastic working, the resulting composite structure is coated with gallium, and said gallium-coated composite structure is heat treated to diffuse the gallium into said coated layers and simultaneously to produce V_3Ga in a boundary zone.

3,778,895

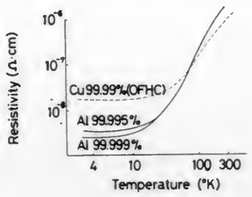
METHOD OF FABRICATING AN ALUMINUM CLAD MULTIPLEX SUPERCONDUCTOR

Harehiko Nomura, and Susumu Shimamoto, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Division of Ser. No. 212,199, Dec. 27, 1971, Pat. No. 3,714,371. This application Oct. 24, 1972, Ser. No. 300,345
Claims priority, application Japan, Dec. 28, 1970, 45/120120
Int. Cl. H01v 11/00
U.S. Cl. 29—599 4 Claims

An aluminum clad multiplex superconductor comprises an aluminum alloy cladding and a multiplex superconductor inserted into the cladding and is constructed with a plurality of unit superconductors twisted or braided with each other, each of which unit superconductors is constructed with a strand of a plurality of superconductive wires, an intermediate alu-

minum layer and a relatively hard aluminum alloy layer surrounding the intermediate layer. The intermediate aluminum



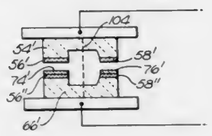
layer serves to prevent the flowing phenomenon during the withdrawing of the unit superconductor.

3,778,896

BONDING AN INSULATOR TO AN INORGANIC MEMBER

John F. Bagby, Glendora, Calif., assignor to Bell & Howell Company, Pasadena, Calif.

Filed May 5, 1972, Ser. No. 250,544
Int. Cl. G11b 5/42; H01f 7/06
U.S. Cl. 29—603 **26 Claims**



A method for joining an insulator to another member of poor electrical conductivity. The latter member is formed with a metal surface for contact with the insulator in a Mallory type bonding process wherein a potential is applied across the contact surfaces while heating below a molten state. In particular embodiments, the poor electrical conductor is a ferrite sputtered with metal to form the bonding surface and the method is used to manufacture a ferrite magnetic head having pole tips separated by a gap filled with a glass insulator. In other embodiments, a very thin layer of insulator is made more suitable for Mallory type bonding by RF sputtering onto a substrate from a target which is cooled by disposing a heat conductor between the target and the RF electrode. Mallory bonding of the thin insulator layer is enhanced by a reversal of polarity of the applied potential following a decrease in electric current flow.

3,778,897

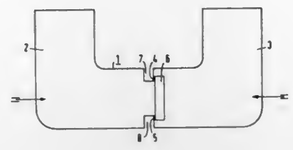
METHOD OF PRODUCING MAGNETIC CORE PARTS

Erwin Bock, and Oskar Theml, both of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 29, 1971, Ser. No. 202,881
Claims priority, application Germany, Dec. 1, 1970, P 20 59 064.1
Int. Cl. H01f 7/06
U.S. Cl. 29—609 **3 Claims**

In a method of producing at least two separate magnetic core parts that are each made up of stacked laminations, the following steps are provided: the step of stamping sections out of an individual metal sheet to form connecting struts located between and extending transversely to lamination sections of the sheet, and the step of displacing the lamination sections toward each other in a longitudinal direction of the lamination sections for shearing the struts so as to separate the lamination sections from one another.

Also, a blank for performing steps in a method of producing at least two separate magnetic core parts that are each made up of stacked laminations. The blank includes a sheet of metal having a longitudinal axis and having at least one opening having a longitudinal axis, the opening being located in the sheet so that the axes are mutually perpendicular. The sheet also has two notches extending inwardly transverse to the axis of the sheet from respective sides thereof and the opening is adjacent the notches to form struts therebetween.

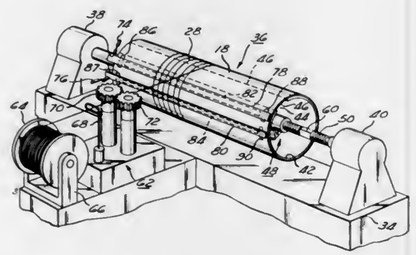


3,778,898

METHOD OF MAKING A LAMINATED ELECTRICALLY HEATED WINDOW

George A. Gruss, Mentor; Leslie H. Pfeller, Willowick, and George J. Polanka, Solon, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 166,064, July 26, 1971, Pat. No. 3,729,616. This application Dec. 27, 1972, Ser. No. 318,868
Int. Cl. H05b 3/06
U.S. Cl. 29—611 **5 Claims**



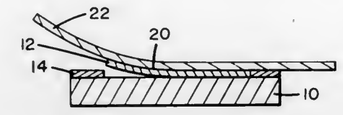
A method of making a laminated safety glass window having a clear polymer inner layer which includes a pattern of wrinkled resistance wires oriented in non-parallel random fashion so as to reduce glare from the wires when the window is used as a windshield. The individual resistance wires are partially embedded in the polymer sheet by a technique utilizing shrinkage of a thermoplastic polymer from its original dimensions when heated to an elevated temperature together with having the individual wires change configuration when relaxed from tension forces on the wire when first assembled with the polymer sheet. The method includes steps of forming the wire-incorporated polymer sheet member by automatically applying prestressed resistance wire to a thermoplastic sheet followed by heating the assembly under proper conditions to form the composite member.

3,778,899

MOUNTING PREFORMED CIRCUITS ON FLEXIBLE DIELECTRIC SUBSTRATES

E. Curtis Johnson, Mahtomedi, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed Nov. 12, 1971, Ser. No. 198,147
Int. Cl. H05k 3/20
U.S. Cl. 29—625 **7 Claims**



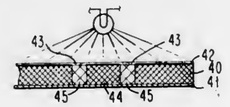
A process for preparing preformed circuits for mounting on a flexible dielectric substrate in which the preformed circuit is subject to a strong alkaline bath so as to add oxygen atoms to the surface of the circuit to increase the incidence of hydrogen bonds between the circuits and the dielectric substrate.

3,778,900

METHOD FOR FORMING INTERCONNECTIONS BETWEEN CIRCUIT LAYERS OF A MULTI-LAYER PACKAGE

Frank W. Haining, Binghamton, and Loren J. Puterbaugh, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,646
Int. Cl. H01r 43/00; C23f 1/02
U.S. Cl. 29—628 **5 Claims**



Process for forming holes in an insulation layer for interconnecting conductors between conductive layers of a multi-layer circuit board in which photosensitive dielectric is placed between conductive foils to form a multi-layer assembly. The dielectric may be either the negative or positive type and is selectively exposed to radiant energy to produce soluble and insoluble portions. If negative, exposure occurs prior to adding both foils; if positive, exposure is after both foils are in place. Holes are formed in one or both foils corresponding to the location of the soluble portions of the dielectric or to the portions to be solubilized by exposure. Development then removes the soluble dielectric resulting in well formed holes for conductors.

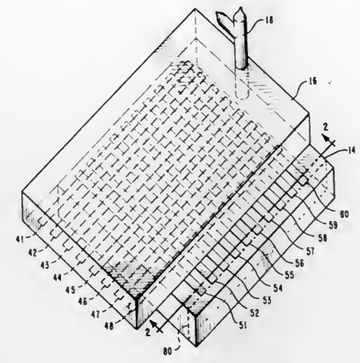
3,778,901

METHOD OF PROTECTING ELECTRICAL CONDUCTOR TERMINATIONS DURING GAS PANEL FABRICATION

Peter R. Wagner, Lake Katrine, and Donald M. Wilson, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,150
Int. Cl. H05k 3/28
U.S. Cl. 29—625 **4 Claims**

Thin parallel electrical conductors are protected from attack during elevated temperature operations in gas panel fabrications by a method which involves depositing the parallel electrical conductors on a pair of glass plates with the parallel conductors terminating a given distance from the edges of each glass plate whereby each such plate extends beyond the ends of the parallel conductors, and covering the parallel conductors with a protective glass coating which covers completely the top, sides, and ends of each parallel conductor. Since the ends of the parallel conductors are covered completely, they are protected from attack and destruction during subsequent firing operations in the fabrication of a gas panel. After panel fabrication is completed one



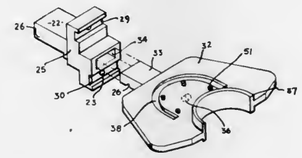
end of each glass plate may be cut off flush with the ends of the parallel conductors if desired. The protective glass coating is removed around the end or terminal regions of the parallel conductors whereby the exposed portions of the conductors may serve as electrical contacts.

3,778,902

DENTAL CLUTCH FABRICATION

Niles F. Guichet, 320 Olympia Place, Anaheim, Calif.

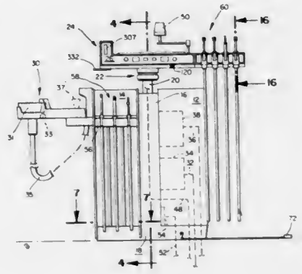
Filed Nov. 1, 1971, Ser. No. 194,174
Int. Cl. A61c 9/00
U.S. Cl. 32—20 **17 Claims**



An improvement in the dental clutch fabrication means shown in U.S. Pat. No. 3,508,333 is described herein. The improvement permits use of but a single set of clutch support forks for endentulous and dentulous patients and provides preformed bearing pin guide means for greater precision of operation. The dental clutches, which are intaglio castings of the teeth, are formed on support forks that are secured in precise relationship to each other by jig means which has a separation plate to separate the clutches as they are formed. The clutches are preferably cast in the patient's mouth, directly on the teeth. The improved support forks described herein are combined with plates having bearing pin guide surfaces which have a preformed contour so that no difficulties are encountered in the forming of this guide surface. Two types of bearing surfaces are provided; a substantially flat planar surface for endentulous patients and a dished surface, preferably having a particular shape to encourage purely lateral and protrusive movements, for dentulous patients. The plates have means to index their position to the fork when casting the clutches and can be attached or unattached to the forks. The plates are preferably supported from the forks with attachment means which permits their removal so that they

can be supplied in pairs and the undesired bearing surface can be removed from one of the forks which can then be used for forming the mandibular clutch, while the fork bearing the desired bearing surface is used for the maxillary clutch.

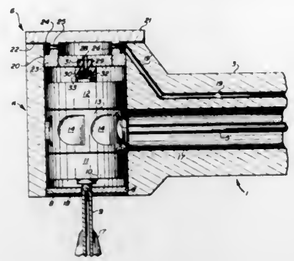
3,778,903
DENTAL UNIT
John M. Gardella, Matawan, N.J.; Anthony Ciavattoni, Staten Island, N.Y., and Joseph I. Ujvary, Cliffwood Beach, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Mar. 23, 1971, Ser. No. 127,098
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 **23 Claims**



A dental unit includes an inverted generally T-shaped frame with a supply section located on one side of the upright portion of the frame, and an evacuation section on the other side thereof; the evacuation section includes an evacuation instrument removably supported on a front side thereof, this section being rotatably mounted to the horizontal portion of the frame so that the front side thereof may be rotated to face in any one of an infinite number of positions located within a 180° arc as measured in a horizontal plane. A vertical post is supported within and extends upwardly above the upright portion of the frame, and also above the above mentioned sections. A horizontally extending arm assembly is rotatably mounted at one end thereof to the upper end of the post, and supports a tray assembly at the other end thereof, the tray assembly having a plurality of dental drills removably supported thereon; the arm and tray assemblies may be retracted to a position over the above mentioned sections. The unit includes an outlet into which a prophylaxis unit plug can be inserted so that a single foot control unit can be used for operating both the dental drills and the prophylaxis unit. Upon removing a drill from its associated hanger the supply system is programmed to actuate the selected drill upon actuation of the foot control unit, unless upon removal of the drill, its associated hanger is latched in its lowermost position.

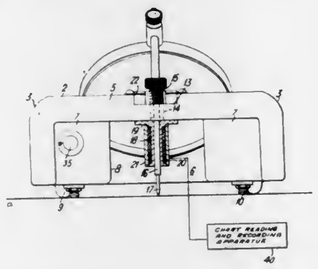
3,778,904
COOLING SYSTEM FOR A DENTAL HANDPIECE
Chris R. Melde, 7755 Foothill Dr., Scottsdale, Ariz.
Filed July 17, 1972, Ser. No. 272,202
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **10 Claims**

A dental handpiece including a handle, a shank and a head is disclosed for conveying a cooling stream of air to a workpiece. The stream of air is conveyed through a passageway in the dental handpiece to a cap in the head. The cap includes a collection chamber for receiving and distributing the stream of air. The air within the collection chamber is forced out through an axially disposed aperture within the cap and internal to the head. The end of a hollow burr, the burr being rotatably mounted within the head, communicates with the collection chamber via an apertured resilient coupling. Thereby, the air forced out of the collection chamber, flows through the coupling and into the hollow burr. Thence, the air



flows through the burr to the working portion thereof and cools the working portion as well as the workpiece in proximity to the working portion.

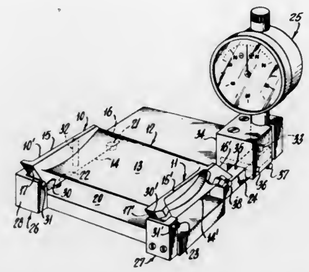
3,778,905
SCRIBING INSTRUMENTS
Alan Jebb, Bromley, and Colin Bowden Besant, Marlow Bottom, both of England, assignors to D-Mac Limited, Glasgow, Great Britain
Filed Mar. 9, 1971, Ser. No. 122,459
Claims priority, application Great Britain, Mar. 10, 1970, 11,314/70
Int. Cl. B43l *13/00*
U.S. Cl. 33—18 R **4 Claims**



A scribing instrument for use on a scribing surface has a body portion on which is mounted a stylus and the body is supported on the scribing surface by at least one variable support. Downward pressure applied to the body causes the variable support to contract such that the instrument takes up a first position in which the stylus contacts the surface and the instrument can then be moved across the surface in said first position for scribing. Release of the pressure causes the variable support to expand such that the instrument takes up a second position in which the stylus does not contact the surface, and the instrument can be moved in said second position across the surface without scribing it.

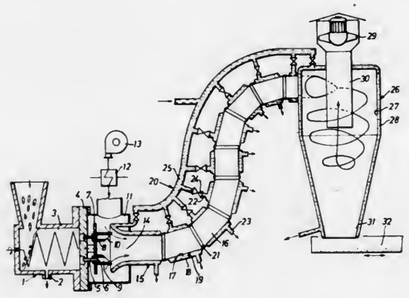
3,778,906
BUTTRESS TWIST GAGE
Edward C. Palmenberg, Nanuet, N.Y., assignor to Chromalloy American Corporation, Orangeburg, N.Y.
Division of Ser. No. 25,506, April 3, 1970. This application Dec. 29, 1971, Ser. No. 213,577
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 P **5 Claims**

The invention contemplates a vane-twist measuring or gaging instrument in which the overall twist of the vane is assumed to be indicated by the angular relation between a reference alignment, taken on one buttress surface, and a measured-offset alignment, taken on the corresponding surface of the other buttress for the same vane. Basically, a reference plane is established for the reference surface of the first abutment, as by using two fixed and precisely positioned spaced point-contact elements, and a gage carried by the instrument near the other buttress senses the inclination of the other buttress (with respect to the reference plane) when the



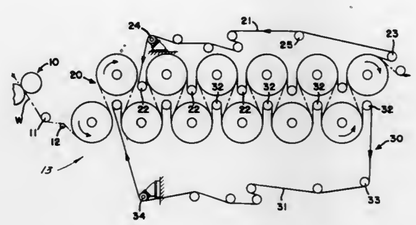
other buttress is applied against a single, or third, fixed point of support on the instrument. In one form, the third support point is established by an elongated bar, with provision for central pivotal support, so that its angular orientation about the pivot may reflect contact with, and therefore slope of, the other vane buttress; in another form, the third support point is a fixed abutment near one end of the other buttress, and a probe responds to a given location near the other end of the buttress when the vane is applied to the three fixed support contacts.

3,778,907
DRYING OF MOIST MATERIAL
Egon Kuntz; Paul Esser; Edgar Muschelknautz, all of Leverkusen, and Heinz Grone, Marl, all of Germany, assignors to Bayer Aktiengesellshaft, Leverkusen, Germany
Filed May 24, 1971, Ser. No. 146,374
Claims priority, application Germany, June 11, 1970, P 20 28 742.7
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 R **10 Claims**



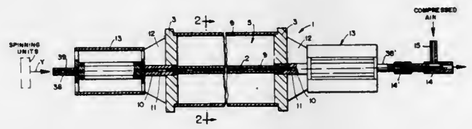
Drying of moist material, e.g., rubber crumbs, is effected using a screw machine which disperses the particles in an air stream. The air stream and particles pass through a conveying pipe, in which further drying occurs, and then into a separator from which the dried particles fall onto a conveyor. The conveying pipe and the separator are cooled. The cooling prevents accumulation of the particles on the walls of the equipment.

3,778,908
PAPER MACHINE DRYING APPARATUS
Willard C. Notbohm, Watertown, N.Y., assignor to The Black Dawson Company, Hamilton, Ohio
Continuation of Ser. No. 833,407, June 16, 1969, abandoned. This application July 27, 1971, Ser. No. 166,400
Int. Cl. F26g *11/00*
U.S. Cl. 34—116 **13 Claims**



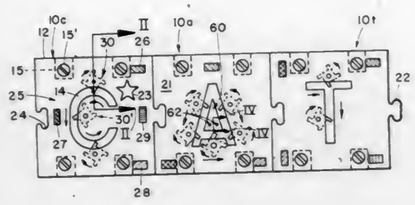
At least one dryer felt roll in a paper machine dryer section is of the variable crown type so that the pressure with which the roll bears against the dryer felt may be varied along the length of the roll. In this way, nonuniformities in felt tension caused by the deflection of other felt rolls in the dryer section may be compensated for, and more uniform drying of a paper web in the cross machine direction obtained as it is pressed against the dryer drums by the dryer felt.

3,778,909
APPARATUS FOR THE CONTINUOUS HEAT TREATMENT OF RUNING YARNS
Karl Ostertag, Elsenfeld; Heinrich Nilgens, Erlenbach, and Herbert Schelber, Kleinwallstadt, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.
Filed Apr. 21, 1972, Ser. No. 246,326
Claims priority, application Germany, May 4, 1971, P 21 21 843.9
Int. Cl. F26b *25/00*
U.S. Cl. 34—155 **18 Claims**



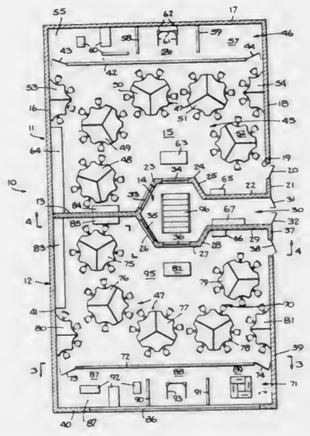
Apparatus for the continuous heat treatment of a number of running yarns, tows, threads, strands or the like with saturated steam requiring a corresponding number of straight pressure pipes as individual heating chambers with feed inlet means for the steam and including a corresponding number of pressure locking means having a variable throttle cross-section at each of the inlet and outlet ends of the heating chambers so that the heating chambers are individually supplied with the steam and the yarns can be individually reintroduced in the event of breakage. The pressure locking means is preferably constructed with a special labyrinth seal.

3,778,910
WRITING AID
Lenore R. Smalligan, 1845 Orville S.E., Grand Rapids, Mich.
Filed June 22, 1972, Ser. No. 265,290
Int. Cl. G09b *11/04*
U.S. Cl. 35—37 16 Claims



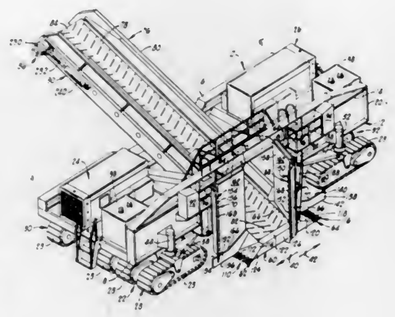
A writing aid includes a plurality of stencil modules, each including a template board having a guide track in the pattern of a cursive or script letter or number. The modules are positioned over a writing sheet and further include unidirectional motion limiting devices extending into the guide track at locations which permit motion of a writing instrument in only the proper direction.

3,778,911
CLASSROOM FOR PAIRED LEARNING
Myron Woolman, 4828 16th St., N.W., New York, N.Y.
Continuation of Ser. No. 41,258, May 28, 1970, abandoned. This application June 1, 1972, Ser. No. 258,811
Int. Cl. E04h *3/08*
U.S. Cl. 35—60 30 Claims



A classroom is presented in which a plurality of learners may engage in paired learning and psycho-motor activities in a manner to increase the learning effectiveness of each of these two types of learning programs. A first area is provided for containing paired learning devices and a second area is provided for containing simulator equipment for psycho-motor activities.

3,778,912
SIDE BANK EXCAVATOR
George W. Swisher, Jr., and Autho Hale, both of Oklahoma City, Okla., assignors to CMI Corporation, Oklahoma City, Okla.
Filed May 12, 1971, Ser. No. 142,725
Int. Cl. E02f *5/00*
U.S. Cl. 37—110 14 Claims

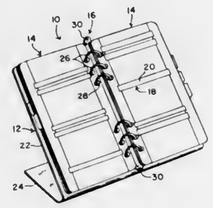


An improved excavator for excavatingly removing earth from a hill or a bank-like area, having a horizontal earth removal assembly and a vertical earth removal assembly, each having a portion constructed to excavatingly engage a portion of earth in a forward moving direction of the excavator and another portion to excavatingly engage a portion of earth in a rearward moving direction of the excavator. The excavator includes, a conveyor constructed and positioned to remove the excavated earth to a remote, predetermined position, in a forward and a rearward moving direction of the excavator, and a conveyor control having one portion to automatically adjust the tension of the conveyor, and another portion to maintain the conveyor in a predetermined alignment position. The excavator is drivingly supported by a plurality of track members, each track member being connected to the support frame of the excavator via a track support member and a hydraulic cylinder, such that the support frame is vertically positionable in an upwardly and a downwardly direction. The hydraulic cylinders are hydraulically interconnected and controlled via a grade and slope control in such a manner that the support frame is vertically positionable about three predetermined control positions, for optimum positionability of the excavator.

3,778,913
METHOD OF MAKING A DURABLE PRESS GARMENT
John Garvin Lord, Swarthmore, Pa., assignor to Cotton, Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 826,277, May 20, 1969, Pat. No. 3,656,246. This application Feb. 16, 1972, Ser. No. 226,987
Int. Cl. D06m *13/54*
U.S. Cl. 38—144 8 Claims

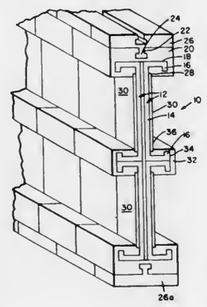
A durable press garment is made by cutting and assembling the garment from a cellulose fiber-containing fabric, pressing the garment to impart a suitable crease thereto, applying a liquid impregnant containing all constituents for giving the garment durable press characteristics upon subsequent heating, said application of liquid impregnant being performed without significantly disturbing the pressed condition of the garment, then drying the impregnated garment under normal atmospheric conditions, re-pressing the garment without curing the impregnant to eliminate any wrinkles which may have formed therein and to touch up the crease, and heating of the garment at about 200° – 350°F. to cure the creaseproofing agent.

3,778,914
VISIBLE INDEX SYSTEMS
Alexander Patton Janssen, Bellair, Va., assignor to Datastrip Corporation, Charlottesville, Va.
Filed Oct. 13, 1971, Ser. No. 188,743
Int. Cl. G09f *1/00*; B32b *3/10*
U.S. Cl. 40—64 R 3 Claims



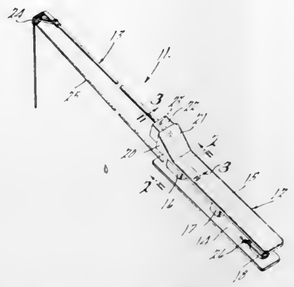
A visible index system including a panel, inserts removably attachable to the panel, and labels on which information can be typed or otherwise imprinted, provision being made for attaching the labels to the inserts.

3,778,915
FRAME ASSEMBLY KIT
George Freeman, and Patricia V. Freeman, both of 2051-43rd Ave., San Francisco, Calif.
Filed June 23, 1972, Ser. No. 265,870
Int. Cl. G09f *07/08*
U.S. Cl. 40—125 R 11 Claims



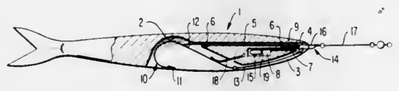
A frame assembly kit that can be readily assembled and reassembled to provide for changes in shape and size of display area required. Provisions are included for utilizing indicia emitting light of fluorescent wave length.

3,778,916
FISHING ROD
Maynard Wallace, 38172 Seaway Dr., Mt. Clemens, Mich.
Filed Oct. 10, 1972, Ser. No. 295,894
Int. Cl. A01k *87/00*
U.S. Cl. 43—18 R 4 Claims



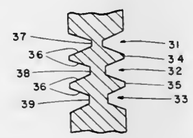
A short fishing rod especially useful for ice or chug fishing, trolling, or children's use. the rod comprises an elongated handle portion and a rod portion mounted in a socket thereof. One end of the line is secured to the handle, which has a longitudinal groove around it for storing the line.

3,778,917
DECOY, ESPECIALLY TROLLING HOOK
Emil Peippo, Harjavalta, Finland
Filed May 18, 1972, Ser. No. 254,378
Int. Cl. A01k *85/02*
U.S. Cl. 43—35 8 Claims



A trolling decoy or lure comprising a body with a longitudinal recess open to one side of the body to receive a hook therein. The hook is held retracted in the recess by a setting pin releasably engaging a loop on the hook against the bias of a spring mounted on the body but is ejected outwardly from the recess by the spring when the setting pin is released from the hook loop upon the strike of a fish.

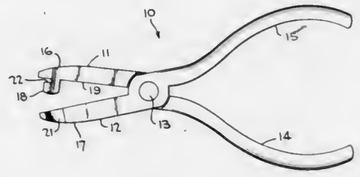
3,778,918
DOWNRIGGER RELEASE FOR FISHING
John E. Emory, Sr., and John E. Emory, Jr., both of Traverse City, Mich., assignors to Big Jon, Inc., Traverse City, Mich.
Filed Jan. 7, 1972, Ser. No. 216,170
Int. Cl. A01k *91/00*
U.S. Cl. 43—43.12 20 Claims



A downrigger release mechanism for releasably securing a fishing tackle line to a separate downrigger or outrigger line. The mechanism comprises a cylindrical release member including one of two types of means for securing it to the downrigger line. One means fixedly secures the release

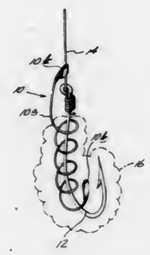
member to the downrigger line and weight. The other slidably secures the release member to the downrigger line such that the position of the release member on the downrigger line can be controlled by the amount of tackle line released. Further, in this latter embodiment the addition of other release members to the downrigger line is made possible, thereby allowing several fish to be caught without raising the downrigger line and/or release members. The mechanism utilizes two alternative removable release clip means directly securable to a release means formed integrally in the release member for releasably securing the tackle line to the release member.

3,778,919
HOOK EXTRACTOR PLIERS
James O. Simon, 2215 W. 15th St., Marion, Ind.
Filed Mar. 14, 1972, Ser. No. 234,561
Int. Cl. A01k *97/00*
U.S. Cl. 43—53.5 **3 Claims**



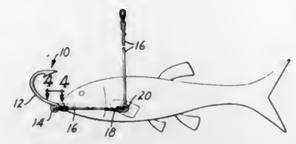
Hook extractor pliers having a push-plate on one of the jaws thereof, the plate facing toward the other pliers jaw which has a slot therein for accommodating the plate. A notch provided at the base of the plate permits the pliers to be guided along the shank of the hook and moved toward the bent portion thereof for disconnecting the hook from the mouth of the fish after which the jaws are closed to firmly grasp the hook therebetween for completely removing the hook from the fish.

3,778,920
FISHING BAIT RETAINER
Robert P. Anton, and Vernon P. Anton, both of 5915 N.E. Alameda, Portland, Oreg.
Filed Aug. 30, 1971, Ser. No. 175,953
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.4 **6 Claims**



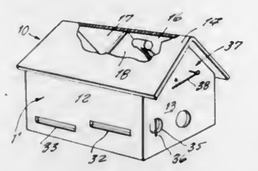
An elongated plastically deformable wirelike device for securing and retaining bait on a fishing hook. The device has flattened opposite ends, either one of which may conveniently be folded and clamped about a fishing line at the location where such attaches to a hook. The remaining portion of the device, i.e., that which extends away from an end thus fastened to a line, may be wound tightly around the hook's shank, and around any bait on the hook, thus to anchor the bait to the shank.

3,778,921
LIVE-BAIT FISH-HOOK
Lonn M. Peterson, 616 W. Ella, Willmar, Minn.
Filed July 29, 1971, Ser. No. 167,236
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.8 **3 Claims**



A fish-hook formed from a single piece of wire and including a bight portion, a looped eyelet formed adjacent the bight portion, a shank portion extending from the looped eyelet, and terminating in a shank eyelet. The shank eyelet is formed by bending the wire into a partial loop proximately abutting itself and continuing on away from the shank portion to provide a guiding surface permitting a retaining line to resiliently deflect the wire and essentially open the shank eyelet while being passed into the shank eyelet.

3,778,922
BIRDHOUSE SPARROW TRAP
James Webster Clark, Mendon, Mo.
Filed July 8, 1971, Ser. No. 103,353
Int. Cl. A01m *23/02*
U.S. Cl. 43—61 **2 Claims**

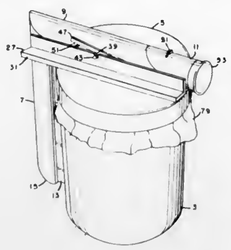


A trap for catching English sparrows, the device comprising a configurated enclosure having two separate chambers with a partition therebetween. The first of the chambers has an access opening from the outside thereinto and an exit opening through the partition into the second chamber, and a mechanism whereby a sparrow after entering the first chamber then closes the entrance opening and at the same time opens the exit opening so that the bird can pass through the partition into the second chamber from which it can be manually retrieved through a separate door.

3,778,923
AUTOMATIC MOUSE-TRAP DEVICE
Michael J. Cuoco, 2233 Helderberg Ave., Schenectady, N.Y.
Filed June 8, 1972, Ser. No. 260,911
Int. Cl. A01m *23/04*
U.S. Cl. 43—69 **9 Claims**

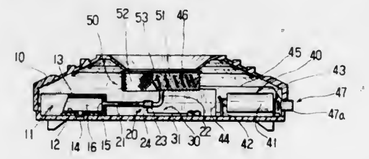
Discloses an automatic mouse-trap device comprising a drowning receptacle having a receptacle cover which carry brackets pivotally mounting an unbalanced horizontal runway tube tiltable through an elongated slot in the receptacle cover. The device has an inoperative position where there is closed communication from the bait receptacle through the horizontal runway tube and verticle access tube to the bottom open end of the vertical access tube to localize odor from bait in the bait receptacle to attract rodent entry. The adjoining ends of the access tube, runway tube, and bait receptacle are formed with cooperating 45° angles. Weight of a rodent on the unbalanced side of the horizontal runway tube tilts it downward

through the receptacle cover's elongated slot to dispose the rodent in the drowning receptacle and thereafter the over-



balanced side of the horizontal runway tube automatically returns the horizontal runway tube to its inoperative position.

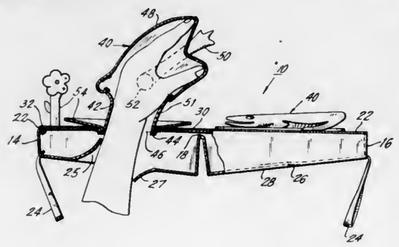
3,778,924
INSECTICIDAL FUMIGATOR
Sakujiro Okui, Kyoto, Japan, assignor to Kodama Brothers Co., Ltd., Wakayama-ken, Japan
Filed July 21, 1972, Ser. No. 274,052
Int. Cl. A01m *13/00*
U.S. Cl. 43—129 **12 Claims**



In an insecticidal fumigator, liquefied gas available in the form of cigarette lighter fuel is ignited through an electric circuit including a radiating filament connected to a dry cell and a normally open pushbutton switch, and once ignited, it is kept catalytically burnt to heat a heating plate so that an insecticide imbued in a fibrous tissue element adjacent to said plate is smoked into the air.

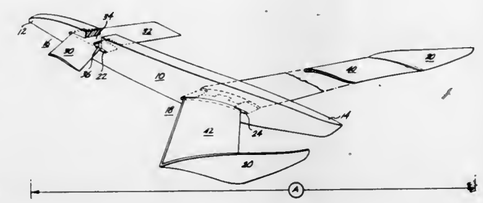
Said fumigator is provided with a safety device comprising a bimetallic actuator adapted to automatically close a valve when overheating takes place whereby a fuel supply pipe connected to said valve is prevented from feeding the fuel.

3,778,925
PUPPET TOY
Andrew Alden Owen, Tempe, Ariz., assignor to Ambassador International, Inc., Tempe, Ariz.
Filed June 15, 1972, Ser. No. 263,264
Int. Cl. A63h *33/00*
U.S. Cl. 46—13 **12 Claims**



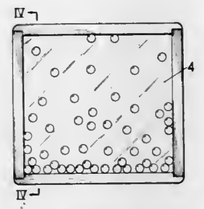
A pair of hand operable puppets are attached to a sheet. The sheet is attached to covers which can be closed to form an enclosed package containing the puppets and their support sheet. The covers are provided with access openings therethrough which permits access to the interiors of the puppets.

3,778,926
SLOW-FLYING AIRCRAFT
B. Michael Gladych, Issaquah, Wash., assignor to Gentle Toy Co., Inc., Bellevue, Wash.
Filed Aug. 11, 1972, Ser. No. 280,060
Int. Cl. A63h *27/00*
U.S. Cl. 46—79 **10 Claims**



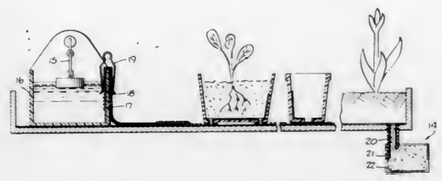
A slow-flying aircraft is disclosed in which there is a Canard or forewing standing out from the fuselage in advance of a transversely disposed rear-swept main wing having upward and outward and rear-swept stabilizer fins at its tips. The aircraft is formed of light-weight foamlike material. Means is provided to vary the decalage of the wing surfaces to permit increase or decrease of lift provided by the wings and also to increase or decrease drag. Preferably the wing elements are shiftably mounted in curved camber slots through the fuselage to provide variable flight performance of the aircraft. This abstract is neither intended to define the invention of this application which, of course, is measured by the claims; nor is it intended to be limiting as to the scope of the invention in any way.

3,778,927
AMUSEMENT AND EDUCATIONAL DEVICE
Benjamin Edden, 92 Bert Zait, Jerusalem, Israel
Filed Aug. 17, 1970, Ser. No. 64,448
Int. Cl. A63h *17/26*
U.S. Cl. 46—233 **9 Claims**



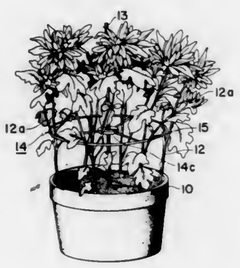
An amusement and educational device comprises a container having a closed compartment all the walls of which are of electrically insulating material, and a plurality of beads disposed in the compartment. The beads are of electrically insulating material and of small size such that after the container is shaken, a sufficient static electrical charge is produced by friction on the beads to support the upper ones against gravity in the compartment when the device is placed at rest. The front wall, and preferably also the rear wall, are made of transparent material to permit viewing the beads therein. In the preferred embodiment described, there are a plurality (five) of such compartments each separate and distinct from the others and each containing a plurality of differently colored spherical beads providing a dimensional effect.

3,778,928
PLANTER IRRIGATION SYSTEM WITH SAND DRAIN
Evert S. Green, 14 Kenneth Ave., North Bellmore, N.Y.
Continuation-in-part of Ser. No. 10,147, Feb. 10, 1970, abandoned. This application May 7, 1971, Ser. No. 141,113
Int. Cl. A01g 27/00
U.S. Cl. 47—38.1 4 Claims



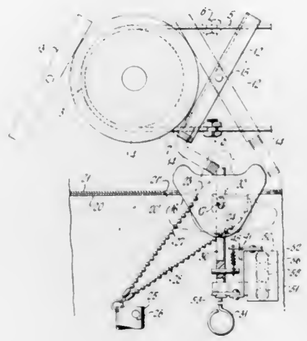
Apparatus for supplying water to and removing water from a plurality of plants in accordance with the needs of each individual plant is disclosed. The apparatus includes a water reservoir which by capillary action continuously circulates water through a drain controlled water transmitting agent. The plants are placed on the water transmitting agent and by capillary action can receive as much water as they require from the water in the transmitting agent discharging their dissolved waste products to the transmitting agent where they are carried to the drain mechanism away from the plants themselves.

3,778,929
PLANT GROW GUIDE
Theodore A. Pearson, 71 Hancock Ave., Newton Center, Mass.
Continuation of Ser. No. 17,698, March 9, 1970, abandoned. This application July 12, 1971, Ser. No. 161,858
Int. Cl. A01g 17/14
U.S. Cl. 47—58 4 Claims



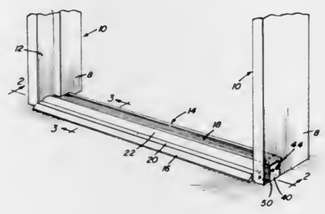
Many plants grown in pots require stacking and binding at a time near their maturity. A self-positioning collar is set in the pot with a stake when the plants are small. As the plants grow the collar is raised along its stake by the plant growth, adjusting to the changing size of the plants. At maturity, the potted plants are supported and retained by the staked collar which prevents the individual plants from bending too far away from the pot, thereby presenting a neat and unified appearance for the potted plant, and making the potted plant easy to secure and handle.

3,778,930
GARAGE DOOR ENERGY STORED AND EMPLOYED
Frederick A. Purdy, 870 United Nations Plaza, New York, N.Y.
Continuation-in-part of Ser. No. 25,016, April 2, 1970, abandoned. This application Mar. 31, 1971, Ser. No. 129,843
Int. Cl. E05f 15/20, 15/10
U.S. Cl. 49—25 11 Claims



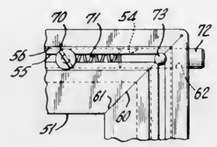
Energy in the momentum of a moving garage-door admits door-coasting beyond motor-shut-off point into collision downward onto the doorway-sill in a door-closing movement; or, in a door-opening movement, into collision horizontally against a stop on the rearward end of a horizontal support track. Thus, energy of momentum is wasted. The instant invention captures wasted energy, puts the energy into storage, and holds it, without depletion, for years, days, or minutes, and, when opportune, releases and employs the energy to close an electric-circuit to door-drive motor for opening or closing the door.

3,778,931
THRESHOLD ANCHOR DEVICE
Tommie C. Donaldson, Rt. 3, Box 1156, Odessa, Tex.
Filed July 17, 1972, Ser. No. 272,220
Int. Cl. E06b 1/04
U.S. Cl. 49—380 2 Claims



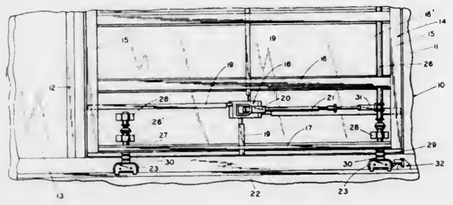
A prefabricated ready-to-use doorframe construction characterized, broadly stated, by a pair of opposed spaced parallel wooden frame members fashioned into and providing a pair of doorjambs, prefabricated threshold means embodying an inside doorsill spanning the space between and having its ends oriented with and cooperatively abutting corresponding lower end interior surface portions of the aforementioned doorjambs and individual anchoring adapter or devices secured to coordinating end portions of said threshold means and also secured to coacting lower end portions of said doorjambs usually by way of screw-threaded headed fasteners.

3,778,932
DOOR AND HINGE ASSEMBLY
Robert L. Ewing, Newark, Ohio, assignor to Holophane Co., Inc., New York, N.Y.
Filed Feb. 14, 1972, Ser. No. 225,787
Int. Cl. E05d 7/08
U.S. Cl. 49—388 2 Claims



A door and hinge pin assembly with a frame of extruded aluminum for supporting a door panel and retractable hinge pins within the aluminum extrusions for cooperation with corresponding hinge bearings in a door frame or jamb.

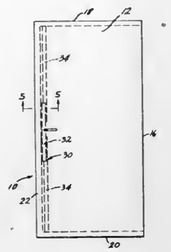
3,778,933
HOLD-OPEN LOCK FOR PLUG SLIDING DOOR
Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed Sept. 13, 1971, Ser. No. 179,667
Int. Cl. E05d 13/04
U.S. Cl. 49—449 5 Claims



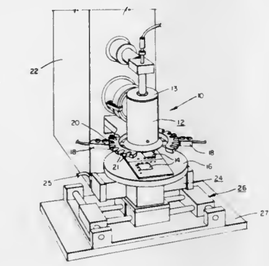
A combination plug and sliding door for a railway box car is retained in an open position by means of a locking device supported on the door track positioned beneath the door opening. The lock device includes a latch element which is rotated to a disengaged position relative to a keeper on the door. Normal vibration of the door moving to its closed position will result in the latch element dropping by gravity to a reset position ready for engagement with the keeper when the door is again moved to the open position.

3,778,934
DOOR CONSTRUCTION
Frank G. Fisher, 2709 Whipple St., Elkhart, Ind.
Filed Aug. 28, 1972, Ser. No. 284,257
Int. Cl. E06b 3/00
U.S. Cl. 49—503 3 Claims

A structure for doors of the type used in house trailers, recreational vehicles, boats and the like, where a concave camber is formed in the door to insure an adequate weather seal between the unhinged edges of the door and the door frame. The door includes one or more integral relatively rigid members preshaped to impart the desired camber. The relatively rigid members have resilient properties sufficient to assure a good weather seal between the door and the door frame.



3,778,935
ABRADING APPARATUS WITH ROTARY INDEX TABLE
John William Callahan, Lanoka Harbor, N.J., and Martin J. Capdeville, Staten Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Jan. 26, 1972, Ser. No. 220,977
Int. Cl. B24c 3/22
U.S. Cl. 51—8 10 Claims

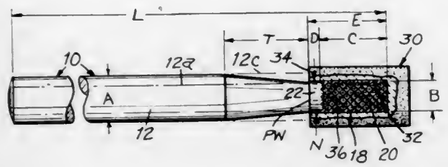


An abrading apparatus has a rotatably reciprocating worktable, and a vertical nozzle for directing an abrasive stream downwardly toward the worktable. The worktable has a plurality of workpiece holding zones thereon, each being designed to locate and secure a workpiece which is to be abraded. A control system is provided which includes a manual-automatic switch, the latter permitting the apparatus to be operated in either of two modes. In the manual mode, an operator depresses a switch to index the worktable to bring a holding zone, and consequently a workpiece under the abrading nozzle; the operator then depresses a second switch to initiate and complete the abrading operation. In the automatic mode, the operator depresses a single switch to index the worktable, and initiate and complete the abrading operation. In both modes, as one workpiece is being abraded, the operator is locating another in the holding zone which will subsequently be moved under the abrading nozzle.

3,778,936
MOUNTED ABRASIVE POINT

Wilfred A. Steadman, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed May 12, 1972, Ser. No. 252,618
Int. Cl. B24b 45/00
U.S. Cl. 51—168 5 Claims

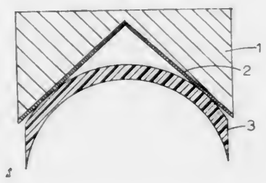


A relatively small diameter mounted abrasive point or grinding wheel with a supporting drive spindle of increased strength provided without increasing the hole size or reducing the amount of usable abrasive in the abrasive wheel. The spindle has a wheel mounting end portion, including a knurled portion and a shorter adjoining plain cylindrical portion of equal diameter and greater strength embedded in the abrasive point rigidly supported by and fixedly secured thereto. An inner side of the abasive point is positioned in a plane which passes through the adjoining plain cylindrical portion of greater strength. Initially the knurled portion is preformed to cylindrical shape with a diameter equal to its pitch diameter and thereafter the metal is displaced by knurling to the diameter of the adjoining cylindrical portion.

3,778,937
METHOD FOR MAKING ASPHERIC SURFACES

Charles W. Neefe, P.O. Box 429, Big Spring, Tex.

Continuation-in-part of Ser. No. 15,120, Feb. 27, 1970, Pat. No. 3,641,717. This application Nov. 1, 1971, Ser. No. 194,327
Int. Cl. B24b 13/00
U.S. Cl. 51—284 5 Claims

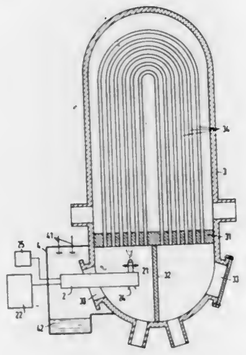


A method of generating aspheric convex surfaces by abrading a spherical surface against a concave cone. The cone being tangent to the spherical surface at a point between the center and edge. The cone tangent against the spherical surface abrades the sphere to produce an aspheric surface having a shorter radius at the center and a longer radius at the edge than the original sphere.

3,778,938
METHOD FOR DECONTAMINATION OF SURFACES OF NUCLEAR REACTOR COMPONENTS

Roland Korn, Nurnberg; Gunther Seyd, and Uwe Paulsen, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 4, 1972, Ser. No. 223,471
Claims priority, application Germany, Feb. 17, 1971, P 21 07 479.3
Int. Cl. B24c 1/00
U.S. Cl. 51—320 6 Claims

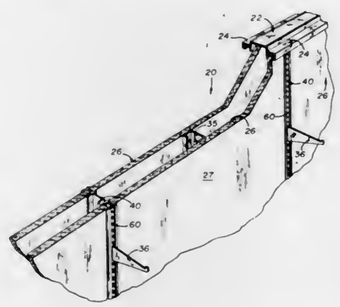


Cleaning of radioactively cotaminated surfaces and components of nuclear power reactors is carried through by means of sandblasting technique, wherein boron trioxide sand is used as the blasting medium. The process is carried out such that the passivation layer on the surfaces to be cleaned is not attacked and that water is used for flushing out the blasting materials which may have remained on the surfces which have been cleaned.

3,778,939
INTEGRAL STUD AND BRACKET STANDARD AND THE ASSEMBLY THEREOF IN A WALL CONSTRUCTION

Neis Nelsson, Des Plaines, Ill., assignor to United States Gypsum, Chicago, Ill.

Division of Ser. No. 79,580, Oct. 9, 1970, Pat. No. 3,712,015. This application Sept. 12, 1972, Ser. No. 288,450
Int. Cl. E04b 2/32
U.S. Cl. 52—36 8 Claims

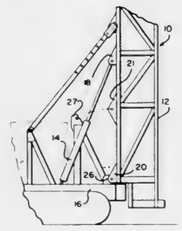


A stud and wall assembly constructed therewith for supporting shelf brackets and the like, the stud having as an integral part thereof, both a slotted flange for engaging shelf brackets, and as an extension of the flange, flat surfaces for engaging partition members which make up the wall. The slotted portion of the flange may be recessed within the stud or projected therefrom, so as to conceal or expose, respectively, the slotted portion. Additional bracket-supporting hooks can be extruded as part of the flange. The over-all cross-sectional configuration of most of the embodiments of the stud is an "H"-shaped configuration.

3,778,940
TRANSFERENTIAL PIN

William E. Blecken, Seattle, Wash., assignor to Ingersoll-Rand Company, Woodcliffs Lake, N.J.

Filed June 29, 1972, Ser. No. 267,548
Int. Cl. E04h 12/34
U.S. Cl. 52—116 5 Claims

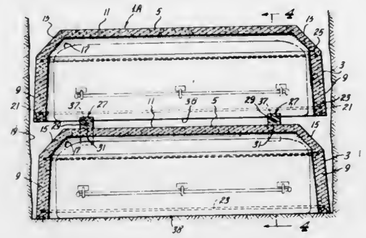


A vehicle mounted tower pivoted on the vehicle by two pivot joints spaced along the length of the tower and alternately engageable during the swinging of the tower between horizontal and vertical positions by a hydraulic cylinder extending between the vehicle chassis and the tower. Alternate use of spaced pivot points reduces the loading on the lift cylinder and improves angular control in drilling operations.

3,778,941
BELL-LINER PROTECTOR

John P. Dorris, Newport Beach, Calif., assignor to Pre-Cast Concrete Products, Ltd., Newport Beach, Calif.

Filed Dec. 11, 1969, Ser. No. 884,220
Int. Cl. E04h 13/00
U.S. Cl. 52—124 12 Claims

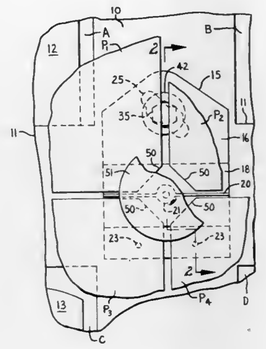


The invention comprises a one piece, concrete, bell type grave liner or protector to be lowered into a grave to enclose a casket. The protector has notches cast in its lower corners, corner edges, or bottom edges to receive a hoisting cable, thereby making handling easy. The protector has a top designed to resist vertical loads, cave-in of the side walls, and a sluffing-off of earth when an excavation is made next to it. The top is also designed to receive saddles for supporting a second protector for double interment. The protector is useful in conjunction with a base for either single or double interment. All side walls are tapered, i.e., inclined downwardly and outwardly to keep the protector from being raised, or "floating" to the surface, when unstable soils become saturated through sprinkling, rain, or exceedingly high water table.

3,778,942
MARBLE HANGER FOR CRYPT FRONT

Herman H. Bondi, 1224 S.E. Henry St., Portland, Oreg.

Filed Aug. 30, 1972, Ser. No. 285,129
Int. Cl. E05c 19/18; E04h 13/00
U.S. Cl. 52—134 4 Claims

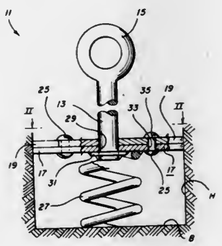


A one-piece metal hanger casting has an inclined slot of special configuration in its upper portion to permit horizontal, vertical and diagonal adjustment on a single hanger bolt. Two holes in a lower portion of the casting provide for the optional placement of a stabilizing pin to prevent swaying in an earthquake. In a central position, a thickened portion of the casting provides an abutment for the rear faces of marble wall panels while a forwardly projecting horizontal flange on the thickened portion forms a ledge for supporting a pair of upper panels. A tapped boss in the middle of the flange receives a threaded stud on a rosette which clamps the adjacent corners of four panels to the casting.

3,778,943
EARTH ANCHOR

Leon E. Day, Memphis, Tenn., assignor to William A. Rolen and James B. Sellers, Memphis, Tenn., part interest to each

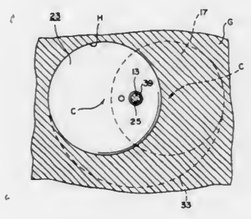
Filed June 28, 1971, Ser. No. 157,352
Int. Cl. E02d 5/74
U.S. Cl. 52—157 10 Claims



A device for anchoring a structure, e. g., a mobile home or the like, to the ground so that the structure has at least equal

ability to withstand high winds as do conventional residential structures. The device is intended to be received in a prepared hole in the ground and includes a rod having an eye or the like at the one end for attachment of typical cable structure thereto. The opposite end of the rod has fixedly attached thereto a platelike member which freely pivotally supports a pair of extendable knifelike members. The device is lowered into the hole and the knifelike members are urged outwardly into the undisturbed earth adjacent the bottom of the hole, thus greatly increasing the area of the earth engaging structure. The lower end of the rod preferably carries a corkscrewlike member which may be screwed into the undisturbed earth immediately at the bottom of the hole to further increase the holding ability of the device, i. e., particularly while the loose earth, which obviously is used to refill the hole, has fully compacted.

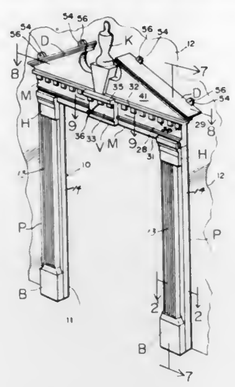
3,778,944
EARTH ANCHOR
Challice F. Easley, Rt. 4, Box 894, Millington, Tenn.
Filed July 12, 1972, Ser. No. 271,626
Int. Cl. E02d *5/80*
U.S. Cl. 52—159 **3 Claims**



An earth anchor for insertion into a prepared hole in the ground. The anchor includes a rod having the first of two substantially identical disks perpendicularly disposed and fixedly attached to the lower end thereof. The rod is freely received in an aperture provided in the second disk. The second disk contiguously engages the first disk. The aperture in the second disk is positioned a predetermined distance from the center thereof and the predetermined distance corresponds to the location to which the rod is attached to the first disk. Therefore, rotational movement of the rod is effective to align or misalign the two disks. The prepared hole preferably is slightly larger in diameter than are the diameters of the disks so that when the disks are aligned, they may be inserted into the hole. Subsequent application of rotational force to the rod drives one of the disks into the undistrubed earth defining the hole. The disks are locked one to the other after being misaligned by thrusting a lock pin into lock pin apertures provided in both the disks. Additional rotational force applied to the rod may now drive the other disk into the undistrubed earth.

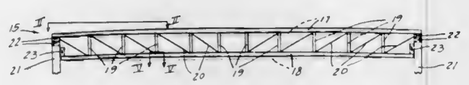
3,778,945
ADJUSTABLE PREFABRICATED ENTRYWAY
Robert S. Medow, 15840 W. Prestwick Pl., Miami Lakes, Fla.
Filed Sept. 29, 1972, Ser. No. 293,519
Int. Cl. E06b *1/30*
U.S. Cl. 52—217 **3 Claims**

A prefabricated entryway made of molded fiberglass consisting of individual fluted pilasters, base and head blocks, a mantel made in two parts, a mantel overlay, a pediment made in two parts, a combined urn and urn base and a plurality of spring clips. The entire assembly is readily erected in place on a wall about an opening upon the spring clips being fastened to



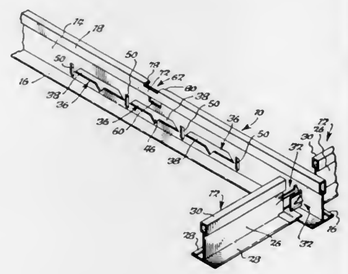
the wall and the various parts becoming interlocked and interengaged without the use of nails, screws and the like.

3,778,946
TRUSS AND METHOD OF MAKING SAME
Gordon G. Wood, Glen Ellyn, and James L. McCabe, Wheaton, both of Ill., assignors to Woodco Ltd., Glen Ellyn, Ill.
Filed Dec. 21, 1970, Ser. No. 100,282
Int. Cl. E04c *3/10, 5/08*
U.S. Cl. 52—223 R **8 Claims**



Camber is automatically attained in the chords of a truss by means of tensioned tensors and compression members between the top and bottom chords of the truss.

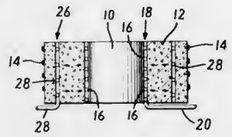
3,778,947
FIRE-RATED GRID MEMBER WITH CONTROLLED EXPANSION MEANS
Gale E. Sauer, Williamsville, N.Y., assignor to Flangeklamp Corporation, Buffalo, N.Y.
Filed Nov. 3, 1971, Ser. No. 195,237
Int. Cl. E04c *2/52, 2/42*; **E04b** *5/52*
U.S. Cl. 52—232 **14 Claims**



A fire-rated grid member having a plurality of cut-out sections in the web thereof defining connecting portions for con-

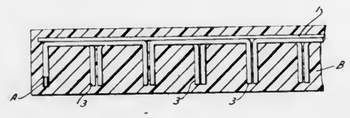
trolling deformation of the grid member to predetermined areas upon expansion. The bead surmounting the web is deformed to create a weakened portion deformable upon grid member expansion. The opposite ends of the grid member are provided with a slot and tongue arrangement for splicing adjacent grid members together.

3,778,948
INSTALLATION FOR CONTROLLING THE CONDITION OF WATER IN CONCRETE STRUCTURES
Rene Marie Berthier, 4, rue Wilfried Kilian, Grenoble, France
Continuation-in-part of Ser. No. 647,940, June 22, 1967, abandoned. This application Oct. 2, 1970, Ser. No. 77,682
Claims priority, application France, June 22, 1967, 674964
Int. Cl. E04b *1/16*
U.S. Cl. 52—302 **6 Claims**



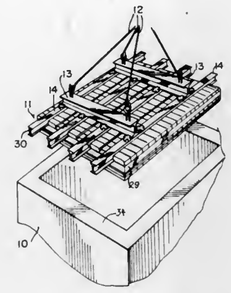
Disclosed herein is a reinforced concrete structure for surrounding a nuclear reactor vessel containing a high-temperature, highly pressurized fluid. The concrete structure has a concentrically configured drainage network therein for evacuating water and vapor from the concrete structure, to prevent destruction thereof due to excessive vapor pressure caused by heat absorbed from the reactor. The drainage network is arranged so that the direction of vapor flow is opposite to the thermal flux within the structure, and comprises perforated pipes or prefabricated blocks assembled within the structure, adjacent the vessel, and connected to drain conduits for allowing the water and vapor to be removed from the concrete structure.

3,778,949
REINFORCED STRUCTURAL ELEMENT
Walter Hellerich, Heilbronn, Germany, assignor to Arbed S.A. Arbed-Felten & Guilleaume Vereinigte Drahtwerke, Cologne, Germany
Filed May 20, 1971, Ser. No. 145,200
Claims priority, application Germany, May 20, 1970, P 20 24 453.5
Int. Cl. B32b *5/00*; **E04c** *1/00*
U.S. Cl. 52—309 **3 Claims**



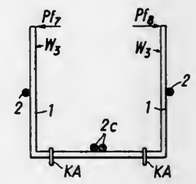
A body of synthetic plastic material has an exposed surface and reinforcing means in form of one or more layers of wires which are embedded in the body. Anchoring means in form of wire sections extend from the region of the exposed surface to the reinforcing means and are connected therewith.

3,778,950
REMOVABLE REFRACTORY FURNACE COVER
Herbert C. Philander, Chicago, Ill., assignor to Chicago Fire Brick Company, Chicago, Ill.
Filed June 22, 1972, Ser. No. 265,192
Int. Cl. F23m *5/04*
U.S. Cl. 52—483 **7 Claims**



A roof structure comprises a number of parallel I-beams each having a row of refractory tiles having T-shaped slots which fit over a flange of the I-beam. Reinforcing steel plates are disposed between adjacent tiles of a row. The plate has a web portion overlying a side surface of one tile with a T-shaped opening of shape and dimensions the same as T-shaped slot in the tile. The plate also has a flange at its remote edge which extends into a groove formed in the side surface of the tile. The plate retains the tile in position on the I-beam in the event that the interlocking portion of the tile is broken.

3,778,951
REINFORCEMENT
Georgi Oroschakoff, Simon-Denk-Gasse 7/7, Wien IX, Austria
Filed Nov. 30, 1970, Ser. No. 93,822
Claims priority, application Austria, Nov. 28, 1969, A11166/69
Int. Cl. E04h *12/18*; **E04c** *2/42*
U.S. Cl. 52—646 **3 Claims**

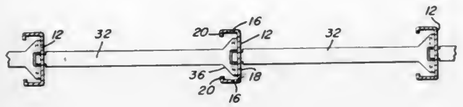


At least one pair of reinforcing sections are provided, each of which has at least two dimensions and which interengage to form a self-supporting reinforcement which is rigid at least in one direction.

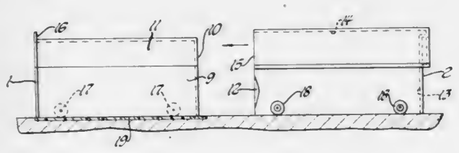
3,778,952
STUD BRACING FOR METAL STUDS
Eugene H. Soucy, 16 Richard St., West Hartford, Conn.
Filed May 5, 1972, Ser. No. 250,813
Int. Cl. E04c *2/42*
U.S. Cl. 52—667 **5 Claims**

A bracing assembly for use between adjacent channel-shaped sheet metal studs of the type having generally cruciform openings formed through the bight portions thereof. The bracing assembly includes a pair of end aligned bracing members with adjacent ends thereof being releasably engaged

with each other and including endwise outwardly facing abutment surfaces for opposing remote sides of an associated sheet metal stud bight portion through which an extended end portion of one of the brace members extends.

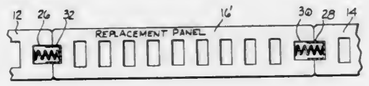


3,778,953
BUILDING CONSTRUCTION
John Zachary Delorean, 640 Lone Pine Hill, Bloomfield Hills, Mich.
Filed July 24, 1972, Ser. No. 274,779
Int. Cl. E04b *1/35*
U.S. Cl. 52—745 **15 Claims**



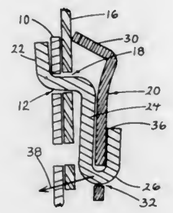
Inner and outer mold members are moved into juxtaposition on a building site to provide a cavity for casting a monolithic shell, open at one end and consisting of two side walls, one end wall and the roof of a building. After filling said cavity with hardenable material and subsequent withdrawal of the mold members from the shell, a utility unit is moved into the shell through said open end, which is thereafter closed with a window and door containing wall.

3,778,954
METHOD OF REPLACING A DAMAGED BULKHEAD PANEL
Robert H. Meserole, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Continuation of Ser. No. 83,537, Oct. 23, 1970, abandoned.
This application Sept. 7, 1972, Ser. No. 287,192
Int. Cl. E04b *1/00*; **E04g** *21/00*
U.S. Cl. 52—747 **4 Claims**



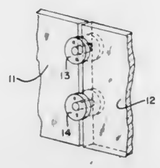
A method of replacing a damaged panel in a bulkhead without the necessity of removing or temporarily repositioning undamaged panels on either side thereof. First, the damaged panel is removed by complete destruction. Thereafter grooves are formed on the edges of undamaged panels which face the opening created by the removal of the damaged panel. Grooves are formed on oppositely facing edges of a replacement panel which is then inserted into the opening so that the newly formed grooves on the panels face one another to define a cooperating cavity. Means are provided to substantially fill this cavity so as to interfere with the removal of the replacement panel.

3,778,955
ATTACHMENT FOR PERFORATED BOARDS
James Garth Close, 3215 29th St., Lubbock, Tex.
Filed Mar. 14, 1972, Ser. No. 234,532
Int. Cl. F16b *5/00*
U.S. Cl. 52—758 D **7 Claims**



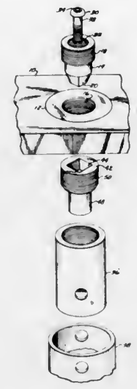
A releaseable peg means for a perforated panel or the like for attaching and supporting objects from said panels. Said peg means having a body extending through perforations in said panel and a head attached to said body for releasably attaching said peg means in position on said panel.

3,778,956
GLASS PANE FASTENING
Richard W. Martin, 25 Corte St., North Easton, Mass.
Filed May 12, 1971, Ser. No. 142,512
Int. Cl. F16b *5/02*
U.S. Cl. 287—189.36 D **9 Claims**



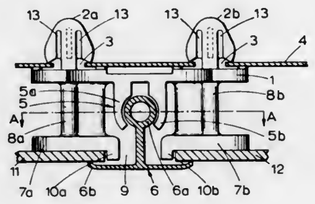
Large adjacent glass panes are fastened together by means including a glazing button comprising a stem that is preferably thinner than the glass to be joined coacting with two shoulder portions to define a pair of recesses slightly larger than the thickness of the adjacent glass panes to be connected. At least one of the shoulder-defining portions is threaded for receiving a member with an internally threaded socket that may be tightened to securely interconnect the adjacent panes of glass.

3,778,957
ADJUSTMENT FASTENER
Walter T. Appleberry, Long Beach, Calif.
Filed Oct. 2, 1972, Ser. No. 293,764
Int. Cl. F16b *7/18*
U.S. Cl. 52—758 D **7 Claims**



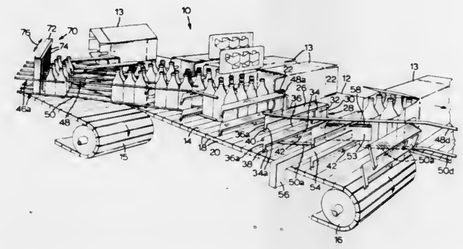
A fastener for adjusting the spacing between a panel and a support or object wherein mating sets of male and female inserts between them have reverse threads or threads of different pitch. Rotation of the male portions cause longitudinal expansion and contraction to vary the spacing between the panel and object. A single tool, an Allen wrench T-handle, may be used for panel handling, insertion and attachment of parts and their adjustment.

3,778,958
PANEL SPACING AND HOLDING CLIP
Gerald Fowler, Chorley, England, assignor to British Leyland Truck & Bus Ltd., Leyland, Lancashire, England
Filed Jan. 29, 1971, Ser. No. 111,071
Claims priority, application Great Britain, Jan. 30, 1970, 4577/70
Int. Cl. F16b *5/07*
U.S. Cl. 52—760 **16 Claims**



Trim panels are held on by clips each of which has: a plurality of pegs or other means by which it may be applied to or engage a support; lugs or projections arranged to locate the adjacent edges of two panels against the clip; and means to engage and retain a finishing mould which is adapted to retain the panels against the clip and cover the joint between the panels.

3,778,959
END LOADERS
Marinus J. M. Langen, and Jacobus J. Langen, both of Rexdale, Ontario, Canada, assignors to H. J. Langen & Sons Ltd., Rexdale, Ontario, Canada
Filed June 21, 1972, Ser. No. 264,891
Int. Cl. B65b *21/06, 35/30*
U.S. Cl. 53—26 **19 Claims**



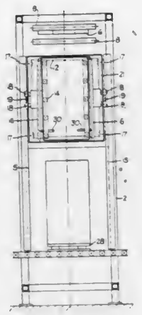
In a machine for loading shipper packages such as cartons, trays or the like with containers such as bottles, cans or the like, the improvement of a mechanism for arranging the containers in a series of spaced apart pay-loads while continuously moving the container along a predetermined path. The apparatus includes a conveyor means and a plurality of transversely extending spaced apart fence means mounted on the conveyor. A plurality of container slips, each inclined at an acute angle to the longitudinal direction of the conveyor, are mounted to open onto a marginal edge of the conveyor. Each of the fences has a leading edge which is adapted to engage a container from each of slips in turn as it is driven by the conveyor across the plurality of slips to move the container engaged thereby along its respective slip. The trailing edge of each of the fences is adapted to restrain the movement of the containers through the slips until raked therefrom by the leading edge of the next following fence. The ends of the slips are open at a point spaced inwardly from one edge of the conveyor and the fences pass through the guide rails during their longitudinal movement with the conveyor so as to rake a predetermined number of containers from the discharge end of each slip into each compartment to establish the required pay-load. In addition, the present invention provides an improved mechanism for guiding the containers transversely of the conveyor to discharge into the unloading shipper packages. The improvement consists of a transverse guide rail structure which extends transversely of the conveyor means and is adapted to permit the fences to pass therethrough during their passage along the conveyor means. The transversely extending guide rail means is characterized by a lower guide rail which has a first portion adapted to underlie the lower bar of the fence means and a second portion adapted to overlie the lower bar of the fence means in the area which overlies the fence support pad. The present invention also provides an improved method of discharging containers from a conveyor into an end loading shipper package wherein the conveyors are firstly arranged in at least two rows of containers, one row being staggered with respect to the other row and thereafter moving the containers transversely of the conveyor into the open end of a shipper package and then one row of containers is moved relative to the other so that the containers are moved out of the staggered relationship into a parallel relationship in two planes and thereafter closing the shipper package.

3,778,960

AUTOMATIC PACKING DEVICE FOR PALLET STACKS AND THE PROCEDURE PECULIAR HERETO

Borge Christensen, Farum, and Hans Hansen, Malov, Denmark, assignors to Ingeniorfirmaet Borge Christensen Kastanialle, Farum, by said Christensen and Ingeniorfirmaet Hans Hansen, Malov, Denmark, by said Hansen

Filed Sept. 16, 1970, Ser. No. 72,785
Int. Cl. B65b *43/30*
U.S. Cl. 53—29 **8 Claims**



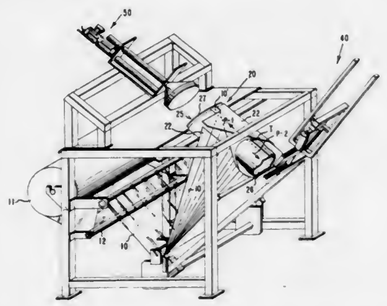
The invention is concerned with an improved method and machine of packing goods items into hoods, whereby each hood is fitted over the goods without being torn by sharp corners of the goods and at high speed.

3,778,961

TUBE AND PACKAGE MAKING METHODS

Herbert A. Lesher, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1972, Ser. No. 228,276
Int. Cl. B65b *9/08*
U.S. Cl. 53—28 **1 Claim**



A method is provided of forming a tube from a flat web of material including the steps of:

providing a web having at least sealable edge parts;

moving the web around the surfaces of a tube forming means to form a tubular structure with at least the sealable edge parts in overlapping relationship with each other;

bonding the overlapping edge parts together and passing the tubular structure along the outer surface of the tube forming means and around a lip of the tube forming means and into the interior thereof to form a tube receptive for filling.

The overlapping edge parts of the tubular structure are sealable by pressure, or heat if desired, and the movement of the tubular structure is under tension so as to provide the forces necessary to align and assist in sealing the overlapping edge parts as the tubular structure is moved.

A method also is provided of making a package using the tube described above including the further steps of:

closing the formed tube at its end;

inserting an article in the tube;

forming a closure in the tube adjacent to the article; and

severing the tube adjacent to the closure to form a package.

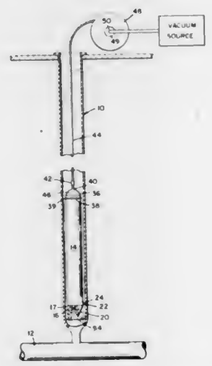
The tube may be evacuated of air prior to closing the portion of the tube adjacent to the article and the closed tube may then be shrunk into contact with the article to form a shrink package.

3,778,962

VACUUM CONTROLLED VESSEL LOADING WITH PARTICULATE MATERIALS

Maurice L. James, Pinole, Calif., assignor to Calcato, Inc., Richmond, Va.

Filed Mar. 30, 1972, Ser. No. 239,552
Int. Cl. B65b *1/06*
U.S. Cl. 53—35 **11 Claims**



Method for loading friable particulate matter without substantial free fall into vertical columns. A container is provided having first and second openings. The first opening includes means for vacuum closure of the container, while the second opening is for joining to a grid protected connection to a vacuum line. The vacuum controlled opening may be a flap which is hermetically sealed to a rigid collar or a cylindrical plastic sheet which collapses upon itself to provide a hermetic seal. After the container is filled, the vacuum applied and the vacuum seal formed, the container may be lowered into the column to a solid surface. The vacuum is then partially or completely released, which causes breaking of the seal, and the container raised releasing the particulate matter without substantial free fall.

3,778,963

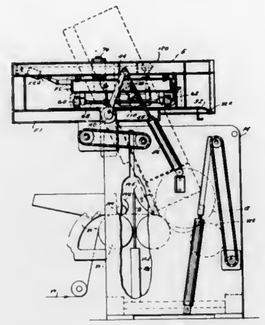
APPARATUS FOR WRAPPING ROLLS OF MATERIALS

John E. Straujups, Lexington, and Frederick J. Bellwood, Braintree, both of Mass., assignors to Birch Brothers, Inc., Somerville, Mass.

Filed Dec. 3, 1971, Ser. No. 204,419
Int. Cl. B65b *13/16*
U.S. Cl. 53—66 **8 Claims**

A roll wrapper apparatus for attachment on a web winding machine of the class commonly employed in winding webs of textiles, plastics, and the like, includes means for furnishing and applying a measured length of wrapping material around a roll of cloth or other material which has been wound in the web winding machine. The wrapper apparatus is constructed with means for feeding and cutting a desired length, applying

adhesive along one edge of wrapping sheet, means for positioning the wrapper sheet in suitable relation to a wound goods roll, and means for advancing the wrapper sheet into the goods roll while it is rotating in the winder machine. A completed goods roll is doffed from the web winding machine with wrapping secured around it. Control circuitry for the web winding machine may be connected into operating circuits for the wrapping operation so that winding and wrapping may be automatically handled in suitably timed relationship.

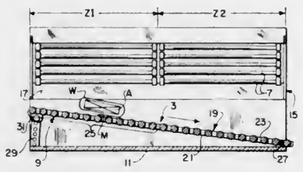


3,778,964

APPARATUS FOR SHRINK PACKAGING

Frederick F. Rowland, Ferguson, Mo., assignor to Roll-O-Sheets, Incorporated, St. Louis, Mo.

Filed Nov. 15, 1971, Ser. No. 198,642
Int. Cl. B65b *53/02*
U.S. Cl. 53—184 **3 Claims**



Apparatus for shrink-packaging articles in a heat-sealable, heat-shrinkable plastic film wrapper, in which the wrapper is heated for heat-sealing by means located below the article as it is conveyed through the apparatus, this heat-sealing means being heated by thermal radiation from thermal radiation heaters within the apparatus, and in which the wrapper is heated for heat-shrinking by thermal radiation from these heaters and by air heated by the heaters.

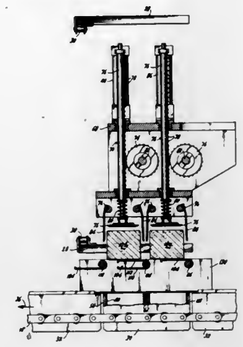
3,778,965

LOADING SYSTEM FOR PACKING MACHINE

Anthony J. O'Lenick, Fairlawn; Douglas P. Roome, Cedar Grove, and Joseph T. Gabriel, Lincoln Park, all of N.J., assignors to Standard Packaging Corporation, New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 208,847
Int. Cl. B65b *39/02*
U.S. Cl. 53—248 **2 Claims**

A loading system for use in a packaging apparatus is disclosed as including a conveyor for moving the article to be packaged to a first operations station and then to a loading station. At the loading station, clamps are provided to grip the article, loading doors are provided to support the article while it is being clamped and to release the article into a package element. Stationary guides are provided at the loading station to assist in directing the article upon its release through the loading doors. Furthermore, the loading doors themselves are constructed and arranged to funnel the article in cooperation with the stationary guides in precise position to the package element, which precise position is necessitated to avoid jamming of the apparatus by the article.



ERRATUM

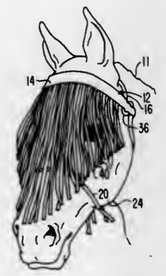
For Class 53—159 see:
Patent No. 3,778,972

3,778,966

FACE FLY SCREEN

Willis Hadley, P.O. Box 297, Ferndale, Calif.

Filed Feb. 4, 1972, Ser. No. 223,485
Int. Cl. B68b *1/02*; B68c *5/00*
U.S. Cl. 54—81 **7 Claims**

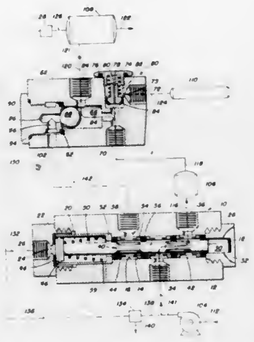


A face fly screen having an improved rigging comprised of a browband, a nose web secured to and extending downwardly and forwardly from the browband, a headstall adjustably connected at its ends to respective ends of the browband, a nose rope coupled to the forward end of the nose web, and a cheek rope coupled to the ends of the browband. The ends of the nose and the cheek ropes are adapted to be coupled together such as by being tied together, in the throat latch region of a horse with the length of the nose web being sufficient to position the nose rope forwardly of and in proximity to the laterally projecting cheekbones of a horse when the rigging is mounted on the head of the horse. The headstall has an S-shaped extension which frictionally engages the adjacent end of the browband to releasably maintain the headstall at a fixed length. A number of strands are secured to and are suspended from the browband to cover the face of the horse yet allow the latter to see through the strands when the rigging is mounted on the head of the horse.

3,778,967
APPARATUS AND PROCESS FOR THE FRACTIONATION BY THE ADSORPTION OF A COMPRESSED GAS

George C. Kauer, Jr., Plainview, L.I., and Louis E. Brooks, Great Neck, L.I., both of N.Y., assignors to Air Techniques Incorporated, New Hyde Park, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,028
Int. Cl. B01d 53/04
U.S. Cl. 55—21 12 Claims

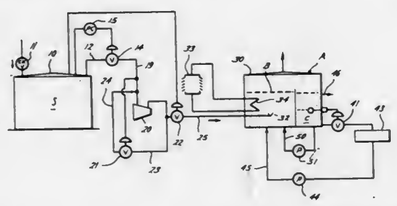


A system and apparatus for effecting the adsorption of a component of a compressed gas wherein compressed gas is continuously available to the user equipment. The compressed gas is passed through a valve assembly and after being subjected to adsorption in a tower is divided with a portion being passed to a storage tank for user equipment supply. Another portion is passed to a purge tank for subsequent regeneration of the adsorbent. Upon reaching a predetermined pressure in the storage tank, a control device associated with the storage tank arrests the flow of compressed gas from the compressor to the adsorption tower maintaining, however, the compressor and storage tank in fluid communication. Simultaneously, the purge tank is placed in fluid communication with the atmosphere through the adsorption tower by the valve assembly, to permit the compressed gas therein to flow through the adsorption tower under conditions to regenerate the adsorption material. The compressor is directly or indirectly in fluid communication with the storage tank under any condition of valve assembly configuration.

3,778,968
METHOD AND APPARATUS FOR CONTROLLING AIR POLLUTION CAUSED BY VOLATILE EMISSIONS FROM STORAGE TANKS AND THE LIKE

George Parker, Sr., Corpus Christi, Tex., assignor to J. B. Trimble and Dwain Smith, both of Houston, Tex.; part interest to each

Filed Aug. 10, 1972, Ser. No. 279,499
Int. Cl. B01d 53/14
U.S. Cl. 55—32 8 Claims

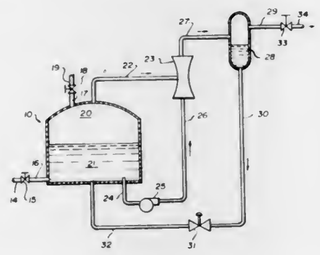


Method and apparatus for controlling air pollution caused by volatile emissions from petroleum storage tanks and the like, wherein such volatile emissions or vapors are passed through a brine or glycol solution having a controlled temperature range for separating petroleum hydrocarbons, water and air and for collecting the hydrocarbons so that they do not escape to the environment.

3,778,969
EJECTOR VAPOR RECOVERY SYSTEM FOR STORED VOLATILE LIQUIDS

Jackie Wayne Sudduth, Brookfield, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Apr. 12, 1972, Ser. No. 243,187
Int. Cl. B01d 19/00
U.S. Cl. 55—55 8 Claims

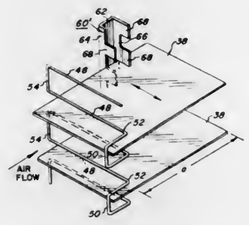


A process of separating a volatile liquid vapor from admixture with air by pressurizing a liquid stream which is at a temperature below its boiling point, feeding the pressurized liquid stream through an ejector to a lower pressure, conducting a stream of air and vapors of the liquid to the suction side of the ejector to form an admixture of liquid, liquid vapor and air, at a pressure intermediate the pressure of the streams fed to the ejector but adequate to condense the volatile liquid vapors to liquid, and gravity separating the volatile liquid, including condensed vapor, from the air.

3,778,970
ELECTROSTATIC AIR CLEANER

James A. Swimmer, Highland Park, and Martin Harris, Chicago, both of Ill., assignors to Air King Corporation, Chicago, Ill.

Filed June 11, 1971, Ser. No. 152,118
Int. Cl. B03c 3/08
U.S. Cl. 55—137 3 Claims



An electronic air cleaner in which parallel collector plates are slidably and removably received by a frame member. An ionizing wire is strung in a generally zig-zag configuration to overlie and underlie each of the collector plates and the collector plates are engaged with a snug fit by electrical contact means which provide all of the collector plates with the same potential.

3,778,971
DEVICE FOR PURGING GAS FROM A LIQUID

Alain Granger, Lesigny, and Andre Sausse, Sceaux, both of France, assignors to Rhone-Poulenc S.A., Paris, France

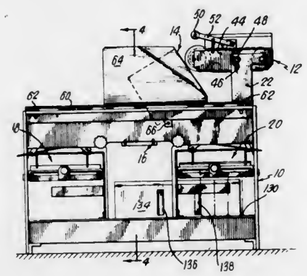
Filed Sept. 29, 1971, Ser. No. 184,890
Claims priority, application France, Sept. 29, 1970, 7035149
Int. Cl. B01d 19/00
U.S. Cl. 55—159 2 Claims

A device for purging gas bubbles from a liquid in which a wall is arranged to form a passageway, at least half of the wall being in the form of a hydrophobic porous membrane having a pore size between 0.01 to 30μ. The liquid flows parallel to the membrane in a passageway between 0.5 and 10 mm maximum thickness and the gas escapes through the pores. The membrane may be formed into a tube and may act as a connector between two lengths of piping, the gas escaping between the ends of the piping. In another construction the device is in the form of a sachet having an intermediate impermeable wall, the liquid being caused to flow parallel to the sides of the wall of the sachet.

3,778,972
APPARATUS FOR HANDLING LIQUID FILLED FLEXIBLE POUCHES

Adam Chlipalski, 863 55th Ave., Lachine, Quebec, Canada

Filed Mar. 28, 1972, Ser. No. 238,873
Int. Cl. B65b 35/56
U.S. Cl. 53—159 18 Claims



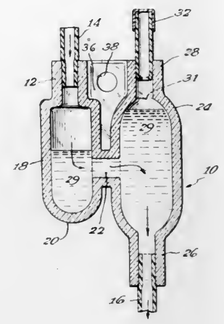
A liquid pouch handling apparatus which includes a pivoting cradle adapted to collect a plurality of pouches and then drop them into an outer bag held by a pair of oppositely pivoting jaws below the cradle, and sealing stations adjacent the path of the outer flexible bag and liquid filled pouches whereby tension fingers are included for engaging the open end of the outer bag and retaining it under tension while the top of the bag is being sealed by heat-sealing means.

3,778,973
BUBBLE TRAP FOR REMOVAL OF BUBBLES FROM BIOLOGICAL FLUIDS UNDER STERILE CONDITIONS

Felix Jesus Martinez, Palatine, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Dec. 23, 1971, Ser. No. 211,397
Int. Cl. B01d 19/00
U.S. Cl. 55—199 8 Claims

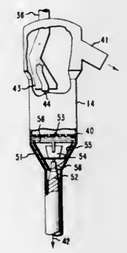
A bubble trap for liquid flowing in a conduit comprises an inlet port communicating with one end of a first chamber. The other end of the first chamber is closed, and a lateral port is defined in the side of the first chamber, communicating with the side of a second chamber between the ends thereof. The second chamber has an outlet port at an end opposite the inlet port, and a bubble collection port at an end adjacent the inlet port. The bubble collection port is closed with a resealable diaphragm, to permit the repeated aseptic insertion of a syringe to remove trapped gas.



3,778,974
APPARATUS

John M. Iwasyk, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 19, 1972, Ser. No. 299,092
Int. Cl. B01d 57/00
U.S. Cl. 55—199 2 Claims

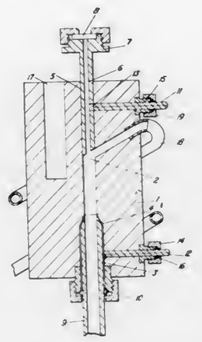


A steam polymer separator is provided that includes an upright tubular vessel having an outlet adjacent the bottom thereof, and a transfer screw with a shaft extending through the bottom of the separator. An open cage structure is attached to the top of the screw. In order to accentuate plug flow in the melt pool in the vessel, the cage structure is modified with a centrally positioned bottomless cup attached thereto. The size and shape of the cup are determined by formulae.

3,778,975
GAS CHROMATOGRAPHY

David Robert Deans, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 29, 1971, Ser. No. 193,708
Claims priority, application Great Britain, Nov. 9, 1970, 53,117/70
Int. Cl. B01d *15/08*; B21d *43/10*
U.S. Cl. 55—197 5 Claims

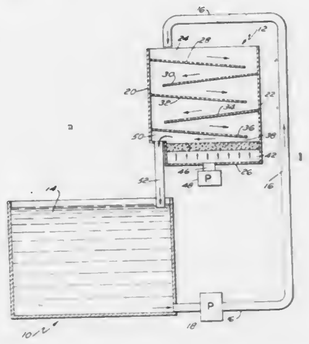


"Tailing" of peaks in gas chromatography is reduced by providing a bleed of gas through places in chromatographic apparatus which part of a sample may enter and thus be held up.

3,778,976
DEGASSING APPARATUS FOR A FISH AQUARIUM OR THE LIKE

Robert B. Pond, Mansfield, Mass., assignor to Atom Manufacturing Co., Inc., South Attleboro, Mass.

Filed Jan. 21, 1972, Ser. No. 219,679
Int. Cl. B01d *47/02*; E04h *3/20*
U.S. Cl. 55—206 5 Claims

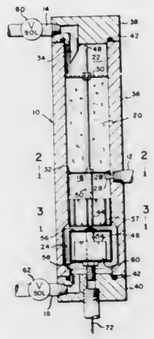


Degassing apparatus for a fish aquarium or the like comprising means for feeding the contaminated water from the aquarium to the upper end of the degasser housing, the housing having baffle means for causing the water to flow downwardly therethrough in a zigzag path and in a thinned-out state, until the water reaches a lower chamber, porous means such as an air stone forming the bottom of said lower chamber and defining the top wall of an air chamber located therebeneath, means for introducing air under pressure into said air chamber whereby said air is forced upwardly through the porous means to effect the desired gaseous exchange with the thinned-out water in order to reconstitute same, and means for recycling the reconstituted water back to the aquarium.

3,778,977
GAS INSTRUMENT LIQUID SEPARATOR

Alvie P. Conn, 7926 Ridgeview Dr., Houston, Tex.

Filed May 22, 1972, Ser. No. 255,437
Int. Cl. B01d *50/00*
U.S. Cl. 55—219 9 Claims

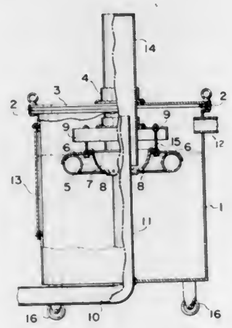


A separator for removing liquid hydrocarbons from a gas instrument line is disclosed. The miniature and compact separator utilizes impingement and centrifugal action for primary removal of entrained liquids, as well as a shredded coalescing material for further separation. The outlet chamber utilizes a probe to further prevent liquid carryover. Straightening vanes and a float chamber are provided for removal of the liquids.

3,778,978
DUST COLLECTOR

Masao Matsushita, Kuritagun, Japan, assignor to Matsushita Dendokogu Co., Ltd., Osaka City, Japan

Filed Nov. 30, 1971, Ser. No. 203,137
Claims priority, application Japan, Aug. 10, 1971, 46/71444
Int. Cl. B01d *47/02*
U.S. Cl. 55—223 1 Claim

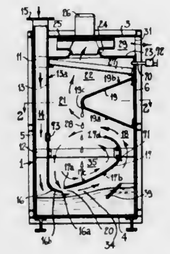


A dust collector comprising a closed water tank and a floating member for receiving dusty air and blowing it into the water contained in a confined bowl-like depression formed in a base plate of the floating member so as to splash the water upward to a tray placed above said bowl. By rebounding repeatedly between the tray and bowl, water screens are formed around dusty air and catch dusts which settle down at the bottom of the water tank.

3,778,979
METHOD OF AND APPARATUS FOR CLEANING GASES

Gerard Friedling, Vernier, and Marcel Chuard, Meyrin, both of Switzerland, assignors to Technicair S.A., Chatelaine, Vernier, Switzerland

Filed Mar. 30, 1971, Ser. No. 129,447
Claims priority, application Switzerland, May 14, 1970, 7239/70
Int. Cl. B01d *47/02*
U.S. Cl. 55—227 3 Claims

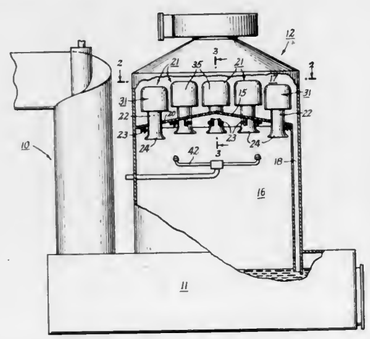


A method of cleaning gas contaminated by dust and like particles utilising an apparatus comprising a nozzle defined by a liquid surface and the surface of a wall and through which the gas is forced so that some of it takes up liquid, a channel extending downstream from said nozzle to a chamber formed above said wall and providing a turbulent zone in which the gas becomes wetted throughout, an opening being formed in the wall to communicate said chamber with the upper part of the nozzle whereby wetted gas is returned from the chamber to the upper part of the nozzle to wet that portion of the gas which passes through the nozzle without contacting the surface of the liquid.

3,778,980
GAS DRYING APPARATUS

Carlo A. Vancini, Stamford, Conn., assignor to Peabody Engineering Corporation, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,664
Int. Cl. B01d *47/16*
U.S. Cl. 55—238 4 Claims

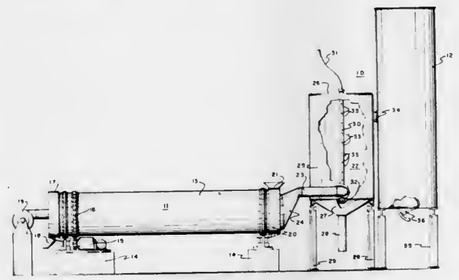


Apparatus for removing suspended matter from gases including a transverse baffle plate having openings for the passage of gases and separating units in said openings including a central pipe through which the gases pass and having vanes to cause rotation of the gas stream for the centrifugal separation of the suspended matter. A cap registers with said pipe having a central opening through which cleaned gases pass and has a deflecting annular rim with a depending skirt for deflecting the gases with a reversal in direction around the outside of said pipe to remove suspended matter by impingement.

3,778,981
EXHAUST CLEANER

Samuel Scott Ross, 1570 Sunset Strip, Mountain Home, Idaho

Continuation-in-part of Ser. No. 202,291, Nov. 26, 1971. This application Mar. 21, 1973, Ser. No. 343,586
Int. Cl. B01d *47/06*
U.S. Cl. 55—263 3 Claims



The exhaust cleaner comprises a steam scrubber in communication with a source of particulate aerosols through a duct which is disposed at a tangent to the lower portion of the steam scrubber, the steam scrubber including upstandingly disposed cylindrical walls, a flat horizontally disposed enclosure wall at the uppermost terminal end of the cylindrical walls, and downwardly projecting, substantially cone-shaped walls at the lowermost terminal end of the cylindrical walls; a dependently mounted steam conduit being supplied with steam under pressure from a suitable source and having a plurality of suitably disposed exitway holes; an exitway through which condensed water and particulates are discharged at the lowermost terminal end of the cone-shaped walls; and a heat exhaust duct discharging heated gases and the like into a suitable exhaust stack.

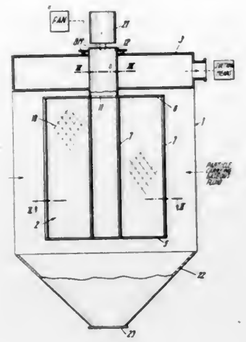
3,778,982
SCRUBBER FOR REMOVING PARTICULATE MATTER FROM GASEOUS FLUID

Gerhard Birke, Langenberg, Germany, assignor to Firma W. Ernst Haas & Sohn, Sinn/Dillkreis, Germany

Filed May 25, 1972, Ser. No. 256,914
Claims priority, application Germany, May 28, 1971, P 21 26 594.1
Int. Cl. B01d *46/08*
U.S. Cl. 55—290 10 Claims

A filter unit is interposed in the flow path of a stream of particle-gaseous fluid and can be rotated about an upright axis. The filter unit has a pair of vertically spaced plates connected by connecting elements about which a web of filter material is trained to surround an interior chamber. The gaseous fluid passes through the filter material into the interior of the chamber from which the now filtered gaseous fluid is withdrawn by a conduit normally in communication with the chamber and also in communication with a suction source. The particulate matter is retained at the exterior side of the web of filter material. The filter unit can be rotated about its upright axis to thereby eject the retained particulate matter by centrifugal force from the web of filter material, and a control

arrangement interrupts the communication between the filter chamber and the withdrawal conduit for filtered material in



automatic response to rotation of the filter unit, restoring the communication when the rotation terminates.

3,778,983

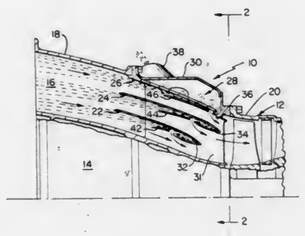
INTEGRAL MULTICHANNEL SEPARATOR

Gregers G. Rygg, Oxford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Aug. 30, 1972, Ser. No. 284,771

Int. Cl. B01d *45/08*

U.S. Cl. 55—306 **7 Claims**



An integral multichannel separator for separating and removing foreign particles from engine inlet air is disclosed. The multichannel separator utilizes a plurality of concentric rings mounted in the air inlet passageway to divide the passageway into multiple flow paths. Each ring has a particle entrapping portion at the trailing edge. Each particle entrapping portion of the rings is connected with scavenge struts which support the rings as well as transport the particles for disposal. Deflector rings cooperate to prevent particle rebound into the main airstream.

3,778,984

GAS LIQUID SEPARATOR FOR USE IN A REFRIGERATION SYSTEM

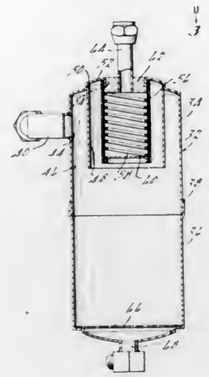
John J. Lawser, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 2, 1971, Ser. No. 120,147

Int. Cl. B01d *50/00*

U.S. Cl. 55—333 **1 Claim**

A gas liquid separator for use in a refrigeration circuit having a rotary compressor in which oil is mixed with refrigerant as the latter is circulated through the refrigeration cycle, said separator being situated between the compressor and the condenser portion of the cycle and including a swirl chamber for receiving the compressed refrigeration gas and oil mixture



whereby the oil is centrifuged from the gas, collected and returned through an oil port to the inlet side of the compressor for recycling.

3,778,985

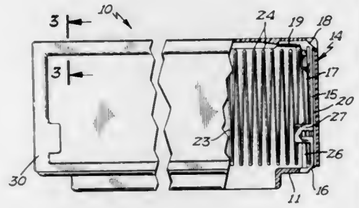
AIR CLEANER WITH FOLDING SIDE WALLS

Paul A. Daigle, Castle Rock, and Donald D. Gronholz, Bloomington, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Feb. 9, 1972, Ser. No. 224,748

Int. Cl. B01d *27/08*

U.S. Cl. 55—497 **5 Claims**



A unitary filter housing molded from a plastic material is shown, including a bottom wall with an aperture, and a pair of opposing, two-piece side walls. A rectangularly-shaped pleated filter element extends between the side walls. The side walls each have an outer wall portion hinged to the bottom wall, and an inner wall portion hinged to the top edge of the outer wall portion. The inner wall portion extends downwardly between a pair of outer folds of the pleated filter so that at least one outer fold extends upwardly between the wall portions. Hinged end walls are provided to seal the ends of the filter element and to aid in holding the side walls in position.

3,778,986

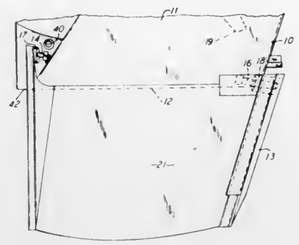
GRASS CATCHER BAG AND MOWER ASSEMBLY

Bruce C. Wright, Kansasville, and Donald G. Erickson, Racine, both of Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed June 8, 1972, Ser. No. 260,917

Int. Cl. A01d *35/26*

U.S. Cl. 56—202 **7 Claims**



A grass catcher bag and mower assembly of a mower housing and a chute pivotally mounted on the housing and a grass catcher of the bag type mountable on the mower housing. The grass catcher has an extension for engaging the chute and pivoting the chute out of the way when the bag is being mounted onto the mower, and the mower and the grass catcher have mating portions which interengage for suspending the catcher on the mower.

3,778,987

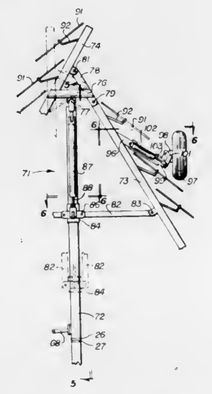
WINDROW RAKE OPENING DEVICE AND ONE WHEEL TRACTOR

Everett V. Rankins, P.O. Box 132, Manteca, Calif.

Continuation-in-part of Ser. No. 51,597, July 1, 1970, Pat. No. 3,672,459. This application May 18, 1972, Ser. No. 254,730

Int. Cl. A01d *77/06*

U.S. Cl. 56—377 **8 Claims**



A windrow rake has two rake wheel mounting members pivotted relative to each other and to a longitudinal beam so that by hydraulic controls operable from the towing vehicle the members can be moved between a transport position in which the members are parallel and close to the beam and a working position in which the members diverge outwardly forwardly. Ground wheels for the members are hydraulically turned automatically so that the wheels rotate in planes parallel to the direction of movement. The beam may be towed by a conventional tractor or by a one-wheel self-propelling attachment shown in copending U.S. application Ser. No. 51,597 filed July 1, 1970 which is now U.S. Pat. No. 3,672,459. Auxiliary retractable wheels may be mounted on said attachment to support it in upright position where not connected to the rake or other implement.

3,778,988

METHOD OF LAYING PROTRUDING FIBRES, AND INCREASING ABRASION RESISTANCE OF TEXTILE YARNS

Wilfred A. S. White, and Edgar R. West, both of Dundee, Scotland, assignors to Jute Industries Limited, Dundee, Scotland

Filed May 12, 1970, Ser. No. 36,634

Int. Cl. D01h

U.S. Cl. 57—12 **12 Claims**



Textile yarn spun from natural or man-made staple fibres and of the kind, such for example, as jute, from which fibres usually protrude at random so that the yarn has an appearance of hairiness, has a fine wrapping material, for example nylon yarn or film in tape form, extending helically and externally thereof, by which fibres which would otherwise protrude from the yarn are laid along and anchored to the body of the latter, the abrasion resistance of the yarn is increasd and fibre loss in subsequent processing is decreased. The wrapping material is fed to the yarn during spinning in a spinning frame, as the yarn passes, while twisting, from the drawing rollers to the eye of the wharve of a spindle of the frame, so that the wrapping material becomes helically wrapped around the yarn externally.

3,778,989

APPARATUS FOR WITHDRAWING THREAD

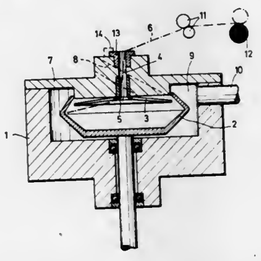
Rudulf Schon, Stuttgart, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed June 20, 1972, Ser. No. 264,531

Claims priority, application Germany, June 21, 1971, P 21 30 724.4

Int. Cl. D01h *1/12*

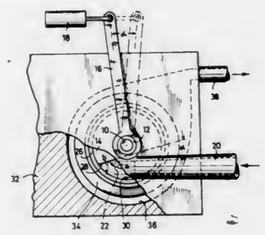
U.S. Cl. 57—58.89 **10 Claims**



A spindleless spinning machine having a rotatable spinning turbine and coaxial outlet by which the thread is withdrawn.

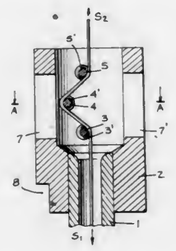
The device is provided with means having deflecting zones or surfaces, at the end of the outlet farthest from the turbine. This deflecting means is adjustable to selectively present one of a number of arrays and combination of deflecting surfaces to the thread, in order to obtain more selective results.

3,778,990
DEVICE FOR OPEN END SPINNING
Gerhard Bartling, Burgstall, and Rudolf Schon, Stuttgart, both of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany
Filed June 20, 1972, Ser. No. 264,530
Claims priority, application Germany, June 21, 1971, P 21 30 738.0
Int. Cl. D01h 1/12
U.S. Cl. 57—58.95 **11 Claims**



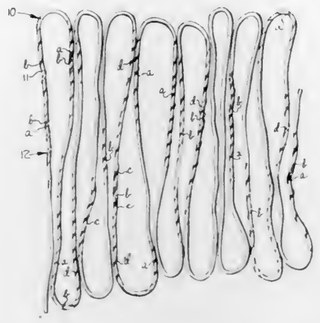
Apparatus for spinning yarn provided with a cup shaped turbine, having an open end face and located within an enclosed housing. A feed tube mounted to impinge a fiber stream on to the inner wall of the turbine. A baffle is interposed between the feed tube and the turbine having a guide slot defined by at least one vertical wall, adapted to deflect the fiber stream. The baffle is rotatably mounted to adjust the wall relative to the fiber stream to thus vary the degree of deflection.

3,778,991
TWIST TUBE FOR A FALSE-TWIST DEVICE
Josef Brummer, Wil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland
Filed Jan. 31, 1972, Ser. No. 222,091
Claims priority, application Switzerland, Feb. 10, 1971, 1941/71
Int. Cl. D02g 1/06, 1/04
U.S. Cl. 57—77.3 **6 Claims**



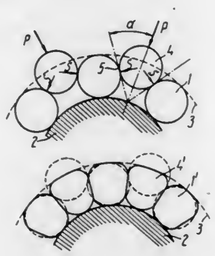
A twist tube for a false-twist device for texturing textile yarns wherein the ratio of tension of yarn being drawn from the tube to tension of yarn entering the tube is substantially reduced by providing at least three yarn deviation elements in the tube over which the yarn may pass, the elements being spaced in the direction of the longitudinal axis of the tube.

3,778,992
NOVELTY YARN
Johnathan L. Rhyne, Lincolnton, N.C., assignor to Paul C. Rhyne, Jr. and Joseph M. Rhyne, Jr., Lincolnton, N.C., part interest to each
Filed Dec. 8, 1971, Ser. No. 205,887
Int. Cl. D02g 3/34, 3/36
U.S. Cl. 57—139 **10 Claims**



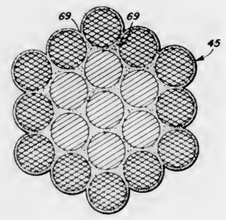
A novelty yarn formed of randomly arranged, pretwisted, relatively short, auxiliary strands spirally twisted around a ground strand of spun staple fibers.

3,778,993
METHOD OF MANUFACTURING TWISTED WIRE PRODUCTS
Mikhail Fedorovich Glushko, prospekt Shevchenko, 15/5, kv. 17, and Viktor Klementievich Skalatsky, prospekt Gagarina, 2, kv. 21, both of Odessa, U.S.S.R.
Filed Dec. 7, 1971, Ser. No. 205,664
Int. Cl. D07b 1/06
U.S. Cl. 57—145 **3 Claims**



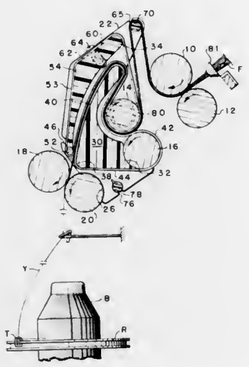
A method of manufacturing twisted wire products having a core and at least one outer layer of wires laid about the core consists in arranging the outer layer of wires in two groups during manufacture; one group, which is a substantial fraction of the number of wires in the outer layer is twisted and disposed in contact with the core so as to form as many peripheral gaps as there are remaining wires other than those in the fraction; the second group of wires which are the remaining wires are disposed in peripheral gaps so formed, and laid radially away from the core and in contact with adjacent wires of the first group; the outer layer so arranged in two groups is subjected to radially compressive deforming forces so as to wedge the conductors of the second group into the peripheral gaps so as to produce a tight and improved twisted wire product. Circular wires of the same diameter may be used for the core and the outer layer. Twisted wire products having a plurality of outer layers may be produced by forming single outer layers as said and building them in succession; alternatively, the product may be formed in a single stage of plastic deformation and subsequent thermal treatment as required. The core may be of circular, oval, oblong or triangular shape.

3,778,994
CORROSION RESISTANT WIRE ROPE AND STRAND
Darral V. Humphries, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.
Continuation-in-part of Ser. No. 112,211, March 30, 1971, Pat. No. 3,681,911, which is a continuation-in-part of Ser. No. 850,148, Aug. 14, 1969, abandoned. This application Aug. 9, 1972, Ser. No. 278,413
Int. Cl. D07b 1/16
U.S. Cl. 57—149 **15 Claims**



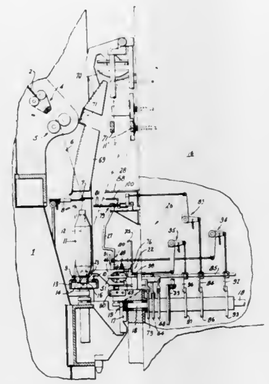
A wire rope or strand is provided with a plastic foam type internal sealant and corrosion resistant outer strands or wires to provide superior corrosion resistance at low cost for wire strands and ropes requiring a bare metal surface.

3,778,995
DRAFTING METHOD
Grady H. Sanders, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Sept. 9, 1971, Ser. No. 179,022
Int. Cl. D02g 3/00; D01h 5/00
U.S. Cl. 57—156 **1 Claim**



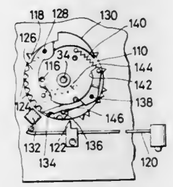
Method of drafting sliver which has at least some of the staple fibers therein longer than the distance between center lines of adjacent pairs of rolls in a drafting system.

3,778,996
METHOD FOR DOFFING A BOBBIN AND FORMING A TRANSFER TAIL
Raymond E. Olson, and Harold R. Yone, both of Rockford, Ill., assignors to Barber-Coleman Company, Rockford, Ill.
Division of Ser. No. 67,367, Aug. 27, 1970, Pat. No. 3,696,602. This application Apr. 13, 1972, Ser. No. 243,655
Int. Cl. D01h 9/10
U.S. Cl. 57—156 **5 Claims**



A method for simultaneously removing a filled bobbin and its trailing bobbin thread from a spindle in a single operation, winding a new transfer tail on the spindle, and then severing the thread between the spindle and bobbin.

3,778,997
CLOCKWORK MECHANISM FOR LARGE CLOCKS
Heinz Jauch, Villingen-Schwenningen, Germany, assignor to Erhard Jauch, Uhrenfabrik, Villingen-Schwenningen, Stadtbezirk Schwenningen, Switzerland
Filed Feb. 24, 1972, Ser. No. 229,091
Claims priority, application Germany, Feb. 26, 1971, P 21 09 138.3
Int. Cl. G04b 21/04
U.S. Cl. 58—13 **12 Claims**

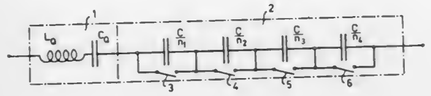


A clockwork mechanism for clocks with chimes comprising a clock movement, a striking mechanism, a control device for the striking mechanism, a driving motor for driving the striking mechanism and a set of batteries for the driving motor all constituted as seperate units mounted in the housing of the clock. At least the motor and batteries are detachably mounted for each replacement.

3,778,998
VARIABLE CAPACITOR FOR ADJUSTING THE FREQUENCY OF A QUARTZ-CRYSTAL CLOCK

Jean-Claude Berney, Lausanne, Switzerland, assignor to Bernard Golay S.A., Lausanne, Switzerland

Filed May 2, 1972, Ser. No. 249,495
Claims priority, application Switzerland, May 14, 1971, 7083/71
Int. Cl. G04c 3/00
U.S. Cl. 58—23 AO 5 Claims

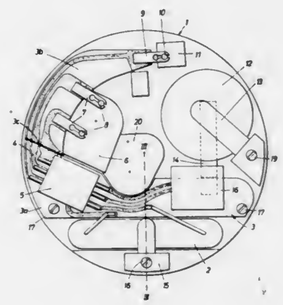


A variable capacitor for adjusting the frequency of a quartz-crystal clock, including a plurality of fixed capacitors of predetermined capacitances tapped in series, conductive elements connected to the poles of each of the fixed capacitors, and a plurality of movable blades adapted to provide for short-circuiting of each of the fixed capacitors across the conductive elements independently of the other capacitors so as to facilitate equi-incremental step variations of the quartz oscillation frequency.

3,778,999
ELECTRONIC WRISTWATCH

Georges C. Vuffray, La Chaux-de-Fonds, Switzerland, assignor to Girard-Perregaux SA, La Chaux-de-Fonds, Switzerland

Filed Dec. 13, 1972, Ser. No. 314,670
Int. Cl. G04c 3/00; G04b 37/00
U.S. Cl. 58—23 R 11 Claims

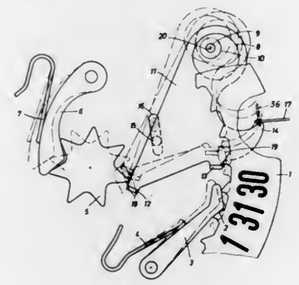


An electronic wristwatch having a printed circuit which is flexible in part and reinforced in part. An integrated circuit is mounted on the reinforced part while a motor, which drives the hands of the watch, is connected to the flexible part. The flexible part has clamps which extend therefrom and cooperate with conductive studs located on the motor to connect the motor to the integrated circuit. Also, the flexible part and the reinforced part lie in different planes with a permanent fold connecting the two planes. At the fold copper conductive paths lying on a flexible insulating support have a cross-section, as compared with the cross-section of the insulating support, such that the malleability of the copper assures the permanence of the fold. A frequency standard element located near the reinforced part of the printed circuit is connected to the integrated circuit by flexible conductors to limit mechanical coupling.

3,779,000
CORRECTION DEVICE FOR DAY-AND-DATE CALENDAR WATCHES

Peter Schmid, Diessbach b. Bueren, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services SA, Bienne, Switzerland

Filed Oct. 3, 1972, Ser. No. 294,507
Claims priority, application Switzerland, Oct. 6, 1971, 14542/71
Int. Cl. G04b 19/24
U.S. Cl. 58—58 6 Claims



A correction mechanism for a calendar watch which connects a control organ such as the winding stem of the watch to first and second indicating organs such as day and date indicators. The correction mechanism comprises a driving organ which is one clement of a jointed system with four joints. The driving organ has two drive beaks associated, respectively, with the first and second indicating organs. The beaks move together in a non-circular, closed curve in which one beak moves in a clockwise direction while the other beak is moving in a counter-clockwise direction. When a beak moves in one direction about the non-circular curve it will advance its associated indicating organ one step whereas movement of that beak in the opposite direction will not cause such indicating organ to advance one step.

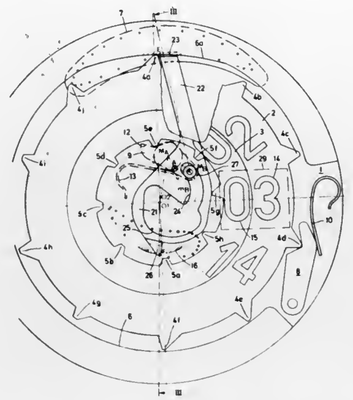
3,779,001
DATE-INDICATING DEVICE FOR A CALENDAR TIMEPIECE

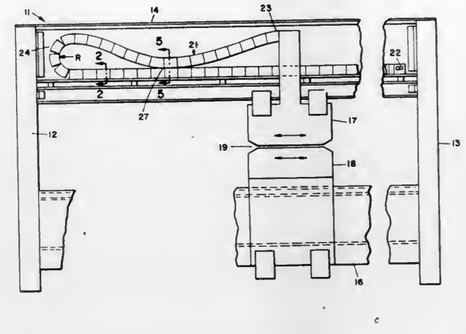
Hans Kocher, Buren a/Aare, and Peter Schmid, Diessbach, both of Switzerland, assignors to Societe Suisse pour l'Industries Horlogere Management Services SA, Bienne, Switzerland

Filed Jan. 30, 1973, Ser. No. 328,122
Claims priority, application Switzerland, Feb. 9, 1972, 1829/72
Int. Cl. G04b 19/24
U.S. Cl. 58—58 12 Claims

Date-indicating device for a calendar timepiece comprising

two concentric rings, the inner ring containing tens digits and the outer ring containing units digits, both rings driven in a rotary movement only or a rotary and translatory movement by driving elements on a linkage once each 24 hours.



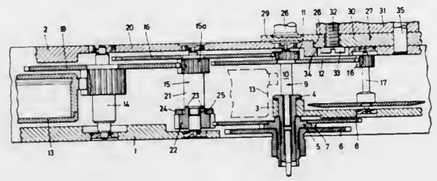


between the pivot axes on the base to allow for sag in the carrier to thus allow a long length carrier to be used. On the other hand, a fixed radius of curvature is provided so that the cable which is carried is not bent excessively.

3,779,002
WATCH MOVEMENT WITH OFF-CENTER CENTER WHEEL AND PINION

Roland Zaugg, Grenchen, Switzerland, assignor to A. Schild S.A., Grenchen, Switzerland

Filed Jan. 29, 1973, Ser. No. 327,428
Claims priority, application Switzerland, Jan. 27, 1972, 1213/72
Int. Cl. G04b 33/00
U.S. Cl. 58—59 4 Claims



Watch movement with an off-center center wheel driving a third wheel with a friction-coupled auxiliary pinion driving the minute hand which permits setting of the hand while the third wheel is continuously driven, a fourth wheel extending at the same level as said off-center center wheel, resulting in a thinner watch movement structure.

3,779,003
CABLE CARRIER WITH REMOVABLE PLASTIC LINKS

Mathew G. Boissevain, Los Altos Hills, and Erik B. Dahlin, Saratoga, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.

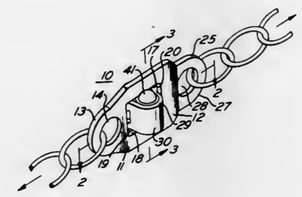
Filed Sept. 7, 1972, Ser. No. 286,853
Int. Cl. F16g 13/02
U.S. Cl. 59—78.1 9 Claims

A cable carrier consisting of a chain with a plurality of links for conveying electric power, water, etc. to the point of application on equipment-in-motion in which each links consists essentially of plastic and includes U-shaped base and U-shaped cover. The cover has a width less than the distance

3,779,004
FUSIBLE LINK

Fred A. Gloeckler, Huntington Valley, Pa., assignor to Star Sprinkler Corporation of Florida, Philadelphia, Pa.

Filed Sept. 12, 1972, Ser. No. 288,280
Int. Cl. F16g 15/00
U.S. Cl. 59—93 7 Claims



A fusible link is provided suitable for use for controlling a weight release, for a door closer or for a sprinkler, which can be used in tension or compression, and which includes two link elements one interengaged with the other and held against movement by a transverse fusible temperature responsive retainer.

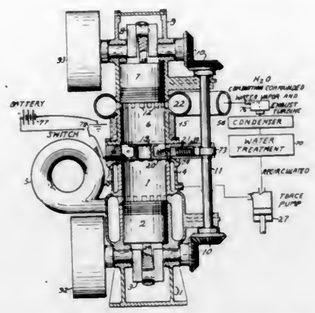
3,779,005
TURBOCHARGED PISTON ENGINE HAVING IMPROVED ECONOMIZER AND SELF IGNITION

George C. Sorensen, 589 S.E. 4th St., Ontario, Oreg.

Continuation-in-part of Ser. No. 800,200, Feb. 18, 1969, abandoned. This application May 10, 1971, Ser. No. 141,868
Int. Cl. F02b 9/00
U.S. Cl. 60—11 1 Claim

A conventional turbocharged internal combustion engine of either 2 stroke cycle or 4 stroke cycle having auxiliary mechanism adapted to capture hot products of combustion or exhaust gas and by compression elevated heat provides ignition, superheated steam expansion energy and includes an ex-

haust turbine for utilization of powerful blowdown energy and by great reduction of final exhaust temperature facilitates condensation of combustion compounded water for recirculation through an included water reclamation and combustion cooling system.



3,779,006

FLAME SHIELD FOR A GAS TURBINE ENGINE

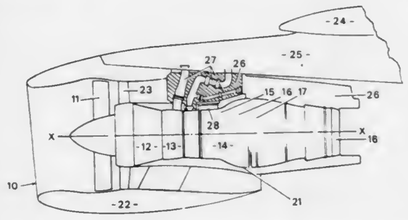
Brynley Lewis, Nottingham; George Langham Miller, Spondon; Kenneth John Brooks, Nottingham, and Arthur George Goss, Derby, all of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 4, 1971, Ser. No. 195,612

Claims priority, application Great Britain, Nov. 30, 1970, 56,738/70

Int. Cl. F02g *3/02*; **F16p** *1/02*

U.S. Cl. 60—39.11 **11 Claims**



A flame shield for a gas turbine engine comprises a sheet of refractory metal, preferably tantalum, having at least on the side subject to flame attack a material which prevents oxidation of the sheet and on the other side an insulating layer. The flame shield is so positioned and so dimensioned that in the event of failure of the combustion equipment of a gas turbine engine in an aircraft, any flame issuing therefrom is prevented from coming into contact with other parts of the engine or the aircraft fuselage for a predetermined length of time.

3,779,007

FUEL DELIVERY AND CONTROL SYSTEM FOR A GAS TURBINE ENGINE

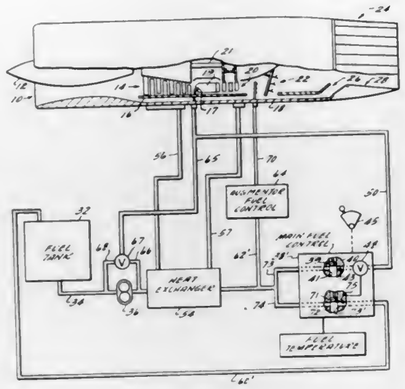
John Paul Lavash, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.

Filed Apr. 28, 1972, Ser. No. 248,694

Int. Cl. F02c *9/10*

U.S. Cl. 60—39.28 R **5 Claims**

A fuel delivery and control system is provided for use with a gas turbine engine and includes a fuel-oil heat exchanger for reducing engine oil temperature wherein a minimum rate of fuel flow is maintained through the heat exchanger and main fuel control by including a second recirculating valve in parallel flow connection to the fuel control metering valve. The recirculating valve is arranged to automatically open and close as a function of fuel temperature, metering valve position and in-flight engine fuel shutoff.



3,779,008

ELECTROPHILLIC GAS GENERATING COMPOSITIONS AND PROCESS

Charles B. Henderson, Alexandria, and Richard F. Hoglund, Reston, both of Va., assignors to Atlantic Research Corporation, Alexandria, Va.

Filed Dec. 15, 1970, Ser. No. 98,453

Int. Cl. C06d *5/06*

U.S. Cl. 60—207 **38 Claims**

Gas-generating, combustion-sustaining compositions, which produce electrophillic combustion products in amounts effective to attach free electrons in the atmospheric wake of a rapidly moving vehicle, consisting essentially of a metallic component selected from the group consisting of molybdenum, tungsten, molybdenum oxide, tungsten oxide, and mixtures thereof, an oxidizing agent, and an organic fuel binder as required or desired.

Process for removing free electrons from the atmospheric wake of a rapidly moving vehicle comprising injecting into said wake the combustion products of the aforedescribed gas-generating, combustion-sustaining compositions.

3,779,009

CATALYTIC METHOD OF PRODUCING HIGH TEMPERATURE GASES

Joseph Friedman, Encino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 503,442, Oct. 23, 1965, abandoned. This application Nov. 4, 1968, Ser. No. 772,985

Int. Cl. C06d *5/08*

U.S. Cl. 60—217 **8 Claims**

A system for providing high temperature gases comprising a single storage tank containing a nondetonable mixture of an inert gas, an oxidizer and a fuel. A catalytic bed is functionally connected therewith whereby the oxidizer and fuel are ignited by the catalytic bed, producing hot gases.

3,779,010

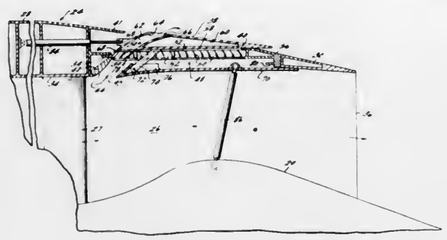
COMBINED THRUST REVERSING AND THROAT VARYING MECHANISM FOR A GAS TURBINE ENGINE

Anthony Joseph Chamay, Marblehead, and Richard Paul Johnston, Peabody, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Aug. 17, 1972, Ser. No. 281,478

Int. Cl. F02k *3/04*

U.S. Cl. 60—226 A **7 Claims**



A thrust reversing mechanism for reversing the flow through either the exhaust nozzle or fan duct of a jet propulsion powerplant is further modified to include apparatus for varying the throat area of the exhaust nozzle or fan duct as a means of optimizing powerplant efficiency throughout its operating range.

3,779,011

FUEL UNIT FOR A HYBRID HOT-GAS GENERATOR

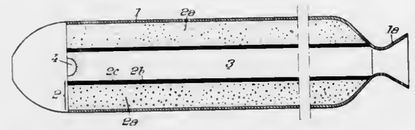
Claude H. Verdier, Neauphle-le-Chateau, France, assignor to Office Nationale d'Etudes et de Recherches Aerospatiales, Chatillon-sous-Bagneux and Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale, Delegation Ministerielle pour l'Armement, Direction des Poudres, Paris, France

Filed July 19, 1971, Ser. No. 163,987

Claims priority, application France, July 22, 1970, 7027104

Int. Cl. F02k *9/00*

U.S. Cl. 60—251 **6 Claims**



A fuel unit for a hybrid hot-gas generator comprises two consumable constituent parts of different compositions which are separated by a partition which in storage conditions is stable and chemically inert with respect to said two parts and which is consumable during operation of the generator. Reactions between said constituent parts during storage, which might impair the combustion of the fuel unit, are thereby prevented.

3,779,012

ROCKET ENGINE

Xaver Suter, Thalwil, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

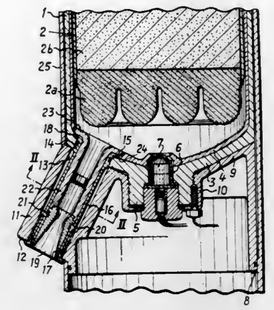
Filed May 17, 1972, Ser. No. 254,083

Claims priority, application Switzerland, May 27, 1971, 7753/71

Int. Cl. F02k *1/00*, *9/02*

U.S. Cl. 60—271 **4 Claims**

A rocket engine incorporating an extrusion molded-combustion chamber having a domed chamber floor with a substantially central cylindrical projection. A nozzle is retained in a bore at the combustion chamber floor. The bore is arranged eccentrically at the combustion chamber floor and a holding body means is secured to the central projection and serves to fix the nozzle in desired direction.



3,779,013

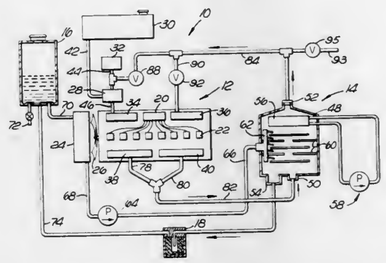
CLOSED SYSTEM INTERNAL COMBUSTION ENGINE

George E. Faber, Los Angeles, and Frank F. Kates, Thousand Oaks, both of Calif., assignors to Krun Corporation, Santa Fe Springs, Calif.

Continuation-in-part of Ser. No. 161,820, July 12, 1971, abandoned. This application Oct. 30, 1972, Ser. No. 302,169

Int. Cl. F02b *75/10*; **F02n** *25/06*

U.S. Cl. 60—278 **13 Claims**



The exhaust gases from an internal combustion engine which is using gasoline and air as fuel, are passed through a catalytic condenser for converting and/or condensing the products of combustion into various liquids and solids which are removed from the condenser, with the remaining and/or newly formed gases being recycled to the cylinders of the engine for further combustion and/or conversion. The system is operable fully closed with no gaseous exhaust to the atmosphere, with the solids from the condenser being removed by means of a filter, and with the liquids being received in a storage tank.

3,779,014

EXHAUST EMISSION CONTROL DEVICE

Hidetaka Nohira, and Masaru Kokokawa, both of Susono City, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Toyota City, Japan

Filed Oct. 14, 1971, Ser. No. 189,267

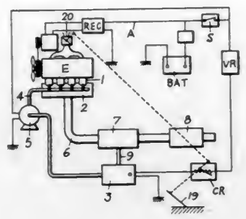
Claims priority, application Japan, May 26, 1971, 46/35983

Int. Cl. F01n *3/16*; **F02b** *75/10*

U.S. Cl. 60—286 **3 Claims**

An exhaust emission control device comprising a hydrogen producing means, a control means for effecting control of the

quantity of hydrogen produced by said hydrogen producing means in accord with the production of exhaust gases of combustion, and a hydrogen supply line for supplying hydrogen produced by said hydrogen producing means to an oxides of nitrogen reductive reaction chamber.

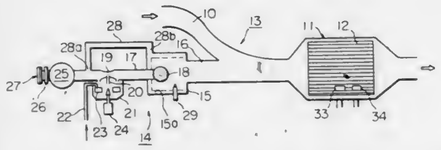


3,779,015

EXHAUST GAS TREATING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hiroyuki Maruoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Feb. 8, 1972, Ser. No. 224,518
Claims priority, application Japan, Aug. 17, 1971, 46/62454
Int. Cl. F01n *3/14*
U.S. Cl. 60—286 **4 Claims**



A temperature control system for the catalyst of an exhaust gas afterburner arranged in the exhaust pipe to maintain the reaction temperature within an optimum oxidizing range by blowing heated air through the afterburner when the temperature is below the optimum range and by blowing cool air through the afterburner when the temperature is above the optimum range. Heated air is obtained by burning an air-fuel mixture in a chamber communicating with the exhaust pipe upstream of the afterburner.

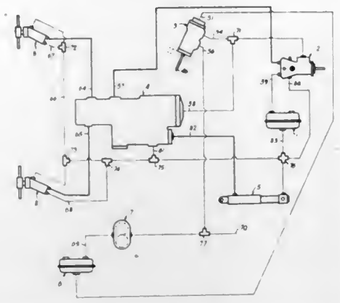
3,779,016

APPARATUS FOR CONTROL OF HYDRAULIC CIRCUITS

Oldrich Ryc, Pribor, Czechoslovakia, assignor to TAIRA, narodni podnik, Koprivince, Czechoslovakia

Filed Apr. 17, 1972, Ser. No. 244,662
Int. Cl. F15b *11/16*
U.S. Cl. 60—329 **10 Claims**

A system for controlling a pair of hydraulic motor circuits, comprising a source of primary fluid, first conduit means including a valve having hydraulically actuable bypass means for delivering primary fluid to one or both of the said motor circuits. A hydraulic adjustable pump is interposed between the source of primary fluid and the valve. A secondary fluid system including second conduit means having a thermo valve is provided. The thermo valve is responsive to a predetermined level of heat generated by the operation of the motors



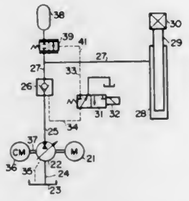
to cause delivery of the secondary fluid simultaneously to the adjustment means and the bypass means.

3,779,017

HYDRAULIC LIFT

Fumio Fujisawa, Mito-shi; Mitsuaki Takenoshita; Ichiro Nakamura, and Hiroshi Yumino, all of Katsuta-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,833
Claims priority, application Japan, Sept. 17, 1971, 46/71800
Int. Cl. F15b *1/02*
U.S. Cl. 60—413 **5 Claims**



A hydraulic lift having an accumulator and an associated flow restricting valve disposed in a fluid conduit supplying a fluid under pressure for lifting a cage. In the hydraulic lift, the flow restriction of the flow restricting valve is varied in response to variations in the load carried by the cage so as to prevent transient oscillations tending to occur during starting, deceleration and stoppage of the cage.

3,779,018

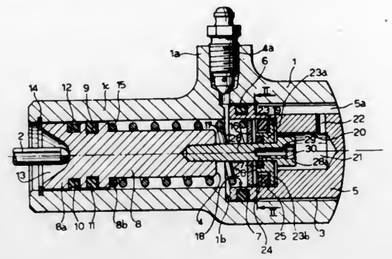
MASTER CYLINDERS

Philip Sidney Baldwin, Florence, Italy, assignor to FIAT Societa per Azioni, Turin, Italy; a part interest

Filed Mar. 15, 1972, Ser. No. 234,837
Claims priority, application Italy, Mar. 27, 1971, 68038 A/71
Int. Cl. F15b *7/08*
U.S. Cl. 60—575 **5 Claims**

The invention relates to a master cylinder for a hydraulic fluid system such as the hydraulic braking system of a motor vehicle. The cylinder has a main piston and an auxiliary piston between which there is a precompressed spring which transmits movement of the auxiliary piston, caused by its engagement with a push rod operated by the brake pedal, to the main piston. The main piston has two passageways by means of which the space between the main and auxiliary pistons can communicate with a reservoir of hydraulic fluid for the circuit. One of the passageways is controlled by a valve which closes under the action of a flow of fluid from the said space toward

the reservoir, and the other is controlled by a valve, linked to the auxiliary piston, which is closed after a predetermined approach of the auxiliary piston towards the main piston against the action of the precompressed spring.

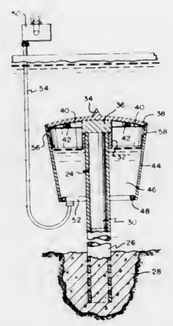


3,779,019

PROTECTION AGAINST SHEET ICE AT AN OFFSHORE STRUCTURE

Ivo C. Pogonowski, and Paul D. Carmichael, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 10, 1971, Ser. No. 179,387
Int. Cl. E02b *3/00, 15/00*
U.S. Cl. 61—1 **5 Claims**



The invention relates to means for protecting a stationary marine platform or structure from the contingency of damage due to contact with moving sheet ice. One or more submerged sheet ice shattering members are disposed about the platform at appropriate intervals and anchored to the ocean floor. Each of said members comprises a vertically movable, fluid actuated fracturing cap. Said cap is slidably positioned on a guide pile or the like whereby to permit controlled vertical reciprocatory movement of the cap to be periodically urged into contact with the underside of an ice sheet. The resulting stress induced in the ice will cause the latter to yield and shatter into smaller, less harmful pieces.

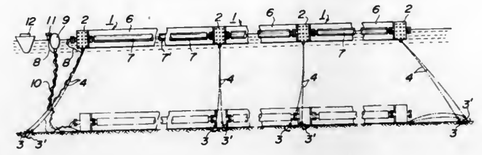
3,779,020

IMMERSIBLE OIL FENCE ASSEMBLY

Tateo Muramatsu, and Kuninori Aramaki, both of Yokohama City, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Mar. 14, 1972, Ser. No. 234,579
Claims priority, application Japan, Mar. 20, 1971, 46/15685
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **12 Claims**

An immersible oil fence assembly including alternately connected oil fence units and immersible buoys. The oil fence units have tubular float means connected to inflatable bags of the immersible buoys. By inflating and deflating the tubular



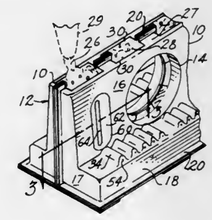
float means and the inflatable bags, the oil fence is selectively floated and immersed. The buoys are anchored to station the oil fence assembly in position.

3,779,021

METHOD OF MAKING A HEADWALL

Robert H. Green, 550 High Point Ln., N.E., Atlanta, Ga.

Filed Dec. 27, 1971, Ser. No. 212,217
Int. Cl. E02d *5/20*
U.S. Cl. 61—16 **5 Claims**



The expression "headwall" refers to the reinforced concrete structure which supports one end of a large pipe and retains earth fill on one side. Instead of building concrete forms on the site the headwall is poured into a form made from two identical lightweight plastic concave sections which are made to shape and size by vacuum forming identical plastic sheets placed back-to-back to produce the mold which is a shell having the two sections attached together by plastic strips or the like. Each concave plastic section is vacuum formed with an intricate shape to produce an outwardly extending base and an upright retaining wall which may have a circular or oval-shaped hole passing through the walls to accommodate the drainage pipe. The plastic walls around the hole may be weak so as to distort around the pipe or may be split. The completed form has openings at the top through which concrete is poured. The bottom may be open so that concrete can come into contact with the irregular terrain or soil.

3,779,022

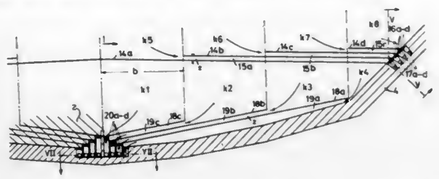
DAM HAVING AN INTERNAL APRON AND MEANS FOR INDICATING LEAKAGE OF APRON

Alfred Feiner, Porz-Westhoven, Germany, assignor to Strabag Bau-A.G., Cologne-Deutz, Germany

Filed Feb. 24, 1972, Ser. No. 228,865
Claims priority, application Germany, Mar. 9, 1971, P 21 11 034.9
Int. Cl. E02b *7/04*
U.S. Cl. 61—31 **23 Claims**

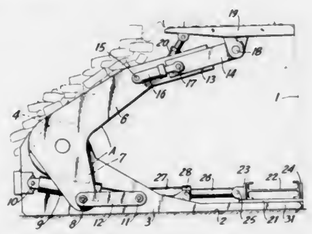
A dam having a core packing providing a sealing apron, laterally supported by upstream and downstream embankments, and vertically supported by a foundation toe wall, is provided with means for detecting the location of leaks in the sealing apron. A filter wall vertically supported by the toe wall is laminated with the core packing, for receiving leakage of the core packing at about the location where leakage occurs.

A plurality of leakage water collectors are disposed in the toe wall, and the collectors are communicated, respectively, with



different sections of the filter wall. The location of leaks can be detected by observation of water received at the collectors.

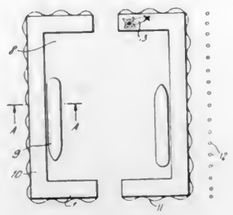
3,779,023
SHIELD ROOF SUPPORT
Manfred Koppers, Duisburg-Hamborn, Germany, assignor to Rheinstahl AG, Essen, Germany
Filed June 23, 1972, Ser. No. 265,489
Claims priority, application Germany, Dec. 1, 1971, P 21 59 535.7
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **10 Claims**



A shield roof-support has a sole plate, at least one roof or heel plate and a hydraulic element supporting the roof plate from the sole plate. The hydraulic supporting element includes a piston-cylinder actuator mounted inside the sole plate and extending along the longitudinal axis thereof, the movable element of the actuator being connected to one arm of an angle lever pivoted on a horizontal axis on the sole plate and having its other arm pivotally connected to the roof plate, the angle between the two arms of the lever preferably being adjustable. The lever transforms the force-action line of the actuator from the horizontal direction to the vertical direction. Thrust means on the longer arm of the lever are pivotally connected to the roof plate at a fulcrum, and a locking actuator is interconnected between the roof plate and the longer arm of the lever. A second piston-cylinder actuator extending longitudinally of the sole plate is operable to advance the sole plate relative to the working face of a mining operation, for example.

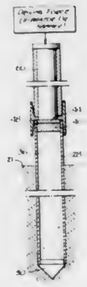
3,779,024
STATIONARY STORAGE AND MOORING PLANT RESTING ON THE BOTTOM OF THE SEA
Gottfred Greve, Oslo, Norway, assignor to A/S Hoyer-Ellefsen, Oslo, Norway
Filed June 21, 1971, Ser. No. 155,136
Claims priority, application Norway, June 23, 1970, 2442/70
Int. Cl. E02b *17/00*; E02d *5/00*; B63b *35/02*
U.S. Cl. 61—46 **11 Claims**

A stationary plant for servicing ships comprises a mooring structure resting on the bottom of the sea and projecting upwardly above the surface of the sea. The mooring structure extends around a central area to generally enclose that area to form a generally enclosed sheltered harbour having at least



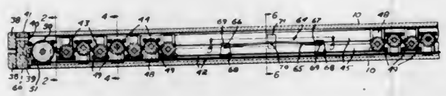
one entrance for vessels, and the mooring structure comprises at least one hollow water-tight caisson capable of storing a liquid such as oil, gas or the like.

3,779,025
PILE INSTALLATION
Augustus P. Godley, Hohokus, and William E. Kruse, Plainfield, both of N.J., assignors to Raymond International, Inc., New York, N.Y.
Filed Oct. 7, 1971, Ser. No. 187,289
Int. Cl. E02d *5/00*, *5/20*
U.S. Cl. 61—53.52 **13 Claims**



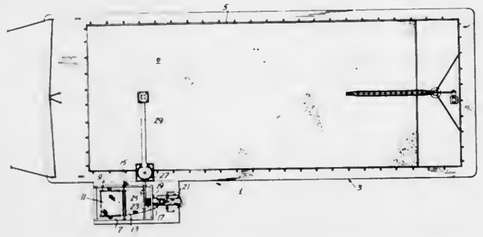
Piles are installed by driving a tubular lower pile shell section into the ground to a first location beyond which the shell section refuses to penetrate, thereafter, filling the shell with concrete, allowing the concrete to harden and stiffen the shell, and thereafter continuing to drive the concreted shell down to a final bearing depth substantially beyond the first location.

3,779,026
EXPANSIBLE MANDREL EMPLOYING LEAF SPRINGS TO BIAS ITS SECTIONS INTO ITS PILE ENTERING RELATIONSHIP
Charles L. Guild, 7 Stone Tower Ln., Barrington, R.I., and Willard B. Goodman, P.O. Box No. 62, Newport, Oreg.
Filed Apr. 3, 1972, Ser. No. 240,381
Int. Cl. E02d *7/30*
U.S. Cl. 61—53.72 **12 Claims**



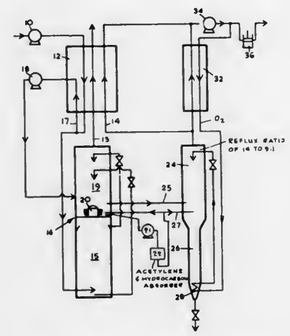
An expansible mandrel is disclosed of the type provided with power operated means by which the mandrel sections are forced into their pile-gripping relationship and with means resiliently biasing the sections towards their pile-entering relationship, each in the form of a leaf spring extending lengthwise of the mandrel and connected at its ends to one mandrel section with the other mandrel section having a member so engaged with the central part of the leaf spring as to tension it as the the mandrel sections are forced apart into their pile-entering relationship.

3,779,027
METHOD AND APPARATUS FOR A CONTINUOUS DUMBBELL TUBE ANCHORING SYSTEM FOR SUBMARINE PIPELINES
Emmett J. Murphy, Woodside, Calif., assignor to Marcona Corporation, San Francisco, Calif.
Filed Nov. 2, 1972, Ser. No. 302,995
Int. Cl. F16l *1/00*; B65b *1/06*
U.S. Cl. 61—72.1 **14 Claims**



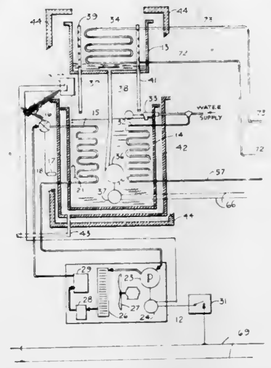
A system for anchoring submarine pipelines by forming a continuous anchor having the shape of a dumbbell tube and constructed from an elongated envelope of plastic filter material which is seamed at sea and filled with ballast during its installation at its final position on the sea bottom. Alternatively, the dumbbell tube may be formed and filled with ballast and be installed continuously and simultaneously with the installation of the pipe sections comprising the submarine pipeline.

3,779,028
IMPROVED KRYPTON XENON RECOVERY METHOD
Paul Maurice Schuftan, Twickenham; John Walter Armond, Great Brookham; John Henry Leader, Cheshunt, and George James Davis, Enfield, all of England, assignors to The British Oxygen Company Limited, London, England
Filed Oct. 8, 1971, Ser. No. 187,907
Claims priority, application Great Britain, Oct. 12, 1970, 48,402/70
Int. Cl. F25j *3/04*, *3/02*
U.S. Cl. 62—22 **14 Claims**



Krypton and xenon are recovered from the oxygen produced in the reboiler of an air separation unit by passing the oxygen into a two-section rectification column having at least one reboiler and in which the reflux ratio is selected to give a primary krypton/xenon concentrate of low methane content and containing at least 10 percent krypton.

3,779,029
REFRIGERATION BOOSTER
Raoul M. Larriva, 5020 E. First St., Tucson, Ariz.
Filed June 16, 1972, Ser. No. 263,456
Int. Cl. F25c *1/12*
U.S. Cl. 62—138 **8 Claims**

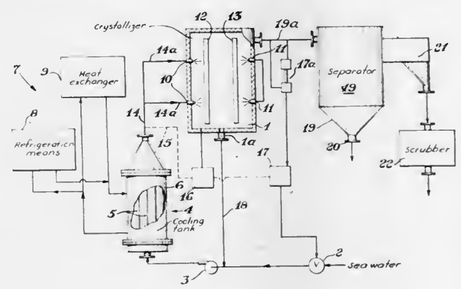


An auxiliary refrigeration unit cooling coil is immersed in water which also surrounds a second coil. The latter contains water which, after pre-cooling, feeds an ice-making machine, thus increasing the thermal effectiveness of the latter. A third coil, also immersed in the water, contains refrigerant and is connected between the ice maker compressor and its condenser, thus again increasing the thermal effectiveness of the ice maker.

In one embodiment the first and second coils are in a lower tank while the third coil is in an upper tank, with water circulation between the two tanks.

In a second embodiment all three coils are in one tank.

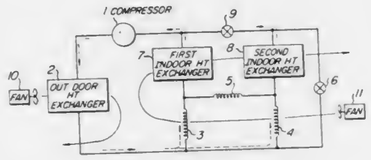
3,779,030
METHOD OF MAKING SODIUM CHLORIDE CONCENTRATE FROM SEA WATER
John S. Best, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 1, 1971, Ser. No. 203,730
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **6 Claims**



A continuous method of producing a sodium chloride concentrate from sea water which comprises initially seeding sea

water with sodium chloride, cooling this admixture to approximately the eutectic temperature of the sodium chloride solution and separating the ice crystals that form from the residual sodium chloride concentrate; thereafter a portion of the remaining sodium chloride concentrate is added to fresh sea water, and the process is repeated. This continuous process thereby yields a sodium chloride concentrate and ice.

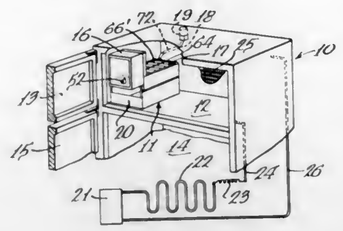
3,779,031
AIR-CONDITIONING SYSTEM FOR COOLING DEHUMIDIFYING OR HEATING OPERATIONS
Mitsuo Akiyama, and Sigeyasu Suzuki, both of Tochigi-ken, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 19, 1971, Ser. No. 173,037
Claims priority, application Japan, Aug. 21, 1970, 45/82845; Sept. 24, 1970, 45/93953; Dec. 23, 1970, 45/128957
Int. Cl. F25b *13/00*
U.S. Cl. 62—160 **4 Claims**



An air conditioner comprising a compressor, an outdoor heat exchanger, a first indoor heat exchanger, a second indoor heat exchanger, a first capillary tube, a second capillary tube, a third capillary tube, a first valve, a second valve and a piping communicating said elements with each other, said compressor communicating with one side of said outdoor heat exchanger and said first indoor heat exchanger, the other side of said outdoor heat exchanger communicating with one side of said first capillary tube and said second capillary tube, the other side of said first capillary tube communicating with the other side of said first indoor heat exchanger, the other side of said second capillary tube communicating with one side of said second indoor heat exchanger, the other side of said second indoor heat exchanger and said compressor communicating with each other by said second valve, a series circuit of said second capillary tube and said second indoor heat exchanger and said first valve being connected in parallel with each other, said third capillary tube being connected between the side of said first indoor heat exchanger closer to said first capillary tube and the side of said second indoor heat exchanger closer to said second capillary tube, said first valve being closed and said second valve being opened during a cooling operation, and said first valve being opened and said second valve being closed during a dehumidifying operation.

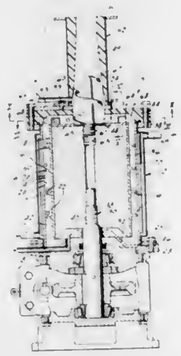
3,779,032
ICE MAKER WATER FILL CONTROL
Duane C. Nichols, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 2, 1972, Ser. No. 277,324
Int. Cl. F25c *1/04*
U.S. Cl. 62—233 **8 Claims**

An ice maker having electrical control means for automatically controlling the making of ice bodies such as in a home refrigerator. The electrical control includes a switching mechanism having adjustable means for varying the amount of



water delivered to the ice maker tray to correspondingly vary the size of the ice bodies formed in the apparatus.

3,779,033
HARVEST AUGER FOR ICE MAKER
Donald F. Swanson, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Apr. 17, 1972, Ser. No. 244,595
Int. Cl. F25d *1/14*
U.S. Cl. 62—354 **7 Claims**

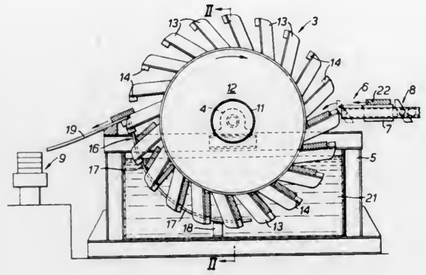


An upright ice maker of the type having a combined auger and press, has means for increasing the capacity of the ice maker. The harvest auger is provided with non-parallel flights having a variable pitch angle with respect to the vertical axis of the auger which is greater at the top than at the bottom of the harvest auger. A series of scavenging vanes are mounted on top of the harvest auger and arranged to rotate with the harvest auger for moving the ice products radially inwardly from the wall of the freezing chamber through a mechanical transfer means to the compression auger.

3,779,034
COOLING TRANSPORT MECHANISM
Hubert Davies Morgan, Papcastle, England, assignor to British Steel Corporation, London, England
Filed May 3, 1972, Ser. No. 249,865
Claims priority, application Great Britain, May 7, 1971, 13,732/71
Int. Cl. F25d *25/02*
U.S. Cl. 62—381 **12 Claims**

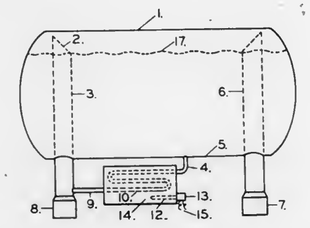
This invention relates to a mechanism for transporting steel sections through quenching tanks as they leave the finishing mill in a hot state.

The invention provides a cylindrical framework rotatable in a housing and having a number of sets of arms outstanding from its periphery. A fixed arcuate rack is interleaved with these arms and extends from an exit station on one side of the framework towards an entry station on the opposite side. The arrangement is such that the steel billets/slabs are individually



deposited on the trailing faces of selected sets of the arms at the entry station and as the framework rotates they are carried downwardly towards the rack and then driven upwardly along it by the leading faces of the succeeding set of arms, the rake of these arms at the exit station being such that they are discharged under gravity to a stacker mechanism.

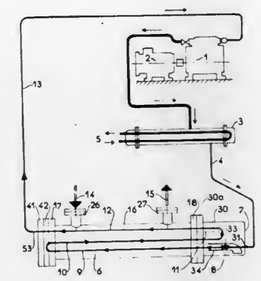
3,779,035
SUCTION ACCUMULATORS FOR REFRIGERATION SYSTEMS
Daniel E. Kramer, 2009 Woodland Dr., Yardley, Pa.
Filed Dec. 17, 1971, Ser. No. 209,162
Int. Cl. F25b *43/00*
U.S. Cl. 62—503 **8 Claims**



In a suction accumulator for refrigeration systems, the improvement which comprises an external conduit for the flow of oil and of trapped liquid refrigerant which conduit passes in heat exchange relation with a heat storage means allowing the stored heat to be transferred to the liquid refrigerant and oil as it flows through the conduit.

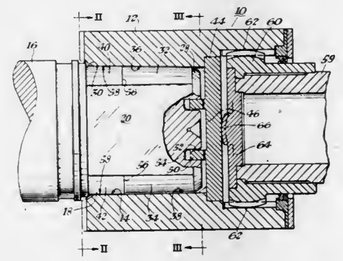
3,779,036
EXPANSION AND EVAPORATION APPARATUS FOR REFRIGERATING MACHINES
Pierre Girardin, Nantes, France, assignor to Froid Industrial Brissonneau York S. A., Paris, France
Filed Jan. 20, 1972, Ser. No. 219,424
Claims priority, application France, Jan. 21, 1971, 7102901
Int. Cl. F25b *43/00*
U.S. Cl. 62—512 **4 Claims**

Apparatus for expanding and evaporating refrigerating fluid in a compression-type refrigerating machine for cooling a fluid such as water, brine, air, moist air, circulating outside the tubes of a tube bundle, said apparatus being characterized in that it comprises (i) a tube bundle part of which is fed, inside the tubes, by forced circulation of refrigerating fluid with a flow exceeding the flow vaporized, the other part of the said bundle serving to dry and to superheat the vapour produced in the first part, (ii) a device, for separating excess liquid, positioned between the first and second parts of said tube bundle,



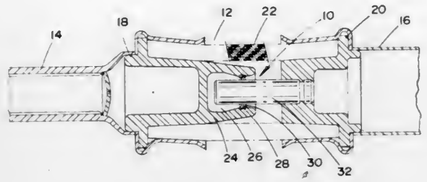
(iii) a separation chamber arranged to collect said excess liquid, and (iv) an ejector taking up said excess liquid to recirculate it, said ejector operating with a motive fluid consisting of the high pressure liquid refrigerating fluid coming from the condenser, said motive fluid being expanded in the neck of the primary nozzle of the ejector.

3,779,037
COUPLING FOR MILL ROLLS
Andrew J. Petros, Oakdale, and Clement S. Rybar, Pittsburgh, both of Pa., assignors to Mesta Machine Company, Pittsburgh, Pa.
Filed May 8, 1972, Ser. No. 251,300
Int. Cl. F16c *35/08*
U.S. Cl. 64—5 **14 Claims**



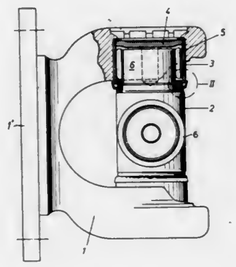
A coupling for a mill roll and the like comprises a connector having a coupling bore therein, with the bore having a first surface shaped for close fitting engagement with a neck portion of the roll adjacent one extremity of the coupling engagement therebetween and a second surface shaped for close fitting engagement with the roll neck adjacent the opposite extremity of such engagement and a third surface disposed generally between the first and said second surfaces shaped for an increasingly close fit with the roll neck as the roll neck is increasingly inserted into the connector.

3,779,038
CENTERING DEVICE FOR FLEXIBLE SHAFT COUPLINGS
Robert E. Stuemky, Elizabeth, Colo., assignor to The Gates Rubber Company, Denver, Colo.
Filed Apr. 19, 1972, Ser. No. 245,419
Int. Cl. F16d *3/28*
U.S. Cl. 64—11 B **12 Claims**



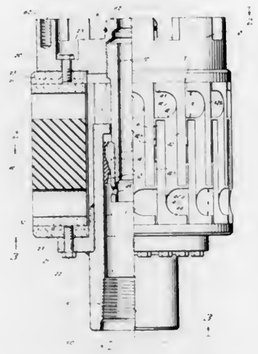
A centering device for flexible shaft couplings that includes a tubular member or alternately a hub having a socket; an elastomeric ring disposed in the tubular member or socket; and a stud extending into the socket or tubular member, and through the elastomeric ring to be radially supported thereby.

3,779,039
SEALING DEVICE FOR THE NEEDLE BEARING OF A UNIVERSAL JOINT JOURNAL PIN
Josef Schultenkamper, Essen, Germany, assignor to Gelenkwellenbau GmbH, Essen, Germany
Filed Dec. 15, 1970, Ser. No. 98,265
Claims priority, application Germany, Dec. 16, 1969, P 19 63 079.6
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 A **7 Claims**



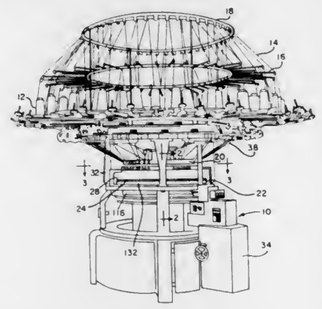
Sealing device for needle bearings of a universal joint journal pin which is carried by a spider member and is receivable in a bearing bushing press-fitted into a leg of a universal joint fork, the bearing bushing having a free end face with an outer terminal edge, includes a sealing ring of elastomeric material mounted on the journal pin adjacent the spider member proper, said sealing ring having a substantially V-shaped cross section and being formed with one sealing lip abutting the spider member and another sealing lip sealingly engaging the free end face of the bearing bushing; and a ring of synthetic material having a substantially L-shaped cross section and formed with a radially directed leg seated with prestressing on said sealing ring between said sealing lips thereof, and a leg extending axially parallel and engaging the bearing bushing for protecting the seal between said other sealing lip and the bearing bushing against penetration by water and dust, said axially parallel leg being of predetermined diameter so that the inner terminal edge thereof engages with prestressing the outer terminal edge of the bearing bushing.

3,779,040
VIBRATION DAMPENERS
William R. Garrett, Midland, Tex., assignor to Smith International Inc., Midland, Tex.
Continuation of Ser. No. 069,463, Sept. 3, 1970, which is a continuation of Ser. No. 815,856, April 14, 1969. This application Nov. 8, 1971, Ser. No. 196,819
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 NM **23 Claims**



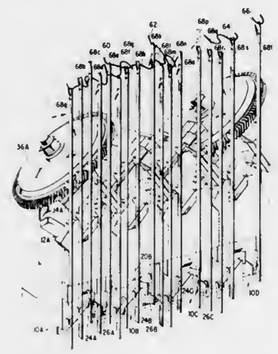
A vibration dampener may be used between the drill steel and power swivel of a boring machine. A plurality of sectors may be disposed side by side and connected to rings at their ends to form an annulus. Each sector may comprise a metal-rubber sandwich. The annulus may be used to provide means to transmit torque and compression. A pair of tubes with sealed telescopic connection therebetween and travel limit stops may be used to provide connection for transmitting tension and drilling fluid.

3,779,041
KNITTING MACHINE
George Gati, 4 Park Ave., New York, N.Y.
Filed Aug. 8, 1972, Ser. No. 278,787
Int. Cl. D04b *9/10, 35/00*
U.S. Cl. 66—14 **20 Claims**



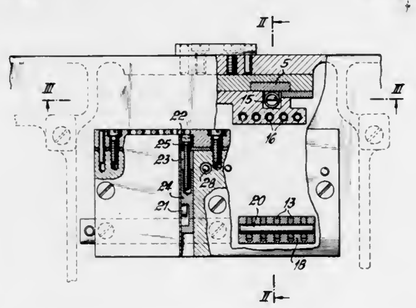
The present invention relates generally to knitting machines which incorporate electrically operated knitting needles of the double hook latch type which have no butts and wherein the machine itself has no cams. Electromagnetic energizers are employed to reciprocate the buttless knitting needles by including longitudinally spaced coils which are activated in accordance with a predetermined sequence of operation to reciprocate the needle to form a predetermined knitted pattern configuration. The machine also includes a vacuum take-up device to control heat flow through the apparatus so that the heat which is developed when the coils are activated may be utilized for heat setting of the newly knitted fabric.

3,779,042
CIRCULAR KNITTING MACHINES FOR PRODUCING A PATTERNED FABRIC
Donald W. Reagan, Hialeah, Fla., assignor to The Singer Company, New York, N.Y.
Filed Oct. 14, 1971, Ser. No. 189,422
Int. Cl. D04b *13/76*
U.S. Cl. 66—50 A **5 Claims**



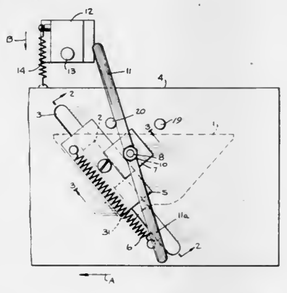
A circular knitting machine is provided with: (a) a pattern wheel for one or more of the feeds but for less than all of the feeds of the machine to raise selected needles to knit positions, (b) a two-position jack pivotally mounted on each needle, (c) jack-engageable cam means for determining the positions of the jacks in advance of non-pattern wheel feeds, and (d) a cam at each of the non-pattern wheel feeds to contact jacks when in one of the said positions and raise only those needles having their jacks in such position.

3,779,043
STITCH CAM ADJUSTING MEANS FOR A FLAT KNITTING MACHINE
Ernst Goller, Pfullingen, Germany, assignor to H. Stoll and Company, Reutlingen, Germany
Filed Oct. 11, 1972, Ser. No. 299,615
Claims priority, application Germany, Oct. 16, 1971, P 21 51 677.8
Int. Cl. D04b *7/00*
U.S. Cl. 66—77 **10 Claims**



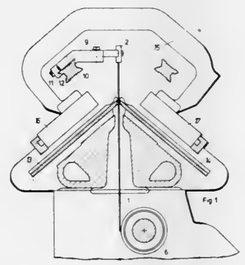
In a flat knitting machine, a mechanism for adjusting the leader stitch cam for its position as the follower stitch cam during the return stroke in the opposite direction. A plurality of selector levers are moved to an inoperative raised position and held there by a magnet as the selected one of said levers is pushed off of the magnet and urged downwardly to an active position. The selector levers are individually adjustable to different stitch cam adjusting positions. A raised portion of the stitch cams engage whichever selector lever is selected.

3,779,044
METHOD AND APPARATUS FOR ADJUSTING STITCH CAMS
Hans Schieber, and Erich Krause, both of Bopfingen, Germany, assignors to Universal Machinenfabrik Dr. Rudolf Schieber G.m.b.H., Westhausen, Germany
Filed Jan. 20, 1972, Ser. No. 219,342
Claims priority, application Germany, Mar. 11, 1971, P 21 11 803.6
Int. Cl. D04b *7/00, 15/36, 35/00*
U.S. Cl. 66—78 **11 Claims**



Automatic cam setting device arranged on knitting machines at the end of carriage travel and including a fixed pin which engages and flips a lever on the carriage to loosen a cam which is then positioned as the carriage and cam move over a cam setting device. The cam is locked in its new position as the carriage moves in the opposite direction.

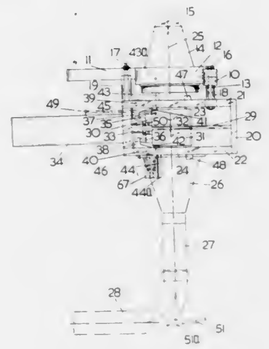
3,779,045
DEVICE FOR SPREADING OF THE KNITTING ON FLAT-BED KNITTING MACHINES
Erich Krause, Bopfingen, Germany, assignor to Universal Machinenfabrik Dr. Rudolf Schieber KG, Westhausen, Postfach, Germany
Filed June 1, 1972, Ser. No. 258,766
Claims priority, application Germany, June 7, 1971, P 21 28 262.2
Int. Cl. D04b *35/00, 15/88*
U.S. Cl. 66—147 **6 Claims**



A device for maintaining knitted material stretched during its movement in a knitting machine from the knitting operation to a material removal roll, the device comprising guide

bars around which the material selvages are knit, the guide bars extending from above the knitting needles to the material removal roll and being adjustable by means of adjusting screws to swing in the plane of the knitted material to provide control and adjustment of their stretching effect on the material.

3,779,046
APPARATUS FOR SEPARATING HOSIERY ARTICLES
Charles Willin Perkins, Skeffington, England, assignor to Hosiery Equipment Limited, Leicester, England
Filed Jan. 28, 1970, Ser. No. 6,521
Claims priority, application Great Britain, Feb. 5, 1969, 6,127/69
Int. Cl. D04b *35/00, 15/88*
U.S. Cl. 66—147 **8 Claims**



A machine attachment for separating tubular knitted articles knitted in succession and connected each to the next succeeding one by a frangible joining thread, in accordance with which the fabric is gripped above and below a separation line and between the positions of gripping the fabric is deflected laterally by a pusher device until the joining thread is fractured and the leading article separated from the next succeeding one, the separated article being subsequently drawn away through a discharge tube. The pusher device is conveniently formed as part of a short tube through which the fabric from the knitting machine passes, which tube is slidable laterally between upper and lower openings for passage of the fabric, which openings have flaps to close them and provide for the gripping of the fabric.

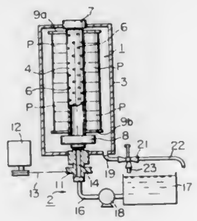
3,779,047
APPARATUS FOR THE TREATMENT OF PERMEABLE TEXTILE MATERIALS
Heinz Fleissner, Frankfurt am Main, Germany, assignor to Vepa Aktiengesellschaft, Basel, Switzerland
Continuation-in-part of Ser. No. 40,055, May 25, 1970, abandoned. This application Oct. 27, 1972, Ser. No. 301,295
Claims priority, application Germany, May 24, 1969, P 19 26 742.6
Int. Cl. D06c *1/08*; **B05c** *3/132*
U.S. Cl. 68—5 D **19 Claims**

An apparatus for treating fluid-permeable materials which includes a treatment chamber adapted to contain a gaseous or liquid treatment medium, inlet means for introducing the material to be treated to the treatment chamber, at least one perforated roller-like conveying means rotatably disposed within said treatment chamber, the conveying surface of said roller-like conveying means being provided by an outer perforated jacket means, an inner perforated jacket means spaced closely adjacent to the outer jacket means, the inner and outer jacket means cooperating to allow treatment of material of substantially differing widths without appreciably affecting the rate of flow of the treatment medium across the conveying surface, means for rotating the conveying means,



means for circulating the treatment medium from the outside to the inside of the conveying means, thereby penetrating the material being conveyed thereon, and outlet means for removing the material from the treatment chamber.

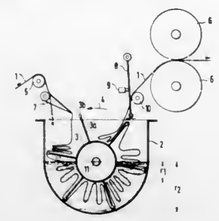
3,779,048
APPARATUS FOR CENTRIFUGAL HYDROEXTRACTION COMBINED WITH OILING OF TEXTILE PIRNS
Shigeo Kitamura; Takatugu Nakamoto; Toshihiro Kaziura, and Shuichi Kurata, all of Osaka, Japan, assignors to Kanebo Ltd., Tokyo, Japan
Filed June 14, 1972, Ser. No. 262,479
Claims priority, application Japan, June 26, 1971, 46/46487
Int. Cl. B05c *8/02*
U.S. Cl. 68—150 **13 Claims**



Apparatus including a rotary upright spindle is placed within a chamber confined by an openable mantle casing in order to extract water or watery liquid from textile pirns mounted thereon by centrifugal effect caused by a high speed axial rotation thereof, subsequent rotation of the spindle at relatively lower speed in combination with a supply pump and a cross valve causing circulation of oiling agent through the textile pirns.

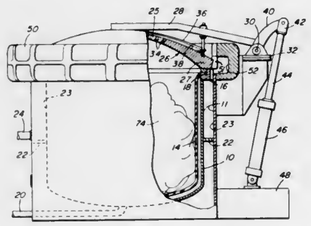
3,779,049
APPARATUS FOR THE WET TREATMENT OF A TEXTILE WEB
Arno Becker, Stuttgart-Vaihingen, Germany, assignor to Bruckner Apparatebau GmbH, Erbach/Odenwald, Germany
Filed Feb. 25, 1972, Ser. No. 229,393
Claims priority, application Germany, Feb. 25, 1971, P 21 09 009.5
Int. Cl. B05c *3/134*
U.S. Cl. 68—158 **14 Claims**

This invention relates to apparatus for the wet treatment of a textile web in a vat of liquid, the apparatus including an intermittently rotated compartmented drum disposed in the vat, conveyor means disposed in front of and behind the vat for the



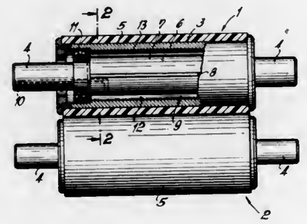
textile web, and sensor means engageable by the web for controlling the rate of movement of the web through the vat.

3,779,050
EXTRACTING
James R. Olliges, Sr., River Grove, Ill., assignor to A-T-O Inc., Willoughby, Ohio
Filed July 10, 1972, Ser. No. 270,050
Int. Cl. D06f *47/06*
U.S. Cl. 68—242 **10 Claims**



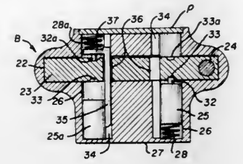
An extractor including a rigid container, a cover overlying the container and having an inner surface defining an imperforate annular region, and a vertically movable guard mounted exterior of the container.

3,779,051
WEB-TREATMENT ROLLERS OF POLYURETHANE
Eduard Kuesters, Gladbacher Strasse 457, Krefeld, Germany
Continuation of Ser. No. 35,362, May 7, 1970, abandoned. This application Feb. 6, 1973, Ser. No. 329,982
Int. Cl. D06f *45/22*
U.S. Cl. 68—248 **2 Claims**



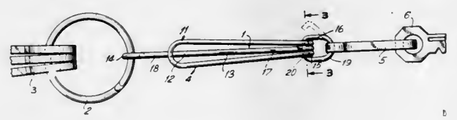
This disclosure is directed to rollers for the treatment of textile webs and similar materials wherein the rolls come in contact with treating solutions applied to the webs. The roll consists of a cylindrical core having a shell of a material with an elastic surface. The surface comprises a polyurethane coating having a Shore A hardness of 86 to 96.

3,779,052
MAGNETIC LOCK
Ronald S. Deitch, 7695 E. Quincy, Denver, Colo.
Filed Aug. 30, 1971, Ser. No. 175,998
Int. Cl. E05b *45/08, 47/00, 67/22*
U.S. Cl. 70—38 C **13 Claims**



A lock device using magnetic tumblers to release the shackle or bolt of the lock or to open or close switches of a circuit. The magnetic tumblers are mounted in guideways adjacent to a face to shift towards or away from this face responsive to the influence of magnets in a magnetic key placed against the face.

3,779,053
MEANS FOR DETACHABLE SUPPORT OF KEYS WITHIN A POCKET OF AN ARTICLE OF CLOTHING
John D. Langwell, 28 Branch Ave., Freeport, N.Y.
Filed May 22, 1972, Ser. No. 255,783
Int. Cl. A44b *15/00*
U.S. Cl. 70—456 R **14 Claims**

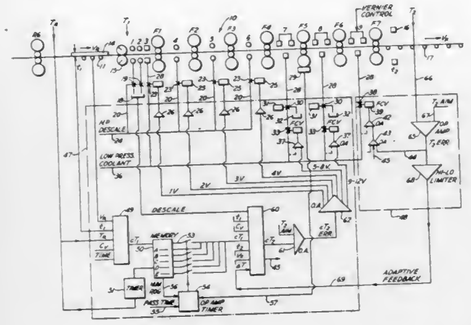


A key chain in which a key ring is attached to a clip adapted for detachable engagement with the material of a pocket of an article of clothing such that the ring and keys thereon are suspended within the pocket. Pivotably attached to the clip at an end thereof remote from the key ring is a manually engageable element which can be inserted into the pocket when the key chain is mounted in the worn position, the manually engageable element being removed from the pocket and employed to detach the clip from the pocket.

3,779,054
COOLANT CONTROL FOR HOT STRIP MILL
Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.
Filed Mar. 2, 1972, Ser. No. 231,221
Int. Cl. B21b *1/22, 45/02*
U.S. Cl. 72—13 **2 Claims**

The disclosure of the present invention relates to a strip temperature control method and apparatus for a finishing train of a hot strip rolling mill, including strip interstand coolant supply means, and a control for varying the rate of flow thereof, which includes a feed-forward control signal wherein the rate of flow is controlled in certain stands with reference

to a computed temperature and a desired temprature of the strip as it leaves the train, and a feed-backward control signal



wherein the rate of flow is controlled in one or more stands with reference to the actual temperature and a desired temperature as it leaves the train.

3,779,055

APPARATUS AND METHOD FOR MANUFACTURING INSULATED CONDUCTIVE WIRES

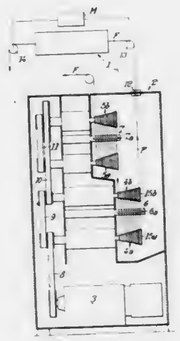
Roland Abel Goyffon, Macon, France, assignor to Manufacture De Fils Isoles Taurus (Mafit), Macon, France

Continuation-in-part of Ser. No. 785,920, Dec. 23, 1968, abandoned. This application Nov. 9, 1971, Ser. No. 197,045

Claims priority, application France, Dec. 28, 1967, 67134091

Int. Cl. B21c *1/00*; B23p *25/00*

U.S. Cl. 72—46 6 Claims



The apparatus comprises a wire-drawing machine driven in combination with an enamelling machine and an intermediate non-slip capstan. The wire-drawing machine and the enamelling machine are respectively driven by individual, independent motor means. The wire issuing from the last die of the wire-drawing machine is driven directly by the non-slip capstan into the enamelling machine. By this method of combining the wire-drawing and enamelling machines either machine can be stopped for adjustment or replacement of parts without stopping the other.

3,779,056

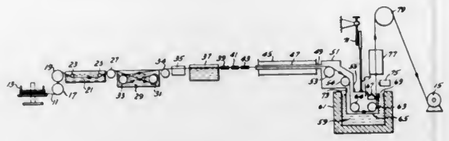
METHOD OF COATING STEEL WIRE WITH ALUMINUM

George Padjen; Robert W. Helman, and Joseph A. Brugger, all of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 28, 1971, Ser. No. 213,048

Int. Cl. B21c *23/24*; C23c *1/08*

U.S. Cl. 72—47 17 Claims



A heavy aluminum coating ranging in thickness from 10 to 15 per cent of the as-coated radius of a wire is provided on steel wire having a nominal diameter of from 0.08 to 0.25 inches by a combination of heating the wire to a temperature within a predetermined range, passing the wire at a predetermined speed related in a substantially inverse ratio to the temperature of the wire through a molten aluminum bath having a predetermined temperature and depth inversely related to each other. The particular operating conditions of the process provide a coating of the desired thickness while operating on a plateau in a curve representing the relationship between the coating thickness and the various combined parameters of the process to provide a readily controllable process of making an easily reproducible, uniform heavy aluminum coating with a very thin interfacial alloy layer on long lengths of ferrous wire. The coated wire is readily redrawable if necessary to attain a desired final gage and strength.

3,779,057

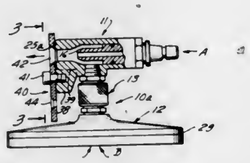
APPLIANCE FOR TREATING ESPECIALLY THIN-WALLED METAL WORK PIECES

Kent L. Sonnenberg, 750 Kappock St., Riverdale, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,433

Int. Cl. B21d *1/12*

U.S. Cl. 72—56 4 Claims



The invention concerns an appliance or tool for treating, in particular, thin-walled metal work pieces, such as automobile fenders and like metallic body parts which need repair or require straightening out of dented or bulging damaged parts thereof. The appliance is so constructed that the applicator's adaptor can be changed to operate under the action of a state of vacuum or through continuous or successive agitation under pressure of a fluid, such as air, steam, and the like. This operation may take place depending, e.g., on the damage of a work piece of the aforesaid type to be treated or repaired, so that dents, as well as bulging or projecting parts of a fender may be readily worked upon in a service station or at the garage of a home. The velocity and impact of the stream of fluid employed may be readily regulated or can be even completely stopped. The fluid may be admitted to the appliance to act under vacuum or pressure with respect to the adaptor proper applied to the work piece, thus affording the construction of a universally applicable tool for all practical purposes.

3,779,058

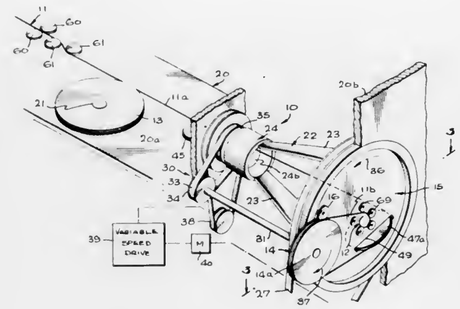
SPRING FORMING APPARATUS

Harry H. Norman, Los Angeles, Calif., assignor to Stephen Baliski, Gardena, Calif., a part interest

Filed Apr. 17, 1972, Ser. No. 244,407

Int. Cl. B21f *3/02*, *3/04*, *3/10*, *7/00*, *23/00*, *35/00*

U.S. Cl. 72—66 12 Claims



A spring forming apparatus of the type wherein a wire is twisted substantially circumferentially between an isolator wheel and a feed wheel mounted for planetary motion on a revolving platen. The improvements include the use of a pinch wheel cooperating with a single feed wheel to grip the wire adjacent its exit from the twist mechanism, together with a simplified planetary drive system in which a portion of the drive assembly is bearing mounted to a cylindrical journal at the wire input end of the platen cage.

3,779,059

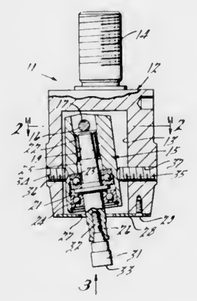
HEAD FORMING TOOL

George Mink, Warren, Mich., assignor to USI Corporation, Pasadena, Calif.

Filed Oct. 29, 1971, Ser. No. 193,873

Int. Cl. B21j *15/36*

U.S. Cl. 72—67 8 Claims



A tool for forming heads on rivets or the like. The tool includes a driven member that is rotatable about an axis and which has an internal cavity. Supported within the cavity is a tool holder which is disposed at an angle to the axis of rotation of the driven member. A work forming member or tool is rotatably journalled within the tool holder on anti-friction bearings and engages the rivet for offsetting it upon rotation.

3,779,060

METHOD AND APPARATUS FOR MAKING STEPPED RIMS

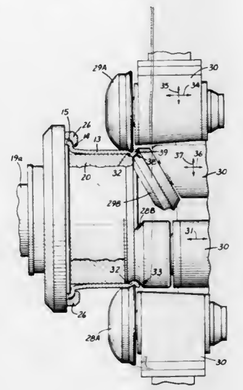
Paul B. Schroder, Hamm/Westfalen, Germany, assignor to Leifeld & Co., Ahlen/Westfalen, Germany

Filed Sept. 16, 1971, Ser. No. 181,170

Claims priority, application Germany, Oct. 28, 1970, P 20 53 005.6

Int. Cl. B21d *22/18*

U.S. Cl. 72—87 4 Claims



A method and apparatus for manufacturing a stepped rim from a cylindrical ring is provided. The ring is bent outwardly at one end to form a clinch and the opposite end of the ring is indented to form a locking ring groove.

3,779,061

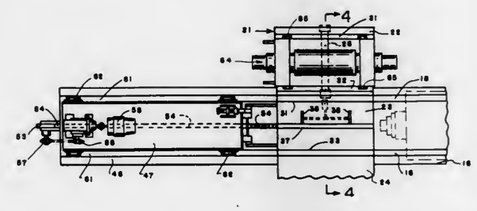
ROLL CHANGING DEVICE

Charles Storer Shumaker, Glenshaw, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed June 14, 1972, Ser. No. 262,811

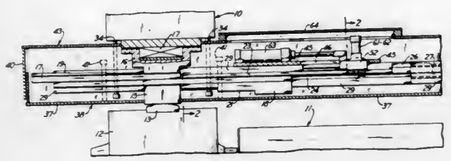
Int. Cl. B21b *31/08*

U.S. Cl. 72—239 3 Claims



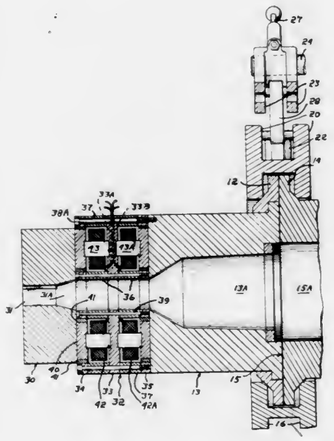
This disclosure relates to a roll changing device for a rolling mill including two side shifting platforms arranged in front of the mill, each having a pair of tracks for supporting a pair of rolls, one pair having been removed from the mill to be replaced by the second pair once the first pair is side shifted away from the front of the mill to position the second pair in front of the mill. Each platform also includes an opening for receiving a gear rack arranged to have its teeth projecting upwardly. On the side of the platforms remote from the mill a carriage is arranged having a motor driven pinion that engages an extension of one of the gear racks of the platforms when arranged in front of the mill, the carriage being employed to push and pull a pair of rolls to and from the mill. When not in use, the gear racks of the platforms are covered by plates selectively movable over the openings.

3,779,062
ROLL POSITIONING MEANS FOR A ROLLING MILL
Charles Gegick, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.
Filed June 5, 1972, Ser. No. 259,634
Int. Cl. B21b 31/30
U.S. Cl. 72—244 10 Claims



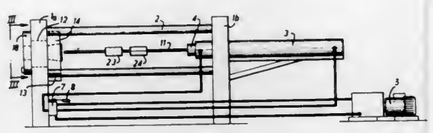
This disclosure relates to an incremental adjusting device for a roll of a rolling mill. The device includes two cooperative sliding bars arranged back to back and each having an equal number of steps, the steps of one bar being fine compared to the coarse steps of the other bar. A piston cylinder assembly selectively moves the coarse and fine steps between the mill housing and the bearing chocks of the roll when the mill is unloaded in order to maintain the roll at a predetermined pass-line of the mill during rolling.

3,779,063
ADAPTERS INCLUDING ELECTRO-MAGNETIC ATTACHING MEANS FOR USE WITH EXTRUDERS
Mathew R. Gannon, 243 Park Ave., Revere, Mass.
Filed Feb. 2, 1972, Ser. No. 222,930
Int. Cl. B23b 5/22
U.S. Cl. 72—253 9 Claims



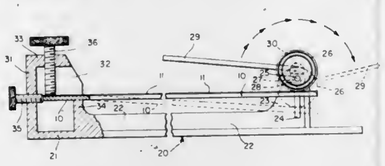
Adapters are disclosed for use with extruders and are provided with electro-magnetic means operable to quickly, easily and securely interconnect the die member and the adapter. Preferably, the adapter is also provided with additional electro-magnetic means operable to similarly connect the adapter to the head member which may itself be conventionally detachably attached to the barrel of the extruder.

3,779,064
PROCESS AND APPARATUS FOR CALIBRATING AND SURFACING TUBES
Louis Pierre Albert Besson, Romainville, France, assignor to Chabas & Besson S.A., Romainville, France
Filed Oct. 29, 1971, Ser. No. 193,632
Claims priority, application France, Nov. 6, 1970, 7039913
Int. Cl. B21c 1/24
U.S. Cl. 72—283 19 Claims



The invention provides a precision method and apparatus for surfacing and removing contaminants from the interior and/or exterior of a tube and for calibrating the interior or exterior of a tube.

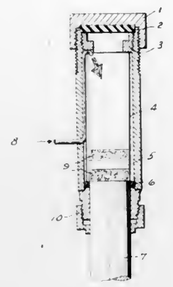
3,779,065
CALIBRATOR FOR DETERMINING THE MAGNITUDE OF STRAINS IN RIGID ARTICLES
Greer Ellis, Pelham, N.Y., assignor to Vishay Intertechnology, Inc., Malvern, Pa.
Filed May 23, 1972, Ser. No. 256,027
Int. Cl. G01n 3/62
U.S. Cl. 73—1 R 10 Claims



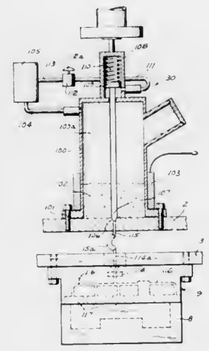
A direct reading, portable calibrator is disclosed for use in accurately measuring the threshold crack sensitivity of a brittle coating for experimental stress analysis. The calibrator is operated by loading a calibration bar, coated with a brittle coating, with thumb pressure at the free end of the bar. Cracks in the coating appear and the threshold strain value, determined in microinches per inch, is read directly from a precision strain scale built into the calibrator.

3,779,066
DETERMINATION OF RESIDUAL SOLVENT IN OILSEED MEALS AND FLOURS BY A VOLATILIZATION PROCEDURE
Sara P. Fore; Eric T. Rayner, and Harold P. Dupuy, all of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Continuation-in-part of Ser. No. 109,883, Jan. 26, 1971, Pat. No. 3,715,910. This application Mar. 28, 1972, Ser. No. 238,878
Int. Cl. G01n 31/08
U.S. Cl. 75—23.1 1 Claim

This invention relates to a simple, rapid and direct gas-chromatographic (GC) procedure for detecting residual solvents and other volatiles present in vegetable oils, peanuts, nut-butter products, and oilseed meals and flours. A sample of the product to be analyzed is placed between glass wool plugs in a glass insert tube of a gas chromatograph. When required, water is added in a prescribed manner to facilitate the release of the volatile materials present. The insert tube is placed in the heated inlet of the gas chromatograph and the volatiles are then analyzed directly by temperature programmed gas chromatography.

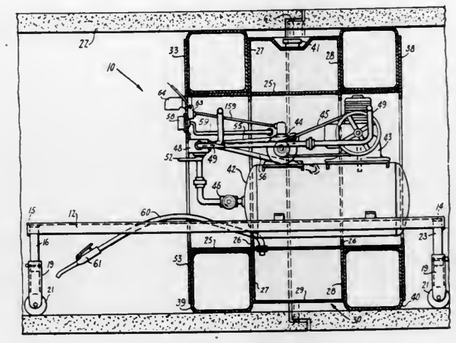


3,779,067
DEVICE FOR FINISHING COMPLEMENTARY PARTS AND TESTING THE SAME
Walter Reis; Helmut Pfenning, both of Obernburg/Main, and Dietmar Boll, Schippach, all of Germany, assignors to said Reis, by said Pfenning and Boll
Continuation-in-part of Ser. No. 887,500, Dec. 23, 1969, Pat. No. 3,640,411. This application Jan. 3, 1972, Ser. No. 214,797
Int. Cl. G01m 3/02
U.S. Cl. 73—37 17 Claims



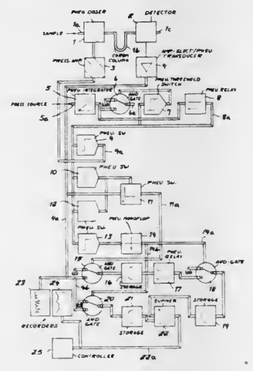
A device for finishing and testing complementary die or mold parts and similar complementary parts has a support plate for supporting a part to be finished in a downwardly facing position. This support plate is slidable between a lowered position in which this part and a second upwardly facing part complement or otherwise coact with each other and a raised position in which the two parts face each other spaced apart, and is also swingable into a position in which the parts are in substantially planar alignment both facing upwardly, whereby both parts are conveniently accessible for finishing. The device also includes a testing assembly for testing the complementary parts as to accuracy of fit and trueness of shape.

3,779,068
PIPE JOINT TESTER
William R. Forsythe, 3052 Bertis Dr., Sacramento, Calif.
Filed Dec. 6, 1971, Ser. No. 205,035
Int. Cl. G01m 3/28
U.S. Cl. 73—49.1 3 Claims



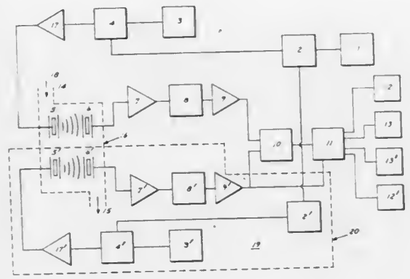
A pipe joint testing machine which moves internally of the pipe and has sealing tubes which circumferentially seal the pipe on opposite sides of the joint. Pressure is provided for applying air pressure between the seals against the joint so as to leak out and be detected by a pressure drop if the seal of the pipe joint is not air tight. Water is provided for wetting down the pipe joint should grouting to seal be required. An air compressor forms part of the machine for providing the compressed air both for testing and for supplying pressure to the water when required.

3,779,069
CHROMATOGRAPHIC APPARATUS AND METHOD
Gunter Berthold, Groitzsch, Germany, assignor to Veb Petrochemisches Kombinat Schwedt, Schwedt, Germany
Filed Jan. 4, 1971, Ser. No. 103,786
Claims priority, application Germany, Jan. 5, 1970, WP 421/144 788
Int. Cl. G01n 31/08
U.S. Cl. 73—23.1 13 Claims



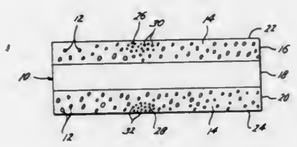
A gas chromatograph for analyzing specimens from a chemical-process line is triggered by a pneumatic sawtooth generator. The output signal is delivered to the recorder directly and through control, regulating and computing elements, all operating with pneumatic, rather than electrical, signals. The process regulator is likewise of the pneumatic type.

3,779,070
PARTICLE SIZE AND PERCENT SOLIDS MONITOR
Charles R. Cushman, Golden, Colo.; James C. Hale, Pea Ridge, Ark., and Vernon A. Anderson, Boulder, Colo., assignors to Autometrics Co., Boulder, Colo.
Continuation-in-part of Ser. No. 866,976, Oct. 16, 1969, abandoned. This application Nov. 23, 1971, Ser. No. 201,504
Int. Cl. G01n 15/00
U.S. Cl. 73—432 PS 57 Claims



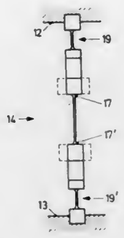
This invention relates to a method and apparatus for developing signals representative of the size and number of particles, such as ore in a slurry. In a preferred form, the invention comprises directing two beams of ultrasonic energy through the slurry, each beam operating at a different frequency and with the beam frequencies so chosen that the attenuation of each beam is a different function of the percent solids by volume, the geometric means particle diameter, the standard deviation of the distribution of the particles and the largest sized particles in the slurry. The two signals resulting therefrom are compared and processed electronically so as to provide two output signals, one of which indicates the particle size and the other, the percent solids by volume in the slurry.

3,779,071
FATIGUE STRAIN GAUGES
Alvin D. Thomas, Jr., Austin, Tex., and Joseph Scott Thornton, Chagrin Falls, Ohio, assignors to Tracor, Inc., Austin, Tex.
Filed Sept. 13, 1971, Ser. No. 180,007
Int. Cl. G01l 1/22
U.S. Cl. 73—88.5 R 6 Claims



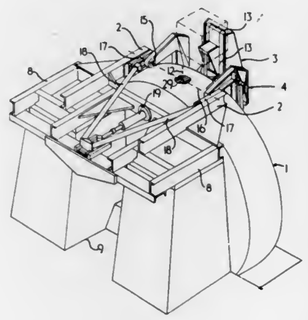
Safety gauges for indicating the internal state of structural materials and methods for determining fatigue of such materials, are provided. In one embodiment, an integral gauge is provided for use in a composite matrix-reinforcing fiber material, the gauge being constructed of like matrix-reinforcing fiber material having therein at least one conducting filament. In another embodiment, a gauge of this type is constructed having a bundle of conducting fibers, and the gauge is bonded to the exterior of a structural part. Conducting fibers are separated from one another by matrix material, to the maximum practical extent.

3,779,072
MEASURING APPARATUS INCLUDING IMPROVED STRING MOUNTING MEANS
Eugen Meier, Wampflenstrasse 45, Meilen, Switzerland
Filed June 5, 1972, Ser. No. 259,854
Claims priority, application Switzerland, July 6, 1971, 9877/71
Int. Cl. G01l 1/10
U.S. Cl. 13—141 R 5 Claims



A load measuring apparatus of the type in which the variation in tension of a pre-stressed electronically-excited string element produces a variation in oscillation frequency that is a function of the parameter to be measured, characterized by the provision of a pair of mounting means for connecting the ends of the string element with the fixed and movable components of the apparatus, respectively, in such a manner that the string is decoupled against vibration in at least one transverse direction. Each of said mounting means is designed for flexure about a first axis normal to the longitudinal axis of the string element, the first axes of flexure and the longitudinal axis of the string element being contained in a common first plane. In accordance with an alternate embodiment, each mounting means also contains a second axis of flexure normal to the axis of the string element, said second axes and the string element axis being contained in a second plane normal to the first plane.

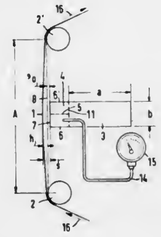
3,779,073
TIRE TESTING MACHINE
Clifford Ward Barson, Sutton Coldfield, England, assignor to Dunlop Limited, London, England
Filed Apr. 4, 1972, Ser. No. 240,918
Int. Cl. G01m 17/02
U.S. Cl. 73—146 14 Claims



A tire testing machine with rotatable drum and mounting means to permit the tire to be contacted with the drum. The drum comprises an annular flange and the mounting means is pivotally mounted radially inwardly of the flange about an axis

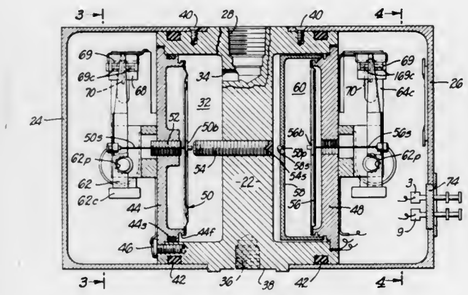
perpendicular to the axis of rotation of the drum and passing through the surface of the drum. Preferably the tire mounting means can also be moved to steer the tire and to move it laterally across the drum.

3,779,074
APPARATUS FOR MEASURING TENSILE STRESSES IN CONTINUOUSLY FED WEBS OF MATERIAL
Eberhard Breyer, Herrenberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Mar. 9, 1972, Ser. No. 233,120
Claims priority, application Germany, Mar. 10, 1971, P 21 11 527.5
Int. Cl. G01l 5/08
U.S. Cl. 73—144 9 Claims



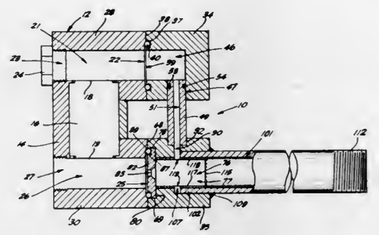
A duct is disposed underneath the travelling web between the two guide rollers and extends across the width of the web. The duct has at least one row of pocket-like chambers connected to a blower so that an air cushion and thereby a static pressure develops between the duct and web. The pressure prevailing in each of the chambers which is proportional to the tensile stress in the strips of the web running over each chamber is measured by a measuring device.

3,779,075
AIR-DATA INSTRUMENT AND METHOD
Stephen Andrew Hluchan, and Leland B. Tainter, Jr., both of Riverside, Calif., assignors to Bourns, Inc., Riverside, Calif.
Filed June 21, 1971, Ser. No. 154,966
Int. Cl. G01c 21/10; G01l 7/12
U.S. Cl. 73—182 7 Claims



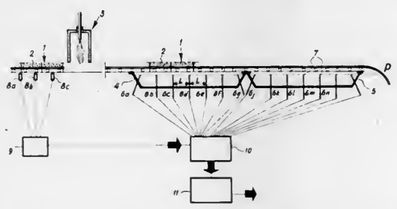
Means and method for sensing one or more sets of variable atmospheric and reference pressure phenomena and producing therefrom one or more sets of signals a first of which signals of all such sets represents directly and linearly the variation of a respective physical quantity selected from among airspeed and altitude and the second of which signals of all such sets represents directly the mn th power of the respective pressure phenomena sensed, and for electrically deriving from such signals a value of a dimensionless number commonly referred to as Mach number.

3,779,076
FLOW METERING RUN WITH ORIFICE PLATE
Lloyd T. Akeley, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Apr. 17, 1972, Ser. No. 244,415
Int. Cl. G01f 1/00
U.S. Cl. 73—211 8 Claims



A flow metering run with an orifice plate for use with a differential pressure instrument for accurately measuring low flow rates of fluids. The flow metering run comprises a pair of flange connectors each having an internal chamber formed therein communicating with an outlet opening that is adapted to sealingly engage a high or low pressure inlet of the DP instrument. The internal chambers are interconnected by a pressure duct. A removable orifice plate is provided across the outlet opening of the low pressure flange connector and a straight flow inlet pipe having smooth inner surfaces and a length approximately ten times its diameter is connected into the low pressure internal chamber. The inlet pipe is aligned with the orifice plate so that a straight flow path through the low pressure side of the DP instrument is achieved. A screen is removably mounted across the flow inlet pipe about two pipe diameters upstream of the orifice plate to produce turbulent fluid flow into the orifice.

3,779,077
METHOD AND APPARATUS FOR ESTABLISHING THE FIRING TEMPERATURE CURVE OF A SINTERING CHARGE
Claude Barry, Saint-Julien-les-Metz, and Patrice Ratte, Metz, both of France, assignors to Institut De Recherches De La Siderurgie Francaise, Saint-Germain-en-Laye, France
Filed Apr. 10, 1972, Ser. No. 242,361
Int. Cl. G01k 13/06
U.S. Cl. 73—341 4 Claims



The firing temperature curve of a sintering charge is established by measuring the speed of the chain which carries successive portions of the charge and the temperature of the gases which have passed through the fired portions of the charge at points spaced longitudinally in the direction of the

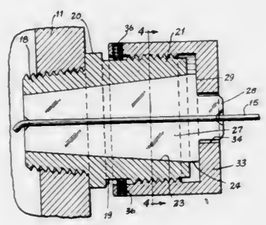
movement of the chain. The measurements are coordinated so that the temperature measurement depends on the speed movement, and the temperature measurements are periodically sampled after a series of such measurements has been completed. The corresponding information is stored in a memory and extracted from the memory after the completion of each series to obtain the firing temperature curve.

3,779,078

FLAME-PROOF FITTING

Glenda F. Kaesser, St. Louis, and Marshall G. Zavertnik, Manchester, both of Mo., assignors to Killark Electric Manufacturing Company, St. Louis, Mo.

Filed Oct. 20, 1971, Ser. No. 191,012
Int. Cl. G01k 1/14
U.S. Cl. 73—343 R **7 Claims**



A flame-proof fitting for conducting a capillary tube through the wall of a box including a bushing threaded through the wall, having a tapered passage through it, two semi-frusto-conical wedges having axial grooves to receive the tube when placed together, and a cap threadable onto the bushing to force the two members tightly into the tapered passage in the bushing, compressing them together tightly, and compressing them tightly against the tube.

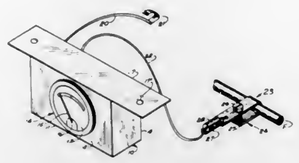
3,779,079

TEMPERATURE MEASURING SYSTEMS FOR AUTOMOTIVE VEHICLES AND THE LIKE

Richard K. Snook, Bridgeton, Mo., assignor to Diginetics Incorporated, Bridgeton, Md.

Filed June 28, 1972, Ser. No. 267,005
Int. Cl. G01k 1/16, 7/22, 13/02
U.S. Cl. 73—346 **12 Claims**

A temperature gauge assembly for easy and convenient installation on automotive vehicles and similar powered devices. The preferred form of the temperature gauge assembly comprises a transmission temperature gauge assembly including a gauge unit and a sender unit. The gauge unit is comprised of an outer housing with an electrically responsive meter mounted therein and is provided for conveneint attachment to the dashboard or other suitable location of the vehicle. One terminal of the meter is electrically connected by means of a C-shaped clamp to a fuse terminal or other electrical member of the vehicle connected operatively to the battery of the vehicle. The other terminal of the meter is electrically connected to a sender unit comprising a second C-shaped clamp which is conveniently disposed about an electrically grounded member of the vehicle in heat exchange relationship to the fluid in which temperature is to be measured. In the case of the transmission temperature gauge, the second C-shaped clamp is connected to one of the fluid lines to the automotive vehicle transmission in order to detect temperature conditions



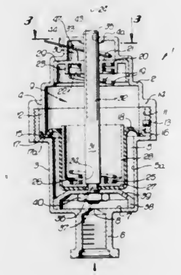
thereof. A diode having proper temperature sensitivity and electrical characteristics is secured to the second C-shaped clamp and is, in turn, connected to the meter. In another embodiment of the invention, means are provided for eliminating variation in the voltage from the generator of the vehicle.

3,779,080

GAUGE RECORDING MAXIMUM PRESSURE

Charles Harry Smith, Glendale, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Filed July 26, 1971, Ser. No. 166,016
Int. Cl. G01l 7/16
U.S. Cl. 73—396 **7 Claims**



Device for visual indication of a maximum fluid pressure condition reached during a given interval of time. Useful for the in-flight recording of fluid pressure condition e.g., in the reduction gear box of a jet engine where excessive pressures are indicative of incipient failures, the device comprises a body having a cavity in fluid pressure communication with system fluid, an indicator movable relative to the body cavity in response to changes in system fluid pressure, and locking means limiting indicator travel to a single direction indicative of a relatively higher pressure condition in the system.

3,779,081

COMPRESSION TESTER

Norman Holtzman, Los Angeles, Calif., assignor to Orion Industries, Inc., Los Angeles, Calif.

Filed Oct. 30, 1972, Ser. No. 302,292
Int. Cl. G01l 7/16
U.S. Cl. 73—419 **6 Claims**

A pressure indicator or gauge which utilizes a piston responsive to test pressure to move a diagonally oriented indicator along a longitudinal axis. A display having a transverse slot is located adjacent the indicator. As the diagonally oriented indicator moves longitudinally, it under-



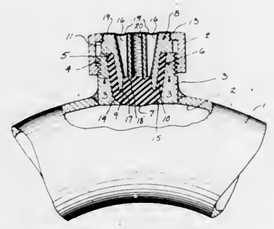
goes an apparent transverse travel along the slot, and pressure indicia adjacent the slot provide an indication of the magnitude of the test pressure.

3,779,082

ASEPTIC SAMPLE FITTING

Edwin J. Galloway, Menasha, Wis., assignor to Galloway Company, Neenah, Wis.

Filed Oct. 4, 1972, Ser. No. 295,042
Int. Cl. G01n 1/12
U.S. Cl. 73—421 B **11 Claims**



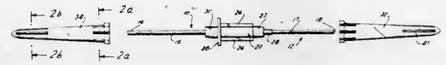
An aseptic sample fitting for a fluid enclosure includes a disposable tapered plug removably held in a neck with its inner end substantially flush with the enclosure interior. The plug includes a rigid core that is provided with circumferentially arrayed convergent sampling needle guide channels, and a cup-shaped self-healing pressure seal member. A sanitary seal member of flexible sheet material protects the outer ends of the guide channels and also indicates the location and used or unused state of each channel. The inner end of the neck opening defines a feathered shroud which extends across a rounded edge of the plug to minimize exposed area and improve surface configuration. Barrier ridges surround each guide channel at the interface of the core and pressure seal member to prevent movement of material from one channel to another. A retainer ring bears against a holding flange on the core to hold the plug in place.

3,779,083

METHOD AND APPARATUS FOR MEASURING PRECISE MICRO QUANTITIES OF FLUID SAMPLES

Waldemar Ayres, Rutherford; Evelyn Walker, Hackensack; William Holderith; Carl Benson, both of Wyckoff, and James Bandrowski, Ridgewood, all of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed May 28, 1971, Ser. No. 147,878
Int. Cl. G01n 1/10
U.S. Cl. 73—425.4 P **16 Claims**



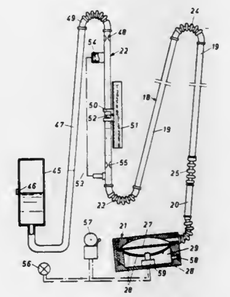
A method for measuring precise micro quantities of fluid samples and apparatus therefor is disclosed which uses a precision, disposable, self-filling capillary tube weakened at a predetermined point between its ends and mounted on a holder. The assembly includes means for protecting the capillary tube from breakage and for severing the capillary tube at the weakened predetermined point transversely across the tube so that the remaining portion or section of the capillary tube will contain a precisely measured volume of fluid to be tested. Optionally, the precisely measured volume of fluid may be mixed with an accurately measured volume of another liquid to thereby obtain a predetermined ratio of mixed liquids.

3,779,084

MEANS FOR CONTROLLING THE WORKING DEPTH OF AN EXCAVATOR

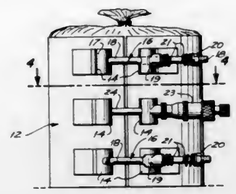
Hans Kenneth Nilsson, Paradis, Askloster, Sweden

Filed Oct. 13, 1971, Ser. No. 188,730
Int. Cl. G01c 5/04
U.S. Cl. 73—432 HA **15 Claims**



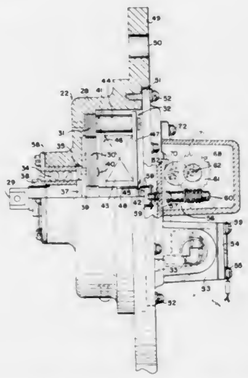
System for controlling the working depth of an excavator of the type having a shovel or similar earth moving implement fitted at the end of an articulated jib the system including a device comprising a level indicator located at the turret of the excavator and a conduit extending therefrom to a receptacle, including an elastic member mounted on the shovel. The device being filled with a fluid or several non-mixable fluids, and the pressure thereof upon an elastic member varying with changes in the vertical distance between the shovel and the indicator causing a variation of the level within the indicator, which may be utilized for various control purposes, either manually or automatically. The device may be provided with means for compensating for variations in relation to different depths or grades of the excavation.

3,779,085
MEANS AND METHOD OF TESTING EXPANSIVE CONCRETE
Edward K. Rice, 14656 Oxnard St., Los Angeles, Calif.
Filed July 24, 1972, Ser. No. 274,432
Int. Cl. G01b 3/10
U.S. Cl. 73—432 R 10 Claims



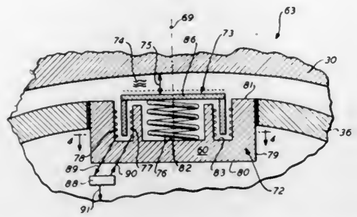
A method of testing expansive concrete wherein a sample of concrete is permitted to expand while subjected to a predetermined restraint, and subsequently to contract, measurements being made of the expansion and contraction. The means of testing expansive concrete comprising a split cylinder which receives a test sample of concrete contained in a pair of plastic bags having low friction characteristics. A measuring device indicates the amount of expansion and contraction occurring in the cylinder.

3,779,086
COMBINED PULSE GENERATOR AND ODOMETER ASSEMBLY FOR A RAILWAY LOCOMOTIVE
Harry L. Myrent, Wilmette, and Chester H. Fluder, Wheeling, both of Ill., assignors to Vapor Corporation, Chicago, Ill.
Filed Oct. 11, 1972, Ser. No. 296,513
Int. Cl. G01c 23/00, 22/00
U.S. Cl. 73—490 5 Claims



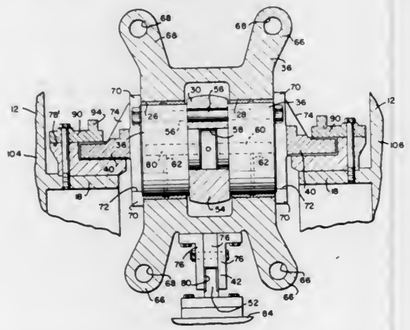
A combined rotary pulse generator and odometer assembly for the axle of a railway locomotive simultaneously generates a speed-indicative electrical signal and digitally totalizes mileage traveled. The assembly includes a pulse generator which has a shaft coupled to the end of a locomotive axle to develop electrical pulses as the axle turns. A novel odometer assembly, mounted on the cover plate of the pulse generator, converts the rotary motion of the generator shaft to oscillating motion to drive a digital mileage counter and record accumulated mileage for the locomotive. The odometer assembly is easily converted to accommodate different sizes of drive wheels and different units of distance, and the digital accumulated mileage display is positioned for maximum legibility under poor lighting conditions.

3,779,087
GYROSCOPE PICKOFF MEANS
Robert J. Dickie, Maywood, N.J., assignor to The Singer Company, Little Falls, N.J.
Filed Mar. 30, 1972, Ser. No. 239,645
Int. Cl. G01c 19/28
U.S. Cl. 74—5.6 10 Claims



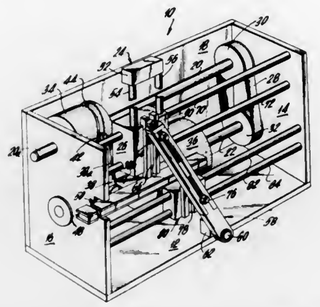
A gyroscope is provided, which has an inner body, an outer body which is displaceable relative to the inner body, a rotor which is disposed inside the inner body, mounting means for positioning the outer body relative to the inner body, and pickoff means for sensing the angular displacement of the outer body relative to the inner body, wherein the pickoff means includes a base member which is fixedly connected to the inner body, a paddle member which is disposed adjacent to the base member and which engages a fluid portion that is trapped in a gap portion of variable thickness disposed adjacent thereto, a spring member which is connected to the paddle member and to the base member, a driving coil which can drive the paddle member at its resonant vibration frequency, and a sensing coil which can sense the vibration frequency of the paddle member.

3,779,088
CRANK MECHANISM
Bernard F. Miller, Corning, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Aug. 4, 1972, Ser. No. 277,889
Int. Cl. F16h 27/22
U.S. Cl. 74—44 21 Claims



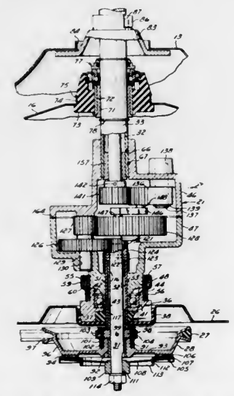
The mechanism comprises a one-piece crosshead and a one-piece auxiliary drive member coupled together for mutual reciprocation, although with a space therebetween, by tensioning tie rods. The crosshead receives a crankshaft connecting rod, the crankshaft being rotatably journaled in a mechanism housing, and the connecting rod being coupled to the crosshead through oversize crosshead pins which oscillate with the translating connecting rod. Replaceable vertical and horizontal guide assemblies effect and maintain planar alignment between the crosshead and drive member.

3,779,089
ADJUSTABLE MOTION TRANSMITTING DEVICE
Earl Beezer, One Andrea Blvd., Saddle Brook, N.J.
Filed Mar. 27, 1972, Ser. No. 238,495
Int. Cl. F16h 25/08
U.S. Cl. 74—53 14 Claims



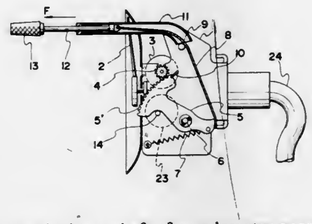
A motion transmission device includes a first shaft having a first cam thereon which is rotated in timed relationship to a second shaft having a second cam thereon, a slide holder is guided in a housing for movement in a first direction, for example an X-direction, and a slide carried on the slide holder is mounted thereon for movement in a second direction, or Y-direction. A lever is pivotally mounted on the housing and has a first follower connected to the slide and a second pivotal follower which is connected to a drive slide which is movable in a direction parallel to the slide holder, but at a spaced location therefrom. A second cam is rotatably mounted on a shaft and the second follower is moved by the second cam in order to oscillate the lever, and to thus cause the slide holder to move backwardly and forwardly in the X-direction. A crank is pivotally mounted in the housing and is provided with a follower arm which is engaged with the first cam and has an opposite arm with a follower which is engaged with a yoke member carried by the slide to move the first slide member in a Y-direction.

3,779,090
WASHING MACHINE
Ramon K. Ostenberg, and Richard P. Case, both of Webster City, Iowa, assignors to Franklin Manufacturing Company, St. Cloud, Minn.
Filed Apr. 28, 1972, Ser. No. 248,401
Int. Cl. F16h 21/40
U.S. Cl. 74—81 6 Claims



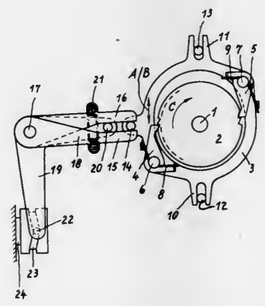
A power drive in a washing machine oscillates an agitator with a positive drive and spins a basket with a limited torque for gradual spin-up. The arrangement includes a transmission for selectively driving either the agitator or the basket as determined by the direction of rotational input. The drive to the transmission includes a one-way clutch adapted to positively drive the transmission in the agitation direction and a slip clutch to drive the bakset with a predetermined torque in the opposite spin direction. A rotatable housing of the transmission forms both a sealed enclosure and a rigid structure in which a gear train is mounted. The housing has two mating sections in each of which are mounted spatially independent gear sets connected by a common pivotal link whereby critical gear center to center distances between housing sections are eliminated.

3,779,091
ODOMETER RESET MECHANISM
Shiro Inoue, 26, 2-2-chome, Kashiwaza, Ageo, Japan
Filed Apr. 13, 1972, Ser. No. 243,581
Int. Cl. F16h 21/44
U.S. Cl. 74—109 1 Claim



A pinion attached to a shaft of an odometer engages a segment pivoted to one side of a speedometer casing. Said segment is forced to rotate by pulling foreward a cable connected to the segment against the action of a spring whereby one complete rotation of the shaft is made to effect resetting of the odometer.

3,779,092
FILM WINDING MECHANISM FOR MOTION PICTURE APPARATUS
Kurt Bode, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed Apr. 14, 1972, Ser. No. 244,142
Claims priority, application Germany, Apr. 24, 1971, P 21 20 188.7
Int. Cl. F16h 29/00
U.S. Cl. 74—122 8 Claims



A pawl and ratchet drive for the take-up spool of a motion picture camera or motion picture projector, the pawls being driven through a form-locking train including a pair of jaws spring-urged toward each other, embracing a driven pin on a pawl carrier. When the film has been wound to the desired

tension, the driving mechanism can continue its normal full stroke without causing full stroke movement of the driven pin on the pawl carrier, so that the film is not wound too tight. In one embodiment, a pair of driving pawls are pivotally mounted on the pawl carrier. In another embodiment, the two pawls are integral with a pawl ring which is swingably mounted on the pawl carrier.

3,779,093

MOTION TRANSFORMER

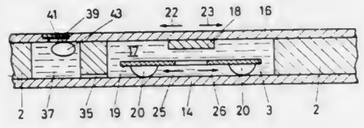
Max Hetzel, Bienne, Switzerland, assignor to Omega Louis Brandt et Frere S.A., Bienne, Switzerland

Filed May 25, 1972, Ser. No. 256,721

Claims priority, application Switzerland, June 14, 1971, 8621/71

Int. Cl. F16h *27/02*

U.S. Cl. 74—142 **17 Claims**



In a motion transformer for converting oscillatory to rotary motion, comprising (a) an enclosure including a base plate, a cover plate, and side members, all of which are substantially rigid, (b) a ratchet wheel within the enclosure mounted for both oscillatory and rotary motion, (c) a pair of stops limiting the amplitude of such oscillatory motion, (d) a ratchet pawl coacting with the ratchet wheel and a restraining member preventing retorgrade rotation thereof to convert oscillatory motion thereof to unidirectional rotary motion, and (e) a liquid filling the space in said enclosure, an expansion chamber is provided adjacent the enclosure in communication therewith through a capillary channel and is partially gas-filled to accommodate thermal expansion and contraction of the liquid. Such apparatus is made by immersing it in the liquid, subjecting the liquid to high vacuum to withdraw air, then restoring atmospheric pressure to drive the liquid into the apparatus, then heating the apparatus to above its maximum expected operating temperature followed by cooling to allow the liquid to contract and cause some air to enter the expansion chamber, and then hermetically sealing the apparatus.

3,779,094

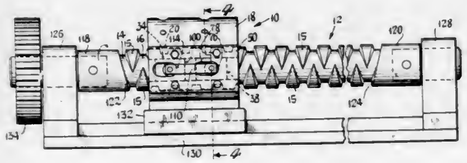
REVERSING NUT FOR A DIAMOND THREAD SCREW

Berger A. La Barre, Bethel, Conn., assignor to Norco, Inc., Ridgefield, Conn.

Filed June 12, 1972, Ser. No. 261,603

Int. Cl. F16h *1/18*

U.S. Cl. 74—424.8 R **20 Claims**



A reversing nut for use with a diamond thread screw having criss-crossed threads. The nut has an annular body and includes a through bore to receive the screw. A fixed pin extends part way into the bore for engagement with the screw threads. The nut is further provided with a pair of movable pins extending into the bore, also engageable with the screw threads. The movable pins are mounted on slide members which are carried by the nut, the slide members being movable between limiting or extreme positions in directions parallel to the axis of the nut. A reversal of the direction of travel of the nut can be effected at predetermined intervals along the length of the screw by moving one slide member and pin from one extreme position toward the other extreme position. During the transition, the pin being moved is disposed at an intersection of the criss-crossed threads and thus no interference therewith is encountered. In a similar manner, a reversal of the nut in the opposite direction is effected by movement of the same slide member and pin from its one extreme position toward the other extreme position. Means are provided for actuating the slide members and thus automatically reversing the direction of travel of the nut at both ends of the screw as well as at predetermined points therebetween. Alternatively, the nut can be held against axial travel, while the screw moves axially.

3,779,095

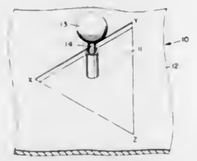
SINGLE CONTROL DEVICE FOR SIMULTANEOUS CONTROL OF THREE OR MORE COORDINATE FUNCTIONS

Jean P. Audet, 138 Mountain Ave., Summit, N.J.

Filed Jan. 3, 1972, Ser. No. 214,583

Int. Cl. G05g *9/04*

U.S. Cl. 74—471 XY **5 Claims**



A single control device for simultaneously controlling three coordinate functions is provided. The device comprises a shaft mounted in a base. The movement of the shaft is limited by the opening in a control surface having a multi-apex angle opening. An operating plate secured to the shaft functions to move motion transmitting control elements positioned in alignment with the apex angles of the opening in the control surface in an amount corresponding to the relative position of the control shaft to the apex angles in the control surface. The device is particularly suitable for use in video color mix control.

3,779,096

SHIFT CONTROL ASSEMBLY

George H. Hurst, Huntington Beach, Calif., and Emanuel F. Cambria, Philadelphia, Pa., assignors to Hurst Performance, Inc., Warminster, Pa.

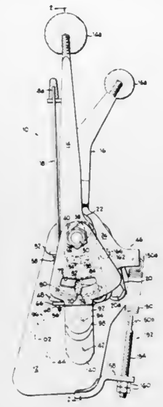
Filed May 22, 1972, Ser. No. 255,397

Int. Cl. G05g *9/16, 5/02*

U.S. Cl. 74—476 **28 Claims**

A shift control for use with an automobile manual transmission characterized by the provision of a shift control lever connected to a horizontally disposed follower pin which tracks in generally horizontal disposed and vertically offset slots of a pair of selector arms, one slot having an upwardly extending vertical notch and the other slot having a downwardly extending vertical notch, the upper slot being in horizontal alignment with the notch in the lower slot and the lower slot being in horizontal alignment with the notch in the upper slot. The follower pin is normally biased downwardly and the surfaces of the slots and notches are such as to urge the pin from the

upper slot and the upper notch of the lower slot, into the lower notch of the upper slot and the lower slot, when the pin is moved from the leading edge of the upper slot towards the trailing edge thereof. By this arrangement, the gears of the



transmission may be shifted through different speeds by moving the lever in a planar path of travel.

Also a separate reverse gear control is provided which is operable only when the system is in a neutral mode.

3,779,097

MECHANISM FOR LOCKING SHIFTING MEMBERS IN CHANGE-SPEED TRANSMISSIONS

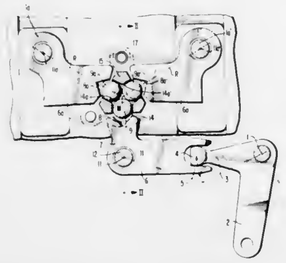
Dietrich Kurz, Stuttgart, and Gerhard Oser, Oeffingen, both of Germany, assignors to Daimler-Benz, AG, Stuttgart-Unterluerkheim, Germany

Filed May 19, 1972, Ser. No. 254,927

Claims priority, application Germany, May 21, 1971, P 21 25 278.8

Int. Cl. G05g *5/10*

U.S. Cl. 74—477 **14 Claims**



A mechanism for locking the shifting elements in change-speed transmissions, especially in motor vehicle change-speed transmissions, in which, for example, three shifting shafts are provided, each carrying a shifting rocker arm having a pivot arm portion which actuates the locking mechanism by way of three pivotal locking levers which are thereby arranged at least axially symmetrical about a common center point and which are provided each with a notch facing three similarly arranged balls which in the neutral position can engage in a respective notch; the pivotal movement of a locking lever thereby forces the associated ball out of its notch and the thus displaced ball, in turn, then forces the other two balls into the other notches of the two other locking levers or retains the same within these notches, if they should be already present in these other notches.

3,779,098

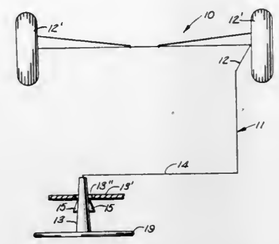
RIGHT HAND STEERING MECHANISM FOR VEHICLES

William Joseph Falzon, 9619 Stout, Detroit, Mich.

Filed June 16, 1972, Ser. No. 263,549

Int. Cl. B62d *1/18*

U.S. Cl. 74—492 **3 Claims**



A steering mechanism for automobiles. This mechanism consists primarily of a steering shaft on a right hand side of the automobile with shaft connecting means to a short steering column having trip lever means for enabling the column to go forward during the event of a collision, thus preventing serious injury to the driver of the automobile.

3,779,099

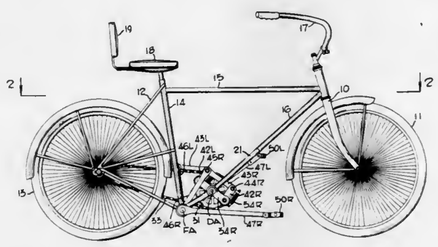
BICYCLE DRIVE ASSEMBLY

Earl M. Trammell, Jr., Ladue, Mo., assignor to Cycle-Drive Corporation, St. Louis, Mo.

Filed Feb. 28, 1972, Ser. No. 229,898

Int. Cl. B62m *3/04*

U.S. Cl. 74—594.3 **17 Claims**

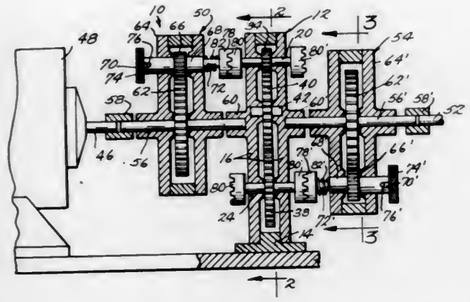


A drive assembly for a physically propelled vehicle such as a bicycle having a crank arm operatively connected to a drive member rotatively mounted on a drive axis for rotating the drive member, and a one-way clutch connecting an advance-crank arm to the crank arm for pivotal movement of the advance-crank arm relative to the crank arm in only one direction. A pedal arm is operatively connected to the connector for substantially moving a portion of a connector with an alternating motion of less than 360° in a predetermined path. A resilient spring interconnects the connector and the advance-crank arm. The connector transmits the turning force to a pivot between the connector and advance-crank arm upon application of sufficient pedal force to overcome a predetermined loading of the resilient spring, the turning force being automatically transferred from the crank arm pin to the pivot of the advance-crank arm, and being automatically transferred back to the crank arm pin upon further rotation of the crank arm and advance-crank arm as the loading of the resilient spring balances and overcomes the pedal force. When the predetermined loading of the resilient spring is overcome, a change in the angle between the connector and advance-crank arm is achieved.

3,779,100
VARIABLE SPEED TRANSMISSION

Richard Schmidt, 11525 Islandale Dr., Cincinnati, Ohio

Filed Sept. 8, 1972, Ser. No. 287,481
Int. Cl. F16h 37/06, 3/08
U.S. Cl. 74—665 N 22 Claims

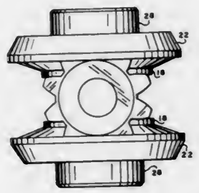


A multiple speed transmission assembly wherein a plurality of drivingly interconnected rotary members are mounted within a central housing in a geometrical arrangement in which the axis of rotation or shafts of the rotary members are spaced circumferentially about a cylindrical plane in equally spaced parallel relation to the axis of the cylindrical plane so that a driving member can be selectively drivingly connected to one end of any of the rotary member shafts by either positioning the axis of the cylindrical plane in line with the driving shaft and utilizing a pair of meshing gears or the like as the driving connection or mounting the cylindrical plane in line with the driving shaft and mounting the central housing for selective rotation about the axis of the cylindrical plane to effect the driving connection with the driving shaft and so that similar driving connections can be utilized to selectively connect the opposite ends of the shafts of the rotary members to a driven member.

3,779,101
POCKETED GEAR DIFFERENTIAL

Victor B. Chaput, Nashua, N.H., assignor to Alex Simoneau, Nashua, N.H.

Filed May 11, 1972, Ser. No. 252,302
Int. Cl. F16h 1/44; F01m 9/10
U.S. Cl. 74—711 11 Claims

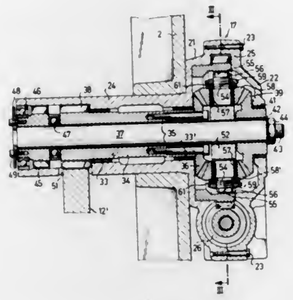


A pocketed gear differential has conventional side gears modified with a plate connectd to the toe and a sleeve arranged about the heel thereof whereby a pocket is formed so that a lubricant entrapped within the meshing gears of the differential cannot readily escape from the sides of the meshing gears and is available to resist rapid movement of the gears to provide a limited slip action.

3,779,102
DIFFERENTIAL GEAR

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Mar. 22, 1972, Ser. No. 237,093
Claims priority, application Switzerland, Mar. 26, 1971, 004503/71
Int. Cl. F16h 1/40, 57/00
U.S. Cl. 74—713 5 Claims

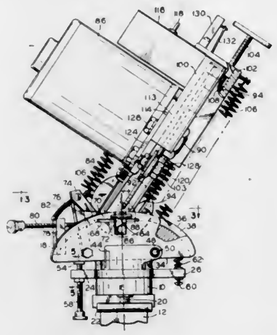


The two warp beams are each connected to different bevel gears in the transmission. These bevel gears are in meshing engagement with two planet pinions mounted in a freely mounted carrier. The carrier is, in turn, mounted in diametrically opposite slots in a driving wheel for the transmission. The driving wheel is driven over a worm. Any variation in speed between the warp beams causes the planet pinions to turn relative to the bevel gears to compensate for the variation without overstressing the gears.

3,779,103
CHIPPER CHAIN GRINDER

Elmer R. Silvey, Rt. 1, Box 138, Eagle Point, Oreg.

Filed Sept. 20, 1971, Ser. No. 181,957
Int. Cl. B23d 63/16
U.S. Cl. 76—25 A 9 Claims



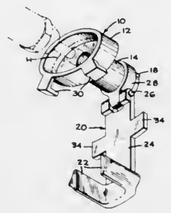
A disc shaped grinding wheel having a rounded edge for sharpening chipper saw chain is mounted on the shaft of a motor supported so that the faces of the wheel are inclined downwardly and to one side of a saw chain grinding machine. A vertically disposed saw chain holder positioned below the wheel has a convex upper edge with a slot therein for receiving the drive lugs of a saw chain which is positioned on the holder with the front of the cutter elements directed toward the other side of the machine. An adjustable pawl holds a cutter element

in a central uppermost position on the holder for grinding engagement by the lowermost portion of the edge of the wheel. The support for the holder is pivoted about a vertical axis passing through the area of such grinding engagement so that the holder is pivotally movable between two adjustable positions for grinding right and left cutter elements. The wheel normally has its lowermost edge portion in a grinding position between the depth gauge and cutter element of a saw chain cutter link on the saw chain holder. The support for the motor and wheel is pivotally movable about an axis at the rear of the machine, which is below and parallel to the axis of the wheel, so that such edge portion of the wheel can be moved upwardly away from the saw chain to enable forward movement of the saw chain on the holder. In the grinding position of such edge portion of the wheel the axis of the wheel is in a vertical plane through the vertical pivotal axis of the support for the saw chain holder. The support for the motor is also slidably mounted so as to enable movement of the axis of the wheel in such vertical plane in a direction parallel to the faces of the wheel to adjust for wear of the edge of the wheel. The holder for the saw chain is pivoted about a horizontal axis spaced from the vertical pivotal axis of its support and a lever enables tilting of the central portion of the holder upwardly and forwardly of the saw chain thereon to move a cutter element into such grinding engagement with the edge of the wheel. A disc shaped dressing element rotatable about an axis parallel to the axis of the wheel and having an edge complementary to the desired rounded edge of the wheel is supported for movement in a direction parallel to the faces of the wheel and the dressing element to bring the edge of the dressing element into dressing contact with the edge of the wheel.

3,779,104
DUAL FUNCTION WRENCH

James R. Curry, 4276 Latimer Ave., San Jose, Calif.

Filed Mar. 3, 1972, Ser. No. 231,599
Int. Cl. B25b 13/48
U.S. Cl. 81—119 5 Claims



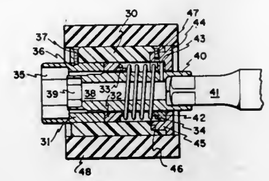
A dual function wrench including two work-engaging members cooperatively joined to enable selectively individual rotative application of torque or alternatively conjoint interengaged application of torque to different sections of a single piece of work.

3,779,105
FASTENER TOOL

Lee Triplett, Magna, and Wilmer R. Peterson, Kearns, both of Utah, assignors to Expando Products Company, Salt Lake City, Utah

Filed July 27, 1972, Ser. No. 275,714
Int. Cl. B25b 13/06
U.S. Cl. 81—121 R 7 Claims

A fastener tool, for use with special fasteners, comprising a sleeve rigidly secured in a housing having a head engaging end extending from the housing, a socket rotatably secured in the sleeve and housing having apertures at both ends and being

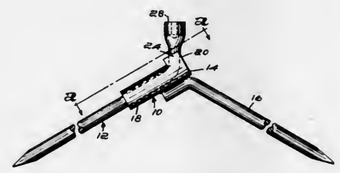


biased into the housing by a spring, and a cover surrounding the housing.

3,779,106
WHEEL WRENCH ADAPTER

Roland Cavicchi, 118 Phipps St., Quincy, Mass.

Filed Apr. 24, 1972, Ser. No. 246,553
Int. Cl. B25b 13/00
U.S. Cl. 81—177 B 5 Claims

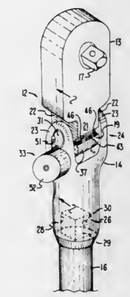


This invention consists in an adapter for use in connection with an automobile wheel tire wrench to enable the wheel nuts to be easily removed when changing a tire.

3,779,107
RATCHET WRENCH TOOL HEAD POSITIONER

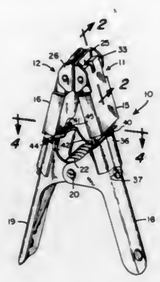
Thomas L. Avery, P.O. Box 867, Tahoe City, Calif.

Filed Oct. 19, 1972, Ser. No. 299,101
Int. Cl. B25b 13/00
U.S. Cl. 81—177.8 5 Claims



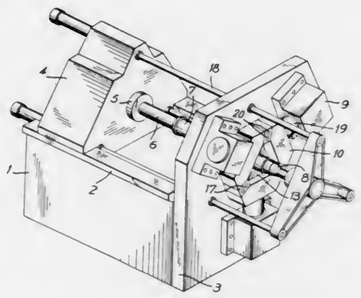
The depending stud of a ratchet tool head is pivotally mounted between the fork arms of a tool holder attachable to a wrench handle. A plurality of spaced transverse grooves in the stud is selectively engageable with and disengageable from a transverse lock pin located adjacent the stud depending upon the angular position of the lock pin. The lock pin is removably held in selected position by a ball detent.

3,779,108
CLAMP
John J. Reiter, 6521 Stevens Ave., South, Minneapolis, Minn.
Filed May 19, 1971, Ser. No. 144,819
Int. Cl. B25b *7/02*
U.S. Cl. 81—424 **7 Claims**



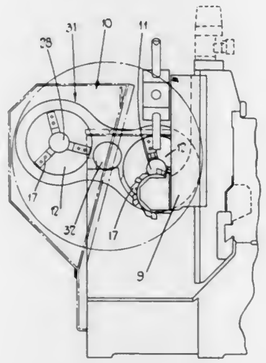
Clamping means comprising a pair of opposed gripping jaws adapted to open and close upon a workpiece interposed therebetween. The apparatus includes a pair of clamping arms with a pair of cooperating actuating handle portions in axial extension with said clamping arms and being separated from the clamping arms by a pivoting fulcrum means. Spring bias means are arranged for biasing the jaws to a normally closed disposition. Each of the clamping arms includes a work retaining shoe means, with the arm and shoe means forming a gripping jaw. The shoe means includes a work engaging surface and is provided with means coupling the shoe to the clamping arm. Pivotal mounting means couple the work engaging surface to the shoe means along an axis generally transverse to the elongated axis of the clamping arm, and generally parallel to the pivot axis of the fulcrum means. The shoe means are provided with connecting rod means for securing the shoe means to the clamping arms, the connecting rod means being journaled for axial rotation about the elongated axis of the clamping arms, with said axial rotation being generally transverse to the axis of said pivotal mounting means and said pivoting fulcrum means, thus permitting alignment of the work engaging surfaces relative to the axis of the jaw.

3,779,109
DEVICE FOR MACHINING A WORKPIECE BY A TURNING OPERATION
Pierre Antoine Theophile Gibert, 16, rue d'Espourrins, Tarbes, France
Filed Mar. 27, 1970, Ser. No. 22,783
Claims priority, application France, Mar. 27, 1969, 6909026
Int. Cl. B23b *13/02*
U.S. Cl. 82—2.5 **8 Claims**



A device for machining a workpiece comprises two or more jacks fastened on a plate carrying tool holders arranged around and centered on a mandrel spindle carrying the workpiece, the tool holders bearing on packing inserts interposed between adjacent tool holders and secured to the plate. The position of the tools in the tool holders is controlled by abutment of the tool holders on the packing inserts, the thickness of which determines the machined diameter of the workpiece.

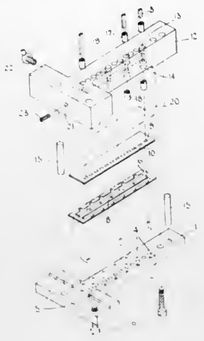
3,779,110
LATHES WITH CHUCK TRANSFER MECHANISM
Julius Harman, Baginton, and Michael Eric Norman, Holly Croft, both of England, assignors to Alfred Herbert Limited, Coventry, England
Filed Apr. 8, 1971, Ser. No. 132,523
Claims priority, application Great Britain, Apr. 10, 1970, 17,118/70
Int. Cl. B23b *13/02*
U.S. Cl. 82—2.5 **13 Claims**



A lathe is provided with a chuck transfer mechanism which includes a head having a circular opening to receive a chuck for transfer. For holding the chuck in the opening there is a plurality of fluid actuated plunger devices around the opening with the devices interconnected to permit displacement of fluid from one device to another. This allows transverse movement of the chuck relative to the head to allow a toothed locating device on the chuck to align itself accurately with a complementary toothed locating device on the work spindle.

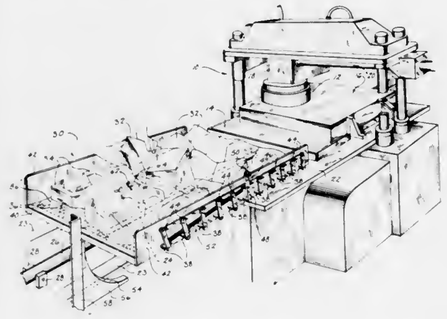
3,779,111
PUNCH MECHANISMS
Eric Bailey, Letchworth, England, assignor to International Computers Limited, London, England
Filed Aug. 13, 1971, Ser. No. 178,516
Claims priority, application Great Britain, May 26, 1971, 17,227/71
Int. Cl. B26d *7/06*
U.S. Cl. 83—23 **2 Claims**

A punch mechanism for record members is disclosed which includes a die assembly consisting of a thin plate having a plurality of apertures therein for co-operating with a plurality of punches. The thin plate is bonded to a bolster which supports



it over its unperforated area. The walls of the apertures in the thin plate are hardened and the remainder of the plate is relatively soft.

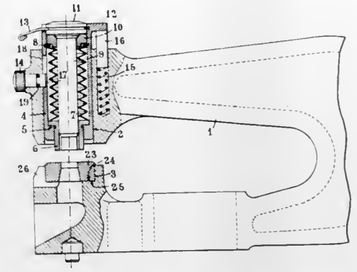
3,779,112
POP-UP DELIVERY TABLE FOR PAPER CUTTING PRESS
Raymond G. Vallier, Brookfield, Wis., assignor to Western States Envelope Company, Milwaukee, Wis.
Filed May 22, 1972, Ser. No. 255,722
Int. Cl. B26d *7/06*
U.S. Cl. 83—103 **7 Claims**



A paper cutting press has a cutting die and a cutting board for making laterally spaced die cuts through a lift of paper to provide laterally-spaced stacks of blanks separated by waste. A delivery table, which is mounted adjacent to the cutting board for receiving the die cut lift of paper, has a plurality of spaced projectable and retractable cam fingers which are each positioned to engage beneath a stack of blanks to lift a corner of the stack above the level of the cut waste which is between the stacks of blanks so that the stacks of blanks can be easily separated from the waste.

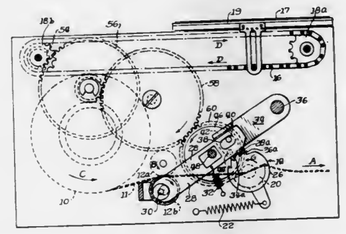
3,779,113
PUNCHING UNIT
Paul Jestin, 79-bis Avenue du General Leclerc, Pantin, France
Filed Aug. 5, 1971, Ser. No. 169,259
Claims priority, application France, Mar. 4, 1971, 7107458
Int. Cl. B26d *7/06, 1/00*
U.S. Cl. 83—140 **6 Claims**

A punching unit of the type comprising a C-shaped body has the punch and die disposed coaxially at the outer ends of its arms. A stop member limiting the upward stroke of the external sleeve, having a punch slidably mounted therein is, fitted in a transverse bore formed in the outer end of the upper arm of the body of the punching unit and engages a longitudinal slot formed in said external sleeve. The stop



member is retained in said bore by an expansion ring. A striker plate or punch head capping the upper portion of the external sleeve is secured to the flange constituting the upper portion of the sleeve by means of a retaining spring. Thus, the punch can be fitted and removed without resorting to any screwing or unscrewing operation.

3,779,114
KNIFE PROGRAMMER
Albert M. Rabin, Wood Dale, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Mar. 30, 1972, Ser. No. 239,543
Int. Cl. B26d *5/24*
U.S. Cl. 83—205 **7 Claims**



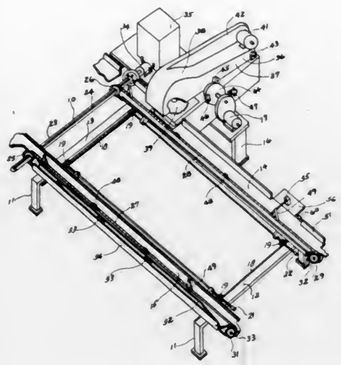
A copying machine of the type which uses copy paper from a supply roll is provided with a system for adjusting the relative positions of timed copying and cutting cycles for varying the length of sheets of paper cut from the roll for each copying cycle. The system uses a clutch mechanism in the drive to the cutter assembly to vary the cutter cycle position relative to the printing cycle. The system is responsive to a selector for selecting desired paper size so that the selected size is cut.

This invention relates to copying machines which cut individual sheets of copy paper from a supply roll and more particularly relates to a control system for controlling the cutting operation.

3,779,115
NOTCHING MACHINE
William Lewis Talbert, York, Pa., assignor to Canton Company of Baltimore, Baltimore, Md.
Filed Nov. 26, 1971, Ser. No. 202,157
Int. Cl. B26d *5/20*
U.S. Cl. 83—210 **2 Claims**

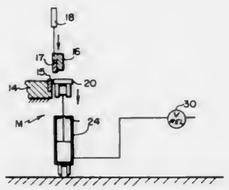
This panel notching machine comprises a trackway along which synchronously moving chains push a panel under a

reciprocating cutter head. Power is applied to the chains by an hydraulic motor. Stopping the oil flow stops the chain motion so precisely that panels can be notched by a reciprocating cutter head and will interfit with any other panels to form a



corner joint in a crate or shipping container. Besides notching, the machine will position parts for boring or for any other machining operation which must take place at fixed linear distances.

3,779,116
SHEARING APPARATUS
William I. Curtis, Middleburg Heights, and Augustus C. McDaniel, Jr., Shaker Heights, both of Ohio, assignors to The Hill Acme Company, Cleveland, Ohio
Filed Feb. 16, 1972, Ser. No. 226,688
Int. Cl. B23d *33/08*; **B26d** *7/02*
U.S. Cl. 83—378 **2 Claims**



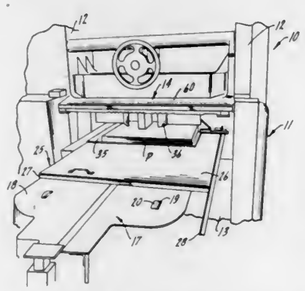
A shearing machine for shearing a workpiece with relatively low power and without attendant curling. The machine includes a pair of knives mounted on a frame with one of the knives being relatively movable toward and away from the other. Also included is a yieldable workpiece support anvil disposed adjacent the stationary blade and below the movable knife for supporting a generally planar workpiece while it is being sheared. The workpiece support anvil is yieldably mounted to effect a constant, even, equal, yield resistance for the anvil in opposition to the movable knife as the workpiece is sheared. One form of such mounting is a pair of piston-cylinder mechanisms supporting the anvil, such mechanisms having suitable control means so that the anvil provides a constant even resistance throughout the shearing operation, thereby preventing curling of the workpiece.

3,779,117
SLAB AND CANT MILL
Richard E. Roberson, Dubach, and Richard E. Roberson, Jr., New Orleans, both of La.
Filed July 8, 1971, Ser. No. 144,054
Int. Cl. B27b *7/00, 29/08*
U.S. Cl. 83—404.4 **8 Claims**



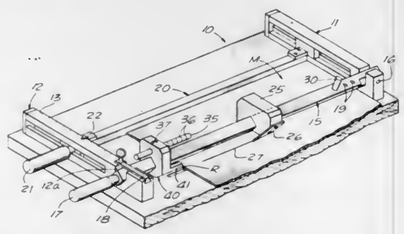
A Slab and Cant Mill for cutting of lumber from whole logs and having a log carriage with log dogging device, multiple saws, a cant trough with saw and a "V" trough.

3,779,118
BLANK CUTTING MACHINE
Charles E. Habanec, Westchester, Ill., assignor to Moser Paper Company, Chicago, Ill.
Filed Aug. 24, 1971, Ser. No. 174,391
Int. Cl. B26d *7/06, 7/26*
U.S. Cl. 83—437 **3 Claims**



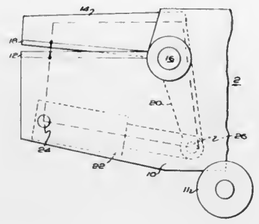
A machine for cutting envelope blanks from a stack of paper stock. The machine includes a vertically movable die head which mounts die blades for longitudinal transverse and angular adjustability. The blades engage the stack of sheet stock supported on a horizontally movable die platen. The platen surface is defined by a sheet of vinyl tile attached to a base member with adhesive so as to be readily removable.

3,779,119
MAT CUTTING MACHINE
Israel Broides, 927 N. Vista St., Los Angeles, Calif.
Filed Oct. 16, 1972, Ser. No. 297,653
Int. Cl. B26d *5/08, 7/16, 7/26*
U.S. Cl. 83—581 **4 Claims**



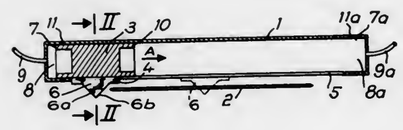
A picture mat cutter which is provided with a number of adjustable stops and guides such that once the machine is adjusted, a quantity of identical mats may be cut with uniform borders on all four of their sides without readjusting the machine.

3,779,120
METAL SHEARING MACHINES
Kenneth Horace Strawson, Grenoside, England, assignor to W. E. Burnand & Son Limited, Sheffield, England
Filed Mar. 6, 1972, Ser. No. 232,133
Claims priority, application Great Britain, Mar. 10, 1971, 6,479/71
Int. Cl. B26d *5/12*
U.S. Cl. 83—601 **2 Claims**



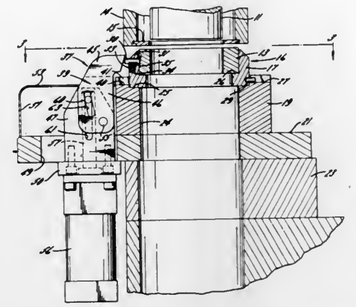
A metal-shearing machine including a fixed jaw and a movable jaw the latter being constituted by one arm of a member in the form of a bell-crank lever the other arm of which extends downwardly and is connected to one end of a hydraulic piston and cylinder assembly the other end of which is pivotally connected to structure immediately beneath the fixed jaw.

3,779,121
SHEET MATERIAL CUTTING APPARATUS
Georges Lagain, 3, rue des Sorbiers, Ermont, France
Filed July 16, 1971, Ser. No. 163,273
Claims priority, application France, July 21, 1970, 7026865
Int. Cl. B26b *5/12*
U.S. Cl. 83—614 **5 Claims**



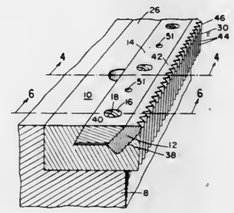
This invention relates to apparatus for cutting sheet material, particularly material in sheath form for manufacturing bags. A cutting blade is detachably secured to a movable member which is arranged for movement over a rectilinear guide member that is fixed to a support, and this movable member is constituted by a double piston which is mounted to slide in a tube. The tube is shaped to offer at each of its ends a cylinder which forms, with the adjacent face of the piston, a chamber of varying size arranged to be supplied with operating fluid under pressure, through at least one conduit that discharges into the chamber. In one form, the tube is longitudinally slotted to receive a part of the movable member and this part extends outside the tube and carries the cutting blade. In another form, the guide member is constituted by a rail on which slides a carriage that comprises the movable member and carrying the double piston for alternate engagement by its two ends in two cylinders that are arranged at the two ends of the rail.

3,779,122
PUNCH PRESS WITH ASSEMBLY LOCKING MECHANISM
Roger V. Sawvell, New Milford, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.
Filed July 24, 1972, Ser. No. 274,256
Int. Cl. B26d *1/06*
U.S. Cl. 83—698 **11 Claims**



The die assembly is clamped to a die shoe by a locking arm which, when released, permits the assembly to be inserted into and removed from the shoe in a horizontal direction in order to avoid the vertical obstruction presented by a stripper overhanging the shoe. The arm is clamped and released by a vertically reciprocable rod carrying a pin which rides in an inclined slot in the arm to convert the vertical force exerted by the rod into a horizontally directed clamping force of relatively large magnitude.

3,779,123
KNIFE HOLDER AND KNIFE THEREFOR
George G. Chafee, Narrangansett, R.I., assignor to Cumberland Engineering Company, Inc., Attleboro, Mass.
Filed Oct. 16, 1972, Ser. No. 297,897
Int. Cl. B26d *1/02, 1/38, 7/26*
U.S. Cl. 83—698 **12 Claims**

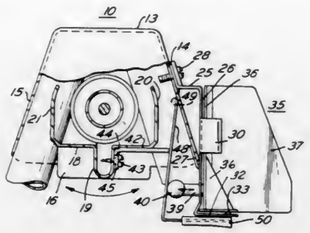


A knife holder and knife therefor to be used on a machine for dicing or cutting plastics, the knife holder being an elongated body having a channel therein, the channel being shaped to hold an elongated insertable knife blade against the front wall of the channel, and an elongated wedge mounted between the knife and the back wall of the channel to clamp the knife securely in the knife holder. The walls of the channel are divergent from each other. The cooperation between the knife, wedge, and front and back walls of the channel is such that wedge-fastening screws or bolts have reduced forces acting on them. In a second embodiment, means are also provided whereby regound or replacement knives may be fitted into the knife holder with a minimum of adjustment necessary in respect to the fly knives of the machine.

3,779,124
SWING OPERATED MUSIC BOX

Walter L. Christensen, Pottstown, Pa., assignor to Graco Metal Products, Inc., Elverson, Pa.

Filed Sept. 7, 1972, Ser. No. 287,065
Int. Cl. G10f *1/06*
U.S. Cl. 84—94 C 4 Claims

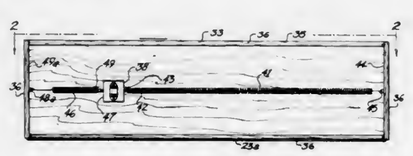


A swing operated music box is disclosed in which operating and control mechanism is interposed between a reciprocating part of a swing and a music box, the mechanism including a resilient lever swingably and pivotally mounted on a fixed part of the swing.

3,779,125
SYMPATHETIC PIANO SOUND AUGMENTER

John W. Quitmeyer, 400 Oak St., Rochester, Mich.

Filed June 30, 1972, Ser. No. 268,059
Int. Cl. G10c *3/06*
U.S. Cl. 84—189 4 Claims

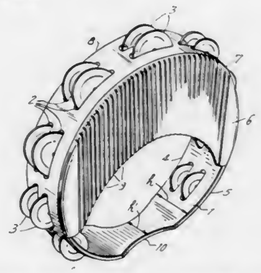


The purpose of this invention is to provide additional force from the impact of the hammer of a percussion instrument on a string associated therewith by providing a sympathetically vibrating means to act on the sounding board area of such instrument to improve the sound tonal quality and resonance of the instrument.

3,779,126
PERCUSSION INSTRUMENT

Fred A. Hoey, San Antonio, Tex., assignor to C. Bruno & Son, Inc., Melville, N.Y.

Filed July 17, 1972, Ser. No. 272,300
Int. Cl. G10d *13/02*
U.S. Cl. 84—418 9 Claims

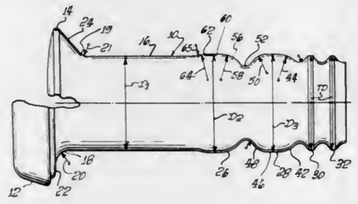


A percussion instrument comprising an annular rim having a plurality of openings distributed around the wall thereof, a plurality of jingles within said openings, a soundboard comprising a relatively large flat member fastened across one end of said rim and covering only a given portion of the available surface area enclosed by said one end of said rim, a plurality of markings in the uppermost surface of said soundboard, and a hand-hold means defined on said rim at a circumferential region of said rim.

3,779,127
STRESS COINING BOLT

Eugene R. Speakman, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Sept. 2, 1971, Ser. No. 177,326
Int. Cl. F16b *19/05*
U.S. Cl. 85—7 5 Claims

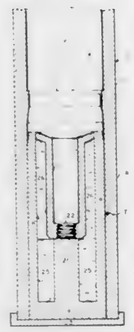


A bolt for minimizing the stress concentration generated by an aperture in metallic structure. The bolt includes a hard and rigid elongated shaft adapted for forcible insertion through the aperture. The shaft is provided with a plurality of different diameter annular protuberances at one end and a bolt head at the other. The largest protuberance is usually closest to the bolt head and has a diameter of a predetermined relationship to the diameter of the aperture so that upon forced insertion therethrough, the material forming the wall of the aperture is plastically displaced radially outward substantially one-half the difference between the diameter of the largest protuberance and the original diameter of the aperture. The length of the shaft between the largest protuberance and the bolt head may be just less than the depth of the aperture so that radii on the bolt head and on the last protuberance additionally stress the edges of the aperture to further improve the fatigue strength of the metallic structure.

3,779,128
MORTAR WITH ELECTRO-MAGNETIC RETAINING COIL

Pedro B. Pelaez, Cedar Hill Ranch, Vanderpool, Tex.

Filed Apr. 25, 1972, Ser. No. 245,467
Int. Cl. F41f *1/06*
U.S. Cl. 89—1 F 8 Claims

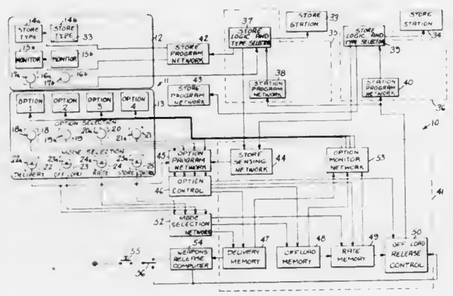


A mortar or short barrel weapon including a rifled barrel for propelling and rotating a projectile. The base plate, supports, and sighting components are conventional. This invention pertains to a newly improved design for a projectile for use in combination with a mortar barrel including an electro-magnetic retention means designed to momentarily restrain the projectile in the breech of the barrel promoting burning of the propelling charge while momentarily retaining the projectile resulting in increased pressures, muzzle velocity and range. The magnetic retention means comprises a retaining coil or coils selectively activated and deactivated by a control circuit comprising switches, coils, and conductors. An alternative mechanical retaining means is suggested utilizing retaining pins employing mechanical, hydraulic, or electro-magnetic control means.

3,779,129
ELECTRICAL MONITORING AND MANAGEMENT SYSTEM FOR AIRBORNE ORDNANCE

Michael J. Lauro, Belle Vale St., Monroe, Conn.

Continuation of Ser. No. 535,482, March 18, 1966, abandoned. This application Mar. 3, 1970, Ser. No. 16,200
Int. Cl. F41f *5/00, 5/02, 3/04*
U.S. Cl. 89—1.5 R 19 Claims



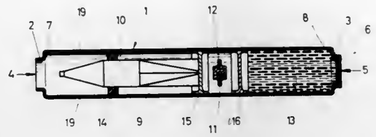
This disclosure relates to a system for controlling the actuation of different types of stores at various remote store stations where each store requires management in one or more operational modes prior to actuation. The type of store at each station is sensed and the store type is visually displayed at a central location. When the operator selects a store type for actuation other display means responsive to selection means and the sensing means display the operational modes of the selected store that require management prior to actuation thereof. Further display means responsive to the mode selection display to the operator the options available in each management mode. When the operator has made compatible selections in all mode options he may then actuate the selected store type.

3,779,130
LAUNCHING TUBE FOR PROJECTILES AND MISSILES RESPECTIVELY

Werner Schnabele, Wolfratshausen, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschnrankter Haftung, Munich, Germany

Filed Dec. 18, 1970, Ser. No. 97,479
Claims priority, application Germany, Jan. 16, 1970, P 20 01 758.7
Int. Cl. F41f *3/02*
U.S. Cl. 89—1.701 6 Claims

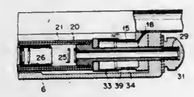
Launching tube for projectiles and missiles, respectively, in which the serviceable projectile to be launched, a propelling charge, and — in the appropriate circumstances — a filling of a flowable medium of relatively high density being separated from the propelling charge by a piston or the like are arranged axially behind each other. Immediately after the projectile left the launching tube, the latter's forward opening is closed. The pressure gases produced by the propelling charge escape from the launching tube through one or several blow-out port(s) provided for in the tube jacket and/or in the cover of the forward tube opening and/or through leaks and slots, respectively, between the cover of the forward tube opening and the tube jacket, said blow-out ports or leaks or slots having a considerably smaller cross-section or total cross-section than the caliber cross-section. The cover of the forward tube opening is preferably a pressure-resistant piston which extends over the whole cross-sectional area of the caliber and which is caught, in particular by a stop, within the portion of the forward tube opening immediately after the projectile left the launching tube. In an embodiment of the invention said blow-out ports are arranged in the tube jacket directly behind the caught piston.

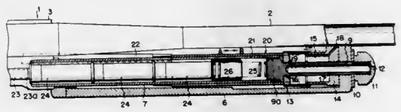


3,779,131
DEVICES FOR AUTOMATICALLY FEEDING SPARE CARTRIDGE INTO THE FIRING CHAMBER OF SHOTGUNS

Takeji Kawamura, 1099-11 Ishinazaka-machi, Hitachi-shi, Japan

Filed Apr. 12, 1972, Ser. No. 243,284
Claims priority, application Japan, Apr. 21, 1971, 46/25271
Int. Cl. F41d *5/10*
U.S. Cl. 89—191 A 1 Claim



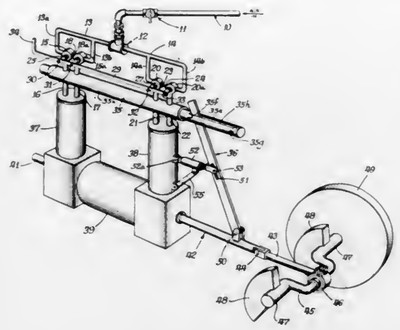


A device for automatically feeding spare cartridges in the magazine tube into the firing chamber of a shotgun of the type comprising a piston mechanism for successively feeding the spare cartridge. The mechanism comprises a cup shaped piston receiver, a cup shaped piston slidable along the outer surface of the piston receiver, a shaft extending in the axial direction of the piston and the piston receiver for guiding the piston, the piston and piston receiver cooperating to define a gas chamber, a conduit for supplying the gas generated at the time of firing into the gas chamber, and means for discharging the gas from the gas chamber when the piston is moved to one of the extreme positions by the gas admitted into the gas chamber.

3,779,132
COMBINATION AIR AND HYDRAULIC MOTOR

Thomas W. Otto, 700 N. Rand Rd., Apt. A-104, Arlington Heights, Ill.

Filed July 14, 1971, Ser. No. 162,549
Int. Cl. F15b *21/04*; F01l *31/14*
U.S. Cl. 91—4 A 8 Claims

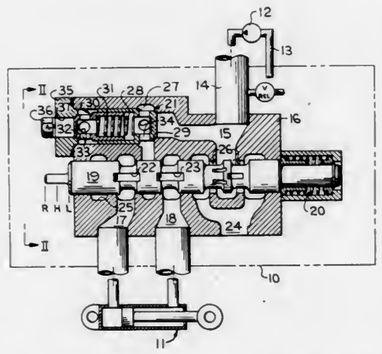


A combination air and hydraulic motor in which air under pressure is used as the primary source of power. Hydraulic liquid is used as an intermediate linkage between the air under pressure and a mechanically reciprocating arm. A spherical float acts as a coupling means to separate the air and hydraulic liquid and prevents undesirable admixture of air and liquid. Valve means for the air under pressure determines the direction of movement of the hydraulic liquid. Mechanical linkage joins the reciprocating arm and the valve means whereby the valve means is alternately shifted to move the hydraulic liquid in one direction and then the other in alternating fashion to keep the motor running.

3,779,133
MAKE-UP VALVE FOR HYDRAULIC CONTROL CIRCUIT

Joseph E. Dezelan, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 21, 1972, Ser. No. 264,961
Int. Cl. F01b *25/02*; F15b *11/08, 13/042*
U.S. Cl. 91—6 8 Claims

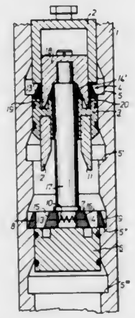


A closed reservoir is connected to a pump for delivering pressurized hydraulic fluid to a directional control selector valve operatively connected to the ends of a double-acting hydraulic cylinder. A first check valve is positioned between the pump and the selector valve to pass pressurized hydraulic fluid thereby whereas a second check or make-up valve is telescopically mounted within the first check valve in exposed relationship to the hydraulic fluid contained in the reservoir. The make-up valve opens when the fluid pressure in the reservoir exceeds a predetermined level whereby such fluid is communicated therethrough and to the selector valve.

3,779,134
NUCLEAR REACTOR CONTROL ROD DRIVES

Peter Daublebsky, and Gunter Zeitzschel, both of Frankfurt, Germany, assignors to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed June 7, 1971, Ser. No. 150,360
Claims priority, application Germany, June 6, 1970, P 20 27 988.3
Int. Cl. F15b *15/26*
U.S. Cl. 91—44 10 Claims



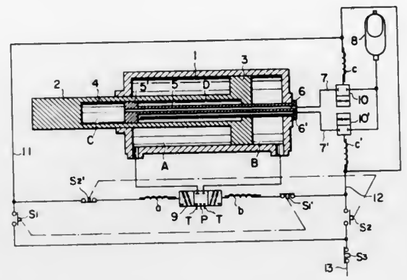
A control rod drive for nuclear reactors in which the drive is actuated through a pressure medium that acts against a control piston associated with the rod and having a locking device which includes relatively movable latches that can be selectively engaged in detents in a guide tube for the piston. A second control piston is carried in axially spaced relationship to the control piston within the guide tube and has the same type of locking device. Means are provided within the guide tube to operatively interconnect the locking devices of the two control pistons in a sequential manner and to ensure that, during a movement of the drive in a direction to withdraw the control rod from the reactor, the latches of one locking device are engaged in an associated detent during a movement of the control piston crrrying the other locking device and this locking device is not disengaged until the latches of the other locking device are engaged in another detent.

3,779,135
AIR PRESSURE ACTUATOR

Nobuyuki Sugimura, 1416, Sodeshi-cho, Shimizu-shi, Japan

Filed Mar. 20, 1972, Ser. No. 236,474
Claims priority, application Japan, Mar. 30, 1971, 46/18891
Int. Cl. F15b *15/26*
U.S. Cl. 91—45 8 Claims

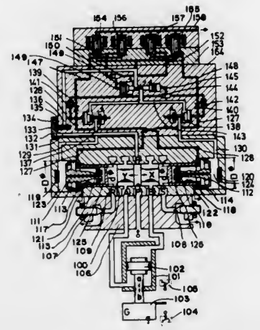
An air pressure actuator comprises an air pressure cylinder having a piston slidable therein. A brake is provided at a position where the air pressure cylinder and piston make relative movement, thus stopping their movement. When the movement of the piston in the cylinder is to be halted at a predetermined position, this is effected by the brake so as to constrain the piston correctly relative to the air pressure cylinder. Said brake is formed by an hydraulic cylinder and an hydraulic piston actuated in association with relative movement of the air pressure cylinder and air pressure piston. Alternatively the brake is formed by a retractable braking element housed in the air pressure piston.



3,779,136
VALVE UNIT FOR CONTROLLING DOUBLE ACTING FLUID OPERATING CYLINDERS

Herman Hohlein, Wolfsburg, Germany, assignor to Volkswagenwerk Akt., Wolfsburg, Germany

Division of Ser. No. 54,915, July 15, 1970. This application Apr. 11, 1972, Ser. No. 243,102
Int. Cl. F15b *13/16*
U.S. Cl. 91—361 2 Claims



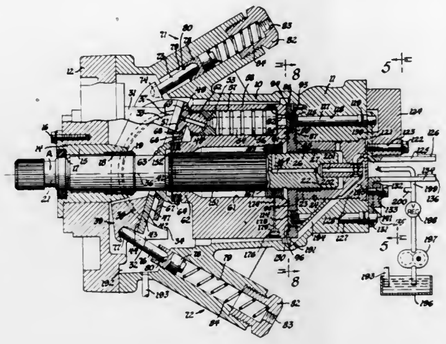
A system comprising a fluid motor and a valve unit having a movable slide connecting in its end positions, one side of the fluid motor to a fluid source under pressure and the other side of the fluid motor to exhaust and connecting in its central position, both sides of the fluid motor to the fluid source under pressure. Solenoid valves actuate the movable slide so that, when de-energized, the slide is caused to move into its central position so that the fluid motor is immediately supplied with fluid under pressure on both sides of the slide and retained in every intermediate and end position.

3,779,137
HYDROSTATIC TILT BOX BEARING

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 27, 1971, Ser. No. 183,959
Int. Cl. F01b *13/04*
U.S. Cl. 91—489 17 Claims

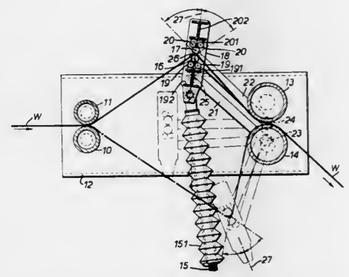
A hydrostatic pump or motor unit of the axial piston type having a tilt box supporting the annular swash plate for reciprocating the piston in which the tilt box has a hydrostatic bearing pressurized by the power circuit pressure. The hydrostatic bearing has a semi-cylindrical bearing on each side of the machine axis and each of these semi-cylindrical hydrostatic bearings have three pressure pockets. The connections from the power circuit pressure source are arranged so that the high power circuit pressure is supplied to three pockets of the bearing having the higher load and to one pocket of the bearing having the lower load while the low pressure is supplied to the remaining two pockets. When the operation of the machine is reversed to interchange the high and low pressure line, the pressurizing of the pockets in the cylindrical bearings is reversed to proportionally support the bearings in accordance with the load thereon.



3,779,138
CURL CORRECTOR APPARATUS FOR OPERATING ON A CONTINUOUS WEB

Horst Karl Lindstaedt, Bristol, and Edwin James Webb, Somerset, both of England, assignors to Masson Scott Thrissell Engineering Limited, Bristol, England

Filed Mar. 10, 1972, Ser. No. 233,511
Claims priority, application Great Britain, Mar. 10, 1971, 6,522/71
Int. Cl. B31f *7/00*
U.S. Cl. 93—1 R 6 Claims

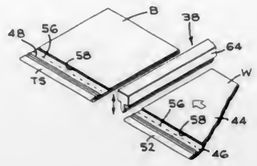


Curl corrector apparatus for operating on a continuous travelling web of paper, cardboard or like material, is arranged between two pairs of web guide rollers. Two similar curl corrector rods are rotatably mounted parallel to each other and to the web guide rollers between the latter. Means are provided for shifting these corrector rods to opposite sides of the straight line path between the guide rollers so that one or the other operates to correct curl. Support rollers back-up these corrector rods, which may also be urged together to provide a nip for the web. The corrector rods are guided by pivoting links or rails.

3,779,139
PLASTIC BAG WITH INTEGRAL TIE AND METHOD OF FORMING SAME

Daniel A. White, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 16, 1972, Ser. No. 226,710
Int. Cl. B31b *1/90, 49/04*
U.S. Cl. 93—35 VL 4 Claims

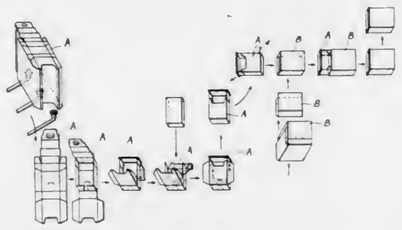


A plastic film web is perforated and sealed at the open end of a bag to provide an integral tear strip portion of the bag material which can later be either wholly or partially detached for use as a closure tie.

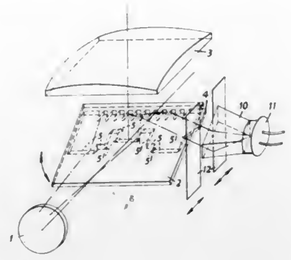
3,779,140
METHOD AND APPARATUS FOR AUTOMATICALLY SETTING UP OF PAPER CASES WITH THE BENDABLE-HEADED INNER CASE

Yoshinobu Yamamura, Kyoto, Japan, assignor to Kinki Insatsu Kabushiki Kaisha, Mitejima, Nishiyodogawa-ku, Osaka, Japan

Filed Mar. 29, 1972, Ser. No. 239,116
Claims priority, application Japan, Oct. 19, 1971, 46/83161
Int. Cl. B31b *17/74*
U.S. Cl. 93—36.01 3 Claims

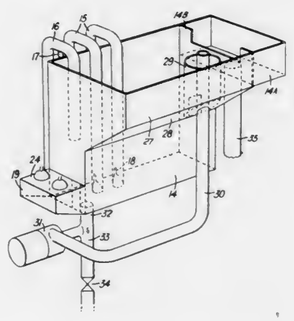

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The second reflective surface reflects light rays entering the light concentrator guide from the object lens of the camera



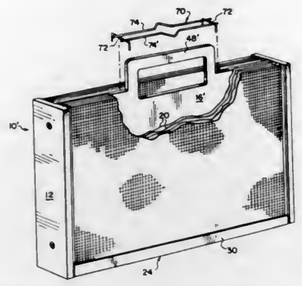
towards a light emergent surface thereof. A photoelectric receiver is situated opposite the light emergent surface of the light concentrator guide to receive the light rays.

3,779,147
APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIAL
Derrick Sunnucks Woollacott, Sidcup, England, assignor to Colorapid Limited, Croydon, England
Filed July 25, 1972, Ser. No. 274,988
Int. Cl. G03d *3/06*
U.S. Cl. 95—96 **13 Claims**



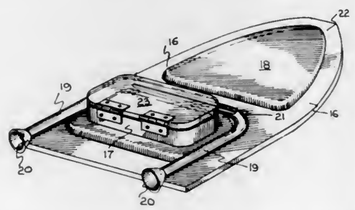
Apparatus for treating photographic prints or film material in which chemicals and water are selectively fed to a light proof container for the material to be treated, which is releasably mounted on a collecting chamber from which it is pumped by a processing pump to the container and flows back to the chamber via a light trap. The temperature of the chemicals and water is accurately controlled. The chemicals are fed selectively from containers therefore positioned in a thermostatically controlled water tank via a separate secondary pump for each vessel and via a separate syphon tube for each secondary pump. When the pumps are switched off a portion of the chemicals can syphon back for re-use. Various types of light proof containers may be used and in one construction the feed pipe from the outlet of the pump is connected to the lower end of the container with the chemical or water overflowing at the top via a surrounding outer container. A level sensing switch in the container may alternately switch on and off the processing pump to provide vertical agitation. Film spirals may be supported on a motor driven rotary rod.

3,779,148
PHOTOGRAPHIC PRINT PROCESSING BASKET
William G. Hill, 1163 Walnut St., Des Plaines, Ill.
Filed Sept. 20, 1972, Ser. No. 290,487
Int. Cl. G03d *3/00*
U.S. Cl. 95—100 **12 Claims**



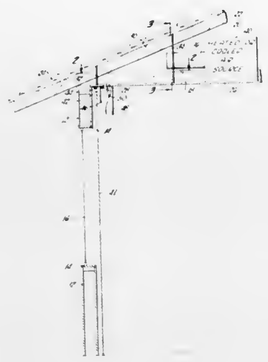
A photographic print processing basket having compartments for photosensitive films provided by a pair of facing end walls and a plurality of mesh walls of plastic material arranged in spaced parallel planes between the end walls and molded therein. A center plate is disposed between the end walls in a plane normal to the facing surfaces thereof. The end walls are screwed to the center plate. The bottoms of the compartments are blocked by a perforate plate member screwed to the center plate. The center plate has a handle secured along the upper edge thereof to extend outwardly from the basket. A print hold down device is provided selectively to block egress of the photosensitive films from the top of the compartments, one form thereof being frictionally secured to the handle and another form thereof comprising wire bails hingedly secured to the upper ends of the end walls and capable of movement between a position blocking the upper ends of the compartment and a position enabling access thereto for insertion and removal of the photosensitive films.

3,779,149
VENTILATOR DEVICE
John E. Bernard, Jr., 1804 Skycoe Dr., Salem, Va.
Filed July 26, 1972, Ser. No. 275,346
Int. Cl. B60h *1/30*
U.S. Cl. 98—2.16 **1 Claim**



A ventilator device in the form of a half dome having an open, screened face surmounting a sloping header with an internal, hinged entrance located below the header and a slotted U-tube having dual funnel shaped intakes facing in the direction of the screened face, the slotted U-tube enabling air forced therein via the funnel intakes to disperse moisture within the device to be exhausted other than through the air passageway over which the ventilator device is mounted with an opening in a vehicle to be ventilated. The ventilator device may be molded or otherwise formed, and the material of which it is made may be opaque or translucent - in the latter case providing illumination from daylight sources as well as ventilation.

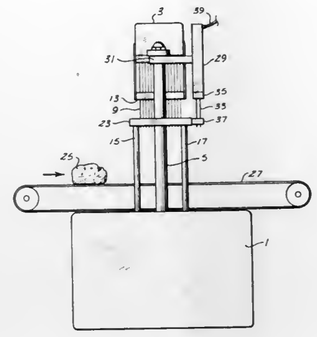
3,779,150
COMBINATION VALANCE AND CONDITIONED AIR ADMISSION DUCT
Fred C. Sproul, Sr., 12227 Ranch House Rd., San Diego, Calif.
Filed June 28, 1971, Ser. No. 157,282
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D **8 Claims**



In a structure adapted for human habitation there is provided in the ceiling of a room an elongated aperture parallel to and closely adjacent to a wall, particularly an outside wall provided with a window with which there may be associated a drapery. Depending from the ceiling paralleling and adjacent to the sides of the aperture are shallow and deep boards or panels, the former being located between the drapery and the aperture, and the latter being on the other side of the aperture. Above the ceiling and in communication with the aperture in the ceiling there is a plenum chamber to which is connected a duct for supplying heated, cooled or otherwise controllably conditioned air to the plenum chamber and through the aperture in the ceiling into the room. The depth of the shallower of the panels is preferably such as to overlap by a small amount the top of the drapery and thereby to serve as a baffle to direct the flow of air downwardly along the room side of the drapery rather than to permit the air to enter the space between the drapery and the window. The depth of the deeper board or panel is largely a matter of aesthetics, since it functions to serve as a valance and conceal from view the shallow baffle board and the aperture in the ceiling, except when the point of viewing is more or less directly below the valance boards, as well as serving the function of confining the initial flow of air to a downward direction along the wall. The aperture may be provided with adjustable baffle vanes for controlling the amount of air admitted into the room through the orifice.

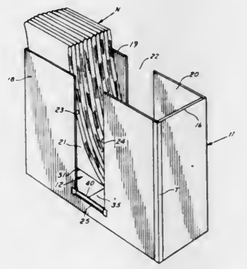
3,779,151
FORCE-LIMITED INJECTION SYSTEM FOR MEAT PROCESSING
Henry M. Ross, Nokesville, Va., assignor to Ross Industries, Inc., Midland, Va.
Filed Mar. 13, 1972, Ser. No. 233,893
Int. Cl. A23b *1/16*
U.S. Cl. 99—533 **3 Claims**

A fluid-operated apparatus for injecting seasoning solutions into meat having a reciprocable head with spaced, independently force-limited needle elements disposed over a conveyor belt for injecting the meat as it is successively positioned by longitudinal and lateral movement of the conveyor belt. The needle elements have individual poppet valves actuated by needle penetration into the meat. The needles are pushed



back into the head when bone or cartilage is encountered and a predetermined force is exceeded, thereby protecting them from damage.

3,779,152
STORAGE RECEPTACLE-BUNDLER ASSEMBLY
Duaine E. Smith, P.O. Box 19006, Denver, Colo.
Filed Aug. 30, 1972, Ser. No. 285,106
Int. Cl. B65b *13/00*
U.S. Cl. 100—34 **17 Claims**

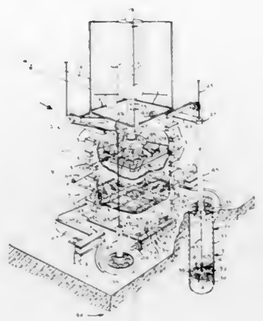


A storage receptacle-bundler assembly for newspapers and the like is made from a flat blank provided with crease lines to be formed at the point of use into the required shape including a box-like receptacle portion with an open top and opposed openings in opposed side sections together with a base portion with support surfaces at opposed positions relative to the side openings lying in a plane above the lower edge forming the side access openings to provide a throughspace for passing a tie line under a collection of newspapers supported on the support surface in the receptacle portion and then up along the top thereof to be tied into a bundle. The flat blank is preferably made of paperboard or a like lightweight, imperforate, disposable material and the receptacle and base portions are made from a single flat blank or separate flat blanks which fit together to form the complete assembly. A line cutting blade and roller support for the tie line is carried by the assembly in a convenient location.

3,779,153
SLUDGE SEPARATOR

Truman Winningham, Monta Vista, Calif., assignor to Truman Smog Control, Inc., San Francisco, Calif.

Filed Apr. 13, 1972, Ser. No. 243,805
Int. Cl. B30b *9/06*
U.S. Cl. 100—116 7 Claims



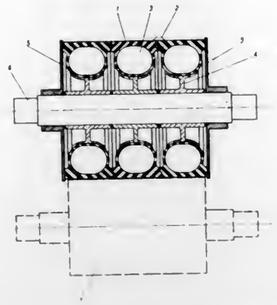
Apparatus for facilitating separation of the liquid and the particulate matter of a sludge mixture. The apparatus including an upright container for receiving a supply of the sludge mixture, said container having inlet means for receiving a supply of said sludge mixture at an elevated sludge receiving zone within the container, a liquid discharge means extending between the interior and exterior of the container engaged to said container about a liquid discharge zone vertically beneath said receiving zone for controlling discharge of liquid from said container and a particulate discharge zone vertically beneath said liquid discharge zone for discharging particulate matter from said container; a plunger member within the interior of the container, the plunger member being movable reciprocably within the container intermediate said sludge receiving zone and said particulate discharge zone; drive means engaged to the plunger member for driving the plunger member vertically within the container between said zones; collector means engaged to the container about the particulate discharge zone for retaining accumulations of the particulate matter; and conveyance means for conveying the collector means from said container to the exterior of the container; said plunger member further including sealant means for sealing said container about the bottom of the liquid discharge zone when said collector means is removed from said particulate discharge zone.

3,779,154
ROLL PRESS FOR REMOVING THE WATER FROM LAUNDERED WASHING OR OTHER TEXTILES

Hans Fritz Arendt, D-712 Bietigheim-Wttbg., Bleichinsel, Germany

Filed Apr. 16, 1971, Ser. No. 134,771
Claims priority, application Germany, Apr. 16, 1970, P 20 18 161.7
Int. Cl. B30b *3/04*
U.S. Cl. 100—155 R 1 Claim

A roller press for removing water from clean wet washing comprising at least one roller which is rigid and at least one roller which is elastic. The elastic roller consists of a plurality of resilient pressurized wheel-like elements having substantially flat peripheral side surfaces juxtapositioned to one another about a common shaft. The flat side surfaces of the

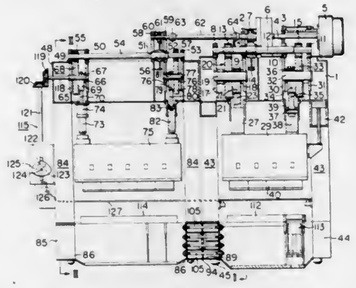


wheel-like elements are provided with interlocking means so as to form a continuous and coextensive outer peripheral roll surface which acts as a single, unitary elastic roller.

3,779,155
PLURAL-SLIDE TRANSFER PRESSING APPARATUS

Eiji Ohno, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan

Filed Dec. 29, 1971, Ser. No. 213,409
Claims priority, application Japan, Dec. 31, 1970, 45/123570
Int. Cl. B30b *15/14, 1/06, 15/04*
U.S. Cl. 100—207 2 Claims



Plural-slide transfer pressing apparatus wherein a plurality of single action presses are connected right and left at their bed portions, a transmitting shaft provided on a crown of one of the presses and a transmitting shaft provided on a crown of the other press are connected with flexible couplings, both of the presses are driven or stopped by a clutch and a brake provided in one press, and moreover a transfer bar provided across both of the presses is driven by the rotating force taken from either one of main gears provided in a crown of one of the presses.

3,779,156
TRASH COMPACTOR HAVING MEANS FACILITATING TRASH REMOVAL THEREFROM

Marlin L. Race, Elm Grove, Wis., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 16, 1971, Ser. No. 199,266
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 6 Claims

Refuse storage apparatus such as a compacting appliance of the type having a driven ram for compacting collected refuse in a bin is provided with an elongated band for use as a sling in manually removing the compacted trash from the bin. The sling is specifically designed to conform to the inside of the bin and is disposed to underlay the trash in the bin. Flap portions of the sling are adapted to be foldably retracted and positioned so as not to interfere with general operation of the compacting apparatus. The flap portions are further adapted to be manually pulled upwardly from opposite sides of the bin and brought together whereby the sling, with the compacted trash

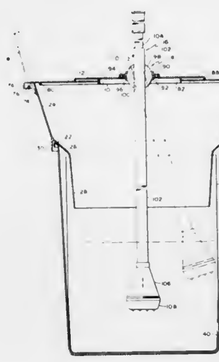


enwrapped therein, may be withdrawn from the bin by the operator exerting a lifting force on the flap portions. The sling facilitates removal of the compacted trash from the bin and enables the operator to conveniently carry the compacted trash from the compacting apparatus for final disposal with less likelihood of accidental staining to the operator's clothes or abrasion from sharp edges of crushed items in the load of trash.

3,779,157
RECEPTACLE FOR WASTE MATERIAL

Thorvald S. Ross, Jr., Manchester, and Leonard P. Entin, Wayland, both of Mass., assignors to said Ross, by said Entin

Filed Apr. 29, 1971, Ser. No. 138,482
Int. Cl. B30b *5/00;* B65b *1/24*
U.S. Cl. 100—240 32 Claims

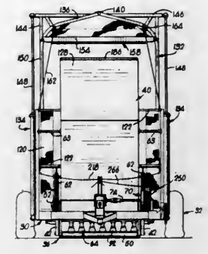


A receptacle for receiving, compacting, storing, segregating, and eventual disposal of the compacted trash. It comprises an outer holder, and inner removable and disposable container, an overlying combined funnel and cover, the funnel opening into the top of the disposable container, and the cover being pivoted to the funnel so as to be swung outwardly therefrom, and being provided with a hole through which a manually actuated compactor or ram may be inserted for crushing the trash.

3,779,158
STACK FORMING LOADER

Raymond A. Adee, Newton; Dean P. Brooks, Hesston, and John Dale Anderson, Canton, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 82,900, Oct. 22, 1970, Pat. No. 3,732,672.
This application Feb. 4, 1972, Ser. No. 223,685
Int. Cl. B60p *1/38*
U.S. Cl. 100—250 9 Claims

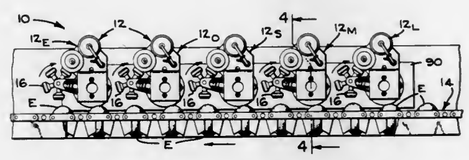


A stacking implement picks the precut crop off the ground, elevates the crop and blows it into a wagon. The crop is periodically compressed in the wagon, a crop-distributing deflector in the wagon is tilted in response to actuation of the compressor, and a stack unloading ramp is also raised and lowered by actuating the compressor.

3,779,159
EGG MARKING APPARATUS

Boyd W. Rose, Riverside, and John H. Bercovitz, Jr., Mira Loma, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed June 30, 1971, Ser. No. 158,367
Int. Cl. B41f *17/30*
U.S. Cl. 101—35 13 Claims

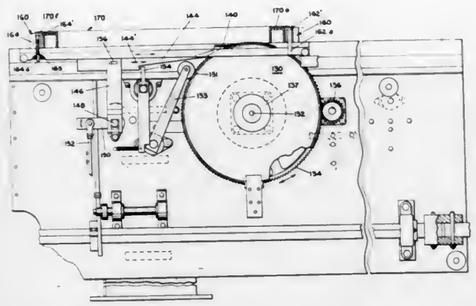


An apparatus for selectively marking individual eggs carried by a bucket-type egg conveyor includes a bank of marking wheels each of which carries a plurality of circumferentially spaced marking heads with printing dies embedded in their outer faces. The outer portion of each marking head is universally pivotable about an inner neck portion so that the printing dies can be urged into flush printing engagement with the eggs carried by the conveyor, even one that is cocked in its bucket and thereby not aligned squarely with the marking head. Each marking wheel is arranged to be continuously rotated and is mounted on a pivotable arm that is operatively connected to a rotary solenoid whereby, when the solenoid is energized, the marking wheel will be moved down to place one of its marking heads into engagement with an egg passing therebeneath. The marking wheels are each associated with a particular grade of eggs and are operated through a memory unit which records the grade of the egg carried by each individual bucket of the egg conveyor.

3,779,160
PRINTING PRESS AND WEB REGISTRY SYSTEM

James A. Black, Kent City, and Harry Russell Farwell, Cedar Springs, both of Mich., assignors to James A. Black, Kent City, Mich.

Filed July 2, 1970, Ser. No. 51,852
Int. Cl. B41f *15/04*
U.S. Cl. 101—115 7 Claims

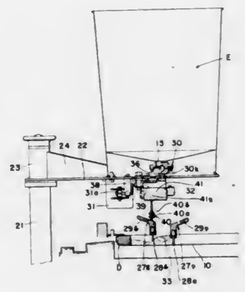


A multiple station continuous web printing press having a plurality of web-receiving operative stations spaced by web-slack receiving zones. Tab applicator means upstream of a first station are provided to apply a series of spaced registry tabs to the web. Tab engaging and advancing means at each station is shiftable to engage the tabs and advance portions of the web from the slack zones into registry at each station for printing thereon.

3,779,161
SCREEN PRINTER WITH INK LEVEL SENSING AND CONTROL

Masaharu Tatebe, Kyoto, Japan, assignor to Kurashiki Boseki Kabushiki Kaisha (a/k/a Kurabo Industries Ltd.), Hommachi, Kurashiki-shi, Okayama-Kin, Japan

Filed Sept. 20, 1971, Ser. No. 181,732
Claims priority, application Japan, Sept. 28, 1970, 45/85249
Int. Cl. B41f *15/40*
U.S. Cl. 101—123 6 Claims

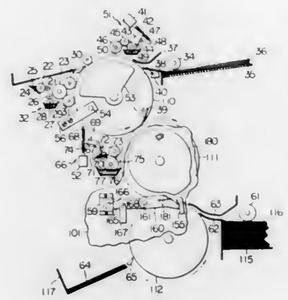


An automated printing ink supply device including an ink storage container, a slider valve through which the flow of printing ink onto an ink receiving area can be controlled and a mechanism including a liquid level detector for operating the slider valve. By this menas, the ink can be automatically supplied to the ink receiving area on the screen during the time an endless belt of the automatic screen printing machine is stopped to compensate for the amount of the printing ink that has been lost or deposited on the material to be printed.

3,779,162
COPY SHEET DISTINGUISHING DEVICE FOR ROTARY OFFSET PRINTING MACHINES

Toshiya Ogawa, Tokyo, and Toru Hasegawa, Kawasaki, both of Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 67,056, Aug. 26, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,704
Claims priority, application Japan, Sept. 8, 1969, 44/71459
Int. Cl. B41f *7/06*, *35/06*
U.S. Cl. 101—142 11 Claims



A copy sheet distinguishing device for rotary offset printing machines having a copy sheet feed device of the type in which the copy sheet feed operation is automatically controlled. The copy sheet distinguishing device controls the automatic copy sheet feed device such that the latter acts also as a marker copy sheet feed device, inserting copy sheet markers between successive groups of printed copy sheets for one master plate each time a predetermined number of copy sheets have been printed from one of a series of masterplates successively mounted on the master cylinder, so that rapid distinguishing between several groups of printed copy sheets can be facilitated after the completion of duplication of a predetermined number of master plates. A logic control circuit is disclosed including a first pulse generator responsive to the printing of a copy sheet and a second pulse generator responsive to each revolution of the master cylinder, which signals are used to affect control of the copy sheet feed device to provide printed copy sheets and marker copy sheets from the same stack.

3,779,163
PRINTING METHOD

Bart A. Inwood, 186 Lawrence Dr., Paramus, N.J.

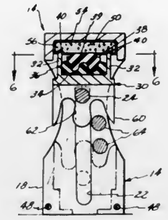
Filed Oct. 29, 1971, Ser. No. 193,786
Int. Cl. B41m *1/10*, *1/18*
U.S. Cl. 101—170 9 Claims

A printing method wherein a series of indicia, a geometric design, an artistic work or the like is scribed on a flexible plastic sheet serving as a printing plate. The plastic sheet is then coated with a water base ink, an oil base ink, or both, one after the other in either order. The excess ink is removed after each coating. The inked plastic sheet is placed on top of an ink receptive paper or the like with the scribed and inked surface of the plastic sheet adjacent the paper. The non-scribed, non-inked side of the plastic sheet is rubbed with a hard, smooth-edged implement. Thereafter, the plastic sheet is removed from the paper and the ink thereon is permitted to dry.

3,779,164
STAMPING DEVICE

Jon A. Study, Grosse Pointe Woods, Mich., assignor to Carco, Inc., Detroit, Mich.

Filed May 3, 1971, Ser. No. 139,784
Int. Cl. B41k *1/54*
U.S. Cl. 101—334 1 Claim

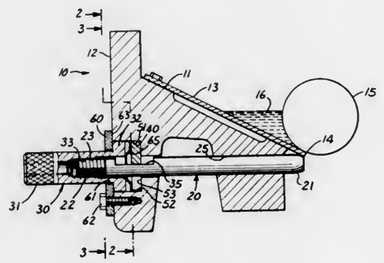


A stamping device for providing ink to a stamp die supported by a frame movable between a first position wherein the stamp die is in contact with an ink pad through an opening in an envelope that otherwise completely encloses the ink pad, and a second position wherein the frame is shifted downwardly to disengage the stamp die from the ink pad. The frame is attached to the stamping device in such a manner that downward movement of the stamp die away from the ink pad results in the movable frame being rotated 180° to move the stamp die into a position for further downward movement toward a stamping operation. Tensioning means are provided for urging a sealing member, carried by the movable frame and circumscribing the stamp die, into engagement with the outer surface of the envelope to provide a seal around the envelope opening, thereby preventing a premature drying of the ink carried by the ink pad.

3,779,165
INK FOUNTAIN IN AN INKING MECHANISM FOR PRINTING MACHINES

Paul Abendroth, and Kurt Reiser, both of Offenbach, Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach/Main, Germany

Filed Nov. 9, 1972, Ser. No. 304,898
Int. Cl. B41f *31/04*
U.S. Cl. 101—365 9 Claims

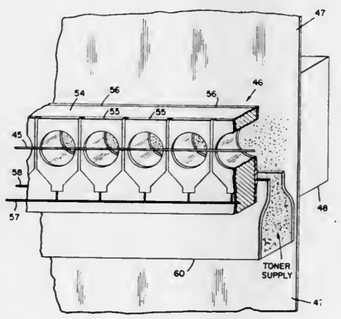


An ink fountain having a fountain roller and cooperating blade, the fountain including a plurality of blade adjusting pins which are mounted in the frame for endwise movement. The presented outer ends of the pins are threaded for engagement by respective adjusting nuts. The adjusting nuts are captively rotatable in the frame and a key is interposed between the frame and each of the pins for holding the pin against rotation as the nut is turned to move the pin inwardly and outwardly. The captivity is provided by an annular flange or shoulder at the inner end of each nut, the flange being received in a groove enclosed by a retainer plate, the retainer plate being removable to permit retraction of the pin, nut and key as a unit for cleaning purposes.

3,779,166
ELECTROSTATIC PRINTING SYSTEM AND METHOD USING IONS AND TONER PARTICLES

Gerald L. Pressman, Cupertino; Hugh Frohbach, Sunnyvale, and David E. Blake, Woodside, all of Calif., assignors to Electroprint, Inc., Palo Alto, Calif.

Filed Dec. 28, 1970, Ser. No. 101,681
Int. Cl. G03g *13/06*
U.S. Cl. 101—426 29 Claims

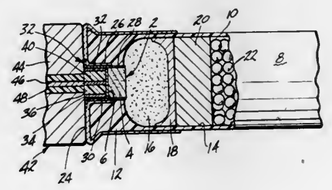


A system for electrostatic printing including a corona source and electrode for generating a substantially uniform ion stream in the direction of a print receiving medium and a multilayered apertured grid modulator interposed in the ion stream for modulating the cross sectional flow density of ions in the stream in accordance with a pattern to be reproduced. A toner supply introduces a cloud of substantially uncharged toner marking particles adjacent the print receiving medium whereby the modulated ion stream selectively impinges upon and charges toner particles in the cloud which are thereby accelerated and deposited on the print receiving medium in accordance with the pattern to be reproduced.

3,779,167
ELECTRICAL INITIATOR

Charles G. Irish, Jr., Cheshire; Joseph W. Silva, Northford, and Raymond I. Cowles, Woodbridge, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 4,480, Jan. 21, 1970. This application Sept. 5, 1972, Ser. No. 286,387
Int. Cl. F42b *5/08*
U.S. Cl. 102—46 1 Claim

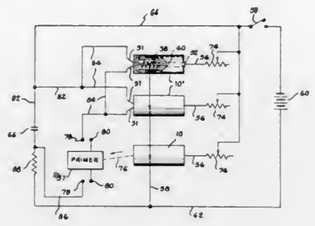


An initiator having a body of nitrocellulose material having a surface characterized by thin fibres or thin webs with a film of a conductive material adhered to said surface.

3,779,168
ELECTROCHEMICAL FIRING DEVICE

Douglas M. Hinely, Derwood, and Robert J. Lyon, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 15, 1971, Ser. No. 134,171
Int. Cl. F42b 5/08; F23q 7/02
U.S. Cl. 102—70.2 R 5 Claims

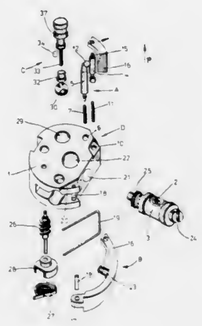


A firing device wherein an electroresponsive explosive primer is constrained in an "out-of-circuit" position by an electrolytically controlled delay device. The circuit includes several electrolytically timed normally open switches which prevent the initiation of the primer until a predetermined length of time has elapsed whereupon the switches close and complete the circuit allowing a charged capacitor to discharge through the primer thereby initiating detonation.

3,779,169
DETONATING CAP SAFETY DEVICES

Gunter Backstein, and Lothar Petzsch, both of Meerbusch-Langst, Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Jan. 27, 1972, Ser. No. 221,280
Claims priority, application Germany, Feb. 13, 1971, P 21 06 964.7
Int. Cl. F42c 15/24
U.S. Cl. 102—78 9 Claims

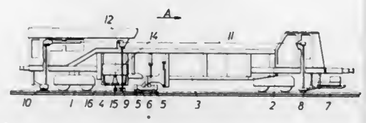


In projectiles it is desirable to prevent premature detonation of the explosive charge and therefore the detonating cap is provided in a rotor which is turned from a safety position to a detonating position by spring means after operation of a safety chain comprising several safety components including a first component comprising two interdependent inertia bolts, a second component released by the first component, and a third component constructed as a gas pressure safety device, the second and third components being operatively connected with the rotor such that premature release of one of the components blocks rotation of the rotor into the detonating position. A self-contained disc-shaped construction housing all the safety components is provided for attachment to a projectile.

3,779,170
CONTROL FOR THE LATERAL ADJUSTMENT OF A TRACK WORKING TOOL ASSEMBLY

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria

Filed Dec. 30, 1971, Ser. No. 214,070
Claims priority, application Austria, Feb. 19, 1971, 1458
Int. Cl. E01b 27/16
U.S. Cl. 104—12 10 Claims

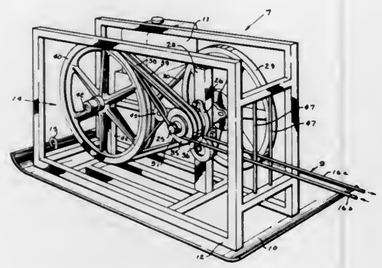


The lateral adjustment of a track tamping unit is controlled by a sensor associated with the unit and arranged to sense the lateral position of the track in respect of the unit as the tamper moves on the track rails. The sensor produces electrical control signals corresponding to the sensed track deviations, and an adjustable control device for the track tamping unit drive is electrically connected to the sensor and receives the control signals. The signals adjust the control device for moving the track tamping unit laterally in response to the control signals.

3,779,171
PORTABLE SKI LIFT DRIVE MECHANISM

John J. Littlehorn, Jr., 4530 S. Broadway, Englewood, Colo.

Filed Jan. 24, 1972, Ser. No. 220,263
Int. Cl. B61b 7/06
U.S. Cl. 104—173 8 Claims

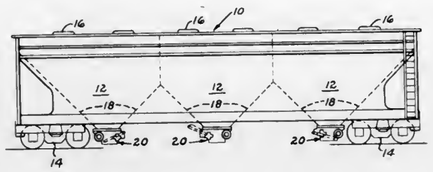


A portable ski lift including a sled-mounted power drive mechanism and a return pulley mechanism between which extends a continuous-loop tow rope. The power unit drives the rope to pull a skier uphill. The tow rope is driven by a rope drive mechanism which includes two or more drive sheaves fixed on the drive shaft for powered rotation by the engine. A corresponding number of rope drive pulleys are journaled for rotation about an axis parallel to the axis of rotation of the drive shaft and are drivingly connected with the sheaves by drive belts. A rope idler wheel is positioned intermediate the pulleys and sheaves. The tow rope enters the drive mechanism and passes sequentially over the pulleys and idler wheel, then exits from the drive mechanism through a positive rope feed wheel arrangement. The tow rope is gripped between each rope drive pulley and the associated drive belt extending between the pulley and the sheaves. Additional guide rollers may be provided to direct the tow rope in and out of the drive mechanism.

3,779,172
RAILWAY HOPPER CAR OUTLET

Dennis J. Schipper; Harold T. Ried, and Dallas W. Rollins, all of St. Charles, Mo., assignors to ACF Industries Incorporated, New York, N.Y.

Filed Mar. 24, 1971, Ser. No. 127,452
Int. Cl. B61d 7/20, 7/22, 7/32
U.S. Cl. 105—282 P 15 Claims

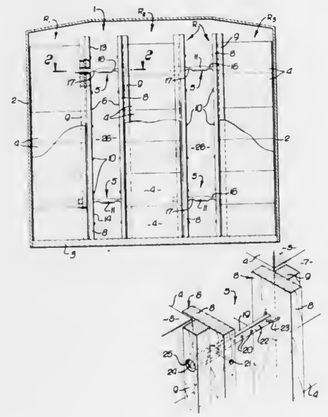


A railway car hopper outlet for either gravity or pneumatic unloading includes an inclined wedge shaped gate, which is mounted on upper and lower rollers for limiting tilting of the gate during opening. A pneumatic discharge tube extends along the lower edge of the gate in a direction perpendicular to the direction of the movement of the gate so that the gate in its closed position guides the lading toward the pneumatic tube. The pneumatic tube has a rotatable valve adapted to open at and above the lower edge of the gravity gate for receiving lading. For gravity operation, the rotatable valve is left closed and the gate only is moved longitudinally. For pneumatic operation, the gate is left closed and only the valve is opened.

3,779,173
BOXED PRODUCE CARLOADING

Harold C. Pierce, 234 Mountain View Ave., Pomona, Calif.

Division of Ser. No. 44,942, June 10, 1970, Pat. No. 3,701,324.
This application June 23, 1972, Ser. No. 265,680
Int. Cl. B61d 45/00; B60p 7/10
U.S. Cl. 105—369 S 4 Claims

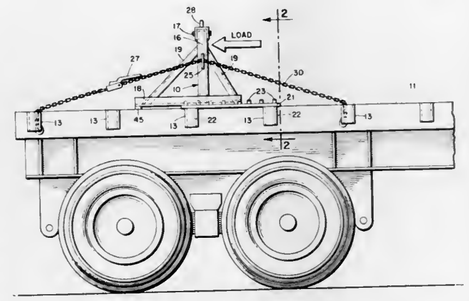


Boxed produce load for refrigerated rail cars of the type having boxes arranged in vertical stacks and the stacks aligned in plural rows running longitudinally of the car and in which the rows have a cumulative width less than the load width of the car, means being provided to expand the load to the car load width and to support the rows against lateral displacement including a longitudinal series of opposed pairs of uprights engaging the rows and rigid elements extending between and supporting the upright pairs; the rigid elements being length adjustable to selectively transversely space the rows to occupy the full load width of the car and brace the load.

3,779,174
BULKHEAD

William F. Doyle, 2818 McAlister St., Topeka, Kans., and Charles W. Artzer, 631 Freeman St., Topeka, Kans.

Filed Aug. 25, 1972, Ser. No. 283,765
Int. Cl. B60p 7/14
U.S. Cl. 105—376 11 Claims

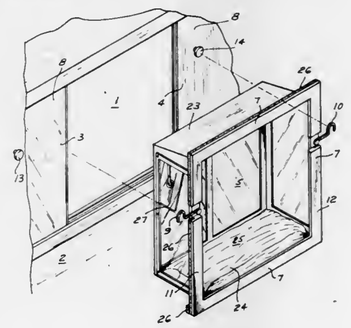


A bulkhead for use on vehicles having an open flat cargo carrying surface and stake pockets has a retaining panel attached to the bed of the vehicle with a rack carried by the panel and a comb structure which is secured in the stake pockets. The rack and comb are secured together with a plurality of longitudinally spaced pegs and holes which permit longitudinal positioning of the bulkhead against the cargo. A bracket having a slot of two different cross-sections is provided on the bulkhead to cooperate with a chain to secure the bulkhead to the vehicle against relative vertical movements.

3,779,175
PORTABLE LOCOMOTIVE CAB STORM WINDOW

Raymond Allen Wallen, Sr., Spokane, Wash., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

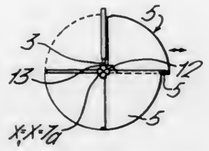
Filed Aug. 18, 1972, Ser. No. 281,737
Int. Cl. B61c 17/04; B61d 25/00; B61k 13/00
U.S. Cl. 105—456 7 Claims



A portable storm window for a window of a locomotive cab comprises a glass panelled box with an adjustable rear view mirror having an open side and dimensioned to fit into the maximum open area of the cab window when the cab window is open. The box extends outward beyond the outside of the locomotive at the cab window. A protruding strip around the

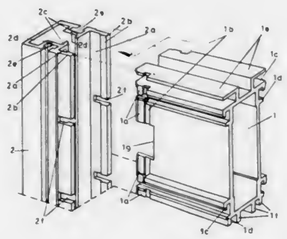
open side of the box is adapted to abut the inside of the locomotive at the cab window. Releasable fastening means on the strip releasably affixes the storm window to the inside of the locomotive at the cab window.

3,779,176
FOLDING TABLE
Giancarlo Piretti, Bologna, Italy, assignor to Anonima Castelli s.a.s. di Casare Castelli, Bologna, Italy
Filed Sept. 17, 1971, Ser. No. 181,550
Int. Cl. A47b 3/00
U.S. Cl. 108—112 **3 Claims**



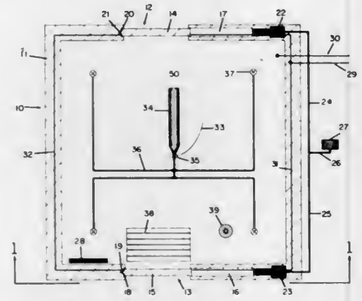
A folding table comprising a carrying structure which is constituted of a plurality of C-shaped metallic frames and of a plurality of plates designed to form in combination the bearing plane of the table, said C-frames being pivotally connected to each other, one excepted, by means of hinge devices having vertical pivot axes and arranged at the sides of each vertical members of the C-frames, said vertical members being so shaped as to form in the use position of the table a single central composite post for the table, while the upper arms of the C-frames in said use position are radially positioned and spaced apart from each other of a same angle and forming the carrying means for said plates, which are designed to be each located between two adjacent C-frames, when in use position, while the lower arms of said C-frames form the radial legs of the table, said C-frames being provided with first and second stop means, wherein the first stop means define the mutual position of the C-frames, where the parts constituting the table occupy the minimum space, while the second stop means define the position of the C-frames in the use position of the table, each of the said plates being so shaped as to be inserted between two adjacent C-frames, when these latter are in their operative position, said plates being associated with means adapted to connect said plates to the upper arms of the C-frames and/or to each other in a disconnectable manner.

3,779,177
MODULAR FURNITURE
Ernesto Nesofsky Gigante, 21-23, Alfonso Gomez St., Madrid, Spain
Filed Mar. 31, 1971, Ser. No. 129,694
Claims priority, application Spain, Mar. 31, 1970, 378111
Int. Cl. A47b 43/00, 47/00
U.S. Cl. 108—114 **5 Claims**



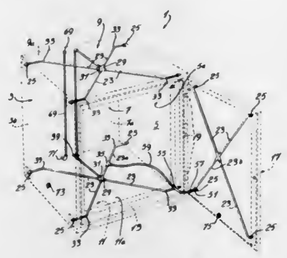
Modular furniture such as wardrobes, clothes lockers, shelving, sliding door cabinets, filing cabinets and the like, is assembled from extruded sections that snap together at their ends and that also have special interconnecting members. Particular provision is made for the reception of sliding door panels and for the hanging of shelves from the modules, the sliding doors being lockable.

3,779,178
RESTRAINED ACCESS PROTECTION APPARATUS
Gerald Frederick Riseley, Jr., 8149 E. 31st Ct., Tulsa, Okla.
Filed Feb. 14, 1972, Ser. No. 225,822
Int. Cl. E05g 3/00
U.S. Cl. 109—6 **9 Claims**



An apparatus wherein an intruder may be restrained within a protected area and held captive therein until the proper authorities are summoned in order to deactivate the apparatus, and apprehend the thief, thereby preventing loss of property as well as loss or endangerment of human life.

3,779,179
FIRE-INSULATED PARTITION AND FIREPROOF CONTAINER MADE THEREWITH
Jules Marois, 2060 Boulevard Talbot, Notre Dame des Laurentides, Quebec, Canada
Filed Mar. 31, 1972, Ser. No. 240,162
Int. Cl. E05g 3/00
U.S. Cl. 109—33 **6 Claims**



A fire insulated partition which can be used whenever it is necessary to store valuable papers or other articles of value inside a fireproof enclosure. The partition comprises an interior wall and an enterior wall both of which are spaced from one another to define an inner space therebetween. A wet-pipe system of sprinklers is disposed in the above inner space. This system includes water pipes connected to the sprinklers and valves for the sprinklers. There is provided a water inlet for filling the water pipes and for keeping water under pressure in the water pipes. The exterior wall is provided with fusible metal portions which are associated with the valves and are

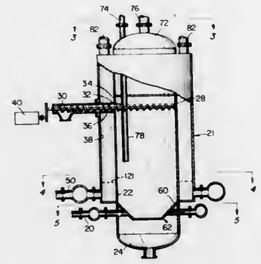
operable when the exterior wall is heated to cause opening of the valves and to produce a discharge of water inside the inner space, by the sprinklers, thus filling it with water. Water is continuously drained from the top of the inner space, thus producing a continuous circulation of a volume of water inside the inner space after the valves have been opened.

3,779,180
COMBUSTION CHAMBER
Manfred Hardemann, Gummersbach, Germany, assignor to L & C Steinmuller GmbH, Gummersbach, Germany
Filed Oct. 26, 1971, Ser. No. 192,009
Claims priority, application Germany, Oct. 24, 1970, P 20 52 315.3
Int. Cl. F23g 7/04
U.S. Cl. 110—7 R **3 Claims**



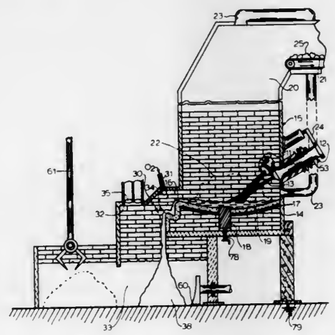
An arrangement for burning substances contained in liquid media and also for burning fine granular substances, in which a plurality of pipes line the inside of a combustion chamber and have a section bent into the interior of the combustion chamber so as to define chamber means in which burner nozzles are located for injecting the substances to be burned in the combustion chamber, while air nozzles in the ceiling of the combustion chamber blow air near the walls of the combustion chamber in counter current flow to the direction in which the burner nozzles flow.

3,779,181
FLUID BED DRYER AND HEAT EXCHANGE SYSTEM
Herbert K. Staffin, and Robert Staffin, both of Colonia, N.J., assignors to AWT Systems, Inc., Wilmington, Del.
Filed Aug. 30, 1972, Ser. No. 284,705
Int. Cl. F23b 1/38
U.S. Cl. 110--7 R **15 Claims**



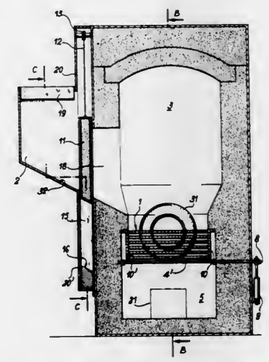
A fluid bed dryer comprising a drying chamber and a heating jacket contiguous with a drying chamber. The drying chamber and the heating jacket are each adapted to contain a bed of fluidizable particulate heat transfer material and each has a fluidizing gas inlet and an exhaust gas outlet. The drying chamber also has a feed inlet and a feed outlet. The fluid bed dryer may be used in a heat exchange system in combination with means for conveying a slurry comprising liquid and combustible waste solids to the feed inlet of the drying chamber of the fluid bed dryer; a reactor having a feed inlet, a reaction section, and a vapor exhaust port; conveyor means for transferring solids from the feed outlet of the drying chamber to the feed inlet of the reactor; conduit means connecting the vapor exhaust port of the reactor to the fluidizing gas inlet of the heating jacket of the dryer; and means for providing fluidizing gas to the fluidizing gas inlet of the drying chamber.

3,779,182
REFUSE CONVERTING METHOD AND APPARATUS UTILIZING LONG ARC COLUMN FORMING PLASMA TORCHES
Salvador L. Camacho, O'Neal Rd., Raleigh, N.C.
Filed Aug. 24, 1972, Ser. No. 283,516
Int. Cl. F23g 5/12
U.S. Cl. 110—8 R **10 Claims**



A method and apparatus are disclosed which are based on utilizing a plural number of long arc column forming plasma torches in combination with a refractory lined furnace chamber to continuously pyrolyze household and industrial refuse material fed into the chamber and convert the same to usable materials and useful forms of energy.

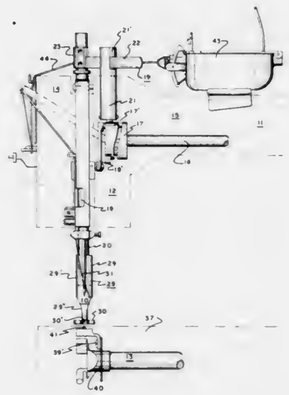
3,779,183
TIRE INCINERATOR
Jacques Brion, Velizy-Villacoublay, France, assignor to Commissariat a L'Energie Atomique
Filed May 12, 1972, Ser. No. 252,549
Claims priority, application France, May 13, 1971, 7117311
Int. Cl. F23g 7/00
U.S. Cl. 110—18 R **10 Claims**



The incinerator is designed to burn whole tires representing 100 percent of the charge. A hearth which is smaller in width

than the diameter of the tires to be burned has longitudinal vertical walls provided with lateral orifices for the admission of combustion air. A charging lock-chamber having internal dimensions slightly larger than the dimensions of a vertical tire has a sloping floor along which the tire rolls into the hearth and remains vertical. The combustion chamber of the incinerator is fitted with nozzles for the injection of air in order to induce high turbulence.

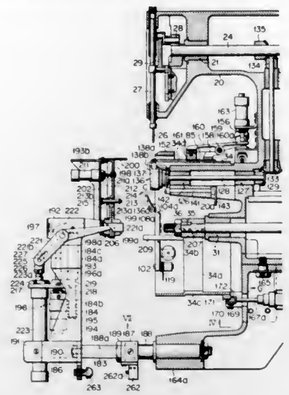
3,779,184
FEED DOG AWL ASSEMBLY
Ferdinand H. Jean Blanc, 2719 N. 36th, Boise, Idaho
Filed July 20, 1972, Ser. No. 273,569
Int. Cl. D05b *27/02*
U.S. Cl. 112—2 **2 Claims**



A feed dog awl assembly for making pilot holes for a sewing machine needle includes a foot subassembly having means operable to drive the sewing foot in a vertically oscillating motion and an awl subassembly disposed above the bobbin of the sewing machine. The foot subassembly may include a selectively controllable operating lever operable to control the lowermost travel of the sewing foot.

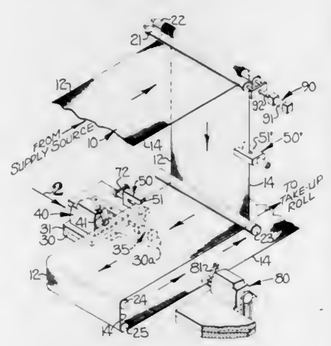
3,779,185
APPARATUS FOR JOINING TOGETHER TWO PIECES OF WORK FABRIC OR SIMILAR MATERIALS
Shiro Sakakura, Nagoya, and Naotake Ito, Chiryu, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Horita-dori, Mizuho-ku, Japan
Filed Nov. 4, 1971, Ser. No. 195,789
Claims priority, application Japan, Nov. 5, 1970, 45/97644
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 **25 Claims**

An apparatus for joining together two pieces of work fabric or similar materials which comprises a first support for setting a first piece of work fabric and a second support for setting a second piece of work fabric and causes the edges of the first and second pieces to be superposed one on the other by the



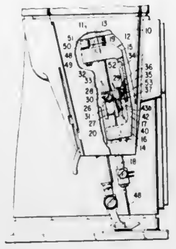
movement of at least one of said supports so as to have said superposed edges later joined together by suitable joining means such as stitch forming means.

3,779,186
SELF-ALIGNING EDGE STITCHING APPARATUS FOR TRAVELING WEBS
Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, Ware Shoals, S.C.
Filed Aug. 26, 1969, Ser. No. 853,224
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.14 **9 Claims**



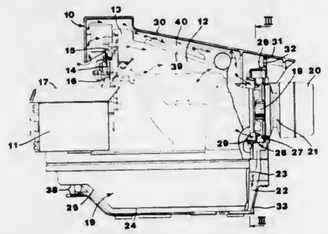
Apparatus for stitching a traveling web along the longitudinal side edges thereof, characterized by compensating for lateral shifting of the web and for variations in the width of the web, and including the following components. A first longitudinal edge stitching mechanism is mounted for lateral movement with respect to the web and is responsive to an edge sensing means sensing the lateral position of the first longitudinal edge of the moving web to insure that the first stitching mechanism is always in proper stitching position with respect to the first longitudinal edge of the moving web. A stationary, second longitudinal edge stitching mechanism is provided along with related laterally shiftable web guide means controlled by an edge sensing means sensing the lateral position of the second longitudinal side edge of the moving web to insure that the second longitudinal side edge is always in proper stitching position with respect to the second stitching mechanism.

3,779,187
SEWING MACHINE WITH HOOK TIMING AND SKIP STITCH MECHANISMS
Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, New York, N.Y.
Filed Dec. 13, 1972, Ser. No. 314,647
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 R **11 Claims**



A sewing machine, particularly of the zigzag stitch type in which the needle bar gate is pivotably mounted in the frame of the machine and carries a needle bar and needle mounted thereon for endwise reciprocation and vibratory movement transverse to the line of stitches being produced. The penetration of the needle is co-ordinated with the vibratory movement of the needle bar gate by the provision of an eccentric member co-operable with the gate and with a latch member carried by the needle bar, pivotal movement of the gate effectuating rotation of the eccentric member and linear displacement of the latch member. Means are also provided which cooperate with the latch member for effecting skip stitching.

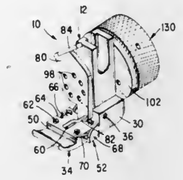
3,779,188
AIR-COOLED SEWING MACHINE
Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy
Filed May 18, 1972, Ser. No. 254,376
Int. Cl. D05b *71/00*
U.S. Cl. 112—218 R **6 Claims**



An improved sewing machine construction in which the machine is encircled within a pair of envelopes and the lubricant sump is formed with cooling fins which define passages through which cooling air is directed from a suitable source that delivers air between the pair of envelopes and the machine body.

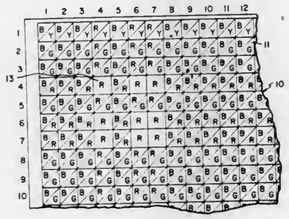
3,779,189
THREAD TRIMMING DEVICE FOR SEWING MACHINES
Douglas J. Fox, Halton, England, assignor to The Singer Company, New York, N.Y.
Filed Dec. 21, 1972, Ser. No. 317,501
Int. Cl. D05b *65/00*
U.S. Cl. 112—252 **13 Claims**

A manually operated thread cutting attachment for a sewing machine which may be used in place of the conventional sewing machine presser foot. A manually operable drive wheel is fastened on a short shaft journaled in an enlarged presser foot shank and extending in the direction of feed. Secured to the front of the shaft is a disk-like member carrying on its periphery a thread engaging finger, which when the shaft is initially manually turned, swings across the top of the presser foot sole plate and engages the needle thread, drawing it slightly to one side of the needle hole in the presser foot sole plate. The thread engaging finger remains in this position by means of a latch member mounted with the knurled drive wheel while the operator turns the hand wheel of the machine. As the needle descends to form the next stitch, it lays a needle



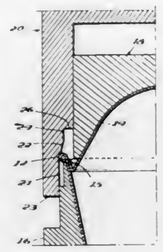
thread loop over the threading engaging finger. The knurled drive wheel is thereafter further manually rotated causing the thread engaging finger to pull upwardly and outwardly on the needle thread and thereby draw bobbin thread up through the throat plate so that both the needle thread and the bobbin thread extend up through the hole in the presser foot sole plate in position to be cut by a knife slidably mounted in the presser foot. The knife is actuated by a further turning of the knurled drive wheel which causes a strike on the disk-like member to engage and slide the knife. When thread severing is completed a spring effects return of the thread engaging finger to its initial position.

3,779,190
METHOD OF WORKING TARTAN OR GINGHAM ON CANVAS
Sara Hower, 101 Manorview Rd., Scott Township, Pa.
Filed June 14, 1972, Ser. No. 262,483
Int. Cl. D05b *95/00, 97/00*
U.S. Cl. 112—262 **10 Claims**



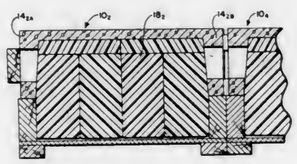
A method of preparing a canvas for needlework, and of making a tartan or gingham pattern on canvas, comprises tramming both horizontal and vertical rows of canvas to form an intersection of yarn which defines the combination of colors and the boundaries of the pattern. The yarn is secured to the canvas with yarn of the same colors used in the trame to complete the pattern.

3,779,191
METHOD AND APPARATUS FOR SECURING A CLOSURE MEMBER WITHIN A CONTAINER
Thomas E. Marion, Baltimore, and Richard D. Collins, Timonium, both of Md., assignors to Maryland Cup Corporation, Owings Mills, Md.
Filed July 6, 1972, Ser. No. 269,304
Int. Cl. B21d *51/34*
U.S. Cl. 113—120 K **16 Claims**



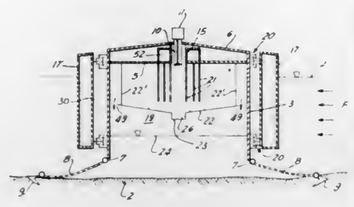
A method for securing a closure member in an open end of a container having a curled or rolled rim is described. Die elements are provided including a container holder, an external pressure pad, and a forming head. A container is supported in said holder and a closure member is inserted into said container just below the curled or rolled rim thereof where it is held in place by said pressure pad. The forming head is then actuated to force or roll the rimmed edge inwardly and crimp the same against the closure member to lock the closure member within said container.

3,779,192
MODULAR CONCRETE FLOATATION UNIT
Paul S. Gonzalez, 12258 Buckingham Ave., Baton Rouge, La.
Filed Aug. 9, 1971, Ser. No. 169,968
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 F **15 Claims**



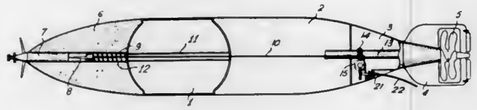
A modular floatation unit useful in the construction of floating piers, boat houses, work platforms, docks, marinas, and the like, readily articulated and of particular utility in water bodies with frequent level changes. The modular floatation unit is comprised of the combination of a reinforced concrete channel slab having an upper flat side and a hollow or concave side, blocks of cellular foam or plastic wrapped in a protective covering or coated with a protective film packed within the hollow or concave side of the said slab, and an open wood frame secured to the underside of the concrete slab to hold the wrapped or coated blocks of cellular foam or plastic in place. The center of gravity of the modular floatation unit is located at a point wherein, in water, the upper flat side of the concrete slab will float above the surface, and provide a deck or walkway as well as protection for the wrapped blocks of cellular foam or plastic. The wood frame will be submerged where it will protect the blocks of cellular foam or plastic against impacts, and it is itself protected against deterioration.

3,779,193
FLOATING OIL STORAGE INSTALLATION
Hiroshi Hirata, 15-30, 2-chome Sanno, Ota-ku, Tokyo, Japan
Filed Jan. 6, 1972, Ser. No. 217,705
Claims priority, application Japan, Jan. 8, 1971, 46/150
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 T **15 Claims**



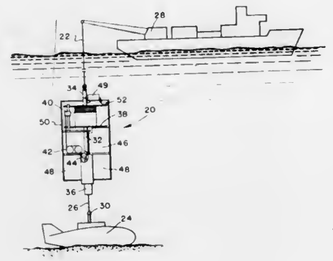
Floating oil storage tank has a roof and an open bottom. Upper part of tank beneath the roof may serve as a pontoon for floating the tank when no oil is stored in it. The pontoon may house offices, equipment room, operations room, and lodgings. The tank may be secured to fixed anchors on the sea bottom or to a rotatable anchor about which the tank rotates depending upon the direction of the wind, waves, and tide. Oil may be supplied to the tank from a submarine pipe line through the rotatable anchor. Wave protectors may be carried externally of the tank, and may be either fixed or rotatable with respect to the tank. The top wall of the upstream wave protector, with respect to the direction of wave movement, may be sloped to reduce up and down movement of the tank. The tank may have internal sludge collecting and depositing means. A plurality of tanks may be bonded together and a tanker temporarily bonded to the tanks during discharge of oil into the tanker.

3,779,194
MARINE MISSILES FOR DESTRUCTION OF SUBMARINE TARGETS
Louis Lazare Kahn, 102, rue de Grenelle, Paris, France
Filed Sept. 27, 1956, Ser. No. 612,517
Int. Cl. F42b *19/01, 19/06, 19/10*
U.S. Cl. 114—20 R **10 Claims**



1. A self-propelled marine missile with an impact detonator for the destruction of a movable submarine target by dive launching in straight line toward said target, comprising, in combination, an adjustable elevator carried by the missile for dive steering said missile, means housed within the missile and connected to said elevator for adjusting the latter with respect to the missile, adjustable means accessible externally and connected to said adjusting means for controlling the latter and adjustable at the launching time for determining a constant dive angle of the missile equal to the angle of negative elevation in depth of the submarine target as detected at said launching time whereby the adjusted elevator maintains the path of the dive launched missile substantially coincident with the detected line of negative elevation of said submarine target; an assembly housed within the missile comprising an explosive charge, the impact detonator of said charge a distance responsive detonator in contacting engagement with said charge, and means for detonating the latter means impact of said missile against the submarine target; means housed within the missile for maintaining said detonating means in an inoperative position at the launching time, an adjustable means housed within the missile and responsive to the distance travelled by the missile along the path thereof for releasing said maintaining means in order to obtain an immediate operation of said detonating means, means housed within the missile for adjusting said releasing means at the launching time to operate the release of the maintaining means upon travelling a distance equal to that of the movable submarine target as detected at the launching time, and means connected to said last adjusting means, for remotely controlling the latter in accordance with said detected distance and disconnectable from said last adjusting means when the missile is dive launched.

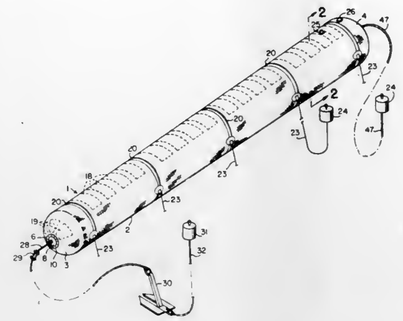
3,779,195
LIFT CABLE TRANSFER APPARATUS
Ernest N. Oeland, Jr., West Covina, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 12, 1970, Ser. No. 2,303
Int. Cl. B63c *7/04*
U.S. Cl. 114—51 **5 Claims**



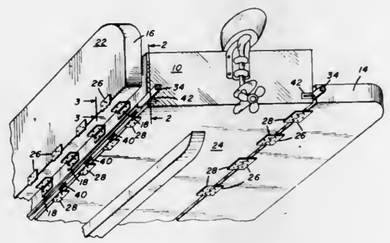
A lift cable transfer apparatus for retrieving a submerged object including: a strongback; a reel mounted on the strongback for reeling in and storage of a messenger line from the submerged object; power means mounted on the strongback for powering the reel; and latching means mounted on the strongback for connecting the strongback to the submerged object.

3,779,196
TOWABLE FLOATING STORAGE CONTAINER
Ernest Knaus, Akron, and Francis M. Milhoan, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 24, 1972, Ser. No. 274,369
Int. Cl. B63b *35/00*
U.S. Cl. 114—74 T **10 Claims**

A floating, towable container for liquid comprising an elongated flexible walled body portion shaped like a truncated cone tapering from a smaller diameter at the front end to a larger diameter at the rear end and having hemispherical end portions integral with the body. Rigid end closure fittings having towline attachments are mounted in centrally located holes in each end portion. The rear fitting has a filler and discharge opening. Buoyant material is located inside the body portion along the top of the container. Mooring line attachments are spaced along each side of the container.

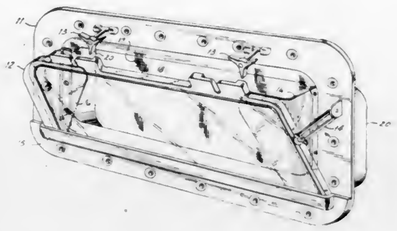


3,779,197
DECK HINGE AND LOCKING APPARATUS FOR BOATS EQUIPPED WITH SIDE DECKS
Robert D. Hawkins, 15 Berry Hill Rd., Oyster Bay, N.Y.
Continuation-in-part of Ser. No. 523, Jan. 5, 1970, Pat. No. 3,662,412. This application June 30, 1971, Ser. No. 158,340
Int. Cl. B63b *7/02*
U.S. Cl. 114—85 **6 Claims**



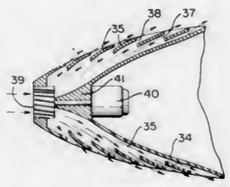
Apparatus is disclosed for hingedly supporting side decks to a hull, and for locking said side decks in place when they horizontally extend from the hull. For each of two decks, a hinge obtains between a side of the hull and the edge of the deck in question which is lowermost when the deck is vertically oriented. A second hinge (actually a plurality thereof), half of which is secured to the hull underside, and the other half of which is secured to the deck underside when the deck is horizontal, provides the deck locking feature, a pin being slideably engageable and disengageable from said hinge halves.

3,779,198
PORTHOLES
Arnold Leo Gray, P.O. Box 8236, 7007 N. Rome, Tampa, Fla.
Filed June 9, 1972, Ser. No. 261,306
Int. Cl. B63b *19/00*
U.S. Cl. 114—178 **1 Claim**



A porthole consisting of a frame, portlight, and flexible wings attached to the porthole frame that provide an opening that will allow the free movement of air through said opening while not allowing water in the form of rain or spray from entering this same opening.

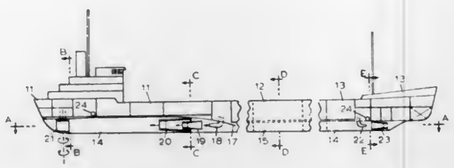
3,779,199
BOUNDARY LAYER CONTROL MEANS
Robert A. Mayer, Jr., 17133 Kings James Way, Gaithersburg, Md.
Division of Ser. No. 861,042, Sept. 25, 1969, Pat. No. 3,604,661. This application Aug. 13, 1971, Ser. No. 171,596
Int. Cl. B63h *11/02*
U.S. Cl. 115—14 **1 Claim**



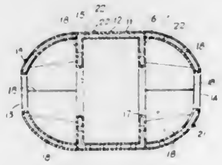
A vehicle movable through a fluid supporting medium includes an active system for controlling the layer of said fluid over at least a portion of the vehicle exterior surface. Parallel slots through the surface permit fluid under pressure to issue over the surface to reduce drag and improve lift and/or propulsion.

3,779,200
MARINE JET PROPULSION SYSTEM
Francis R. Hull, 567 E. 26th St., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 701,262, Dec. 6, 1957, abandoned, Continuation-in-part of Ser. No. 277,071, April 29, 1963, abandoned, Continuation-in-part of Ser. No. 353,700, March 23, 1964, abandoned, Continuation-in-part of Ser. No. 492,959, Aug. 27, 1965, abandoned, Continuation-in-part of Ser. No. 554,614, April 27, 1966, abandoned, Continuation-in-part of Ser. No. 666,234, Aug. 9, 1967, abandoned, Continuation-in-part of Ser. No. 732,476, April 25, 1968, abandoned, Continuation-in-part of Ser. No. 814,475, Feb. 17, 1969, Pat. No. 3,620,183. This application Sept. 22, 1971, Ser. No. 182,760
Int. Cl. B63h *11/12*
U.S. Cl. 115—16 **18 Claims**

This invention relates to the ahead-and-astern propulsion of marine vessels by means of a reversible hydraulic-jet ejector structure composed in part of oppositely-directed ejector stagings disposed centrally within a longitudinal open-channel conduit formed into the vessel's hull. The open-channel conduit is formed by opposite chines or keels which depend downwardly from the bottom hull structure of the vessel to define boundaries of the longitudinal ejector passage. A pivoted secondary-nozzle member is disposed centrally within the after section of the longitudinal ejector passage to steer the vessel in ahead propulsion. The invention includes motive-fluid piping systems for supplying pressurized motive fluids to motive nozzles of the reversible ejector structure from liquid pumps, pressurized steam and water from displacement pressure vessels of pulse-jet systems, and pressurized steam from saline conversion power plants for condensing steam jets within the longitudinal ejector passage of the reversible ejector structure. The invention also includes independent liquid pulse-jet and steam-jet propulsion systems.



3,779,201
INFLATABLE AMUSEMENT DEVICE FOR TREADING ON WATER
Leland R. Spahn, 1701½ Pershing Ave., Davenport, Iowa
Filed Apr. 17, 1972, Ser. No. 244,383
Int. Cl. B63b *35/72*
U.S. Cl. 115—20 **3 Claims**

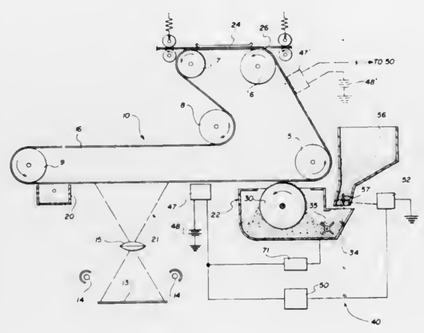


A hollow dirigible-balloon shaped device has spaced, inflated, double walls of pliable plastic and is provided with end openings as passageways for water sportsmen who enter the device and tread on waer. A pair of spaced, plastic dividers within the interior of the device provide reinforcement, and their inner rims function as hand rails.

3,779,202
MANUALLY PROPELLED WATER CRAFT
Gerlad Martin, Miami Beach; James A. Baccus, North Miami, and Marvin Gurman, North Miami Beach, all of Fla., assignors to Holiday Recreation Products, Inc., North Miami, Fla.
Filed Aug. 10, 1971, Ser. No. 170,481
Int. Cl. B63h *16/00*
U.S. Cl. 115—22.3 **2 Claims**

A surfboard-like, buoyant support member is provided at one end with a manually operable crank mechanism comprising a transverse axle rod having, at each end, a crank handle and a paddle wheel for hand actuation by an operator lying prone upon the support member, and further including vertically swingable flap members extending rearwardly of the rear end of the support member for actuation by the legs of the operator in propelling and steering the craft.

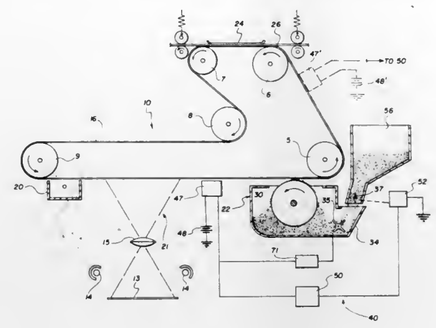
3,779,203
TONER CONCENTRATION CONTROL APPARATUS
Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 14, 1972, Ser. No. 280,396
Int. Cl. G03g *13/16*
U.S. Cl. 118—8 **8 Claims**



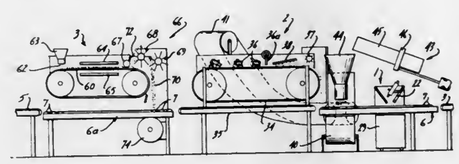
A toner concentration control apparatus includes a circuit responsive to the cummulative total charge of electrostatic images and/or toner images which pass a predetermined position of a path for producing a signal which is an accurate measure of the quantity of toner which will and/or has been applied to such images.

3,779,204
TONER CONCENTRATION AND AUTO BIAS CONTROL APPARATUS
Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 14, 1972, Ser. No. 280,397
Int. Cl. G03g *13/16*
U.S. Cl. 118—8 **4 Claims**

A toner concentration and auto bias control apparatus includes a circuit for producing a signal which is a function of the charged density of an electrostatic image passing a predetermined position of a path, a toner concentration control apparatus responsive to such signal for controlling the toner concentration of a mixture of toner and carrier and an auto bias circuit responsive to such signal for adjusting the potential of a developed electrode to influence the toning process.



3,779,205
FOOD APPLICATOR
Harvey G. Kuhlman, N56 W21466 Silver Spring Rd., Menomonee Falls, Wis.
Division of Ser. No. 32,030, April 27, 1970, Pat. No. 3,682,106. This application Jan. 6, 1972, Ser. No. 215,765
Int. Cl. B05c *5/00*
U.S. Cl. 118—24 **3 Claims**

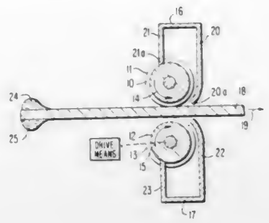


A conveyor for the bases includes a plurality of parallel longitudinally-spaced tined shafts which are simultaneously rotated to carry the pizza bases through the food-depositing stations. The tines on adjacent shafts are offset and overlapped to minimize the spacing therebetween. The open structure defined by the tined supports provides an open structure to permit removal and/or recovery of the excess food. The sauce applicator includes a pressurized sauce spray head located within an open bottom enclosure mounted above the tined conveyor and includes a fluid activated cleaning pin to prevent clogging of the nozzle. The meat applicator includes a transfer belt which is cooled and a rotating metering means to drop selected amounts of grated meat upon the bases.

3,779,206
APPARATUS FOR SCRAPING LIQUID OFF OF SHEET MATERIAL
Masamichi Sato, and Isoji Takahashi, both of Asaka, Japan, assignors to Fuji Photo Film Company, Ltd., Nakanuma, Japan
Filed Jan. 20, 1972, Ser. No. 219,540
Claims priority, application Japan, Jan. 20, 1971, 46/1494
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 **5 Claims**

An apparatus for scraping liquid off of sheet material, for example, in photo developing, comprises a combination of a

pair of drive rollers having a flange or belt provided for feeding the sheet material by gripping both edges while not contacting the image portion with the rollers. Air supply boxes are



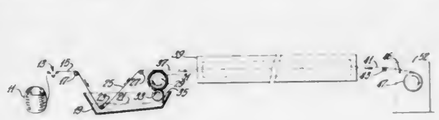
provided at the outlet side of the pair of rollers co-operating with the rollers to jet air onto the surface of the sheet material thereby blowing out any excess of the liquid.

3,779,207

APPARATUS FOR IMPREGNATING AND COATING FIBROUS STRANDS

Gustav E. Benson, Edgewood, and Paul D. Yakuboff, Woonsocket, both of R.I., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 12, 1971, Ser. No. 171,252
Int. Cl. B05c *11/02*; **D06c** *29/00*
U.S. Cl. 118—109 **15 Claims**



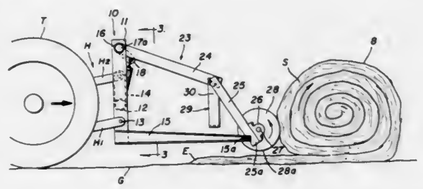
Strands of textile filaments are impregnated and coated with a liquid material by passing each strand through an immersion bath and in contact with a resiliently compressible and absorptive material which wipes off excess impregnant and coating from the strand. The path and tension of the strand is adjustable to vary the depth at which the strand is embedded into the absorptive material. The absorptive material is in the form of an endless surface constantly rotating to continuously present an unsaturated portion to the strand.

3,779,208

APPARATUS FOR HANDLING ROLLED BALES OF HAY

James E. Gay, Vinton, Iowa, assignor to Starline, Inc., Harvard, Ill.

Filed Aug. 2, 1972, Ser. No. 277,322
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **14 Claims**



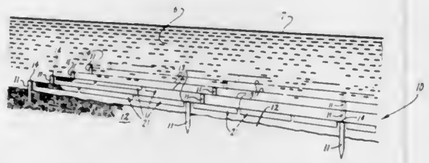
Apparatus for handling rolled bales of hay, and especially those rolled on the ground from a windrow of hay, which includes a frame that may be mounted on a farm tractor and that includes a roller for unrolling a bale onto the ground so that livestock may feed on the hay in the unrolled bale. In one form of the apparatus the unrolling means also forms part of a bale transporting fork lift device.

3,779,209

OYSTER GROWING APPARATUS AND METHOD

William W. Budge, Hillsborough, and Malcolm Donald, Woodside, both of Calif., assignors to Pacific Mariculture, Inc., Pigeon Point, Pescadero, Calif.

Division of Ser. No. 42,253, June 1, 1970, Pat. No. 3,638,615.
This application Sept. 23, 1971, Ser. No. 183,203
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **5 Claims**



Apparatus for growing oysters in sea water comprising a member mounted in sea water so that it is above the bottom level of the sea water at all times and below the top surface of the sea water for a substantial period of each 24 hours. A plurality of seed oysters are provided and a cement other than that excreted by the oyster seed secures the oyster seed to the member. The oysters are arranged in a predetermined pattern and are spaced in such a manner that the oysters can grow to a substantially larger size on the member without deforming each other.

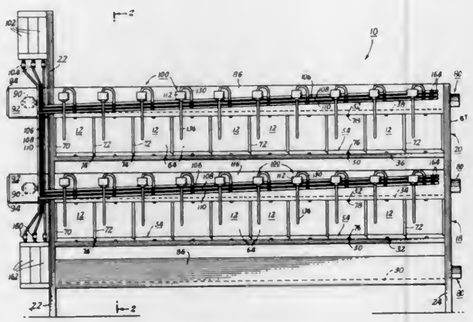
In the method, a member is positioned in the sea water so that it is disposed above the bottom level of the sea water and for a substantial period of time of each 24 hours, below the top surface of the sea water. Seed oysters are secured to the member using an adhesive and the oysters are arranged in a predetermined pattern and are spaced in such a manner so that they can grow to a substantially larger size without deforming each other.

3,779,210

INCUBATIVE ANIMAL CONFINEMENT SYSTEM

Bruce A. Blair, Winnetka, Ill., assignor to International Farm Systems, Inc., Streator, Ill.

Filed Apr. 5, 1972, Ser. No. 241,338
Int. Cl. A01k *01/02*
U.S. Cl. 119—18 **13 Claims**



An incubator for young animals is provided and includes a plurality of modular animal confinement pens. Each of the modular pens includes a flooring of an open-mesh grill work to

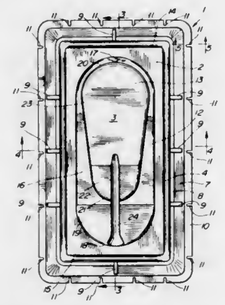
allow animal waste to fall through to a collecting trough where it can be flushed away and each pen is provided with feed supply means which is readily accessible to the animal confined therein connected to a precisely measured source of nourishment, such as milk, which is automatically and periodically replenished from a central source of supply. Means are provided to maintain an overpressure and a flow of conditional air through the pens and each pen is supplied with heating means to maintain a warm temperature for the animal therein.

3,779,211

OPERATING BOARDS

Donald E. Etes, Crystal Lake, Ill., assignor to Plas-Med, Inc., Crystal Lake, Ill.

Filed July 12, 1972, Ser. No. 271,060
Int. Cl. A61g *13/00*
U.S. Cl. 119—103 **14 Claims**



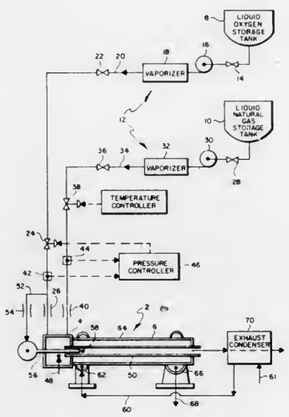
An operating board for small animals, and the like, which may be made of relatively thin plastic sheet material, or the like, and embodying a raised platform portion disposed within a fluid-retaining area.

3,779,212

NON-POLLUTING STEAM GENERATOR SYSTEM

William R. Wagner, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 12, 1972, Ser. No. 252,706
Int. Cl. F22b *31/00*
U.S. Cl. 122—23 **9 Claims**



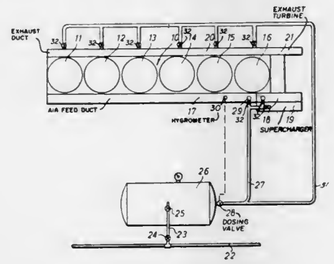
A steam generating system comprising burning fuel which contains no sulphur or nitrogen in an atmosphere of pure oxygen to heat water in a heat exchanger for converting water to steam. Preferably, the fuel and oxygen are provided in liquid or gaseous form and are supplied under pressure to the combustion chamber, to provide more rapid combustion, and additional oxygen may be added to the burning gases as they are passed to the heat exchanger to further increase the temperature of the flame. In addition, the water to be converted into steam is maintained isolated from the products of combustion. Both method and apparatus are disclosed.

3,779,213

CLEANING INTERNAL COMBUSTION ENGINES OR THE LIKE

Bjarne Knudsen, Mathopen, Norway, assignor to Ivar Rivenaes Krakenes, Fana, Norway

Filed Oct. 28, 1971, Ser. No. 193,316
Claims priority, application Norway, Oct. 10, 1970, 4274/70
Int. Cl. B08b *9/02*; **F01n** *3/00*; **F02m** *29/00*
U.S. Cl. 123—1 R **11 Claims**



A method and apparatus for cleaning an internal combustion engine or the like so as to remove carbon deposits, coke sediments and the like. The method involves intermittently adding to the air feed system of the engine and optionally to the exhaust stream from the engine, fluid cleaning medium for a predetermined period of time at predetermined time intervals while the engine is in operation. The addition is effected via pressure diffusor jet means directly into the air stream and optionally the exhaust stream while the relative humidity of air and cleaning fluid is controlled. In the apparatus, the pressure diffusor means communicates via valve-controlled conduit means with a container for storing cleaning fluid under pressure. The jet means is arranged to discharge into the air feed system and optionally into the exhaust system, each system having a hygrometer inserted therein downstream relative to the jet means and for control of a dosing valve in said conduit means to maintain the humidity between 60 percent and 75 percent, measured at a temperature of 30° C within said system.

3,779,214

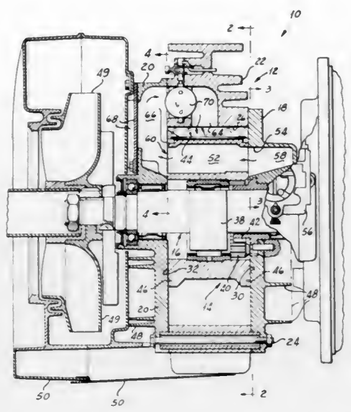
ROTARY COMBUSTION ENGINE HAVING A CHARGE-COOLED ROTOR AND SIDE AND PERIPHERAL WALL INTAKE PORTS

Harry M. Ward, III, Waukegan, Ill., and Eugene R. Hackbarth, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 13, 1972, Ser. No. 297,254
Int. Cl. F02b *55/06*
U.S. Cl. 123—8.01 **10 Claims**

In a rotary internal combustion engine, having a charge-cooled rotor and intake ports in a housing side wall and housing peripheral wall, the intake ports are in communication with the rotor to receive all of the fuel-air mixture after it has flowed through the rotor. The flow through the intake port in the side wall is controlled by the rotor in its rotation within the housing while the flow through the intake port in the

peripheral wall is throttled by a valve actuated in response to the speed or load of the engine so that, simultaneously with efficient cooling of the rotor, the engine derives the benefit of side intake and peripheral intake ports for smooth engine performance from idle to full speed.



3,779,215

INTAKE AND EXHAUST ARRANGEMENT FOR A ROTARY-PISTON INTERNAL COMBUSTION ENGINE

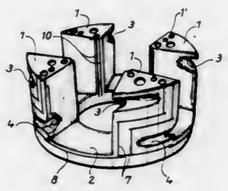
Huschang Sabet, Eduard-Pfeiffer-Strasse 67, Stuttgart, Germany

Continuation-in-part of Ser. No. 137,870, April 27, 1971, Pat. No. 3,736,080. This application Aug. 30, 1972, Ser. No. 284,896

Claims priority, application Germany, Sept. 25, 1971, P 71 36 462.0

Int. Cl. F02b *55/14*

U.S. Cl. 123—8.47 **9 Claims**



An internal combustion engine, in which two sets of four pistons rotate about the axis of a cylindrical casing wall and additionally move angularly relative to each other about the casing axis to expand and contract combustion chambers circumferentially extending between the pistons of the two sets having circumferential faces of different width, and each wider circumferential face is formed with two radially open grooves in respective axially spaced planes, the two grooves being open only in respective, opposite, circumferential directions for communication with respective combustion chambers and connecting the combustion chambers from time to time with intake and exhaust ports formed in the casing in the aforementioned axially spaced planes.

3,779,216

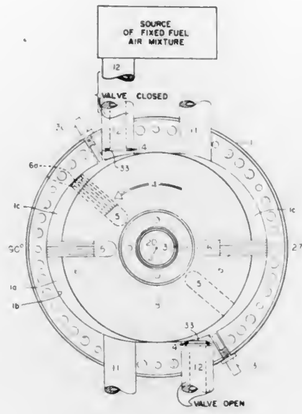
VARIABLE EXPLOSION-DISPLACEMENT ROTARY ENGINE

Robert Gordon Britt, 242 Connecticut Ave., Spartanburg, S.C.

Filed June 5, 1972, Ser. No. 259,741

Int. Cl. F02b *53/06*

U.S. Cl. 123—8.49 **9 Claims**



A variable explosion-displacement rotary engine, free of a fuel compression cycle, and specifically designed for use with pollution free fuels of the alkyne type; and others, having a cylindrical rotor revolving in an elliptical opening of a housing to define two annular spaces on two sides therebetween. The rotor having radial members which project to follow without sealing the contour of the elliptical opening to form volume expanding combustion areas behind said members. High speed tungsten poppet valves mounted in the fuel input ports which extend into the combustion areas open and close via differential in pressures to admit fuel periodically between explosions, the engine providing four explosions in one shaft revolution. Ignition timing cooperating with the position of said members and the volume of fuel displaced controls the explosive force, the explosion displacement, engine torque and shaft revolutions per minute. The volume of fuel exploded is in direct proportion to the amount of horsepower required at any moment with the fuel-air mixture precisely fixed for complete combustion and pollution free exhaust.

3,779,217

DEVICE FOR INTERLINKING THE UPPER SPRING-CAPS OF TWO MUTUALLY ADJACENT INTERNAL-COMBUSTION-ENGINE VALVES

Karl Walter Kuhn, 5, rue des Arcades, Saint-Germain-en-Laye, France

Filed Mar. 3, 1972, Ser. No. 231,610

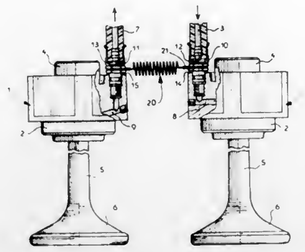
Claims priority, application France, Mar. 10, 1971, 7108330

Int. Cl. F01p *3/14*; **F01l** *1/46*, *31/00*

U.S. Cl. 123—41.41 **7 Claims**

Device for interlinking the upper spring-caps of two mutually adjacent internal-combustion-engine valves comprising a tension spring or resilient element, the mutually opposite ends of which are respectively attached to the said spring-caps.

In one embodiment the opposite ends of said spring are attached respectively to the couplings that interconnect flexible pipes that deliver cooling fluid to the spring caps of said valves.



3,779,218

IGNITION TIMING CHANGE-OVER DEVICE FOR SPARK ADVANCE MECHANISM HAVING ROTATABLE GOVERNOR PLATE

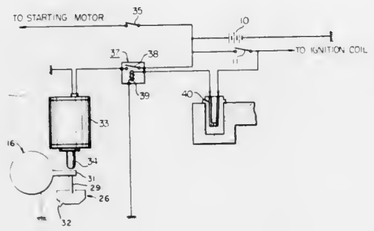
Shyuya Nambu, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Oct. 22, 1970, Ser. No. 82,868

Claims priority, application Japan, Oct. 22, 1969, 44/84541

Int. Cl. F02p *5/10*, *5/14*

U.S. Cl. 123—117 A **4 Claims**



An ignition timing change-over device adapted for use with a spark advance mechanism having a rotatable governor plate. A plunger means is adapted to protrude and rotate the governor plate to an angular position in which an ignition advance occurs during the cold operating conditions of the engine irrespective of the intake manifold vacuum. In one embodiment, the plunger means is actuated to hold the governor plate in the advance position during closure of a starting switch. Another embodiment employs a relay and a thermostatically controlled switch to keep the plunger means in the advance position during the engine warm-up operation. A further embodiment comprises a thermostatically operated plunger which is operative to rotate the governor plate through a mechanical linkage during the engine warm-up operation.

3,779,219

DEVICE FOR CONTROLLING IGNITION TIMING OF ENGINE

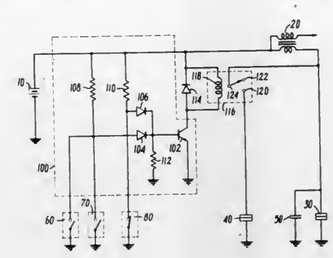
Toshikazu Saita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1971, Ser. No. 111,425

Claims priority, application Japan, Feb. 4, 1970, 45/11408; Feb. 10, 1970, 45/13391

Int. Cl. F02p *5/04*

U.S. Cl. 123—117 R **14 Claims**



A switching transistor is placed in its conducting mode when a sensor switch senses certain operating conditions of an engine such as the idling in which the ignition timing should lag and, is placed in its nonconducting mode when a separate sensor switch senses operating conditions of the engine such as the starting in which the ignition timing is normal. When conducting, the transistor operates a relay to enable one contact set to generate an ignition voltage across an ignition coil at a time later than the normal ignition timing. When nonconducting, the transistor maintains the relay in its normal position to enable another contact set to generate an ignition voltage across the coil at the normal ignition timing. Alternatively, the contact sets each may be open to render another conducting transistor nonconducting to interrupt a primary ignition coil.

3,779,220

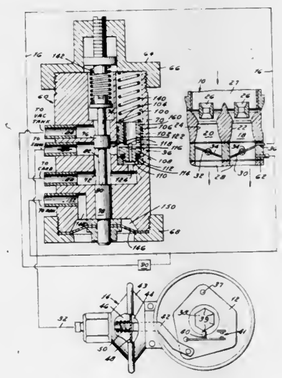
DISTRIBUTOR VACUUM SPARK ADVANCE CONTROL VALVE WITH REGULATOR

Tao-Yuan Wu, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 8, 1972, Ser. No. 232,806

Int. Cl. F02p *5/04*

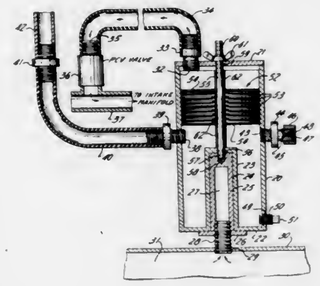
U.S. Cl. 123—117 A **15 Claims**



An engine spark timing control system includes a conduit connecting carburetor spark port vacuum to the distributor servo actuator in parallel paths one of which contains an ori-

fice for normally slowly advancing and retarding the ignition timing as a function of changes in spark port vacuum; the system also including a device that has a valve operable in response to predetermined acceleration movements of the throttle valve to disconnect or block the direct connection from the spark port to the distributor servo while at the same time connecting a vacuum reservoir to the distributor servo to artificially advance the ignition timing above the value that normally would be called for by the level of the vacuum at the spark port; the higher than normal advance decaying by bleed of the vacuum through the spark port line orifice until the vacuum level equals that at the spark port, at which time the ignition timing will be returned to normal; the device further including a vacuum pressure relief valve adjustable to limit the maximum level of vacuum in the reservoir so as not to unduly advance the ignition timing beyond a desired value.

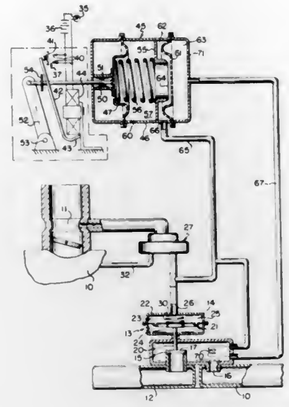
3,779,221
INTERNAL COMBUSTION ENGINE POLLUTION CONTROL DEVICE
Joseph J. Gartner, 506 Queen Anne Rd., Teaneck, N.J.
Filed Nov. 23, 1971, Ser. No. 201,351
Int. Cl. F02m *25/06*; **B01d** *45/00*
U.S. Cl. 123—119 B **12 Claims**



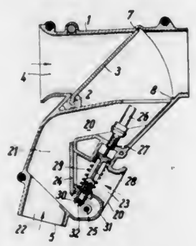
A pollution control device for automobile engines and the like is provided having a housing adapted to receive the blowby gasses from the engine crankcase. The housing has a filter assembly for filtering the blowby gasses and inlet means for mixing the gasses with air to increase oxidation of the pollutants in the gasses. The treated gasses are supplied to the engine intake manifold through the positive crankcase ventilation valve. Alternative embodiments of the invention provide for heating the blowby gasses in the housing, eliminating the need for the positive crankcase ventilation valve, and for sonic mixing of the air and blowby gasses in the housing.

3,779,222
MALFUNCTION INDICATOR FOR EXHAUST GAS RECIRCULATION VALVE
Jerome L. Lorenz, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio
Filed Sept. 25, 1972, Ser. No. 291,984
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **4 Claims**

A malfunction indicator for a vacuum operated exhaust recirculation valve in an internal combustion engine comprises an indicator means actuated in response to attainment of a gradually drawn vacuum in a chamber communicating with the valve operating vacuum source, the chamber adapted to be cut off from the vacuum source prior to attainment of the actuating vacuum by a valve operated in response to a given increase in resistance to flow of air through a capillary tube comprising a section of conduit connected to the vacuum source and subjected to the high temperatures of exhaust passing through the valve.

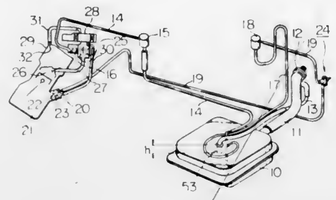


3,779,223
METHOD AND APPARATUS FOR MIXTURE PREPARATION OF INTERNAL COMBUSTION ENGINES
Ferdinand Piech, Stuttgart-Nord, and Sepp Schmitt, Stuttgart-Ost, both of Germany, assignors to Dr.-Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany
Filed Mar. 3, 1972, Ser. No. 231,622
Claims priority, application Germany, Mar. 5, 1971, P 21 10 484.7
Int. Cl. F02m *31/04*
U.S. Cl. 123—122 D **37 Claims**



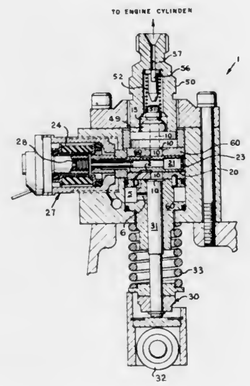
A method and apparatus for the mixture preparation of internal combustion engines in which an adaptation of the suction air temperature to the varying operating and load conditions of internal combustion engines for motor vehicles is achieved; possibly exclusively preheated air is thereby supplied to the internal combustion engine by way of the suction system in the partial load range while exclusively fresh air flows into the combustion engine in the full load range whereby the warm air serving for the mixture formation has a substantially constant temperature over the entire range of its admixture.

3,779,224
AIR-POLLUTION PREVENTIVE SYSTEM
Katsuhiro Tagawa, and Takuzo Kurosawa, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan
Filed Mar. 1, 1972, Ser. No. 230,739
Int. Cl. B65d *25/00*; **F02m** *59/00*
U.S. Cl. 123—136 **5 Claims**



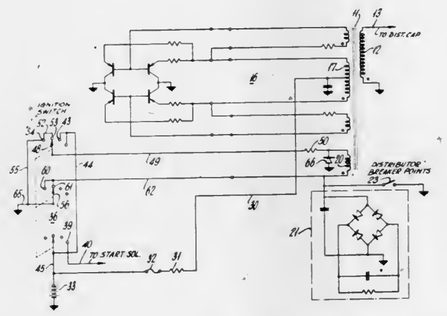
An air-pollution preventive system for a gasoline-powered internal combustion engine, adapted to eliminate the evaporation of gasoline vapors from the fuel tank to the atmosphere. The gasoline vapors emitted from the fuel tank are introduced through a passage to the crankcase and admitted through the carburetor to the engine combustion chamber together with blow-by gases in the crankcase. The flow of gasoline vapors into the crankcase is controlled by a pair of check valves adapted to be responsive to pulsations of the pressure in the crankcase caused by the reciprocating motion of the piston. An additional valve is provided intermediate the passage leading from the fuel tank to the crankcase and is adapted to be automatically closed to block the passage upon opening of a closure member of a filler vessel for fuel replenishing purposes. The valve cooperates with an air escape pipe to prevent the fuel tank from being filled to its full capacity without leaving any unoccupied space for thermal expansion of the content.

3,779,225
RECIPROCATING PLUNGER TYPE FUEL INJECTION PUMP HAVING ELECTROMAGNETICALLY OPERATED CONTROL PORT
Edwin B. Watson, Sidney, N.Y., and Harlan I. Fuller, Doylestown, Pa., assignors to The Bendix Corporation, Southfield, Mich.
Filed June 8, 1972, Ser. No. 260,882
Int. Cl. F02d *5/00*
U.S. Cl. 123—139 E **6 Claims**



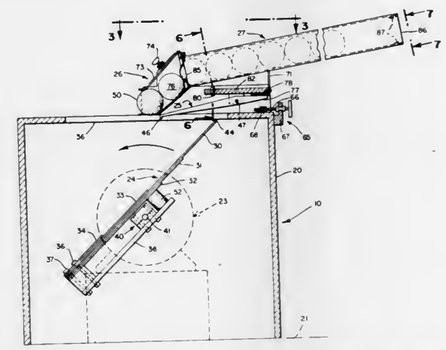
A fuel injection system for an internal combustion engine of the type having a reciprocating piston pressure pump that includes an electromechanically operated relief or control valve that is arranged so that the face of the valve is not subjected to the pressurized fluid in the pumping chamber, thereby requiring less electromechanical energy to open and close the valve. In this type of arrangement it is now possible to control the opening and closing of the relief valve independently of the reciprocating motion of the piston which pressurizes the fuel in timed relation to rotation of the camshaft or crankshaft of an internal combustion engine.

3,779,226
HIGH FREQUENCY CONTINUOUS WAVE IGNITION SYSTEM
Robert E. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.
Filed Mar. 6, 1972, Ser. No. 232,094
Int. Cl. FO2p *3/02*
U.S. Cl. 123—148 E **7 Claims**



An ignition system employing continuous-wave high-frequency spark energy, makes use of a special ignition-switch circuit. The special circuit switches only control winding current of an oscillator that supplies the spark energy. Consequently, high current oscillator energy may be directly and permanently connected.

3,779,227
SPRING TYPE PROJECTING DEVICE
Walter T. Scott, Huntingdon Valley, Pa., assignor to Duncan Pollitt, Titusville, N.J. and Roger Coe, Paoli, Pa.
Filed Dec. 22, 1971, Ser. No. 210,920
Int. Cl. F41b *7/00*
U.S. Cl. 124—16 **7 Claims**



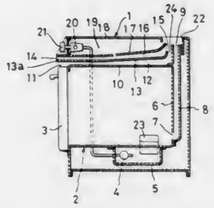
Apparatus is disclosed for propelling game balls or like objects sequentially in a desired trajectory. A rotating elongated

leaf spring, being bent over its entire length by the combined action of a trip lever and a fulcrum, is used to propel the objects. The trip lever, when engaged by the elongated leaf spring, pivots to separate the object to be propelled from the flow of objects from a magazine and to retain the elongated leaf spring in a stressed and cocked condition. The apparatus prevents overloading of the leaf spring and also prevents extended vibration of the leaf spring by the use of leaf springs and snubbing spring.

3,779,228
COOLING APPARATUS FOR AN OVEN

Sueo Mizuno, Higashikasugai-gun, and Tadayoshi Takase, Nishikamo-gun, both of Japan, assignors to Kabushiki Kaisha Rinnai Seisakusho, Nagoya-shi, Aichi-ken, Japan

Filed Mar. 29, 1971, Ser. No. 128,851
Int. Cl. F24c *3/00*
U.S. Cl. 126—21 R **2 Claims**

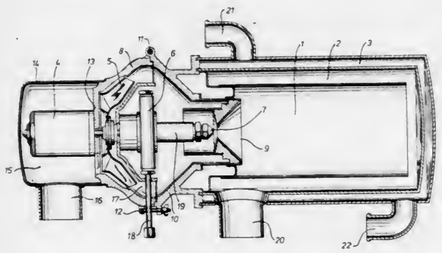


An oven has a heating chamber and a surrounding outer casing, and mounted between the chamber and casing are partition plates which define flow passages for cooling air. The flow passages have outlets adjacent an outlet of an exhaust channel of the heating chamber so that air flow is produced in the passages by suction effect caused by exhaust flow through the outlet of the exhaust channel. A manual control knob of a burner valve disposed in a space between the uppermost partition plate and the outer casing is cooled by proximity to the flow passages.

3,779,229
HEATER FOR VEHICLES

Hartwig Volbehr, Lochham, Germany, assignor to Webasto-Werke W. Baier KG, Stockdorf/Munich, Germany

Filed Sept. 17, 1971, Ser. No. 181,316
Claims priority, application Germany, Oct. 3, 1970, P 20 48 760.9
Int. Cl. F24h *3/06*
U.S. Cl. 126—110 B **11 Claims**

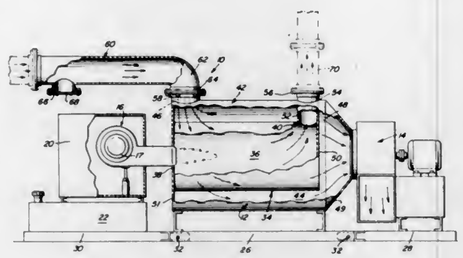


A compact heater for vehicles which is fired by fluid fuels and wherein one half of a split casing is arranged in the burner assembly, while the other half carries the combustion chamber and the heat exchanger. The burner assembly includes, in coaxial succession, an electric drive motor, an impeller for the combustion air, a central air guide, a fuel pump and an atomizing nozzle extending therefrom into the burner head at the mouth of the combustion chamber. The casing halves can be pivoted open for convenient access to the parts of the burner assembly.

3,779,230
INDIRECT OR DIRECT FIRED HEATER

Ernest R. Muckelrath, Tioga, N. Dak., assignor to Air Heaters, Inc., Tioga, N. Dak.

Filed Apr. 7, 1972, Ser. No. 241,998
Int. Cl. F24h *3/06*
U.S. Cl. 126—116 R **11 Claims**

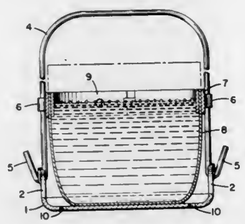


A selectively indirect and direct-fired air heater has a fire tube and sheel section, a blower section detachably connected to the fire tube and shell section and arranged for moving air therethrough, and a plurality of heating units selectively connectible to the fire tube and shell section for passing combustion gases to a fire tube thereof. Each heating unit is designed to burn a different type of fuel. The fire tube and shell section has a housing provided with a wall defining the fire tube. A shell is arranged in heat exchange relation with respect to the housing, and is provided with a wall arranged around the housing wall and defining a fluid or airflow passage having inlet and outlet openings. The fire tube has an outlet opening having a flanged duct surrounding same. A pipe in communication with the shell inlet opening is provided with a flange which is selectively joinable with the flanged duct for selectively connecting the fire tube outlet opening to the shell inlet opening for cycling combustion gases through the airflow passage. The firing is direct when the fire tube outlet is so connected, and indirect otherwise.

3,779,231
DISPOSABLE COOKING POT

Rodney J. Anderson, 2043 Gale St., Burley, Idaho

Filed Oct. 17, 1972, Ser. No. 298,439
Int. Cl. A47j *27/00*
U.S. Cl. 126—373 **3 Claims**

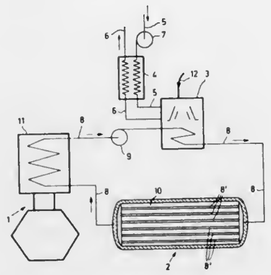


A light weight disposable cooking pot for use over open fires made up of a bottom plate, a handle attached to the bottom plate, a collar slidably mounted on the handle, a paper liner forming the container for the food to be cooked positioned within the collar and resting on the bottom plate and an expansible ring to secure the liner against the interior of the collar.

3,779,232
HEAT ACCUMULATOR

Johann Schroder, Achen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,761
Claims priority, application Netherlands, Aug. 29, 1970, 7012830
Int. Cl. F24h *7/00*
U.S. Cl. 126—400 **10 Claims**

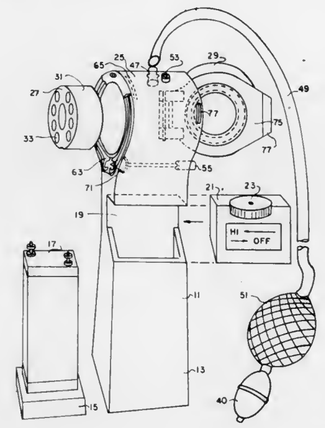


A heat accumulator comprising a eutectic mixture of NaF and magnesium fluoride having a melting point of less than 850°. The mixture may additionally comprise potassium fluoride and/or calcium fluoride. The heat accumulator is suitable for supplying thermal energy to a hot-gas engine and for use in heat accumulating ovens.

3,779,233
SPECULUM INSTRUMENT WITH DISPOSABLE FORWARD SECTION

Seymour Saslow, and Jerome A. Roberts, both of Saratoga Springs, N.Y., assignors to Espey Mfg. & Electronics Corp., Saratoga Springs, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,138
Int. Cl. A61b *1/06*; **F16l** *35/00, 55/00*
U.S. Cl. 128—6 **5 Claims**

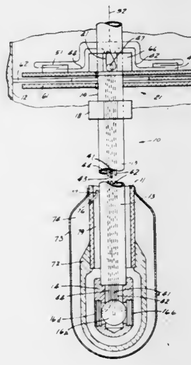


Speculum instrument for use with disposable plastic (polyethylene) sigmoidoscope or proctoscope tube. The elongated tubes are tapered to provision for the geometric optics employed, and contain a light shield, which acts to diffuse the light source and also protect the light source and instrument from cantamination. The tubes contain a rectangular groove that provides for its captivation by the instrument. A disposable plastic obturator is also provided with each tube. The instrument is fitted with a cylindrical lamp holder assembly having a plurality of lamps, an eye piece that allows one to look through the cylinder of lamps, a spring retaining ring that provides for the colleting of the disposable tubes, a cam push button arrangement for opening the retaining ring collet and ejecting the disposable tube, a handle that contains a rechargeable battery, a reostat with thumb wheel which controls the amount of light, a fitting for rubber tubing to allow for the admission of air, an air valve for the release of air, and gasket seals to provide for an air tight assembly.

3,779,234
ULTRASONIC CATHETER WITH ROTATING TRANSDUCERS

Reginald C. Eggleton, and Albert W. Weidner, both of Champaign, Ill., assignors to Interscience Research Institute, Champaign, Ill.

Filed June 30, 1971, Ser. No. 158,154
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V **13 Claims**



An instrument and method which allows real time examination of internal organs of the body such as the heart comprising a catheter which has a rotating tip in which a number of ultrasonic transducers are mounted and which can be selectively connected to a pulser to transmit a ultrasonic pulse into the body and receive an echo from such pulse and including commutating, indexing and presentation means such that display of the conditions within the body may be obtained.

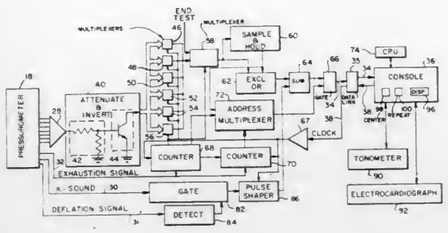
3,779,235
CARDIOVASCULAR TEST STATION PRESSUROMETER INTERFACE SYSTEM

William J. Murphy, Jr., Framingham; Joseph B. Ferguson, Harvard, and Edward B. Rawson, Lincoln, all of Mass., assignors to Searle Medidata Inc., Waltham, Mass.

Filed June 18, 1971, Ser. No. 154,561
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 M **15 Claims**

A pressurometer interface circuit operative to provide serial, binary data representative of patient pulse rate and patient systolic and diastolic blood pressures. In response to automatic inflation and deflation of a cuff the interface circuit receives in parallel a plurality of bilevel signals, each associated with a given cuff pressure and indicating whether a

Korotkoff sound response is detected at the cuff pressure. The bilevel signals are converted, for efficient data communication, to serial binary coded data representative of the boundaries of the range of pressures during which Korotkoff sounds are exhibited. Further binary data is generated indicating patient pulse rate as interpreted from the Korotkoff sounds during deflation.

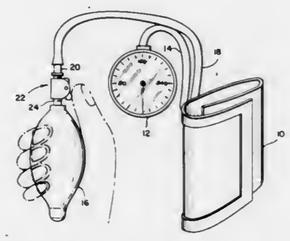


3,779,236

PRESSURE RELIEF VALVE FOR A SPHYGMOMANOMETER

James M. Stewart, West Palm Beach, Fla., assignor to Stewart Research, Inc., West Palm Beach, Fla.

Filed Sept. 7, 1971, Ser. No. 178,212
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 G **9 Claims**



A pressure relief valve assembly particularly for use with a sphygmomanometer having a housing, an internal axial bore for passing pressurized air through the housing, a transverse bore intersecting the axial bore and communicating with the exterior of the housing, a flexible, resilient member mounted within the axial bore and sealing off the intersecting end of the transverse bore, and actuating means extending through the transverse bore for depressing the resilient member away from sealing relationship with the transverse bore to permit selective relief of the pressurized air.

3,779,237

METHOD AND SYSTEM FOR AUTOMATIC PROCESSING OF PHYSIOLOGICAL INFORMATION IN GREATER THAN REAL TIME

Richard R. Goeltz, Greece; Howard Schumacher, Rochester, and Albee Roth, Far Rockaway, all of N.Y., assignors to Electrocardio Dynamics, Inc., Rochester, N.Y.

Filed Apr. 13, 1971, Ser. No. 133,627
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **74 Claims**

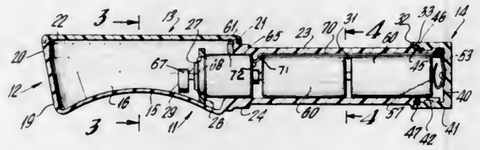
A system and method is described whereby electrocardiograph signals are translated into digital data which represents certain cardiac events. This digital data controls an electrocardiogram recorder for recording the cardiac complexes which manifest only those events which are represented by the digital signals. In this way the system is capable of processing long term (for example 24-hour) durations of activity so as to select only such data of particular interest as for example data which represents abnormalities and diseases of the heart.

3,779,238

WATERPROOF BATTERY OPERATED VIBRATOR

Lester M. Cutler, Roslyn Heights, and Paul Friedman, Old Westbury, both of N.Y., assignors to Vibra-Spa Products, Inc., Roslyn, N.Y.

Filed June 29, 1972, Ser. No. 267,578
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 **24 Claims**



The casing of this vibrator comprises three molded parts. The first molded part comprises a head having a bottom wall from which an annular side wall extends upwardly. An integral sleeve handle extends from the side wall at right angles to the axis of the bottom wall. The second molded part comprises a top cover fitted on the side wall and having a heat-sealed watertight connection therewith. The third molded part comprises a cap which has a bayonet, removable, rotary connection to the outer end of the sleeve. An electric motor in the sleeve projects into the interior of the head. An integral flange or wall extends up from the bottom wall and is formed with a hole into which the forward end of the motor projects for support. Dry batteries back up the motor in tandem, within said sleeve handle. The cap carries a switch for ON and OFF connection of the rearmost battery in circuit with a connector to the motor, upon turning the cap. An eccentric weight is fixed to the central motor shaft to vibrate the casing. An O-ring on the cap presses against an annular shoulder on the rear end of the sleeve to render the capped end of the sleeve watertight.

3,779,239

CONNECTOR FOR FRACTURED BONES

Artur Fischer, Altheimer Strasse 219, Tumlingen, Germany, and Jean-Nicolas Muller, 20 rue du Marechal Joffre, Strassburg, France

Filed Mar. 13, 1972, Ser. No. 234,102
Claims priority, application Germany, Mar. 13, 1971, P 21 2 139.1
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 BC **7 Claims**

An elongated sleeve is insertable into a passage provided in a fractured bone, so as to bridge the fracture thereof. The front end of the sleeve carries an expansion anchor sleeve which is longitudinally slotted so that its circumferential wall is composed of strips which are connected only at the leading and trailing ends. The strips are buckled in radially outward direction by inserting a rod through the sleeve and connecting it with the leading end of the expansion anchor sleeve so as to exert a rearwardly directed tensile force upon the same, causing its buckling.

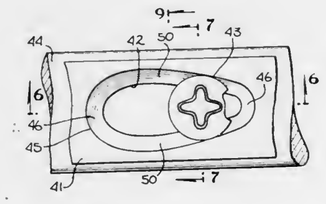


3,779,240

COMPRESSION PLATE FOR OSTEOSYNTHESIS

Shigeru Kondo, 13 Kamibanba-cho, Jodoji, Kyoto, Sakyo-ku, Japan

Filed Mar. 31, 1972, Ser. No. 240,243
Int. Cl. A61f *5/04*; **A61b** *17/18*
U.S. Cl. 128—92 D **4 Claims**



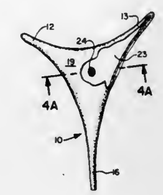
A compression plate for the retention and internal fixation of fragments resulting from a bone fracture. The compression plate is of generally elongate structure and is adapted to be attached to both pieces of the broken bone by screws fitting within slots generally aligned with the length of the compression plate. At least one of the slots in the compression plate is formed with a slot having a taper, generally defined by a portion of the arc of a first hole through the compression plate, a portion of the arc of a second hole through the compression plate, larger in diameter than the first hole and closer to the end of the plate, and lines which are tangential to both holes. The top surface of the tapered slot is preferably chamfered so as to better mate with a screw having a tapered head. Thus, tightening of the screw in the tapered hole causes progression of the compression plate along its axis to encourage and retain the fracture surfaces in firm abutment.

3,779,241

INTRAUTERINE CONTRACEPTIVE DEVICE AND METHOD FOR ITS USE

William O. Vennard, and Jack C. Wright, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Oct. 20, 1971, Ser. No. 190,780
Int. Cl. A61f *5/46*
U.S. Cl. 128—129 **11 Claims**



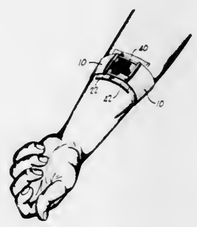
A method and apparatus for birth control utilizing an intrauterine contraceptive device which includes a preformed, hollow body with thin, flexible walls, the hollow body having the approximate size and shape of the uterine cavity. A flexible, compressible, filler material substantially completely fills the hollow body so that the walls of the hollow body make contact with a major portion of the walls of the uterine cavity when the device is in position within the uterine cavity. In a preferred form, the hollow body is filled with a polymerizable organosiloxane material after being placed in the uterine cavity and the material is then polymerized to produce a device having substantially the size and shape of a normal uterine cavity.

3,779,242

PERFORATED COMPOSITE BANDAGE

Gerald W. McCullough, 1038 N. Flood St., Norman, Okla.

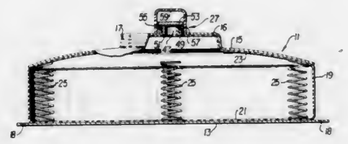
Filed July 19, 1971, Ser. No. 132,482
Int. Cl. A61f *13/00*
U.S. Cl. 128—171 **4 Claims**



A bandage for maintaining a dressing in contact with a wound, which bandage includes a monoplanar sheet of fabric having a straight side edge, and having spaced perforation lines intersecting the side edge at spaced points. A relatively stiff rod is secured to the fabric sheet along the straight side edge and extends from one end of the side edge to the other. The rod has weakening notches spaced therealong at the intersections of the perforation lines with the side edge. A portion of the sheet is covered with an adhesive, which is in turn covered by a removable non-adhesive protective sheet. Between the covered adhesive area and the straight side edge

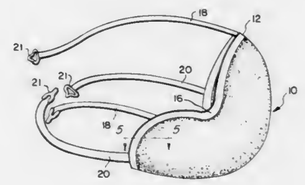
is an adhesive-free area. The sheet of fabric is perforated on opposite sides of each of the perforation lines adjacent the rod so that notches may be provided at this location.

3,779,243
CONTAMINATION FREE SURGICAL EVACUATOR
Jimmy D. Tussey; George W. Oakes, both of South Boston, Va.; Herbert F. Carr, Ozark, Ala., and Irving Melnick, Danville, Va., assignors to Said Melnick and said Oakes by said Carr and Said Oakes by said Tussey
Filed Oct. 15, 1971, Ser. No. 189,563
Int. Cl. A61m *1/00*
U.S. Cl. 128—278 **18 Claims**



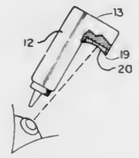
A contamination free surgical evacuator comprising an evacuator bag having valves in the input (drain) and the output (purge) lines leading to and from the bag is disclosed. The drain valve is a one-way flap valve that allows fluids to enter the bag from a patient yet prevents fluids from returning to the patient. The purge valve is a one-way magnetic valve that allows drained fluids to be purged from the evacuator bag without allowing contaminants to enter the bag. The evacuator bag is collapsible and is located between a pair of rigid plates, one of which curves outwardly. The drain and purge valves are located in the outwardly curved rigid plate with the purge valve being located in a cup-like trap that projects outwardly from the center of the curved shaped plate. The cup-like trap includes graduations which allow the evacuator to be utilized as an instrument to measure the rate of drainage from a patient.

3,779,244
DISPOSABLE FACE RESPIRATOR
Thomas Joseph Weeks, Jr., Valley Cottage, N.Y., and George Paul Reimschussel, Flemington, N.J., assignors to Johns-Manville Corporation, New York, N.Y.
Filed Feb. 3, 1971, Ser. No. 112,364
Int. Cl. A61f *13/00*
U.S. Cl. 128—146.2 **14 Claims**



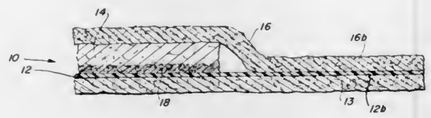
A respirator mask is formed by a filter medium that comprises a majority of the face portion of the mask and edge sealing means. The filter medium includes at least two layers of interfelted fibers: (*a*) a backing layer of fibers, and a binder, and (*b*) a filter layer including fibers having a fine diameter. The filter medium is formed by sequentially depositing solids on a foraminous mold having the desired shape of the interior of the mask, from separate aqueous slurries. A pressure differential is applied across the foraminous mold to cause the fluid portion of each slurry to pass through the mold and to deposit solids on the mold.

3,779,245
DEVICE FOR APPLYING MATERIALS TO THE AREA OF THE EYE
Robert K. Windsor, 417 Spruce St., Philadelphia, Pa.
Filed June 13, 1972, Ser. No. 262,384
Int. Cl. A61m *1/00*
U.S. Cl. 128—233 **3 Claims**



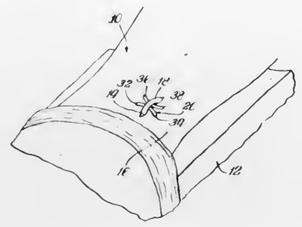
A device to be used for applying materials to the area of the eye which comprises an applying means for applying materials to the area and a mirror so that the user can see his eye reflected therein during the applying process.

3,779,246
DISPOSABLE DIAPER
Frederick K. Mesek, Downers Grove, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Oct. 7, 1971, Ser. No. 187,473
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **6 Claims**



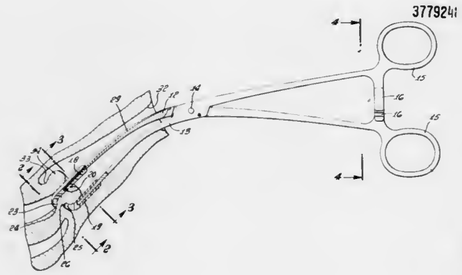
A disposable multi-layer diaper of high absorptive capacity is provided which comprises as a first layer, to be brought into contact with an infant's skin, a porous, fibrous, non-woven bonded facing web of controlled wettability made of mixed long and short fibers. A second layer, in juxtaposition to the facing layer, is a highly porous, loosely compacted cellulosic batt having greater wettability than that of the facing web. Beyond the cellulosic batt is an impervious backing sheet adhered to the batt over a widely distributed area of adhesion. The final or outermost layer is a fibrous material which is adhered to the backing sheet, and which enables the diaper to have the feel and handle of a cloth diaper. The outermost layer, preferably, is a non-woven web made of mixed long and short fibers that are bonded together with a water-repellent bonding agent.

3,779,247
LOOP COLOSTOMY BRIDGE
John L. Nolan, Glenview; Arnold A. Rivin, Chicago, and Bremen I. Johnson, Cary, all of Ill., assignors to Hollister Incorporated, Chicago, Ill.
Filed Aug. 2, 1971, Ser. No. 168,177
Int. Cl. A61b *17/00*
U.S. Cl. 128—303 R **6 Claims**



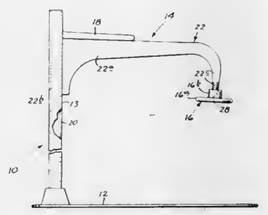
During a temporary colostomy a structurally unique bridge is used to prevent premature withdrawal of the intestine back into the abdominal cavity. A surgeon opens the abdominal wall and eases a short loop of intestine out of the opening. The colostomy bridge, having lateral extensions at each end, is positioned beneath the section of exposed intestine and is laid flat against the abdominal wall. If only a short loop of intestine is brought out of the abdominal cavity, the colostomy bridge may be folded and threaded beneath that portion of exposed intestine, then unfolded and laid flat against the abdominal wall. The bridge spans the incision beneath the section of exposed intestine to prevent withdrawal of the intestine into the abdominal cavity and by its structure is prevented from accidentally working out from beneath the intestine. After the medical objectives have been accomplished, the bridge can be folded and removed easily without cutting and without discomfort to the patient.

3,779,248
FORCEPS
Harvey Karman, Los Angeles, Calif., assignor to Medical Concepts, Inc., El Segundo, Calif.
Filed Oct. 18, 1971, Ser. No. 190,117
Int. Cl. A61b *17/28, 17/42, 1/30*
U.S. Cl. 128—321 **3 Claims**



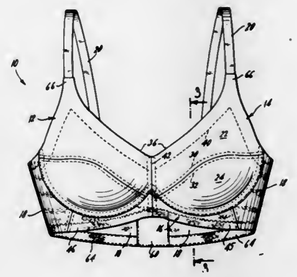
A forceps for medical use, particularly for gripping the cervix without tissue damage and having jaws with fixed or removable and disposable tips. A forceps with one tip having an inwardly turned smooth convex edge and the other tip having a smooth concave edge, preferably semicircular, with the one tip positionable within the arc of the other for cradling and gripping the cervix during interuterine medical procedures.

3,779,249
ARTERY CLAMP
Herbert J. Semler, 2330 N. W. Flanders, Suite 105, Portland, Oreg.
Filed Apr. 19, 1972, Ser. No. 245,528
Int. Cl. A61b *17/12*
U.S. Cl. 128—325 **3 Claims**



An artery clamp including a base, a support joined to the base, and a pressure-pad-bearing arm structure slidably mounted on, and releasably lockable at any position along, the support. The clamp is used, for example, following catheterization or needle puncture of a femoral artery to compress the artery while coagulation occurs, freeing a physician or nurse for other duties.

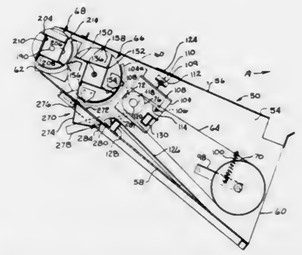
3,779,250
BRASSIERE
Alfreda Radomski, Trumbull, Conn., assignor to Warnaco Inc., Bridgeport, Conn.
Filed Mar. 20, 1972, Ser. No. 236,329
Int. Cl. A41c *3/00*
U.S. Cl. 128—489 **7 Claims**



A brassiere wherein left and right bust cups are fashioned from a single layer of soft, resilient material. The upper bust edge of each of the bust cups includes a reinforcement band of the same material as the bust cups. The upper edge of the reinforcement band is secured to the upper edge of the bust cups with elasticized thread thereby providing an accomodating, comfortable garment. The lower edge of the band is secured a larger-than-normal distance from the upper edge of each of the bust cups, thereby forming a reinforcement band which distributes upper-bust edge pressure over a greater-than-nor-

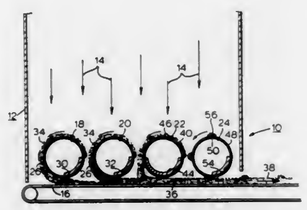
mal area. Additionally, the reinforcement band is comparatively flat and relatively undetectable when worn under garments which would reveal a normal reinforcement band on a conventional brassiere.

3,779,251
CROP ELEVATOR FOR A COMBINE
Edward William Rowland-Hill, Lancaster, and Edwin O. Margerum, Paradise, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Sept. 20, 1971, Ser. No. 181,913
Int. Cl. A01f *12/10*
U.S. Cl. 130—27 JT **8 Claims**



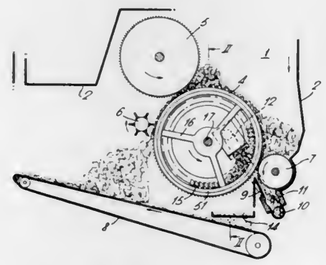
A combine crop elevator delivers to the intake of a combine a rapidly moving thin mat of crop material clear of stones and other debris. The crop material is progressively increased in speed by a chain type of conveyor receiving the crop material from a header, a following transverse intermediate bladed beater and a transverse rear discharge bladed beater. The crop material is cleared by the cooperative interrelation of the intermediate beater and a stone trap positioned underneath the forward portion of the intermediate beater to collect stones, debris and the like deflected downward by the intermediate beater as it sweeps the crop material rearwardly.

3,779,252
TOBACCO STREAM MANUFACTURE
Warren A. Brackmann, Cooksville, Ontario, and Daniel Di Ianni, Toronto, Ontario, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada
Continuation-in-part of Ser. No. 128,412, March 26, 1971, abandoned. This application Sept. 3, 1971, Ser. No. 177,740
Int. Cl. A24c *5/18*
U.S. Cl. 131—84 B **4 Claims**



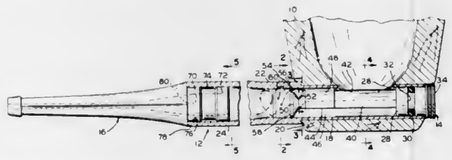
A tobacco manipulating apparatus for formation of a tobacco filler rod for use in the formation of cigarettes includes a relatively thin and flat chute, a tobacco particle gatherer located adjacent the discharge of the chute and a relatively flat elongated conveyor to receive tobacco from the gatherer. The gatherer includes a plurality of rotatable discs mounted across the width of the chute and each having substantially the same diameter and including a tobacco receiving peripheral surface in the plane of the chute. A source of vacuum is connected to each disc and vacuum interrupter is provided to prevent the application of vacuum over part of the surface of each disc. In this way a plurality of narrow substreams is formed from a broad stream of such particles in the chute. The narrow substreams are deposited sequentially and tangentially of the discs into the filler rod on the conveyor, the discs being mounted so that a straight line through their axes of rotation is inclined in a downstream direction with respect to the conveyor.

3,779,253
CIGARETTES
Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, assignor to Molins Machine Company Limited, Deptford, London, England
Filed Sept. 6, 1968, Ser. No. 757,890
Claims priority, application Great Britain, Sept. 15, 1967, 42,270/67
Int. Cl. A24c *05/39*
U.S. Cl. 131—110 **6 Claims**



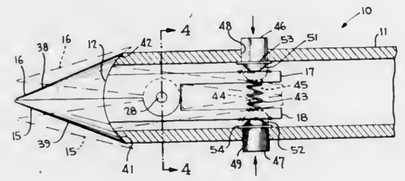
In tobacco feeding apparatus in a cigarette making machine, "shorts" are collected from the tobacco supply and are mixed by tumbling in a hollow rotating member such as a drum forming part of a cigarette-making machine, e.g. a main feed drum, a refuser drum, or a shorts return drum. In one embodiment shorts are fed into rotating annular sieves one within the other and mounted in a rotating drum, so that the shorts are graded as well as mixed. The mixed shorts are later incorporated in the tobacco filler.

3,779,254
SMOKER'S PIPE
John R. Linskey, Rt. 1, Box 174, Hillsboro, Oreg.
Continuation-in-part of Ser. No. 39,000, May 20, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,316
Int. Cl. A24f *05/04*
U.S. Cl. 131—198 R **14 Claims**



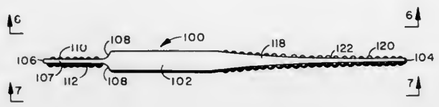
An aluminum pipe stem has an air jet opening in the upper portion thereof adjacent a smoke passing orifice formed in the upper portion of the stem by a baffle blocking the lower portion of the stem, and turbulates and dilutes the smoke flowing through the orifice. The baffle forms the rear end of a front inserted pin which guides the smoke from the bowl downwardly to the bottom portion of the stem and then upwardly to the outlet orifice. A bit has an insert having two lands having a friction or interference fit within the stem with an annular groove between the lands to permit flow of material of the bit as the interference fit is effected.

3,779,255
HAIR CURLING IMPLEMENT
Irene Theodorides, 193 rue du Jardin-Public, Bordeaux, France
Continuation of Ser. No. 117,800, Sept. 3, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 313,635
Int. Cl. A45d *2/26*
U.S. Cl. 132—41 A **3 Claims**



An implement for the curling of hair including a hollow handle member, relatively movable jaw members having clamping jaws forming a smooth extension outwardly of the handle and leg members thereof located within the handle, spring means biasing the clamping jaws into a clamping position, and press buttons on the handle cooperating with the leg members for opening the clamping jaws.

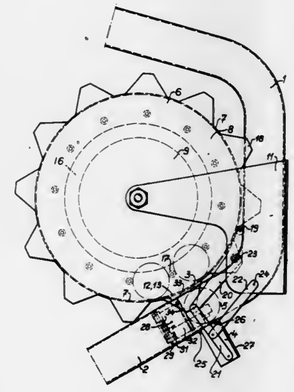
3,779,256
ORAL HYGIENIC DEVICE
Albert L. Maloney, and Holly H. Maloney, both of 3806 Inlet Isle, Corona Del Mar, Calif.
Filed Oct. 20, 1971, Ser. No. 190,925
Int. Cl. A61c *15/00*
U.S. Cl. 132—93 **11 Claims**



An oral hygienic device comprising an elongated member having a tapered rounded end capable of being inserted within the spaces between a user's teeth, with a hook at the opposite end thereof having sufficient space for receiving a length of dental floss. The tapered end has a blade or reduced edge for scraping food debris, bacterial plaque and residue from a user's teeth. The intermediate section of the device is relieved with stippling or cross-hatching on either or both sides to provide a roughened portion capable of gently abrading extraneous material on and between a user's teeth.

A second embodiment comprises an elongated device having a pointed end and a tapered portion internally bevelled or curved to provide a hollow terminating in an edge, with a handle at the distal end thereof having a relieved portion for gripping ease. The second embodiment also has stippling along the blade which serves to remove food debris, bacterial plaque and residue from a user's teeth.

3,779,257
COIN MAGAZINE
Claude Wenger, Geneva, Switzerland, assignor to Sodeca Societe des Compteurs de Geneve S.A., Geneva, Switzerland
Filed Aug. 19, 1971, Ser. No. 173,214
Claims priority, application Switzerland, Aug. 24, 1970, 12602/70
Int. Cl. G07d *1/00*
U.S. Cl. 133—5 R **4 Claims**

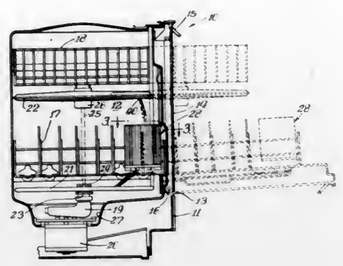


A coin magazine comprises an annular chamber defined between a fixed outer cylindrical wall and an helical track cut in a fixed coaxial inner cylinder. A rotatable coaxial end flange has regularly spaced fingers extending through said chamber parallel to and equally spaced from the common axis. Pusher means operating in synchronization with rotation of the flange introduce coins into the chamber through a slot in said wall to a position between pairs of adjacent fingers which serve to propel the coins along the track. By rotating the flange in the opposite direction, coins in the chamber are restituted via said slot.

3,779,258
ROTATING SILVERWARE BASKET FOR DISHWASHER
Robert A. Brenner, St. Joseph, and Victor W. Cuthbert, Sodus, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Feb. 11, 1972, Ser. No. 225,503
Int. Cl. B08b *3/02*
U.S. Cl. 134—138 **8 Claims**

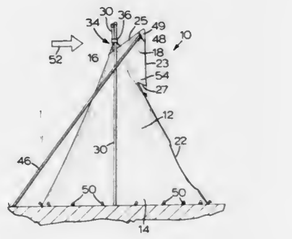
A dishwasher having a holder for holding silverware to be washed rotatably mounted on a dish holding rack in the washing chamber. The silverware basket is rotated on the dish holding rack so as to permit subjecting silverware carried thereby to a spray of washing liquid, with the spray striking the silverware in different angular positions as the silverware basket revolves. The spray itself may have movement relative

to the dish holding rack and silverware holding basket, and in the illustrated embodiment is provided by a rotating spray



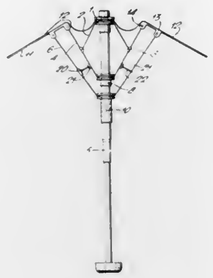
arm. Further, in the illustrated embodiment, the rotation of the silverware basket is effected by a supplemental spray acting against vanes on the rotatable silverware basket.

3,779,259
COLLAPSIBLE PROTECTIVE STRUCTURE
John G. Fuller, Calgary, Alberta, Canada, assignor to Ian Tyson, Toronto, Ontario, Canada
Filed Apr. 21, 1972, Ser. No. 246,255
Int. Cl. A45b *1/00*
U.S. Cl. 135—1 C **7 Claims**



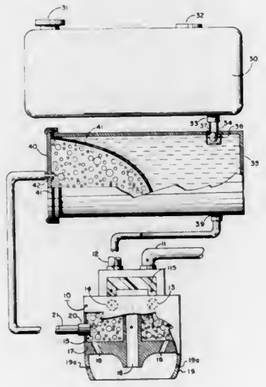
This invention provides a tent structure essentially cone-shaped, including a flue opening in one side adjacent the peak. Two flexible smoke flaps are aligned vertically along the lateral edges of the flue opening. Two truss poles extend from the ground on opposite sides of the tent to a location above the peak, and the peak of the tent is slung from the point where the truss poles meet. Two flap poles extend upwardly from the ground on the side opposite the flue opening, each flap pole crossing one of the truss poles externally and being attached to one of the smoke flaps, in order to maintain the flaps taut in a desired orientation.

3,779,260
UMBRELLA FRAME
Fernando Creixell Garay, Onate, Spain, assignor to Hijos De Juan De Garay S.A., Onate, Spain
Filed July 17, 1972, Ser. No. 272,525
Claims priority, application Spain, July 30, 1971, 393,795; Aug. 3, 1971, 393,861; Sept. 18, 1971, 395,201; Dec. 7, 1971, 397,734
Int. Cl. A45b *19/00*
U.S. Cl. 135—20 R **5 Claims**



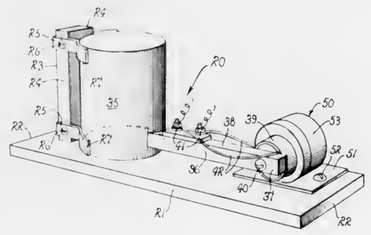
An umbrella frame which closes into compact form including a linear shank, a plurality of supporting ribs, a radial assembly connecting each supporting rib to first and second bushings slidably mounted on the linear shank. A weather-resistant fabric mounted on the umbrella frame is connected to and supported by the supporting ribs and fixed to the top end of the linear shank at a central portion thereof. From the normal closed position the second sliding bushing may be telescoped upwardly along the linear shank to displace the radial assemblies in the frame and urge the supporting ribs into an open position.

3,779,261
METHOD AND APPARATUS FOR MIXING FLUIDS
Alfred E. Zygiel, 3623 Parader Ct., Dallas, Tex.
Filed Mar. 10, 1972, Ser. No. 233,513
Int. Cl. *564.5*; **G05d** *11/02*
U.S. Cl. 137—3 **11 Claims**



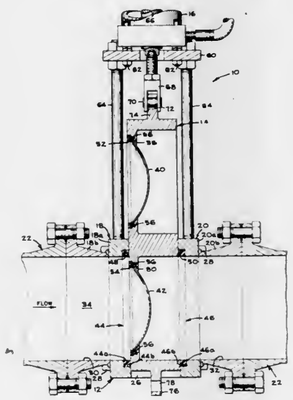
Disclosed is fluid mixing apparatus employing a metering chamber divided by a flexible diaphragm. Two fluids are simultaneously injected into a mixing nozzle. The ratio of fluids is controlled by a feedback line which translates pressure from the first fluid outlet to the second fluid and thereby maintains a relatively constant ratio between the head pressures on the two fluids.

3,779,262
SEISMICALLY SENSITIVE SAFETY DEVICE
John C. Manning, and Mark T. Manning, both of 2512 Spruce St., Bakersfield, Calif.
Filed Jan. 12, 1972, Ser. No. 217,189
Int. Cl. F16k *17/36*
U.S. Cl. 137—38 **7 Claims**



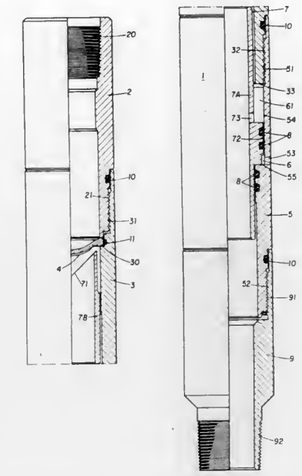
A seismically sensitive safety device adapted for connection to a line for supplying fuel, electricity or other conductible energy or energy source material having a seismic sensor capable of perceiving seismic impulses of pre-selected magnitude, a mechanism for translating the perceived seismic impulses into an electrical impulse; an electrical circuit connected to the mechanism adapted to transmit the impulse supplied by the mechanism, and a flow control in operable association with the circuit and connected to the supply line adapted to interrupt such conduction of energy or energy source material in response to receipt of such an impulse.

3,779,263
PRESSURE RESPONSIVE AUXILIARY DISC VALVE AND THE LIKE FOR WELL CLEANING, TESTING, AND OTHER OPERATIONS
Arnold Glen Edwards, and Charles J. Jenkins, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Feb. 9, 1972, Ser. No. 224,755
Int. Cl. F16k *13/04*; **E21b** *21/00*
U.S. Cl. 137—68 **5 Claims**



A full opening pressure operated disc valve particularly suited for cleaning formation perforations by surging and for other operations comprises a rupturable sealing element and a sliding tubular rupture member actuated by a controlled pressure differential between the tubing chamber and the casing annulus, with said element and rupture member being located concentrically within a tubular body and having an ID substantially the same as that of the tubing string.

3,779,264
AUTOMATIC PRESSURE-RELIEF RUPTURE DISC CHANGER
Joseph R. Roche, and Mat M. Bowen, both of Houston, Tex., assignors to FMC Corporation, San Jose, Calif.
Filed Oct. 10, 1972, Ser. No. 296,493
Int. Cl. F16k *17/40*
U.S. Cl. 137—68 **6 Claims**



An automated apparatus for holding and changing pressure-relief rupture discs in a pipe line or other fluid conduit. The apparatus includes a gate-like disc carrier with a pair of apertures in each of which a rupture disc is secured, a housing or body in which the carrier is slidably disposed, and a pneumatic cylinder or similar operator connected to the carrier for mov-

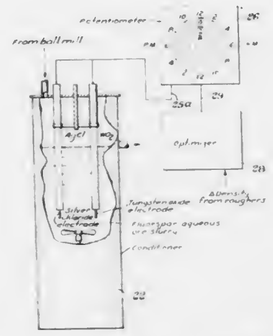
ing the discs in and out of the line. When either one of the discs is in functional position in the line the other disc is accessible for replacement or servicing without need for line shutdown or apparatus disassembly.

3,779,265

APPARATUS FOR CONTINUOUS MEASUREMENT AND CONTROL OF FLOTATION CONDITIONS

Porter Hart, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 20, 1972, Ser. No. 219,230
Int. Cl. G05d *21/00*
U.S. Cl. 137—93 **3 Claims**



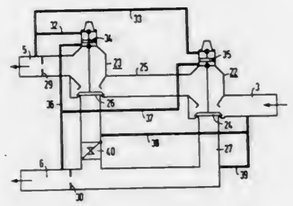
A method and apparatus necessary to carry out the method of continuous measurement, recordation, and correction of the varying electrode potential or E.M.F. within an ore slurry containing conditioning components in a mineral flotation system by immersing in cooperative relationship a tungsten oxide electrode and a silver chloride electrode in the slurry, relaying the potential thereby obtained to a recording instrument or to an optimizer or to both and either manually, or automatically by means of the optimizer, adjusting the rate of feed of at least one conditioning component of the slurry to correct the potential or E.M.F. to provide a more efficient process.

3,779,266

DEVICE FOR AUTOMATICALLY SWITCHING A FEED FLOW FROM ONE TO THE OTHER OF TWO PARALLEL BRANCH LINES OF AN EMERGENCY COOLING SYSTEM, ESPECIALLY IN NUCLEAR REACTORS

Hans Fruth, Erlangen-Bruck, and Wolfgang Godel, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 22, 1971, Ser. No. 210,780
Claims priority, application Germany, Dec. 24, 1970, P 20 63 674.2
Int. Cl. G05d *11/00*
U.S. Cl. 137—110 **6 Claims**



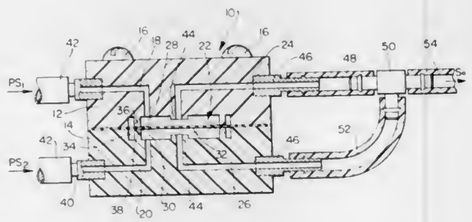
Device for automatically switching a feed flow from one to the other of two parallel lines branching from a feed line when a break occurs in one of the branch lines, includes a piston-controlled three-way valve situated at a location of the feed line at which the branch lines branch off, the three-way valve having an inlet connected to the feed line and a respective outlet connected to each of the branch lines, the three-way valve having a valve member normally closing one of the outlets and being operatively connected to a displaceable piston and actuable thereby for opening the normally closed outlet and closing the other of the outlets, a fixed throttle disposed in each of the outlets, a first pressure line connected between one side of the piston and the branch line connected to the normally closed outlet at a location thereof downstream of the fixed throttle in the normally closed outlet, and a second pressure line connected between the other side of the piston and the branch line connected to the other outlet at a location thereof downstream of the fixed throttle in the other outlet.

3,779,267

FLUID OPERATED LOGIC DEVICE

Larry Clyde Cowan, Jamestown, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed July 26, 1971, Ser. No. 165,446
Int. Cl. F15c *3/04*
U.S. Cl. 137—111 **1 Claim**



Fluid operated logic device providing a positive going OR or a negative going AND signal is disclosed. Input signals are provided via fluid moving in first and second circuits or fluid flow paths which pass through a common chamber. The chamber incorporates a fluid impervious flexible diaphragm which isolates the first and second circuits or flow paths within the chamber. The diaphragm is movable in response to fluid movement through one of the first and second flow paths to block the other flow path through the chamber, thereby precluding fluid movement from the inlet to the outlet opening of the other flow path and also preventing feedback of one input signal into the other circuit. The device is passive, operating on signal power alone.

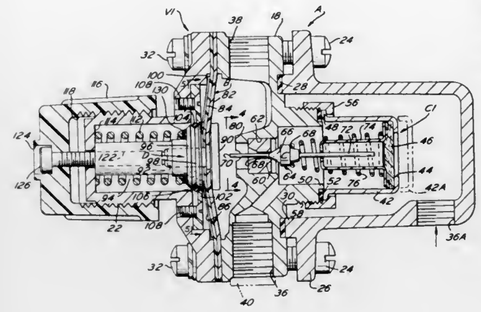
3,779,268

AUTOMATIC CHANGEOVER VALVE FOR CHLORINE GAS SYSTEM

William Collins Conkling, Essex Fells, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed June 13, 1972, Ser. No. 262,385
Int. Cl. G05d *7/01*
U.S. Cl. 137—113 **7 Claims**

An automatic changeover diaphragm valve for chlorine gas service incorporates a loading spring on the atmospheric side of the diaphragm in order to provide a regulated positive pressure discharge. A latching mechanism for the valve employs spaced parallel rods which engage a V-groove on the loading spring spool to hold the valve in standby condition prior to release for changeover operation. The diaphragm includes a tetrafluorethylene web on the gas side and a chlorosulfonated web on the atmospheric side clamped at the outer peripheries. A sectored metal disk is used to abut against the chlorosulfonated web while the central portions of the two webs are in clamped disposition.

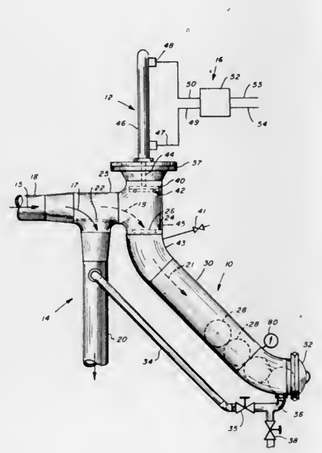


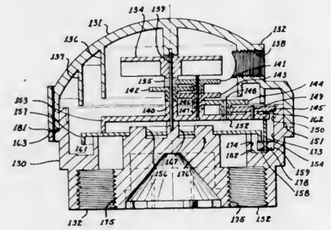
3,779,269

FLOW SWITCHING VALVE

Henry D. Gould, 7734 N. 41st Ave., Phoenix, Ariz.

Continuation-in-part of Ser. No. 79,724, Oct. 12, 1970, abandoned. This application Jan. 20, 1972, Ser. No. 219,224
Int. Cl. A01g *25/00*; **B05b** *9/00*; **F16k** *21/00*
U.S. Cl. 137—119 **12 Claims**





A fluid flow valve is disclosed for sequentially switching an incoming fluid stream through each of a plurality of outlet ports. An impeller is disposed for angular rotation within the valve and turns in response to the flow of fluid. The impeller is connected to a rotor by means of a planetary gear train. The rotor operates a cam which opens one segment of a multi-segmented plate associated with the outlet ports, thereby allowing fluid flow through the selected outlet ports.

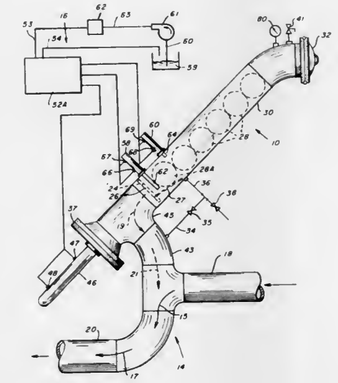
3,779,270

SPHERE LAUNCHER AND RECEIVER

Billy E. Davis, Tulsa, Okla., assignor to Signet Controls, Inc., Tulsa, Okla.

Filed May 26, 1972, Ser. No. 257,144
Int. Cl. B08b *9/04*
U.S. Cl. 137—268 **7 Claims**

This invention describes an improved method of launching spheres into a flowing fluid pipeline and for receiving spheres that have been traveling with the fluid in the pipeline. It comprises in general a barrel which is attached at one end to an opening into the flow line of the pipeline and is closed at the other end by a removable closure. Inside the flow line is a piston means which is adapted to close and seal across the end of the barrel near the point of attachment to the flow line. This piston is normally withdrawn so that spheres which are carried to this point by the moving fluid will enter and accumulate in the barrel. When the piston is moved to close off the first end of the barrel, the fluid can be drained, the removable closure can be opened, and the spheres removed from the barrel. After the spheres are removed, the barrel is repressured and the piston is withdrawn, opening the input end of the barrel so that spheres can continue to be received therein.

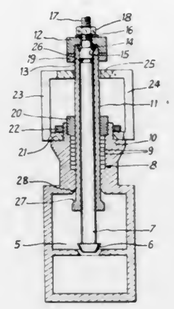


The launcher is a similar type of barrel with a piston closure at the end where it is attached to the flow line. While the receiver is tilted downward from the point of attachment, the launcher is tilted upward, so that after spheres are put into the barrel, they can be launched by being dropped down into the flow line. Hydraulically operated plungers are provided which move through the wall of the barrel at its lower end and serve to restrain the downward movement of the spheres. Simply withdrawing the lower of the two plungers will cause one of the spheres to be launched into the flow line.

3,779,271
VALVES WITH REPLACEABLE PACKING

Jean Marcel Legrandgerard, Chenneviers-sur-Marne, France, assignor to ADAR, Hauts-de-Seine, France

Filed Mar. 21, 1972, Ser. No. 236,731
Claims priority, application France, Mar. 29, 1971, 7110912
Int. Cl. F16k 41/02
U.S. Cl. 137—315 1 Claim

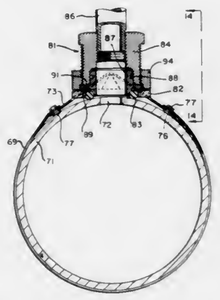


In this device with replaceable packing auxiliary valve means are provided between the tubular valve guide and the surrounding valve body whereby, upon release of the means rigidly interconnecting the valve guide and valve stem, said auxiliary valve means can be closed to permit a continuous operation of the apparatus while replacing the worn packing elements. (Figure 2)

3,779,272
PIPE SADDLE ASSEMBLY

Paul G. Dunmire, Oakland, Calif., assignor to Johns-Manville Corporation, Arapahoe, Colo.

Division of Ser. No. 38,342, May 18, 1970, Pat. No. 3,687,480, which is a continuation-in-part of Ser. No. 826,563, May 21, 1969, abandoned. This application July 27, 1972, Ser. No. 275,481
Int. Cl. F16k 43/00
U.S. Cl. 137—315 4 Claims

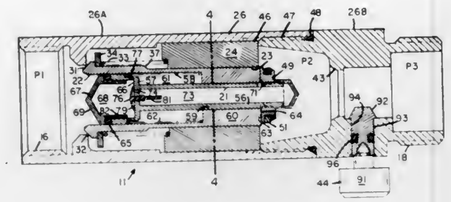


A pipe saddle assembly employing a flexible strap adapted to be disposed about a pipe into which a branch line is to be made. The saddle assembly includes lugs cooperating with the ends of the band and bolts for drawing the lugs together to tension the band. The bolts ride on fulcrums supported by a boss element to be drawn against the pipe. A seal ring interposed between the boss element and pipe seals against leakage.

3,779,273
SHUT OFF DEVICE

Allan V. Stone, 33 Summit Rd., Port Washington, N.Y., and Francis J. Martin, 5 Skyline Dr., Huntington, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,163
Int. Cl. F16k 17/12
U.S. Cl. 137—460 16 Claims

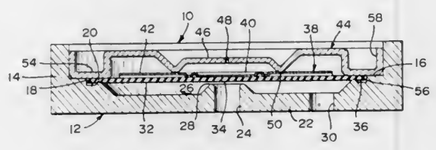


An automatic shut off device particularly designed to be positioned upstream of the flexible hose through which the feed water flows to a household automatic washing machine. The device operates if flow through it continues for longer than the usual water-demand period of the washing machine cycle. It includes means for establishing a pressure differential, whose magnitude is substantially independent of the flow rate over a wide range of flow rates, and shut off means responsive to the continuance of that differential.

3,779,274
PRESSURE REGULATOR

Samuel T. Kelly, Torrance, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 21, 1972, Ser. No. 308,619
Int. Cl. F16k 31/385
U.S. Cl. 137—505 15 Claims

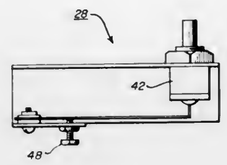


A pressure regulator including a housing having inlet and outlet ports and a valve seat communicating with the inlet port, a flexing member mounted in the housing to form a chamber therein and a cover press fitted in the housing to retain the flexing member and having an annular fulcrum engaging the flexing member, the flexing member being flexed at a ring disposed within the fulcrum to move a valve face portion of the flexing member toward and away from the valve seat to regulate outlet pressure. In one embodiment the flexing member includes a rubber diaphragm with a metal spring disc secured thereto, and in another embodiment the flexing member is a thin, flexible metal disc providing the functions of both spring and diaphragm.

3,779,275
ENVIRONMENTAL AIR DISTRIBUTION CONTROL SYSTEM POWERED BY SYSTEM PRESSURE

Ralph M. Ley; Harold M. Alyea, and Thomas H. Holloway, all of Waukesha, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 22, 1971, Ser. No. 201,006
Int. Cl. F16k 21/14
U.S. Cl. 137—505.18 4 Claims

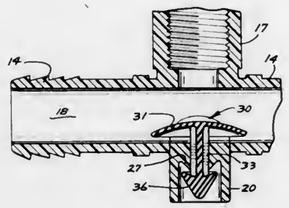


An environmental air distribution control system regulates the flow of air under pressure by using the system pressure itself to effect the desired control. This is accomplished by using one or more pressure regulating valves, each pressure regulating valve being adapted to selectively vary the pressure drop across its output impedance to thereby control the rate of flow of air.

3,779,276
DRAINAGE VALVE STRUCTURE

Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn.

Filed June 9, 1972, Ser. No. 261,276
Int. Cl. F16k 15/14
U.S. Cl. 137—512.4 1 Claim



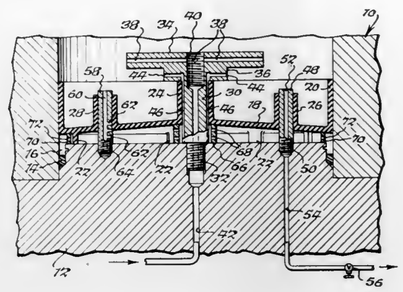
A drainage valve structure in connection with a water line of an underground watering system comprising a nipple having an upper and a lower valve seat and corresponding upper and lower valves, said upper valve seating under normal water pressure in said water line and opening said valve automatically under a lesser water pressure and said lower valve seating to close said valve responsive to the pressure of subsurface water to prevent its entrance into said water line.

3,779,277
ANTI-DIRT SLEEVE FOR ISOSTATIC PRESS

Eduard L. J. Papen, Belsele, Belgium, assignor to National Forge Company, Irvine, Pa.

Filed Feb. 29, 1972, Ser. No. 230,306
Int. Cl. F16j 15/48; B29c 3/04
U.S. Cl. 137—592 8 Claims

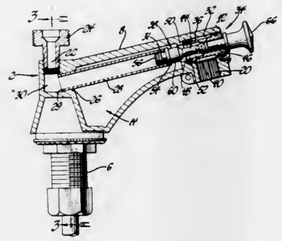
A disc of elastomeric material to catch falling particles and prevent them from abrading the bottom seal of a pressure vessel. The disc has an outer edge which is turned up to form a pan of circular shape and is dimensioned to make a close fit to the inside wall of a pressure vessel.



3,779,278
FAUCET

Larry M. Hill, Frankfort, Ind., assignor to Indiana Brass Company, Inc., Frankfort, Ind.

Filed Sept. 21, 1971, Ser. No. 182,438
Int. Cl. F16k 11/00
U.S. Cl. 137—597 14 Claims

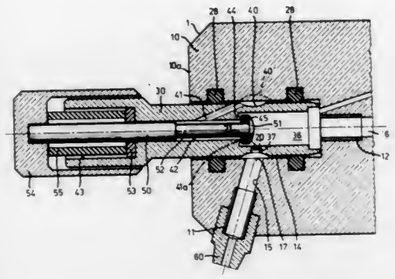


A faucet including a housing having hot and cold water inlets and a spout portion. A first outlet is formed in the spout portion for directing water from the faucet to a sink or lavatory, and a second outlet is formed in the housing at a position remote from the first outlet for directing the water to a tub or shower. A diverter tube has one end supported in the housing and communicating with the second outlet with its other end spaced from the first outlet. A diverter valve recess is formed in the spout and a diverter valve assembly is mounted in the recess for controlling communication between the hot and cold water inlets and either the diverter tube or the first outlet so that actuation of the diverter valve determines whether or not water flows from the first or second outlets.

3,779,279
CONDUCTIVITY MEASURING CELL

Kurt Schon, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Oct. 27, 1972, Ser. No. 301,646
Claims priority, application Switzerland, Nov. 12, 1971, 16511/71
Int. Cl. G01n 27/00
U.S. Cl. 137—599 7 Claims

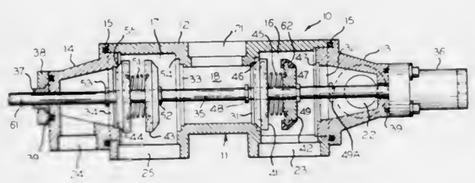


A conductivity measuring cell for a counting apparatus for counting particles suspended in a fluid medium incorporating a suction channel communicating with a withdrawal channel by means of a calibrated bore serving as an electrical resistance measuring path. The suction channel flow communicates with the withdrawal channel through the agency of an auxiliary branch channel arrangement equipped with a throughpassage which can be sealingly closed and opened.

3,779,280
CONTROL VALVE FOR CONTAMINANT-LADEN GASES

Arthur J. Evans, Northville, Mich., and Joseph C. Morin, New Westminister, British Colombia, Canada, assignors to Whitlock, Inc., Farmington, Mich.

Filed Aug. 17, 1972, Ser. No. 281,531
Int. Cl. F16k 11/00
U.S. Cl. 137—625.5 5 Claims

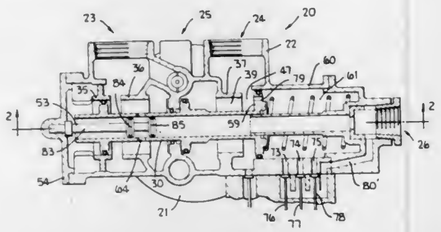


A control valve for directing the flow of gases which may contain substantial amounts of powder, granular material, or other contaminants, comprising a housing defining two transfer chambers; both chambers are connected to a central port and each chamber is connected to a separate intermediate port and to an end port. An actuator rod extending through both transfer chambers carries two pair of poppets, one pair in each transfer chamber. The poppets in each pair are slidably mounted on the rod, back-to-back, and each pair is biased away from the other poppet in the pair, toward a retainer mounted on the rod, by a spring interposed between the poppets. Each poppet is face with a frusto-conical seal of moderately soft elastomer that engages a relatively sharp valve seat in line contact to seal off one of the transfer chambers from the central port or from one of the end ports, the valve being actuated by axial movement of the actuator rod.

3,779,281
WATER SOFTENER VALVE ASSEMBLY WITH REGENERATION CAPABILITY

Earl P. Brane, Largo, Fla., assignor to Laurtech International Company, Racine, Wis.

Filed Sept. 18, 1972, Ser. No. 290,233
Int. Cl. B01d 29/38
U.S. Cl. 137—625.29 7 Claims

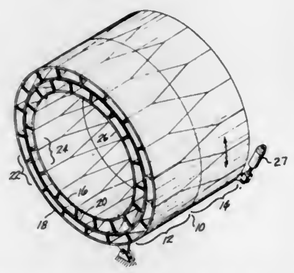


A valve assembly for a water softener which is capable of regenerating the water softening material within the tank. The assembly has a housing including a plurality of passages and chambers through which a tube is slidably movable. A plurality of seals are mounted to the tube and are sealingly engageable with various passages to direct the fluid in the desired directions. One position of the movable tube forces the incoming water to flow through the water softener tank and then out through the soft water outlet. A second position of the movable tube causes the hard water flowing in the inlet of the assembly to flow immediately out of the assembly through the soft water outlet. In addition, the hard water is caused to flow in a reverse direction through the water softening tank thereby providing a backwash with the drain water exiting the assembly through a drain exit. A third position of the movable tube causes brine to flow into the water softener tank and a subsequent flow rinse of the water softening tank. The last position of the movable tube causes a fast rinse of the water softening tank while simultaneously refilling the brine storage tank. A plurality of pistons are utilized to control the movement of the movable tube.

3,779,282
ANNULUS INVERTING VALVE

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 8, 1971, Ser. No. 196,422
Int. Cl. F16k 11/06
U.S. Cl. 137—625.46 23 Claims

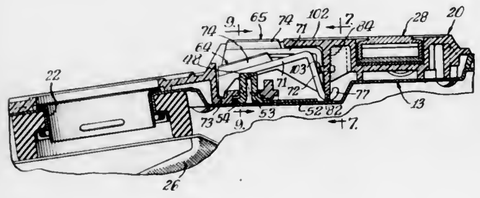


A flow control system for inverting the positions of two adjacent constant area flow patterns within the confines of a fluid passageway having an area substantially equal to the combined area of the two separated flow patterns. The preferred embodiments involve annular first and second duct means divided into duct elements shaped and arranged such that two annular flow patterns are discharged at the exit end of the passageway in an inverted adjacent concentric relationship to that which exists at the entrance end of the passageway. Valve embodiments for optionally causing either inverted or straight through flow are also presented.

3,779,283
PUSH BUTTON VALVE ASSEMBLY FOR ADJUSTING THE NEGATIVE PRESSURE OF A SUCTION CLEANER

Samuel E. Hohulin, Lexington, Ill., assignor to National Union Electric Corporation, Greenwich, Conn.

Filed May 28, 1971, Ser. No. 147,809
Int. Cl. F16k 11/22; A47l 9/00
U.S. Cl. 137—637 16 Claims

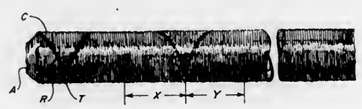


A push button valve assembly is disclosed for adjusting the negative pressure developed in the casing and hence at the suction inlet of a canister-type suction cleaner. The valve assembly includes a plurality of different size apertures in the casing, which communicate with the negative pressure zone therein and which permit different bypass flows of air to be established from the exterior of the cleaner to the negative pressure zone. Such different bypass flows serve to control the suction at the suction inlet of the cleaner. A plurality of slides are provided for covering and uncovering the apertures, and a series of push buttons having cam surfaces thereon engageable with reaction surfaces on the slides, effect movement of the slides with respect to the apertures. The arrangement is such that depression of any one of the push buttons will cause movement of one or more of the slides so that the aperture associated with the depressed push button is uncovered while all of the other apertures are covered by the other slides. At the same time, any previously depressed push button is raised to an inoperative position.

3,779,284
SHIRRED CASING STICK WITH REVERSE HELICAL FOLD PATTERN

Valdis M. Tums, Palos Park, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 6, 1971, Ser. No. 159,858
Int. Cl. A22c 13/00
U.S. Cl. 138—118.1 3 Claims

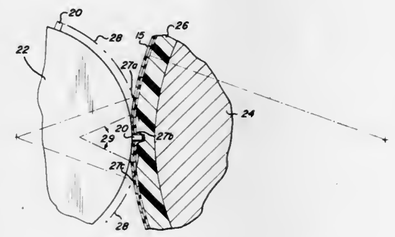


A shirred stick of sausage casing has a plurality of repetitive zones endrto-end. In one zone each successive pleat is axially and rotationally displaced from its preceding neighbor in a direction counter clockwise to the longitudinal axis of the stick as viewed from one end. In another zone each successive pleat is axially and rotationally displaced from its preceding neighbor in a direction clockwise to the longitudinal axis of the stick as viewed from the same end. In between the two zones is a transition zone in which successive pleats are substantially free of rotational displacement with respect to adjacent pleats. Apparatus for producing such a stick comprises a mandrel secured by movable clamps to a frame, means for feeding tubing to the mandrel, shirring means secured to the frame and associated with the mandrel to shirr the casing, a holdback mounted adjacent to the driving means, and means for reversibly rotating the holdback during shirring of the tubing.

3,779,285
METHOD FOR OBTAINING PERFORATED TUBULAR FOOD CASINGS

Armando J. Sinibaldo, Brookfield, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 1, 1969, Ser. No. 821,040
Int. Cl. A22c 13/00
U.S. Cl. 138—118.1 4 Claims



Perforated tubular food casings having substantially free-draining vent holes are obtained by passing a flattened web of tubular food casing between contiguous, counter-rotating punch and support rolls. Positioned on the circumference of one roll are a plurality of radially mounted, flat-faced, sharp-edged punches adapted to cut through the casing and indent a resilient support surface on the other roll.

3,779,286
METHOD AND APPARATUS FOR WEAVING TERRY CLOTH

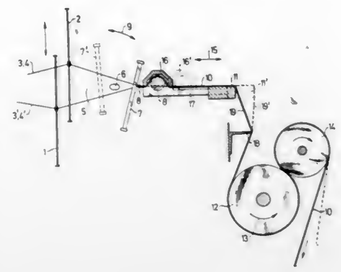
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Oct. 2, 1972, Ser. No. 294,207
Claims priority, application Switzerland, Oct. 11, 1971, 140801/71
Int. Cl. D03d 39/22
U.S. Cl. 139—25 10 Claims

The terry cloth weaving machine is provided with a means to vary the length of cloth travel downstream of the temples so as to maintain the fell straight.

In one embodiment, a deflecting element is positioned between the breast beam and draw-off roller to deflect the

cloth out of its normal path during reciprocation of the breast beam. In another embodiment, a vertically-reciprocal roller is



mounted between the temples and breast beam to deflect the cloth.

3,779,287

CONNECTION BETWEEN FRAME AND POWER TRANSMITTING ROD OF A SHED-FORMING MACHINE

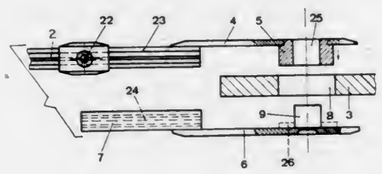
Joseph Palau, Haute-Savoie, France, assignor to Staubli Ltd., Zurich, Switzerland

Filed May 24, 1972, Ser. No. 256,536

Claims priority, application Switzerland, May 28, 1971, 7839/71

Int. Cl. D03c *13/00*

U.S. Cl. 139—88 **9 Claims**



Connecting rod connection, especially for use with heddle frames. A connecting rod is provided for connecting to an opening in a heddle frame by having a pair of plates forming a yoke and projecting beyond the end of a connecting rod and, when in operative position, projecting to a point adjacent a connecting point for the heddle frame. A sleeve is affixed to one side of the yoke and projects toward the other thereof while a pin is affixed to said latter-named side, is positioned coaxially with said sleeve and projects toward the first-named side. The heddle frame is provided with an opening snugly but pivotally received over the external diameter of said sleeve, each of said sides are provided with alignment means such as serrations by which they are properly related to the connecting rod to be in accurate alignment with each other for coaxial reception of said pin into the internal diameter of said sleeve. Clamp means clamp said sides against the connecting rod and into the heddle frame.

3,779,288

WEFT CARRIER GUIDE

Edward S. Budzyna, East Douglas, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 14, 1972, Ser. No. 262,515

Int. Cl. D03d *47/12*

U.S. Cl. 139—122 R **3 Claims**



A weft carrier guide for the inserting carrier of a shuttleless loom of the gripper type for guiding the carrier to and to prevent its rising above its weft pick up position when caused to move toward the warp shed into which it is adapted to carry the weft.

3,779,289

LOOM TEMPLE WEFT CUTTER

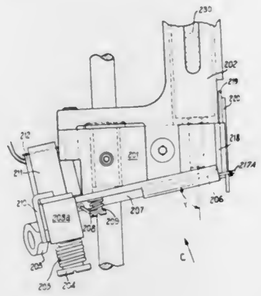
Colin Leonard Lucas Bulcock, Blackburn, England, and Erhard Kenk, Kleinglattbach, Germany, assignors to Lupton Brothers Limited, Accrington, Lancashire, Great Britain

Filed May 2, 1972, Ser. No. 249,625

Claims priority, application Great Britain, Feb. 8, 1972, 5,700/72

Int. Cl. D03d *45/50*

U.S. Cl. 139—266 **6 Claims**



A loom temple including a weft cut-off device operable by a lever which, in synchronism with a loom sley, moves rectilinearly to move the cut-off device towards a weft to be cut and thereafter pivots to operate cut-off device shears and sever the weft to be cut.

3,779,290

APPARATUS FOR UNTWISTING AND STRIPPING TWISTED WIRE PAIR LEADS

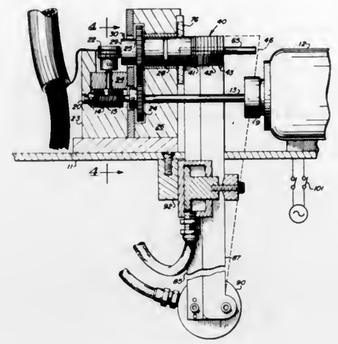
Dennis E. Rich, Phoenix, and Robert O. Crump, Scottsdale, both of Ariz., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Sept. 28, 1972, Ser. No. 293,291

Int. Cl. B21f *21/00*

U.S. Cl. 140—1 **4 Claims**

A rotatable wire guiding assembly is provided which at one end receives a twisted wire pair fed thereto and at the other end fits with a grooved conical separator element that has a saddle shaped tip. Attached to the wire guiding assembly is a cutter-stripper assembly which includes an insulation cutter and a set of plates that grip insulation for stripping. Actuators



drive the wire cutting and stripping elements and a motor drives the rotatable wire guiding assembly and a pair of wire feed rollers.

3,779,291

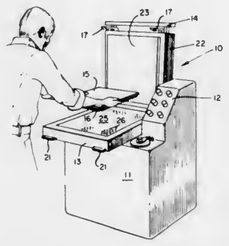
PIN STRAIGHTENING MACHINE

Herbert G. Yeo, Lincoln, R.I., assignor to Augat, Inc., Attleboro, Mass.

Filed May 11, 1972, Ser. No. 252,489

Int. Cl. B21f *1/02*

U.S. Cl. 140—147 **13 Claims**



A machine for straightening the pins secured to a multiple pin board. The pins are simultaneously inserted through holes in a plate which is movable with respect to the pin board. Through an arrangement of gears which provide the relative motion between the plate and the pin board, this motion is carefully timed and controlled as to the amount, direction and sequence of relative motion imparted. All of the pins on the pin board are acted upon simultaneously so that at the end of the operation any axial deformity of any of the pins is corrected and all of the pins stand parallel to each other and perpendicular to the plane of the pin board.

3,779,292

CARBONATED BEVERAGE FILLER

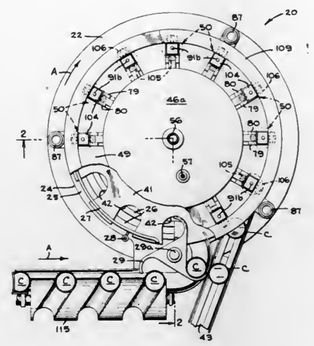
Samuel A. Mencacci, Saratoga, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 17, 1972, Ser. No. 235,516

Int. Cl. B65b *3/04*

U.S. Cl. 141—11 **22 Claims**

A filling apparatus for carbonated beverages including a filling valve connected to a beverage source under pressure and including a measuring cylinder movable into and out of a container to be filled. The measuring cylinder has a foot valve on its lower end and is telescopically associated with an inlet valve. The measuring cylinder is filled with a predetermined amount of beverage at superatmospheric pressure by moving the cylinder down into an empty container when the foot valve is closed and the inlet valve is open. The inlet valve is then



closed and the cylinder is again moved down a slight amount to increase the volume thus reducing the pressure of a measured volume of beverage to atmospheric pressure. The foot valve is then opened and the measuring cylinder is moved upwardly at one rate and the container is moved upwardly at a slower rate relative to the closed inlet valve to transfer the measured quantity of beverage into the container at atmospheric pressure.

3,779,293

FILLING ELEMENT FOR COUNTER PRESSURE FILLING MACHINES

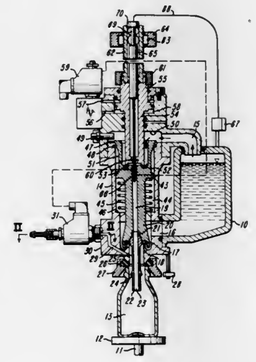
Klaus Kaiser, Bad Kreuznach, Germany, assignor to Seitz-Werke G.m.b.H., Planiger Strauss, Germany

Filed Jan. 18, 1971, Ser. No. 107,241

Claims priority, app'ication Germany, Jan. 17, 1970, P 20 02 060.4

Int. Cl. B65b *31/06*

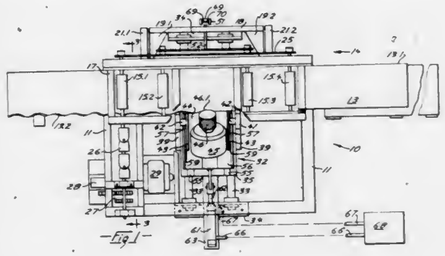
U.S. Cl. 141—39 **4 Claims**



A filling structure free from filling pipe means for counter pressure filling machines. A gas conduit extends coaxially from a tubular fluid discharge opening into a pressed-on vessel to be filled with liquid. The gas conduit has an opening for discharging the tension gas and limiting the drop height. The

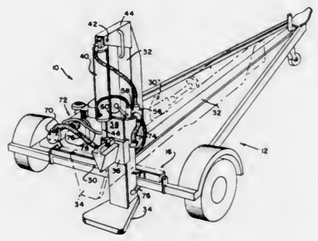
gas conduit is equipped with an electric control adapted to be influenced by the substance to be filled in for releasing a closing pulse for a liquid control valve.

3,779,294
BOARD EDGING MACHINE
William Warren Gillis, Burnaby, British Columbia, Canada, assignor to Mill and Timber Products Ltd., Burnaby, British Columbia, Canada
Filed Mar. 27, 1972, Ser. No. 238,054
Int. Cl. B27c *5/02*; **B27m** *3/08*
U.S. Cl. 144—117 B **3 Claims**



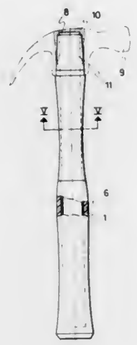
A board edge trimming machine having a rotating cutter which is mounted for rocking movement on a sliding carriage and controls for independently controlling rocking movement of the cutter and movement of the carriage so as to provide a board with a wavy, variably-bevelled edge.

3,779,295
LOG SPLITTER AND TUBE BENDER
Paul H. Balsbaugh, 935 Baker Dr., Ripon, Calif.
Filed Oct. 14, 1971, Ser. No. 189,161
Int. Cl. B27l *7/00*
U.S. Cl. 144—193 A **7 Claims**



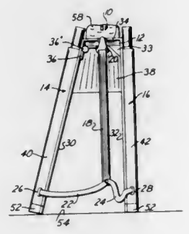
A portable log-splitting and tube bending apparatus comprising a vertically disposed frame preferably adapted to be mounted on a vehicle, including a pair of splitting or bending elements carried by the frame, one of the elements being generally convex and one of the elements being fixed to the frame and the other element being mounted on the frame for reciprocating movement along the frame toward and away from the other splitting or bending element. When being utilized as a log splitter, one of the splitting elements is a relatively flat log-abutting member disposed normally to the frame and the other splitting element is a wedge-shaped blade having a leading edge at an oblique angle relative to the face of the flat log-abutting member. When being used as a tube bender, one of the bending elements is fixed to the frame and the other element is mounted on the frame for reciprocating movement along the frame toward and away from the other bending element.

3,779,296
HANDLE FOR MANUAL PERCUSSION TOOLS
Nicolas Guerrico Echeverria, Apartada No. 6, Legazpia, Spain
Filed Jan. 24, 1972, Ser. No. 220,120
Int. Cl. B25g *1/10*, *3/28*
U.S. Cl. 145—61 H **9 Claims**



Handle for manual percussion tools having a metal tube covered with plastic cases of varying rigidity which affect different areas of the tube. The tube constitutes the core of the handle and has a preferably elliptic section with two coaxial portions of approximately the same length and different width and near the free end of the narrower portion there is a deformation which affects the lateral surface. The portion of the tube of greater section receives a dismountable casing shaped for manual gripping of the handle. The portion of the tube of lesser section immovably receives a rigid plastic covering preferably of acetate, having a graded extreme area of lesser dimensions than the rest and has the general shape of a rectangular truncated pyramid concealing the deformation.

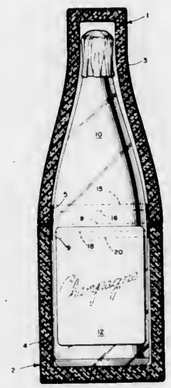
3,779,297
HINGED GOLF CLUB BAG
John S. Stammer, Rt. 3, Box NP51, Longview, Tex.
Filed May 26, 1971, Ser. No. 147,068
Int. Cl. A63b *55/00*
U.S. Cl. 150—1.5 R **8 Claims**



A lightweight golf club bag having a pair of side arm members secured to a common cross member whereby at least one of the arms may be alternately pivoted in directions away from and toward the other arm to provide extended and contracted

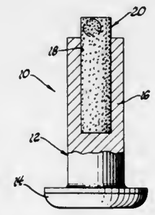
positions for the bag. In the extended position of the bag the golf clubs may be efficiently stored or supported in a substantially upright position and in the contracted or closed position of the bag the clubs may be easily transported.

3,779,298
LIGHT WEIGHT DECORATIVE INSULATED BOTTLE CONTAINER
Francis J. Piccirilli, 611 W. Market St., Bethlehem, Pa., and Joseph M. Sabo, 163 Turner St., Allentown, Pa.
Filed May 12, 1972, Ser. No. 252,658
Int. Cl. B65d *23/08*
U.S. Cl. 150—52 R **5 Claims**



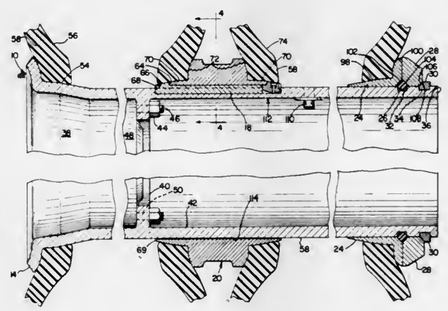
An inexpensive bottle container adapted for wine and like bottles of varying size comprising upper and lower open-ended matching enclosures of a light weight insulating material such as closed cell polyurethane, which enclosures are retained on the bottle by means of decorative upper and lower sleeves having elastic means disposed at the open ends of the respective enclosures, these elastic means circumscribing an opening of smaller area than that circumscribed by the open ends of the enclosures whereby the contact of the elastic means of the sleeves with the bottle is functional in retaining the insulated enclosure in position over the bottles, as well as in inverted position for packing and storage purposes.

3,779,299
TIRE STUD
Charles S. Baum, St. Clair Shores, Mich., assignor to Permanence Corporation, Detroit, Mich.
Filed May 15, 1970, Ser. No. 37,708
Int. Cl. B60c *11/16*
U.S. Cl. 152—210 **10 Claims**



A tire stud and the method of making same. The tire stud includes an elongated metal body having a head at one end and a shank extending from the head with a cavity extending into the shank toward the head. In making the completed stud, the body is disposed in a bore having a shank receiving portion and a smaller portion which is generally of the same cross sectional area as the cavity and which extends upwardly from the cavity to an opening. Material is disposed through the opening to fill the cavity and at least a part of the smaller portion of the bore above the cavity. These materials include particles made of carbon grains sintered together by a binder such as cobalt and an additional filler metal powder. The filler metal powder is melted so as to fill the spaces between the particles and thereafter solidifies to form a composite of the particles bonded together by the filler material.

3,779,300
MULTIPLE TIRE RIM
Peter C. Stabovitz, Woodstock, Ill., assignor to Peter C. Stabovitz, Jr., Orangeburg, S.C.
Filed Apr. 19, 1971, Ser. No. 135,237
Int. Cl. B60c *5/00*
U.S. Cl. 152—376 **2 Claims**

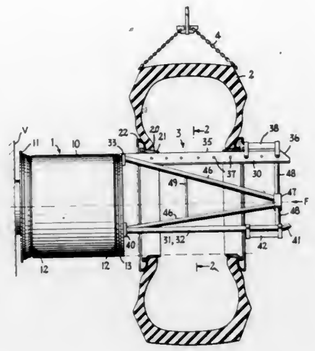


A one-piece unitary substantially cylindrical rim is disclosed for mounting a plurality of concentric tires thereon. In a preferred embodiment, adjacent tires are sealed and supported by removable radially extending flanges on a separator ring. When tubeless tires are used, the adjacent tires are pneumatically interconnected in this preferred embodiment.

3,779,301
MOUNTING OF VERY LARGE TIRES
Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-dome), France
Filed July 21, 1972, Ser. No. 273,721
Claims priority, application France, Aug. 2, 1971, 7128338
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.17 **6 Claims**

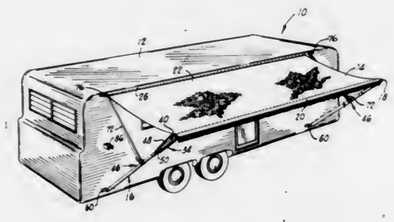
In order to facilitate mounting or removing a very large tire on or from a cylindrical rim, a slide beam is fastened at one

end to the rim edge in such a manner that the beam is included within a cylinder forming an extension of the base of the rim



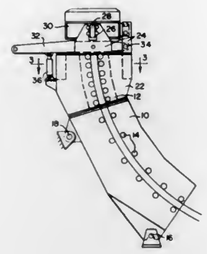
and is tangent to such cylinder along a generatrix. Auxiliary beams are similarly mounted at intervals of 120° around the rim.

3,779,302
AWNING CONTROL APPARATUS
Robert M. Akers, and Harold L. Westfall, both of 1536 S. Central, Oklahoma City, Okla.
Filed Jan. 22, 1971, Ser. No. 108,880
Int. Cl. E04f *10/06*
U.S. Cl. 160—68 **11 Claims**



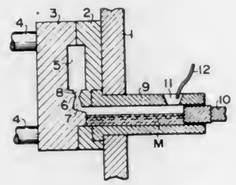
An improved awning control apparatus for connection to a support structure wherein the awning is secured to the support structure on one end thereof and to a shaft on the opposite end thereof. The shaft is rollingly supported by a support assembly, having a portion pivotally secured to the support structure and another portion bearingly connected to the shaft. The awning control apparatus includes a drive assembly to rotate the shaft in a storing direction to storingly roll the awning about the shaft, thereby pivoting the shaft and the support assembly generally toward the support structure, and to rotate the shaft in a releasing direction to releasingly unroll the awning from the shaft, thereby pivoting the shaft and the support assembly in a direction generally away from the support structure.

3,779,303
INSTALLATION FOR CONTINUOUS INGOT CASTING
Joseph Pietryka, Paris, France, assignor to Fives Lille-Cail, Paris, France
Filed Jan. 4, 1972, Ser. No. 215,321
Claims priority, application France, Jan. 8, 1971, 7100416
Int. Cl. B22d *11/14*
U.S. Cl. 164—282 **3 Claims**



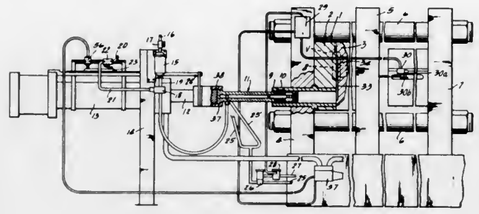
In a continuous ingot casting installation, the frame of an upper set of guide rollers for the ingot is supported directly on, and is rigidly fixed to, the frame of a lower set of ingot guide rollers, the frame of the lower set of guide rollers being supported on a base support. The ingot mold is guided for oscillating movement in the direction of the casting axis, and the ingot mold as well as the fixed elements guiding it during oscillation are carried by the frame of the upper set of guide rollers.

3,779,304
INJECTION GATE SYSTEM
Isao Miki, Fuji, Japan, assignor to Nippon Light Metal Company Limited, Tokyo, Japan
Filed July 13, 1971, Ser. No. 162,249
Int. Cl. B22d *17/08, 27/20*
U.S. Cl. 164—312 **5 Claims**



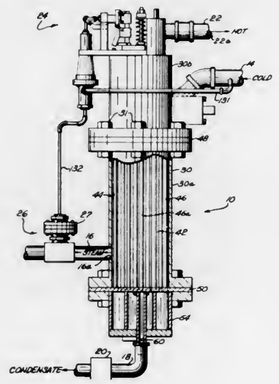
In an oxygen flush presure injection die casting system, the molten metal is introduced into the die cavity in a turbulent condition to achieve efficient mixing with the oxygen gas in such cavity and thus promote reaction of the metal with the gas and minimize the presence of blow holes in the cast product.

3,779,305
APPARATUS FOR LUBRICATING A DIE STRUCTURE EMPLOYED IN DIE CASTING OPERATIONS
William J. Pondelicek, Arlington Heights, and Vernon F. Schmidt, Chicago, both of Ill., assignors to Heich Die Casting Corporation, Chicago, Ill.
Filed Dec. 30, 1971, Ser. No. 213,867
Int. Cl. B22d *17/10*
U.S. Cl. 164—312 **5 Claims**



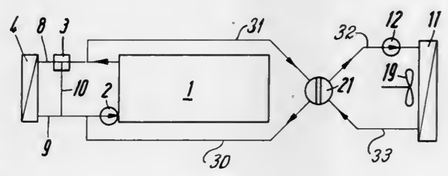
An apparatus for lubricating a die structure employed in die casting operations, and die therefore, whereby a quantity of lubricant is injected under gas pressure into the die cavity, and in which the plunger runs of the die casting machine is provided with a chamber for receiving the die lubricant, which chamber communicates with the inner end of the plunger and thus through the metal supply shot sleeve with the die cavity, the lubricant being discharged from the plunger by gas under pressure into the die cavity, with the apparatus being constructed to effect discharge of lubricant into the die cavity when the members of the die are in a closed position, and the plunger is in a position blocking the pour hole in the shot sleeve.

3,779,306
HEAT EXCHANGER
Warren M. Wilson, 809 Superior Dr., Huron, Ohio
Filed Apr. 27, 1970, Ser. No. 32,041
Int. Cl. B60h *1/00*
U.S. Cl. 165—39 **28 Claims**



An improved heat exchanger mechanism for heating water to a predetermined temperature with steam includes means for controlling the output temperature of the heated water. The water to be heated and the steam are introduced into a heat exchange chamber and the heated water is discharged therefrom in accordance with the demand for the heated water. The means for controlling the output temperature of the heated water includes adjustable control means for mixing the heated water with unheated water and for controlling the flow of the steam to the heat exchange chamber to thereby enable the mechanism to provide the heated water at a demand location at a predetermined temperature which is easily varied by resetting the adjustable control means.

3,779,307
HEATING AND COOLING SYSTEM FOR MOTOR VEHICLES
Paul Weiss, Vaihingen; Helmut Bardong, Stuttgart, and Wolfgang Frank, Ludwigsbur-Ossweill, all of Germany, assignors to Firma Su Ddeutsche Kuhlerfabrik Julius Fr. Behr., Stuttgart-Feuerbach, Mauserat, Germany
Filed Nov. 26, 1971, Ser. No. 202,099
Claims priority, application Germany, Nov. 26, 1970, P 20 58 280.3
Int. Cl. B60h *1/06*
U.S. Cl. 165—42 **11 Claims**

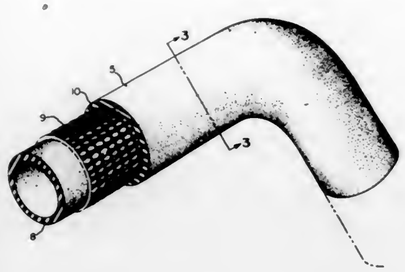


A heating and cooling system for motor vehicles having a primary circuit including a pump driven by the engine for cooling the engine of the motor vehicle and a secondary circuit including a pump driven independently of the engine for heating and cooling the passenger compartment of the motor vehicle. The two circuits are connected by a 4-way mixing valve or a hydraulic bridge so that the same coolant circulates through both circuits, but the circulation of coolant through the secondary circuit is independent of engine r.p.m. The secondary circuit further includes means to regulate the amount of hot coolant coming from the engine and cold coolant coming from a cooling means which enters the passenger compartment air heat exchanger so that the same heat exchanger can continuously control the temperature of the air passing therethrough from cold to hot.

3,779,308
COOLING SYSTEM INCLUDING REINFORCED HOSE
Wayne H. Buhrmann, Martell, and Sidney R. Fix, Lincoln, both of Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 5,029, Jan. 22, 1970, Pat. No. 3,682,202.
This application Apr. 17, 1972, Ser. No. 244,371
Int. Cl. F01p *11/04*; **F01l** *11/08*
U.S. Cl. 165—51 **10 Claims**

An improved collapse-resistant, reinforced hose of flexible polymeric material including a semi-rigid generally circumferentially disposed supporting structure which includes preferably a single layer of textile fabric reinforcement, the major portion of which is composed of treated polyester or nylon fibers. The polyester or nylon fibers are treated with an organic polyisocyanate and preferably a solution of at least 2 percent organic polyisocyanate in a non-reactive solvent. The

hose has substantially improved bursting strength and resistance to vacuum collapse without the need of additional support, such as a metal wire insert. The invention is particularly useful for flexible radiator hoses used in automotive vehicle cooling systems.

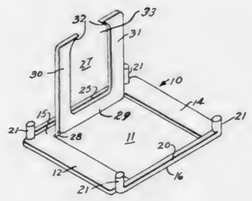


3,779,309

GUIDE ELEMENT FOR BASEBOARD RADIATION

Theodore M. Bunten, Rydal, Pa., assignor to Repco Products Corporation, Philadelphia, Pa.

Filed Jan. 5, 1972, Ser. No. 215,586
Int. Cl. F24h *9/04*
U.S. Cl. 165—55 **3 Claims**



A guide element for baseboard radiation is provided that is interposed between the bottoms of the fins of the radiation heat transfer units and the supporting brackets to hold the units in place and permit them to move noiselessly lengthwise along the brackets during expansion and contraction due to temperature changes. The guide element has portions engaging the heat transfer units to impart stability.

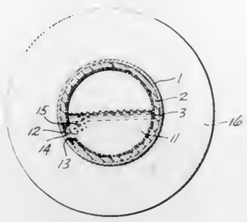
3,779,310

HIGH EFFICIENCY HEAT TRANSIT SYSTEM

George F. Russell, 1401 Thorne Rd., Tacoma, Wash.

Continuation of Ser. No. 817,483, April 18, 1969, abandoned.
This application Apr. 5, 1971, Ser. No. 130,995
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **8 Claims**

A closed tube in substantially horizontal position and approximately half filled with vaporizable liquid under very low absolute pressure has one exterior portion of its length exposed to hot fluid from which heat is extracted to vaporize liquid in the tube and another exterior portion of its length exposed to a relatively cool fluid which extracts heat from the vapor in the tube and condenses it. Vapor formed in the portion of the tube exposed to the hot fluid migrates to the portion of the tube exposed to the cool fluid and the condensate resulting from such cooling flows back to the tube portion exposed to hot fluid. The major portion of the internal periphery of that portion of the tube exposed to hot fluid is lined with wicking, but a gap is left between ends of the arcuate liner below the surface of the liquid in the tube for transmission of heat from the fluid externally of the tube directly to liquid in the tube to expedite its vaporization at that location.

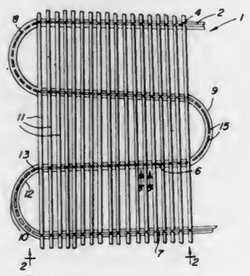


3,779,311

HEAT EXCHANGER

Joseph M. O'Connor, Chicago, and Stephen F. Pasternak, Park Ridge, both of Ill., assignors to Peerless of America, Incorporated, Chicago, Ill.

Filed Aug. 26, 1971, Ser. No. 175,264
Int. Cl. F28f *1/32*
U.S. Cl. 165—171 **9 Claims**



A heat exchanger wherein elongated, secondary heat transfer elements extend transversely to passes of a primary heat transfer element and are clampingly secured thereto.

3,779,312

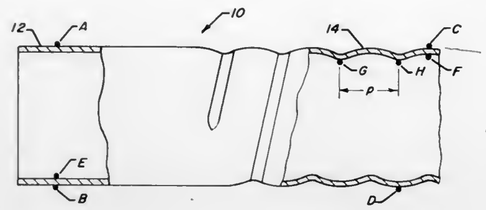
INTERNALLY RIDGED HEAT TRANSFER TUBE

James G. Withers, Jr., Dearborn; Edward P. Habdas, Dearborn Heights, and Mitchael W. Jurmo, Dearborn, all of Mich., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 7, 1972, Ser. No. 232,571
Int. Cl. F28f *1/14*
U.S. Cl. 165—184 **8 Claims**

Metal heat transfer tube has a single start helical ridge on its inner surface which conforms to a range of values of a disclosed equation relating the height of the ridge to its pitch and

to the inner diameter of the tube. A method of designing a tube for maximum performance is also disclosed. The improved tube provides especially good results in systems, such as steam condensation systems, wherein a single phase fluid is carried by the tube.

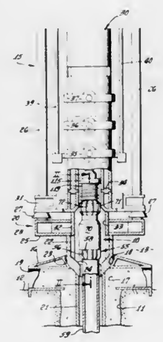


3,779,313

RELEASABLE CONNECTING APPARATUS FOR SUBSEA WELLHEAD

Albert Michael Regan, Huntington Beach, Calif., assignor to Regan Forge & Engineering Company, San Pedro, Calif.

Filed , Ser. No. 160,407
Int. Cl. E21b *7/12*
U.S. Cl. 166—0.6 **10 Claims**



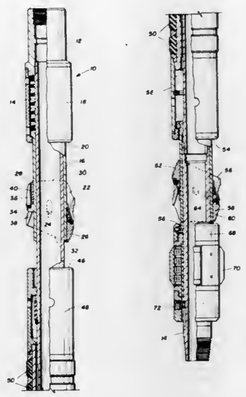
The apparatus has inner and outer members nonrotatably telescoped together with a driving ring therebetween which in an extended position of the members is locked to the inner member for rotation therewith, which in a contracted position of the members is freed from the members, and which has lower teeth mating with teeth on a casing hanger whereby when the casing hanger is suspended over its landing shoulder in a subsea wellhead, in order to maintain the apparatus in the extended position, right hand rotation of the string drivingly rotates the casing despite a left hand threaded attachment between the hanger and the outer member when the casing hanger engages the landing shoulder, but when the apparatus contracts to free the drive ring, right hand rotation of the string unscrews the left hand threaded attachment to release the apparatus from the casing hanger for withdrawal of the apparatus.

3,779,314

WELL TOOL AND RELEASING DEVICE THEREFOR

Norman Weldon Read, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 15, 1972, Ser. No. 253,087
Int. Cl. E21b *23/00*
U.S. Cl. 166—216 **15 Claims**



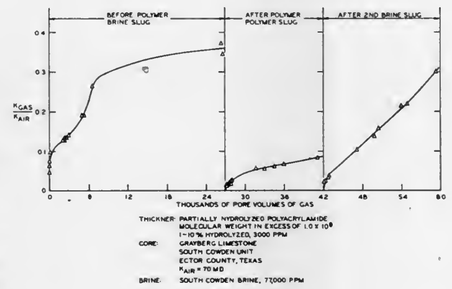
Disclosed is an improved well tool that utilizes a unitary gripping member that is pivotally carried by the well tool for movement between a wall engaging position and a retracted position wherein the well tool can be moved through the well bore. A sleeve extends through the gripping member and has a lug thereon that is engageable with the gripping member. A cam member carried by the sleeve or by the gripping member is engageable with both the gripping member and the well bore wall as the sleeve is moved upwardly relative to the gripping member to initiate movement of the gripping member from the well engaging position to the retracted position.

3,779,315

PRODUCTION METHOD

David F. Boneau, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 29, 1972, Ser. No. 284,483
Int. Cl. E21b *43/18, 33/138, 43/20*
U.S. Cl. 166—268 **14 Claims**



A method of producing hydrocarbons from a subterranean hydrocarbon containing formation and reducing the flow of

gas from a gas cap of the formation by passing a preselected volume of polymeric solution into the formation at an elevation lower than the gas cap, terminating the injecting of the polymeric solution, and producing fluid entering the well bore while at least intermittently injecting one of a gas-water admixture or volumes of gas and water into the gas cap.

3,779,316

SECONDARY RECOVERY OF PETROLEUM

Lawrence L. Bott, Oak Park, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 2, 1971, Ser. No. 204,322. The portion of the term of this patent subsequent to Mar. 19, 1990, has been disclaimed.

Int. Cl. E21b *43/02*

U.S. Cl. 166—276 **5 Claims**

This invention relates to the secondary recovery of petroleum, and in particular, involves a process for reducing the amount of water recovered from a producing well in a water flooding process for recovering petroleum from a subterranean oil-bearing formation. This reduction in water is accomplished by introducing a stable liquid dispersion of a water soluble anionic vinyl addition polymer and a water soluble cationic polymer.

3,779,317

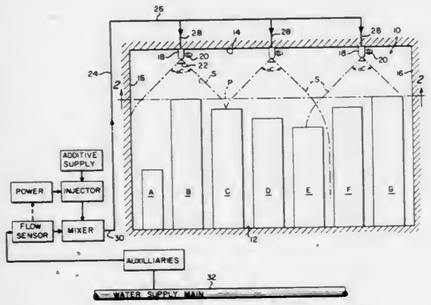
METHOD OF FIRE PROTECTION UTILIZING INDEPENDENTLY OPERABLE DISCHARGE HEADS

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Boston-Providence Turnpike, Mass.

Division of Ser. No. 864,612, Oct. 8, 1969, Pat. No. 3,645,338. This application Sept. 24, 1971, Ser. No. 183,668

Int. Cl. A62c *1/00*

U.S. Cl. 169—1 A **9 Claims**



A fixed fire protection system and method by which discrete areas of extinguishant coverage are selected for each of several nozzle heads on the basis of the maximum elevation of fuel surfaces in the space protected.

3,779,318

DISCHARGE HEAD FOR DISCHARGING FLUID IN TWO DISCHARGE PATTERNS AND FIRE PROTECTION SYSTEM INCORPORATING SAID HEAD

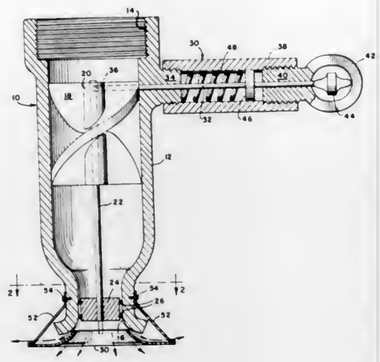
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Oct. 5, 1972, Ser. No. 295,237

Int. Cl. A62c *31/26*; **B05b** *1/26*

U.S. Cl. 169—1 B **14 Claims**

A discharge head and a fire protection system incorporating the head in which the head is in the form of a body member having an inlet adapted for connection to a source of fluid and an outlet for directly discharging the fluid in a solid conical



spray pattern. A curved deflector plate cooperates with the outlet of the head for intercepting a portion of the spray and forming an additional discharge pattern.

3,779,319

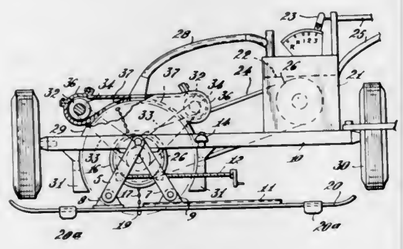
MOBILE SNOW WORKING APPARATUS WITH ADJUSTABLE HEIGHT FLAILER

Theodore J. Pease, 461 Faunce Corner Rd., North Dartmouth, Mass.

Continuation-in-part of Ser. No. 9,267, Feb. 6, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 247,142

Int. Cl. A01b *33/14*

U.S. Cl. 172—45 **14 Claims**



A trailer for breaking and pulverizing crusty and/or icy snow cover on a ski slope comprising a frame provided with wheels by means of which it may be transported over open roads and/or bare ground to a ski slope and skis for traversing the slope. The trailer frame has on it a motor-driven drum to which are attached a plurality of chain flails having at their distal ends breaker elements for cutting through the hard cover, and there are adjustable mounting members connecting the skis to the frame so as to enable raising and lowering the frame and hence the drum relative to the skis so that on the one hand the drum may be supported above and spaced from the snow cover to permit the flails to be turned at a rapid rate about the axis of the cylinder and to cause the breaker elements at their ends to break through the crust and on the other hand may be lowered into substantial engagement with the cover to cause the flails to become traction elements between the drum and the cover.

3,779,320

AGRICULTURAL MACHINE FOR TILLING THE SOIL

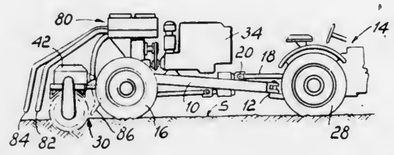
Natale Cantone, Corso M Prestinari 162, Vercelli, Italy

Filed Oct. 29, 1970, Ser. No. 85,021

Claims priority, application Italy, Nov. 5, 1969, 61113 A/69; Mar. 3, 1970, 84604 A/70; July 22, 1970, 27730 A/70; Sept. 29, 1970, 30330 A/70

Int. Cl. A01b *33/00*

U.S. Cl. 172—60 **12 Claims**



A main frame is supported, adjacent its rear end, by a pair of wheels, and the front end of the main frame is arranged for connection to the coupling pin of either a conventional tractor, preferably having a power take-off, or of a separate traction and steering assembly. An independent motor on the main frame drives rotatable ground-engaging agricultural implements supported on the main frame. These implements, when rotated by the independent motor on the main frame, are operable to work the soil, and develop with the soil, a thrust force tending to drive the main frame at a first speed determined by the reaction of the soil. The independent motor on the main frame is more powerful than the power take-off of the associated tractor or of the motor driving the separate traction and steering assembly.

The connection of the main frame to the coupling pin serves to transmit a reaction force between the main frame and the steering and control mechanism. The motor of the tractor or control and steering assembly is independent of the motor on the main frame, and constitutes the sole driving means for the wheels of the tractor or the steering and control mechanism, and tends to drive the tractor or steering and control mechanism at a second speed. The relative speed due to the first and second motors causes a reaction force to be transmitted through the connection coupling the main frame to the tractor or steering and control mechanism, to counteract increases and decreases in the thrust force exerted by the rotating agricultural implements. The main agricultural implement is a rotary hoe carrying laterally projecting tines, and divided into two sections which may be swung to a horizontal position, to extend to either side of the main frame, or to a vertical position, for compactness during transport along a highway or road. Other agricultural components on the main frame may include tanks containing soil treating materials, distributing means connected to these tanks, and other ground working implements.

3,779,321

DATA TRANSMITTING SYSTEMS

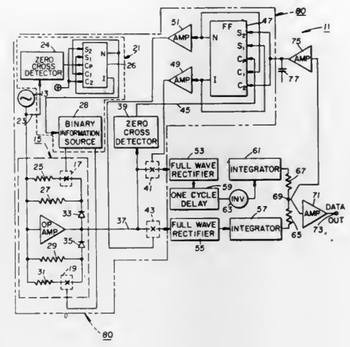
Donald C. Landwer, Arlington Heights, Ill., and Allan A. Lorenz, Mentor, Ohio, assignors to Teletype Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 104,380, Jan. 6, 1971, abandoned. This application June 30, 1972, Ser. No. 267,789

Int. Cl. H04l *27/02*

U.S. Cl. 178—66 R **13 Claims**

Successive bits of serial data modulate successive alternate cycles of an alternating current reference signal. The modulated reference signal is separated into its modulated and its unmodulated cycles, or components, which are then full wave rectified. One of the components is then phase-shifted in time and inverted so that the cycles of the modulated and the unmodulated components occur simultaneously. Both the modulated and the unmodulated components are then integrated and averaged to obtain a signal which is representative of the original serial signal.



3,779,322

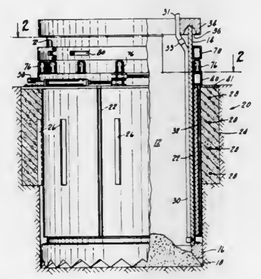
MACHINE FOR SINKING VERTICAL SHAFTS

Richard W. Stevens, Oconomowoc, Wis., assignor to Milwaukee Boiler Manufacturing Company, Milwaukee, Wis.

Filed Mar. 24, 1972, Ser. No. 237,659

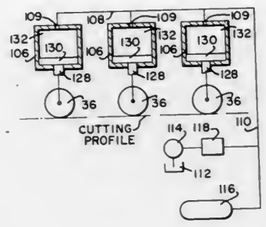
Int. Cl. E21b *3/02*, *19/08*; **E21c** *11/00*

U.S. Cl. 175—162 **20 Claims**



Apparatus for sinking a vertical shaft includes a tubular cutting head. The cutting head is positioned in a guide collar in the earth and is rotated by a rotary drive means to bore the shaft into the ground. A crane and clam shell bucket may be used to remove the spoil generated by this cutting action and to attach additional sections of casing to the cutting head. Means are provided to both urge the cutting head into the ground and to extract it from the shaft.

3,779,323
EARTH CUTTER MOUNTING MEANS
Carl R. Horten, Warren, N.J., and William H. Hamilton, Seattle, Wash., assignors to Ingersoll-Rand Company, Woodcliff, N.J.
Filed Apr. 27, 1972, Ser. No. 235,563
Int. Cl. E21c *13/00*
U.S. Cl. 175—381 **8 Claims**

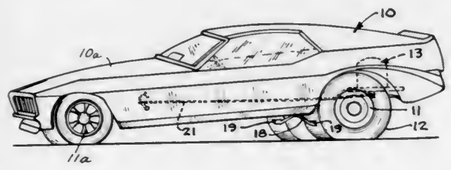


Mounting arrangements for roller-type earth cutters, used in continuous boring or tunneling machine, which prevent an excessive loading of a cutter. In one embodiment, spring-type means urge the cutters outwardly from a support and thrust surface, such as a cutterhead, and yields under a predetermined load to allow inward movement of the cutter to prevent overloading thereof. In another embodiment, hydraulic-fluid-pressure-powered plungers, manifolded together from a common source of fluid pressure, urge cutters against the work face, and excessive loading of any one cutter displaces some of its plunger fluid to other cutter plungers whereby the loading is substantially averaged for all cutters.

ERRATUM

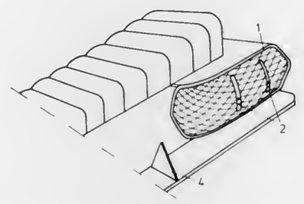
For Class 178—66 R see:
Patent No. 3,779,321

3,779,324
INCREASED TRACTION RACING MOTOR VEHICLE
Alvin Kreske, Jr., 2504 N. Calumet, Valparaiso, Ind.
Filed Jan. 21, 1972, Ser. No. 219,660
Int. Cl. B60b *39/02*; **B60c** *27/00*; **B60s** *3/00*
U.S. Cl. 180—1 R **4 Claims**



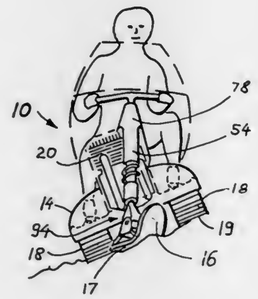
A device and for applying a liquid cleaning agent to the driving wheels of a racing vehicle to permit the tires to become more adherent to the track surface comprising a pressure tank containing the liquid cleaning agent and an under pressure conduit means leading from the tank to the rubber tires on the rear driving wheels of the vehicle, a filler cap for applying the liquid cleaner to the pressure tank, and a stem with a valve connected to the filler cap adapted to communicate with the nozzle of an air pressure source for applying air under pressure to the pressure tank.

3,779,325
MOTOR GUARD
Heikki Liuhanen, and Kauko Kallio, both of Oulu, Finland, assignors to Valmet Oy, Helsinki, Finland
Filed Apr. 7, 1972, Ser. No. 242,184
Int. Cl. A63c *13/00*
U.S. Cl. 180—1 R **2 Claims**



A detachable motor guard for cross-country and snow vehicles which normally serves to cover the engine compartment ventilation opening and which, in an emergency, can be detached and used as a snow shoe.

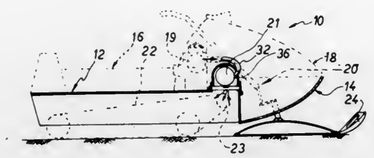
3,779,326
SNOW VEHICLES
Wolfgang Trautwein, 3529 Carroll Circle S.E., Huntsville, Ala.
Filed Oct. 4, 1971, Ser. No. 186,026
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **7 Claims**



A powered snow vehicle in which a frame portion upon which passengers are seated and a front ski are tiltable with respect to rear, snow engaging tracks, or skis, and with respect to terrain.

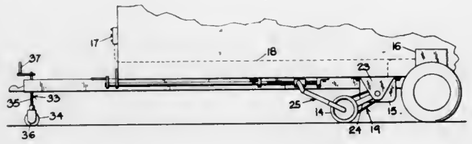
3,779,327
MUFFLER ASSEMBLY FOR SNOWMOBILES
Jules Pereault, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed Mar. 17, 1972, Ser. No. 235,674
Int. Cl. B62m *27/02*; **B60k** *13/06*, *13/04*
U.S. Cl. 180—5 R **9 Claims**

The disclosure herein describes a muffler assembly consisting of a cover for completely enclosing the muffler of a snow-mobile-like vehicle over an aperture provided through the frame of the vehicle. The cover provides a heat barrier between the muffler and the other surrounding components located under the hood of the vehicle while the frame aperture allows air and snow circulation around the muffler inside the



cover. To cut down on the intensification of vibration, in a first alternative, the muffler cover and the frame are separated from one another by vibration attenuating means. In another alternative, the muffler cover is fixed directly on the frame and the vibration attenuating means are disposed betwen the muffler and the cover.

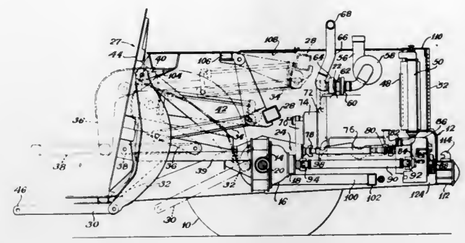
3,779,328
TRAILER MANEUVERING MECHANISM
John G. Wollenburg, 410 Clinton Ave., Oak Park, Ill.
Filed June 30, 1972, Ser. No. 268,033
Int. Cl. B62d *13/06*
U.S. Cl. 180—14 A **3 Claims**



A trailer drive wheel assembly for close quarter maneuvering of the trailer on which it is mounted. The assembly has an electric motor powered by a battery connected to the motor by a reversible switch. The motor is connected by drive means to a maneuvering wheel which can be raised and lowered between a traveling position and a working position by a retractable mounting means that is mounted on the underside of the trailer.

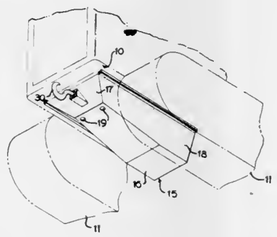
3,779,329
REARFACING ENGINE AND REARAXLE HAVING OFFSET DRIVE LINE
Edward D. Duke, Chicago, and Julius F. Marquardt, Westchester, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Nov. 15, 1972, Ser. No. 306,662
Int. Cl. B60k *5/02*
U.S. Cl. 180—54 F **12 Claims**

Automotive vehicle comprising an engine mounted adjacent one end of the vehicle having its power output end extending forwardly from the one end; and a power drive train connected to the power output end of the engine providing a path for conveying power, leading from the engine forwardly, then downwardly and laterally to one side of the engine, then rearwardly beneath that side to the engine rear, then laterally



beneath the engine rear to the opposite side of the engine, thence forwardly beneath that side of the engine for driving connection with a wheel axle of the vehicle.

3,779,330
BELLY PROTECTIVE PAN FOR TRACTOR ENGINE
Mose Walter Longpre, P.O. Box 224, Alberton, Mont.
Filed Apr. 20, 1972, Ser. No. 245,952
Int. Cl. B62d *25/20*
U.S. Cl. 180—69.1 **5 Claims**

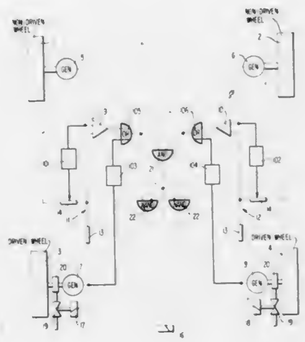


A protective shield or pan is removably mounted beneath the undercarriage of a tractor engine, enveloping the exposed surfaces of the oil pan beneath the tractor engine. It is guided along a longitudinal track assembly mounted to the tractor undercarriage. It is releasably secured by interlocking engagement of pivoted stops mounted along the interior sides of the belly pan and cooperative receiving slots formed through the supporting track assembly. The stops are externally operated by pivotal movement of a pulling hook at the outer end of the pan.

3,779,331
DEVICE FOR PREVENTION OF SPINNING OF THE DRIVEN WHEELS OF A MOTOR VEHICLE

Manfred H. Burckhardt, Waiblingen; Hans-Jorg Florus, Goeppingen; Horst Grossner, Geradstetten; Hellmut Krohn, Esslingen, and Hermann Stein, Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 27, 1972, Ser. No. 292,784
Claims priority, application Germany, Sept. 28, 1971, P 21 48 303.4
Int. Cl. B60t 8/06
U.S. Cl. 180—82 R 15 Claims

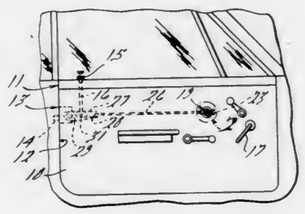


A system for preventing the spinning of the driven wheels of a motor vehicle, in which each wheel is equipped with a generator producing an electrical voltage proportional to the wheel rotational speed and in which the control voltage for the control of the driving or brake force is produced by a comparison of the voltage of a driven and of a non-driven wheel when exceeding a predetermined slippage threshold; the control voltage is obtained by feeding the voltages of the generators of the non-driven wheels to a respective differential amplifier while the voltages of the driven wheels are fed to the corresponding differential amplifier by way of a voltage divider whereby the ratio of division of the voltage divider is adjusted by a control device operated in dependence on the rotational speed of the corresponding non-driven wheel.

3,779,332
SAFETY IGNITION LOCK

Joseph D. Snitgen, 9656 Artesian, Detroit, Mich.

Filed Oct. 20, 1969, Ser. No. 867,828
Int. Cl. B60r 21/02
U.S. Cl. 180—112 8 Claims

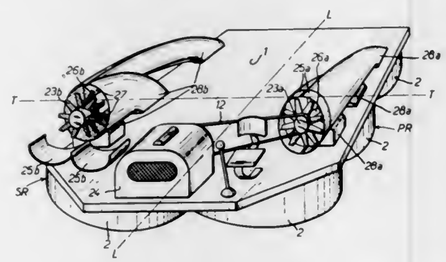


An automotive anti-theft device wherein the ignition switch is positioned in the driver's door and is interrelated with the door locking mechanism. The interrelationship between the door locking mechanism and the ignition switch is such that the key cannot be inserted in the ignition switch until the door is locked and the door cannot be unlocked until the key is removed.

3,779,333
MULTI-CUSHION AND MULTI-FAN SYSTEM FOR SURFACE EFFECT MACHINES

Jean Henry Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France

Continuation-in-part of Ser. No. 741,991, July 2, 1968, Pat. No. 3,586,118, which is a continuation-in-part of Ser. No. 502,934, Oct. 23, 1965, Pat. No. 3,478,835, which is a continuation-in-part of Ser. No. 165,634, Jan. 11, 1962, Pat. No. 3,263,746. This application Apr. 6, 1971, Ser. No. 131,607
Claims priority, application France, Jan. 17, 1961, 849,877; June 30, 1961, 866,604
Int. Cl. B60v 1/04
U.S. Cl. 180—121 5 Claims

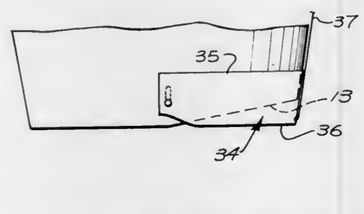


From the elongated platform of an air-cushion vehicle depend a plurality of cushion containing skirts alined behind each other in two parallel rows on opposite sides of the longitudinal axis, with each skirt of one row being paired with a corresponding skirt of the other row at a same longitudinal level along said rows. Two lift fans are fitted on the platform at a same longitudinal level and on both sides of the longitudinal axis. The discharge of each fan is fractionated and connected via a ramified ducting to the individual skirt contained cushions of the row on the same side as said fan.

3,779,334
CELLS FOR FLUID CUSHION VEHICLES

Wilfred J. Eggington, Claremont, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation-in-part of Ser. No. 35,834, May 8, 1970, abandoned. This application June 7, 1972, Ser. No. 260,513
Int. Cl. B60v 1/00
U.S. Cl. 180—121 7 Claims



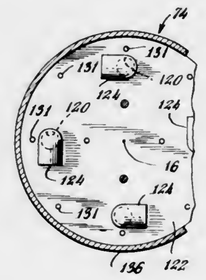
The lower rear portion of the skirt of a fluid cushion cell for a fluid cushion vehicle is provided with a cutaway portion tending to maintain this rear portion raised somewhat further above the terrain than would be the case if the cutaway were not present. This reduces contact drag on the terrain or water

over which the vehicle is travelling and results in less wear and tear on the skirt of the cell. It also provides a thrust component by reason of the increased escape of fluid from the cell through the cutaway region. A similar cutaway formation can be made in a peripheral skirt for the vehicle if such peripheral skirt be present.

3,779,335
CONFINED-LIQUID SEISMIC EXPLORATION METHODS AND SYSTEMS

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Continuation of Ser. No. 851,268, Aug. 19, 1969, abandoned. This application Feb. 14, 1972, Ser. No. 225,851
Int. Cl. G01v 1/14
U.S. Cl. 181—.5 NC 25 Claims



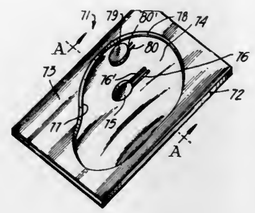
Confined-liquid seismic exploration methods and systems in which powerful sound impulses are generated by the abrupt release of confined gases into a confined liquid that is coupled to the earth in vibration transmitting relationship during the brief period of time while these impulses are being transmitted into the earth. The repeatability of the powerful impulses is enhanced by permitting the entire mass of confined liquid to jump upwardly in reaction to the powerful impulses transmitted into the earth. Weight may be added to increase the intensity of the impulses transmitted into the earth. After the mass jumps into the air, it is then restrained from immediately returning to the earth, thus avoiding spurious "bouncing" impulses such as would occur if the liquid mass were allowed to fall back freely to earth. Total confinement of the liquid is provided thus intensifying the seismic impulses transmitted per unit volume of the liquid, enabling a relatively compact system to be utilized. The abruptly released gases are separated from the totally confined liquid in preparation for the next "shot" to be fired. The methods and systems described are conveniently applicable to many different types of sites, enabling a single survey crew to carry out highly effective survey work on hard ground, soft ground, marshy or swampy ground or submerged ground, as it is encountered on the job site.

3,779,336
DIAPHRAGM FOR SOUND TRANSDUCERS, METHOD AND APPARATUS FOR MANUFACTURING IT

Jose Juan Bertagni, 1027 Hernandaris St., Buenos Aires, Argentina

Filed June 27, 1972, Ser. No. 266,552
Int. Cl. G10k 13/00; H04r 7/00
U.S. Cl. 181—31 B 11 Claims

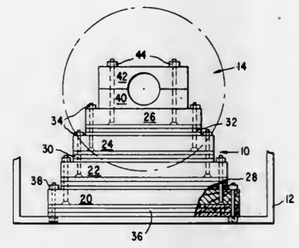
Diaphragm for sound transducers and a method for manufacturing it, including providing a cellular plate-like member molded of granular starting material and defining a provisional flat front face and a rear face. A layer including said provisional flat front face is heat severed from the plate-like member, whereby a new concavely shaped front face and plate-like member is defined, where the contiguous severed cells become sealed in themselves and sealed together at the same time as they are subject to stresses and provide a hardened surface. Preferably a sheet-like member is adhered to the new front face and the curved plate-like member is then urged into substantially planar condition, whereby the sheet-like member becomes stressed and the severed cells of the new front face are subject to additional stresses, so that the resulting diaphragm has a flat front face under a higher stress than the successive cells defining said diaphragm from said front face towards said rear face, the stresses progressively decreasing from said front face towards said rear face. The invention relates also to an apparatus for severing the layer including said provisional front face, from the rest of the plate-like member.



3,779,337
VIBRATIONLESS SPEAKER ASSEMBLY

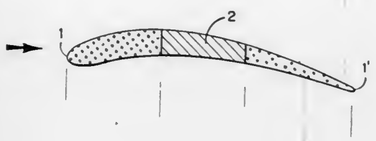
William Henry Gregory, 1009 Richmond Ave., Victoria, British Columbia, Canada

Filed Nov. 27, 1972, Ser. No. 309,697
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B 7 Claims



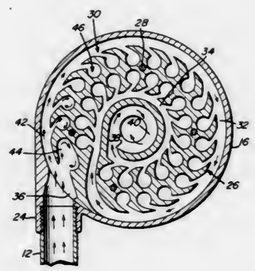
A vibrationless speaker assembly includes a speaker, an enclosure, and a speaker mount within the enclosure. The speaker mount is formed from alternate layers of rigid mounting blocks and vibration damping material with a split collar attached to one end of the mount. The other end of the mount is fixed in a speaker enclosure spaced from a baffle board having an orifice. An annular member of vibration damping material is secured around the periphery of the orifice. The speaker is mounted in the enclosure by pressing the speaker cone firmly against the annular member on the baffle board and securing the driving portion of the speaker by friction in the split collar to hold the speaker in position.

3,779,338
METHOD OF REDUCING SOUND GENERATION IN FLUID FLOW SYSTEMS EMBODYING FOIL STRUCTURES AND THE LIKE
Richard Earle Hayden, Arlington, Mass., and Robert Charles Chanaud, Boulder, Colo., assignors to Bolt, Beranek and Newman, Inc., Cambridge, Mass.
Filed Jan. 27, 1972, Ser. No. 221,223
Int. Cl. G10k *11/00;* **F01d** *5/12*
U.S. Cl. 181—33 C **7 Claims**



This disclosure deals with preventing or at least reducing sound generation that normally results from fluid flow in various rotor and stator systems about the foil or blade surfaces from the developed fluid forces, by rendering at least portions of the blade of reduced flow impedance, as by rendering the same porous in various degrees.

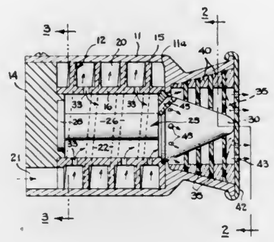
3,779,339
MUFFLER
Howard R. Johnson, 3300 Mt. Hope Rd., Grass Lake, Mich.
Filed June 2, 1972, Ser. No. 258,988
Int. Cl. F01n *1/00, 1/08*
U.S. Cl. 181—48 **9 Claims**



Gas flow induced by a pulsating pressure source such as an internal combustion engine, is conducted through a main duct having an acoustical impedance created by parallel branched, resonator chambers acting as low pass filters to gate low frequency pressure pulsations while absorbing higher frequency acoustical energy. Angled connecting passages between the main duct and the resonator chambers impart spin to the gas and create turbulent conditions for sonic wave transmission.

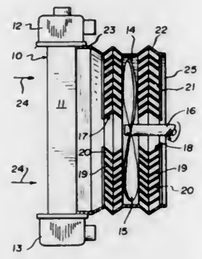
This invention relates to noise abatement devices or mufflers of the wave filter type.

3,779,340
MUFFLER AND SPARK ARRESTOR FOR INTERNAL COMBUSTION ENGINE
Edward H. Hoffman, and Clifford F. Kennedy, both of Simi Valley, Calif., assignors to Enviro-Acoustic R & D Inc., Duluth, Minn.
Filed Oct. 10, 1972, Ser. No. 296,072
Int. Cl. F01n
U.S. Cl. 181—49 **19 Claims**



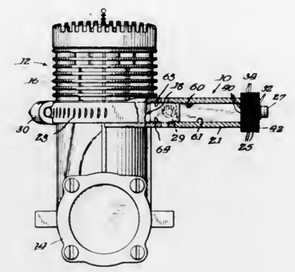
A tuned cavity is provided to receive the exhaust gases from an internal combustion engine, the cavity being proportioned so that an acoustical standing wave is set up therein at the principal frequency of the noise output of the engine, pressure nodes of this wave appearing at the opposite ends of the cavity. The gas from the cavity is passed through a series of apertures spaced therealong into a chamber in a manner so as not to significantly affect the standing wave pattern. The gas is then passed from the chamber to a section comprising flexible diaphragm means which acts as an inertial damper and a flap valve, the gas being exhausted into the ambient atmosphere from the diaphragm section.

3,779,341
NOISE SUPPRESSIVE FAN SHROUD
Homer D. Huggins, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.
Filed Oct. 16, 1972, Ser. No. 297,994
Int. Cl. F01n *1/10, 1/24*
U.S. Cl. 181—50 **2 Claims**



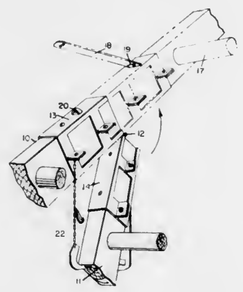
A noise suppressive fan structure and a heat exchanger having on one side thereof the fan structure in which the fan structure comprises a fan having blades rotatable about an axis and shrouds adjacent the fan comprising closely spaced sound absorbing baffles that are curvilinear, spaced apart and nested to provide a substantially complete shadow to the sound waves from the fan. Where the fan structure is used in conjunction with an air permeable heat exchanger the shroud may be on the side of the fan opposite the heat exchanger.

3,779,342
ENGINE NOISE DEPRESSING ASSEMBLIES
Dewey O. Broberg, Jr., Rt. 1, Box 102, Long Grove, Ill.
Filed Oct. 26, 1972, Ser. No. 301,178
Int. Cl. F01n *1/08*
U.S. Cl. 181—56 **8 Claims**



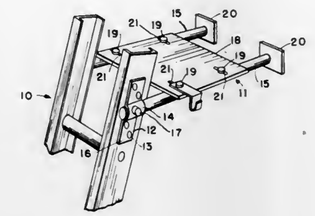
Noise depressing devices are provided for use in conjunction with engines of the type commonly used to power model aircraft, boats, cars and the like. The noise depressing devices include: (1) an elongated extension sleeve that is secured to and aligns at one of its ends with the exhaust port of an engine and (2) a plurality of spaced baffle plates secured to the opposite end of the sleeve that are designed to quietly diffuse the exhaust gases into the atmosphere.

3,779,343
UNITS FOR CONNECTING TOGETHER SUCCESSIVE LADDER SECTIONS
Callion Littlejohn, 5118 Dorchester Ave., Chicago, Ill.
Continuation-in-part of Ser. No. 249,152, May 1, 1972. This application July 26, 1972, Ser. No. 275,322
Int. Cl. E06c *1/383*
U.S. Cl. 182—163 **4 Claims**



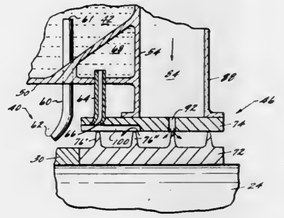
A sectionalized ladder of which the sections are provided with matching proximate, hinged together end portions to produce an integrated assembly; such hinged relationship permitting both sections to be brought into alignment with each other to produce an aligned section ladder of length greater than either of the sections, or may be folded into facial contact with each other to produce a double thickness unit of the length of a section, and locked in such aligned section thickness or such double thickness condition for ready transport or storage.

3,779,344
MULTI PURPOSE LADDER
Franklin D. Rister, Fort Mill, S.C.
Filed Oct. 10, 1972, Ser. No. 296,256
Int. Cl. E06c *7/14, 7/48*
U.S. Cl. 182—214 **1 Claim**



This invention relates to a ladder attachment adapted to support the top of a ladder spaced outwardly from a vertical supporting surface and a platform adjustable to various width ladders for the purpose of resting tools or equipment when not in use.

3,779,345
EMERGENCY LUBRICATION SUPPLY SYSTEM
Thomas Carl Barnes, Boxford, and Malcolm Hubert Knapp, South Lynnfield, both of Mass., assignors to General Electric Corporation, Lynn, Mass.
Filed May 22, 1972, Ser. No. 255,718
Int. Cl. F01m *1/20;* **F16n** *29/02*
U.S. Cl. 184—6.4 **12 Claims**

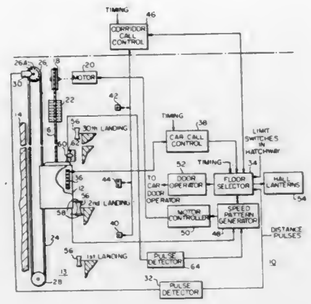


An emergency lubrication supply system operates to continuously provide oil to a lubricated part during normal operation of the part and for a limited duration after failure of a main supply of lubrication to the part. Means for providing a flow of pressurized air are further included in order to draw a sufficient stream of lubricant from an emergency reservoir to adequately lubricate the bearing for the limited duration after failure of the main system. The flow of pressurized air further acts to provide a cooling effect on the lubricated part.

3,779,346
TERMINAL SLOWDOWN CONTROL FOR ELEVATOR SYSTEM
Charles L. Winkler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 17, 1972, Ser. No. 254,005
Int. Cl. B66b *1/30*
U.S. Cl. 187—29 R **10 Claims**

Terminal slowdown control for elevator systems which includes spaced markers and a detector, mounted for relative

movement as an elevator car approaches a terminal. The markers are spaced such that if the elevator car is approaching the terminal with a constant deceleration rate, the combination of the spaced markers and detector will produce pulses at a constant rate. If this constant rate is within a predetermined range, the slowdown is normal. If the rate is faster than a

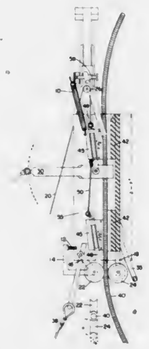


predetermined value, comparison means provides a speed error signal which may be used to initiate terminal slowdown, and the same speed error signal may be used to generate an auxiliary speed pattern voltage for use by the elevator control in bringing the car to a stop according to a predetermined deceleration schedule.

3,779,347
CABLE CATCHER

Arthur A. Chevalier, Cody, Wyo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Apr. 3, 1972, Ser. No. 240,681
Int. Cl. B65h *59/16*
U.S. Cl. 188—65.2 5 Claims

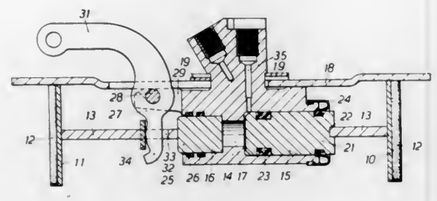


A device for catching a cable, e.g., a downhole oil well pump power cable, to prevent reverse motion of said cable. The device catches the cable in a pair of wedge-type slips, preventing the cable from dropping down the wellhole during its withdrawal from the hole.

3,779,348
SHOE-DRUM BRAKES

Glyn Philip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, England

Filed Sept. 2, 1971, Ser. No. 177,890
Claims priority, application Great Britain, Sept. 3, 1970, 42,112/70
Int. Cl. F16d *65/24*
U.S. Cl. 188—106 A 3 Claims

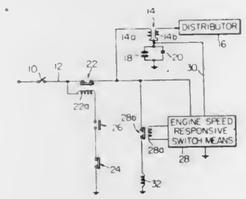


In hydraulic and mechanical actuating means for an internal shoe-drum brake an hydraulic slave cylinder has opposed aligned bores of different diameter in communication at their inner ends and a piston working in the bore of larger diameter acts on one shoe while a piston working in the bore of smaller diameter and a bell-crank lever mounted on the cylinder act on the other shoe.

3,779,349
VEHICULAR AIR-POLLUTION PREVENTIVE APPARATUS

Hiroyuki Maruoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sept. 12, 1972, Ser. No. 288,409
Claims priority, application Japan, Dec. 10, 1971, 46/99959; Feb. 25, 1972, 47/19519
Int. Cl. F02n *17/00*
U.S. Cl. 192—.092 16 Claims

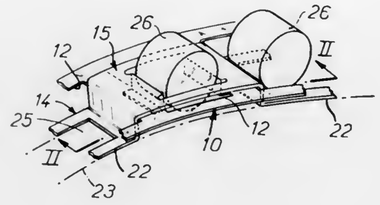


To prevent emission of toxic compounds from an automotive engine during idling as in the case where the motor vehicle is stopped at a crossing or on a jammed highway, an apparatus is provided which includes first switch means responsive to a temperature of the engine and second switch means responsive to an uncoupled condition of a power transmission system. These two switch means are connected to an ignition coil and de-energize the coil when the engine temperature is higher than a predetermined level and concurrently the transmission system is in an uncoupled condition.

3,779,350
FREE-WHEEL MECHANISMS AND FREE WHEELS INCORPORATING SUCH MECHANISMS

Michel Theophile Rist, Boulogne, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed July 26, 1972, Ser. No. 275,271
Claims priority, application France, July 27, 1971, 7127411
Int. Cl. F16d *15/00*
U.S. Cl. 192—45 6 Claims



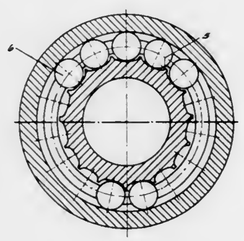
The invention relates to improved free-wheel mechanisms adapted to couple together or to disconnect two members capable of relative rotation. The free-wheel mechanism is intended to co-operate with inner and outer circular tracks, one of said tracks having ramp means and the other of said tracks having a plain surface, comprising a plurality of jamming members and a cage therefor, said cage comprising two parts, a first part having a plurality of circumferentially spaced windows for receiving the jamming members, and a second part having a plurality of depressions received in said windows and portions folded over said first part for limiting at least relative radial movement of said parts, the bottom end of at least one of said depressions providing a friction surface for cooperation with said plain track surface.

The free-wheel mechanisms find advantageous applications in vehicle transmission systems, for example in hydraulic torque converters.

3,779,351
COMPOSITE SLIDING AND ROLLING BEARING

Georg Hentschel, Schweinfurt, Germany, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Mar. 16, 1972, Ser. No. 235,339
Claims priority, application Germany, Mar. 17, 1971, G 71 10 173.0
Int. Cl. F16d *15/00*
U.S. Cl. 192—45.2 11 Claims

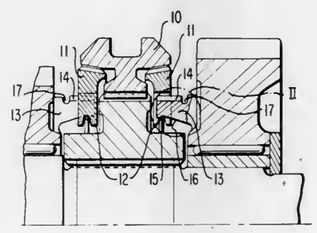


A composite rolling and sliding bearing comprising an outer and inner ring and a plurality of intermediate bearing elements arranged therebetween. Each of the bearing elements is provided on one side with a convexedly formed face adapted to slide and roll against one ring and on the opposing side with suitable means for tilting or rocking the element with respect to the other ring.

3,779,352
BLOCKING SYNCHRONIZING ARRANGEMENT FOR MOTOR VEHICLE CHANGE-SPEED GEARS

Gunter Worner, Rommelshausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuggart-Unterturkheim, Germany

Filed Dec. 15, 1971, Ser. No. 208,216
Claims priority, application Germany, Dec. 15, 1970, P 20 61 621.1
Int. Cl. F16d *23/06*
U.S. Cl. 192—53 F 10 Claims

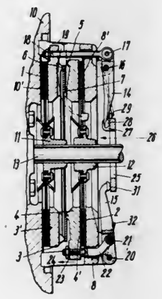


A blocking synchronization for motor vehicle change-speed transmissions, in which an axially displaceable shifting sleeve cooperates with synchronizing rings that are also axially displaceable and rotatable within limits; the synchronizing rings, in their turn, cooperate by means of blocking surfaces with the engaging tooth system at the gear whereby the blocking teeth at the synchronizing ring and at the gear are separate in effect from the engaging tooth system at the shifting sleeve and at the gear while the shifting sleeve in its engaged position abuts axially at an abutment of the gear whereas the synchronizing ring is free in such position.

3,779,353
FRICTION CLUTCH, ESPECIALLY FOR MOTOR VEHICLES

Paul Maucher, Sasbach, Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Buhl (Baden), Germany

Filed Feb. 24, 1971, Ser. No. 118,364
Claims priority, application Germany, Feb. 24, 1970, P 20 08 424.6; Dec. 18, 1970, P 20 62 410.6
Int. Cl. F16d *13/44*
U.S. Cl. 192—70 8 Claims



Friction clutch, especially for motor vehicles, includes a housing, a pair of torque-transmitting friction discs disposed in

the housing, a respective pressure plate located adjacent each of the friction discs, lever means operatively connected to the pressure plates and actuable for displacing the pressure plates in axial direction of the clutch, the pressure plates having friction surfaces facing away from one another and being formed with annular seats on respective surfaces thereof facing toward one another, a plate spring disposed between the pressure plates and engaging the annular seats, the housing being securable to a flywheel and being formed with a reaction surface engageable by one of the friction discs, the flywheel having a reaction surface engageable by the other of the friction discs, and means for rotationally entraining the pressure plates, both of the friction discs having respective hubs mountable on a single driven member for transmitting torque thereto.

3,779,354

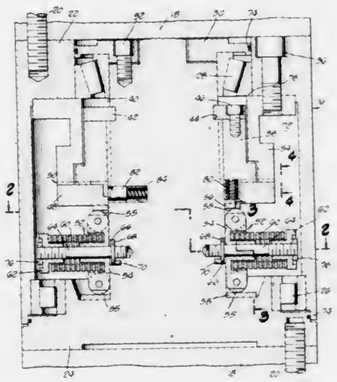
PROTECTIVE OVERSPEED TORQUE COUPLING

Rowland E. Ball, Long Beach, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 10, 1971, Ser. No. 197,250

Int. Cl. F16d *43/24*

U.S. Cl. 192—104 R **7 Claims**



A rotatable coupling adapted to transmit torque between a driving unit and a driven unit such as a centrifugal pump including a first member adapted to rotate with a second member, a linkage mechanism such as meshing gears or dogs normally locking the first member from rotation with respect to the second member and a release mechanism responsive to rotational speed of the coupling which will release the linkage mechanism at a predetermined rotational speed over normal speed and permit free rotation of the first member with respect to the second member.

3,779,355

CENTRIFUGAL CLUTCH

Yoshihiro Okuno, Toyonaka, Japan, assignor to Kabushiki Kaisha Daikin Seisaku-Sho, Osaka Prefecture, Japan

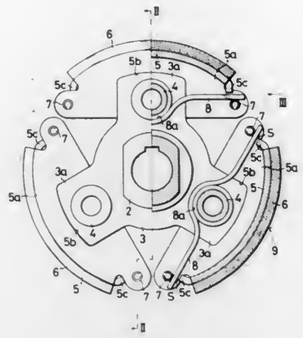
Filed Oct. 26, 1971, Ser. No. 192,162

Claims priority, application Japan, Oct. 29, 1970, 45/107898

Int. Cl. F16d *43/14*

U.S. Cl. 192—105 BA **3 Claims**

A centrifugal clutch in which two brackets are mounted on the opposite ends of a clutch boss and each formed with guide projections and saddle-like arcuate shoes each having a lining and a guide recess fitted with each pair of the opposing guide projections of the brackets so as to be movable radially of the clutch. A stud pin extends between each pair of the opposing guide projections. Holding portions are formed at the circumferentially opposite ends of each of the shoes. Springs each having a longitudinally middle portion in engagement with the outer periphery of each of the stud pins and opposite ends caught on the holding portions urge the shoes toward the center of the clutch, but the outward movement of the opposite ends of the springs is limited by restricting portions at the opposite ends of the shoes when they are forced outward under the action of a centrifugal force. The springs or guide plates on the inner faces of the shoes prevent the shoes from removing from the guide projections in the axial direction of the clutch.



3,779,356

ROLLER FOR ROLLER CONVEYORS

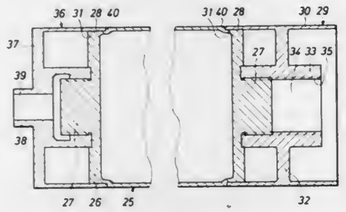
Torben Jorgenso, Kolding, Denmark, assignor to Kastrup og Holmegaards Glasvaerker A/S, Copenhagen K., Denmark

Filed Feb. 11, 1972, Ser. No. 225,574

Claims priority, application Denmark, Feb. 12, 1971, 647; Aug. 31, 1971, 4261

Int. Cl. B65g *13/00*

U.S. Cl. 193—37 **5 Claims**



A roller for a roller conveyor adapted to be mounted together with one or more other like rollers to constitute a composite roller means of desired length. The roller is adapted to be manufactured of plastic material in a blow casting process, so that the manufacturing cost will be low. The roller is provided with coupling means for coupling with other rollers or coupling members for building a composite roller means. The coupling means are adapted for easy disengagement and for rigid and strong connection between all the elements in the composite roller.

3,779,357

DEVICE FOR CONTROLLING A SELF-SERVICE DISPENSER USING IDENTIFICATION DATA CARRIERS

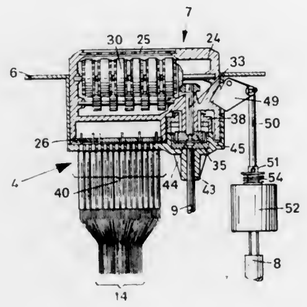
Willi Haller; Richard Lebhere, and Kurt Kratt, all of Aldingen, Germany, assignors to Firma J. Hengatter KG, Aldingen, Germany

Filed July 27, 1971, Ser. No. 166,509

Claims priority, application Germany, July 29, 1970, P 20 37 580.8

Int. Cl. G07f *13/02*

U.S. Cl. 194—5 **6 Claims**



A device for controlling a self-service dispenser which includes a quantity and/or price recording mechanism connected to the dispenser includes a reader having a plug-in receiver. The plug-in receiver includes a lower receiving panel with a plurality of electrical contact elements arranged in a pattern and which are engageable with identification feelers carried by a plug-in identification device which is engageable in the plug-in receiver. The reader also carries a digital counter having a drive shaft which is connectable to the quantity or price recording mechanism upon interengagement of the plug-in identification device with the plug-in receiver. The article dispenser is provided with a start or a release signal operating means which energizes a solenoid causing interengagement and locking between the plug-in receiver and the plug-in identification device. During the delivery of the articles, the digital counter is driven by the recording mechanism which is actuated by the dispenser to indicate either the quantity of the devices dispensed or the price of these articles. When the delivery is completed, the solenoid releases the pawl to permit disengagement of the identification device.

3,779,358

ACTUATING MECHANISM FOR VENDING AUTOMATS

Helmut Borner, Solingen-Ohligs, Germany, assignor to Andreae & Mayer GmbH, Cologne, Germany

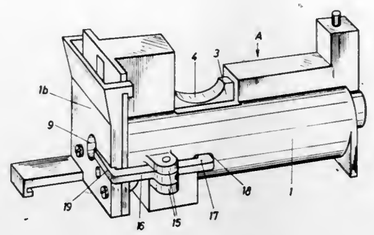
Filed Apr. 21, 1972, Ser. No. 246,228

Claims priority, application Germany, Apr. 23, 1971, P 21 19 833.4

Int. Cl. G07f *11/00*

U.S. Cl. 194—75 **8 Claims**

An actuating mechanism for a coin controlled vending machine in which a locking member is provided reciprocable against a spring bias from a rest position to an actuated position wherein vendable material is released from the vending machine. The locking member has a bore therein and a pressing member is provided for moving the actuating member and is receivable in the bore. A coin slot is provided for receiving a coin which will close the end of the bore in the actuating member to permit actuation thereof by the pressing member while a coin receiver is provided for receiving the coin near the position which it occupies when the locking member is moved into actuated position.



3,779,359

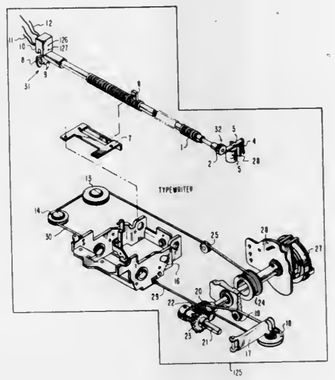
SYSTEM FOR PERFORMING CARRIER RETURN OPERATION

Donald J. Morrison, and Reuben Raesz, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,679

Int. Cl. B41j *19/70*

U.S. Cl. 197—66 **12 Claims**

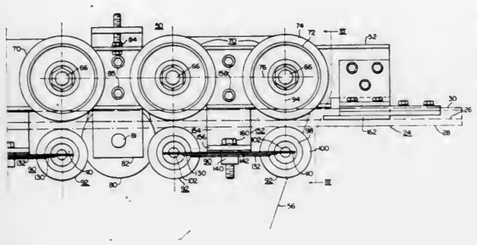


A system for performing a carrier return operation in a typewriter, printer, etc., having a leadscrew controlled carrier, and controlling when the carrier is to be returned dependent upon a carrier return signal generated in conjunction with combinations of generated signals indicative of rotation and non-rotation of the leadscrew, and the leadscrew rotational position. The system is structured such that the carrier will be returned and properly positioned at the left margin of starting line upon termination of escapement, and upon signals being generated indicating that the leadscrew is in its home rotational position.

3,779,360
TRANSPORTATION DEVICE HAVING MOVABLE HANDRAILS

Mohammed Amin El Taher; Erno Balogh, both of Gettysburg, Pa., and Henry Boltrek, Freeport, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1972, Ser. No. 283,262
Int. Cl. B66b 9/12
U.S. Cl. 198—16 R 21 Claims

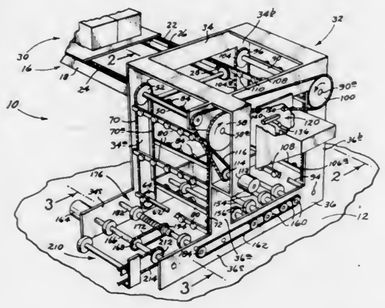


A transportation device having an endless handrail driven about a closed loop by drive means which include traction and pressure rollers. The pressure rollers are biased against the handrail, opposite the traction rollers, by biasing means which includes at least one main leaf spring member. The leaf spring member is stressed from a predetermined unstressed curved configuration to a flat configuration when the handrail is disposed between the traction and pressure rollers.

3,779,361
ARTICLE HANDLING APPARATUS

Robert A. Schmitt, Vancouver, Wash., assignor to Columbia Machine Inc., Vancouver, Wash.

Filed Aug. 20, 1971, Ser. No. 173,480
Int. Cl. B65g 47/00
U.S. Cl. 198—24 1 Claim

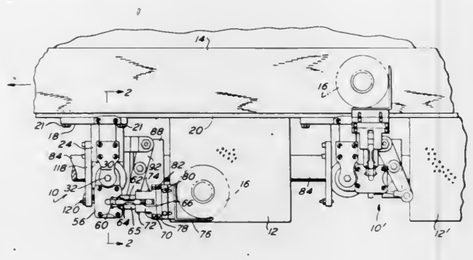


Article handling apparatus including a lowerable platform adapted to receive an article at one elevation and to lower it. A puller is provided for shifting such an article laterally and into proper position on the platform when at its one elevation. The puller includes an elongated, rocking arm having opposed article-engaging and cam-engaging ends. The arm is shiftable along a horizontal path between an extended position where its article-engaging end is under the platform and a retracted position where such end is spaced to one side of the platform. The cam-engaging end of the arm rides on a track which controls rocking of the arm, whereby its article-engaging end is below the elevation of the platform when the arm is extended and is raised above such elevation when the arm is shifted from its extended toward its retracted position. When the arm raises and retracts it frictionally engages the base of an article on the platform and shifts the article laterally on the platform.

3,779,362
GLASS CONTAINER HANDLING APPARATUS

Larry L. Horn, Winchester, Ind., assignor to Maul Bros. Inc., Millville, N.J.

Filed Oct. 13, 1971, Ser. No. 188,929
Int. Cl. B65g 47/00
U.S. Cl. 198—24 10 Claims

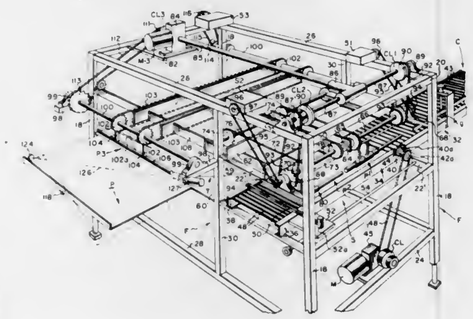


A 90° pusher for handling glass containers, convertible from righthand to lefthand and vice versa, is self-contained and includes a housing supported by a bracket and rotatable about a center post. Rotation of the housing is effected by means of a dual surface cam track and linkage actuated thereby. The pusher has an automatic reset feature if a jam occurs.

3,779,363
DISC TYPE PATTERN MAKER AND METHOD

Ronald D. Elson, Merrill; Norman O. Krenke, Saginaw, and Charles E. Ingram, Freeland, all of Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Filed Sept. 21, 1970, Ser. No. 73,981
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AB 55 Claims



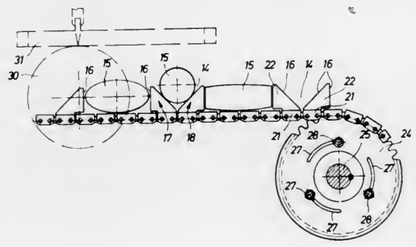
Pattern forming apparatus and methods for grouping food products, such as loaves of packaged bread, into any one of a plurality of different patterns comprising: a turntable; a longitudinally extending conveyor for conveying products in a longitudinal path along one side of the turntable; a pair of end-to-end transversely movable pusher members which are selectively, individually or collectively, movable for selectively pushing products from the conveyor to the turntable; and

drive mechanism for turning the turntable through a partial revolution to reorient the products thereon prior to the products following being moved thereto.

3,779,364
TRANSPORT DEVICE, MORE ESPECIALLY FOR SCREEN PRINTING MACHINES

Wilfried Kammann, Suedlengern, Germany, assignor to Werner Kammann, Buende-Westphalia, Germany

Filed June 3, 1971, Ser. No. 143,635
Claims priority, application Germany, June 19, 1970, P 70 23 045.4
Int. Cl. B65g 15/10, 17/42
U.S. Cl. 198—131 11 Claims

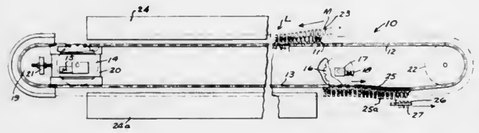


A transport device, more espeically for screen printing machines, with conveying chains which run parallel and spaced apart and hold the workpieces to be moved in receptacles, wherein each receptacle which carries one end region of a body, is formed from two catches which are provided on two adjacently running conveying chains which face each other, and have lugs which engage the receptacle, which is open upwards, the said lugs having faces which are vertical or inclined with respect to the longitudinal direction of the chains, and in which two chains are movable with respect to one another in the longitudinal direction of the chains to form differently shaped or dimensioned receptacles.

3,779,365
ARTICULATED CONVEYOR STRUCTURE

Louis P. Yakubek, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 10, 1971, Ser. No. 170,561
Int. Cl. B65g 17/00
U.S. Cl. 198—131 6 Claims

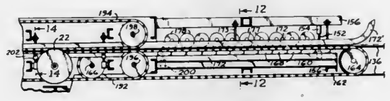


A conveyor structure for use where accuracy is desired between succeeding portions of the conveyer and, at the same time, wear is to be minimized. The conveyor comprises a plurality of interconnected links. Each link comprises a body having at least two longitudinally spaced openings. A bushing is resiliently mounted in each opening by a relatively resilient but solid plastic molded in situ between the periphery of the bushing and the opening. The links are interconnected by pins extending through the aligned bushings of succeeding links and the pins engage a rotary element such as a sprocket to produce a driving engagement between the rotary element and the conveyor.

3,779,366
CORE ASSEMBLY APPARATUS FOR PLYWOOD LAY-UP APPARATUS

Victor R. Nelson, 2700 S. W. Summit Dr., Lake Oswego, Oreg.

Division of Ser. No. 734,466, Jan. 4, 1968. This application Aug. 11, 1971, Ser. No. 170,882
Int. Cl. B65g 15/14; B65h 7/08
U.S. Cl. 198—160 5 Claims

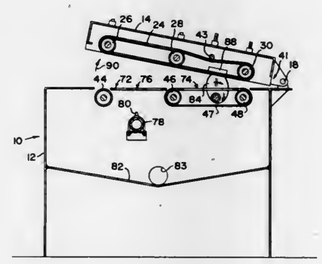


Bottom veneer plies are arranged end to end and conveyed continuously under a core assembly unit where core strips are crowded together in edge-abutting relationship, trimmed to desired panel width and laid upon the bottom plies, after which overlay veneer plies are laid end to end over the core ply and the assembly conveyed to a cut-off unit where it is cut to plywood panel lengths for subsequent stacking and delivery to a press.

3,779,367
CLEANING MACHINE

Richard P. Hope, Odessa, and Henry B. Long, Tampa, both of Fla., assignors to Auto-Mat Corporation, Tampa, Fla.

Filed Oct. 9, 1970, Ser. No. 87,994
Int. Cl. B65g 15/14
U.S. Cl. 198—167 6 Claims

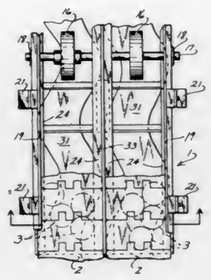


A machine designed to clean mats, rugs and the like by means of a high powered liquid spray impinging upon the mats as they are conveyed through the machine. An endless driven belt engages the upper surface of the mat and carries it through the machine, over grates through which the spray is directed. A pair of driven, spring-loaded rollers are positioned at the entrance and exit to the machine such that the first pair of rollers pulls the mat into the machine and the second pair of rollers forces the mat out the exit of the machine while simultaneously squeezing the excess water from the mat. Access to the interior of the machine is accomplished by a top which may be lifted from the tank of the machine by means of a lever and cam arrangement.

3,779,368
WEAR STRIP CONSTRUCTION FOR CONVEYOR

Wayne A. Smith, Shorewood, Wis., assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed Nov. 17, 1971, Ser. No. 199,545
Int. Cl. B65g 15/60
U.S. Cl. 198—204 6 Claims



An improved wear strip construction for a conveyor. The conveyor includes a pair of spaced side walls and the upper and lower extremities of each side wall are provided with inwardly extending flanges. Metal wear strips are snap fitted on the upper flanges of the side walls and serve to support the side edges of a plastic link belt conveyor chain in a conveying path of travel, while a sinusoidal metal wear strip is supported on the lower flanges of the side walls and serves to support the link chain in its return path of travel.

3,779,369
ART PAINT SAVER

Jack H. Lang, 9709 W. Olympic Blvd. No. 19, Beverly Hills, Calif.

Filed July 11, 1972, Ser. No. 270,621
Int. Cl. B44d 3/00
U.S. Cl. 206—1.8 3 Claims

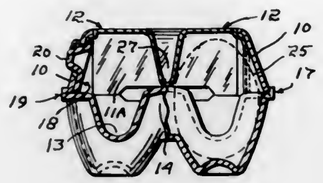


A paint saver for artists' use adapted to be used with a palette having spaced paint regions thereon comprising a hollow cup-like member with a peripheral flange surrounding an opening; and adhesive means disposed on the flange for detachably securing said member to the palette with the opening in contact with the palette and surrounding at least one of the regions.

3,779,370
EGG CARTON

Gerald A. Snow, Cumberland Foreside, and Harold A. Doughy, Cape Elizabeth, both of Maine, assignors to United Industrial Syndicate, Inc., Portland, Maine

Filed Feb. 25, 1972, Ser. No. 229,299
Int. Cl. B65d 1/36, 25/54
U.S. Cl. 206—45.31 3 Claims

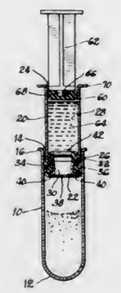


A molded egg carton is disclosed having the central portion of its cover of a transparent material with the remainder of the carton being of an opaque material that has better load-supporting and egg protecting qualities than the transparent material.

3,779,371
PACKAGE OF SEPARATED MATERIALS TO BE MIXED

Walter M. Rovinski, 16 Cambridge Rd., Turnersville, N.J.

Filed Mar. 13, 1972, Ser. No. 234,064
Int. Cl. B65d 81/32
U.S. Cl. 206—47 A 13 Claims

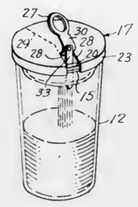


A package in which two materials maintained in separated relation can be mixed and dispensed in which a liquid is preloaded in one member and a material to be taken up in the liquid in another member and the two members are joined to form a package in which the materials are maintained in their separated relation but in which the liquid can be transferred from the one member to the other without member separation for taking up the other material in solution or suspension.

3,779,372
CONTAINER FOR THE COMPONENTS OF MIXED DRINKS

Herminia Albarez Gil de Lloret, Quinta Los Anso Avenida "C" Urbanizacion, Caracas, Venezuela

Filed Mar. 28, 1972, Ser. No. 238,835
Claims priority, application Spain, Apr. 1, 1971, 167,545
Int. Cl. B65d 25/08
U.S. Cl. 206—47 A 12 Claims

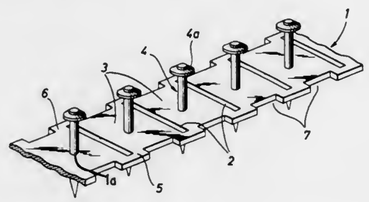


A dual container for two components of a mixed drink, consisting of a main compartment containing a first beverage and a flanged hollow cap normally sealingly covering the main compartment and containing a second beverage to be mixed with the first beverage. The hollow cap has a tearable top wall section provided with a ring-shaped tab. A rigid pointed lever is attached to the underside of the tearable wall section and is rotated downwardly when the tearable top wall section is pulled upwardly by tension exerted on the ring-shaped tab, rupturing the bottom wall of the hollow cap and allowing the second beverage to flow downwardly into the first beverage. The tearing of the top section breaks the cap flange and allows the cap to be removed, whereby the main compartment may then be employed as a drinking cup.

3,779,373
NAIL HOLDER FOR A SETTING DEVICE OPERATED BY EXPLOSIVE FORCE

Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Fuerstentum, Liechtenstein

Filed Aug. 25, 1971, Ser. No. 174,847
Claims priority, application Germany, Aug. 28, 1970, P 20 42 769.4
Int. Cl. B65d 83/00
U.S. Cl. 206—56 DF 3 Claims

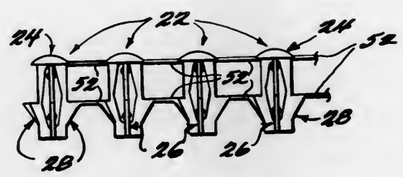


A nail holder for feeding nails serially into a setting device from which they are driven by an explosive force into a target material is formed by an elongated belt or strip which has a plurality of longitudinally spaced holes each of which holds the shank of a nail. Between each pair of holes a transversely extending slot is arranged which extends across a major portion of the strip between its longitudinal edges. When a nail is driven from the setting device, its head contacts the strip and the section between the slots separates from the remainder of the strip forming a disc or washer on the shank of the nail. The disc or washer has an area which is a multiple of the area of the nail head and its extended surface is useful in securing low strength materials to the target material.

3,779,374
MOLDED PLASTIC FASTENER

Kenneth R. Bockenstette, Cincinnati, Ohio, assignor to Vanguard Industries, Inc., Cincinnati, Ohio

Filed Oct. 20, 1971, Ser. No. 191,116
Int. Cl. B65d 69/00; F16b 21/08
U.S. Cl. 206—56 DF 10 Claims

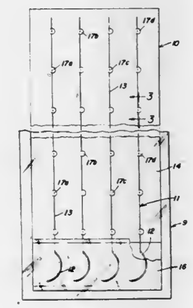


A fastener molded of elastomeric material into an integral structure having a pair of locking parts integrally connected at their ends to the free end of the shank part of the fastener and the head part of the fastener respectively, the locking parts including perpendicularly disposed locking surfaces and inclined cam surfaces leading thereto from the free end of the shank part, the fastener serving to secure two elements together when moved axially through aperture menas formed therein into an operative position, during which movement the cam surfaces are operable to flex the locking parts both with a tortional movement about the integral end connections thereof and with an inward bending movement between the integral end connections thereof so that the flexure will cause the locking parts to move outwardly when the fastener reaches its operative position permitting the locking surfaces to effect the securement of the elements together. A plurality of the fasteners are integrally connected in a row with the shank parts extending generaly perpendicular to the extent of the row formation.

3,779,375
SUTURE PACKAGE

Alliene Caraway Foster, 3016 Kingston, Dallas, Tex.

Filed Feb. 17, 1972, Ser. No. 227,183
Int. Cl. A61l 17/02; B65d 73/00
U.S. Cl. 206—63.3 9 Claims



A carrier for suture devices, which consist of preassembled suture needles and threads, includes an elongated web of paper or other material having an end strip of heavy paper or

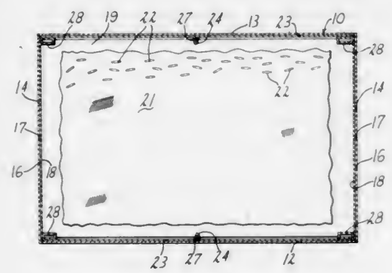
cardboard resistant to needle puncture. Parallel side-by-side rows of tabs are formed in the web by cutouts from the web material which remain attached along one side of the cutout opening to form a hinge. These tabs are lifted or displaced to receive and confine the extended thread of the suture device with the suture needle overlying the heavy end portion; and the tabs are then replaced within the cutout openings to retain and confine the suture threads in side-by-side parallel alignment at longitudinally spaced intervals. A transparent adhesive strip is placed over the needles on the heavier end strip to confine the needles and provide immediate visual identification of the type and size of needle. The packaging method includes: providing the web and heavy base; forming the tabs as above described; displacing the tabs while laying the extended suture threads over the web and replacing the tabs to confine the suture threads.

3,779,376

SHIPPING AND STORAGE CONTAINER FOR CASKET INTERIORS

Jerome A. Lewis, Irondale, Ala., assignor to Lewis Industries, Inc., Irondale, Ala.

Filed Feb. 28, 1972, Ser. No. 229,904
Int. Cl. B65d *85/16, 73/00*
U.S. Cl. 206—65 R **4 Claims**



A shipping and storage container for prefabricated and prepressed casket interiors adapted to be inserted in caskets without any further work on the interiors. The container has at least one openable end and a plurality of vertically arranged, slidable and accurately spaced panels. The casket interiors are removably attached to the sides of the panels so that by opening the end of the box and sliding a panel outwardly, a selected casket interior may be removed from the panel. The container incorporates specific means for slidably positioning and holding the panels. The two innermost panels are spaced far enough apart to permit casket interiors to be removably secured to adjacent surfaces of said panels.

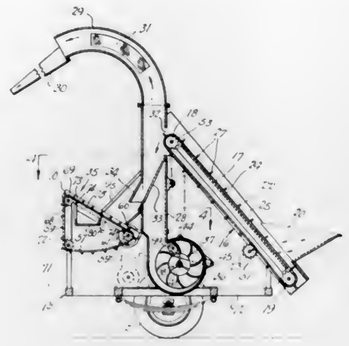
3,779,377

PECAN CLEANER

William D. Phelps, Little Rock, Ark., assignor to Phelps-Davis, Inc., Baton Rouge, La.

Filed May 5, 1972, Ser. No. 250,629
Int. Cl. B07b *9/00*
U.S. Cl. 209—36 **11 Claims**

A pecan separator and cleaner consisting of an inclined infeed elevator leading to a vertical air conduit supplied with upwardly moving air by a blower provided with a manually adjustable air intake port. As the harvested pecan material reaches the top of the infeed elevator, the pecans and heavier debris drop down to a second inclined elevator, the lighter residue material being blown upwardly to an outwardly directed discharge chute. The second inclined elevator overlies a grating which has a first part consisting of closely spaced rods through which light trash and faulty pecans drop by gravity. Beyond the first part of the grating is a second part having widely spaced rods through which acceptable pecans drop onto an inclined lateral chute leading to an inspection table.



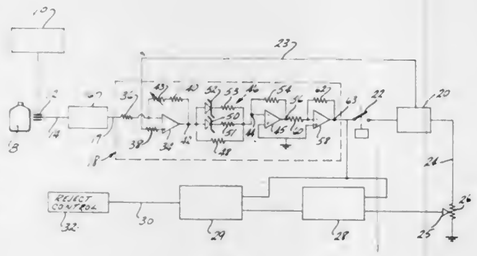
Elongated twigs and similar debris are discharged forwardly from the top end of the second elevator. The air intake port can be adjusted so that all material lighter in weight and less streamlined than acceptable pecans is transported upwardly by the upwardly moving air.

3,779,378

APPARATUS AND METHOD FOR LINEARIZING THE OUTPUT OF A NORMALLY NONLINEAR RADIO FREQUENCY THICKNESS GAUGE

Gerald F. Scherf, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 31, 1973, Ser. No. 328,453
Int. Cl. B07c *5/08*
U.S. Cl. 209—73 **5 Claims**



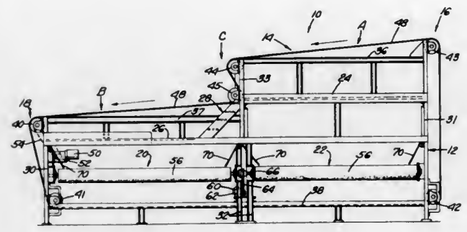
Apparatus and method for producing a linear voltage versus thickness output for a radio frequency glass thickness gauge. One type of thickness measuring device for glass containers uses the attenuation of a radio frequency signal as a measure of thickness. The thickness signal is a voltage which varies nonlinearly as a function of thickness. This invention is a circuit for linearizing the nonlinear thickness signal. The input resistance to an operational amplifier is varied as a function of the thickness signal voltage. This creates a variable gain for the operational amplifier and consequently results in the generation of a linear thickness versus voltage relationship. Zener diodes are used as nonlinear variable resistors in two different thickness ranges to give a nonlinear, variable, input resistance to the operational amplifier.

3,779,379

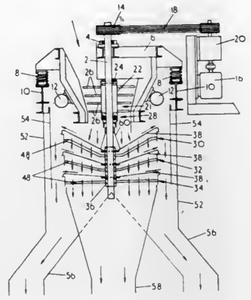
AUTOMATIC CORRUGATED WASTE PICKER

Robert I. Buchbinder, and Albert J. Buchbinder, both of West Covina, Calif., assignors to Devco Management Inc., New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,277
Int. Cl. B07b
U.S. Cl. 209—102 **10 Claims**



Mixed rubbish is dumped onto the first section of a sorting screen conveyor consisting of a plurality of laterally spaced, narrow conveyor belts or wires, with open spaces between them, through which small particles of trash fall. At the discharge end of the first section, trash is dumped onto the receiving end of a lower, second conveyor section, also consisting of laterally spaced, narrow belts, or wires. In passing from the first section to the second, trash falls freely through the air and tumbles onto the second section, causing thorough agitation of the trash and sifting of small particles through spaces between belts, leaving only bulky corrugated paper on the conveyor. Pickers stationed alongside the sorting screen conveyor manually remove unwanted material too bulky to pass between belts. Conveyor belts below the sorting screen conveyors remove small particle trash for disposal. In one embodiment of the invention, the belts or wires in each section diverge so that spaces between belts gradually open wider to pass larger particles of trash.



and oversize material is ejected from the periphery of the surface and collected in a peripheral chute. With the various embodiments described it is possible to retreat both the undersize and the oversize material, or solely the undersize material, or solely the oversize material.

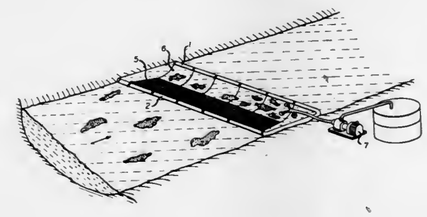
3,779,380

COLLECTOR COMPOSITION FOR ORE FLOTATION

William T. Bishop, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 12, 1971, Ser. No. 188,571
U.S. Cl. 209—166 **13 Claims**

Disclosed is a novel ore concentration process. The process involves the use of novel collectors in the flotation method for concentrating ore such, for example, as iron ore.



3,779,381

SIZING SCREENS

Michael Pearson Armstrong, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, Grosnensor, London, England

Filed July 27, 1971, Ser. No. 166,429
Claims priority, application Great Britain, Aug. 7, 1970, 38,130/70
Int. Cl. B07b *1/08*
U.S. Cl. 209—271 **10 Claims**

A sizing screen for particulate material of different sizes has a series of generally horizontal circular screen surfaces which are rotated about a vertical axis so that undersize material passes through the surface and is collected in central chute

An oil-guide-boom which is effective in the removal of surface oil and residue from flowing water is disclosed. The boom includes two support members and a sheet extending between the supports in a trough-like manner. The sheet comprises a wire mesh material and a non-woven fabric. In operation the boom is placed in water toward the direction of flow so as to allow water to pass through the mesh portion of the sheet and to collect in the trough portion of the sheet. The boom has particular utility in that its structure and materials allow continuous removal of surface impurities from flowing water. Method of purifying water containing oil on the surface thereof utilizing the oil-guide-boom is also disclosed.

3,779,382

DYNAMICALLY EFFECTIVE OIL-GUIDE-BOOM AND METHOD FOR PURIFYING WATER EMPLOYING THE SAME

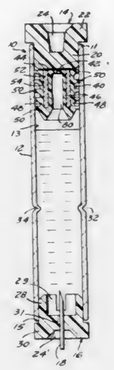
Hermanna R. Steltner, 5 Sparkes St., St. Catharines, Ontario, Canada

Filed Oct. 21, 1971, Ser. No. 191,264
Claims priority, application Canada, Nov. 2, 1970, 30651
Int. Cl. B01d *21/00;* **E02b** *15/04*
U.S. Cl. 210—83 **9 Claims**

3,779,383
SEALED ASSEMBLY FOR SEPARATION OF BLOOD COMPONENTS AND METHOD

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Apr. 25, 1972, Ser. No. 247,386
Int. Cl. B01d 21/26
U.S. Cl. 210—84 17 Claims



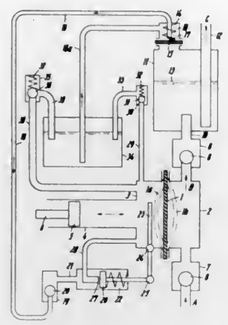
A self-contained fluid separator assembly is disclosed capable of separating blood into its component parts of plasma or serum, the light phase, and the cellular portion, the heavy phase. The assembly comprises a container having at least one open end for receiving blood for subsequent separation and a closure sealing the open end of the container, the closure being formed of a self sealing elastomeric material which is penetrable by a pointed hollow needle through which the blood to be separated is conducted into the container. A piston is slidably disposed in the container with its outer surfaces in sealing contact with the inner surfaces of the container. Pressure responsive valve means is provided on the piston which is normally closed when there is a minimum pressure differential on each side of the piston and the valve automatically opens in response to a substantial pressure differential so that when the container is subjected to centrifugal force the blood first separates into its light phase and heavy phase and the valve means automatically opens with the light phase passing through the valve means and the piston moves down through the light phase while retaining sealing engagement with the inner surfaces of the container. Positive stop means is provided on the container between its ends so that the piston as it moves through the light phase will contact the stop means and stop at a predetermined distance above the closure bottom of the tube means whereupon the pressure differential is terminated and the valve means automatically closes to provide an impervious barrier between the separated light and heavy phases of the blood.

3,779,384
PRESSURE-REGULATED DIAPHRAGM PUMP

Friedrich R. R. Stahlkopf, Buchen, Germany, assignor to Otto A.P. Tuchenhagen, Buchen, Germany

Filed Jan. 17, 1972, Ser. No. 218,175
Claims priority, application Germany, Jan. 21, 1971, P 21 02 762.3
Int. Cl. B01d 35/26, 35/14
U.S. Cl. 210—136 6 Claims

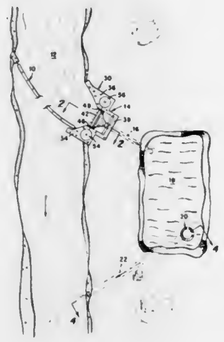
A piston-operated diaphragm pump for pumping liquids containing solids in suspension has a pump chamber divided into primary and secondary sides by a flexible diaphragm reciprocated by hydraulic pressure produced by a piston acting on a clean liquid in the primary side of the chamber. The solids-containing liquid from the secondary side of the pump is delivered via a closed tank to a treatment such as filtration. The clean liquid is circulated through a fluid circuit which includes a throttle valve operated by a rise in pressure in the closed tank, so that if the back-pressure of the solids-containing liquid rises above a predetermined level e.g., due to filter blockage, the flow of clean liquid in the fluid circuit is throttled and the amount of clean liquid in the primary side of the pump thereby reduced to effect a corresponding reduction in the delivery rate and pressure of the pump.



3,779,385
APPARATUS FOR REMOVING OIL AND OTHER FLOATING CONTAMINANTS FROM A MOVING BODY OF WATER

John W. Strohecker, Oak Ridge, Tenn., assignor to The United States of America, as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 30, 1971, Ser. No. 203,267
Int. Cl. E02b 5/08, 7/28
U.S. Cl. 210—154 2 Claims

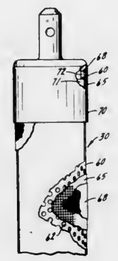


Floating contaminants such as oil and solid debris are removed from a moving body of water by employing a skimming system which utilizes the natural gravitational flow of the water. A boom diagonally positioned across the body of water diverts the floating contaminants over a floating weir and into a retention pond where an underflow weir is used to return contaminant-free water to the moving body of water. The floating weir is ballasted to maintain the contaminant-receiving opening therein slightly below the surface of the water during fluctuations in the water level for skimming the contaminants with minimal water removal.

3,779,386
FILTER CARTRIDGE

Leo F. Ryan, Somerville, N.J., assignor to Ecodyne Corporation, Chicago, Ill.

Division of Ser. No. 87,661, Nov. 9, 1970, Pat. No. 3,680,700.
This application Mar. 23, 1972, Ser. No. 237,568
Int. Cl. B01d 27/02
U.S. Cl. 210—193 3 Claims

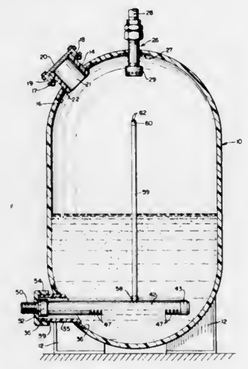


An improved precoat filter cartridge and a method of applying the precoat medium thereto. The filter cartridge comprises: a vertically extending tubular core element having apertures therein; a filter screen positioned about said core element to receive precoat particles; and a cover member closing off the upper portion of said core element defining a chamber formed by the sides thereof to accumulate gas trapped within said cartridge. A vent hole is provided in said cover member to permit the trapped gas to be vented therethrough.

3,779,387
FILTER

John J. Day, and Paul S. Hirschman, both of Fort Lauderdale, Fla., assignors to Ocean Protein Corporation, Dania, Fla.

Filed Oct. 20, 1971, Ser. No. 190,756
Int. Cl. B01d 29/10
U.S. Cl. 210—232 7 Claims

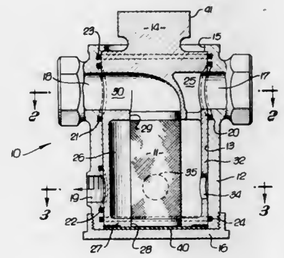


A filter having a container made of a substantially inert material which has fittings fastened thereto. Various operating portions of the filter are attached to the fittings in a way such that they can be easily removed and access had to the interior of the filter container for cleaning the container or charging it with a fluid medium.

3,779,388
STRAINER SHUT-OFF VALVE WITH MANUAL BACK-FLUSH

Donald W. Coughlin, P. O. Box 2025, 3170 State St., San Bernardino, Calif.

Filed Dec. 30, 1971, Ser. No. 214,157
Int. Cl. B01d 35/02
U.S. Cl. 210—390 8 Claims



The valve body provides a cylindrical bore rotatably confining a cylindrical rotor, the body having fluid inlet and outlet connections for interposing the valve in a domestic water service line just outside the water meter, and a drain connection leading to the waste system. Concentrically embodied in the rotor is a strainer chamber enclosing a cylindrical screen. Valve passages are provided in said rotor whereby: one setting of this rotor closes the drain connection and causes water to flow from the inlet connection to the strainer chamber and from the interior of the screen to said outlet connection thereby retaining solids in the strainer chamber; a second rotor setting shuts the outlet connection, leaves the inlet connection connected to the strainer chamber and connects the latter with the drain connection thereby flushing accumulated solids from the strainer chamber under service line pressure; a third rotor setting shuts the inlet connection, connects the outlet connection with the strainer chamber and leaves the latter connected with the drain connection thereby draining to waste the water in the premises, including the meter, and preventing ice damage from freezing; and a fourth rotor setting reverses the direction water entering from the inlet connection takes in its flowing through the screen, thereby cleaning fibrous matter from the exterior of the screen and flushing this to waste.

3,779,389
MOLTEN METAL FILTER

William D. Fant, Spokane, Wash., assignor to Fibrous Glass Products, Inc., Spokane, Wash.

Filed Sept. 5, 1972, Ser. No. 286,225
Int. Cl. B01d 23/04
U.S. Cl. 210—474 2 Claims

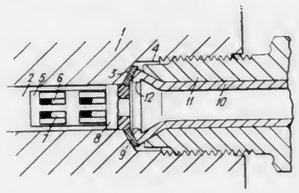
A bag-shaped filter is described for removing solid con-

taminates from molten metal, particularly aluminum. The bag is constructed from a rectangular piece or sheet of woven glass



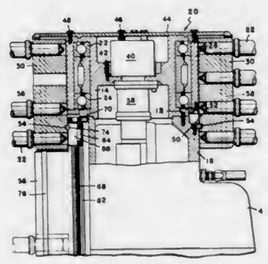
fiber cloth. The bag is constructed with the edges of the cloth folded and secured to the inside of the bag.

3,779,390
FILTER ASSEMBLY.
Heinrich Oberthur, Offenbach-Rumpenheim, Germany, assignor to Itt Industries, Inc., New York, N.Y.
Filed May 18, 1972, Ser. No. 254,450
Int. Cl. B01d *29/30*
U.S. Cl. 210—495 **2 Claims**



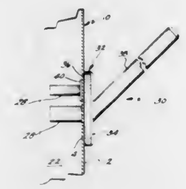
A filter assembly including a cylindrical wire mesh having a cylindrical apertured plastic cage therearound. The mesh is embedded in the plastic for support.

3,779,391
TOOL CHANGER FOR MACHINE TOOL
Yoshikazu Sato, No. 1,026, 4-Chomo, Shimotakaido, Suginami-ku, and Makoto Sato, No. 1-10, 1-Chomo, Nakano, Nakano-ku, Tokyo, both of Japan
Division of Ser. No. 804,220, March 4, 1969, Pat. No. 3,715,801. This application June 1, 1971, Ser. No. 148,910
Int. Cl. A47f *3/08*; **B23q** *3/18*
U.S. Cl. 211—1.5 **3 Claims**



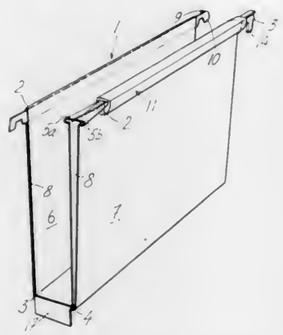
A tool changing mechanism for a machine tool having a horizontal spindle. A rotatable magazine is provided with a plurality of guides for supporting and guiding a plurality of tool cartridges. Each cartridge is provided with a plurality of vertically aligned tools. The magazine is indexed to align a selected cartridge with a transfer station. The cartridge is shifted into the transfer station and is positioned to present a selected tool to a transfer mechanism for removal of the tool and insertion into the spindle. The tool is returned to the cartridge by the transfer mechanism after use. A tape controlled motor means coordinates the operation of magazine, cartridges, and transfer mechanism to provide for returning one tool while another tool is operating on the work.

3,779,392
LABORATORY DRAINBOARD
Paul J. Betts, Sr., Muskegon, Mich., assignor to Browne Morse Company, Muskegon, Mich.
Filed Sept. 13, 1971, Ser. No. 179,660
Int. Cl. A47j *5/08*
U.S. Cl. 211—75 **1 Claim**



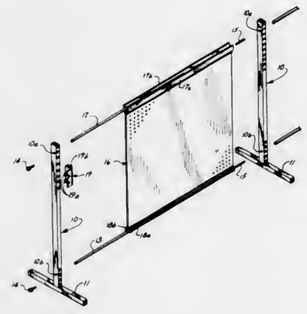
A lightweight laboratory drainboard formed from sheet material includes a hook shaped lip on the upper edge for mounting the board to wall-mounted clips. The board includes rearwardly extending side edges for holding the board in approximate parallel relationship with respect to the wall, and an outwardly extending lower lip to facilitate the drainage of fluids from wet laboratory glassware mounted on pegs affixed to the board. The pegs include stud portions which extend through apertures in the face of the board and collar portions which abut the board on the front surface thereof. Slip nuts slide over the studs from behind the board and abut the rear surface of the board to firmly hold the pegs in place.

3,779,393
FILE FOR DOCUMENTS AND THE LIKE
Carl Erik Grundell, Osmagatan 8, Enskede, Sweden
Filed Aug. 11, 1971, Ser. No. 170,784
Int. Cl. A47f *3/14*
U.S. Cl. 211—126 **6 Claims**



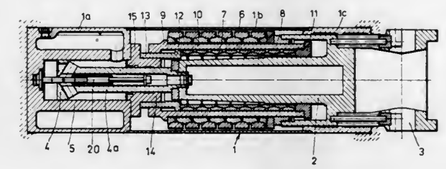
A file for documents and the like comprises a double envelope, obtained by folding a rectangular sheet of a thin but relatively rigid material such as cardboard along a folding line parallel to its short sides and located near the middle of the long sides and then folding the composite sheet along at least one additional folding line to provide a bottom. The free ends of the superimposed sheet parts are connected to a first suspension bar while a second suspension bar is introduced between the two sheets parts and adapted to bear against the first-mentioned fold thereof.

3,779,394
STORE DISPLAY FIXTURE ASSEMBLY
Melvern O. Bard, Shawnee Mission, Kans., assignor to Western Auto Supply Company, Kansas City, Mo.
Filed Dec. 13, 1971, Ser. No. 207,132
Int. Cl. A47f *5/00*
U.S. Cl. 211—134 **3 Claims**



A plurality of spaced parallel uprights, self-standing or wall-assisted, are connected in series by rod-like cross members having hollow interiorly-threaded end portions which receive bolt-like members passed through the uprights. The uprights are slotted for reception of shelf support brackets. Pegboard or solid panels are fitted between the uprights and supported by the cross members, the upper and lower panel edges having specially formed structure adapted to register with the cross members and operable to permit quick and easy installation and removal of the panels without the use of tools. Stabilizing clips mounted on the uprights anchor side edge portions of the panels to hold the panels to hold the plane.

3,779,395
CLAMSHELL BUCKET UNLOADER WITH ROPE OPERATED TROLLEY
Howard E. Dykeman, Pittsburgh, Pa., assignor to Heyl & Patterson, Inc., Pittsburgh, Pa.
Filed Nov. 15, 1972, Ser. No. 306,919
Int. Cl. B66c *1/16*
U.S. Cl. 212—81 **8 Claims**

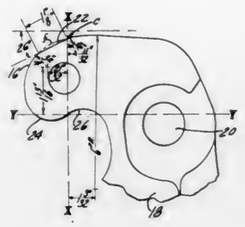


A boom extending horizontally away from a tower supports a trolley that can be moved along the boom and that supports a turntable, below which there is a clamshell bucket supported by means attached to the turntable. Operating means, supported by the tower, control rope means extending from the tower out around the turntable in order to turn it and the bucket suspended from it.

3,779,396
HYDRAULIC BUFFERS
Erich Zielinski, Gruiten, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany
Filed Mar. 30, 1972, Ser. No. 239,668
Claims priority, application Germany, Apr. 17, 1971, P 21 18 655.0
Int. Cl. B61g *9/08*
U.S. Cl. 213—43 **2 Claims**

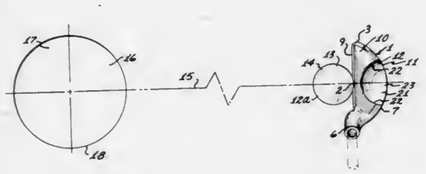
A hydraulic buffer device of the type in which a piston is slidable in a cylinder and has a throttle aperture which is controlled by a regulating pin whose cross section varies along its length. The throttle aperture is closable by a valve member which is spring loaded into the closing position. On rapid entry of the piston into the cylinder the valve member is unsealed and a relatively low resistance to piston travel is afforded. On slow entry of the piston into the cylinder the valve member remains seated and a relatively high resistance to travel of the piston is afforded.

3,779,397
RAILWAY CAR COUPLER
Kenneth Louis De Penti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Apr. 21, 1972, Ser. No. 246,415
Int. Cl. B61g 3/04
U.S. Cl. 213—151 6 Claims



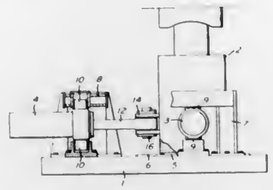
A railway car coupler of the knuckle type has the contour of its knuckle modified so as to increase the gathering range of the coupler, particularly during knuckle-to-knuckle engagement between two couplers as they come together for coupling from positions in which they are displaced laterally relative to one another.

3,779,398
GOLF PUTTER
James T. Hunter, 6239 W. Marshall, Glendale, Ariz.
Filed Feb. 26, 1971, Ser. No. 119,301
Int. Cl. A63b 53/00, 69/36
U.S. Cl. 273—183 D 2 Claims



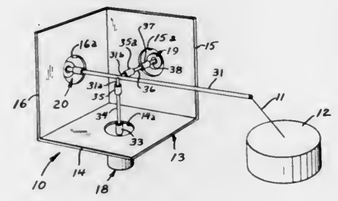
A golf putter wherein the club head includes an arcuate rear surface and a top surface having a recess therein. The arcuate rear surface has a radius of curvature slightly less than the radius of curvature of a golf putting cup. The recess in the top surface is generally in the shape of a semi-circle having a radius of curvature which is slightly greater than the radius of curvature of a golf ball. The semi-circular recess includes a bottom formed by an insert and opens into the rear arcuate surface whereby the club head may be inserted into a putting cup to scoop balls into the semi-circular recess for retrieving balls without stooping. A vertical plane bisecting the semi-circular recess and arcuate rear surface passes through the sweet spot on the front face of putter head, whereby the recess and rear surface facilitate aligning the putter head with the putting cup. The semi-circular recess includes substantially vertical side walls which the player can employ visually to assume substantially the same position relative the putter head each time the ball is addressed for putting and thereby supplement the kinesthetic training of the putting muscles.

3,779,399
ADJUSTING MECHANISM OF REMOVING HEAVY ARTICLE
Shuichi Shigeno, Sakura, and Masayoshi Ishii, Gifu, both of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha; Nihon Koki Kabushiki Kaisha, Minata-ku, Tokyo and Nippon Kokan Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan
Filed Dec. 30, 1971, Ser. No. 214,114
Int. Cl. B66f 3/24
U.S. Cl. 214—1 R 4 Claims



A mechanism for moving heavy articles such as blocks for use in constructing vessels, buildings or the like, for example, both vertically and horizontally by means of a vertically moveable jack for supporting the heavy article and slideable on a base and hydraulic cylinders connected to said jack and said base, capable of moving said jack laterally over said base.

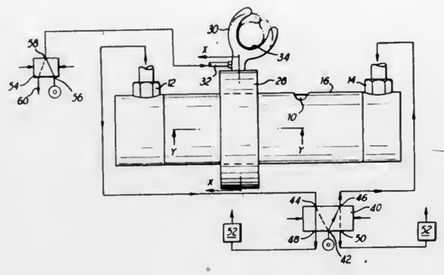
3,779,400
MICROMANIPULATOR SYSTEM
William H. Brockman, and Mary H. Greer, both of Ames, Iowa, assignors to Iowa State University Research Foundations, Inc., Ames, Iowa
Filed Feb. 14, 1972, Ser. No. 225,877
Int. Cl. B25j 3/04
U.S. Cl. 214—1 BB 2 Claims



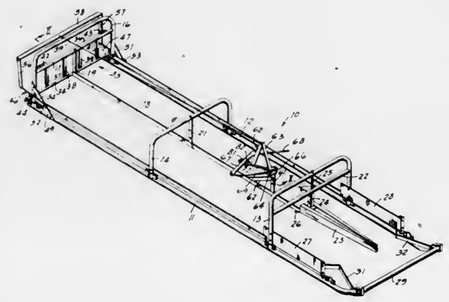
A system for manipulating tools or samples over very small distances uses orthogonally-oriented linear electromechanical transducers connected to a tool by means of a bendable linkage to control the position of the tool. A control stick is connected to three linear potentiometers, and when it is moved by an operator in a desired direction, the potentiometers are positioned to generate signals to control their associated electromechanical transducers such that the tool or the sample moves in the desired direction, also.

3,779,401
PNEUMATIC DEVICE FOR MOVING ARTICLES
George Carroll, 12 Palmerston, Stockport, England
Filed Feb. 17, 1972, Ser. No. 227,570
Claims priority, application Great Britain, Feb. 18, 1971, 4,890/71
Int. Cl. F01b 1/00
U.S. Cl. 214—1 BB 8 Claims

A device for moving articles comprising a cylinder of non-ferrous material, a piston including a magnet movable within said cylinder, means for controlling the admission of pressure fluid to the cylinder for moving said piston and a body disposed outside and adjacent to said cylinder, said body including a magnet, the arrangement being such that movement of said piston causes a corresponding movement of said body.

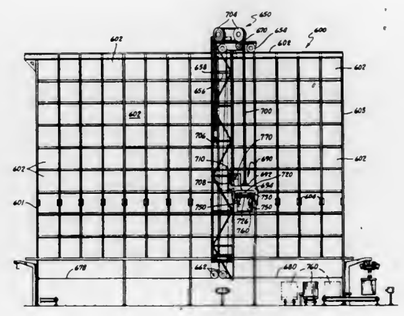


3,779,402
AUTOMATIC GATE FOR HAY BALE ACCUMULATOR
Gary L. Erlenbusch; Calvin N. Hansen, and Richard H. Mott, all of Sioux Falls, S. Dak., assignors to Du-Al Manufacturing Company, Sioux Falls, S. Dak.
Filed Oct. 2, 1972, Ser. No. 294,027
Int. Cl. B65g 67/00, 57/20
U.S. Cl. 214—6 B 8 Claims



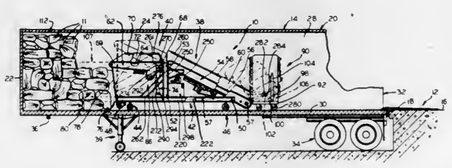
An automatic gate for a hay bale accumulator which includes a control arm mounted to pivot about a substantially horizontal axis as bales of hay are alternately received in the accumulator until such time that feeler arms attached to the control arm are prevented from rotating about a horizontal axis because the bale accumulator is substantially full. At this time the control arm moves upwardly about a horizontal axis at right angles to the first axis so as to actuate a trip arm to trip the latch of a tailgate so as to allow the bales to be unloaded.

3,779,403
CONTAINER STORAGE AND HANDLING APPARATUS
Robert R. Young, Danville, Calif., assignor to Kaiser Industries Corporation, Oakland, Calif.
Division of Ser. No. 842,158, July 16, 1969, Pat. No. 3,630,402, which is a continuation-in-part of Ser. No. 717,174, March 29, 1968, Pat. No. 3,543,952. This application Mar. 8, 1971, Ser. No. 121,979
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A 5 Claims



Apparatus for handling large heavy containers and similar loads and especially for transferring the same among the compartments of a vertical array of compartments and a separate transfer station and more particularly a crane for picking up and depositing such loads outside of a compartment, for inserting such loads into the compartments and depositing the same therein, and for picking up the loads within the compartments and removing the same therefrom.

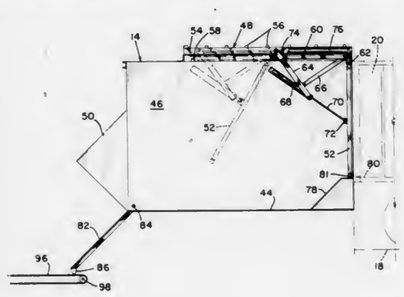
3,779,404
APPARATUS FOR LOADING MAIL BAGS INTO A HIGHWAY VEHICLE
Joseph E. McWilliams, 1345 Canterbury Ln., Glenview, Ill.
Filed July 27, 1972, Ser. No. 275,790
Int. Cl. B65g 67/08
U.S. Cl. 214—41 11 Claims



The invention relates to loading of mail bags from a loading dock into an end loading highway vehicle to fully and completely load the vehicle, in which a wheeled frame is provided with an upright support on which is mounted a forward conveyor section for swinging movement about a horizontal axis adjacent its rearward end for elevational distribution of the mail bags, and that carries a high speed bag propelling belt conveyor. Associated with the wheeled frame is a second conveyor section having its forward end approximating the elevation of the rearward end of the first conveyor section, and hav-

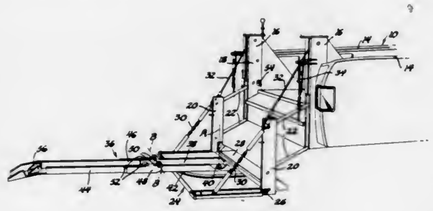
ing its rearward end at an elevation for convenient manual loading of mail bags thereon. The second conveyor section includes a belt conveyor operating at a lower speed for conveying mail bags received thereon to the high speed propelling conveyor. Both conveyor sections have dimensions transversely thereof that substantially span the transverse dimension of the vehicle loading area, and several ways are disclosed for supplying mail bags from the loading dock to the belt of the second conveyor section, either in single bag form or in multiple bag form.

3,779,405
VEHICLE UNLOADING APPARATUS
Daniel E. Kavanaugh, Jr., Far Hills, N.J., assignor to Mail Express, Inc., Elizabeth, N.J.
Continuation of Ser. No. 21,835, March 23, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,752
Int. Cl. B65g *67/40*
U.S. Cl. 214—46 **8 Claims**



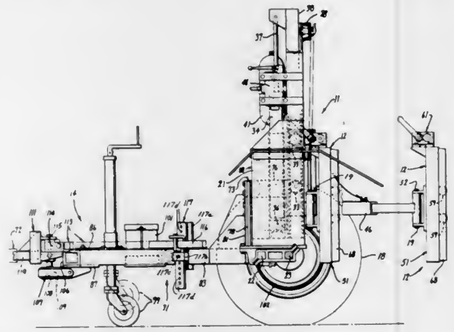
Apparatus for unloading material from a vehicle supported upon a platform tilted to a desired elevation by a fluid ram. The flow of material from the vehicle into a receiver and subsequently to a take-away conveyor assembly is regulated by a gate member mounted for pivotal movement as well as longitudinal displacement within the receiver.

3,779,406
VEHICLE CARGO BED LOADER FOR ELONGATED ARTICLES
Christof Hermann, St. Clair Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 28, 1972, Ser. No. 292,967
Int. Cl. B60p *1/44*
U.S. Cl. 214—77 P **10 Claims**



A vehicle includes an elevated cargo bed accessible through a generally rectangular gate opening selectively closed by a generally rectangular gate which supports a loader for elongated articles. The gate is pivotally mounted by support members for movement about a transverse vehicle axis between a vertical position closing the gate opening and an elevated horizontal position generally aligned with the plane of the cargo bed. Four-bar linkages mount the support members so as to move the horizontal gate between the elevated position and a lower position adjacent ground level. The loader includes a first channel-shaped article receiving member with one end pivoted to the upper side of the horizontal gate at a central portion thereof adjacent the pivotal axis of gate movement. A second channel-shaped article receiving member of the loader has a flanged bifurcated end pivoted to the free end of the first article receiving member about an axis normal to the side walls of these members. The loader is movable to an unfolded loading position where the flanges of the second member locate the members in an alinged relationship on the horizontal gate so as to extend outwardly from the gate opening. The four-bar linkages translate the horizontal gate between its elevated and lower positions and thus move the unfolded loader between the ground and the cargo bed so as to facilitate loading and unloading of elongated articles on the cargo bed. The loader is also movable to a folded storage position where the members extend transversely of the gate opening and are stored adjacent the plane of the cargo bed with the gate in its vertical position closing the gate opening. A vehicle mounted flange engages the free end of the second article receiving member to automatically maintain the loader in the storage position during operation of the vehicle.

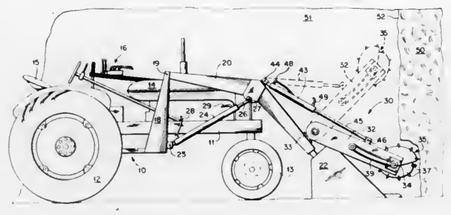
3,779,407
VEHICLE LIFTING AND TOWING APPARATUS
Luke D. Gillem, Orinda, Calif., assignor to Roger W. McCoy, Piedmont, Calif., a part interest
Filed May 24, 1971, Ser. No. 146,294
Int. Cl. B60p *3/12*
U.S. Cl. 214—86 A **6 Claims**



An apparatus for lifting one end of a disabled vehicle and for coupling it to a towing vehicle in which the apparatus itself comprises a wheel supported carriage for assuming the majority of the load of the disabled vehicle and being constructed and connected to the towing vehicle in a manner permitting a relatively light weight towing vehicle to lift and tow a relatively heavy weight disabled vehicle.

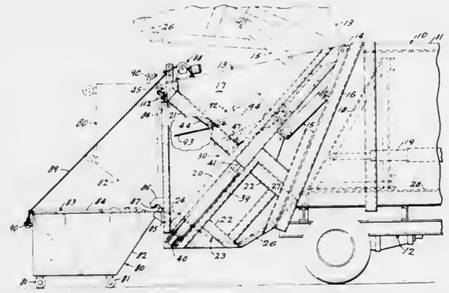
3,779,408
FRONT-MOUNTED SILAGE TILLER FOR A FRONT-END LOADER
Louis E. Ivie, 138 Jackson St., Lawrenceburg, Tenn.
Filed July 10, 1972, Ser. No. 270,096
Int. Cl. E02f *3/70*
U.S. Cl. 214—145 **5 Claims**

A silage tiller for mounting on the front-end loader of a tractor vehicle, in which the front-end loader has a pair of loader arms pivotally mounted on the vehicle frame and supporting a loader bucket at the front ends of the loader arms. The silage tiller includes a pair of tiller arms pivotally mounted upon the loader arms on opposite sides of and projecting forward of the bucket. A rotary tiller head is rotatably mounted between the front ends of the tiller arms, and a motor is mounted on the tiller arms for driving the tiller head. A linear motor is pivotally connected between the loader arms and the tiller



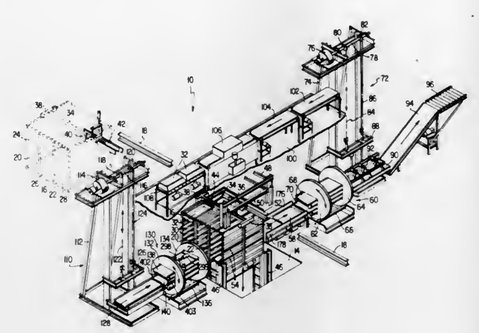
arms for swinging the tiller head from a lower position in front of the bucket for tilling silage in a trench silo to a raised inoperative position above the bucket.

3,779,409
CONTAINER DUMPING MECHANISM FOR A REAR LOADER REFUSE VEHICLE
William A. Herpich, and Donal W. Chaney, both of Galion, Ohio, assignors to Peabody Galion Corporation, Galion, Ohio
Filed Aug. 31, 1972, Ser. No. 285,536
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **7 Claims**



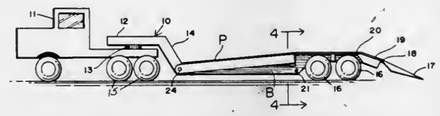
A rear-loading refuse vehicle having a tailgate that is pivotally mounted at its upper forward end to the rear of the vehicle body. The tailgate has a hopperlike bottom into which refuse is dumped through an open rear end that has a horizontal sill. A transversely-extending packer blade extends across the tailgate and is movably mounted within the tailgate by a plurality of hydraulic cylinders to move in a closed, loop-like path, one leg of which lies in close proximity to the hopper bottom and the return leg of which is in vertically spaced relationship above the hopper bottom. Means are provided for grasping, elevating, and tilting an open-top refuse container over the horizontal sill so that the contents of the refuse container are dumped into the tailgate. To facilitate the dumping action, a raking mechanism, comprising fork-like tines, is shiftably mounted on the packer blade and means are provided for projecting the tines into the interior of the elevated container as the packing blade approaches its rearmost position and for moving the tines downwardly and forwardly through the container to assist in discharging any compacted contents of the refuse container out of the container and into the tailgate, as the packer blade moves forward through the hopper.

3,779,410
MECHANIZED GUM BASE PAN UNLOADER
Michael Phillips, North Brunswick, and Victor A. Jurow, Freehold, both of N.J., assignors to L. A. Dreyfus Company, South Plainfield, N.J.
Filed Aug. 17, 1971, Ser. No. 172,451
Int. Cl. B65g *65/00*
U.S. Cl. 214—311 **22 Claims**



Disclosed is a machine for automatically unloading chewing gum base materials from cooling pans or trays. A carriage is indexed vertically into a pit in the factory floor and pans supported at their upper edges by flanges in the carriage have their undersides successively engaged by a chain conveyor supported on a table in the pit so that the pans are raised and propelled laterally by the conveyor out of the carriage. The pans are inverted, lifted and vibrated to separate the gum base from the pans. The pans are then coated with a release agent, reinverted and reloaded into the carriage as it moves upwardly out of the pit. The carriage is horizontally indexed so that several banks of pans may be unloaded, emptied and reloaded.

3,779,411
LOW BED TRAILER FOR HEAVY EQUIPMENT
Joseph G. Moretti, Jr., 2455 N.W. 6th St., Miami, Fla.
Filed Dec. 11, 1972, Ser. No. 314,235
Int. Cl. B60p *1/04*
U.S. Cl. 214—505 **2 Claims**

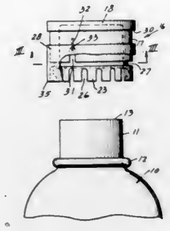


A low bed trailer for hauling heavy equipment having a horizontally disposed bed positioned at a substantially lower level than that of the rear loading platform and the gooseneck between which the bed is mounted; the bed having equipment supporting deck means pivoted at one end to the forward end portion of the deck and power operated lift means for raising the other end of the deck to the level of the rear loading platform whereby equipment may be rolled from the rear loading platform onto the equipment supporting deck; then the latter is pivoted downwardly to its horizontal and lowermost position to provide the equipment with a minimum overhead clearance and the combined trailer and equipment with the center of gravity thereof at absolute minimum of height above the ground for safe hauling.

3,779,412
LOCKING FINGER SEALED CAP

Joseph M. Kirton, 968 North 800 West, Woods Cross, Utah

Filed Sept. 8, 1971, Ser. No. 178,718
Int. Cl. B65d 55/02
U.S. Cl. 215—9 1 Claim

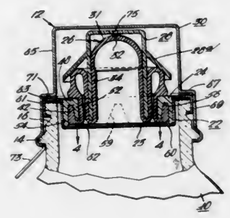


A locking cap for a bottle having a cap with downwardly extending fingers receivable over a rim formed on a bottle and including an annular slidable locking ring on the cap which when aligned with the cap in a first position is movable away from the flexible fingers so that they may flex outwardly and release the rim of the bottle and movable to a second position on the cap so as to substantially enclose the flexible fingers so that they cannot flex outwardly and the cap is locked to the bottle. A tongue and groove arrangement is formed between the ring and cap so that the ring may be moved from the locked to the unlocked position only when a particular orientation exists between the ring and the cap.

3,779,413
PRIMARY NURSER ASSEMBLY

Fred T. Pickerell, Royersford, and Dominic J. Brignola, Phoenixville, both of Pa., assignors to The West Company, Phoenixville, Pa.

Filed June 18, 1971, Ser. No. 154,505
Int. Cl. A61j 9/00
U.S. Cl. 215—11 C 18 Claims

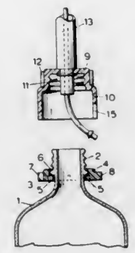


A primary nurser assembly for mounting over the opening in a container comprising a dam member spanning the opening and having a portion at least partially detachable to provide an access opening for discharge of the contents of the container, a nipple having a base portion overlying the dam, a pusher element engageable over the feeding tip of the nipple operable upon displacement toward said dam to partially detach said portion, and an outer cover assembly hermetically sealing said elements.

3,779,414
ANAESTHETIC SUPPLY

Wilfred Jones, Keighley, England, assignor to Cyprane Limited, Keighley, Yorkshire, England

Filed May 10, 1972, Ser. No. 252,114
Claims priority, application Great Britain, May 10, 1971, 14,023/71
Int. Cl. B65d 55/02
U.S. Cl. 215—44 13 Claims

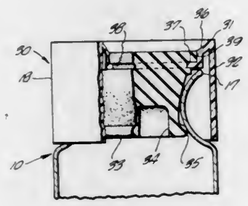


The specification discloses the combination of a bottle and a connecting cap therefor, both components having mating screw threads, the components having a mating key and keyway system extending axially of the bottle neck and being designed so that mating of the key and keyway system is necessary before relative rotation between the cap and the bottle to screw the cap onto the bottle is possible. Thus, a connecting cap can only be secured to a bottle if the bottle and cap are complementary and the potential danger of connecting a bottle containing the wrong liquid to, for example, an anaesthetic vapouriser, can be avoided.

3,779,415
COMBINED FILTER PAPER SUPPORT AND FILTRATE CONTAINER

Roy T. Eddleman, Beverly Hills, and Richard L. Schmitz, Diamond Bar, both of Calif., assignors to Spectrum Medical Industries, Inc., Los Angeles, Calif.

Filed Apr. 29, 1971, Ser. No. 138,617
Int. Cl. B65d 39/00
U.S. Cl. 215—48 11 Claims

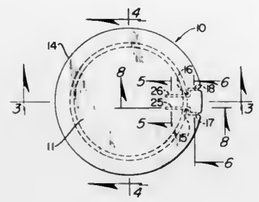


A container capable of functioning as a combined filter paper support and filtrate holder is disclosed which comprises a self-standing body portion which narrows into a neck area which in turn flares outwardly to the upper lip. The size of the neck area and flared portion are selected so that they are capable of supporting a conical filter medium such as a folded piece of filter paper. The container is further adapted to be tightly closed by a flexible stopper having an exterior, downwardly extending protective skirt which extends over the lip area as well as the outside of the neck and flared portions.

3,779,416
FLEXIBLE SEALING CLOSURE WITH FRANGIBLE SECTION

Henry O. Wilcox, Lakewood, Colo., assignor to Denver Plastics, Inc., Lakewood, Colo.

Filed Nov. 15, 1971, Ser. No. 198,715
Int. Cl. B65d 17/00, 45/00
U.S. Cl. 220—27 11 Claims

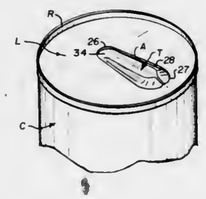


A flexible sealing closure for an opening in the wall of a container, such as in the top closure wall of bulk containers for milk, includes a cover portion having a pull tab forming an outwardly projecting extension thereof and a flange portion depending from one side of the cover portion. The flange portion has a circumferentially continuous surface with an intermediate annular sealing ring portion and a lower annular holding lip portion. Weakened sections in the closure are provided by reductions in wall cross section which are located in such a way as to insure that the pull tab breaks away from the flange and tears away a part of the cover portion along shear line portions upon the application of a pulling force to the pull tab to provide a hole of a selected size in the cover portion.

3,779,417
FLEX TAB FOR A GATED CAN LID

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo.

Filed Feb. 14, 1972, Ser. No. 225,920
Int. Cl. B65d 17/00
U.S. Cl. 220—27 15 Claims

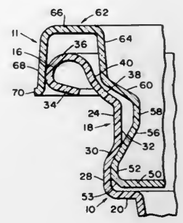


The invention concerns a gated can lid having a tab therein defined by a score line, to be pushed into the can as the metal neck between the tab and the lid at the score line is severed. The tab is dished upwardly to a convex form which may be flexed, by pushing, to a downward concave form with the periphery of the tab hinging about the metal neck at the score line as the flexing occurs. A disruption, such as a crease, is formed across the score line at a selected point to cause a positive rupture of the metal neck at the score line as the tab is pushed from the convex to the convave position, such rupture initiating and facilitating the tearing away of the tab from the can lid as the tab is then pushed inwardly into the can.

3,779,418
DISPOSABLE PLASTIC CONTAINER AND COVER

Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed Nov. 8, 1971, Ser. No. 196,567
Int. Cl. B65d 43/10
U.S. Cl. 220—60 R 4 Claims

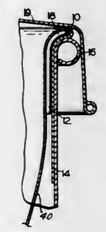


A disposable plastic container and cover wherein the container has an upwardly and outwardly flaring side wall and a rolled rim at the top. The container has an external lower shoulder in the side wall spaced below the rim and an undercut portion that joins the rim region with the external shoulder. An inwardly concave wall section joins the crown of the rim with the top of the undercut portion. The lid includes a bead which engages the undercut portion of the container and an upwardly and outwardly inclined upper inner shoulder which forms a seat for the bead of an identical lid when stacked on it. The upwardly and outwardly inclined upper inner shoulder which forms a seat for the bead of an identical lid when stacked on it. The upwardly and outwardly extending lid shoulder gives a low stack height to a lid stack, it cooperates with the inwardly concave face of the container side wall for a proper lid fit, and it centers the lid with the adjacent lid when nested.

3,779,419
HOLDER FOR FLEXIBLE RECEPTACLE LINERS

Charles T. Heitz, 7200 S.E. 92nd Ave., Portland, Oreg.

Continuation-in-part of Ser. No. 802,521, Feb. 26, 1969, abandoned, and a continuation-in-part of Ser. No. 768,395, Oct. 17, 1968, abandoned. This application Feb. 10, 1971, Ser. No. 114,325
Int. Cl. B65d 25/14
U.S. Cl. 220—63 R 11 Claims



A holder having a hollow frame body member with a selected diameter whereby to seat on the top edge of a receptacle such as a garbage can. The holder has an upright portion arranged to lie along a vertical surface of the receptacle adjacent its opening. Some embodiments have an outwardly extending upper portion arranged to seat on the top edge of the receptacle. Also, some forms of the invention have a pair of

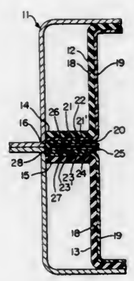
disconnected ends, and means are provided for receiving the disconnected ends and connecting them together. The body member is arranged to receive an upper portion of the liner up through the hollow center thereof and to have the upper portion of the liner folded over the outside of the body member, whereby upon supporting the body member on a receptacle the upper portion of the liner can be tucked inside the receptacle with the body member of the holder engaging a portion of the liner between it and the receptacle. A method of installing a holder and liner assembly in a receptacle comprises seating the holder on the container top, placing the liner in the receptacle and draping surplus material over the outside of the receptacle, raising the liner and holder high enough to tuck the surplus material inside, and then reseating the assembly.

3,779,420

FLUID CONTAINER

Ernest Knaus, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 13, 1971, Ser. No. 171,676
Int. Cl. B65d *25/16, 89/02*
U.S. Cl. 220—63 R **10 Claims**



A flexible fuel container having an outwardly projecting pinch seam around the peripheral outermost edges thereof. The seam is capable of extending or expanding in a direction normal to the direction of the projecting seam in order to provide increased fluid-holding capacity in the container. The flexible containers are particularly useful as vacuum-formed fuel containers which are disposed within vehicle fuel tanks.

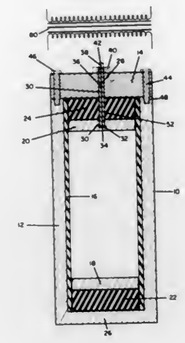
3,779,421

APPARATUS FOR CONTAINING HIGHLY CORROSIVE MATERIALS UNDER PRESSURE

Larry P. Brown, and Vaughan W. Rhoades, both of Tulsa, Okla., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 22, 1971, Ser. No. 191,663
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 **3 Claims**

An improved apparatus for containing highly corrosive materials under pressure. The apparatus is utilized in conjunction with a housing having a blind end machined in its bottom and an open end to which a top is connected. The improvement of the present invention comprises means for isolating the corrosive materials to be contained under pressure from the housing and forming a seal having increasing sealing ability in relationship with increasing pressures exhibited in the housing.

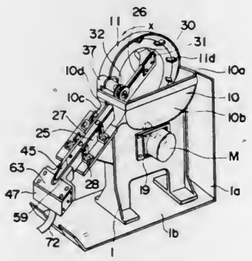


3,779,422

FASTENER FEEDING APPARATUS

Yubi Mori, Neyagawa; Tamoisu Tanaka, Hirakata; Shoji Hara, Neyagawa; Masakatu Iwashita, Kantano, and Yasuyuki Igaki, Tsuzuki-gun, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan

Filed July 18, 1972, Ser. No. 273,020
Int. Cl. B23g *7/00*
U.S. Cl. 221—10 **15 Claims**



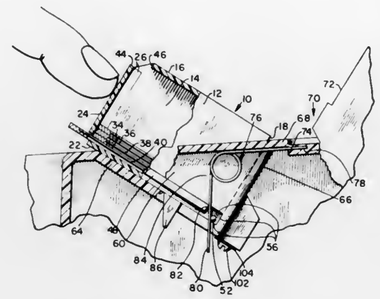
A fastener feeding apparatus for use in an operative association with a power operated fastening tool such as a screw driver or rivetting tool, which comprises a chute section including a rotary drum and a fastener receiving funnel, a drive section including an electrically operated motor for rotating the drum to scoop a plurality of fasteners upwardly from the bottom of the funnel, a chute section including a pair of spaced rails providing a track along which the scooped fasteners are downwardly guided, either rail being provided with a pair of spaced electrodes electrically connected with the drive section for controlling the supply of fasteners in response to the presence of the row of fasteners on the track, and an escapement section for successively transferring each of the fasteners from the track onto the power operated fastening tool.

3,779,423

PHOTOGRAPHIC SLIDE DISPENSER

Peter T. Quinn, Englewood, and Bruce W. Schroeder, Littleton, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 6, 1972, Ser. No. 215,728
Int. Cl. B65g *59/06*
U.S. Cl. 221—186 **10 Claims**



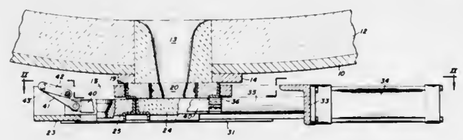
A slide dispenser including a slide box slidably supported in an inclined recess in a support member and having slots in the top and bottom front wall and rear bottom wall thereof. Detents on the box cooperate with spring means to allow limited sliding movement of the box while retaining the box in the recess. A slide pusher carried by the support member extends through the slot in the rear wall of the box and abuts against an edge of the bottom slide whereby sliding movement of the box causes the opposite edge of the bottom slide to be pushed through the slot in the bottom front wall of the box.

3,779,424

OPERATING MECHANISMS AND METHODS FOR SLIDABLE-GATE CLOSURES

Earle P. Shapland, Jr., Champaign, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 74,785, Sept. 23, 1970. This application Feb. 23, 1972, Ser. No. 228,597
Int. Cl. B22d *37/00*
U.S. Cl. 222—1 **23 Claims**



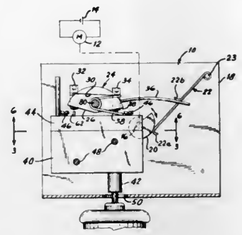
A mechanism for operating slidable gate closures on a bottom-pour vessel. The gates are individual blanks for closing the nozzle in the bottom of the vessel, or orifice gates for permitting pouring. Initially, the blank is positioned in line with the nozzle, while the orifice gate is supported temporarily in the space between the blank and a gate-pulling means. Gates can be loaded into this space without interference from the propelling means, which is located at the opposite side of the vessel. To start pouring, the two gates are pulled toward the propelling means to align the orifice gate with the nozzle and displace the blank. In one embodiment the two gates later can be pushed back along rails to return the blank into alignment with the nozzle to stop pouring, and the orifice gate can be removed or replaced without changing the blank. In another embodiment each time a new gate is pulled into alignment with the nozzle, the displaced gate drops from the mechanism.

3,779,425

PERIODICAL DISPENSER FOR AEROSOL CONTAINERS

Herbert S. Werner, Melville, N.Y., assignor to Mista-Matec Corporation, Lynbrook, N.Y.

Continuation-in-part of Ser. No. 851,389, Aug. 19, 1969, Pat. No. 3,610,471. This application Oct. 4, 1971, Ser. No. 186,242
Int. Cl. G01f *11/30*
U.S. Cl. 222—70 **14 Claims**



In an actuator for periodically dispensing metered quantities of the contents of an aerosol container, a housing is provided having means for maintaining the valve stem of the aerosol container in an open position. A metering chamber, formed in the housing, is provided with first valve means that communicate with the interior of the aerosol container and the metering chamber. The housing is also provided with second valve means that communicate between the metering chamber and the atmosphere by means of a passageway. Means responsive to drive means having low power requirements are used to concurrently reverse the position of the first and the second valve means on a periodical basis, so that a metered quantity of the contents of the aerosol container is discharged into the atmosphere from the metering chamber when the second valve is open. The metering chamber is filled when the position of the valve means is reversed. Adjustable means are used to axially displace pins in the first and second valve means. In addition, an improved gasket is provided transversely of the valve pins for sealing the valve pins from the metering chamber and from the passageway.

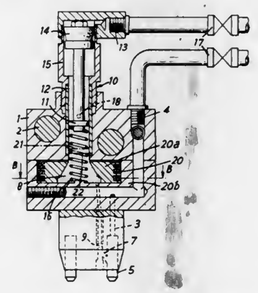
The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,779,426

ADHESIVE APPLICATOR

Roger Frederick Mawby, Bradford on Avon, England, assignor to C.I.C. Ralphs Limited, Bath, Somerset, England

Filed May 15, 1972, Ser. No. 253,563
Claims priority, application Great Britain, May 19, 1971, 15,879/71
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 **11 Claims**



An adhesive applicator for use in the lasting of shoes, the applicator including a reservoir for molten adhesive, an air

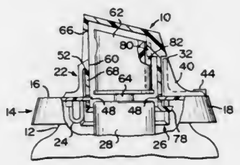
passage leading to a nozzle through which air under pressure is supplied, a pump for feeding molten adhesive into a moving air stream in the air passage, and means for feeding predetermined quantities of adhesive into the reservoir. In operation the applicator is so controlled that the desired quantity of adhesive is first fed to the reservoir, air under pressure is caused to flow through the air passage and nozzle and the pump is then operated to expel the desired quantity of adhesive into the air passage.

3,779,427

SAFETY CLOSURE ADAPTOR

Ronald F. Ewald, Rolling Meadows, Ill., assignor to Seaquist Valve Company, Division of Pittway Corporation, Cary, Ill.

Filed July 21, 1972, Ser. No. 273,879
Int. Cl. B65d *83/14*
U.S. Cl. 222—153 **13 Claims**



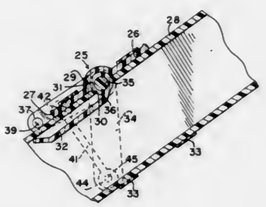
A childproof safety closure for an aerosol dispenser comprising a button depressor having a locking rim and arming lug arranged in cooperative relation with a mounting cup adaptor having a split locking ring wherein the locking ring and locking rim operatively engage each other to hold the button depressor out of operative engagement with the button actuator to prevent actuation of the dispenser when in the "locked" position and wherein rotation of the depressor and arming lug relative to the adaptor moves the locking ring out of operative engagement with the locking rim thereby "arming" the dispenser for actuation and on actuation the system automatically goes to the "locked" position.

3,779,428

SEED CONTROL GATE FOR PLANTERS

Jack L. Bauman, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 13, 1971, Ser. No. 162,090
Int. Cl. F16k *1/20, 31/56*
U.S. Cl. 222—498 **9 Claims**



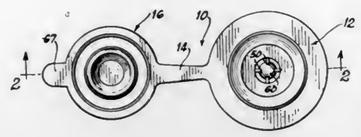
A seed dispenser for planters in which seed is fed by gravity from a hopper through a seed delivery chute to a device which meters the seed and discharges it to the planter furrow openers. A control gate is mounted in the seed chute and is movable from an open to a closed position to shut off the flow of seed to the metering device.

3,779,429

PLASTIC DISPENSING NOZZLE WITH A BALL VALVE

John C. Porcelli, Lincolnwood, Ill., assignor to Federal Tool & Plastics, a Division of VCA Corporation, Chicago, Ill.

Filed Dec. 17, 1971, Ser. No. 209,253
Int. Cl. B65d *5/72*
U.S. Cl. 222—500 **8 Claims**



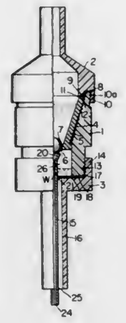
A plastic nozzle in combination with a closure cap in which the interior of the nozzle is provided with a valve cage or valve housing for retaining and supporting a ball valve to prevent entrance of foreign matter through the nozzle into the container when the ball valve is in its normal seated position, but which permits the discharge and dispensing of the material in the container when the container and nozzle are tilted or inverted for pouring position.

3,779,430

WATER DISPENSER FOR SMALL ANIMALS

Motohiro Niki, 22-11, 2-chome, Yushima, Bunkyo-ku, Tokyo, Japan

Filed Aug. 15, 1972, Ser. No. 280,855
Claims priority, application Japan, Aug. 16, 1971, 46/62197; May 24, 1972, 47/50754
Int. Cl. B65d *25/44*
U.S. Cl. 222—501 **11 Claims**



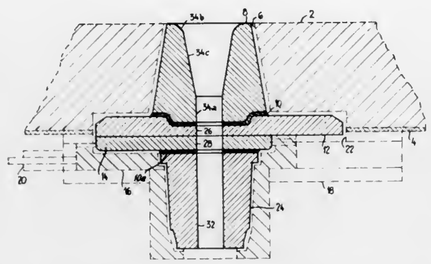
A funnel securely mounted within a casing has a metal ball displaceably fitted in its bottom opening. A tube swingably supported by a rubber disk has its funnel-shaped upper end positioned opposite to the ball partly projecting out of the bottom opening of the funnel. When the tube is swung about the disk by the application of a force at its lower end, the funnel-shaped upper end of the tube lifts the ball by leverage, so that water stored in the funnel flows down into the tube. In another embodiment of the invention, the spacing between the ball and the funnel-shaped upper end of the tube is made adjustable to regulate the rate of water flow into the latter.

3,779,431

SLIDE CLOSURE MECHANISM FOR CASTING VESSELS FOR LIQUID METALLIC MELTS

Bernhard Tinnes, Zollikon, and Hans Bieri, Pfaffikon, both of Switzerland, assignors to Metacon AG, Zollikon, Switzerland

Continuation of Ser. No. 42,299, June 1, 1970. This application Dec. 4, 1972, Ser. No. 311,742
Claims priority, application Switzerland, June 9, 1969, 8725/69
Int. Cl. B22d *37/00*
U.S. Cl. 222—561 **5 Claims**



A slide closure mechanism for casting vessels or the like, comprising a bottom block having a melt throughflow opening provided for the casting vessel, said throughflow opening including a substantially circular-shaped inlet portion. There are further provided a base plate, a movable slide plate and a discharge member cooperating with said bottom block. The base plate, movable slide plate and discharge member each have a respective opening for passage of the melt. The opening of the base plate communicates with the interior of the casting vessel via the throughflow opening of the bottom block. The opening of the base plate and the opening of the slide plate each possess a substantially elongate cross-sectional configuration, wherein the primary direction of extension of said base plate- and slide plate- openings is substantially transverse to the direction of movement of the movable slide plate. The opening of the discharge member and the opening of the bottom block likewise possess a substantially elongate cross-sectional configuration at least at the regions thereof directly neighboring the slide plate and base plate, respectively. The discharge member- and bottom block-openings at said neighboring regions likewise possessing a primary direction of extension which is substantially parallel to the primary direction of extension of the openings of the slide plate and base plate, and the cross-sectional area of the opening of the discharge member reduces in the flow direction of the melt.

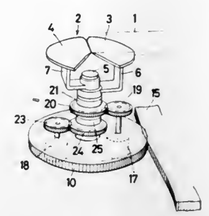
3,779,432

METHOD OF AND APPARATUS FOR AUTOMATIC BAG REVERSING

Kenji Fukuta; Junichi Sekiguchi; Rihei Miyashita, all of Yokohama; Yoshihira Matsuzaki, Chigasaki-shi, and Yoshihiro Miura, Yokosuka-shi, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 26, 1971, Ser. No. 192,459
Claims priority, application Japan, Oct. 27, 1970, 45/94563; Nov. 12, 1970, 45/99637
Int. Cl. A41h *43/00*
U.S. Cl. 223—39 **2 Claims**

This invention consists of clamping both ends of a bag with a pair of clamps each composed of two clamping plates for holding the respective ends of the bag between them from the inside and outside of the bag and rotating the pair of clamps in their respective inward directions with their clamping plates



holding the ends of the bag between them so that the bag is turned inside out and outside in.

3,779,433

WIG STAND

Sukeyoshi Imai, 229 Naka Takase, Tomioka, Japan

Filed Dec. 22, 1971, Ser. No. 210,664
Claims priority, application Japan, Apr. 9, 1971, 46/27394
Int. Cl. D06c *15/00*
U.S. Cl. 223—66 **1 Claim**



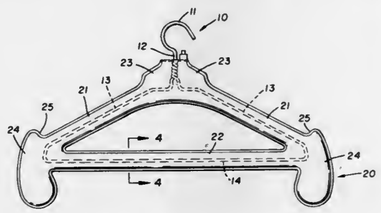
A wig stand having a top portion adapted to support a wig and mounted to a base portion by a telescoping shaft. The base contains a receptacle which surrounds the telescoping shaft and is covered by a cover having an aperture sized to receive said shaft. The top portion includes a plurality of smaller apertures through which pins may be pressed to fasten said wig to said stand as well as a plurality of larger apertures which have raised edges protruding upwardly from said top portion for engaging the underside of said wig and providing ventilation thereto.

3,779,434

HANGER FORM

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio

Continuation-in-part of Ser. No. 183,409, Sept. 24, 1971, abandoned. This application Feb. 9, 1972, Ser. No. 224,890
Int. Cl. A47j *51/097*
U.S. Cl. 223—88 **7 Claims**



An inflatable form to be attached to a conventional wire coat hanger that includes two halves which can be joined together by adhesive means to completely encompass the conventional hanger, following which the form can be inflated to

provide support for clothing. The device is configured so as to provide support in the neck region of the garment as well as support in the shoulder regions. A modified form of the invention also contemplates filling the interior of the form with foam material, thereby providing the necessary support while eliminating the problem of maintaining an air-tight chamber. Alternatively, the form can be made entirely of foam with the outer surface being created by the smooth skin formed by molding contact with the surface of the mold.

3,779,435

UNIVERSAL LUGGAGE RACK FOR PLACEMENT ON CYCLES WITH WHEELS OF VARIOUS DIAMETERS, SUCH AS VARIOUS SIZE BICYCLES

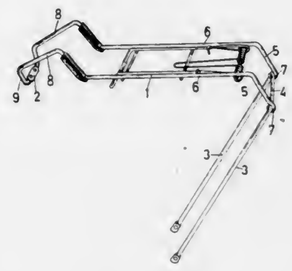
Heinz Niemann, Heresford, Germany, assignor to ESGE-Marby GmbH & Co., near Bielefeld, Germany

Filed Jan. 11, 1972, Ser. No. 217,066

Claims priority, application Germany, Jan. 13, 1971, G 71 01 034.9

Int. Cl. B62j *7/04*

U.S. Cl. 224—37 **5 Claims**



A frame forms a luggage support plane, the frame being formed either by parallel longitudinal bars, plastic walls or the like; one end of this support surface is adapted for attachment to the rear fork of a bicycle, the other end being formed with a downwardly extending projection. Support arms adapted to be attached at, or adjacent the axle of the rear wheels are hinged below the plane forming the support surface, at the downwardly extending projection, in such a manner and by such a distance that the arc described by the attachment end of the support arms, upon rotation or swinging movement over the hinge points, describes a circle which essentially includes the connection points for the luggage carriers of cycles made for various wheel diameters, while permitting folding of the arms into the carrier for transport when removed from a cycle.

3,779,436

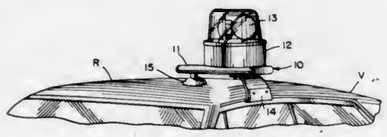
SUPPORTING BAR ASSEMBLY FOR VEHICLE

Oliver J. Burland, 214 Rugley Rd., Western Springs, Ill.

Continuation-in-part of Ser. No. 886,829, Dec. 22, 1969, Pat. No. 3,677,451. This application Feb. 17, 1972, Ser. No. 227,196. The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.

Int. Cl. B60m *11/00*

U.S. Cl. 224—42.1 G **9 Claims**



A supporting bar structure for a vehicle includes an elongated bar and a pair of end support means for supporting the bar above the roof of the vehicle. The bar includes substantially planar top and bottom surfaces, and at least one longitudinally extending T-shaped slot is provided in each of the surfaces. Attachment means are slidably received in each of the slots, and each attachment means includes shoulders which extend laterally outwardly beyond the edges of the slot to prevent removal of the attachment means therefrom. The bar is shorter than the width of the vehicle, and one of the support means includes clamping means for securing one end of the bar to the side of the vehicle roof which the other support means includes a suction cup for securing the other end of the bar to the vehicle roof. Each of the support means includes attachment means which are threadedly engageable with the attachment means in the bottom wall slot to tighten the shoulders of the attachment means in the slot against the bottom wall of the bar, and the attachment means in the top wall slot can be used to secure warning lights, sirens, and the like to the support bar.

3,779,437

APPARATUS FOR CUTTING THE EDGES OF SHEET GLASS

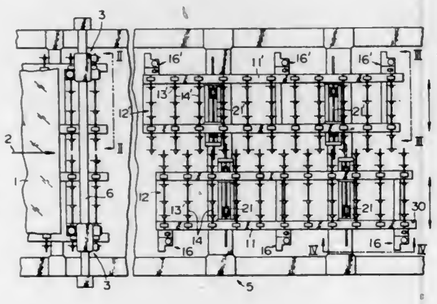
Yasumichi Yamamoto, and Kazuo Rokujo, both of Nishinomiya, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed June 26, 1972, Ser. No. 266,353

Claims priority, application Japan, July 6, 1971, 46/50112

Int. Cl. C03b *33/02*

U.S. Cl. 225—96.5 **9 Claims**



An apparatus for cutting the edges of a sheet glass, including at least two cutter means for providing cutting lines in the longitudinal direction at the desired positions across the glass sheet, two frames each having a conveyor for supporting the glass sheet and a break means for cutting the glass sheet along the cutting lines, and means for moving at least one of said frames so that said break means is in a predetermined relative position with respect to the cutting lines.

3,779,438

APPARATUS FOR MAINTAINING A PREDETERMINED RELATIVE POSITION OF A MOVING WEB OF MATERIAL AND AN ELEMENT

Erling Ingvar Nilsson, Lund, Sweden, assignor to AB Kelva, Lund, Sweden

Filed Apr. 11, 1972, Ser. No. 243,077

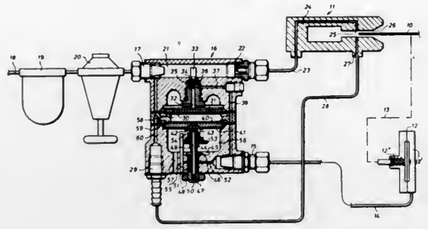
Claims priority, application Sweden, Apr. 14, 1971, 4798/71

Int. Cl. B65h *25/26*

U.S. Cl. 226—19 **6 Claims**

An apparatus for maintaining a predetermined position of a moving web of material in relation to an element comprises a pneumatic sensing means, and a control valve having a pressure chamber formed between two diaphragms. The pressure

in this pressure chamber is governed by a pressure signal supplied by the sensing means in dependence of the position of the web in relation to the element. The diaphragms are operatively connected with valve members controlling the pressure in a pressure box for adjusting the position of the web in dependence of the pressure in the pressure chamber.



3,779,439

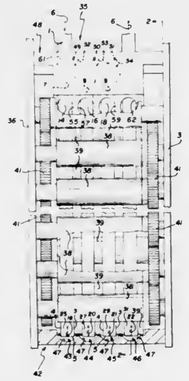
WEB GUIDING APPARATUS

Thomas C. Fessop, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1972, Ser. No. 258,591

Int. Cl. B65h *23/34*

U.S. Cl. 226—88 **6 Claims**



A web guiding apparatus is adapted for use with flexible web material (a) which has a longitudinal axis, two oppositely spaced longitudinal edges and a sensitive surface extending between the last-mentioned edges (b) and which when longitudinally bowed is generally resistive to transverse flexing. The apparatus guides such web material longitudinally along a multi-loop path having a series of parallel, path sections which are curved respectively about parallel, coplanar axes and individually have two spaced portions arranged in transversely offset relation. In the apparatus, a plurality of web guideways are provided for guiding such web material respectively along these path sections. Each of the web guideways has a web guiding surface which is contorted to longitudinally extend between the two, transversely offset portions of a respective one of the path sections. Also, since the web guiding surface is crosswise curved about the longitudinal axis of web material moving along the respective path section, and is longitudinally arched in substantially conformal relation with the curvature of the respective path section, the web guiding surface will abut only the two longitudinal edges of such a moving web so as to longitudinally bow the moving web without contacting the sensitive web surface and so as to support the same web for rotation about the longitudinal web axis.

3,779,440

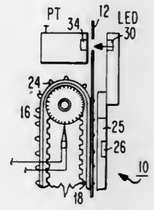
FORM RUN-OUT AND JAM DETECTOR FOR PRINTER

William R. Casale, Endwell; Fred Saltz, Binghamton, both of N.Y.; George R. Schreck, Montrose, Pa., and Emanuel V. Tomassini, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1972, Ser. No. 246,052

Int. Cl. G03b *1/30*

U.S. Cl. 226—74 **4 Claims**



An error counter counts the lines moved by a continuous form tractor. The error counter is reset by pulses generated by a detector connected to detect feed holes in the form as they pass. If the form jams, a form run-out occurs, or forms shingling occurs with multiple forms, the feed hole pulses are interrupted and the error counter advances to a predetermined error count, producing an error output signal to stop the machine and/or activate an error indicator.

3,779,441

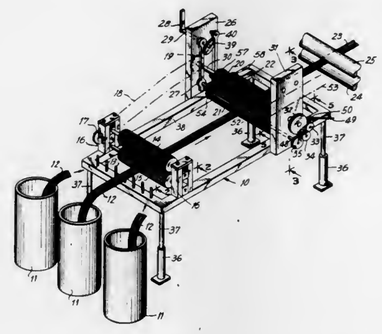
FABRIC TENSIONING APPARATUS

Henry Policella, 1826 Holland Ave., Bronx, N.Y.

Filed Mar. 16, 1972, Ser. No. 235,270

Int. Cl. B65h *17/42*

U.S. Cl. 226—111 **6 Claims**



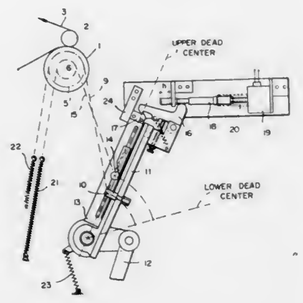
A fabric tensioning apparatus particularly suitable for synthetic fabrics, such as nylon and the like, having a first assembly of splined profile rollers for receiving lengths of crimped synthetic fabric and stretching this fabric under tension between a tripod assembly of rollers in a continuously moving manner so that the fabric can be fed directly to a cutting machine and cut to uniform lengths for use in carpets and the like.

3,779,442

FOIL TRANSPORT ARRANGEMENT IN HOT PROCESS EMBOSSING PRINTING MACHINES

Roland Wetzel, Ziegelhausen, and Hugo Rambausek, Wiesloch, both of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Nov. 23, 1971, Ser. No. 201,435
Claims priority, application Germany, Nov. 25, 1970, P 20 58 058.9
Int. Cl. B65h 17/26
U.S. Cl. 226—123 6 Claims



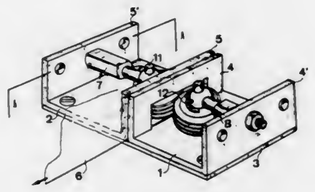
A foil transport arrangement in hot process embossing printing machines which provides intermittently acting forward pulls of the foil ribbon in different lengths and in a predetermined sequence. The various forward pulls are formed of several sequentially occurring normal forward pulls of a given length with a concluding longer forward pull. The invention permits the use of a large number of control steps by a plurality of oscillating elements which operate either singly or in combination, subject to automatic control by electrical impulses. The flexibility and control is largely obtained through the use of directional or free-wheeling couplings between a driven shaft and the forward pull assembly.

3,779,443

POSITIONING DEVICE FOR THE EDGE OF FLEXIBLE FILMS

Robert Regipa, Toulouse, France, assignor to Centre National D'Etudes Spatiales, Paris, France

Filed Apr. 6, 1972, Ser. No. 241,600
Claims priority, application France, Apr. 9, 1971, 7112661
Int. Cl. B65h 23/32
U.S. Cl. 226—199 3 Claims



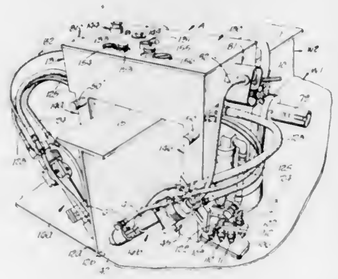
The disclosure herein describes a positioning device for at least one edge of a flexible film intended to travel continuously under the action of driving means in order to be subjected to a pre-determined operation. Two adjacent guiding elements include two oppositely facing surfaces spaced apart by a distance slightly greater than the thickness of the film; abutment means are provided with a positioning edge parallel to the direction of movement of the film. At least one pair of rollers are arranged symmetrically on each side of the guiding elements and are each provided with a flexible rolling skirt between which the film edge is elastically gripped; the plane of rotation of the skirts is slightly oblique with respect to the positioning edge so that the skirts of the rollers apply to the film forces directed towards the positioning edge, tending to apply the edge of the film against the positioning edge.

3,779,444

POWER PROPELLED WELDING AND CUTTING APPARATUS

Milo M. Kensrue, 11031 Cherryhill Dr., Santa Ana, Calif.

Continuation of Ser. No. 29,914, April 20, 1970, abandoned. This application Mar. 2, 1972, Ser. No. 231,419
Int. Cl. B23k 37/04
U.S. Cl. 228—4 31 Claims



Power propelled apparatus for welding, cutting and similar work operations, in which a wheel supported carriage attached to an elongate workpiece is movably guided therealong while performing the particular work operation along a desired locus line on the workpiece, the attached carriage having driving elements operable into clamped driving engagement with a portion of the workpiece, for example, the web of an I-member or other structural member. Appropriate tool means, such as one or more cutting torches, welding torches or the like, are mounted on the carriage and are continuously automatically oriented so as to track the locus line during carriage movement and perform the work operation therealong. For arc welding use, the torch has a nozzle into which an appropriate gas is fed, together with a welding electrode wire supplied from a source on the carriage. Adjustable control means provides for variations to meet different operating requirements, and includes means for automatically stopping and shutting off the apparatus upon its reaching the end of the workpiece.

3,779,445

APPARATUS FOR PRODUCTION OF CONCRETE REINFORCEMENT LATTICE

Oskar Palmer, Rembrandtstrabe 25, Dusseldorf 4, Germany

Filed May 11, 1972, Ser. No. 252,477
Claims priority, application Germany, May 12, 1971, P 21 23 501.8
Int. Cl. B23k 29/00
U.S. Cl. 228—5 8 Claims

Apparatus for forming wire mats for reinforced concrete in which wire is drawn from a reel and successively direced to parallel, adjacent support tubes, the wire being successively cut after a predetermined length of the wire has been deposited into a respective tube. The cut lengths of wire constitute the longitudinal wires of the mat, and these lengths are



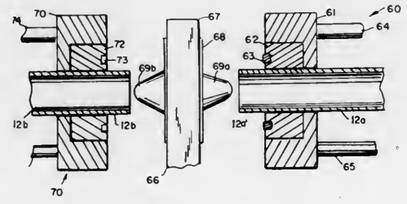
advanced from the tubes as a unit and fed into a welding machine where transverse lengths of wire are welded to the longitudinal wires at points of intersection.

3,779,446

WELDING APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation of Ser. No. 797,899, Feb. 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 362,870, April 27, 1964. This application Oct. 13, 1971, Ser. No. 189,018
Int. Cl. B23k 37/00
U.S. Cl. 228—15 5 Claims



A welding apparatus and method are provided which are particularly applicable to the welding of aligned and abutted sections of pipe and tubing. In one form, welding is effected by a spinning tool which heats and deforms portions of tube work members such as the flanged or abutted ends of tubing in a manner to weld same together. The apparatus and method are also applicable to the welding of shapes other than tubing.

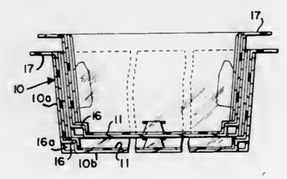
In another form, the aligned ends of two tubes are simultaneously or sequentially automatically flared prior to the welding operation which involves abutting the flared end portions and welding same together by spinning or cold pressure welding apparatus.

3,779,447

BOILABLE BAKEABLE PACKAGE AND METHOD

Robert P. Bemiss, Hillsborough, Calif., assignor to Robalex, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 83,704, Oct. 26, 1970, Pat. No. 3,715,853. This application June 21, 1971, Ser. No. 154,784
Int. Cl. B65d 15/22
U.S. Cl. 229—14 B 10 Claims



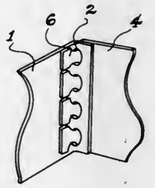
A laminated or multi-layer wall tray is provided which has a self-supporting outer layer or wall portion of paperboard which can be formed and handled as an independent self-supporting unit during manufacture of the laminated tray. A plastic liner is heat-vacuum formed into the paperboard tray or carton to provide a boilable, bakeable, liquid-tight, leakproof lining for the tray which in its entirety is of a boilable or bakeable character, and to provide a strengthened structure of the composite tray of the outer paperboard supporting structure and inner plastic film liner in supporting structure. Both the liner and the paperboard are preferably made of a thinness or caliper of a dimension less than can be normally employed in such structures when used alone. At the bottom the paperboard outer structure has certain formed indents around its bottom corner edge which provide resting portions or stops for nesting of the tapered trays to be handled as a stack, and also provide exit openings or vents for air from within the carton or tray at required positions to the outside during the thermo-vacuum forming of the liner. The method of fabricating or combining the components of such a tray comprises the steps of forming the outer paperboard structure or layer with the corners locked or secured together in self-supporting fashion to receive the plastic liner by thermo-vacuum forming process drawn inside of the self supported paperboard outer structure to correspond identically to the inner profile of the paperboard container thereby locking and if desired, adhering the molten plastic material to the inside paperboard structure. A laterally horizontally extending flange may be provided around the upper edge of either the paperboard or the plastic, or both.

3,779,448

INTERLOCKING SEAM STRUCTURE

William A. Wootten, 425 Via Corta, Palos Verdes Estates, Calif.

Filed June 23, 1971, Ser. No. 155,781
Int. Cl. B65d 5/42
U.S. Cl. 229—48 R 19 Claims



A seam to join flat panels of paper board material edge to edge or edge to the plane of a second panel employing a pattern of alternately spaced openings and cuts which, when properly placed in an overlapping relationship, can be forced together by applying pressure to specific areas, thus causing an interlocking of said openings and cuts to achieve a permanent or easily opened connection depending upon the cut configuration.

3,779,449

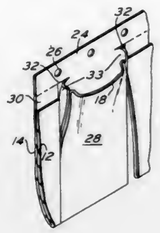
LINEAR STRIP OF SEVERABLE BAGS

Hercules Membrino, 1934 Arch St., Philadelphia, Pa.

Continuation-in-part of Ser. No. 178,908, Sept. 9, 1971. This application May 5, 1972, Ser. No. 250,659
Int. Cl. B65d 33/00
U.S. Cl. 229—66 8 Claims

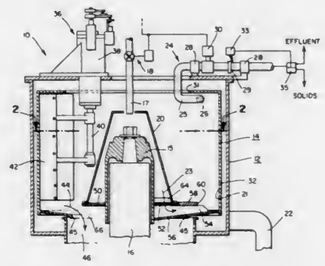
A flexible bag or series of flexible bags connected in a strip, each bag having a selvage portion, this selvage portion being common to all the bags when in said strip. The bag or bags are connected to the selvage portion by a perforated line, there being an elongated slit in the perforated line adjacent the side edges of the bag. The bag or bags are each provided with an

open mouth defined by an upwardly extending portion of the rear wall thereof, this upwardly extending portion forming a lip. Each lip is connected to the selvage portion by means of the perforated line. When a bag is pulled laterally forward, the slits permit a portion of the rear wall to move into a transverse position forming side walls for the open mouth. The selvage



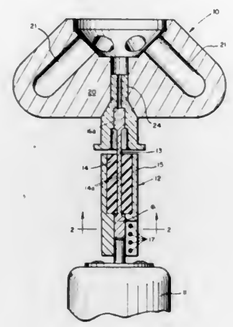
portion may be flat or tubular. When it is tubular, it is adapted to receive a supporting mandrel and is also optionally provided with apertures corresponding to optionally provided apertures in the mandrel, whereby pulses of gaseous or liquid fluid may be passed into the mouth of each bag to aid in opening the bag.

3,779,450
BASKET CENTRIFUGE
Leonard Shapiro, Upper Darby, Pa., assignor to Pennwalt Corp., Philadelphia, Pa.
Filed Mar. 29, 1972, Ser. No. 239,085
Int. Cl. B04b *11/00*
U.S. Cl. 233—21 **10 Claims**



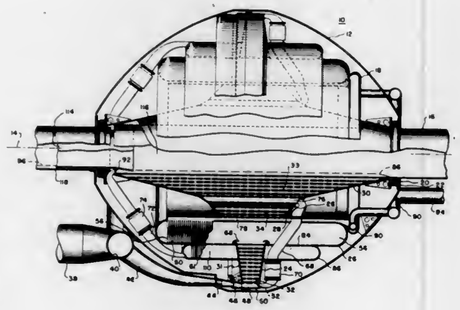
A centrifuge which rotates about a vertical axis, has a driving hub, a feed cone supported on and surrounding the hub, and a bowl with a separation chamber therein. The improvement includes structure which supports the bowl and feed cone on the hub, while simultaneously closing the bottom of the feed cone and forming a plurality of enclosed passageways which extend from the bottom interior of the cone into the separation chamber; the passageways are symmetrically arranged around the axis, and mounted so as to rotate with the bowl. During operation of the centrifuge, a feed mixture is introduced into the top of the rotating feed cone, the mixture descending to the bottom interior thereof; from the bottom interior of the feed cone, the mixture enters the enclosed passageways where it is tangentially accelerated while being fed into the separation chamber.

3,779,451
FLEXIBLE SHAFT STABILIZER
Ivan L. Lehman, Wellesley, Mass., assignor to International Equipment Company, Needham Heights, Mass.
Filed Nov. 22, 1971, Ser. No. 201,069
Int. Cl. B04b *9/14*
U.S. Cl. 233—23 A **4 Claims**



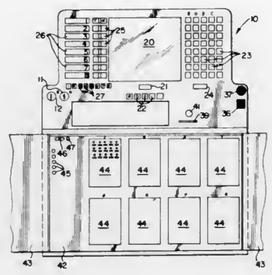
A flexible shaft construction to transmit rotational energy between a motor and a centrifuge rotor having a thin, long flexible shaft surrounded by a resilient sleeve and a stiff tubular member. The shaft, sleeve and tubular member are arranged so that there is no relative rotational motion between them.

3,779,452
ROTARY SEPARATOR
Richard A. Nau, La Jolla, and Sterling A. Campbell, San Diego, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.
Filed Sept. 22, 1960, Ser. No. 57,742
Int. Cl. B01d *45/12*
U.S. Cl. 233—32 **5 Claims**



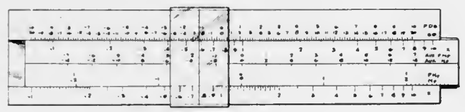
The disclosed apparatus is for separation of mixed gases through the combined action of distillation and centrifugal force. A rotor rotates a separator which includes means for condensing from a gas the less volatile of the mixed gases. The separating means comprises a plurality of sieve trays arranged concentrically around the axis.

3,779,453
ELECTRONIC VOTING MACHINE
James D. Kirby, Palos Park; Douglas R. Hetzel, Chicago; Richard H. McKay; James U. Snydacker, both of Wheaton, and Paul G. Ziebold, Chicago, all of Ill., assignors to Frank Thornber Co., Wheaton, Ill.
Filed July 7, 1972, Ser. No. 269,558
Int. Cl. G07c *13/00*
U.S. Cl. 235—54 F **7 Claims**



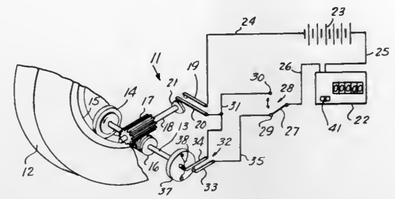
An electronic voting machine utilizing a video screen upon which the names of candidates or propositions to be voted are projected from an appropriate slide or other transparency, and utilizing actuating means coordinated with the projected names or propositions, and wherein the voting machine may be rendered operative by a voter's identification card, which is programmed to enable each voter to use the machine only in those areas and upon those propositions or candidates where the voter is authorized to cast a ballot. The machine incorporates solid state circuitry with means to indicate a malfunction, including a warning light and an audible beeping. Means are provided for straight voting, split ballot voting, straight voting with one or more cross-over votes, write-in voting, proposition voting, cancellation of a vote, and includes cumulative counting means as well as positive lock means to enable use of the machine only for authorized voting, and a party-selecting locking means for single party voting as in a primary election, whereby candidates may be voted upon in one party and all candidates from other parties are locked out.

3,779,454
SLIDE RULE FOR ELECTRONIC ANALYSIS
Jan Koren, Bridgeport, Conn., assignor to Raymond Lee Organization, Inc., New York, N.Y.
Filed May 1, 1972, Ser. No. 249,379
Int. Cl. G06g *1/02*
U.S. Cl. 235—70 A **2 Claims**



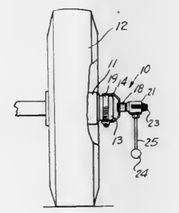
An improved slide rule containing new graduated scales for calculating from decibels, and nepers, directly into units of voltage, current, impedance, and power.

3,779,455
LIFTOFF AND LANDING DISTANCE INDICATOR
Edward E. Leibert, 2330 Hood Pl., Walla Walla, Wash.
Filed Feb. 9, 1973, Ser. No. 331,254
Int. Cl. G01c ; G06f
U.S. Cl. 235—95 **10 Claims**



A liftoff and landing distance indicator consisting of a pulsing circuit driven by an aircraft wheel and including a switch mechanically operated by a flywheel having a lost-motion connection with the aircraft wheel. The switch is closed shortly after the aircraft wheel starts to roll and is opened as the flywheel backs off slightly as the aircraft wheel leaves the ground. Another switch is provided to close the pulsing circuit when landing. The pulsing circuit includes a counter whereby the sum of the pulses are recorded. In an alternative embodiment the aircraft wheel drives an alternating current generator connected through a divider and through normally closed contacts of a relay to the counter. The relay has an energizing circuit including an electronic switch which is controlled by an integrating circuit and a discharge circuit connected to the generator and arranged to energize the relay and open the counter circuit when the aircraft wheel leaves the ground.

3,779,456
MEASURING ATTACHMENT FOR MOTOR VEHICLE WHEELS
William W. Burnett, Rt. 1, Box 1275, Lincoln, Calif.
Filed Mar. 14, 1973, Ser. No. 341,088
Int. Cl. G01c
U.S. Cl. 235—95 **3 Claims**

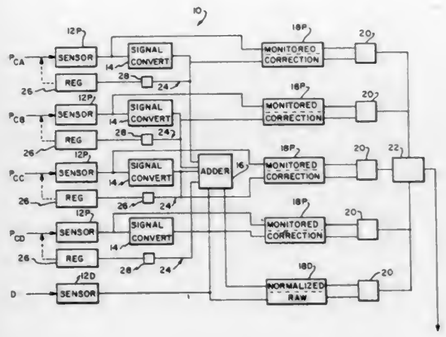


A measuring attachment for motor vehicle wheels which includes a revolution counter and a flexible clamp to clamp the counter to the rotating hub of a motor vehicle wheel. The counter shaft is rigidly secured to the clamp and the counter body is weighted with a pendulum weight to prevent its rotation as the shaft is rotated with the vehicle wheel. A reset knob is provided for resetting the counter when desired.

3,779,457
DATA NORMALIZING METHOD AND SYSTEM

William S. Cornyn, Jr., Palos Verdes, Calif.; Stephen A. Dier, Fraser, and Robert M. Lynas, Birmingham, both of Mich., assignors to TRW Inc., Redondo Beach, Calif.

Filed June 28, 1971, Ser. No. 157,095
Int. Cl. G06g 7/48, 7/57
U.S. Cl. 235—151.3 18 Claims



Raw numerical output data representing the value of a selected function or parameter which varies according to a known relationship with one or more control functions or parameters is monitored and its measured value is normalized to determined the value, i.e., normalized value of the date under preselected standard conditions at which the control parameters have predetermined standard or nominal values. Signals representing the values of the control parameters are produced and converted to correction factor signals representing the deviations, if any, between the monitored and standard values of the control parameters, and the correction factor signals are combined with a signal representing the measured value of the raw output data to obtain a normalized data signal representing the normalized value of the output data. The data normalizing operation may occur in a test mode which provides a readout representing the normalized data value, in a monitoring mode which provides a display representing the raw and normalized data values, the monitored control parameter values, and the parameter correction factor values or furnishes these values to a computer for further processing or to a data bank for storage, or in an adaptive mode which provides error or feedback signals for regulating the control parameters to maintain the latter precisely at or within a given range about their standard or nominal values.

3,779,458
SELF-CHECKING DECISION LOGIC CIRCUIT

Herbert Yu-Pang Chang, Woodridge; Roger Alan Elliott, Plainfield, both of Ill.; Daniel John Senese, Freehold, and Thomas Loyd Smith, Oceanport, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

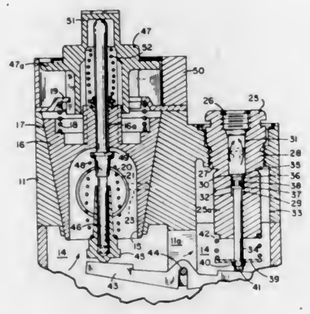
Filed Dec. 20, 1972, Ser. No. 316,876
Int. Cl. G06f 11/08
U.S. Cl. 235—153 BG 14 Claims

A self-checking decision logic circuit for making any one of a number of possible decisions based on selected bits stored in a check register. A true and a complement output of each cell of the check register are individually combined with corresponding true and complement outputs of a mask register to generate a decision signal via the complement outputs and a check signal via the true outputs. A controlled entity assumes one of two states responsive to the decision signal and generates a state signal indicative of its state. The check signal and state signal then are applied to a 1-out-of-n error checking circuit to check the validity of the decision operation.

3,779,459
COMBINATION GAS VALVE

Robert J. Battersby, Lomita, and Louis L. Mucciante, Cerritos, both of Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 21, 1972, Ser. No. 282,502
Int. Cl. F24c 3/10
U.S. Cl. 236—15 A 10 Claims

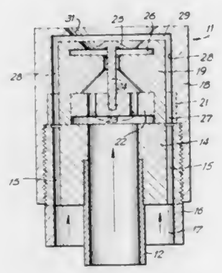


A valve having substantially the same dimensions as a conventional thermocouple energizable electromagnet generally used in manually resettable safety gas valves. It is used to convert such a safety valve into a valve for supplying gas to a runner burner for remotely lighting a pilot burner by eliminating the conventional safety valve and by using it with a main burner control valve that can only open when a pilot burner flame exists at the main burner.

3,779,460
ACOUSTIC NOZZLE

Richard J. Monro, Bronxville, N.Y., assignor to Combustion Equipment Associates, Inc., New York, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,121
Int. Cl. B05b 3/14
U.S. Cl. 239—102 8 Claims

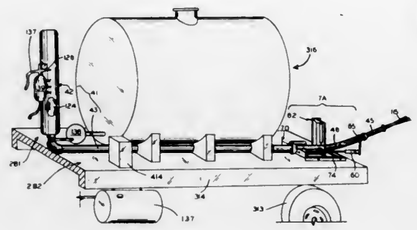


A nozzle for finely dispersing a liquid in a gas stream, usually air or steam, has therein a stem and a cap for diverting the gas stream radially into a resonance chamber. The pressure waves resulting are effective for atomizing a liquid introduced either into the resonance chamber or into the gas stream downstream from the cap.

3,779,461
EXPLOSIVE BLAST ACTUATED LIQUID DISTRIBUTORS AND PROCESSES OF OPERATION THEREOF

Dwaine M. Paul, Amarillo, Tex., assignor to Ebald, Inc., Lubbock, Tex.

Continuation-in-part of Ser. No. 835,539, June 23, 1969, Pat. No. 3,589,604. This application June 11, 1971, Ser. No. 152,044
Int. Cl. B05b 9/04
U.S. Cl. 239—172 12 Claims

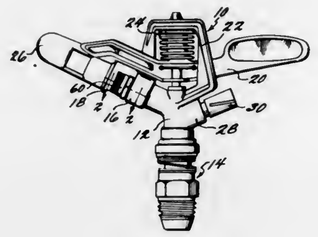


An explosive blast actuated liquid distributing assembly is transported by and located at or near and operatively connected to the location at which its operation is desired for applying successive increments of water as a stream which extends substantial distances from the end of that assembly for purposes of quelling riots and controlling fires.

3,779,462
STEP-BY-STEP ROTARY SPRINKLER HEAD WITH QUICK-CHANGE AND COLOR-CODED NOZZLE INSERT

Kenneth J. Bruninga, Mapleton, Ill., assignor to Nelson Irrigation Corporation, Brimfield, Ill.

Filed Feb. 14, 1972, Ser. No. 226,051
Int. Cl. B05b 3/02
U.S. Cl. 239—230 7 Claims

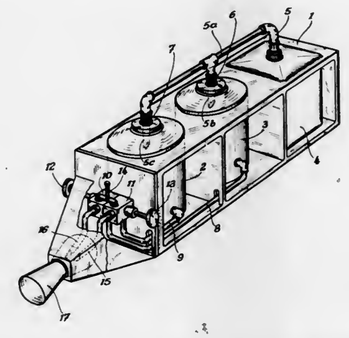


A step-by-step rotary sprinkler head having a nozzle insert provided with exterior straight threads for loosely cooperating with the interior threads of the sprinkler body outlet and an O-ring of resilient material adjacent the threads on the insert for engaging a cylindrical interior surface within the outer end of the outlet in radially inwardly compressed relation so as to provide a water-tight seal between the exterior of the nozzle insert and the interior of the outlet and a constant, non-wedging, frictional force which prevents the nozzle insert from working loose during the high amplitude and high frequency vibrations inherent in the normal operation of the sprinkler head, the arrangement being such that the nozzle insert can be removed and replaced by any one of a series of nozzle inserts having different orifice sizes by a simple digital turning action. The orifice size of the nozzle insert is color-coded by a preformed band of resilient material having a coloring agent dispersed therein mounted within an annular groove formed in the exposed exterior periphery of the nozzle insert by expanding the band over the nozzle insert and allowing it to contract within the annular groove.

3,779,463
MIXING DEVICE

Rudolf Schlidt, Elliger Hoehe 16, Bonn-Bad Godesberg, Germany

Continuation of Ser. No. 81,046, Oct. 15, 1970. This application Nov. 28, 1972, Ser. No. 310,086
Claims priority, application Germany, Oct. 16, 1969, P 19 52 095.7
Int. Cl. A62c 13/32, 13/34
U.S. Cl. 239—308 7 Claims

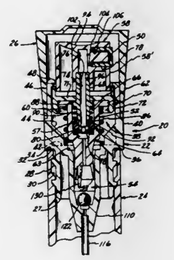


A mixing apparatus for intermixing media adapted to flow, in which at least two containers respectively containing said media communicate on one hand with a source of pressure common to said containers and on the other hand with adjustable control valves which in turn communicate with mixing nozzle means common to said control valves, said control valves being provided with common actuating means for selectively establishing and interrupting fluid flow from said control valves to said nozzle means.

3,779,464
MANUALLY ACTUATED LIQUID SPRAYING DEVICE

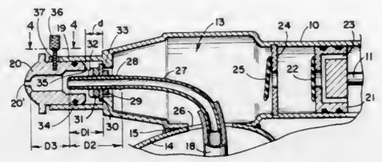
Carl E. Malone, Fort Lauderdale, Fla., assignor to The AFA Corporation of Florida, Miami Lakes, Fla.

Filed Mar. 22, 1972, Ser. No. 236,807
Int. Cl. B05b 1/30
U.S. Cl. 239—350 28 Claims



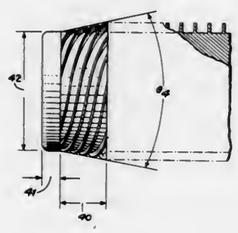
A spray device of the type adapted to be mounted as a closure on a container of liquid. The sprayer has a manually actuated pump with valve assemblies which discharge liquid through a spray nozzle substantially without dribble at the beginning and end of the spray cycle.

3,779,465
SPLATTER PATTERN CONTROL FOR SPRAY GUNS
Howard V. Jett, 238 Los Angeles Ave., Moorpark, and Joseph B. DeMarco, 18434 Collins St. Apt. 12A, Tarzana, both of Calif.
Filed May 19, 1972, Ser. No. 254,899
Int. Cl. B05b 7/12
U.S. Cl. 239—416 2 Claims



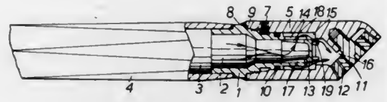
A nozzle support head and nozzle held thereby are designed for cooperation with an air chamber receiving pressurized air and a delivery tube from a container of a spray composition. The delivery tube extends into the support head past a reduced diameter opening and terminates in a free end spaced from the outlet orifice of the nozzle. A portion of this free end includes an enlargement which blocks backward movement of the delivery tube when the enlargement engages the reduced diameter opening. The nozzle itself includes an internal portion which limits the degree of forward movement of the delivery tube in the support head and by making the position of the nozzle longitudinally adjustable on the support head, the distance between the reduced diameter opening and the internal portion can be varied thereby limiting the amount of air that can bypass about the enlarged portion and mix with spray composition so that the splatter pattern can be controlled. In addition, the enlargement itself may be shifted along the free end of the delivery tube to vary the spacing between the extreme end of the delivery tube and the nozzle orifice to provide further control of the splatter pattern.

3,779,466
METHOD OF PRODUCING A NOZZLE FOR A TURBOGENERATOR
Charles P. Majkrzak, Nutley, and Michael S. Folger, Eatontown, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Division of Ser. No. 78,635, Oct. 6, 1970, Pat. No. 3,704,499. This application Aug. 14, 1972, Ser. No. 280,288
Int. Cl. B05b 1/34
U.S. Cl. 239—489 4 Claims



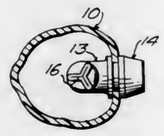
A nozzle for a turbogenerator having a nozzle body with a number of constant width spiraling grooves on a constant diameter and with a tapered circumference. A shroud is fitted to the tapered circumference of the body, and the assembly forms a multiplicity of nozzle inlets and outlets. A cavity in the nozzle body is evacuated and sealed, and the shroud also contains a cavity therein which is evacuated and sealed.

3,779,467
ABLUTIONARY APPLIANCES
Dennis Charles Arbon, Bourton-on-the-Water, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England
Filed Sept. 19, 1972, Ser. No. 290,366
Claims priority, application Great Britain, Oct. 29, 1971, 50,429/71
Int. Cl. B05b 1/32
U.S. Cl. 239—538 5 Claims



A spray nozzle fitting in which a spray head is rotatably mounted on a body for movement from a first to a second position to change the direction of the discharge spray, and valve means within the spray nozzle controlled by such rotation of the spray head to obtain respective different rates of discharge flow when the spray head is in the first or second position.

3,779,468
TRICKLE IRRIGATION SYSTEM
Lloyd Spencer, 220 Patrician Way, Pasadena, Calif.
Filed July 21, 1972, Ser. No. 274,078
Int. Cl. B05b 15/02
U.S. Cl. 239—542 18 Claims

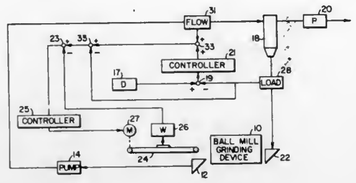


A trickle irrigation system which utilizes a series of irrigating valves and interconnecting tube valves, the irrigating valves assuming open, flushing conditions at pressures below a critical zone, and assuming a restricted or trickle condition at pressures above the critical zone; whereas the tube valves assume a constructed flow or closed condition below the critical pressure zone and expand to full flow condition at pressures above the critical zone. As a consequence, on supplying water to the irrigation system, the irrigating valves first flush then automatically restrict to trickle condition in sequence as the tube valves open in sequence. When the water is shut off a second flushing action occurs before drainage is complete.

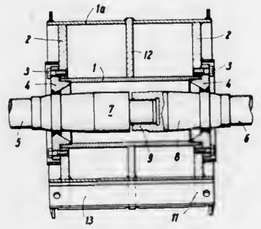
3,779,469
CONTROL SYSTEM AND METHOD FOR A REVERSED BALL MILL GRINDING CIRCUIT
Richard E. J. Putman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 18, 1972, Ser. No. 227,584
Int. Cl. B02c 25/00
U.S. Cl. 241—30 7 Claims

The dynamically fast in response and stable control arrangement for a reversed ball mill grinding circuit, which operates in accordance with the basic control algorithm that the new

material feed rate to the reversed ball mill grinding circuit is controlled as a function of the net output solids flow production from the production cyclones associated with that grinding circuit plus the integral of the error between the desired solids flow load and the actual solids flow load of the grinding mill associated with that circuit.



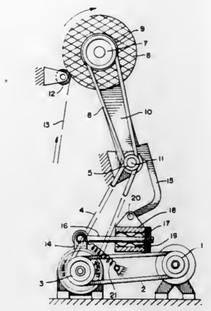
3,779,470
ROTOR FOR USE IN IMPACT CRUSHERS
Barnhard Johannes Smits, Ahaus, Germany, assignor to Die Hazemag Hartzerkleinerungs und Zement-Maschinenbau-Gesellschaft m.b.H., Muenster, Germany
Filed Sept. 13, 1972, Ser. No. 288,792
Claims priority, application Germany, Sept. 14, 1971, P 21 45 868.4
Int. Cl. B02c 13/28
U.S. Cl. 241—191 5 Claims



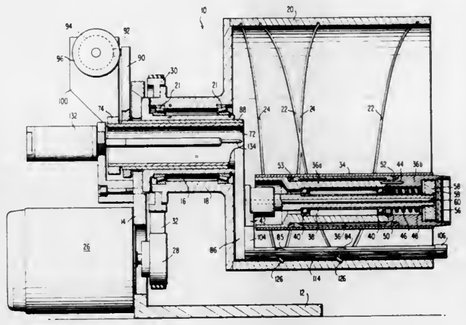
A rotor has a rotor shaft composed of two discrete shaft sections the adjacent ends of which are connected by a sleeve guided in appropriate bores of the ends, so that the shaft sections are axially aligned but have freedom of limited axial relative displacement. Each shaft section carries a rotor end plate fixed to it and extending transversely of it, and a circumferential wall extends between and connects the end plates, surrounding the shaft. Another embodiment is also disclosed.

3,779,471
SPEED CONTROL LINKAGE MEANS FOR WINDING BOBBINS
Hermann Grein, Remscheid, and Volker Vorlander, Berlin, both of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed July 2, 1971, Ser. No. 159,418
Claims priority, application Germany, July 7, 1973, P 20 33 578.8
Int. Cl. B65h 59/38
U.S. Cl. 242—18 CS 12 Claims

A bobbin winding means in textile machinery having a driven spindle for the bobbin and a roller means in contact with the peripheral surface of the bobbin in a closed drive position thereof, the drive means for said bobbin including a friction gear for variation of the speed of revolution of the bobbin in response to increasing diameter of the bobbin by means of a speed control linkage means adapted to actuate a lever adjusting means on the friction gear in response to relative displacement between the bobbin spindle and the roller means, this linkage means having yielding elements which move as a single-acting unit during normal drive of the bobbin but which can be pressured or adjusted into an open position freeing the bobbin from contact with the roller means when the bobbin drive is stopped.



3,779,472
SURFACE DRIVEN WINDER
Beryl A. Boggs, Chester, Va., assignor to Advex Corporation
Filed Sept. 15, 1971, Ser. No. 180,763
Int. Cl. B65h 54/00, 54/28
U.S. Cl. 242—18 DD 13 Claims

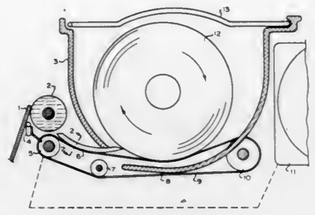


A yarn package is driven by the inner periphery of a rotating drum. Yarn fed in from the open end of the drum passes over a compensating yarn guide and a main yarn guide which are driven by cam slots in the inner periphery of the drum. The yarn guides maintain constant yarn tension, with zero lash, and also undergo an anti-ribboning motion.

3,779,473
AUTOMATIC PAPER LOADING AND GUIDING MECHANISM

Roger C. Edrinn, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 20, 1972, Ser. No. 245,998
Int. Cl. B65h 75/00; G03b 1/56
U.S. Cl. 242—54 R 6 Claims

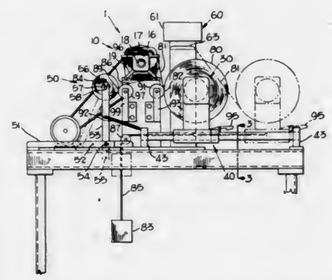


Driven rubber belts are arranged for receiving a roll of paper. A paper deflector is positioned to catch the free end of the rotating paper roll for guiding it through a paper feeding mechanism.

3,779,474
MACHINE FOR WINDING FOIL RIBBON COILS

Robert G. Harelson, Florissant, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 800,521, Feb. 19, 1969, abandoned. This application Aug. 23, 1971, Ser. No. 174,141
Int. Cl. B65h
U.S. Cl. 242—56.1 5 Claims

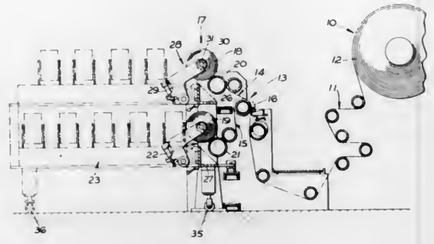


A device for winding electrical coils and having particular use in winding a transformer coil consisting of interleaved layers of a strip of insulative material and a ribbon of conductive foil. One or two prewound foil reels are slidably mounted on a carriage for (independent) movement to a winding position adjacent the piece on which the coil is wound and to a second position spaced radially from the coil. The piece on which the coil is wound is rotatably held on a reeler assembly. A follower piece is biased into engagement with the outer face of the prewound reel and defines the take-off point for the foil. Nothing else touches the foil between the reel and the coil. One or two prewound reels of insulative tape are each biased into contact with a second follower piece, and the insulative tape is interleaved with the conductive ribbon.

3,779,475
SLITTING AND REWINDING MACHINE

Harold Plevin, Hyde, England, assignor to C. A. Harnden Limited, Hyde, England

Filed Nov. 3, 1971, Ser. No. 195,172
Claims priority, application Great Britain, Dec. 16, 1970, 59,749/70
Int. Cl. B65h 35/02
U.S. Cl. 242—56.2 2 Claims

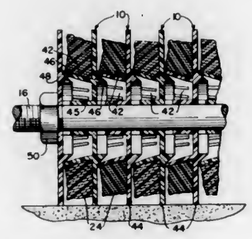


A slitting and rewinding machine, wherein a relatively wide web of material, such as paper or plastics film, is slit into a plurality of narrower webs which are then rewound into individual rolls, comprises, at a rewind station thereof, at least one pair of roll support assemblies carrying a plurality of individual roll carriers, the assemblies being pivotable and arrangeable in a first configuration wherein one assembly is in a rewind position and the other assembly is in an unload position and a second configuration wherein the positions of the assemblies are reversed, enabling a second run of the machine to take place whilst full individual rolls are removed from the inoperative assembly, so reducing machine downtime and increasing productivity.

3,779,476
MAGNETIC TAPE UNIT AND HUB ASSEMBLY THEREFORE

Thomas J. Hofbauer, 48 Lake Trl. East, Wayne, N.J.

Filed Nov. 8, 1971, Ser. No. 196,599
Int. Cl. B65h 17/02, 75/24
U.S. Cl. 242—67.3 12 Claims

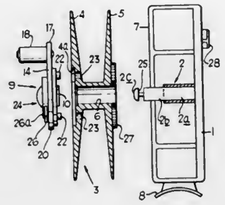


A magnetic tape unit and hub assembly therefore in which the hub portion of the assembly is expansible in a radial direction and has a camming surface which is adapted to cam an adjacent hub member outwardly when the hub members are placed in an abutting relationship on a common support. A method for winding magnetic tape onto hub assemblies of the above type.

3,779,477
FISHING REEL

Raymond Humble, Alnwick, England, assignor to Hardy Brothers (Alnwick) Limited, Willowburn, Alnwick, Northumberland, England

Filed Nov. 15, 1971, Ser. No. 198,904
Claims priority, application Great Britain, Nov. 26, 1970, 56,224/70
Int. Cl. A01k 89/00
U.S. Cl. 242—84.1 R 3 Claims

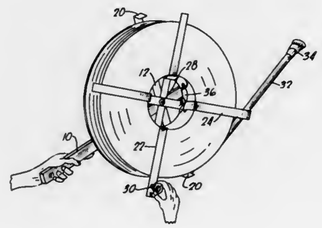


A fishing reel having a multiplying gear system with a unitary winding assembly which is easily and quickly detachable from the fishing line drum so that different winding assemblies can be interchanged which have different gearing ratios and so that different fishing line drums can be replaced in a simple manner. The fishing line drum rotates about a spindle fix to a backing plate which is mounted on the fishing rod. The fishing line drum is caused to rotate by a unitary winding assembly comprising at least two gears. The winding gear assembly has studs extending into socket means in the fishing line drum in order to engage and rotate the fishing line drum.

3,779,478
SOAKER HOSE REEL

Walter V. Fugate, 11123 Shortmeadow Dr., Dallas, Tex.

Filed Nov. 17, 1971, Ser. No. 199,425
Int. Cl. B65h 75/40
U.S. Cl. 242—86 3 Claims

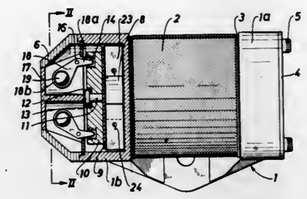


A device for holding a lawn hose comprising a first vertical generally flat and coplanar cross; and a second vertical cross having an inner central section secured to the center of the first cross and an outer coplanar section lying in a plane parallel to and spaced from the first cross, the hose being wound about the central section and disposed between the outer coplanar section and the first cross.

3,779,479
LOCKING DEVICE FOR A WINDING UP SAFETY BELT FOR VEHICLES

Stig Martin Lindblad, 440 20, Vargarda, Sweden

Filed Nov. 8, 1971, Ser. No. 196,493
Int. Cl. A62b 35/00; B65h 63/04
U.S. Cl. 242—107.4 4 Claims

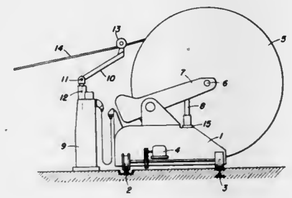


A locking device for vehicle safety belts of the wind-up type having one part of the safety belt wound onto a roller from which it may be unwound against the action of a spring and which locking device includes a brake element connected to said roller for rotation therewith, levers engageable with said brake element and inertia elements provided with said arms whereby when the vehicle is subjected to a rapid acceleration said inertia elements cause said levers to engage said brake element whereupon said roller is prevented from rotating in the belt winding off direction.

3,779,480
TRANSLATING WINDER FOR ELECTRIC CABLES

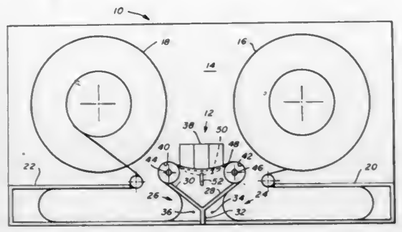
Andre Paul Cambou, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jan. 7, 1971, Ser. No. 104,574
Claims priority, application France, Mar. 19, 1970, 7009853
Int. Cl. B65h 57/28
U.S. Cl. 242—158 R 2 Claims



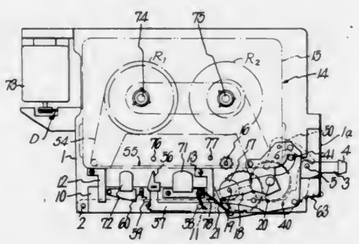
Apparatus for automatically winding cable onto a rotating spool is disclosed in accordance with the teachings of the present invention wherein said rotating spool is mounted on a moveable carriage, the lateral movement of which is controlled as a function of the displacement of the cable as said cable is wound on said spool. As adjoining turns of cable are formed, the angle formed by the intersection of said cable with said spool is varied. The speed and direction of the lateral movement of the moveable carriage is determined by said angle such that said lateral movement opposes the displacement of said cable to urge said angle to a null value. An electric motor is supplied with energy having controllable magnitude and phase for driving the moveable carriage.

3,779,481
VACUUM BUFFER
John H. Wilson, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.
Continuation-in-part of Ser. No. 199,697, Nov. 17, 1971. This application Dec. 27, 1971, Ser. No. 212,405
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 **3 Claims**



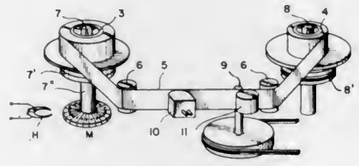
This invention describes an apparatus which uses a vacuum buffer to control the position of a magnetic tape against the transducing heads whereby the tape can be lifted away from the head surface during rewind. The vacuum buffer comprises an enclosed space on the front of the tape deck which is enclosed by two rotating cylindrical elements, the tape stretched across the top of the elements and a wall closing the space on the bottom side, between the two rotating elements. One or both of the rotating elements can be capstans. The oxide surface of the tape is placed uppermost and the head structure is mounted between and above the rollers with the transducing gaps below. Vacuum is applied through an opening in the back wall of the tape deck and a cover plate mounted to the wall closes off the buffer space on the front. Applying vacuum to the buffer space, the tape is pressed downward by atmospheric pressure, taking it out of contact with the transducing heads.

3,779,482
MAGNETIC RECORDING AND REPRODUCING APPARATUS
Toshihiko Chimura, Sohka, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed May 26, 1972, Ser. No. 257,182
Claims priority, application Japan, May 28, 1971, 46/44392
Int. Cl. B65h *59/38, 63/02*; **G03b** *1/04*
U.S. Cl. 242—190 **8 Claims**



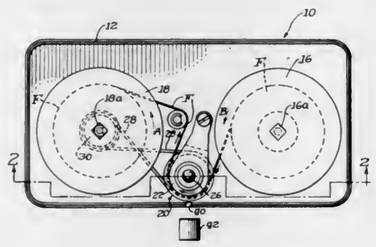
An apparatus for recording and/or reproducing signals on a magnetic tape which is wound on supply and take-up reels, preferably within a cassette, and which has a tape drive for transferring the tape from one to the other of the reels during recording, reproducing and other operations of the apparatus, is provided with a tape tension detecting element moved in response to a change in tape tension from a predetermined value or norm, as upon the full unwinding of the tape from one of the reels, for initiating operation of a shut-off device by the tape drive, and such shut-off device provides a shut-off force for halting operation of the tape drive only if the detected change in tape tension from the norm continues for a predetermined period or time delay after initiation of the operation of the shut-off device, whereby to ensure that the tape drive operation will not be halted in response to merely a transitory or temporary change in tape tension.

3,779,483
APPARATUS FOR GIVING NOTICE TO THE APPROACH OF END OF TAPE
Syuzi Inoue, Gunma, Japan, assignor to Tokyo Sanyo Electric Co., Ltd., Gunma and Sanyo Electric Co., Ltd., Osaka, Japan
Filed Dec. 2, 1971, Ser. No. 203,983
Claims priority, application Japan, Dec. 2, 1970, 45/108332; Dec. 2, 1970, 45/108333
Int. Cl. B65h *59/38*; **G03b** *1/02*; **G11b** *15/32*
U.S. Cl. 242—191 **19 Claims**



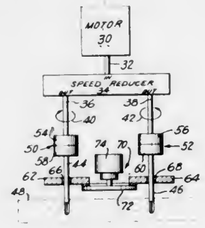
An apparatus for giving a warning during the transport of a tape of the approach of the end of the tape when some length of tape still remains for recording or playback before the end of the tape is reached. The warning is produced by detecting when the rotational speed of the rotary shaft of the supply reel or take-up reel has reached a given level as the transport proceeds from one reel to the other.

3,779,484
FILM MAGAZINE WITH DRIVE CAPSTAN
Robert F. Porazinski, Norridge, Ill., assignor to Bell & Howell Co., Chicago, Ill.
Filed Nov. 22, 1971, Ser. No. 201,041
Int. Cl. G03b *23/04*
U.S. Cl. 242—199 **5 Claims**



A film magazine or cassette for cameras, projectors, recorders, or the like. The magazine includes a film supply reel and a film take-up reel disposed within an enveloping wall structure for rotation about generally parallel axes to carry convoluted film. A capstan assembly, including a roller or hub, is rotatably mounted on the wall structure and engages the film for transferring the film from the supply reel to the take-up reel. The capstan is operatively connected to the take-up reel by a friction belt. A roller-type overrunning clutch forms an integral part of the capstan and is adapted to receive a round shaft from an appropriate photographic apparatus, projector, recorder, or the like, to permit the shaft to over-run the capstan and thereby maintain tension in the film between the supply reel and the capstan.

3,779,485
MAGNETIC TAPE TRANSPORT SYSTEM AND ASSOCIATED CONTROLS
Edgar Wolf, New Hyde Park, and Edward Lau, Old Westbury, both of N.Y., assignors to Redactron Corporation, Hauppauge, N.Y.
Filed Aug. 17, 1971, Ser. No. 172,509
Int. Cl. B11b *15/32*; **G03b** *1/04*
U.S. Cl. 242—204 **20 Claims**



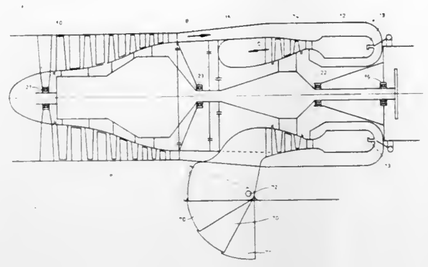
For the reversible driving of a magnetic tape casette, two spindles are selectively connected by electromagnetic clutches to a pulley system driven by a constant speed motor such that one spindle is driven while the other is free-wheeling. Inertia damping discs are mounted on the spindles to smooth the response of the free-wheeling spindle to the driven spindle to which the free-wheeling spindle is coupled via the magnetic tape. A braking system engages the discs in the absence of driving of either spindle. A burst of reverse torque is applied to the free-wheeling spindle before the tape is completely halted. A leader detection circuit is used to detect the tape ends whereupon rotary power to the driven spindle is reduced.

ERRATUM

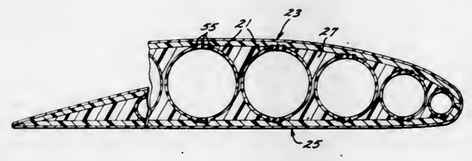
For Class 242—204 see:
Patent No. 3,779,498

3,779,486
GAS TURBINE ENGINES
Gordon Manns Lewis, and Stanley George Hooker, both of Bristol, England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, London, England
Filed Sept. 22, 1971, Ser. No. 182,817
Claims priority, application Great Britain, Sept. 26, 1970, 45,975/70
Int. Cl. B64d *27/10*
U.S. Cl. 244—53 R **10 Claims**

A gas turbine engine for use in aircraft in which a substantial part of the gases discharged from the engine are exhausted through swivel type nozzles capable of varying the direction of the discharge, which are disposed between the compressor and the turbine. Several embodiments are proposed and in general the engines are characterised in that the flow through the compressor is in the opposite direction to the flow through the combustion chamber and turbine.



3,779,487
LIGHT WEIGHT CONTOURED LOAD CARRYING STRUCTURE
Larry J. Ashton, 3934 Marshal Way, Long Beach, and Dale P. Abildskov, 900 Bejay Pl., San Pedro, both of Calif.
Filed Apr. 19, 1971, Ser. No. 134,973
Int. Cl. B64c *3/24*
U.S. Cl. 244—123 **10 Claims**

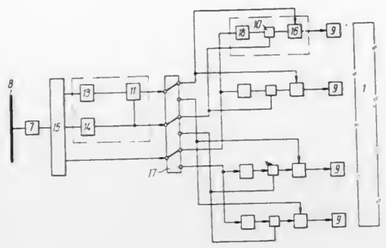


A lightweight load carrying foil structure including a plurality of elongated filament wound fiberglass tubular members disposed in side by side relationship and varying in cross section from one member to the other to have the opposite lateral sides thereof cooperate in defining the contour of a foil cross section that progressively increases in thickness from the leading edge of the foil cross section to form an intermediate portion defining a maximum thickness and to then progressively decrease in thickness to terminate in a relatively thin trailing edge. Fiberglass skin is stretched over the tubular members and cooperates therewith to form longitudinal cavities between such members. A filler foam fills the cavities and is held in place by the fiberglass skin to contain the members against bending when a moment is applied thereto.

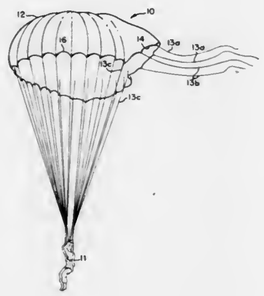
3,779,488
ELECTRIC SYSTEM OF A DEVICE FOR DEICING THE SURFACE OF THINWALLED STRUCTURES
Igor Anatolievich Levin, ulitsa Stepana Supruna, 12, kv. 74, Moscow, U.S.S.R.
Continuation of Ser. No. 826,204, May 20, 1969, Pat. No. 3,672,610. This application Feb. 15, 1972, Ser. No. 226,522
Claims priority, application U.S.S.R., June 24, 1968, 874080
Int. Cl. B64d *15/00*
U.S. Cl. 244—134 A **3 Claims**

A system is disclosed for deicing the skin surface of aircraft and comprises a power supply unit to which are connected an

electrical power accumulator and a program switch. Low inertia converters such as magnetostrictive vibrators are provided in close proximity to the skin surface and are fed from the power supply unit via key switches each having one input connected to the electrical power accumulator while its second input is connected to the program selector switch such that the switch will produce successive single or bundles of electrical pulses separated by pauses at the converters.

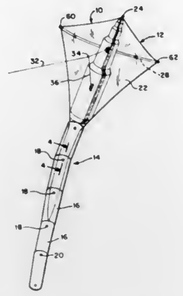


3,779,489
CONTROLLABLE GLIDING PARACHUTE
Jon T. Matsuo, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 31, 1972, Ser. No. 276,626
Int. Cl. B64d *17/34*
U.S. Cl. 244—152 **6 Claims**



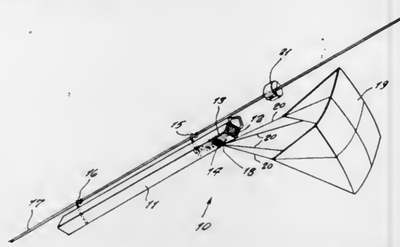
A glidable personnel-type parachute is provided having a conventional canopy and shroud lines connected to a pair of forward and aft risers, a selected number of adjacent shroud lines in the aft risers being releasable by the parachutist simply by pulling on a release lanyard to create a scalloped air-venting portion in the canopy skirt; the release lanyard may also be connected to the shroud lines on each side of the scalloped canopy portion to enable the parachute to be steered in its gliding movement.

3,779,490
SWIVEL TAILED KITE
John D'Amico, 3941 SW 122nd Ave., Miami, Fla.
Filed May 24, 1972, Ser. No. 256,396
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R **1 Claim**



A kite is disclosed which contains a swivel tail made of individual platelets fastened together by fastening means fabricated from rivets, conventional straight pins or acorn fasteners.

3,779,491
KITE PARACHUTE DOLLY
David L. McCoy, 1001 S. Park Ave., Mendota, Ill.
Filed Oct. 12, 1972, Ser. No. 296,923
Int. Cl. B64c *31/06*
U.S. Cl. 244—155 R **1 Claim**

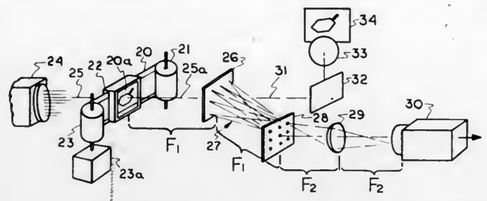


A device which allows a parachute to travel up a string of a kite, so that the parachute can be released near the kite and then float back down to the ground; the device consisting of a parachute dolly barrel having a front and rear hook that can be hooked over the kite string after the kite is flying, the front hook retaining a wire ram, a parachute weight to weigh down a parachute, and a dolly stop secured along the kite string and against which the dolly strikes.

3,779,492
AUTOMATIC TARGET RECOGNITION SYSTEM
Alex Grumet, Whitestone, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, Long Island, N.Y.
Filed Oct. 18, 1971, Ser. No. 189,875
Int. Cl. F41g *9/00*, *7/00*; **42b** *15/02*
U.S. Cl. 244—3.17 **20 Claims**

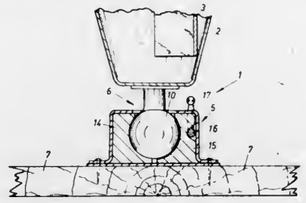
A coherent, optical signal processor for recognition of specific known targets at extremely high speeds, applying matched-filter techniques. A modified matched filter includes a pair of matched filters that will separately process the high and low spatial frequencies. By properly combining the outputs in a logical AND operation, the target may be interrogated for fine features as well as for correct size and shape. The optical memory bank of matched-filter pairs comprises known diffraction patterns of all resolvable views, in both azimuth and elevation, of the target, thus forming a target

recognition comb-filter bank. All views of the recognition bank are simultaneously interrogated optically according to



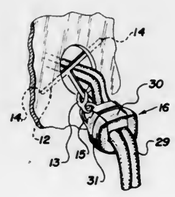
the diffraction pattern of the detected object to determine whether the detected object is the desired target as stored in any of the views in the memory bank.

3,779,493
STAND FOR CHRISTMAS TREES
Karl Gunnar Gidlof, Reveljgatan 3, S-421 76, Vastra Frolunda, Sweden
Filed Dec. 1, 1971, Ser. No. 203,675
Int. Cl. A07g *33/12*
U.S. Cl. 248—44 **2 Claims**



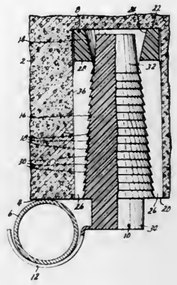
A stand, particularly intended for Christmas trees having means to secure the tree in a water container and means to enable said water container to take various positions of inclination, thereby greatly facilitating both support and correct alignment of the tree in a vertical position. Retaining means, such as clasps, are provided to secure the tree trunk in the water container, and a ball joint is provided to permit adjustment of the alignment of the water container relatively the base supporting said container. The ball joint outer concave portion comprises two sections, one rigid section and one movable relatively the first by means of an eccentric shaft operated by an actuating lever.

3,779,494
CORD ANCHORAGE SECURING DEVICE AND SECURE CORD ANCHORAGE DEVICE
John H. Nicholson, Tree Tops, 13 Aldridge Rd., Ferndowne, England, and William Jemison, 22 Winchester Rd., Summit, N.J.
Filed Feb. 3, 1972, Ser. No. 223,203
Int. Cl. F16l *5/00*
U.S. Cl. 248—56 **10 Claims**



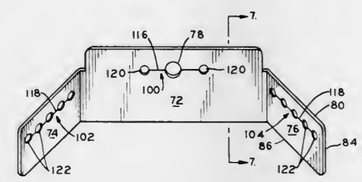
A cord anchorage device is provided with an attachable or integral device to secure the cord anchorage device to an appliance or aperture wall so that the anchorage components may not be readily lost when securing a cord.

3,779,495
WALL ANCHOR FOR ELECTRICAL CONDUITS
Albert A. Richards, 7127 Lafayette St., Wyandotte, Kans.
Filed Aug. 5, 1971, Ser. No. 169,278
Int. Cl. F16b *15/04*
U.S. Cl. 248—71 **1 Claim**



A wall anchor for securing electrical conduits or the like to concrete walls, and consisting of a tubular, internally tapered, elastically expansible plug adapted to be inserted freely into a cylindrical socket drilled therefor in the wall, and a correspondingly tapered core member adapted to be driven into the plug whereby to expand the latter into tight frictional engagement with the wall of the socket, and a hook member carried by the core at the outer end of said core and operable, as the core is driven, to clamp an electrical conduit against the wall surface.

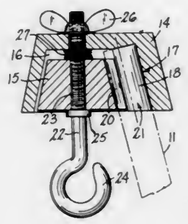
3,779,496
CONTAINER FORMER
Theodore W. Welles, 12600 Shaker Blvd., Cleveland, Ohio
Filed Dec. 16, 1971, Ser. No. 208,552
Int. Cl. B65b *67/12*
U.S. Cl. 248—99 **8 Claims**



A device which comprises a generally U-shaped body portion dimensioned to be received at least partially around the open upper end of a generally rectangular container maintaining the container in an opened condition when foreign objects are deposited therein. The bottom of the U-shaped body portion is positioned to extend across the back wall of the container with the legs thereof extending across the container side walls. Preferably, the body portion is constructed from a resilient plastic material with the legs of the body portion biased slightly outward from each other to engage the side walls of the container. The bottom portion includes a mount-

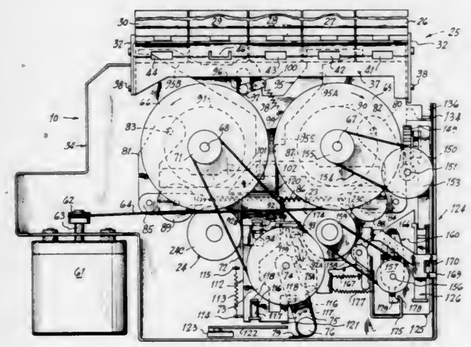
ing hole therein in order that the device may be received over a cooperating supporting and mounting device with the container itself. The bottom and legs of the body portion also include container gripping means for conveniently retaining the container in position and providing strength thereto.

3,779,497
TRIPOD AND SUPPORT THEREFOR
Peter B. Webber, 14 Waverly Rd., Branford, Conn.
Filed Oct. 15, 1971, Ser. No. 189,525
Int. Cl. F16m *11/22*
U.S. Cl. 248—165 **5 Claims**



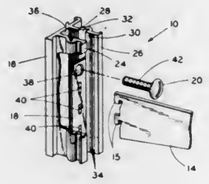
The legs of a tripod are clamped together by a device which comprises a first member having a generally triangular cavity with corner surfaces formed on a radius larger than the radius of the legs, and a second member of generally triangular shape having corner surfaces recessed on a radius smaller than the radius of the legs. The second member is assembled to the first member such that three-point line contact is made by the two members on each of the legs.

3,779,498
MAGNETIC RECORDING AND REPRODUCING APPARATUS
Shizuo Takashino, Saitama-ken, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 10, 1972, Ser. No. 233,452
Claims priority, application Japan, Mar. 19, 1971, 46/15866
Int. Cl. B11b *15/32*; **G03b** *1/04*
U.S. Cl. 242—204 **18 Claims**



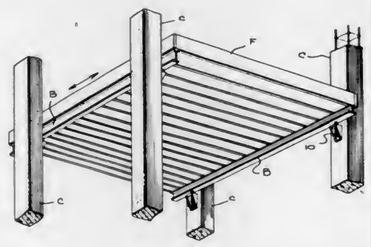
In an apparatus for recording and/or reproducing signals on a magnetic tape which is wound on supply and takeup reels and has its ends secured to the reels, the reels are rotationally coupled with respective reel support members which are selectively urged to rotate in the direction for winding tape on the respective reel upon the manual actuation of a control for causing operation of a reel drive, and a shutoff device is provided which is powered by the reel drive and conditioned in response to the arresting of the rotation of the reel support members, for example, when the tape is fully unwound from one of the reels, during continued operation of the reel drive for causing the control to halt operation of the drive, for example, by de-energizing an electric motor thereof.

3,779,499
SUPPORT ASSEMBLY
Irving W. Shell, 442 W. Wellington, Chicago, Ill.
Continuation of Ser. No. 254,289, May 17, 1972. This application Oct. 30, 1972, Ser. No. 301,867
Int. Cl. A47b *47/00*
U.S. Cl. 248—245 **5 Claims**



A support assembly comprising in combination a support standard having a longitudinal channel defined therein having opposing faces on the sides thereof, each of the faces of the channel having longitudinally extending grooves defined thereupon on either side of a pocket portion disposed therewithin; an intermediate member or connector means disposed in and between said pocket portion and connectable with an article to be supported thereby, said member having an opening defined therethrough extending axially of the article to be supported thereby; and a bolt extendible through said opening in said intermediate member into locking engagement with said grooves in said channel whereupon said standard, said intermediate member and said bolt are integrally joined to support said article when connected thereto. The locking engagement is obtained by the coaction of the grooves on the faces of the channel with the threads on the bolt.

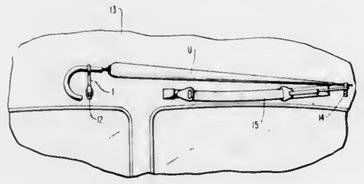
3,779,500
FORM SUPPORT BRACKET
James R. Cox, Largo, Fla., assignor to Jim Cox Company, Largo, Fla.
Filed June 14, 1971, Ser. No. 152,808
Int. Cl. A47f *5/10*; **A47h** *33/00*; **E04g** *17/16*
U.S. Cl. 248—288 **12 Claims**



A support bracket for applying and maintaining a force and simultaneously permitting lateral movement of a movable ob-

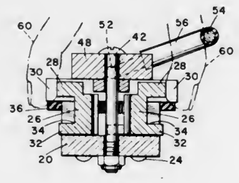
ject supported by the bracket. The bracket includes a supporting and securing means for maintaining the bracket stationary and a power transmitting bolt having Acme threads. At the working end of the bolt is positioned a roller means fitting into a suitable socket in the bolt. At the opposite end of the bolt a square shank is provided to permit the bolt to be advanced or retracted into position to apply and maintain the force. A retaining means and lubrication for the ball is provided.

3,779,501
AUTOMOBILE STORAGE BRACKET
Jules Scott Zibell, 6851 Roswell Rd. N.E., Atlanta, Ga.
Filed Aug. 25, 1971, Ser. No. 174,737
Int. Cl. A47h *1/16*
U.S. Cl. 248—302 **3 Claims**



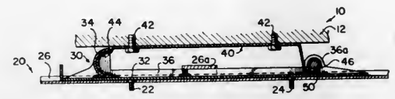
A bracket for storing an umbrella, cane, or other elongated, substantially rigid object in an automobile which has a garment hanger over the rear window and a clip such as a shoulder harness clipover the forward window. The bracket is constructed of a single piece, preferably of flexible material, and is comprised of a loop portion dimensioned to fit over and be secured onto the garment hanger, an open hook portion which is dimensioned to accommodate the handle portion of the umbrella and a stem portion which connects the loop portion and the hook portion. The bracket is installed on the garment hanger so that the open hook portion faces upwards, the bayonet of the umbrella is inserted into the clip over the front window and the handle of the umbrella is placed into the open hook portion of the bracket.

3,779,502
STAKE POCKET TIE DOWN INSERT
Bruce W. Marberg, P.O. Box 217, Bonita, Calif.
Filed Apr. 3, 1972, Ser. No. 243,621
Int. Cl. B65d *19/38*
U.S. Cl. 248—361 R **9 Claims**



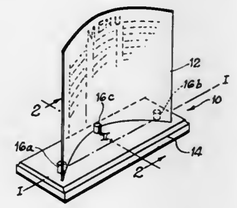
A tie down insert, for use in stake pockets of trucks generally and particularly in stake pockets conventionally provided in the tops of the side walls of the load boxes in pickup trucks or the like, the insert having means for swivel connection of load lashing ropes. The insert is in the nature of an accessory and is manually insertable by lowering the insert into the stake pocket while retracting a pair of sliding latch blocks which are spring biased into engagement with the structure defining the pocket when finger pressure thereon is released.

3,779,503
QUICK DETACHABLE SEAT FOR AUTOMOBILE
Joseph S. Lombardo, Sr., 13 Walnut St., North Brunswick, N.J.
Filed May 5, 1972, Ser. No. 250,815
Int. Cl. F16m *1/00*
U.S. Cl. 248—429 **5 Claims**



A seat for automobiles is provided which may be moved longitudinally on a track and which has a track-engaging element which is confined to movement along the track; a support is fixed to the seat and releasably connected to the track-engaging element for quick release of the seat from the track system.

3,779,504
STAND FOR MENUS AND THE LIKE
Sidney M. Schwartz, 10185 N. Collins Ave., Bal Harbour, Fla., and Avrum N. Andalman, 185 Euclid Ave., Glencoe, Ill.
Filed Apr. 17, 1972, Ser. No. 244,726
Int. Cl. A47b *97/04*
U.S. Cl. 248—441 **1 Claim**

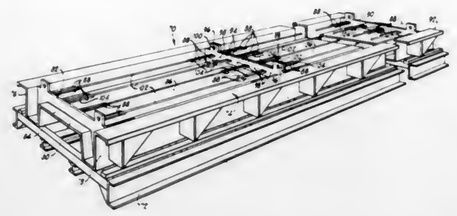


An inexpensive but reliable stand to support a readily bendable article such as a menu, photograph, display card or the like which is flexible in at least one direction, e.g., one of paperboard. The stand has three posts, two of which are on a common axis and the third is displaced laterally from said axis. Thus, the item to be supported may be bent into concave form and rigidly supported by engaging the same between the posts.

3,779,505
APPARATUS FOR SIMULTANEOUSLY PRECASTING A PLURALITY OF STRUCTURAL MEMBERS
Edward R. Sturm, Oklahoma City, Okla., assignor to Thomas Concrete Products Company, Oklahoma City, Okla.
Filed Sept. 30, 1970, Ser. No. 76,820
Int. Cl. B28b *7/22*
U.S. Cl. 249—84 **15 Claims**

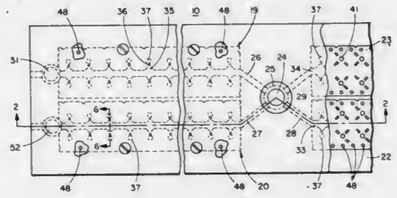
Method and apparatus for precasting concrete wall panels having matched pairs of steel bearing plates cast therein. The wall panels are simultaneously precast in elongated casting beds in relative positions identical to the relative positions they are to occupy when employed in construction of a building. The wall panels are secured together in superposed rela-

tion in precise plumb and alignment by welding the matched pairs of bearing plates. The method and apparatus disclosed are suitable for precasting both slab wall panels and column-



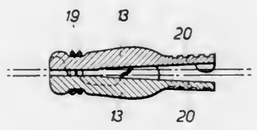
forming wall panels. A novel building structure is also disclosed which employs both slab wall panels and column-forming panels of the present invention in its construction.

3,779,506
APPARATUS FOR EQUALIZING THE FLOW RATE OF MOLDING COMPOUND INTO EACH OF A SERIES OF MOLD CAVITIES
Victor J. Adams, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 25, 1971, Ser. No. 174,815
Int. Cl. B29c *1/00*
U.S. Cl. 249—110 **2 Claims**



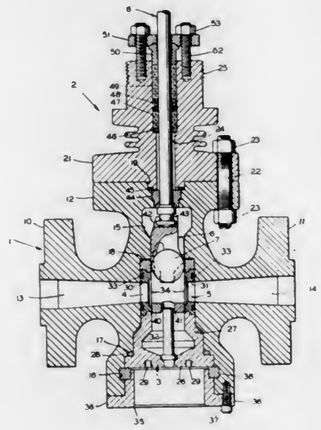
In a mold wherein there are a series of cavities to be filled from a single runner from which passageways, each including a gate, extend to each cavity, the velocity of molding or encapsulating compound into the cavities adjacent the end of the runner may be made the same as adjacent the beginning of the runner, by providing a dump cavity and a gate at the end of the runner to receive molding compound while the cavities adjacent the end of the runner are being filled.

3,779,507
MEANS FOR CONTROLLING FLUID FLOW
Ellis Whiteside Clarke, 47 Deramore Dr., Belfast, Ireland
Filed Sept. 10, 1971, Ser. No. 179,510
Claims priority, application Great Britain, Sept. 11, 1970, 43,513/70; Apr. 23, 1971, 10,934/71
Int. Cl. F16k *7/06*
U.S. Cl. 251—9 **8 Claims**



A device for regulating fluid flow, especially of blood, saline drips and other medical fluids in hospital administration sets, is in the form of a clamp having jaws engaging a flattened portion of tube, and this flattened portion has a tapered groove or a tapered elongated member between its opposed walls. Movement of the point of action of the clamp along the flattened tube portion varies the rate of flow.

3,779,508
VENTURI-BALL VALVE
Herman L. Paul, Jr., 720 Old Mill Rd., Wyomissing, Pa.
Filed Nov. 17, 1971, Ser. No. 199,516
Int. Cl. F16k *47/00*
U.S. Cl. 251—124 **2 Claims**

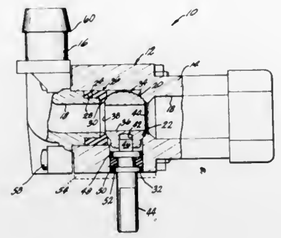


A venturi-ball valve including a body having coaxial inlet and outlet passages and a through opening substantially normal to the axis of the passages and communicating with the inner ends thereof. The inlet and outlet passages taper inwardly in the direction of the through opening. The body is adapted to be temporarily or permanently disposed in a fluid flow line. A pair of spaced seat rings is provided in the through opening, one at the juncture of the opening and the inlet passage and the other at the juncture of the opening and the outlet passage. The seat rings are carried by a removable tubular seat retainer which is located in the through opening. A ball cage containing a sealing ball is slidable along the through opening and the seat retainer by means of an operating stem which extends above the cage and through the top of the body. The ball permits or prevents fluid flow through the outlet passage depending on the position of the cage in the through opening. The seat retainer and the seat rings constitute a subassembly which may be readily positioned in the through opening at the same time of assembly and removed therefrom for purposes of inspection or replacement of the seat rings, as required, without disturbing the operating stem or other parts of the valve or disconnecting the valve from the flow line.

3,779,509
BALL VALVE
Christiaan J. H. Vandenbroek, Ann Arbor, Mich., assignor to Thetford Corporation, Ann Arbor, Mich.
Filed June 1, 1972, Ser. No. 258,901
Int. Cl. F16k *5/02*
U.S. Cl. 251—148 **9 Claims**

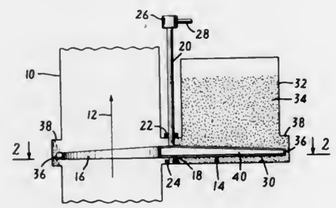
A ball valve that is of the floating-ball type wherein the ball is enclosed by a two-piece housing and is actuated by a stem. The stem is keyed to the ball and projects through the housing. The upstream half of the housing defines a rigid seat facing downstream. A single cylindrical flexible seal seals the mating

joint of the two-piece housing and provides a flexible seat facing upstream towards the rigid seat. The ball is positioned



between the rigid and flexible seats so that the upstream fluid pressure will act on the ball tending to increase the effectiveness of the seal.

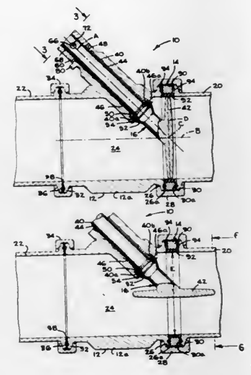
3,779,510
ROTATABLE GASTIGHT VALVE
Harald Krogsrud, Gjettum, Norway, assignor to Elkem A/S, Oslo, Norway
Filed Aug. 1, 1972, Ser. No. 277,129
Int. Cl. F16k *5/00, 1/16;* **C21b** *7/08*
U.S. Cl. 251—301 **6 Claims**



A rotatable valve for gas pipes is disclosed. The valve comprises a disc having an aperture therein, the diameter of the aperature being located entirely within a radius of the disc.

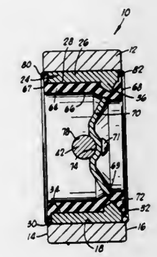
3,779,511
SANITARY BUTTERFLY VALVE
Frank G. Wenglar, Houston, Tex., assignor to FMC Corporation, San Jose, Calif.
Filed Aug. 13, 1971, Ser. No. 171,651
Int. Cl. F16k *1/226*
U.S. Cl. 251—306 **13 Claims**

A butterfly valve especially for use in pipeline systems where a very high level of cleanliness is mandatory, such as employed in the food, pharmaceutical and chemical industries. The valve comprises a disc-type closure element mounted on a valve stem that extends through the side of the valve body at a 45° angle, and a valve seat secured in place between a flange on one end of the valve body and an adjacent pipe flange, by a removable clamp. The stem is sealed to the valve body in a way that prevents entrapment of food or other material flowing through the valve, thus enhancing sanitary



conditions in the valve during periods of continued or prolonged use. A simplified valve operating handle assembly, removably secured to the outer end of the valve stem, holds the disc and stem in place in the valve body and facilitates quick disassembly and reassembly of the valve for periodic cleaning or other servicing.

3,779,512
STAMPED-DISC BUTTERFLY VALVE
Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.
Filed Aug. 18, 1971, Ser. No. 172,628
Int. Cl. F16k *1/22*
U.S. Cl. 251—308 **5 Claims**

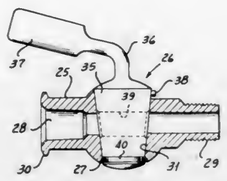


A butterfly valve assembly including a generally cylindrical liner carried within a valve body which valve body has a bore extending therethrough and is adapted to be supported between a pair of aligned pipe flanges. A cylindrical valve stem extends through the bores of the valve body and the liner and is journaled at each end thereof in the valve body. A one-piece butterfly valve disc is sized and shaped to conform to the valve stem and is rigidly secured thereto for opening and closing the valve assembly. An elastomer is molded-in-place and bonded around the entire inner periphery of the liner. An annular valve seat is formed on the inner periphery of the liner to provide, in conjunction with the elastomer, a seal between the liner and the butterfly valve disc when the butterfly valve disc is in the closed position.

3,779,513
VALVE

Melvin Levine, New York, N.Y., assignor to American Cystoscope Makers, Inc., Pelham Manor, N.Y.

Filed May 18, 1972, Ser. No. 254,712
Int. Cl. F16k 5/02
U.S. Cl. 251—309 8 Claims

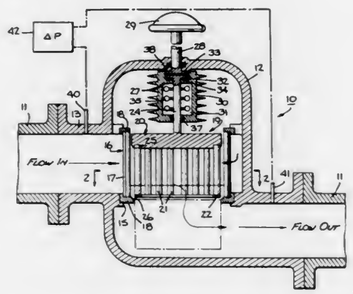


A three-piece valve consisting of a body unit, an insert unit and a C-shaped spring unit. The body unit has a horizontal first through passage, a downwardly tapered frusto-conical second through passage, an arcuate groove at the top and a camming surface at each end of the groove. The insert unit comprises a frusto-conical plug member having a transverse third through passage and an annular groove at its lower end. The plug member is located in the second passage and forms intimate rotary contact with the surface defining the second passage. The insert unit also comprises a handle which is integral with the plug member and a pin at the upper end of the plug member and projecting into the arcuate groove. The C-shaped spring unit registers with the annular groove and releasably engages a reversely tapered fourth passage formed in the bottom of the body unit and communicating with the second passage. The parts are so configured and arranged that, upon predetermined rotary movement of the plug member relative to the body unit in either direction, the pin engages and slides along a corresponding camming surface causing release of the plug member from the body unit against the action of the spring unit.

3,779,514
CONTROL VALVE AND PROCESS CONTROL SYSTEM

Joseph O'Connor, Jr., Goshen, N.Y., assignor to Kieley & Mueller, Inc., Middletown, N.Y.

Division of Ser. No. 112,890, Feb. 5, 1971, Pat. No. 3,709,245.
This application Sept. 25, 1972, Ser. No. 291,930
Int. Cl. F16k 51/00
U.S. Cl. 251—369 6 Claims

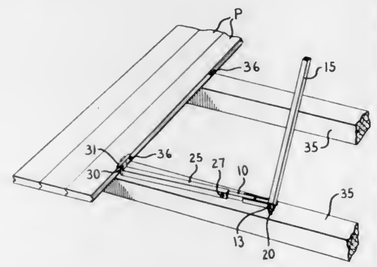


The control valve has a stator which imparts a swirl to the flow of fluid and a rotor which is rotated under the swirl of fluid. Energy is absorbed from the rotor in various ways. In one instance, the rotation of the rotor is subjected to a drag force which is induced in opposition to the force of rotation in order to control the pressure drop in the flow. In another instance, the rotation of the rotor is used to store electrical energy which can be used for other purposes throughout the process system.

3,779,515
ADJUSTABLE DECKING AND FRAMING TOOL

Dennis Gary Larios, 207 Eluria St., Oregon City, Oreg., and Cecil Eldon Vilhauer, 2265-5th Ave., West Linn, Oreg.

Filed Mar. 9, 1972, Ser. No. 233,110
Int. Cl. B66f 3/00
U.S. Cl. 254—16 1 Claim

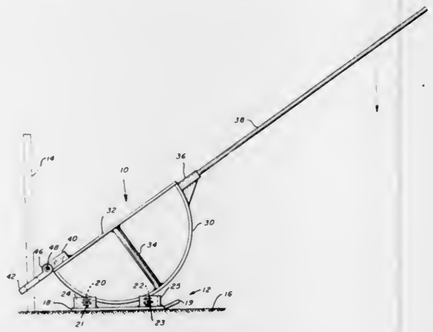


A horizontal base bar is pivotally connected at one end with a vertical lever arm having a point engageable with a wooden structure. A plurality of different attachments may be connected with the other end of the base bar. A decking attachment may be connected in one position for pushing deck boards together on their supporting joists. When the decking attachment is turned over, it may be used for pulling loose deck boards against deck boards which have already been nailed. A T-shaped wall moving attachment is adapted for squaring a wall framing on a floor before erection. A spike attachment is adapted for both pushing and pulling movements to align erected wall frames on a floor.

3,779,516
POST PULLER

Jack E. King, 6326 E. Third St., Tulsa, Okla.

Filed Aug. 14, 1972, Ser. No. 280,092
Int. Cl. E21b 19/00
U.S. Cl. 254—30 3 Claims

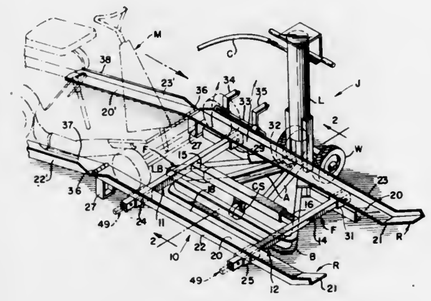


This invention describes a fence post puller which is made in two parts. The first part comprises a base plate which is set on the ground. There are two spaced horizontal rollers with parallel axes fastened to the base plate. In use the plate is aligned so that the line joining the centers of the two rollers will intersect the position of the fence post. The second part comprises a semicircular frame which is adapted to place on the rollers and to rotate about its own center. There is a long lever which is attached to the frame, which is an extension of the diameter in a first direction. At the other end of the diameter is a hinged link which is adapted to be attached rapidly to the fence post. When the link is attached to the post and the handle is pulled down, the frame rotates in the rollers, lifting the fence post.

3,779,517
FRAME AND JACK ASSEMBLY

James Glenn Fisher, Hartwell, Ga., assignor to NVF Company, Wilmington, Del.

Filed Apr. 25, 1972, Ser. No. 247,441
Int. Cl. B66f 3/00
U.S. Cl. 254—134 20 Claims



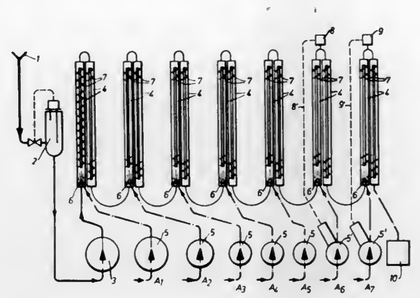
A frame and jack assembly, the frame being substantially rectangularly shaped and including spaced apart vehicle supporting tracks and spaced apart, transverse track supporting cross frame members connecting the tracks together, said jack including a forwardly extending, vertically movable lifting structure, said cross frame members secured to said lifting structure for movement therewith to elevate a vehicle supported on said tracks to a position to facilitate the performance of work thereon.

3,779,518
CONTINUOUS PHOTOGRAPHIC EMULSION PROCESSING

Gunther Koepke, Leverkusen; Wolfgang Muller-Bardorff, Cologne; Peter Herzhoff, Leverkusen; Hans Gref, Cologne; Wolfgang Schweicher, Leverkusen; Hans Frenken, Leverkusen; Karl Voss, Leverkusen; Willi Wasser, Leverkusen; Kurt Browatzki, Opladen, and Josef Friedsan, Langenfeld, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 10, 1972, Ser. No. 225,194
Claims priority, application Germany, Feb. 11, 1971, P 21 06 526.9
Int. Cl. B01f 5/00, 15/02
U.S. Cl. 259—18 18 Claims

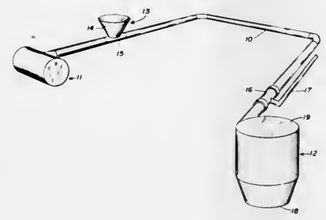
A continuous preparation of photographic emulsions by adding a plurality of individual components, the individual components being introduced continuously and successively by metering pumps. Each individual component is completely mixed with the main stream of emulsion before the next component is introduced. Mixing is carried out in a static mixing zone or alternatively by producing a secondary turbulent flow in a particularly designed mixing zone.



3,779,519
CONCRETE PLACEMENT

Reg A. Anderson, Dallas; Ronald W. Chandler, Richardson; Frederick N. Mueller, Dallas, and Norbert L. Osborn, Plano, all of Tex., assignors to Tetradyne Corporation, Dallas, Tex.

Filed June 7, 1971, Ser. No. 150,542
Int. Cl. B28c 5/06
U.S. Cl. 259—147 10 Claims



A system is provided for delivering a settable concrete mixture to a placement point which includes a gas-solids delivery system for transporting dry cementitious material and suitable aggregate to a water addition zone, and thereafter it carries the cementitious material and water to a deceleration and mixing zone having its outlet positioned over the placement point. The deceleration and mixing zone causes the gas-solids stream to agitate as it decelerates and thereby thoroughly blends the concrete constituents to form a settable mixture, which drops from the opening on the predetermined concrete placement point.

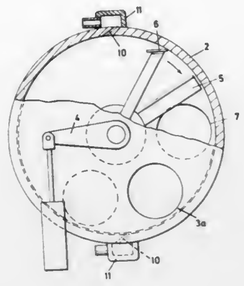
3,779,520
MIXING CHAMBER CONSTRUCTION

Albert Edwards, Peterborough, England, assignor to Baker Perkins Limited, Petersborough, England

Filed Mar. 24, 1972, Ser. No. 237,700
Claims priority, application Great Britain, Mar. 29, 1971, 8,095/71; Dec. 1, 1971, 55,725/71
Int. Cl. B28c 5/16; B22c 5/04; B01f 7/16
U.S. Cl. 259—151 10 Claims

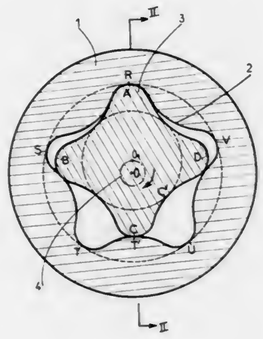
A mixing chamber for mixing cold-setting foundry sand mixtures comprising a cylindrical wall, a base, a roof, a materi-

al inlet, a material outlet and a rotary mixing element. The mixing element has an axis which is substantially co-axial with the axis of the cylindrical wall. The mixing chamber further has a first pair of diametrically opposed blades to sweep the



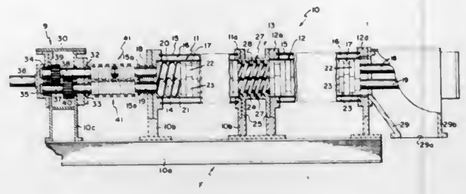
base of the chamber during rotation of the element and a second pair of diametrically opposed blades, angularly offset from the first pair of blades, to sweep the cylindrical wall of the chamber during rotation of the element.

3,779,521
EXTRUSION ASSEMBLY
Henri Godines, Aubervilliers, France, assignor to Creusot-Loire, Paris, France
Filed Apr. 27, 1972, Ser. No. 248,243
Int. Cl. B01f *7/08*
U.S. Cl. 259—191 **1 Claim**



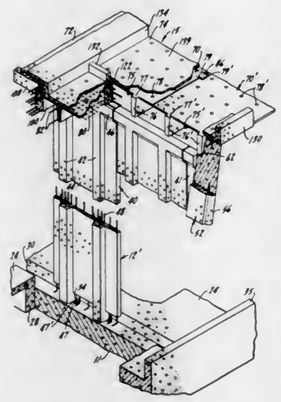
An extruder for feeding a die which extruder includes a mixer unit and a pump unit each of which comprise a screw rotatable in a sleeve, the mixer unit screw having a succession of threads of different pitch while the pump unit sleeve is internally threaded with N threads of pitch P and the pump unit screw has a mating profile, has (N−1)P/N threads and is movable in orbital rotation about the pump unit sleeve axis in contact with the sleeve.

3,779,522
COUPLING STRUCTURE FOR TWIN MIXER SHAFTS
Bernard A. Loomans, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.
Filed Dec. 9, 1971, Ser. No. 206,392
Int. Cl. B01f *7/02*
U.S. Cl. 259—192 **20 Claims**



A mixer or reactor having axially parallel shafts with co-wiping, radially extending mixing and kneading members thereon, extending through a mixer or reactor barrel. A pair of intermeshing axially extending coupling members are provided to removably couple the mixer shafts with axially parallel drive shafts which are axially aligned with the mixer shafts and/or to removably couple elongate sections of the mixer shafts.

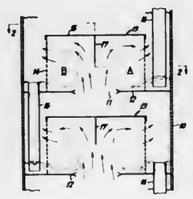
3,779,523
CONCRETE COOLING TOWER
Donn B. Furlong, San Rafael; Harry W. Gobler, and Robert Grother, both of Santa Rosa, all of Calif., assignors to Ecodyne Corporation, Chicago, Ill.
Filed Mar. 8, 1972, Ser. No. 232,830
Int. Cl. B01f *3/04*
U.S. Cl. 261—111 **18 Claims**



A concrete cooling tower shell design made from a minimum number of precast factory-made parts. The shell is fabricated from three basic precast prestressed concrete building elements; namely: wall panels, T-beams, and louver posts. The wall panels and louver posts are positioned above a foundation to define the walls of the tower. The T-beams are positioned above the louver posts and wall panels to form the top deck of the tower. The T-beams have spray nozzle openings formed therein and have a reinforced concrete topping poured thereon in a unique manner which utilizes ex-

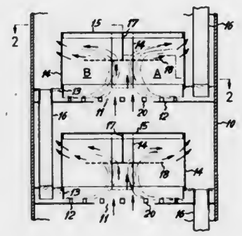
tension members at each nozzle opening to form a corresponding opening therethrough. The topping includes curb portions to define a hot water distribution basin thereabove.

3,779,524
GAS-LIQUID CONTACTING APPARATUS
Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Chuoku, Tokyo, Japan
Filed Aug. 10, 1971, Ser. No. 170,430
Int. Cl. B01d *3/26*
U.S. Cl. 261—114 R **3 Claims**



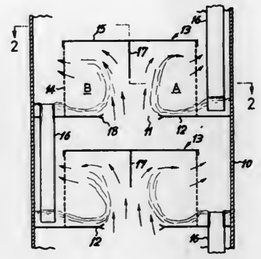
A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow aperture therein and a contacting structure provided on the trays. The contacting structure has a cover for preventing gas and liquid to ascending and partition plate therein.

3,779,525
GAS-LIQUID CONTACTING APPARATUS
Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Aug. 19, 1971, Ser. No. 173,080
Int. Cl. B01d *3/26*
U.S. Cl. 261—114 R **3 Claims**



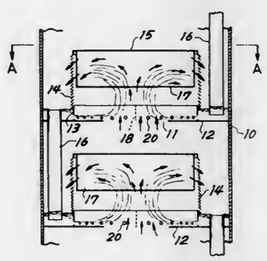
A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow aperture therein and a contacting structure provided on the trays surrounding the gas flow aperture. The contacting structure has a cover for preventing gas and liquid to ascending and a perforated plate for breaking gas and liquid mixing flow therein.

3,779,526
GAS-LIQUID CONTACTING APPARATUS
Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Aug. 19, 1971, Ser. No. 173,149
Int. Cl. B01d *3/26*
U.S. Cl. 261—114 R **3 Claims**



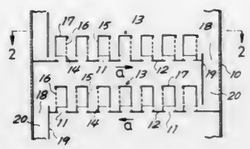
A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow aperture therein and a contacting structure provided on the trays surrounding the aperture. The contacting structure has a cover for preventing gas and liquid to ascending. The edge of said aperture is formed in a saw-teeth shape.

3,779,527
GAS-LIQUID CONTACTING APPARATUS
Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Aug. 24, 1971, Ser. No. 174,450
Claims priority, application Japan, Aug. 29, 1970, 45/86432
Int. Cl. B01d *3/26*
U.S. Cl. 261—114 R **3 Claims**



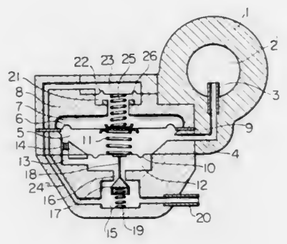
A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow aperture therein and a contacting structure provided on the trays surrounding the gas flow aperture. The contacting structure has a cover for preventing gas and liquid from ascending and a perforated cylinder whose perforations are outwardly and downwardly directed.

3,779,528
GAS-LIQUID CONTACTING APPARATUS
Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Aug. 24, 1971, Ser. No. 174,451
Claims priority, application Japan, Aug. 26, 1970, 45/84897; Sept. 16, 1970, 45/91872
Int. Cl. B01d 3/26
U.S. Cl. 261—114 R 4 Claims



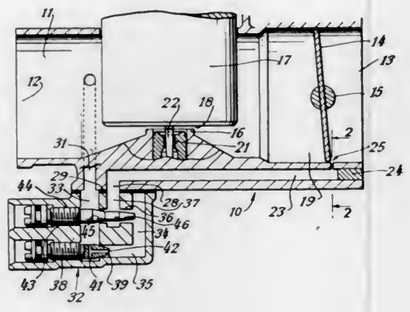
A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow openings therein and contacting structures provided on the trays surrounding the gas flow openings. Each contacting structure has a cover for preventing gas and liquid from ascending and a perforated plate above the liquid level on the tray and has a semi circular shape in horizontal section.

3,779,529
DIFFERENTIAL DIAPHRAGM CARBURETOR
Ryuichi Kimura, Odawara-shi, Japan, assignor to Mikuni Kogyo K.K., Chiyoda-ku, Tokyo, Japan
Filed Mar. 13, 1972, Ser. No. 233,988
Claims priority, application Japan, Aug. 26, 1971, 46/64770; Oct. 30, 1971, 46/85964; Dec. 20, 1971, 46/102653; Nov. 27, 1971, 46/96891
Int. Cl. F02m 17/04
U.S. Cl. 261—35 22 Claims



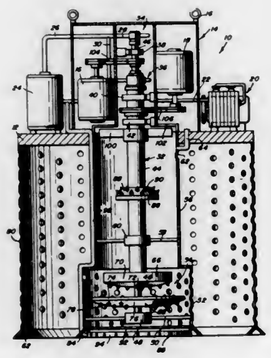
A differential diaphragm carburetor for an internal combustion engine comprising two diaphragms of different size interlocked with each other and one of said diaphragm interlocking with a valve which controls inflow of fuel to the carburetor from a fuel supply system, whereby the negative pressure in the fuel mixing chamber is applied to either one or both of the diaphragms and the operation of the valve is regulated by the difference in the size of the two diaphragms.

3,779,530
CARBURETORS
Geoffrey Lloyd Lawrence, Stanmore, England, assignor to The Zenith Carburetter Company Limited, Stanmore, Middlesex, England
Filed Mar. 23, 1971, Ser. No. 127,206
Claims priority, application Great Britain, Mar. 31, 1970, 15,079/70
Int. Cl. F02m 9/04
U.S. Cl. 261—44 R 11 Claims



A carburetor of the constant depression type having a butterfly throttle valve is provided with an auxiliary passage for supplying air directly to the induction passage downstream of the throttle valve when the said throttle valve is in the idling position, opening of the throttle valve beyond the idling position causing the air supply through the auxiliary passage to a position downstream of the throttle valve to cease either due to the edge of the throttle valve moving across the auxiliary passage opening or to the said auxiliary passage being closed.

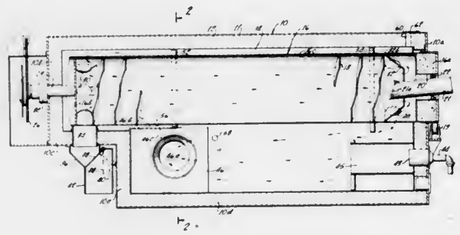
3,779,531
TOP DRIVEN MATERIAL SHEARING MIXER AND AERATOR
Robert W. White, 409 S. Union Ave., P.O. Box 74, Salem, Ohio
Continuation-in-part of Ser. No. 851,702, Aug. 20, 1969. This application Aug. 21, 1970, Ser. No. 65,969
Int. Cl. B01f 3/04, 7/32
U.S. Cl. 261—87 15 Claims



A portable unit supported in or on a body of fluent material activates a shear zone within the material into which a treating medium is injected under pressure. The shear zone is activated

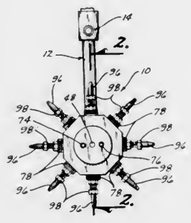
by counter-rotating rotors having projections through which the treating medium is discharged. The rotors are driven from a support by concentric shafts enclosing flow passages conducting the treating medium to the rotors.

3,779,532
CONVECTION HEATING SYSTEM FOR A TEMPERING FURNACE
Harold E. Mescher, Pico Rivera, Calif., assignor to Pacific Scientific Company, Commerce, Calif.
Filed Mar. 29, 1971, Ser. No. 128,978
Int. Cl. F27b 7/10
U.S. Cl. 266—5 R 11 Claims



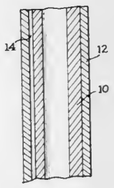
Within an insulated furnace chamber, a blower circulates heated gasses axially through a cylindrical rotary retort by way of large holes in opposite ends of the retort. A baffle wall near the blower directs the gas flow in the proper direction. An inlet in the entrance end of the retort opens to the exterior of the furnace for introducing the parts to be heated, and a guide within the retort prevents the parts from falling through the forward gas circulation holes. The holes in the discharge end of the retort cooperate with a chute in the wall of the furnace to serve as discharge holes for the heated metal parts.

3,779,533
MACHINE MOUNTED CUTTING TORCH
Berwyn E. Etter, 10355 Paradise Blvd., Treasure Island, Fla.
Filed June 15, 1972, Ser. No. 263,269
Int. Cl. B23k 7/10
U.S. Cl. 266—23 T 5 Claims



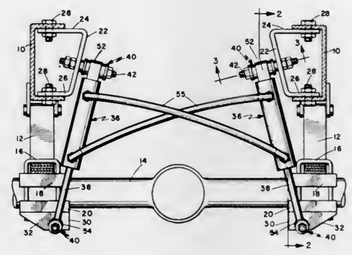
A machine mounted cutting torch is disclosed comprising a support means having a horizontal end portion positioned above the material being cut. A cutting tip support turret is selectively rotatably mounted on the end portion of the support means and has a plurality of spaced apart cutting tips secured thereto extending radially outwardly therefrom. A spring detent means is provided to yieldably maintain the turret in various positions with respect to the material being cut so that the selected cutting tip will be yieldably maintained in an operative position. A conduit means extends through the support means and the turret so that oxygen and industrial gas are supplied only to the cutting tip which is in the operative position. Means are provided to prevent the escape of gas from the turret. Control means is provided for supplying the desired oxygen and gas volumes and ratios to the cutting tip.

3,779,534
DEVICE FOR COOLING A TUYERE OF A REFINING CONVERTER
Pierre Leroy, St. Germain en Laye; Marcel Gombert, Moyeuvre-Grance; Metz Queuleu, Moyeuvre-Grance, and Emile Sprunck, Moyeuvre-Grance, all of France, assignors to Creusot-Loire a societe anonyme, Paris, France
Division of Ser. No. 50,393, June 29, 1970, abandoned. This application May 15, 1972, Ser. No. 253,400
Claims priority, application France, July 8, 1969, 6923145; Nov. 13, 1969, 6938923; June 23, 1970, 6923078
Int. Cl. C21c 5/34
U.S. Cl. 266—41 4 Claims



Means for cooling a tuyere of a refining converter having two separate feed systems, which comprises an axial circuit for the oxidizing gas and a peripheral circuit for the cooling agent, wherein a cooling liquid, such as water under pressure, carbon dioxide in the liquid state or a hydrocarbon-containing liquid is injected into the peripheral circuit in lieu of a cooling gas.

3,779,535
SAFETY STABILIZER AND SHOCK ABSORBER SYSTEM
Walter L. Strand, 16546 Gabarda Rd., San Diego, Calif.
Filed Dec. 20, 1971, Ser. No. 209,743
Int. Cl. B60g 11/26
U.S. Cl. 267—64 1 Claim



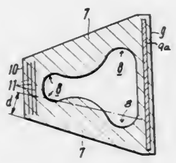
An improved stabilizer and shock absorber system for road vehicles with spring axles such as automobiles and trucks and particularly but not exclusively adaptable to the rear axles of campers, housecars, trailers, certain trucks and vans where pronounced tendencies to sway, lean and pitch are experienced. The disclosed system employs at least one pair of opposed cylinders which will ordinarily be mounted in front of the rear axle of the vehicle and the cylinders are connected in cross-over arrangement and inclined transversely of the vehi-

cle, that is, upwardly and toward each other, for more efficient reaction to individual wheel movement, recognizing that when one side of the vehicle is lowered, the opposing or driven cylinder, by reason of its inclination, thrusts with a sidewise component force as well as vertical within the limits imposed by the spring suspension to lower the other side of the vehicle and thus to prevent leaning. There is also a pronounced tendency for vehicles such as those mentioned above to exhibit "-highway bounce" or "gallop" under certain road and driving conditions, this action involving distinct pivotal movement about the rear and front axle regions, again within limits imposed by the spring suspension, and the cylinders are therefore also inclined longitudinally of the vehicle. Shock absorbing action as such is further accomplished by providing an air cushion at the top of each cylinder.

3,779,536
BUFFER OR FENDER

Hans-Peter Lachmann, Cologne, Germany, assignor to Clouth Gummiwerke AG, Cologne, Germany

Filed Jan. 31, 1972, Ser. No. 222,079
Claims priority, application Germany, Jan. 29, 1971, P 21 04 212.6
Int. Cl. F16f *7/12*
U.S. Cl. 267—140 **7 Claims**

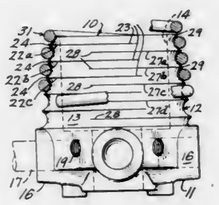


A buffer of elastomeric material forming a hollow body which has two legs spaced from each other in the direction in which the buffer exerts its main cushioning action and also has two additional legs arranged opposite and in spaced relationship to each other while interconnecting the end portions of said first legs, one of said first legs having bendable elastic insert means therein limiting the elasticity to about half of the flexibility of said additional legs.

3,779,537
CONE APPARATUS

Gary B. Kalister, Medina, Ohio, assignor to Napoleon Spring Works, Inc., Archbold and Kalco, Inc., Cleveland, Ohio, part interest to each

Filed Feb. 20, 1973, Ser. No. 334,091
Int. Cl. F16f *1/12*
U.S. Cl. 267—179 **8 Claims**

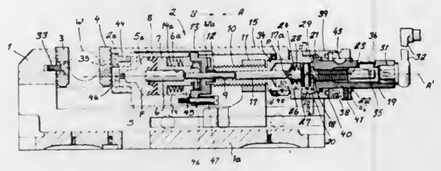


The invention is a cone for use with, for example, a torsion spring in a counterbalancing mechanism of a door. The cone body has a frusto-conical exterior surface. A first plurality of spaced partially circular ridges are provided on the exterior surface. Each of the ridges has first and second ends adjacent the surface and a central portion spaced above the surface. A second plurality of spaced partially circular ridges are alternately disposed between respective ones of said first plurality of ridges. The second plurality of ridges have first and second ends adjacent the surface and central portions spaced above the surface at locations opposed to the central portions of the first plurality of ridges. The cone threadably receives either right-or left-hand wound springs.

3,779,538
MACHINIST VISE

Gunter Horst Rohm, Muhlstrasse 9, 7927 Sontheim/Brenz, Germany

Filed Oct. 18, 1971, Ser. No. 189,871
Claims priority, application Germany, Oct. 17, 1970, P 20 51 119.7; Oct. 23, 1970, P 70 39 210.8
Int. Cl. B25b *1/02, 1/18*
U.S. Cl. 269—23 **13 Claims**

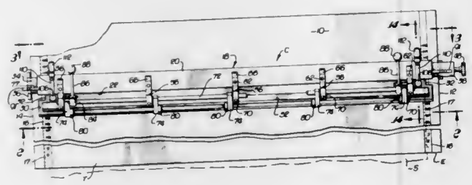


A machinist vise has a sleeve threaded into a support and carrying an axially extensible hydraulic piston-and-cylinder mechanism which in turn carries a vise jaw engageable with another vise jaw carried on the support. A nut is axially entrained by the sleeve and is rotatable relative thereto while a force-transmitting spindle has one end threaded into the nut and another end engaging a small piston of the hydraulic arrangement, a large piston thereof being engaged by the sleeve. A slip clutch is provided between the nut and the sleeve to couple the two together rotationally until the jaws engage the workpiece, and then decouple the two so that the nut can screw the spindle down to pressurize the hydraulic mechanism at an increased mechanical advantage via the small piston. As the spindle is screwed down it pulls the slip clutch open to insure decoupling of the sleeve and nut.

3,779,539
HOLDING APPARATUS FOR SHEET MATERIAL

David F. Ziers, Montebello, Calif., assignor to O/B Masco Drapery Hardware Company, Compton, Calif.

Filed May 16, 1972, Ser. No. 253,833
Int. Cl. B23q *3/00, 3/02*; **D06c** *3/08*
U.S. Cl. 269—91 **22 Claims**



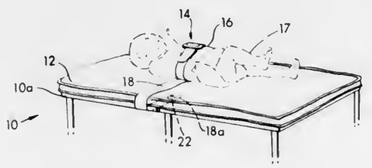
Apparatus for clamping drapery and other sheet material placed upon a table, which comprises an elongate body or carriage which is movable along the table and which can be

secured in any desired position, supporting means pivotally mounted on such body and extending forwardly thereof in a first position of such supporting means, an elongate clamping member extending lengthwise of the body below the supporting means in such first position thereof, means mounting the clamping member on the supporting means for vertical movement with respect thereto and into and out of engagement with the sheet material placed on the table, means for retaining the clamping member in a position above the table and out of contact with the sheet material and means for shifting such clamping member downwardly and into clamping engagement with the sheet material on the table. Important features of the invention include means for pivotally moving the supporting means and the clamping bar to a second position rearwardly of the forward edge of the elongate body to permit a full view of the edge portion of the sheet material adjacent the forward edge of the elongate body and means releasably locking the supporting means in each of the first and second positions thereof.

3,779,540
INFANT'S DRESSING TABLE SECUREMENT

Alban M. Boudreau, Fitchburg, Mass., assignor to Hedstrom Co., Bedford, Pa.

Filed May 22, 1972, Ser. No. 255,800
Int. Cl. A61g *13/00*
U.S. Cl. 269—328 **4 Claims**



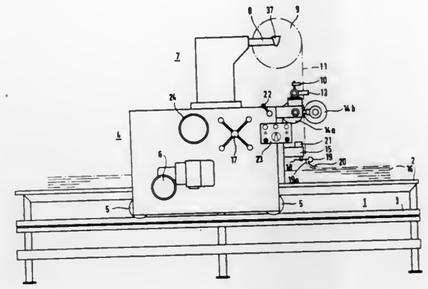
A securement for restraining an infant on a dressing table employs a pair of straps and a three-slot-slide fastener. The straps are anchored at one end at opposite sides of the dressing table. Both straps are passed through the center slot in the fastener. Then each strap is looped back through the adjacent outside fastener slot to form a non-sliding anchoring point at the middle of the dressing table top for the two straps. In use, the free ends of the straps are engaged around the waist of the infant and fastened together so that the infant is held securely at the middle of the dressing table.

3,779,541
CLOTH-SPREADING MACHINE

Gunter Stumpf, 7421 Mehrstetten, Kreis Munsingen, Germany

Filed Oct. 12, 1971, Ser. No. 188,024
Claims priority, application Germany, June 14, 1971, P 21 29 416.6
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **13 Claims**

A cloth spreading machine. A spreading carriage is mounted to reciprocate to-and-fro along a spreading table. A support for a bale of cloth is carried by holding means mounted on the table, and a calender assembly is mounted on the carriage. The cloth-bale support is adjustable relatively to the carriage in a direction parallel to the direction of reciprocation of the carriage, as by a photocell responsive to changes

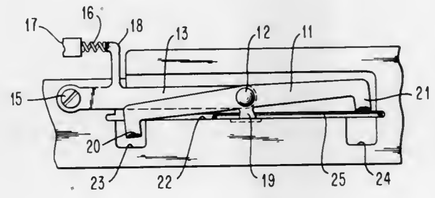


of position of the vertical plane of the web of cloth hanging from the bale and passing between two pull-off rollers of the calender assembly.

3,779,542
GATE MECHANISM FOR CARD READER

John H. Barker, Cary; Norman C. Dribelbis, Raleigh, and Keith B. Stevens, Sr., Cary, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 22, 1972, Ser. No. 282,733
Int. Cl. B65h *9/06, 7/08*
U.S. Cl. 271—60 **4 Claims**



A gate mechanism for a card reader or the like in which the gate mechanism includes a pair of lifter elements which must be simultaneously engaged by the card before the gate will open.

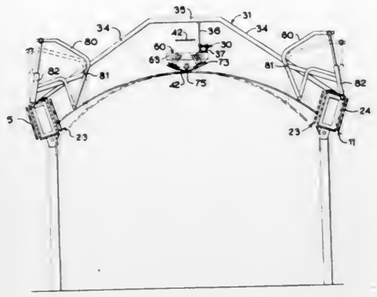
3,779,543
SHEET MATERIAL CONVEYOR

Leonard L. Hayes, Lewiston, Idaho, assignor to Potlatch Forests, Inc., San Francisco, Calif.

Filed Dec. 27, 1971, Ser. No. 212,085
Int. Cl. B65h *29/16*
U.S. Cl. 271—75 **2 Claims**

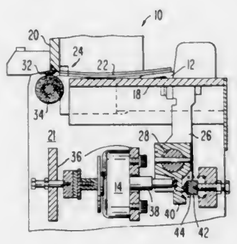
An apparatus for uniformly controlling the upward arch of wood veneer as it is moved longitudinally by a conveying means from a feeding device, which initiates the arched con-

figuration, to plural release mechanisms. The apparatus consists mainly of an endless belt which frictionally engages the



uppermost surface of arched sheets and maintains contact as the sheets move to the above-mentioned release mechanisms. The lower course of the belt is transversely arched for rigidity.

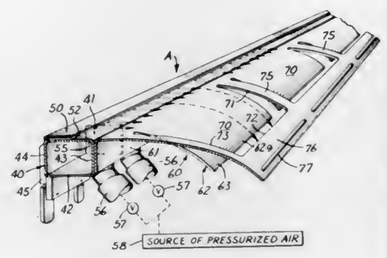
3,779,544
SOLENOID CONTROL SYSTEM
Leonard Wasielewski, Garden City, and James L. Kinner, St. Clair Shores, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Apr. 21, 1972, Ser. No. 246,272
Int. Cl. B65h *3/24*
U.S. Cl. 271—115 **4 Claims**



A solenoid control system is provided in which the plunger travel of a card feeder solenoid subjected to varying loads is monitored, solenoid actuating current being discontinued when the plunger reaches a predetermined point such that the duration of solenoid actuation, rather than being fixed, is a function of the varying loads to which the solenoid is subjected.

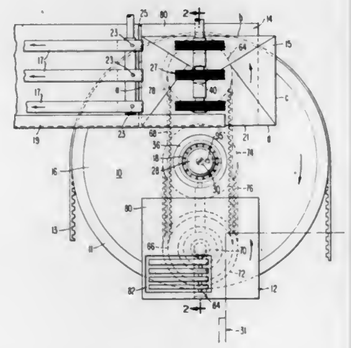
3,779,545
DELIVERY ARRANGEMENT
Siegfried Schuhmann; Claus Simeth, and Erich Wegel, all of Offenbach, Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG
Filed July 7, 1972, Ser. No. 269,704
Claims priority, application Germany, July 14, 1971, P 21 35 105.3
Int. Cl. B65h *29/04, 29/68*
U.S. Cl. 271—183 **14 Claims**

A delivery arrangement including a conveyor and take-off mechanism for delivering a series of printed sheets onto a pile, in which nozzles are provided distributed along the width of a sheet for directing a jet of air in a direction opposite to sheet movement. A guide plate spaced under the sheet and extending upstream from the region of the nozzles serves to confine the jet. Interposed between the guide plate and the sheet path are a series of longitudinally extending friction or land members toward which the sheet is drawn during the course of transport, the jet and friction members serving, together, to decelerate the sheet as it is removed by the take-off mechanism. The guide plate is longitudinally slit at intervals to



form windows defining extensive struck-out portions and intervening frames, the struck-out portions, bent downwardly from the frames, being utilized to confine the jet while the intervening frames provide the frictional engagement. The nozzles are fed by a manifold which is divided into zones which are fed by separate controllable valves in accordance with the width of the sheets being handled. Such nozzle and guide plate assemblies are preferably used in successive sections of the sheet conveyor for control of the sheet during change of direction and to eliminate flutter.

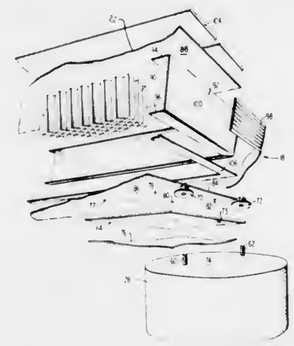
3,779,546
VACUUM WHEEL DOCUMENT DIRECTION CHANGING DEVICE
Edward A. Wojtowicz, Bryn Mawr; James R. Hunter, Chadds Ford, and S. James Lazzarotti, Broomall, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Dec. 11, 1972, Ser. No. 313,828
Int. Cl. B65h *29/24*
U.S. Cl. 271—196 **10 Claims**



Apparatus is described which comprises a continuously rotating wheel assembly having disposed thereon one or more vacuum platens for transporting documents in aidirection changes. The apparatus is effective in changing the direction

or the direction and orientation of documents, such as mail pieces, being transported in single file at high speed. For example, the device may be employed to abruptly change the direction of a moving document approximately through 90° within substantially the same plane. Additionally, the last-mentioned document may enter the device in a direction parallel to one of its axes (directed along the length of its flat surface) and may exit the device in a direction parallel to the other of its axes (directed along its width). Depending upon the application, the device platens may be arranged to provide a variety of document exit orientations along with a choice of substantially planar direction changes.

3,779,547
BALL GAME COURT WITH HEAT RECEIVING PANEL STRUCTURE
Michael Pappas, Irvington, N.J., assignor to Originetics Incorporated, Hopewell, N.J.
Filed June 30, 1971, Ser. No. 158,191
Int. Cl. A63b *61/00*
U.S. Cl. 272—3 **5 Claims**



A ball game court is provided comprising a plurality of panels which may be removably secured to ground mountings. Each panel may comprise a sandwich-like configuration having upper and lower sheets of weather resistant material. Core material may be disposed between the upper and lower sheets and siding may be secured to the edge portions of each panel to completely enclose the core therein. Electrical heating elements may be provided for heating the surfaces of each panel for snow removal or the like. Ground mountings may be provided with framework for vertically supporting poles used as a part of a frame for supporting netting. Sheet or strip material may be applied to an upper surface of each panel to protect the thin upper sheet from damage and wear and therefore are designed to be replaceable. These strips would also give the panel the resiliency, sound absorption and feel characteristics of a wooden court, and help distribute the load on the core.

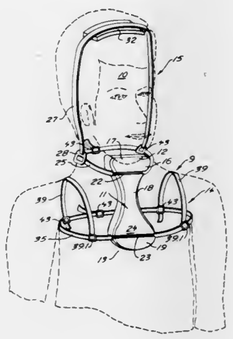
3,779,548
FINGER-TRAINING APPARATUS
Atsuhiko Sato, 12, Kayabacho 2-chome, Nihonbashi, Chuo-ku, Tokyo, Japan
Filed Sept. 27, 1972, Ser. No. 289,286
Int. Cl. A63b *23/00*
U.S. Cl. 272—67 **4 Claims**

A finger-training apparatus, comprising a grip portion and a forked portion formed in connection with the grip portion. The forked portion includes two spaced arms which support a couple of juxtaposed rollers rotatable therebetween. Gears in-



terconnect the rollers whereby rotation of one of the rollers in one direction will cause synchronous rotation of the other roller in an opposite direction.

3,779,549
HEAD BRACE FOR HOCKEY PLAYERS
John Harold MacNeil, Burnaby, British Columbia, Canada, assignor to Michael Pisesky, British Columbia, Canada
Filed Apr. 21, 1972, Ser. No. 246,369
Int. Cl. A63b *71/02, 21/18*
U.S. Cl. 273—1 B **4 Claims**

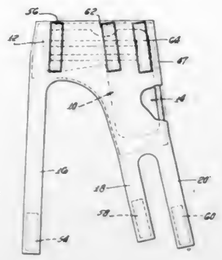


A head brace for hockey players having a strut adapted to fit between a player's chin and his sternum, and head and chest strap assemblies for securing upper and lower ends of the strut to the player's head and body so as to restrain downward freedom of movement of the player's head, but not side movement.

3,779,550
WRIST BRACE
Samuel M. Benoun, Garden Grove, and Roger F. David, Inglewood, both of Calif., assignors to The Align-A-Wrist Company, El Segundo, Calif.
Filed Feb. 22, 1972, Ser. No. 227,877
Int. Cl. A63b *71/14*
U.S. Cl. 273—54 B **3 Claims**

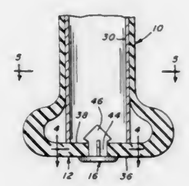
A wrist brace having a unitary support member with a rigid forwardly extending section and a bendable laterally extending section for partially wrapping around the thumb-side of

the forearm. A strap member connected to the forwardly extending section is designed to encircle the hand immediately behind the knuckles and in front of the thumb, and two more



strap members connected to the forwardly and laterally extending sections are designed to encircle for the forearm immediately behind the wrist joint.

3,779,551
INDICATOR ELEMENT FOR BALL BAT
Richard C. Wilson, Arcadia, Calif., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Dec. 10, 1971, Ser. No. 205,994
Int. Cl. A63b *59/06*
U.S. Cl. 273—72 A **7 Claims**

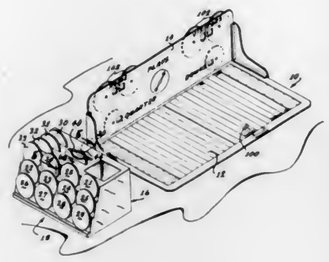


A tubular bat body having an apertured end closure covering one end of the bat body. A cover element secured to the end closure. The cover element having a head disposed generally adjacent the outer surface of the end closure and a shank extending into the closure aperture and in contact with the aperture defining surface. An anchor section formed as an extension of the shank having shoulder means in locking engagement with the closure inner surface. The anchor section may have pilot means for facilitating insertion of the shank into the closure aperture.

The cover element or indicator has means providing information regarding one or more bat properties. The shank may have a generally web-like configuration with substantially parallel opposed marginal edges and stiffener fins may be provided. The anchor section may be substantially triangular with the base of the triangle serving to provide locking shoulders and the other sides providing the pilot surfaces.

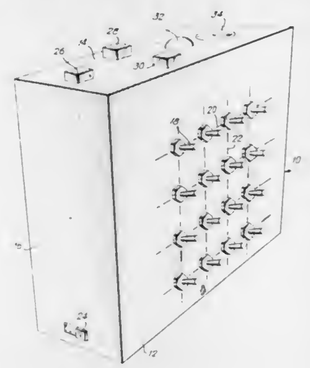
3,779,552
AUDIBLE GAME
Gordon H. Buck, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 16, 1971, Ser. No. 208,668
Int. Cl. A63f *9/00*
U.S. Cl. 273—88 **1 Claim**

A simulated football game or other strategy game, wherein the opposing strategy of two players is employed to select phonograph record tracks. Each track includes a voice recording which sounds like a sports announcer describing a play based on the strategies of the opposing teams, and describing the outcome of the play. The offense player selects one of several records, each record having a label describing a different offensive strategy, and inserts the record into a phonograph so that the defensive player cannot see the label. The record has several markings spaced thereabout indicating different defensive strategies, and the defense player turns the



record until a chosen defensive strategy is opposite a pointer on the phonograph housing. The phonograph then plays a record track describing the outcome of the play. The leadin portions of the record tracks are arranged about the record so that if the defense player has selected a highly appropriate strategy, a track is likely to be played that describes an outcome favorable to the defense, while an inappropriate defense strategy selection is likely to result in playing a record track describing an outcome unfavorable to the defense.

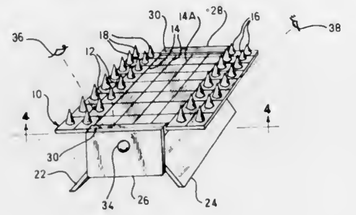
3,779,553
COMPETITIVE GAME APPARATUS INCLUDING GROUPS OF ELECTRIC SWITCHES
Michael Secter, 305 Canal St., New York, N.Y.
Filed Mar. 2, 1972, Ser. No. 231,338
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 AB **16 Claims**



As a competitive game, there is provided a casing having opposite faces on which are arranged respective matrices of switches. The switches of each matrix are connected to each other via switches of the other matrix. Proper operation of switches in both matrices can result in the formation of a continuous circuit along a coordinate of one of the matrices at any

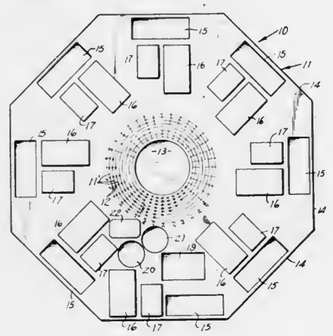
given time. A power source and respective indicators show which group includes such continuous circuit. The continuous circuit can be opened by operation of a switch in the other matrix. A clock is used to show the cumulative advantage which one matrix has over the other. Additional matrices can be connected to the basic matrices.

3,779,554
BOARD GAME APPARATUS
John R. Brix, 2301 42nd Ave., San Francisco, Calif.
Filed Oct. 27, 1972, Ser. No. 301,437
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 B **10 Claims**



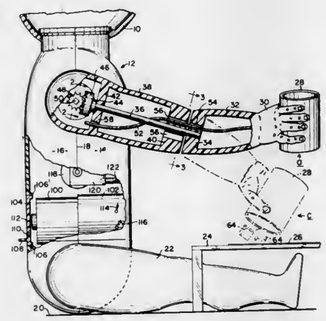
A board game apparatus comprising a transparent game board having intersecting lines thereon to define a plurality of game piece receiving areas. A plurality of game, or playing, pieces are provided which are formed with bottom surfaces to stand upon the transparent game board, which bottom surfaces are provided with indicia for identification of the individual game pieces. Mirrors are located beneath the transparent game board to expose different playing board areas to the view of different players. The indicia-bearing bottom surfaces of playing pieces positioned on the board within such reflected viewing areas are thereby viewable. The apparatus is adapted for use in playing various games including a modified form of chess in which the playing pieces are divided into two groups, with the pieces of one group being visually distinguishable from those of the other group as viewed from above as by use of different colors, shapes, or the like for the groups. Individual chessmen are identified by suitable indicia on the bottom surfaces of the playing pieces indirectly viewable by reflection in said mirrors.

3,779,555
BOARD GAME APPARATUS
Louis Wimberly, 203 W. Chapin, Litchfield, Ill.
Filed Sept. 22, 1971, Ser. No. 182,664
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 D **1 Claim**



A horizontal table of octagonal shape and which at its center has a dice receiving depression that is surrounded by concentric rows of colored circles each of which intersects a plurality of openings, a rectangular depression upon the upper surface of the table and located near the edge of each side and each of the rectangular depressions being of a different color than the others, the present table also including wagering boards located close to the colored depressions, and the table further including a conversion chart and a single bank cut out depression, cruise pool depression and a bounding main pool depression, the game being played with dice and chips between several competitive players.

3,779,556
DIE, GAMEBOARD AND DIE THROWING DOLL
Frank T. Johmann, 49 Hampton Dr., Berkeley Heights, N.J.
Division of Ser. No. 44,063, June 8, 1970, Pat. No. 3,684,291.
This application July 31, 1972, Ser. No. 276,735
Int. Cl. A63f *3/00, 9/04*
U.S. Cl. 273—134 A **8 Claims**

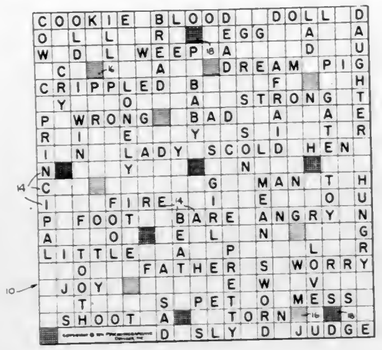


This invention relates to toys. In one aspect, the invention relates to a doll having movable hand driven by an electric motor, preferably battery operated, which hand can move through a sequence of positions. The doll may be constructed so its hand will shake and throw down a pair of dice placed in its hand, and thus may be part of a game set including a game board, and dies wherein markers are moved on the game board a certain number of spaces determined by throwing dice.

3,779,557
PSYCHOLOGICAL TESTING AND THERAPEUTIC BOARD GAME APPARATUS
Nathan I. Kritzberg, and Richard Gardner, both of Tenafly, N.J., assignors to Psychotherapeutic Devices, Inc., New York, N.Y.
Filed July 30, 1971, Ser. No. 167,372
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 D **11 Claims**

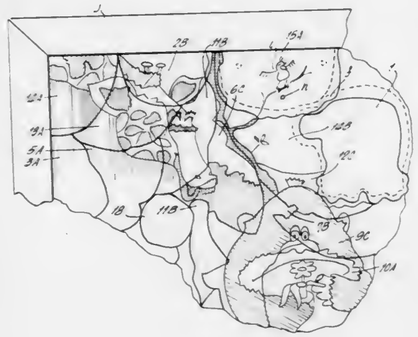
A game includes a stimulus board having a number of emotionally significant words arranged thereon. Lettered playing pieces are employed to permit players to complete words on the board and thus receive an intermediate reward. The word completed is used as a jumping off point for storytelling, answering questions about the story told and dramatizing the story told. All of these additional steps in the game provide additional intermediate rewards. White squares and white playing pieces permit undirected storytelling. Gold playing pieces and gold squares require the selection of one of a series of

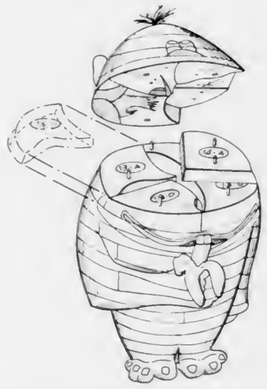
cards that provide a very directed type of storytelling. Intermediate rewards during the game and more concrete rewards



at the end of the game enhance the game feature and provide an incentive for storytelling and fantisizing.

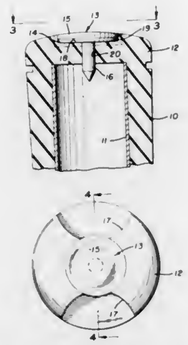
3,779,558
ALTERNATIVE PUZZLE SYSTEM
Claude R. M. Moreau, 85-06, Sixtieth Ave., Elmhurst, N.Y.
Filed Jan. 12, 1972, Ser. No. 217,135
Int. Cl. A63f *9/12*
U.S. Cl. 273—157 R **4 Claims**





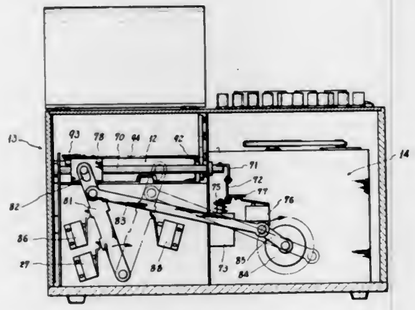
A puzzle comprising a plurality of pieces which can be assembled in more than one configuration, either as a three dimensional, recognizable shape or as a two dimensional surface which presents a graphic representation.

3,779,559
GOLF CLUB GRIP AND MARKER
James H. Taylor, Barberton, Ohio, assignor to The Kosar Gulf Development Laboratory, Inc., Cuyahoga Falls, Ohio
Filed Apr. 26, 1972, Ser. No. 247,790
Int. Cl. A63b *53/00*
U.S. Cl. 273—162 D **2 Claims**



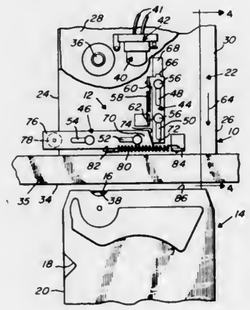
A resilient golf club handle grip having a socket at its outer end for removably holding a spiked marker disk. The side wall of the socket resiliently grips the disk and the spike is resiliently gripped in a hole in the bottom wall of the socket. Diametrically opposite notches in the side wall allow a person's thumb and finger to engage the edge of the disk for axial removal of the marker.

3,779,560
SELECTIVE TAPE RECORDER FOR ENDLESS TAPE CARTRIDGES
Tuneo Yokata, Osaka, Japan, assignor to Funai Electric Co., Ltd., Osaka, Japan
Filed Aug. 16, 1971, Ser. No. 171,846
Claims priority, application Japan, Apr. 30, 1971, 46/28756; Apr. 30, 1971, 46/28757; Apr. 30, 1971, 46/28758; Apr. 30, 1971, 46/28759; May 18, 1971, 46/33757; May 18, 1971, 46/33758; May 18, 1971, 46/33759; May 18, 1971, 46/33760
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 F **6 Claims**



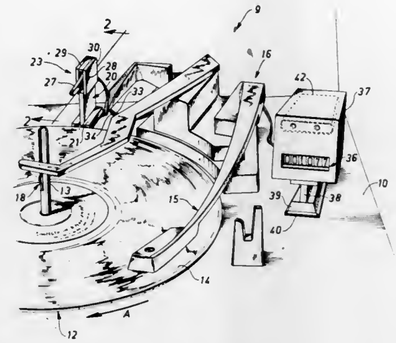
A selective tape recorder for a plurality of endless tape cartridges comprises storing means for storing a plurality of endless tape cartridges, playing means for reproducing the sound tracks of the tape, means for carrying the cartridge from the storing means to the playing means and from the playing means to the storing means, and control means for controlling the storing means, the playing means and the feeding means electrically and correlatively, whereby selection of the desired cartridge from the stored cartridges, conveyance and feed of the selected cartridge to the playing means, sound reproduction and return of the cartridge can be automatically performed.

3,779,561
CARTRIDGE LOCKING MECHANISM FOR A TAPE PLAYER
Donald J. Dattilo, Mount Prospect, Ill., assignor to Motorola Inc., Franklin Park, Ill.
Filed Nov. 8, 1972, Ser. No. 304,686
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 B **9 Claims**



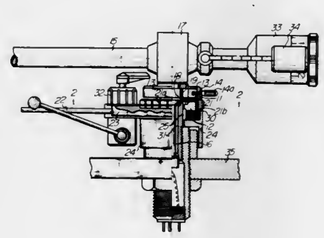
A cartridge locking mechanism for use in a tape player including a chassis having at least one wall connected at opposite ends to side walls extending perpendicular thereto to form a cartridge receiving cavity having an open end through which a cartridge is received, includes an actuator bar member mounted on the one wall for movement in the direction of insertion of a cartridge into the cavity. A portion of the actuator bar member extends into the cavity for engagement with a cartridge inserted thereinto. The actuator bar member is spring biased toward the open end of the cavity. A second bar member is also mounted on the one wall for movement transverse the movement of the actuator bar member and includes a roller mounted on the end thereof farthest from the actuator bar member, for receipt in a groove formed in a side wall of the cartridge received in the cavity. The second bar member is spring biased toward the actuator bar member. Adjacent ends of the bar members normally are engaged so that the second bar member is held against the spring bias applied thereto with the roller being maintained outside of the cavity while no cartridge is inserted into the cavity. Insertion of the cartridge into the cavity in engagement with the actuator bar portion, moves the actuator bar member against the spring biasing force there-against to release the second bar for movement in the direction of the actuator bar member so that the roller is moved into engagement with the cartridge side wall and into the groove therein. A cam surface on the end of the second bar member engaging the actuator bar member provides gradual movement of the second bar member so that the roller is moved into engagement with the side wall of the cartridge substantially at the time the groove is aligned therewith. Withdrawal of the cartridge from the cavity forces the roller from the groove, thereby to move the second bar member against the spring biasing force to permit the return of the actuator bar member to its normal position.

3,779,562
PHONOGRAPH STYLUS USE COUNTER
Christopher David Gower-Rees, Toronto, Ontario, Canada, assignor to Beverly Walton, Ontario, Canada
Filed Sept. 20, 1971, Ser. No. 181,726
Int. Cl. G11b *27/36, 17/08*
U.S. Cl. 274—10 R **32 Claims**



A device for counting the number of record disc sides played on a phonograph includes a support member or pedestal which is mounted on the motor board of the phonograph outwardly of the turntable. An actuating member is pivotally mounted on the pedestal so as to project into the path of a record disc moving along the upstanding axial spindle of the turntable and a digital counter is electrically or mechanically coupled to the actuating member so that, as a record disc moves downwardly along the axial spindle, the digital counter is caused to undergo unit advance actuation whereas no such actuation occurs on removal of a record disc upwardly along the turntable spindle.

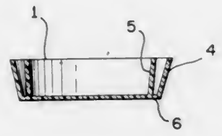
3,779,563
DEVICE FOR ERASING INSIDE FORCE OF PICKUP ARM OF RECORD PLAYER
Kiyosi Irisawa, 11-30 Nakanole 1-chome, Shinagawa-shi, Tokyo, Japan
Filed May 24, 1972, Ser. No. 256,400
Int. Cl. G11b *3/12*
U.S. Cl. 274—23 R **9 Claims**



The device comprises a pair of ring-shaped magnets each of which is magnetized on one side only so that the N and S poles are formed in diametrically opposed relation on the magnetized side. The ring-shaped magnets are mounted on a pickup arm supporting shaft in such a manner that their magnetized faces are opposed to each other, with one of the magnets being arranged slidable on the shaft to enable to adjust the distance between the two opposed magnets and the other magnet being arranged rotatable at its fixed position on the

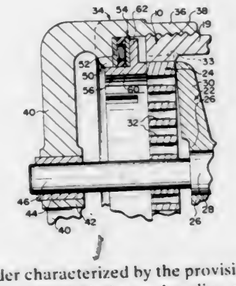
supporting shaft along with the pickup, arm so that the pickup arm operates in a manner such that it is given an attractive or repulsive force of the magnets in a direction opposite to the inside force such that the curve of variation of the turning force caused by displacement of the magnetic poles will substantially coincide with the inside force variation curve.

3,779,564
GASKET FOR JOINING PLASTIC TUBES
Mark Chookazian, Paramus, N.J., assignor to EMA Bond Inc., Englewood, N.J.
Filed July 10, 1972, Ser. No. 269,936
Int. Cl. F16j *9/20, 15/14*
U.S. Cl. 277—80 **10 Claims**



An induction heat sealable gasket made from a thermoplastic material having ferromagnetic particles uniformly dispersed therein, the gasket comprising a ring base, a first wing extending upward and outward from the ring base, and a second wing extending upward from the ring base.

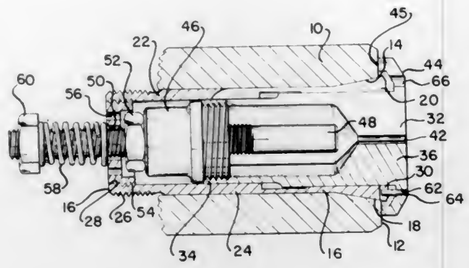
3,779,565
COMPOSITE EXPANSIBLE BIASING AND SEALING GASKET
Walter R. Witte, Des Plaines, Ill., assignor to Speco, Inc., Schiller Park, Ill.
Filed Mar. 6, 1972, Ser. No. 231,909
Int. Cl. F16j *15/12*
U.S. Cl. 277—123 **2 Claims**



A meat grinder characterized by the provision of a novel expansible, spring-assisted biasing and sealing gasket for urging the non-rotatable perforated shear plate against the rotary cutter including an intermediate resilient member sandwiched between outer rigid members and a series of springs disposed in the intermediate member and compressed between the rigid members.

3,779,566
WORKPIECE STOP FOR A COLLET
Willis Tarbox, Big Flats; Vincent Dolan, and Ralston L. Harman, both of Elmira, all of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.J.
Filed Dec. 3, 1971, Ser. No. 204,612
Int. Cl. B23b *31/20*
U.S. Cl. 279—1 S **29 Claims**

A work gripping device for a machine tool spindle comprising a collet for mounting on the spindle, a stop insert member in the collet and having front and rear portions, a stop member, means for mounting the stop member in the stop insert member, the front portion of the stop insert member including work gripping means, and the front portion further including a spindle engaging abutment member extending radially beyond the collet so that the abutment member may contact the spindle when the collet is closed.



3,779,567
TOOL RETAINER FOR CHIPPING HAMMERS
James C. Boyd, c/o Tool Sales & Service Co., 1137 Electric Ave., East Pittsburgh, Pa.
Filed June 27, 1972, Ser. No. 266,694
Int. Cl. B25d *17/10*
U.S. Cl. 279—19.1 **1 Claim**



This disclosure relates to a retainer for the reciprocating chisel of a chipping hammer, of the snap-over, spring yoke type.

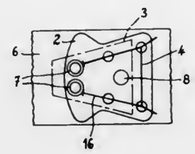
3,779,568
SKI CARRIER
Nobuyuki Wakabayashi, 11-3, Senju-Higashi 2 chome, Adachi-ku, Tokyo, Japan
Filed Oct. 29, 1971, Ser. No. 193,868
Int. Cl. B62b *13/18*
U.S. Cl. 280—9 **1 Claim**

A ski carrier is formed by providing wheels on the inside

surface of a ski-shaped base plate bowed at the tip and providing a clamp for clamping the butt of the skis on the end of a resilient arm the other end of which is rotatably fixed to the rear end of the base plate.



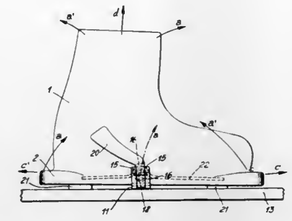
3,779,569
SAFETY FRONT JAW FOR SKI BINDINGS
Rene Ramillon, 3, rue Emile Zola, Grenoble, France
Filed Apr. 8, 1971, Ser. No. 132,324
Claims priority, application France, Apr. 14, 1970, 7013488
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **5 Claims**



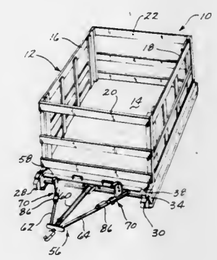
This releasable front hold-down device or toe clamp for ski binding has a boot-engaging jaw adapted to shift laterally within a predetermined range of displacement beyond which the toe end of the ski boot is released. It comprises to this end at least one pair of links dispersed symmetrically on either side of the pivot pin of the body of the device and formed with cam-shaped front ends engaging corresponding rollers carried by the base plate of the device; inner projections are also formed on these links for engagement by a ball through a spring of adjustable pressure, this spring and ball being received in a longitudinal bore of the body.

3,779,570
SELF-RELEASING SKI-BINDING
Alois Betschart, Jr., Aegeristrasse 6417, Sattel, Switzerland
Filed Nov. 3, 1971, Ser. No. 195,136
Int. Cl. A63c *9/086*
Claims priority, application Switzerland, Aug. 11, 1971, 11783/71
U.S. Cl. 280—11.35 R **6 Claims**

A self-releasing ski binding, for securing a shoe to a ski, comprises first and second coupling means, said first coupling means being provided centrally along the shoe and said second coupling means being disposed at an opposed position on the ski, said first coupling means being resiliently latched to said second coupling means, said second coupling means including means for manual disengagement from said first coupling means.



3,779,571
SKID PALLET
Magnus P. Ahmling, Rt. No. 1, Brighton, Iowa
Filed May 11, 1972, Ser. No. 252,299
Int. Cl. B62b *15/00*
U.S. Cl. 280—19 **8 Claims**

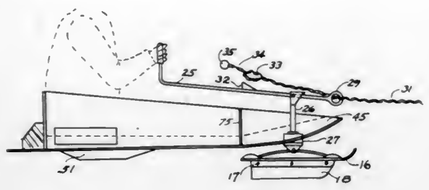


A skid pallet comprises a frame having skid runners thereon, a tongue pivotally connected to the frame for pivotal movement about a horizontal axis, and a pressure bracket connected to the tongue at a point spaced from the horizontal axis. The pressure bracket extends downwardly from the tongue a sufficient distance to protrude below the skid runners when the tongue moves from an elevated position toward a lowered position so that the pressure bracket will engage the ground and provide a leverage fulcrum for lifting the runners in response to lowering of the tongue about the horizontal axis.

3,779,572
CONVERTIBLE SNOW VEHICLE TRAILER
Stanley O. Cheney, Rt. 114 North, Bradford, N.H.
Filed Sept. 24, 1971, Ser. No. 183,439
Int. Cl. B62b *13/08*
U.S. Cl. 280—21 R **6 Claims**

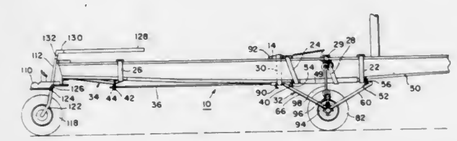
This trailer especially designed for use with snowmobiles, has a bottom surface portion which rides in direct contact with the snow. The bow portion curves upwardly. A front-mounted

ski having a tiller causes the trailer to be steerable. A cockpit surrounded by a flotation collar permits the trailer to be used



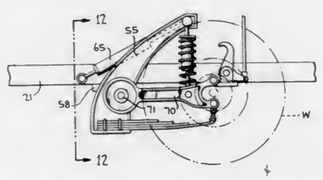
as a boat and be towed, or sailed on the water. Wheels are provided to allow the trailer to be used on land.

3,779,573
LAND SAILING TRAILER
Herbert E. H:son Gullberg, and Stearns Williamson, both of P.O. Box 189, Moylan, Pa.
Filed Dec. 8, 1971, Ser. No. 205,908
Int. Cl. B62d *21/14*
U.S. Cl. 280—34 A **8 Claims**



Land sailing trailers having cradle means for supporting a hull of a sailboat. The cradle means is transversely rotatable about a longitudinally axis of rotation, and tension spring means limits rotation of the cradle means. Wheels support the trailers for traveling on land and one wheel is manually adjustable to steer the trailer. Ski skates are secured to the wheels when the trailer is used on snow or ice, and a trailer hitch forms a part of the trailer to permit transporting of the trailer by a powered vehicle, such as an automobile.

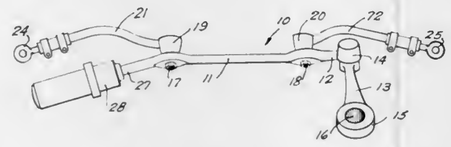
3,779,574
RETRACTABLE WHEEL ASSEMBLY
Gordon Y. W. Ow, Alexandria, Va., assignor to Go-Craft Systems, Inc., Honolulu, Hawaii
Division of Ser. No. 883,157, Dec. 8, 1969, abandoned. This application Jan. 12, 1972, Ser. No. 217,211
Int. Cl. B62d *21/18*
U.S. Cl. 280—43.18 **12 Claims**



A family of vehicles for operation on land or in water are provided wherein the frame is external and mates with the bottom of the body by engaging elongated channels formed therein. The frame serves to support the retractable wheel assemblies and the detachable pontoons whereby stress and strain is isolated from the body. Resilient pad means is provided to cushion the engagement of the assembly. A tongue for attachment to a draft vehicle is slidably retractable so as to be out of the way during marine operations; the auxiliary ground supporting wheel and jackscrew being positioned in a horizontal position. The ground engaging wheels are mounted by compact and independently operating retractable mechanism including leaf and coil springs and a shock absorber which enable easy selection and assembly of component parts essential for wide range of load requirements of the family of vehicles; the compact design being enhanced by positioning of the main or leaf spring and the coil springs/shock absorber on opposite sides of the wheel suspending action lever. Latch means is provided to hold the assembly in the ground engaging position with hydraulic cylinder means serving to retract the wheels when desired. The wheel retracting mechanism is supported by a spindle which extends from the side of the frame to maintain the uncluttered and compact design of the assembly.

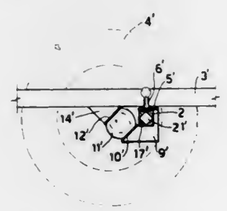
The present invention relates broadly to a family of vehicles having component parts adapted to mate and work together for efficient operation on both land and sea, and more particularly, to a retractable wheel assembly for such vehicles.

3,779,575
STEERING SYSTEM WITH INTEGRAL SHOCK DAMPER
Sylvester S. Mazur, Detroit, Mich., assignor to TRW Inc., Cleveland, Ohio
Filed Aug. 5, 1971, Ser. No. 169,424
Int. Cl. B62d *7/16*
U.S. Cl. 280—95 R **7 Claims**



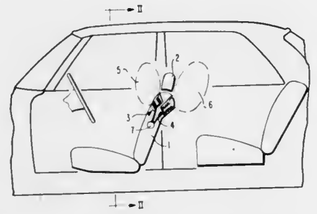
A centerlink type steering linkage having one end of the centerlink supported by the pitman arm and the other end of the centerlink inserted into a shock absorber and terminating in a piston end positioned interiorly of the shock absorber, the shock absorber being pivotably mounted to a frame-carried bracket.

3,779,576
SUSPENSION SYSTEMS
George D. Malcolm, 5 James St., Mangere East, Auckland, New Zealand
Filed Oct. 14, 1971, Ser. No. 189,180
Claims priority, application New Zealand, Oct. 15, 1970, 161732; Mar. 31, 1971, 163250
Int. Cl. B60g *11/60*
U.S. Cl. 280—124 B **17 Claims**



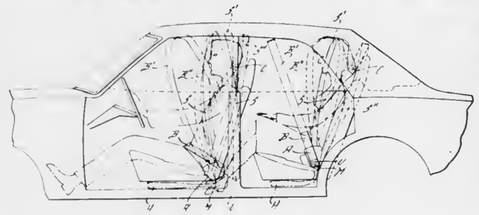
A trailed vehicle has at least one beam axle (but perhaps two with or without load sharing coupling) with the wheels independently suspended on leading or trailing arm members. The axle is mounted to the chassis or body so that in bump or positive roll conditions when a wheel on one side and the body or chassis move closer together, the axle moves forwardly at that side resulting in the steering of the wheels in a direction to counter the effects of the displacing force acting on the trailed vehicle and thus undesirable effects exerted by the trailed vehicle on the towing vehicle. A "bolt-on" suspension unit has a torsionally resilient beam axle, a primary torsion suspension for the arm members and a secondary suspension allowing forward movement of either side of the axle about one of a pair of transversely aligned pivots in reaction to torque imposed on that side of the axle under bump or positive roll conditions.

3,779,577
SAFETY INSTALLATION FOR THE PASSENGERS OF VEHICLES, ESPECIALLY PASSENGER MOTOR VEHICLES
Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Nov. 23, 1971, Ser. No. 201,407
Claims priority, application Germany, Nov. 28, 1970, P 20 58 608.7
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **6 Claims**



A safety installation for the passengers of motor vehicles, especially of passenger motor vehicles in which the backrests of the front seats are equipped with a headrest and accommodate within the area of each backrest underneath the headrest two inflatable gas cushions which are so arranged that upon inflation one gas cushion unfolds in front and one gas cushion unfolds behind the headrest.

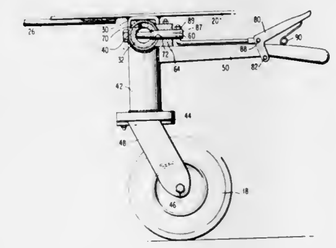
3,779,578
MOTOR VEHICLE WITH A MECHANICALLY-OPERABLE SAFETY BELT SYSTEM
Edwin Spahl, Cologne, Germany, assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 15, 1972, Ser. No. 234,722
Claims priority, application Germany, July 1, 1971, P 21 32 694.3
Int. Cl. B60n *21/02*
U.S. Cl. 280—150 SB **14 Claims**



A motor vehicle body in which a seat having a backrest is fitted with a mechanically operable three point safety belt system, the belt system having mutually independent shoulder and lap belt sections. The belt system includes a first attachment means receiving one end of the shoulder belt section and a second attachment means receiving one end of the lap belt section, the first and second attachment means being located at upper and lower locations, respectively, of a side wall of the vehicle body. A third attachment means located at the center of the vehicle body receives the other ends of both belt sections.

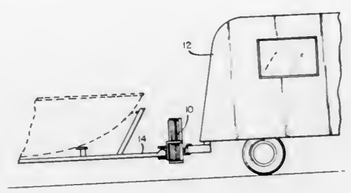
The belt system is characterized in that a flexible stiffener member carrying drive engageable means is secured to a substantial length of each belt section. The third attachment means comprises a guide device with the two belt sections passing through guide sleeves in the guide device. The guide sleeves are equipped with drive means engageable with the drive engageable means on the belt section stiffeners. The stiffened belt sections are extensible by the drive means into an extended position in which they form free-standing belt loops which, by pivoting the guide sleeves substantially about an axis lying in the plane of the seat backrest, can be pivoted into an inoperative position.

3,779,579
WHEEL MOUNTING ASSEMBLY
Richard Ostwald, Bowling Green, Ky., assignor to Gordon Smith & Co., Inc., Bowling Green, Ky.
Filed July 7, 1972, Ser. No. 269,665
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **15 Claims**



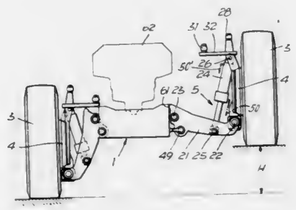
For a vehicle such as an air compressor frame, a wheel mounting assembly including a fixed shaft secured to the vehicle frame by mounting bolts which pass transversely through the fixed shaft and into portions of the vehicle frame. Mounted on the fixed shaft for rotation about the horizontal axis thereof is a movable shaft in the form of a sleeve which has fixed thereto and projecting normally therefrom an arm to which a swivel wheel is mounted to be movable with the arm and movable shaft about the fixed shaft. Fixed to the arm is a handle for moving the wheel assembly about the fixed shaft between a lower or extended position wherein the wheel engages the ground surface and an upper or retracted position wherein the wheel is spaced from the ground surface. A latch is mounted on the handle to releasably lock the wheel assembly in both positions. The latch assembly includes a latch pin mounted in the movable shaft for movement into and out of locking slots radially formed in the fixed shaft. Actuation of the latch pin is by a hand grip pivoted to the main handle and connected to the latch pin by a rod extending along the main handle. The mounting bolts which secure the fixed shaft to the frame are made from material such that should the wheel assembly receive an excessive force such as for example when the wheel assembly is inadvertently left in the lowered position while the compressor frame is being towed, the mounting bolts will shear or rupture to minimize damage to the wheel assembly.

3,779,580
COMBINATION CAMPERSTEP, TIRE CARRIER AND TRAILER HITCH
Jerome P. Thelen, Rt. 3, Clark, S. Dak.
Filed Mar. 3, 1972, Ser. No. 231,479
Int. Cl. B60r 3/00
U.S. Cl. 280—164 7 Claims



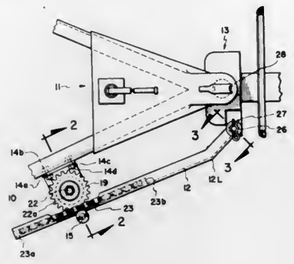
Apparatus for mounting a spare tire on a vehicle, providing a step into the vehicle and towing another vehicle, in which, a bracket is attached to the rear of a vehicle, for example, to the bumper or frame, a tire carrier is pivotally mounted at its lower end to the bracket to permit it to swing from a generally-verticle position to a generally-horizontal position and has a generally flat step formed on its front side, a latch is provided on the bracket to releasably engage the tire carrier and hold it in its vertical position and a trailer hitch is attached to the bottom of the tire carrier, is pivotal with the tire carrier and protrudes beyond the rear of the tire carrier so that a towed vehicle may be coupled thereto.

3,779,581
VEHICULAR SUSPENSION SYSTEM
Hans Scheuerpflug, Bad Mingolsheim, Germany, assignor to Firma Johannes Fuchs, Ditzingen, Baden-Wurttemberg, Germany
Filed Jan. 12, 1972, Ser. No. 217,139
Claims priority, application Germany, Jan. 14, 1971, P 21 01 504.3
Int. Cl. B60p 1/18
U.S. Cl. 280—95 R 13 Claims



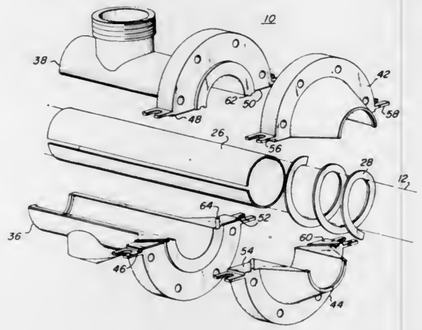
The invention contemplates a vehicle suspension for selectively variable adjustment of track width and ground clearance, wherein the chassis frame is a hollow body containing longitudinally arrayed hydraulic-cylinder mechanism by which the wheels are suspended, the actuating connections to the wheel-positioning arms being by way of bell cranks.

3,779,582
SWAY CONTROL UNIT
Edward B. Hedgepeth, P.O. Box 15394, Salt Lake City, Utah
Filed Nov. 26, 1971, Ser. No. 202,199
Int. Cl. B62d 53/00; B60d 1/00
U.S. Cl. 280—446 B 5 Claims



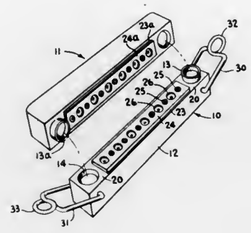
A sway control unit to be linked between a towing vehicle and a towed vehicle and arranged to provide a uniform rotary frictional resistance to lateral weaving or swaying of the towed vehicle with respect to the towing vehicle, without adversely affecting free vehicle or necessary horizontal angular displacement of the vehicles relative to one another.

3,779,583
LINE CUTTING INSULATOR
Frederick H. Nuber, 66 Clearmont Ave., Denville, N.J.
Filed Apr. 13, 1972, Ser. No. 243,730
Int. Cl. F16l 59/16
U.S. Cl. 285—48 14 Claims



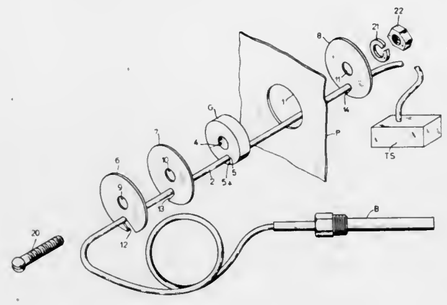
An assembly and method are disclosed for insulating sections of a pipeline with the assembly including a first section surrounding the pipeline, the first section terminating in an enlarged flange at one end thereof, with the first section further including closeable access means for permitting access to the pipeline; a second section surrounding the pipeline, the second section terminating in an enlarged flange at one end thereof, with the enlarged flanges of the first and second sections being positioned in confronting relationship to one another; an insulating sleeve, positioned about the pipeline between the pipeline and the first and second sections; insulating spacer means positioned about the pipeline and disposed between the flanges of the first and second sections; and insulating joining means for drawing the flanges of the first and second sections toward one another. In this manner, after the assembly is positioned on the pipeline, the pipeline can be severed through the access means in the aforementioned first section.

3,779,584
FLUIDIC CONNECTOR
Vladimir Ignatjev, Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Sept. 22, 1971, Ser. No. 182,630
Int. Cl. F16l 39/00
U.S. Cl. 285—137 R 2 Claims



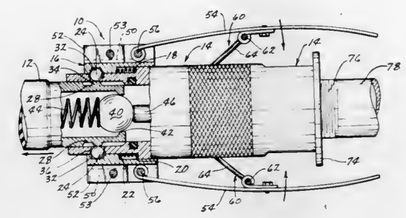
A two-piece type connector assembly for effectively mutually coupling a plurality of fluid conducting passages. Two body members formed from identical molded parts are provided with flat pressure surfaces, each such surface having mounted thereon a rubber-like pad and a layer of plastic film so that when the body members are held together the plastic films are in mutual sealing contact so as to afford an effective air tight coupling between the respective fluid conducting passages formed in said body members.

3,779,585
SEALING MEANS FOR AN APERTURE IN A PANEL OR THE LIKE
Anthony T. Handzlik, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.
Filed Nov. 17, 1972, Ser. No. 307,399
Int. Cl. F16l 3/04
U.S. Cl. 285—158 4 Claims



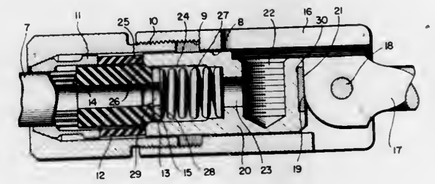
Sealing means for forming a seal between an aperture in a panel or the like and a conduit or the like which passes through said aperture. The sealing means includes a compressible grommet located in the aperture and having adjacent washers alongside the grommet. The washers have peripheral slots which extend inwardly at different angles and in which slots the conduit is located, thus, the washers abutting against one another with their differently inclined slots act to generally close off each other's slots and the washers are compressed against the grommet so the latter seals against the aperture in the panel.

3,779,586
HOSE COUPLING CONNECT AND DISCONNECT MECHANISM
Donald W. Rossiter, Moneta, Iowa
Filed Aug. 10, 1972, Ser. No. 279,546
Int. Cl. F16l 37/00
U.S. Cl. 285—308 10 Claims



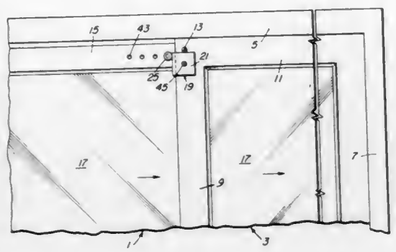
A hydraulic hose coupling including telescopic male and female members having a slidable locking sleeve on the female member. An actuator for the locking sleeve is provided which includes a pair of semi-cylindrical clamping elements having ears on opposite sides to which a pair of oppositely disposed lever elements are pivoted. A pair of oppositely disposed link elements extend from the lever elements towards the coupling and are pivoted at their inner ends to stationary legs having their outer ends secured to the outer end of the female coupling member. The locking sleeve is spring biased towards the male member and inward pivoting of the lever elements causes the locking sleeve to move longitudinally away from the male member against the action of the spring thereby allowing the telescoping members to be separated.

3,779,587
TUBE END FITTING
William H. Racine, P.O. Box 378, Lakeside, Mich.
Filed Aug. 23, 1972, Ser. No. 283,181
Int. Cl. F16l 37/20
U.S. Cl. 285—312 2 Claims



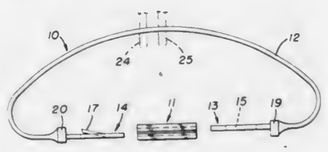
A fitting for mounting to tube ends by actuating quick operating means to translate a ram element inside a body housing against a tubular plug having an opposite end which sealingly compresses against the end of a smooth wall tube. The fitting more advantageously includes a split collet which clamps the circumference of the smooth wall tube simultaneously with compressing the tubular plug by the quick operating means, such as a torque transmitting lever.

3,779,588
SLIDING PANEL LOCK
Raymond T. Raymon, 11618 Highland Dr., Warren, Mich.
Filed Sept. 1, 1972, Ser. No. 285,759
Int. Cl. E05c 5/02
U.S. Cl. 292—57 1 Claim



A pair of sliding panels, sashes or other closure means provided with locking means which is mounted on one closure and is operable when said closure is in closed or stationary position to releasably engage and lock the other sliding closure means to prevent said other sliding closure means from being moved to open or partly open position.

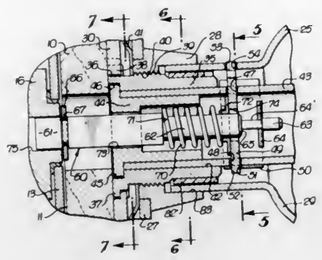
3,779,589
FLEXIBLE STRAP-TYPE SEAL HAVING ENCLOSED LOCKING MEANS
Richard A. Patterson, St. Paul, Minn., assignor to The United Seal Company, Columbus, Ohio
Filed Mar. 24, 1972, Ser. No. 237,844
Int. Cl. B65d 55/06
U.S. Cl. 292—317 1 Claim



A closed-loop security seal for detecting unauthorized opening of the closure means of a freight car, meter casing, or the like, which embodies a flexible plastic strap formed at its opposite ends with relatively engageable catch and latch portions for locking insertion within a cooperatively channeled keeper, the strap being further formed with tamper deterring shoulders arranged to conformingly cover the ends of the keeper upon locking insertion of the catch and latch portions of the strap within the keeper.

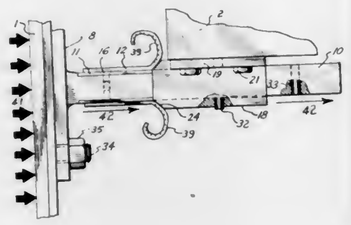
3,779,590
NON REMOVABLE KNOB TRIM
Vernard W. Sanders, and Ronald C. Powell, both of Los Angeles, Calif., assignors to Norris Industries, Inc., Los Angeles, Calif.
Filed Feb. 7, 1972, Ser. No. 223,870
Int. Cl. E05b 3/04
U.S. Cl. 292—336.3 7 Claims

A mortise type lock has outside and inside mounting plates held in place on opposite sides of the door by use of screws accessible from the inside only. A decorative rose covers the outside mounting plate and an internally threaded outside sleeve which engages an externally threaded inside sleeve, in turn fastened to the mounting plate, overlies the rose preventing removal. The shank of an outside knob surrounding a rotatable sleeve has an aperture into which extends a spring



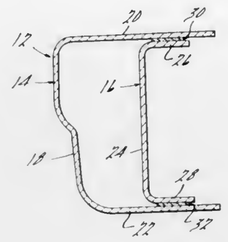
pressed knob retainer for holding the knob on the rotatable sleeve. When the knob and attached parts are mounted on the mortise type lock a central spindle shifts from a position permitting release of the knob retainer to a position extending into the knob retainer to block movement of the knob retainer and release of the knob.

3,779,591
ENERGY ABSORBING DEVICE
William Partington Rands, 6983 Trolley Way, Los Angeles, Calif.
Filed Aug. 23, 1971, Ser. No. 173,813
Int. Cl. B60r 19/00
U.S. Cl. 293—89 2 Claims



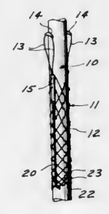
This invention relates to an energy absorbing device employed as the mounting supports in a safety bumper system with said device comprising an initial shaft member attached to the bumper and held in a sleeve fixture member mounted to the vehicle frame and said shaft sleeve combination having properties that soften the impact of collision by developing a resisting force as the shaft telescopes into the sleeve fixture wherein there occurs on the shaft member a mechanical cutting and deforming of longitudinal forms of surface material on the shaft member as said material is forced against abrupt cutting edges on the sleeve member. In a collision, said deforming process absorbs energy and transforms the force transmitted into the vehicle body from that of a sudden shock force into a controlled lesser force, thereby protecting the vehicle from damage in a low velocity collision and minimizing the jolt and rebound backlash experienced by the passengers. Further, the said deformation of material in the device is confined to separable elements fastened to the surface of the shaft member that permits the replacement of the damaged shaft portions and enables the restoration of the bumper to its original pre-collision condition for a relatively low cost.

3,779,592
HIGH STRENGTH VEHICLE BUMPER
Richard R. Golze, Bloomfield Hills, and Richard F. Kienle, Bloomfield Twp., both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.
Filed June 1, 1972, Ser. No. 258,761
Int. Cl. B60r 19/00
U.S. Cl. 293—98 6 Claims



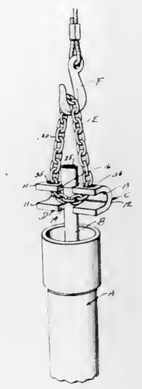
A high strength vehicle bumper resistant to damage caused by impact forces and including a pair of structural members formed from dissimilar metallic materials. Means join the structural members together into a composite member while electrically insulating the dissimilar materials from one another. In a first embodiment of the invention said means comprises an adhesive layer located between the dissimilar materials. In a second embodiment of the invention, said means comprise metal fastener means joining the structural members and shielding means separating and electrically insulating said materials from said fastener means and from each other.

3,779,593
OPEN-MESH SUPPORT GRIP CONSTRUCTION
David H. Neuroth, New Haven, Conn., assignor to Harvey Hubbell Incorporated, Bridgeport, Conn.
Filed May 4, 1972, Ser. No. 250,330
Int. Cl. F16g 11/03
U.S. Cl. 294—86 CG 14 Claims



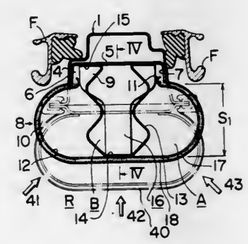
The construction involves a device that is assembled on a conventional wire cable grip to improve the latters' gripping action. The device comprises an elongated rod provided intermediate its length with an adjustable spring seat. A helical compression spring has one end in engagement with the seat and extends in coiled relation around the rod toward one end of the rod. Suitable means connect the other end of the spring to the draft end of the grip and suitable means connect the other end of the rod to the object receiving end of the grip.

3,779,594
PIPE CONSTRUCTION
Edwin T. Monroe, 1 Pleasant Dr., Cameron, W. Va.
Filed June 20, 1972, Ser. No. 264,597
Int. Cl. B66c 1/16
U.S. Cl. 294—91 6 Claims



Elevator mechanism for use in lifting and placement of pipe sections having a U-shaped body portion including upper and lower flanges joined by a bight portion, each flange having a lateral slot therein which are aligned for receiving a pipe, and openings through the upper flange at each side of the slot for receiving a flexible elevator lifting member.

3,779,595
PILLAR FOR A BODY OF A MOTOR VEHICLE
Ichiro Suzuki, and Takashi Saito, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Soyota-shi, Aichi-ken, Japan
Filed July 10, 1972, Ser. No. 269,922
Claims priority, application Japan, Oct. 23, 1971, 46/84057
Int. Cl. B62d 25/04; B60r 21/02
U.S. Cl. 296—28 R 4 Claims

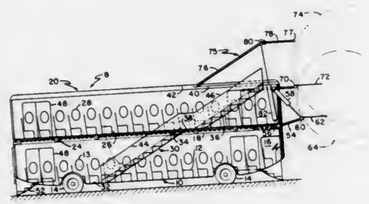


This invention relates to a pillar for a body of a motor vehicle.

The pillar comprises a channel-shaped outer pillar component arranged vertically with its open side facing the inside of the room, a channel-shaped inner pillar component fitted in the outer pillar component with its open side facing the inside of the room, the outer pillar component and the inner pillar component being joined to each other to provide a pillar having a closed space therein, portions of the outer pillar com-

ponent and the inner pillar component at which they are joined being disposed in the vicinity of a door frame, inner panel or other inner side portion of the room so as not to project much into the room, a protector device disposed with its open side facing the open side of the inner pillar component and its opposite edges being disposed near the portion of the inner pillar component at which it is joined to the outer pillar component, the protector device having a width greater than the width of the outer pillar component and being adapted to undergo plastic deformation when subjected to a force of impact higher than the value at which the protector means is set, and a shock absorber mechanism disposed in a space between the inner pillar component and the protector device so as to connect them together.

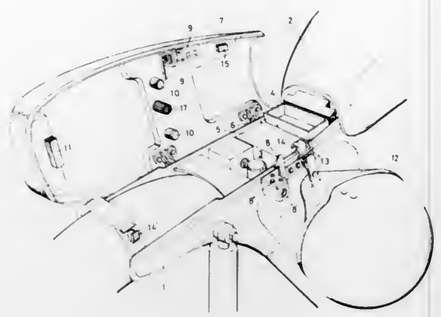
3,779,596
MOBILE PASSENGER LOADING LOUNGE FOR AIRCRAFT
Henry Ritter, Nashville, Tenn., assignor to Avco Corporation, Nashville, Tenn.
Filed July 28, 1972, Ser. No. 276,083
Int. Cl. B62d *31/04*
U.S. Cl. 296—28 AL **7 Claims**



A lower self-propelled steerable passenger compartment releasably supports an upper passenger compartment on its roof. Both upper and lower passenger compartments have passenger stairs from their floors to their roofs. Extendible ramps at the level of the lower compartment roof and the upper compartment roof permit passengers who have ascended the stairs to be loaded from the compartments directly onto aircraft having loading doors at the level of either ramp. The upper passenger compartment may be loaded onto an aircraft as a module to completely eliminate intervehicle passenger transfer.

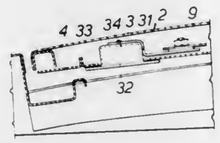
3,779,597
APPARATUS FOR SECURING AN ARTICLE IN A TWO-WHEEL VEHICLE
Masaaki Uchida, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 16, 1972, Ser. No. 235,363
Claims priority, application Japan, Mar. 22, 1971, 46/19092
Int. Cl. B60r *11/00*
U.S. Cl. 296—37 **5 Claims**

A helmet or similar article is attached to the body of a two wheel vehicle by hooking its buckle on a hook member on the body of the vehicle. The hook member is positioned on the body so as to be covered by a pivotable seat when the latter is lowered to operative position so that removal of the helmet is prevented. A lockable engaging means is provided between the seat and vehicle body. In order to prevent unhooking of the article from the hook member when the seat is lowered, a



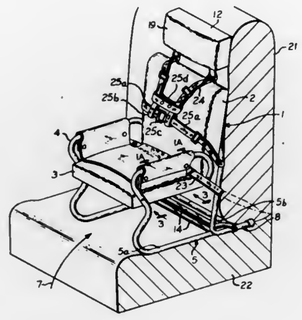
projection is formed in the lower surface of the seat to close any gap which might be formed or alternatively, a recess is formed in the seat in which the hook member is received.

3,779,598
SLIDING ROOFS AND VEHICLES
Frederick Charles Lidington, Birmingham, England, assignor to Weathershields Limited, Birmingham, England
Filed May 4, 1972, Ser. No. 250,275
Claims priority, application Great Britain, Feb. 10, 1972, 6,180/72
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 G **4 Claims**



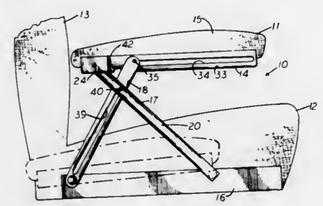
In a vehicle sliding roof incorporating a longitudinally sliding panel for closing an opening in the front part of the roof, a stationary longitudinal rod or bar located under the rear fixed part of the roof extends through a housing mounted on the panel at its rear end. A pair of transverse locking members mounted in the housing are restrained at one pair of adjacent ends against movement with respect to the housing by abutment means in the housing. The locking members are provided with openings through which the rod or bar is passed and at least portions of the locking members containing the openings are normally urged resiliently into operative positions in which they are oppositely inclined with respect to, and lock onto, the rod or bar to prevent relative movement of the panel with respect to the rod or bar only in each of two opposite directions. The engagements between the locking members and the rod or bar are adapted to be released by longitudinal movement of a longitudinal transmission member which is guided in the housing for limited longitudinal movement in a fore and aft direction in response to corresponding movement of a finger-operated control mounted in the panel.

3,779,599
JUVENILE SEATING SYSTEM
Arthur Gottfried, 560 Clinton Rd., Paramus, N.J.
Filed July 8, 1971, Ser. No. 160,598
Int. Cl. A47d *1/10*
U.S. Cl. 297—253 **5 Claims**



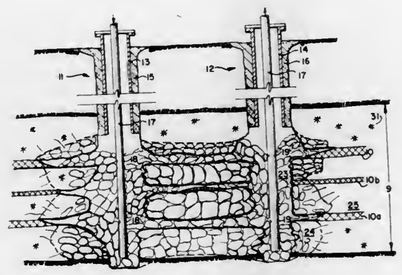
A juvenile seating system including an accessory for cooperation with a juvenile chair so that the latter can be used as a juvenile vehicle seat, the accessory adapted for removably engaging the chair, the accessory having a rigid upwardly extending portion substantially disposed against the back of the backrest of the juvenile chair when the accessory and the juvenile chair engage each other, the accessory being adapted to rest against a backrest of a vehicle seat when the accessory and the juvenile chair are in engaging position and are adapted to be positioned with a vehicle-provided seat belt passing about the juvenile chair urging the accessory against the vehicle backrest, and the accessory having a base complementary to the base of the juvenile chair for the removable engaging.

3,779,600
FOLDABLE ARM REST ASSEMBLY
Howard M. Quakenbush, Monona Village, Wis., assignor to Flexsteel Industries, Inc., Dubuque, Iowa
Filed Sept. 1, 1971, Ser. No. 176,986
Int. Cl. A47c *7/54*
U.S. Cl. 297—417 **10 Claims**



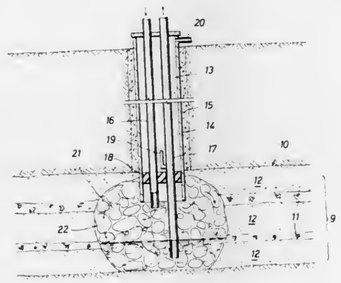
Foldable arm rest assembly for vehicle seats in which first and second pairs of connection means connect to an armrest and seat structure to upper and lower ends of crossed arms, one pair of connection means being pivotal connections and the other including one pivotal and one slidable connection. Locking means are associated with the slidable connection and with the crossing portions of the arms, the locking means being held engaged by gravity and by downward pressure on the arm rest and being releasable by upward movement of the arm rest.

3,779,601
METHOD OF PRODUCING HYDROCARBONS FROM AN OIL SHALE FORMATION CONTAINING NAHCOLITE
Thomas N. Beard, Denver, Colo., assignor to Shell Oil Company, New York, N.Y.
Continuation-in-part of Ser. No. 770,964, Oct. 28, 1968, abandoned. This application Sept. 24, 1970, Ser. No. 75,061. The portion of the term of this patent subsequent to Sept. 18, 1990, has been disclaimed.
Int. Cl. E21b *43/28*
U.S. Cl. 299—4 **7 Claims**



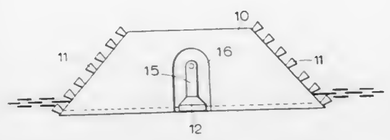
A method of producing hydrocarbons and optionally nahcolite from a subterranean oil shale formation containing zone(s) of nahcolite, by penetrating said formation with at least one borehole and leaching or dissolving the nahcolite from the formation with a solvent fluid so as to form a cavern(s) and/or interconnected cavities, followed by fracturization and/or rubblization of the oil shale surrounding the caverns or cavities, and thereafter injecting into fracturized and/or rubblized zones, a pyrolyzing fluid to effect in-situ hydrocarbon recovery therefrom.

3,779,602
PROCESS FOR SOLUTION MINING NAHCOLITE
Thomas N. Beard, Denver, Colo., and Peter Van Meurs, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Aug. 7, 1972, Ser. No. 278,407
Int. Cl. E21b *43/28*
U.S. Cl. 299—5 **6 Claims**



The process of solution mining sodium bicarbonate (e.g., nahcolite) from a subsurface sodium bicarbonate containing, oil shale formation with water is improved by conducting leaching operations at a selected temperature greater than 250°F and adjusting pressure to a particular preferred value for the selected leaching temperature.

3,779,603
MINERAL MINING MACHINES
Angel Davila Baz, Plaza de Castille, No. 1, 3aC, Alcobendas, Spain
Filed Feb. 2, 1972, Ser. No. 222,852
Claims priority, application Spain, Feb. 10, 1971, 388,136
Int. Cl. E21c *27/44*
U.S. Cl. 299—34 **13 Claims**



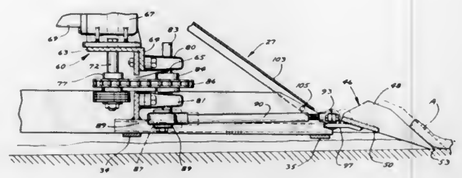
A mineral mining plough of the type which has a body with sets of cutting tools at each end, the machine being guided along a longwall mineral face to strip mineral therefrom. In order to guide the plough so as to cut the face down to the floor level one or more adjustable floor cutters are provided. The, or each, adjustable cutter has a blade with a cutting edge which may be operative in one or both directions of travel of the machine. The adjustable cutter is adjustable so that the cutting edge can be inclined downwardly or upwardly, or aligned parallel to, the floor level of the face. By appropriate adjustment of the cutter the plough can be guided to compensate for any deviation relative to the floor level of the face.

3,779,604
MINERAL MINING INSTALLATIONS
Willy Heyer, Bochum-Gerthe, and Christoph Rassmann, Lunen, both of Germany, assignors to Gewerkshaft Eisenhutte Westfalia, Westfalia, Germany
Filed Feb. 8, 1972, Ser. No. 224,512
Claims priority, application Germany, Feb. 11, 1971, P 21 06 443.7
Int. Cl. E21c *27/35*
U.S. Cl. 299—34 **15 Claims**



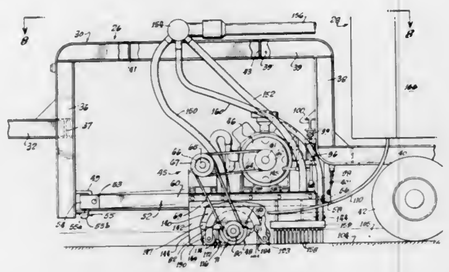
A mineral mining installation composed of a conveyor with a guide member for a plough on one side. The position of the guide member in relation to the floor of a mine working is controlled by means of beams connected to the goaf side of the conveyor. In one construction each beam is pivotably connected to the arms of a U-shaped bracket connected to the conveyor and a locking pin is insertable into various alignable bores in the beam and the arms of the bracket in order to secure the beam in various angular positions. In another construction each beam is composed of a channel member rigidly affixed to a leaf spring. The channel member is connected in the manner of a toggle linkage with a plate affixed to the goaf side of the conveyor and a piston and cylinder unit is connected between the channel member and the plate to effect a change in angular position.

3,779,605
ROOFING REMOVAL APPARATUS
John J. Nieman, 212 E. Main St., New Prague, Minn.
Filed July 28, 1972, Ser. No. 276,123
Int. Cl. E04d *15/00*
U.S. Cl. 299—37 **2 Claims**



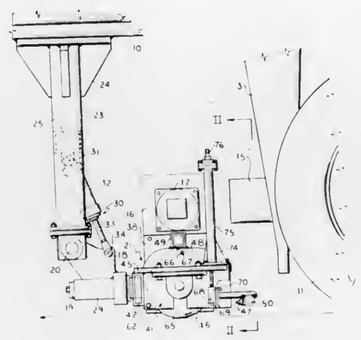
This invention relates to a tractor having detachably secured thereto a roofing removal apparatus, said apparatus comprising a frame having slidable guide rods carrying a cutting head forwardly of said apparatus and a vertically disposed eccentric driving shaft carried by said apparatus and driven by said tractor, said driving shaft having a connecting rod connecting said cutting head thereto for reciprocating action of said cutting head.

3,779,606
PAVEMENT CUTTING MACHINE WITH IMPROVED LIQUID COOLANT SUPPLY
Cecil W. Hatcher, and Gene Warner, both of P.O. Box 1263, El Monte, Calif.
Division of Ser. No. 119,476, March 1, 1971, Pat. No. 3,703,316. This application Aug. 31, 1972, Ser. No. 285,256
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **5 Claims**



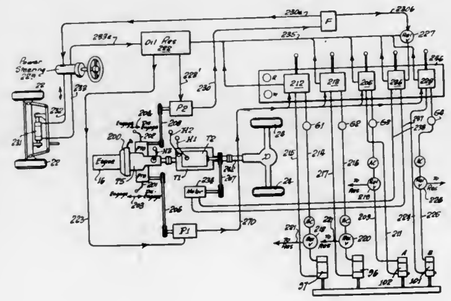
A pavement cutting machine for cutting bumps or grooves. A tractor has a hitch with a cutter trailer and a tank trailer. The tank picks up the sludge from the cutter, filters it and recirculates the filtered water to the cutter. A shroud has a wall around the cutter to provide a vacuum chamber having suction nozzles to pick up the sludge. The nozzles are in the form of upright tubular members having a length sufficient for the lower ends of the nozzles to contact the pavement during operation of the cutter. The cutter and its engine, also the vacuum chamber and nozzles are all carried by a support which is raised or lowered by hydaulic cylinders. The cutter device is a single cutter or two cutters having overlapping shafts at their inner ends with the spacing between adjacent cutting disks the same as on each cutter for cutting grooves or overlapped for cutting bumps.

3,779,607
SUPPORTING CUTTER ASSEMBLIES FOR MULTIPLE GROOVING OF PAVEMENT
Donald C. Staab, Warrington, Pa., assignor to Cardinal Industries, Incorporated, Conshohocken, Pa.
Filed Dec. 27, 1971, Ser. No. 212,475
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **13 Claims**



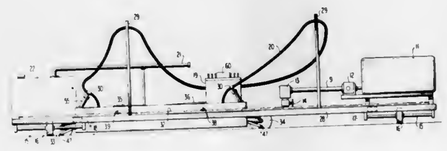
Vehicular apparatus for use in multiple grooving of pavement is provided with generally cylindrical cutter assemblies having cutter heads with laterally spaced blades rotatable to groove pavement when in contact therewith. Each cutter assembly is mounted to be raised and lowered uniformly and also to be tilted relative to the vehicle frame. Adjustable depth wheels at each end of a cutter assembly control the groove depth.

3,779,608
PAVEMENT CUTTING MACHINE WITH SELECTED DRIVE SYSTEM
Cecil W. Hatcher, and Gener Warner, both of P.O. Box 1263, El Monte, Calif.
Division of Ser. No. 119,476, March 1, 1971, Pat. No. 3,703,316. This application Aug. 18, 1972, Ser. No. 281,952
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **8 Claims**



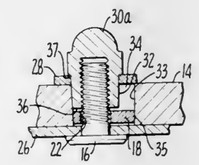
A pavement cutting machine for cutting bumps or grooves. A tractor has a hitch with a cutter trailer and a tank trailer. The tank picks up the sludge from the cutter, filters it and recirculates the filtered water to the cutter. One or more hydraulic cylinders for the cutter or cutters act against a frame member which supports the tank whereby the weight of the tank snubs the cutter or cutters. The tractor has an engine for driving the traction wheels of the vehicle at high speed when moving from one location to another. The tractor has an alternative hydraulic drive operated by the engine when the engine is disconnected from the traction wheels, the hydraulic drive having a low speed transmission to the traction wheels.

3,779,609
CONCRETE CUTTING MACHINE
Robert E. James, Rt. No. 1, P.O. Box 414, Griffin, Ga.
Filed Oct. 27, 1972, Ser. No. 301,535
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **8 Claims**



A machine for cutting transverse contraction joints in concrete highways has independently hydraulically controlled saws which may be hydraulically raised or lowered. The saws will always cut to the same depth with respect to the surface of the road and this depth may be controlled. The machine is itself hydraulically driven and has only one gasoline engine and hydraulic storage tank.

3,779,610
WHEEL AND ALIGNMENT ASSEMBLY
Emil J. Pansky, Hillsborough, and Donald G. Dean, Lafayette, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.
Filed Jan. 21, 1970, Ser. No. 4,557
Int. Cl. B60b *3/16*
U.S. Cl. 301—9 DN **3 Claims**

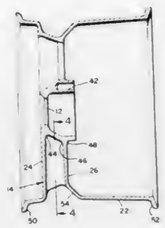


A wheel construction with oversized stud apertures which in cooperation with selected alignment inserts define stud holes coincident in axial alignment with threaded studs on a particular vehicle axle flange. Inserts of differing configuration or of reversible orientation being interchangeably insertable in stud apertures to accommodate the wheel on a plurality of varying axle flanges having threaded studs symmetrically arranged on differing circular radii. Alignment inserts being freely slidable in the stud apertures and retained therein by large flat washers such that lug nuts threadable on the studs and against the washers secure the wheel to the particular vehicle axle flange.

3,779,611
LIGHT WEIGHT RACING WHEEL

Maurice Phillippe, Hethersett, Norfolk, England, assignor to Vel's Ford Sales Co., Torrance, Calif.

Filed Apr. 12, 1972, Ser. No. 243,232
Int. Cl. B60b 9/26, 1/08, 1/12
U.S. Cl. 301—65 6 Claims

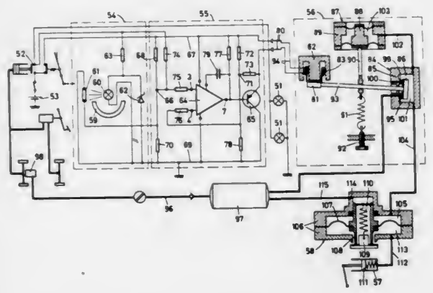


A wheel having spoke members connecting the hub portion with the rim portion that are hollow and connect with the hub portion in a sealing relationship. The opposite ends of each of the hollow spoke members thereby exposing the inside of each of the spokes. A hole is located in one of the spokes near the hub for inflating a tire mounted on the rim portion.

3,779,612
TRAILER BRAKE CONTROL SYSTEM

Hans Tschannen, Gorgier, Switzerland, assignor to Beka St-Aubin S.A., St-Aubin, Neuchatel, Switzerland

Filed May 17, 1971, Ser. No. 143,818
Claims priority, application Switzerland, May 19, 1970, 7394/70; Apr. 23, 1971, 5961/71
Int. Cl. B60t 8/12
U.S. Cl. 303—21 CG 1 Claim

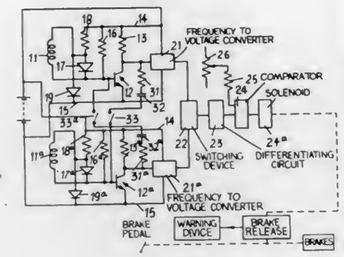


A trailer brake control system for a tractor-trailer arrangement which comprises a deceleration transmitter located at the tractor for generating electrical signals as a function of the braking or deceleration action exerted at the tractor. An electronic circuit serves to amplify the generated electrical signals. Mechanisms responsive to the amplified electrical signals serve to operate braking apparatus arranged at the trailer.

3,779,613
ANTI-SKID BRAKING SYSTEMS

Christopher John Sutton, Tamworth, England, assignor to Girling Limited, Birmingham, England

Filed July 29, 1971, Ser. No. 167,411
Claims priority, application Great Britain, Sept. 9, 1970, 43,114/70
Int. Cl. B60t 8/12
U.S. Cl. 303—21 EB 4 Claims

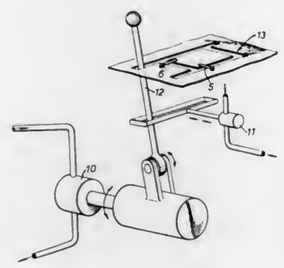


In an anti-skid braking system in which the speeds of two wheels are measured, the two wheels being on a common axle, the signals representing wheel speeds are converted to a suitable form by frequency to voltage converters and then applied to a differentiating circuit which produces a signal representing the rate of deceleration of the slowest wheel, this signal being used to release the brakes from the wheel to prevent skidding. The two frequency to voltage converters are associated with additional transistors and switches in such a way that when the vehicle is to be started, the differentiating circuit receives a signal representing a constant speed even though the vehicle is stationary. When the switch is then opened, the system reacts as if a sudden deceleration has occurred, and releases the brakes. In this way a test is obtained very simply of the operation of the anti-skid circuit.

3,779,614
VEHICLE BRAKING SYSTEMS

Michael James Hughes, Tyseley, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 31, 1972, Ser. No. 240,117
Claims priority, application Great Britain, Apr. 2, 1971, 8,552/71
Int. Cl. B60t 7/08
U.S. Cl. 303—89 3 Claims

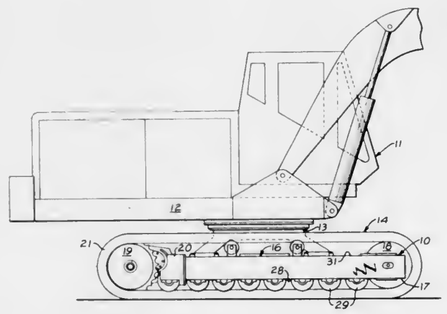


A control valve arrangement particularly for use in a vehicle braking system having fluid pressure brake actuator means and fluid pressure controlled lock actuator means, comprises two separate control valves operated by a single control lever, and a gate which governs movement of the control lever has two parallel legs and two parallel cross-paths intersecting the legs. Mechanical one-way latching means co-ordinate control of the respective valve in such a manner that the lock actuator is rendered operative and inoperative only at predetermined pressure values of the brake actuator means.

3,779,615
MOUNTING DEVICE FOR ROTATABLE MEMBERS

Robert B. Kennicutt, Morton; Ellis A. Sitton, East Peoria, and John W. Yancey, Aurora, all of Ill., assignors to Catepillar Tractor Company, Peoria, Ill.

Filed Apr. 10, 1972, Ser. No. 242,701
Int. Cl. B62d 55/12, 55/30
U.S. Cl. 305—31 9 Claims

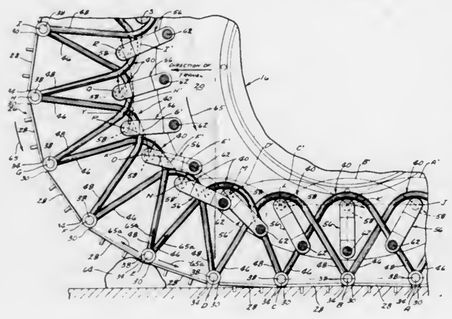


A mounting assembly for slidably supporting a rotatable member comprises a shaft supporting the rotatable member by means of a pair of support brackets being disposed between a pair of substantially parallel frames with each support bracket having a pair of outwardly extending projections slidably embracing a pair of mounting surfaces provided on each frame.

3,779,616
VEHICLE WHEEL

Vernon H. Reisser, 10607 Poppleton Ave., Omaha, Nebr.

Filed Sept. 23, 1971, Ser. No. 183,085
Int. Cl. B62d 55/08
U.S. Cl. 305—19 35 Claims

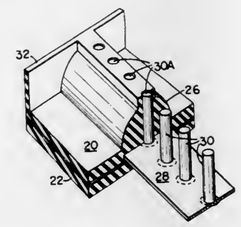


A wheel for vehicles is comprised of a rigid circular inner wheel which is surrounded by a continuous flexible track having a plurality of pad elements joined together continuously in edge-to-edge relationship by a plurality of hinge means, each of which is interposed between the adjacent edges of the pad elements. A plurality of arcuate members each have a first end pivotally connected to one of the hinge means and a second end pivotally connected to another of the hinge means. The arcuate members span at least two pad members. Each of the hinge means is pivotally connected to at least one of the first ends of the arcuate members so that the arcuate members overlap one another, and a plurality of crank elements are each connected at one of their ends to one of the arcuate members and at the other of their ends to the inner wheel. A lubrication system is also provided for the crank members so as to facilitate lubrication of the pivotal joints at the opposite ends of the crank members.

3,779,617
GENERAL PURPOSE TRACKS

Karl V. Palmaer, 5643 Fair Oaks Blvd., Carmichael, Calif.

Division of Ser. No. 817,953, April 21, 1969, abandoned. This application May 28, 1971, Ser. No. 148,152
Int. Cl. B62d 55/24
U.S. Cl. 305—38 7 Claims



A continuous track, for uses such as driving a vehicle over snow, ice, dirt, or the like, has a plurality of cross ridges which extend generally across the full width of the track. These cross ridges are of resilient material, and contain edged or pointed members embedded therein, so that when weight is put on the track, those cross ridges contacting the snow, ice, dirt or the like are compressed, exposing the pointed or edged members to dig into the snow, etc. The track includes at least one continuous band of inextensible material, such as fiberglass. The track may be made up of two or more side-by-side portions which are positioned together to form a complete track.

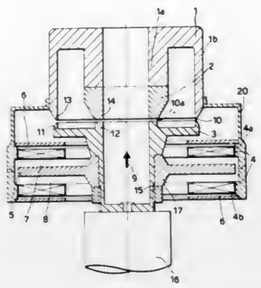
3,779,618
SELF-CENTERING MAGNETIC SUSPENSION

Luciano Soglia; Aldo Catitti; Ciampino Di Marino, and Giancarlo Sacerdoti, all of Rome, Italy, assignors to Comitato Nazionale per l'Engergia Nucleare, Rome, Italy

Filed Feb. 24, 1972, Ser. No. 228,810
Claims priority, application Italy, Feb. 26, 1971, 48671 A/71
Int. Cl. F16c 39/00
U.S. Cl. 308—10 7 Claims

A device is provided for magnetically suspending a body which rotates about a vertical axis for centering said body radially with respect to said axis and for maintaining it at a constant height which device comprises a magnet which provides the main suspension force, a round armature fastened to the suspended body under said magnet which armature is provided with a peripheral tapered ridge for producing a radial

return force when this armature moves radially with respect to a tapered circular pole piece of said magnet and with a series



of disks each interposed between a pair of coils for producing the vertical balancing force as required for keeping the rotating load at a predetermined level.

3,779,619

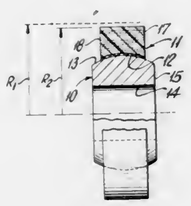
COMPOSITE PLASTIC BEARING

Horace B. Van Dorn, Kensington; Richard J. Matt, Simsbury, and Thomas P. Rolland, Bristol, all of Conn., assignors to Textron Inc., Providence, R.I.

Division of Ser. No. 93,945, Dec. 1, 1970. This application July 14, 1972, Ser. No. 272,039

Int. Cl. F16c *23/04, 33/20*

U.S. Cl. 308—72 **12 Claims**



The invention contemplates an improved sliding bearing, and method of making the same, wherein a low-friction fabric liner of non-cylindrical shape is part of an outer-ring member which has a sliding rotational interface with the matching surface of inner bearing-ring member.

According to the method of the invention, plural inner bearing-ring members are first arrayed upon a common support or mandrel. A braided sock of low-friction fabric is slipped over the inner-ring members and is axially elongated to cause the main body of the sock to conform generally with the external contour of the arrayed inner rings. Hardenable plastic such as epoxy or phenolic is applied to impregnate the threads of the sock and to wet applied reinforcing threads of back-up layers, resulting in a single impregnated cylinder in which the liner material is held to the contour of all inner rings, for curing to ultimate hardness. Separate assembled bearings result from the radial cut-off between adjacent inner rings, and removal of the mandrel. Various further refining details are disclosed.

3,779,620

BEARINGS FOR AN OPEN-END SPINNING TURBINE

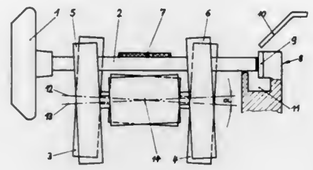
Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Wilhelm GmbH, Reichenbach, Germany

Filed Mar. 16, 1972, Ser. No. 235,319

Claims priority, application Germany, Mar. 17, 1971, P 21 12 913.5

Int. Cl. F16c *13/00*

U.S. Cl. 308—203 **12 Claims**



Bearing means for the turbine shaft of an open-end spinning turbine in which this shaft extends, for example, substantially horizontally, comprising supporting rollers mounted underneath and at both sides of the turbine shaft and forming at least one wedge-shaped gap between them in which the turbine shaft is supported on the rollers and is pressed thereon and directly driven, for example, by a drive belt. For producing an axial thrust of the turbine shaft toward and against a thrust bearing, the shafts of the supporting rollers at both sides of the turbine shaft extend parallel to the turbine shaft as seen in a top view, but as seen in a side view they are inclined about an axis extending transverse to and underneath the turbine shaft.

3,779,621

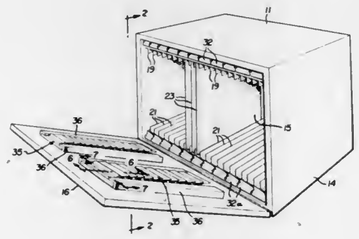
RECORD ALBUM STORAGE CABINET

Ernest Lee Carless, 475 N. Eton Rd., Birmingham, Mich.

Filed July 3, 1972, Ser. No. 268,657

Int. Cl. A47b *81/06*

U.S. Cl. 312—15 **4 Claims**



An open front cabinet having a plurality of upper, narrow tracks vertically aligned with corresponding lower tracks extending from front to rear of the cabinet for storing narrow, flat, record albums and the like in a vertical plane, with the upper and lower edges of each album slidably fitted within a pair of aligned upper and lower tracks. A pivotable lever is arranged at the rear of each such pair of aligned tracks for pivoting into the space therebetween and engaging the rear vertical edge of an album stored therein and for pushing it forwardly upon pivoting of the lever. Said levers are alternatingly mounted at the lower tracks of one pair and at the upper track of the next adjacent pair of aligned tracks. Each lever is pivotally actuated by a lever push rod which extends from the lever to the open front of the cabinet and terminates in a manual push button for selectively pushing the rod rearwardly and thus pivoting its respective lever forwardly for pushing a pre-selected album forwardly of its tracks. The alternating push rods are located between the upper tracks and the top of the cabinet and between the lower tracks and the bottom of the cabinet, so that each push button may be almost as wide as two adjacent tracks.

3,779,622

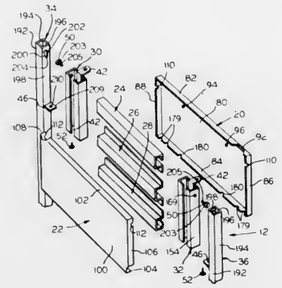
UNITARY PANEL LEG ARRANGEMENT FOR OFFICE FURNITURE

Donald V. Beaver, Brookfield, Ill., assignor to All-Steel Inc., Aurora, Ill.

Division of Ser. No. 80,835, Oct. 15, 1970, abandoned. This application Sept. 20, 1972, Ser. No. 290,435

Int. Cl. A47b *17/00*

U.S. Cl. 312—194 **4 Claims**



A unitary panel leg arrangement for office furniture comprising a pair of quadrilaterally shaped pans disposed in opposed relation which receive horizontally disposed parallel reinforcing members of channel form and a pair of vertically disposed leg mounting channels at the ends of the reinforcing members which are equipped with weld nuts and brackets for application thereto of screws to secure same to a table top and back panel, and to secure a leg to the respective vertical side edges of the panel leg arrangement. The reinforcing members comprise a central channel member of hat shaped section separating a pair of side members of wing flange channel section, with the latter being equipped with weld nuts to secure the panel leg arrangement to a back of gusset plate. The reinforcing and leg mounting members are welded to the pan that is to face inwardly of the furniture, while the reinforcing members are bonded to the outwardly facing pan by an epoxy resin to insure a flaw free surface for good aesthetic effect without requiring machining.

3,779,623

SECTIONAL RACK

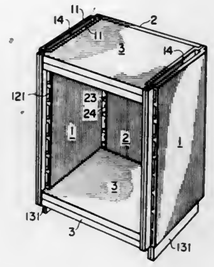
Masatoshi Motohashi, Osaka, Japan, assignor to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 23, 1972, Ser. No. 265,884

Claims priority, application Japan, June 23, 1971, 46/54741

Int. Cl. A47b *43/00, 87/00*

U.S. Cl. 312—257 **7 Claims**



Interfitting, similar sized and configured members, without bolts, screws, nuts or like locking members, define stacked or end to end coupled unit boxes to form a sectional rack useful as a display rack, filing cabinet or bookcase.

3,779,624

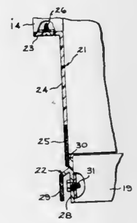
CABINET HAVING A KICK PLATE ASSEMBLY

Thomas W. Werderitsch, Grafton, Wis., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 24, 1972, Ser. No. 247,019

Int. Cl. A47b *81/00*

U.S. Cl. 312—278 **13 Claims**

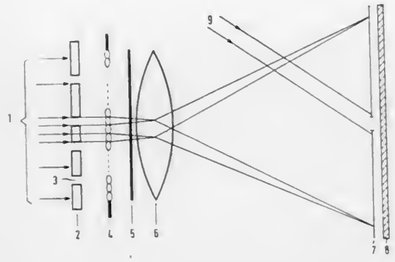


Improved construction for a kick plate assembly in the toe kick area at the lower front of a cabinet such as a compacting appliance. An outwardly movable carrier housed within the cabinet extends substantially close to the bottom of the cabinet such that its lower portion moves outwardly through the toe kick area. The assembly includes a downwardly extending skirt portion mounted at the lower edge of the cabinet's front appearance panel. The skirt portion terminates short of the lower edge of the cabinet, and the lower edge of the cabinet has a strip mounted thereacross adapted to blend with the skirt portion. The skirt portion slightly overhangs the upper edge of the strip whereby the toe kick area beneath the panel is uniformly covered when the panel is in its closed position.

3,779,625
HOLOGRAPHIC RECORDING WITH TWO GROUPS OF DIFFERENTLY ORIENTED PLANE POLARIZED OBJECT ILLUMINATION BEAMS

Manfred Lang, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 6, 1972, Ser. No. 232,018
Claims priority, application Germany, Apr. 1, 1971, P 21 16 013.4
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 8 Claims



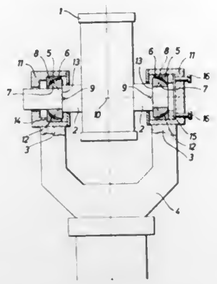
The present invention is directed to a method and apparatus for recording information on a holographic storage medium which information is presented in an information mask characterized by projecting a coherent light beam, which has been polarized in one direction, through a mask which changes the direction of polarization of discrete portions of the light beam which is subsequently divided into a plurality of light beams by a mosaic of lens. The plurality of light beams are projected through the information mask, which modulates the beam with information contained in the mask, and onto the holographic storage medium where a reference beam is superimposed therewith to record the information. The polarization mask is provided with statistically distributed raster of apertures so that a portion of the light beam passing through the material of the mask has its direction of polarization rotated relative to the direction of polarization of the other portion which passes through the apertures. The angle between the directions of polarization of the two portion of the light beam is in either a range of 80° to 100° and preferably 90° or a range of 170° to 190° and preferably 180°.

3,779,626
ASTRONOMICAL TELESCOPE

Heinz Korrenn, Schweinfurt; Horst Voll, Obertheres, and Harald Grubel, Schweinfurt, all of Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

Filed Oct. 25, 1972, Ser. No. 300,860
Claims priority, application Germany, Oct. 29, 1971, P 21 54 087.4
Int. Cl. G02b 23/16
U.S. Cl. 350—85 3 Claims

An astronomical telescope is disclosed having a tube mounted to pivot about a declination axis, the tube being held free of play by means of two laterally projecting trunnions, coaxial with the declination axis, disposed in the two limbs of a fork, in bearings which are axially pre-loaded away from each other, and in which each trunnion is rotatably mounted in an associated limb of the fork by means of an enclosed fluid-tight hydrostatic self-aligning bearing, with spherically curved mutually facing bearing surfaces of which the common center of curvature lies on the declination axis, the two bearings being

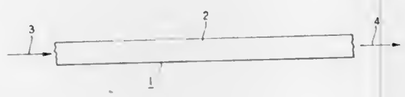


axially mutually pre-loaded apart by virtue of the elasticity of the fork. At least one of the bearings is axially adjustable in the associated limb of the fork along the declination axis.

3,779,627
OPTICAL TRANSMISSION LINE ELEMENTS UTILIZING FLUORINATED POLYMERS

Douglas Arthur Pinnow, Berkeley Heights, and LeGrand Gerard Van Uitert, Morris, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 17, 1971, Ser. No. 143,876
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 9 Claims

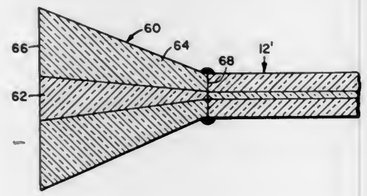


Optical transmission lines constructed of fully fluorinated polymers in the amorphous state, such as fluorinated ethylene propylene, have low inherent insertion loss characteristics.

3,779,628
OPTICAL WAVEGUIDE LIGHT SOURCE COUPLER

Felix P. Kapron, Elmira, and Donald B. Keck, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,702
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 3 Claims



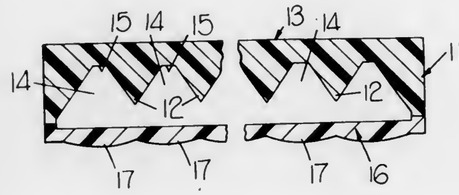
A light coupler for efficiently utilizing light from a source of optical wave energy in the initiation of light mode propagation

in an optical waveguide. The coupler comprises a tapered core of transparent material and a layer of transparent cladding material disposed upon the surface of the tapered core. The refractive index of the core is greater than that of the cladding layer. The core has a large diameter end terminating in an optically polished surface which is adapted to receive light from the light source. The small diameter end of the core is substantially aligned with the core of the optical waveguide.

3,779,629
COMBINED LENS AND REFLECTOR FOR A VEHICLE LAMP

Stanley Green, Warley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 5, 1972, Ser. No. 259,820
Claims priority, application Great Britain, June 23, 1971, 29,403/71
Int. Cl. G02b 5/12
U.S. Cl. 350—103 7 Claims

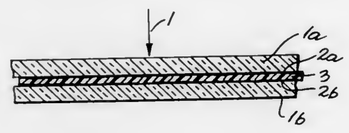


A combined lens and reflex reflector for a vehicle lamp in particular a vehicle tail lamp. The combination includes a first transparent component having integral with one face thereof a plurality of corner cube reflectors. Between the corner cube reflectors are defined a plurality of recesses, and the base of each recess is generally parallel with the adjacent portion of the opposite surface of the component. The corner cube reflectors reflect light incident upon the first component from one direction, back towards its source. The combination includes a second transparent component which defines a plurality of converging lenses, and which is positioned so that light incident on the second component from a direction opposite said one direction is directed by the lenses onto the base regions of the recesses of the first component so that the light is transmitted by the first component.

3,779,630
REAR PROJECTION SCREEN AND METHOD OF MAKING SAME

Erik Clausen, and Johannes Clausen, both of Farevejle, Denmark

Filed June 14, 1972, Ser. No. 262,671
Claims priority, application Denmark, Dec. 16, 1971, 6158/71
Int. Cl. G03b 21/56
U.S. Cl. 350—117 8 Claims

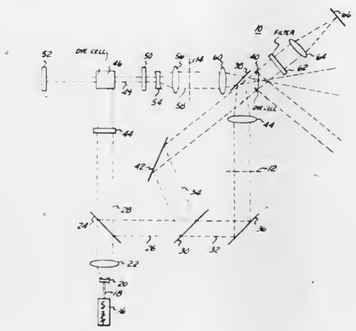


A screen for rear projection comprising an intermediate sheet consisting of light conducting partly crystallized plastic material to opposite sides of which a cover sheet is adhered, light diffusing layers being arranged at the interfaces between the intermediate sheet and the cover sheets the latter having smooth outer surfaces.

3,779,631
OPTICAL CORRELATOR HAVING A DYE AMPLIFIER FOR AMPLIFYING CORRELATING PORTIONS OF SIGNALS

David M. Shupe, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 27, 1971, Ser. No. 212,459
Int. Cl. G06g 9/00
U.S. Cl. 350—162 SF 8 Claims

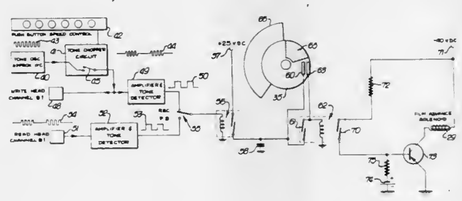


An optical correlator in which a Fourier transform signal representing one image, and a Fourier transform holographic interference signal representing another image are projected onto an organic dye cell amplifier. The dye cell amplifier records, or in other words absorbs energy from the holographic interference signal and utilizes the absorbed energy to differentially amplify the Fourier transform signal. The amount of amplification provided to the various portions of the Fourier transform signal is proportional to the degree of correlation between the various portions of the two images.

3,779,632
ADJUSTABLE SPEED PROJECTOR WITH SYNCHRONIZED SOUND RECORDER

Guy C. Caraway, 9703 Wiley Burke Ave., Downey, Calif.

Continuation-in-part of Ser. No. 89,861, Nov. 16, 1970, abandoned, and a continuation-in-part of Ser. No. 91,061, Nov. 19, 1970, abandoned. This application Apr. 10, 1972, Ser. No. 242,470
Int. Cl. G03b 31/04
U.S. Cl. 352—17 30 Claims



An adjustable speed projector including a continuously running shutter for repetitively interrupting the projection

light path at a rate which is independent of the film frame rate, a source of film frame advance signals having a repetition rate controllable by an operator, and means for advancing a film by one frame in response to each advance signal at a time corresponding to the next succeeding interruption of the projection light path by the shutter so that the film is in motion only at times when the shutter interrupts the light path. The film-advancing mechanism includes a continuously rotating drive wheel, a driven wheel which is caused to engage the drive wheel for one cycle in response to each actuating signal, and a claw, one end of which is eccentrically mounted on the driven wheel and the other end of which engages a film sprocket hole to advance the film by one frame for each cycle of the driven wheel. A single spring urges the driven wheel into engagement with the drive wheel and also urges the claw into engagement with the film and against a lateral guide surface. Two-channel recording and playback apparatus is provided so that film frame advance signals recorded in synchronism with a sound track may be used to control the projector in the playback mode.

3,779,633

ELECTROMAGNETIC SHUTTER RELEASING DEVICE FOR A PHOTOGRAPHIC CAMERA

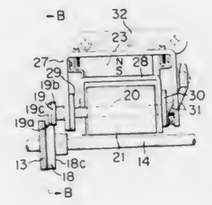
Toshikazu Ichiyanagi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,347

Claims priority, application Japan, Dec. 28, 1970, 45/128435

Int. Cl. G03b *9/10*

U.S. Cl. 352—204 **9 Claims**



An electromagnetic shutter releasing device which includes an electromagnet controlled by an electrical input pulse for electromagnetically releasing a movable shutter from its stationary position for exposure, a permanent magnet interacting with said electromagnet, the polarity of said electrical input to the electromagnet being changed to interact with the permanent magnet to stop or start a motor for driving the shutter shaft. For continuous shooting, the motor is kept driven without applying the electrical input to the electromagnet. The shutter releasing device further incorporates an electronic control circuit including a multivibrator which can respond quickly and correctly to the electrical input pulses.

3,779,634

PORTABLE VIEWING THEATER

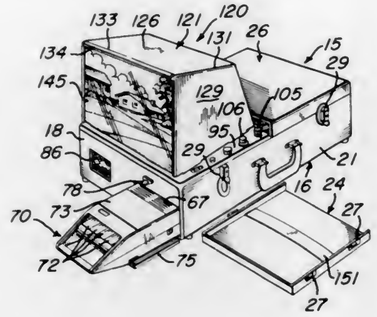
Robert W. Kirchgessner, Dayton, Ohio, assignor to Applied Communication Inc., Dayton, Ohio

Filed Oct. 13, 1971, Ser. No. 188,972

Int. Cl. G03b *31/06, 21/30, 21/10*

U.S. Cl. 353—17 **11 Claims**

A portable compact case includes a rectangular box-like base section and a set of two cover members which seat on the base section and define corresponding front and rear compartments. A standard carousel-type film slide projector is positioned within the rear compartment, and a collapsible viewing hood assembly is located within the front compartment. The front compartment also encloses a standard cassette-type tape recorder in addition to an electronic synchronizing unit which controls the advancement of the slide projector in response to inaudible signals on the tape cassette. The recorder is removable from the front compartment through a door opening within the front wall of the case, and a speaker is positioned adjacent the front wall in back of an adjustable mirror. The viewing hood is formed from a substantially rigid sheet of plasties material and includes a set of side panels which are



connected by an integral hinge to a top panel connected by an integral hinge to a rear panel which, in turn, is connected by an integral hinge to a flange secured to a base control panel mounted within the front compartment of the case. The hood assembly also includes a second mirror and a rear projection viewing screen which is removable for projecting onto a remote viewing screen. The rear projection screen is normally stored within the cover member for the front compartment.

3,779,635

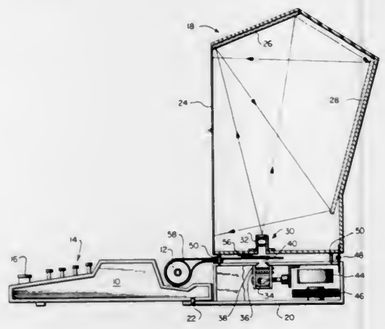
MICROFICHE READING ATTACHMENT FOR A TYPEWRITER

George J. Yevick, Leonia, N.J., and Adnan Waly, Stamford Conn., assignors to Personal Communication, Inc., Stamford, Conn.

Filed Apr. 5, 1971, Ser. No. 131,050

Int. Cl. G03b *21/11, 23/08, 21/134*

U.S. Cl. 353—27 **2 Claims**



A microfiche reader composed of two main components. The first is a moving carriage typewriter of any standard construction. The second is a modular attachment and contains optical projection and viewing elements. The microfiche is read by unit index rotation of the typewriter platen (row scanning) and unit index actuation of the typewriter spacer bar (column scanning).

3,779,636

SLIDE PROJECTOR

Dean McCormack Peterson, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 14, 1970, Ser. No. 63,741

Int. Cl. G03b *23/16*

U.S. Cl. 353—83 **5 Claims**



A projector comprised of 1. a unitary optical system, 2. a means for providing a first and a second light beam each having a separate axes that extends along a common plane and through a different one of two optical objects, 3. a movable first and second light beam directing mirrors jointly coacting simultaneously to replace by infusion a projected image of one of said optical objects that is being projected onto a show screen with the projected image of the other optical object, 4. a connection between the means that moves the light beam directing means and a preview unit of the projector to move the axis of a lens of this preview unit a distance equal to the thickness of one of the mirrors to enable a light image of the non projected one of the two optical objects to be precisely directed by the light beam directing means onto a screen of the preview unit and 5. the employment of the movement of the light beam directing means to replace by infusion the projected image of optical objects that are to be projected onto the preview screen.

3,779,637

SLIDE ATTACHMENT WITH A SOUNDING MECHANISM

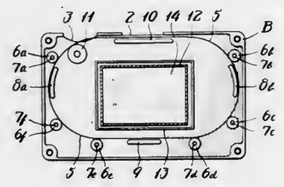
Minoru Otsuboj, 11-21, 1-chome, Nakacho, Meguro-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 45,391, April 11, 1970, abandoned. This application Mar. 7, 1972, Ser. No. 232,469

Claims priority, application Japan, June 14, 1969, 44/46500

Int. Cl. G03b *31/06*

U.S. Cl. 353—120 **6 Claims**



A slide attachment with a sound mechanism which includes a photographic slide film secured within an opening of a casing and an endless strip of film on which sound is recorded in a helical groove with the endless strip being mounted for sliding movement within the casing circumferentially about the opening.

3,779,638

DESK-TOP ELECTROSTATIC COPYING MACHINE

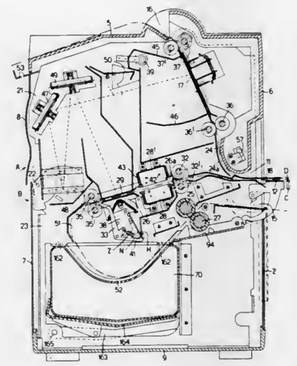
Giovanni Ravera, Turin; Nicola Cosmo, Ivrea, Turin, and Giorgio Siletto, Turin, all of Italy, assignors to Ing. C. Olivetti & C. S.p.A., Torino, Italy

Filed Sept. 23, 1970, Ser. No. 74,817

Claims priority, application Italy, Sept. 24, 1969, 53451 A/69

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **7 Claims**



A desk-top electrostatic copying machine comprising a lower section, an upper section pivotally attached to the lower section, and a front section pivotally attached to the upper section. The lower section contains a copy paper charging station, a copy paper exposure station, and a copy paper developing station, all disposed along a copy paper flow path. The copy paper flow path is defined by bottom elements carried by the lower section and top elements carried by the upper section, so that when the upper section is opened the flow path of the copy paper is exposed. The upper section contains an original paper illuminating station and an optical system for projecting the image of the original paper from the illuminating station to the copy paper exposure station. An original paper flow path is defined by bottom elements carried by the upper section and top elements carried by the front section so that when the front section is pivoted to the open position the flow path of the original paper is exposed.

3,779,639

COLOR ELECTROPHOTOGRAPHIC APPARATUS

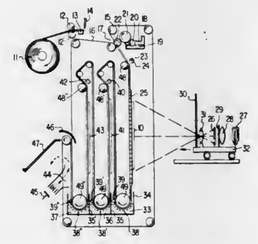
Yasuo Tamai, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami, Ashigara-shi, Kanagawa, Japan

Filed Dec. 30, 1971, Ser. No. 214,242

Claims priority, application Japan, Dec. 30, 1970, 45/123031

Int. Cl. G03g *15/04*

U.S. Cl. 355—4 **10 Claims**



Color electrophotographic apparatus comprises a plurality of operation stations each of which has a charging section, an

optical image exposure section and a developing section. Two sets of endless belts travel between the plurality of operation stations and convey a flexible electrophotographic material. The endless belts contact only the end or edge portions of the electrophotographic material. An optical system is provided wherein the optical axis for exposing the electrophotographic material is maintained in the same position in all the optical image exposure sections, the surface of the photoconductive insulating layer is perpendicular to the optical axis, and the optical images formed on the insulating layer are equal to each other in size during all exposures.

3,779,640

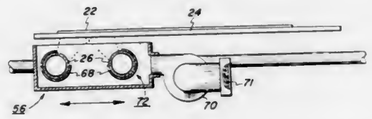
HEATING APPARATUS FOR SCAN LAMP

Wayne L. Kidd, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 13, 1972, Ser. No. 297,520

Int. Cl. G03g *15/00*; **G03b** *15/02*

U.S. Cl. 355—8 **14 Claims**



An illuminating apparatus in which the temperature thereof is regulated for producing light rays having a substantially constant spectral energy distribution.

3,779,641

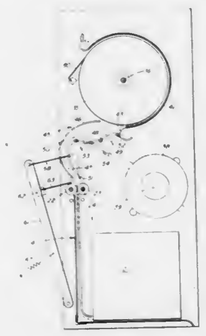
SELF-ACTIVATING CUTTER FOR STRIP MATERIAL

Frederic D. Hauck, Avon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,953

Int. Cl. G03b *29/00*

U.S. Cl. 355—29 **16 Claims**



A cutting or severing device is disclosed in conjunction with a processing machine for heat development of latent images that are exposed successively on paper supplied in roll form. The strip of paper is moved from a supply roll through an exposure station to a pair of drive rolls. These rolls also move the strip of paper through suitable guide means to the surface of a rotating drum that is heated by a resiliently mounted shell that partially surrounds the drum. The guide means through which the strip of paper is moved to engage the drum comprises a fixed member on one side of the strip and a number of sections on the other side of the strip that are pivotally interconnected so as to be movable to a collapsed position when the length of the strip of paper between the drive rolls and drum is shortened to a prescribed amount. A cutting blade is coupled to one of the movable sections of the guide means and upon movement into the collapsed position, the blade is moved toward and into engagement with the strip of paper at a point between the drive rolls and the end of the guide means adjacent thereto.

3,779,642

VARIABLE MAGNIFICATION COPIER MACHINE

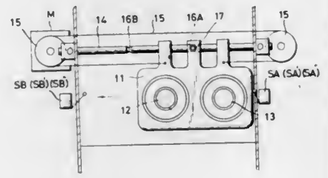
Masaya Ogawa, and Kenichi Wada, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

Filed July 17, 1972, Ser. No. 272,709

Claims priority, application Japan, Aug. 9, 1971, 46/71071 (utility model)

Int. Cl. G03b *27/32*

U.S. Cl. 355—55 **3 Claims**



Device for varying the copying magnification by moving the position of the supporter member mounted with two or more lenses and adapted to be automatically returned to the position for the usual magnification when the main switch for the copier machine is turned off.

3,779,643

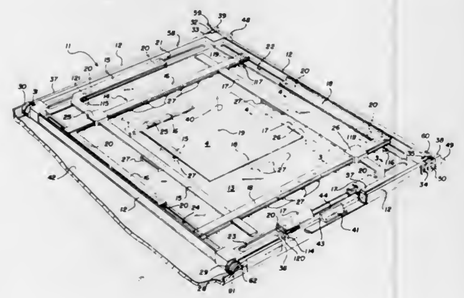
EASEL LOCKING DEVICE

Louis C. Nosco, Webster, and James E. Ryan, Avon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1972, Ser. No. 300,921

Int. Cl. G03b *27/62*

U.S. Cl. 355—75 **3 Claims**



A photographic copying apparatus is provided with a document holder for carrying different size documents which are to be copied. The document holder is supported on the copying apparatus for movement between a document copying position and a document loading and unloading position. An easel mechanism, mounted on the document holder, includes a plurality of easel members which cooperate to frame an area occupied by a document. At least one of the easel members is movable to vary the size of such area for accommodating different size documents. An easel locking device restrains at least one of the easel members from movement to vary the size of the area framed thereby, in response to movement of the document holder out of the document loading and unloading position, and releases at least one of the easel members for movement to vary the size of such area, in response to movement of the document holder into the document loading and unloading position.

3,779,644

DOCUMENT HOLDER EXCHANGE APPARATUS

Louis C. Nosco, Webster, and James E. Ryan, Avon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1972, Ser. No. 300,922

Int. Cl. G03b *27/62*

U.S. Cl. 355—75 **4 Claims**



A photographic copying apparatus is provided with several document holders for individually carrying separate documents which are to be copied. Use of the copying apparatus involves having a first one of the document holders in a document copying position while a second one of the document holders is in a document loading and unloading position. Each document holder includes a wedge member on a forward portion thereof, which may be slipped beneath a rearward portion of another document holder so as to raise that holder. To interchange the respective positions of the first and second document holders, the second document holder is moved in a forward direction out of the document loading and unloading position, causing a wedge member thereof to slip beneath a rearward portion of the first document holder and to raise that holder out of the document copying position. In this way, the first document holder will be located on top of the second document holder as that holder is moved into the document copying position. Thereafter, the first document holder is moved in a rearward direction into the document loading and unloading position.

3,779,645

DISTANCE MEASURING DEVICE

Narihiko Nakazawa, Tokyo; Taiji Nakamura, Zushi; Teruyoshi Kitahara, and Yoshio Habuka, both of Hayama-machi, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

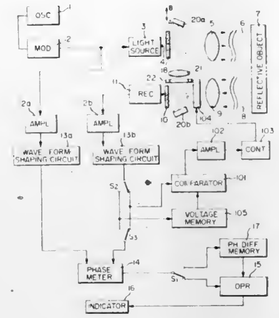
Filed May 13, 1971, Ser. No. 143,048

Claims priority, application Japan, May 20, 1970, 45/43052; May 20, 1970, 45/43055

Int. Cl. G01c *3/08*

U.S. Cl. 356—5 **8 Claims**

An improved distance measuring device of the type which utilizes an amplitude-modulated light wave to measure the phase difference between the transmitted and the received modulated wave and thereby determine the distance of an object, the device being characterized by a feedback path combined with the optical system of the device so that the difference in magnitude between a reception signal and a standard signal or a reference signal may be zero or within a predetermined range, whereby the phase difference between the two signals can be measured independently of the non-



linearity of the circuits and thus highly accurate measurement of the phase difference and accordingly of the distance of the object can be attained.

3,779,646

PREPARATION OF PIG IRON SAMPLES FOR SPECTRAL ANALYSIS

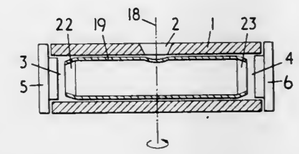
Jules Hancart, Bressoux, and Ivan Houbart, Chenee, both of Belgium, assignors to Centre National de Recherches Metallurgigues Centrum voor research in de Metallurgie, Brussels, Belgium

Continuation-in-part of Ser. No. 876,959, Nov. 14, 1969, abandoned. This application June 7, 1972, Ser. No. 260,593

Claims priority, application Luxembourg, Nov. 15, 1968, 57328

Int. Cl. G01j *3/00*; **G01n** *1/00*

U.S. Cl. 356—74 **1 Claim**



A portion of liquid pig iron tapped directly from the furnace is centrifuged until solidification is completed. The centrifuge is lined with refractory material to prevent solidification of the metal while flowing. The sample produced has an approximately homogeneous structure and is subjected to spectral analysis.

3,779,647

INTERFEROMETRIC DEVICE FOR INDICATING DISPLACEMENT ALONG ONE DIMENSION DURING MOTION ALONG ANOTHER DIMENSION

Juan C. Dawson, Littleton, Colo., assignor to The Bendix Corporation, Southfield, Mich.

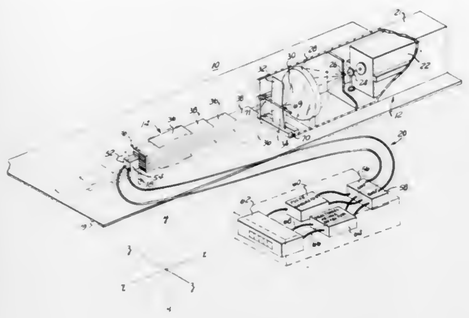
Filed Sept. 7, 1971, Ser. No. 178,237

Int. Cl. G01b *9/02*

U.S. Cl. 356—109 **2 Claims**

An apparatus for measuring the displacement of a part such as a work performing tool or a measuring probe of a flatness measuring instrument. The apparatus includes means for

providing a collimated laser beam that is disposed parallel to and displaced slightly from a predetermined plane of motion. Two identical prisms are placed side by side to intercept different portions of the laser beam. These prisms direct the intercepted portions of the laser beam to intersect and provide an interference pattern comprising a series of adjacent interference planes. An optical grating is attached to a part that is



to be moved nominally along the predetermined plane of motion. This grating intercepts the interference planes and provides a Moire fringe output signal that varies in response to any displacement of the part perpendicular to the plane of motion. Electronic apparatus detects and measures this Moire fringe pattern variation and provides an output indicating the magnitude and direction of any perpendicular displacement.

3,779,648

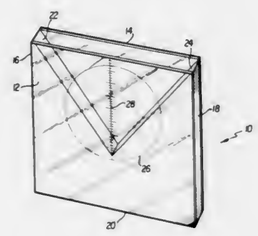
HYDROPHILIC LENS HOLDER

Maurice G. Poster, 108 Columbia Dr., Jericho, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,838

Int. Cl. G01b *9/00*

U.S. Cl. 356—124 **2 Claims**



A lens holder including a "V" or "U" shaped support member mounted between two transparent plates, said support being so sized as to be capable of supporting without deformation a hydrophilic contact lens and forming, with the transparent plates, a container for saline solution. In use, the hydrophilic lens is placed on the support and hydrated in an appropriate solution where the measurements with conventional equipment may be conducted.

3,779,649

METHOD OF AND AN ELECTRO-OPTICAL SYSTEM FOR INSPECTING MATERIAL

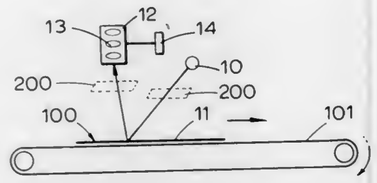
Hastings Charles Maxim Bertoya; Donald Mackenzie Ross; Richard Anthony Brook; Anthony John Allnutt, and Robert Ernest Semos, all of Kent, England, assignors to Sira Institute, Kent, England

Continuation-in-part of Ser. No. 3,231, Jan. 15, 1970, abandoned. This application Dec. 10, 1971, Ser. No. 206,611

Claims priority, application Great Britain, Jan. 17, 1969, 2,862/69

Int. Cl. G01n *21/16, 21/22*

U.S. Cl. 356—200 **20 Claims**



A method of, and system for, automatically inspecting a surface of material such as strip or sheet metal in order to detect flaws in the surface. The surface is moved beneath an optical scanner which receives light reflected from sequential parts of said surface. The reflected light is converted in an electrical waveform composed of a series of pedestals each corresponding to the reflectivity of a part of the surface representing one scan. An analogue comparison waveform is derived from each of the pedestals, by inter alia a special filtering operation and this waveform provides a reference by which the pedestals are examined for flaw indicative information. Various techniques are employed to assess the quality of the pedestals and to generally improve the validity of the flaw detecting operation.

3,779,650

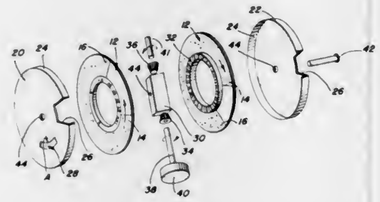
PORTABLE SMOKE MEASURING DEVICE

John H. Crowley, 5607 Alburg Ave., Racine, Wis.

Filed June 25, 1971, Ser. No. 156,612

Int. Cl. G01n *21/20*

U.S. Cl. 356—207 **5 Claims**



A portable device for visual measurement of smoke density of opacity that includes first and second discs that are support in overlapping relation for rotation relative to each other. Each disc has means effecting the opacity of light passing therethrough with the two means cooperating to vary the opacity of the selected area of the disc in response to angular rotation of the discs relative to each other. The device has indicating means giving an indication of the degree of opacity of the selected area so that the selected area may be located in juxtaposed relation to a stream of smoke emanating from a stack and the discs can be rotated relative to each other until the opacity of the selected area corresponds to the opacity of

the smoke. In one embodiment, the discs are of the exposed photosensitive plate type and have a peripheral area of progressively increasing opacity that are placed in overlapping relation to vary the opacity of the two discs while in the alternate embodiment the discs are polarized so that relative rotation will decrease the amount of light passing therethrough.

3,779,651

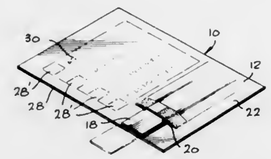
LIGHT GAUGE FOR IDENTIFYING PLANTS THAT CAN GROW IN A PARTICULAR LOCATION

Theodore Gunlock, 1450 W. 228th St., Torrance, Calif.

Filed Nov. 20, 1972, Ser. No. 308,055

Int. Cl. G01j *1/00, 1/46*

U.S. Cl. 356—213 **10 Claims**



One or more strips of light-sensitive material covered by a filter are mounted on a support. A plurality of colors are printed on the support corresponding to the color changes experienced by the light-sensitive material when various quantities of radiation fall on it. A legend is associated with each printed color identifying to plants that can grow in a particular location where the light falling on the light-sensitive material in that location over a predetermined period, causes a color change in the light-sensitive material corresponding to that printed color.

3,779,652

AUTOMATIC PENCIL FOR DRAWING A LINE

Sadayoshi Kunitoku, Oshima Arao, Japan, assignor to Nishitetsu Sangyo Co., Ltd., Fukuoka, Japan

Filed Aug. 5, 1971, Ser. No. 169,369

Claims priority, application Japan, Aug. 8, 1970, 45/69553

Int. Cl. B43k *29/00*

U.S. Cl. 401—50 **4 Claims**



An automatic pencil comprises a motor for constantly rotating the lead therein so that its point is automatically sharpened by contact with a writing surface.

3,779,653

TRAILER HITCH

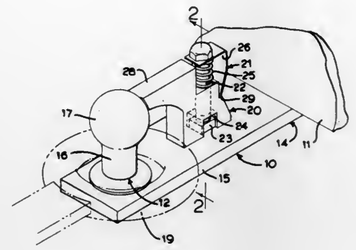
William D. Charlton, 614 Second St., Cheney, Wash.

Filed Nov. 8, 1971, Ser. No. 196,521

Int. Cl. F16c *1/06*

U.S. Cl. 403—3 **1 Claim**

A trailer hitch for a towing vehicle, providing the capability for towing trailing vehicles having either ball and socket or ring and pintle hitching arrangements. The hitch includes a base which supports an upright pintle and a movable ring retaining bracket. When a ring and pintle hitching arrangement is required, the towing ring on a trailing vehicle is placed over the pintle. The retaining bracket is then moved and locked into an operative position preventing the ring from becoming disengaged while in tow. When a ball and socket hitching arrangement is required, the retaining bracket is



pivoted and locked into an inoperative position. The socket of a trailing vehicle may then be moved into engagement with a ball formed at the upper end of the pintle.

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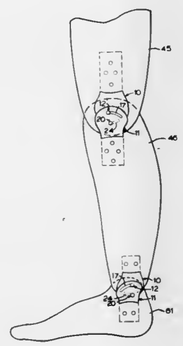
ARTIFICIAL JOINT

Robert V. Horne, 2514 W. Kennwick Ave., Walla Walla, Wash.

Filed Aug. 6, 1971, Ser. No. 169,735

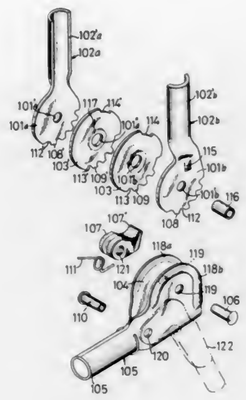
Int. Cl. F16c *11/00*; **A61f** *1/04, 5/00*

U.S. Cl. 403—62 **4 Claims**



An artificial joint for simulating motion of a natural slide and hinge joint of the body, such as those at the knee, elbow or ankle. The disclosed joint comprises rigid overlapping plates connected by a pivot and slide arrangement. First and second pivot bearing elements engage first and second arcuate bearing surfaces on the respective plates to interconnect the plates for controlled sliding and pivoting action relative to one another. One bearing surface has a configuration approximating the convex extremity of one member in the simulated joint. The remaining bearing surface controls the spacing of the two pivot axes to introduce proper forward or rearward displacement thereof in simulating joint movement. The joint may be utilized as a lateral brace for a natural joint, or may be utilized as a lateral brace for a natural joint, or may be modified to serve as an articulating joint in an artificial limb.

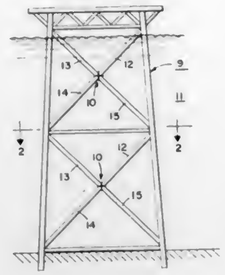
3,779,655
ANGLE VARIABLE JOINT FOR FOLDABLE CHAIR
Yoshitane Toyota, Osaka, Japan, assignor to Sanshin Kinzoku Industries Co., Ltd., Tokyo, Japan
Filed Dec. 23, 1971, Ser. No. 211,285
Int. Cl. F16c *11/00*
U.S. Cl. 403—93 **2 Claims**



A joint comprising a movable rod to be attached to a backrest frame member and having at its lower end a pair of flat discs spaced apart in facing relation to each other and including outer peripheral gear portions respectively, free cam discs of approximately the same size as the flat discs disposed in the space between the flat discs and including outer peripheral gear portions having a pitch equal to that of the gear portions, a pin member for pivotably supporting the flat discs and cam discs at the junction of a stationary support member to be attached to a seat frame member, and a latch member accommodated in the stationary support member and having a support pawl urged into resilient contact with the outer peripheries of the flat discs and cam discs, the movable rod being thus supported by and connected to the stationary support member in a forward and backward inclinable manner at progressively decreasing and increasing variable angles for changing the angle of inclination. The joint is applied to a resting sofa, deck chair or camping bed for connecting two frame members at their junction in a foldable or collapsable manner.

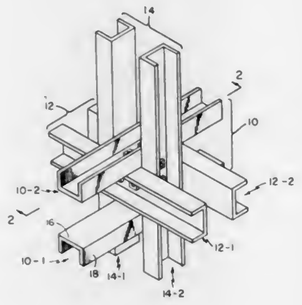
3,779,656
TUBULAR JOINT
Arthur L. Guy, and William J. Ruez, III, both of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.
Filed June 30, 1971, Ser. No. 158,305
Int. Cl. F16b *7/00*
U.S. Cl. 403—174 **12 Claims**

A tubular joint for framing structures, such as offshore platforms of the type used by the oil industry, in which tubular X joints are used within the structural and geometric bracing of the structures. Tubular (or cylindrical) framing members are joined together in an intersecting X shape. Wedge shaped segments of a tubular member are connected to each other and each segment is also connected to a tubular framing member and arranged so that the segments carry the axial loads of said tubular framing members in a straight line direct stress pattern



across the open circular sections of said tubular framing members. The segments may be connected to two flat intersecting plates instead of to each other.

3,779,657
STRUCTURAL JOINT
John M. Kostick, Roxbury, Mass., assignor to Omniversal Design, Roxbury, Mass.
Filed Apr. 21, 1971, Ser. No. 135,839
Int. Cl. F16b *7/18*
U.S. Cl. 403—217 **7 Claims**

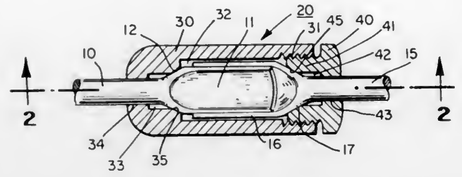


A structural joint comprising three pairs of beams, the beams of each pair being spaced from and parallel to one another, the beams of any pair lying exterior to the beams of a second included pair and lying interior to the beams of a third pair, the included widths of the beams of a pair being equal. The three pairs of beams together define an intersection void; a tension member passes through the intersection void and joins the two beams of a pair and biases them together against the included second pair. The tension members extending between the beams of each pair are aligned in a different plane in relationship to those of the other pairs.

3,779,658
COUPLING MEANS FOR SEWER ROD
Charles B. Caperton, 52 Pitney Ave, Springlake, N.J.
Filed June 6, 1972, Ser. No. 260,142
Int. Cl. F16b *7/18*
U.S. Cl. 403—393 **5 Claims**

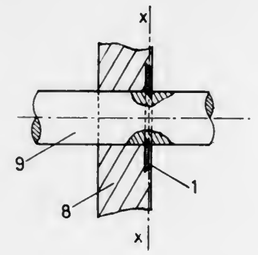
Coupling means connects short individual sections of steel rod into a long continuous length of rod, for clearing obstruc-

tions in underground pipe, sewers and other conduits, and provides transmission of applied axial and torque forces from one rod to the next without slippage therebetween and



without loss of power. The ends of the rods are shaped symmetrically relative to the center axis. Several different coupling means are disclosed.

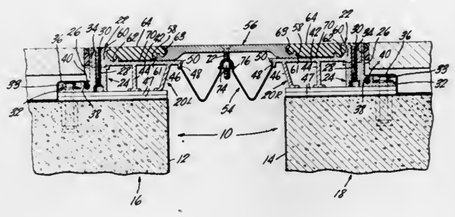
3,779,659
FASTENING MEMBER
Roger Habert, 73 Avenue de la Republique, Epinay/Seine, France
Filed Nov. 11, 1971, Ser. No. 197,670
Claims priority, application France, Nov. 17, 1970, 7041155
Int. Cl. F16d *1/06*
U.S. Cl. 403—372 **2 Claims**



This invention relates to a fastening member for securing an element on a shaft. The fastening member is to be placed without radial play between the external cylindrical surface of the shaft and an interior cylindrical surface of a groove coaxial with the shaft and formed in the element. The fastening member comprises anchoring means preferably in the form of teeth defined by forming a plurality of recesses on the inner and outer peripheral surfaces of a frusto-conical metallic annulus. The anchoring means are capable of acting in a radial direction so as in use to secure the element both against rotation and against movement in an axial direction relative to the shaft.

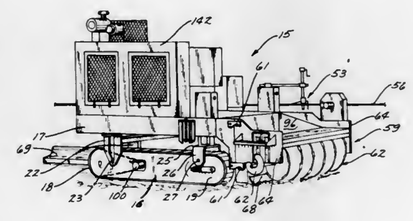
3,779,660
EXPANSION JOINT SEAL
Frank L. McGeary, Scotch Plains, and Patrick L. Zampetti, Cranford, both of N.J., assignors to Construction Specialties, Inc., Cranford, N.J.
Filed Dec. 29, 1971, Ser. No. 213,684
Int. Cl. E01c *11/04*
U.S. Cl. 404—69 **6 Claims**

An expansion joint seal for bridging and sealing an expansion space between structural members comprises a pair of elongated frame members, each of which is adapted to be secured rigidly to one of the structural members on either side of the joint, an elongated substantially rigid bridge member extending lengthwise of the joint and spanning the expansion space between the structural members, the lateral edges of the bridge member being spaced from the edges of the frame members, and a seal member of elastomeric material received between the bridge member and the edges of the respective frame members. The frame members and bridge member include companion surfaces disposed in substantially horizontal planes so that the frame members support the bridge member but are able to move toward and away from each other and relative to the bridge member. Generally C-shaped cavities are provided at, first, a portion of each frame member adjacent and above the horizontal supporting surface and, second, portions adjacent the lateral edges of the bridge



member, the respective cavities of the frame members and bridge member facing each other across the space above the horizontal surfaces of the frame members. The elastomeric material extends into and is therefore captured and sealed within the C-shaped cavity on each frame member and on the bridge member. The inherent resiliency of the elastomeric material tends to hold the bridge member centered between the frame members and distends in accordance with relative movements of the frame members. A bond breaker medium is provided between the seal members and all underlying substantially horizontal surfaces of the frame member and bridge member and prevents any bonding between the seal members and such surfaces.

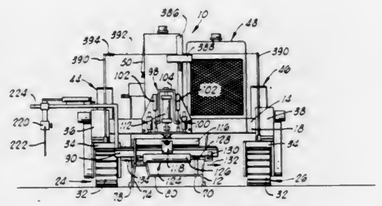
3,779,661
MACHINE AND METHOD FOR PREPARING A SURFACE AND FOR SLIP FORMING A CONCRETE STRUCTURE
Harold W. Godbersen, Ida Grove, Iowa
Filed May 3, 1971, Ser. No. 139,665
Int. Cl. E01c *19/50*
U.S. Cl. 404—72 **6 Claims**



The machine and method provide for the simultaneous and continuous preparing of a graded surface and the slip forming of a curb and gutter or a sidewalk on the prepared surface. An adjustable frame that is carried over the prepared surface is movably adjusted to positions, in conformance with the grade characteristics of a grade line that is extended along one side of the machine, by means actuated by a grade sensor unit

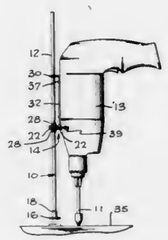
operatively associated with the grade line. The surface traveled by the machine is prepared by a grade trimmer carried at the front end of the adjustable frame and a slip form or mule is extended longitudinally of and supported from the adjustable frame at a position rearwardly of the grade trimmer.

3,779,662
CURB SLIP FORM APPARATUS
Don W. Smith, Edmond, Okla., assignor to CMI Corporation, Oklahoma City, Okla.
Filed July 12, 1971, Ser. No. 161,628
Int. Cl. E01c *11/28*
U.S. Cl. 404—98 **28 Claims**



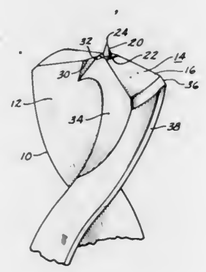
An improved curb slip form apparatus for forming a predetermined, formed configuration of a concrete material or the like on a surface generally along a predetermined survey line, having a form member which is pivotally connected to a support frame, the formed configuration being extruded from the form member, in an operating position of the form member and in a driven position of the support frame. The curb slip form apparatus includes, a form steering assembly which is connected to the form member and constructed to sense the position of the form member relative to a predetermined control line to automatically maintain the alignment of the form member relative to the predetermined survey line; and a track steering control, a cross slope control and an elevation control, each of which are connected to the support frame and constructed to sense the position of the support frame relative to a control line to automatically maintain the curb slip form apparatus in a predetermined aligned position; and an improved apparatus for constructing a control line along a predetermined survey.

3,779,663
DRILL BIT GAUGE
Clyde M. Ruggles, 6058 Fallbrook Ave., Woodland Hills, Calif.
Filed Dec. 20, 1971, Ser. No. 209,554
Int. Cl. B23b *45/14, 49/00*
U.S. Cl. 408—113 **4 Claims**



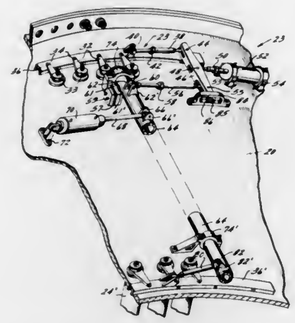
The improved gauge of the invention incorporates both drill bit guide means and drill bit depth regulating means of an improved type. Neither the guide means nor the depth regulating means engages the drill bit so that work surface galling is prevented. The gauge further includes work surface contacting means, drill contacting means and may also include adjusting means engaging the work surface contacting means and drill contacting means.

3,779,664
DRILL WITH GUIDE TIP
Lloyd E. Caley, Seattle; Horace E. Hill, Renton, and Joseph L. Phillips, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Continuation-in-part of Ser. No. 867,204, Oct. 17, 1969, abandoned. This application Dec. 30, 1971, Ser. No. 214,154
Int. Cl. B23b *51/00*
U.S. Cl. 408—225 **4 Claims**



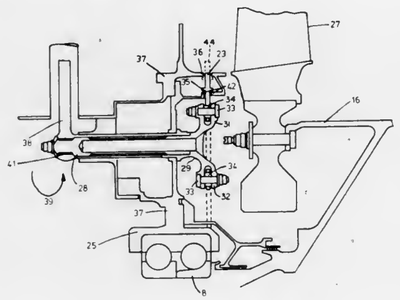
A low-cost, conventional twist drill ground with a unique point configuration that includes a symmetrically-shaped, non-cutting, non-threaded, basically conical tip projecting from the center of the drill point with immediately contiguous cutting edges that enable the drill to generate precision holes in non-ferrous metals and other low-yield strength materials including very thick sections.

3,779,665
COMBINED VARIABLE ANGLE STATOR AND WINDMILL CONTROL SYSTEM
Bemis Caldwell Tatem, Jr., and John Theodore Moehring, both of Cincinnati, Ohio, assignors to General Electric Company, Lynn, Mass.
Filed Sept. 22, 1972, Ser. No. 291,250
Int. Cl. F01d *21/00, 21/02, 17/00*
U.S. Cl. 415—123 **5 Claims**



A gas turbine engine is provided with a combined variable angle stator and windmill brake control system for simultaneous variation of the angles of a multiplicity of stages of variable compressor stator vanes together with independent means for closing off the airflow through the aft most row of variable stator vanes to brake windmilling of the engine in the event that the engine should become inoperative.

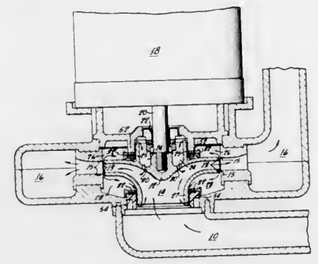
3,779,666
FLUID FLOW COMPRESSORS
Leonard Stanley Snell, Bristol, England, assignor to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England
Filed Dec. 3, 1971, Ser. No. 204,618
Claims priority, application Great Britain, Dec. 17, 1970, 59,871/70
Int. Cl. F01b *25/02*
U.S. Cl. 415—159 **5 Claims**



A fluid flow compressor includes means for arbitrarily obstructing part of the flow area of the compressor duct to improve the compressor efficiency at low flow velocities.

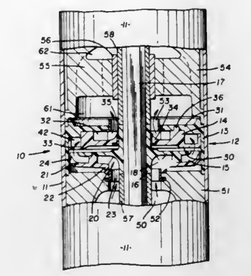
The means comprises a ring arranged in the duct and capable of being expanded in the manner of a circlip by a cam arrangement.

3,779,667
SEMI-SEAL DEVICE
Charles S. Johnson, Laguna Niguel, Calif., assignor to Baker Hydro, Inc., Santa Ana, Calif.
Filed Feb. 24, 1972, Ser. No. 228,945
Int. Cl. F04d *29/08, 29/44*
U.S. Cl. 415—170 A **8 Claims**



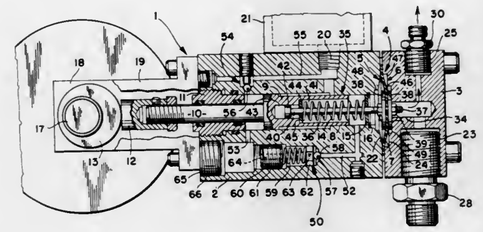
A semi-seal device for controlling the flow of water along a rotating shaft, which device is annular and contained in a retainer disposed around the shaft. The containment is loose so that the semi-sealing member may move laterally in its retainer thus temporarily increasing the clearance between the semi-sealing member and the rotating shaft. In addition, the semi-sealing member is deformable and resilient. The lateral movement and deformation properties allow sand or other foreign particles to pass between the semi-sealing member and rotating shaft.

3,779,668
STAGE FOR A CENTRIFUGAL PUMP
William J. Ekey, Jeromesville, Ohio, assignor to McNeil Corporation, Akron, Ohio
Filed May 11, 1972, Ser. No. 252,355
Int. Cl. F03b *1/04*
U.S. Cl. 415—199 **10 Claims**



Disclosed is an improved stage adaptable for use in multistage centrifugal pumps which find their primary use in moving liquids from deep wells and the like. The pump can include a motor, rotatable drive shaft, external casing and at least one of the improved stages, each stage having an impeller to impart velocity to the liquid and a diffuser to reduce velocity and increase the pressure to force the liquid to the successive stages and to the pump outlet. The impeller is rotated within a stage housing, nonrotatably mounted within the pump casing, and includes a front and rear plate having vanes therebetween which spiral outwardly from the center to the outer edge of the front plate. The front plate extends radially outwardly of the rear plate and terminates in an axially directed flange having a diameter approximating that of the stage housing but clearanced to rotate therein. Liquid thus exits the impeller axially and is received by the overlying diffuser with a minimum of turbulence.

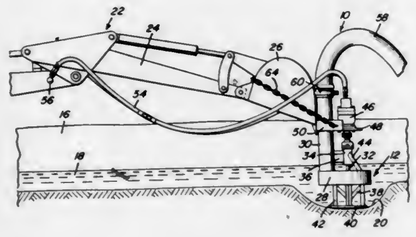
3,779,669
PUMP SPRAY UNIT
Herbert J. Sommer, Wooster, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio
Filed May 22, 1972, Ser. No. 255,562
Int. Cl. F04b *49/00*
U.S. Cl. 417—214 **14 Claims**



Pump spray unit has a lost-motion connection between the pump diaphragm and pump piston which ensures full retraction of the diaphragm during retraction of the piston for obtaining the desired amount of working fluid within the working fluid chamber prior to the pumping stroke of the piston and diaphragm. An adjustable relief valve is also provided for relieving the excess working fluid pressure which is created during standby operation of the pump to the back side of the

piston which causes the piston to move forward out of engagement with its drive cam thereby retaining the piston and diaphragm against movement during standby to minimize wear and power consumption during standby. The high pressure acting on the back side of the piston is bled off through a restricted orifice, and when pumping is resumed the pressure quickly drops to a level at which the piston is again urged by a return spring into engagement with the drive can for reciprocation thereby.

3,779,670
BACKHOE ATTACHED PUMP
Angelo J. Crisafulli, P.O. Box 1051, Glendive, Mont.
Filed Aug. 3, 1971, Ser. No. 168,551
Int. Cl. F04b *17/06*
U.S. Cl. 417—231 **8 Claims**



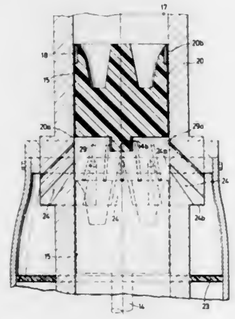
A pump specifically adapted for attachment to a backhoe and including a hydraulic motor integrally mounted with the pump and being drivingly connected with a source of hydraulic fluid pressure normally available on the backhoe. The pump facilitates removal of water from construction site ditches, excavations, and the like.

3,779,671
HYDRAULIC DRIVEN PISTON PUMP
Robert W. Lybecker, 10510 Luzon, San Antonio, Tex., and Kermit A. Wahrmund, Route 3, Box 232 K, Gatesville, Tex.
Filed Jan. 28, 1972, Ser. No. 221,622
Int. Cl. F04b *35/00*
U.S. Cl. 417—393 **6 Claims**



Apumping system utilizing drive means activating a top pump and a ratchet drive rotary control valve selectively switching fluid pressure to a double acting dual piston dual cylinder bottom pump. The two pumps are interconnected by dual pipes through a rotary valve and a multiplicity of check valves causing the dual pipes to alternatively function as a pressure power line or a delivery line depending on the relative position of the control valve. An alternative spool valve control may be employed in conjunction with any source of fluid pressure to activate the bottom pump.

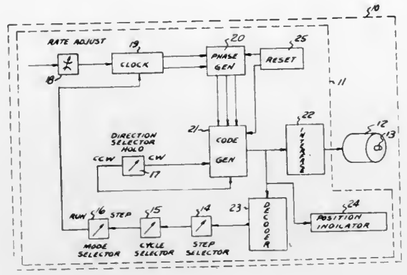
3,779,672
AIR COMPRESSOR
Walter Schroeder, Grenzhausener Weg 8, P. O. Box No. 910326, Cologne-Humboldt-Gremberg, Germany
Filed Mar. 1, 1971, Ser. No. 119,478
Claims priority, application Germany, Mar. 3, 1970, P 20 09 770.5; Great Britain, June 18, 1970, 29,577/70
Int. Cl. F04b *7/04*
U.S. Cl. 417—493 **14 Claims**



A compressor which is adapted to operate in a dry condition without any lubricant. The compressor has a cylinder which defines a compression chamber in its interior and which is provided with a gas intake and a gas outlet. A piston which is made substantially entirely of plastic reciprocates in the cylinder and defines a gap with the inner surface thereof, the gas inlet being in the form of nozzle-shaped openings extending through the cylinder wall and inclined with respect to the cylinder axis. In addition to the latter openings there are balancing bores which extend through the cylinder wall to provide a stable reciprocation of the piston, and the axes of these bores not only are inclined with respect to the cylinder axis but they are also inclined with respect to the axes of the inlet openings in a manner according to which air entering through the latter will retard any tendency of air or other gas to leak out through the balancing bores. Preferably there are a pair of pistons which are directly opposed to each other so that one reciprocates along its suction stroke while the other reciprocates along its compression stroke. According to the method the pistons are reciprocated at a speed of at least 1500 strokes per minute, so that in this way compressed air or other gas can be supplied to chemical, food, or other industries in large quantities for such purposes as the pneumatic operation of bulk material conveyors and the like.

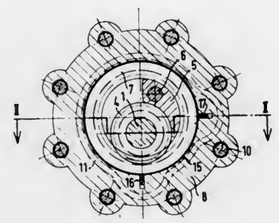
3,779,673
FLUID STEPPER MOTOR
Charles J. Ahern, Lathrup Village; Walter F. Datwyler, Jr., Royal Oak, and Rex W. Presley, Livonia, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.
Filed Apr. 24, 1972, Ser. No. 249,441
Int. Cl. G06m *1/12*; **F01c** *1/02*; **F03c** *3/00*
U.S. Cl. 418—61 **36 Claims**

A stepper motor of the type in which fluidic logic cooperates with a fluidic actuator to produce a rapid high torque positional displacement of the actuator's output member, the fluidic logic in response to an input command to change the position of the actuator's output member from a first position to second position generates a sequential set of



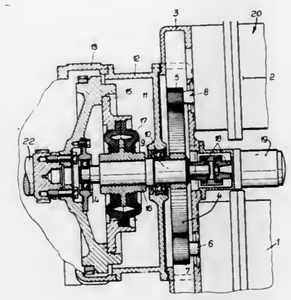
coded signals operative to stepwise drive the output member of the actuator in either direction until the logic generates a coded signal corresponding to the position commanded by the input.

3,779,674
HIGH-PRESSURE GEAR PUMP
Otto Eckerle, Am Bergwald 3, Malsch, and Robert Jung, Malsch, both of Germany, assignors to said Eckerle, by said Jung
Filed July 19, 1971, Ser. No. 163,750
Claims priority, application Germany, July 17, 1970, P 20 35 575.3
Int. Cl. F01c *21/00*; **F03c** *3/00*; **F04c** *1/06*
U.S. Cl. 418—71 **21 Claims**



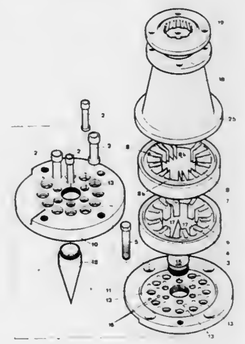
A high-pressure gear pump with a drive pinion, internal gear ring, and filler wedge, where both the axial thrust and radial thrust are substantially compensated; a deflecting axial thrust plate cooperates with an O-ring to define an axial compensation pressure field; a pair of transverse sealing members, either elastic or radially sliding in grooves, cooperates with the adjacent faces of the periphery of the internal gear assembly and of the housing bore to define a radial compensation pressure field. A bearing ring around the internal gear, together with means for directionally restricting the displacements of the internal gear assembly, allow maintenance of a fixed gear center distance and backlash.

3,779,675
DRIVE SYSTEM FOR A PLURALITY OF WORM DRIVEN COMPRESSORS
Kurt Magdhuber, Rossdorf, and Hinrich Kattentidt, Darmstadt, both of Germany, assignors to Frankfurter Maschinenbau Aktiengesellschaft Vormals Pokorny & Wittekind, Frankfurt am Main, Germany
Continuation of Ser. No. 30,819, April 22, 1970. This application July 31, 1972, Ser. No. 276,823
Int. Cl. F01c *11/00*; **F04c** *11/00, 23/00*
U.S. Cl. 418—199 **3 Claims**



A worm compressor system includes at least two parallel worm compressors each having a worm shaft with a gear which is driven from a centerally arranged gear of a main shaft. The main shaft is supported in a bearing carried on a wall member closing the transmission gear housing of the two compressors, and constituting a component of a housing part having an opposite end connected to the flange of a driving motor. The main drive shaft extends through this bearing and has a free end in the transmission gear housing carrying the centrally arranged gear in a cantilever fashion. The opposite end of the main shaft is received in a bearing mounted in the flywheel of the driving motor, and a coupling connects the flywheel to the main shaft between the two bearings. A pump has a drive shaft coaxially aligned with the free inner end of the main shaft and connected thereto by a spline-type coupling.

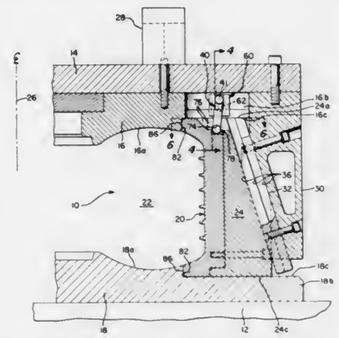
3,779,676
APPARATUS FOR MAKING COMPOSITE PRODUCT
Alain Clair Bernard, Nantes, France, assignor to Alain Clair Bernard, Nantes, France
Filed Oct. 14, 1971, Ser. No. 189,109
Int. Cl. B29f *1/12*
U.S. Cl. 425—131 **9 Claims**



An extruding machine and process is provided for making composite products, such as soap, that comprise two separate

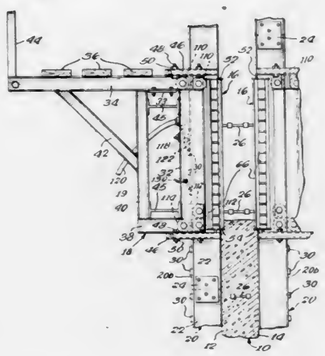
materials joined without mixing. The extruder is comprised of a pair of circular plates and annular plates. The circular plates are joined together by a plurality of tubular members. The annular plates have conduits and radial fins for directing the two separate materials along an axial direction. A cutter and mold are provided for producing the finished product such as striped soap.

3,779,677
SEGMENTED TIRE MOLD
Alan Greenwood, Kent, Ohio, assignor to The Goodyear Tire and Rubber Company, Akron, Ohio
Filed Sept. 27, 1971, Ser. No. 183,931
Int. Cl. B29h *5/02*
U.S. Cl. 425—46 **12 Claims**



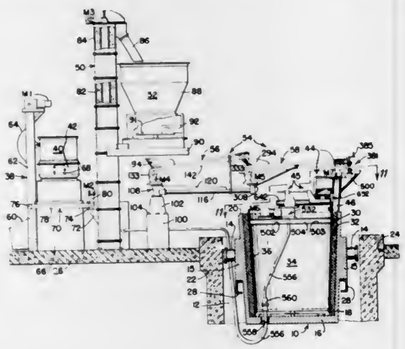
A tire mold in which tread mold segments are moved radially by a coned ring between sidewall plates which bear against the moving segments. Link means connecting each segment to the upper plate enable the segments to be retracted into the ring by moving the upper plate. The link means provides sufficient relative separation between the upper plate and the segments to prevent friction, wear, and binding therebetween during such retraction.

3,779,678
APPARATUS FOR CONSTRUCTING CONCRETE WALLS
Herman Scheller, Eaton, Colo., assignor to Research-Cottrell, Inc., Bridgewater Township, N.J.
Continuation-in-part of Ser. No. 856,326, Sept. 9, 1969, abandoned. This application Feb. 9, 1971, Ser. No. 113,967
Int. Cl. B29c *23/00*
U.S. Cl. 425—65 **12 Claims**



In an apparatus for constructing a high-rising, poured concrete wall or shape, pairs of spaced-apart, upright supports are preliminarily mounted on a foundation and then detachably attached to both sides of at least a partially hardened level of concrete wall and at intervals along the length of the wall for repeated, upward, step-wise use as the wall is being formed; a plurality of carriages are mounted on adjacent supports along both sides of the wall for continuous upward movement as the wall is being cast, and adjustable concrete shaping assemblies are mounted on the carriages each assembly opposing a similar assembly to define a continuous mold into which new concrete is poured on top of previously poured concrete to form the wall. The method of constructing such a wall, by repeated, step-wise use of upright supports attached to lower sections of partially hardened concrete, and said supporting mounting a plurality of movable carriages, each holding a concrete shaping assembly, and pouring concrete into the assemblies along the entire length of the wall as the assemblies move continuously upwardly in unison on the supports.

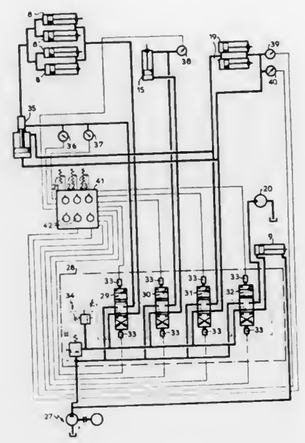
3,779,679
APPARATUS FOR LINING THE WALLS OF METALLURGICAL VESSELS WITH PREPARED REFRACTORY MATERIAL
Angelo J. Bisinella, Niles, and Roy F. Nosek, Berwyn, both of Ill., assignors to Pettibone Corporation, Chicago, Ill.
Filed Aug. 3, 1971, Ser. No. 168,689
Int. Cl. B28b *19/00*
U.S. Cl. 425—110 **21 Claims**



Apparatus for lining a metallurgical vessel (ladle) having a continuous arcuate rim by delivering wads of prepared refractory material having high kinetic energy into the arcuate space existing between the side wall of the vessel and a conformably shaped pattern in centered relation within the vessel. A turntable which rotates about the common axis of the vessel and the pattern carries an eccentrically disposed, radially shiftable, rotary, motor-driven slinger which is constrained to follow the contour of the rim during rotation of the turntable and, thus, maintain its discharge chute in register with the aforesaid arcuate space. A conveyor system receives the lining material from a nearby feeder and delivers a continuous flow thereof to the slinger. The pattern is expansible and contractible to facilitate its removal from the newly-lined vessel.

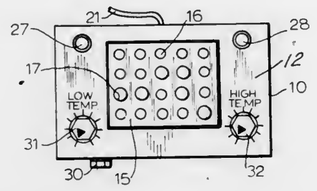
3,779,680
CONTROL EQUIPMENT FOR AN INJECTION MOULDING MACHINE
Marcel Manceau, 4, rue du Four, Congis, France
Filed Apr. 15, 1971, Ser. No. 134,407
Claims priority, application France, Apr. 17, 1970, 7013891
Int. Cl. B29c *3/06*
U.S. Cl. 425—145 **6 Claims**

Control equipment for an injection-molding machine includes a hydraulic circuit fitted with electrically operated distributors for controlling the operation of various hydraulic receivers for displacing the various moving elements of the machine. Such electrically operated distributors are of the type that incorporate constriction means regulable under the action of hydraulic pilot units acting as pressure reducers and the displacement of which is a function of the strength of the current applied to corresponding control electromagnets. A pressure compensating means is provided for regulating the flow through the distributors irrespective of the pressure used.



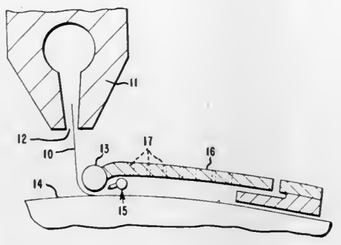
Means convert the position of the various moving elements of the machine and the pressure in the supply passages of the corresponding hydraulic receivers into electrical values. Means display the required predetermined position relating to the speed of displacement of the moving elements and to the pressure in the corresponding hydraulic receivers. Electronic apparatus is provided for processing such electrical values and for producing control signals for the electromagnets of the various distributors as a function of such predetermined conditions.

3,779,681
APPARATUS FOR EMBEDDING ELECTRON MICROSCOPY TISSUE
Thomas D. Kinney, 3120 Devon Rd., and John E. P. Pickett, 3323 Pinafore Dr., both of Durham, N.C.
Filed July 6, 1971, Ser. No. 159,998
Int. Cl. B01f *11/00*
U.S. Cl. 425—160 **1 Claim**



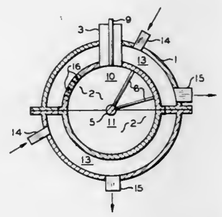
Tissue particles intended to be thinly sliced for electron microscopy examination are placed in capsules filled with an epoxy resin embedding mixture and the capsules are received by a holder which is both vibrated and sequentially heated by an apparatus programmed to a time-temperature sequence which apparatus and method drastically reduces embedding time.

3,779,682
QUENCHING MOLTEN THERMOPLASTIC FILM
C. George Huskey; Charles J. Resler, Jr., and Sidney C. Sanders, Circleville, all of Ohio, assignors to E. I. duPont de Nemours and Company, Wilmington, Del.
Filed Mar. 8, 1972, Ser. No. 232,763
Int. Cl. B29h *5/24*
U.S. Cl. 425—174.8 E **6 Claims**



In the casting of molten thermoplastic film onto a moving quenching surface and pinning the edges of the film to the quenching surface an improvement is realized by applying additional pinning force to the edge portions of the extruded film to prevent localized thinning of the film.

3,779,683
CARBON BLACK MIXING APPARATUS
Robert E. Dollinger, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 27, 1972, Ser. No. 248,312
Int. Cl. B01f *13/02*; **C09c** *1/58*, *1/60*
U.S. Cl. 425—222 **1 Claim**

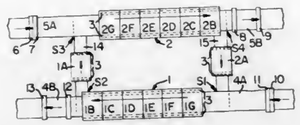


A jacketed pelleter having a perforated inner wall for the introduction of a portion of that material introduced into the jacket through the wall of the pelleter and into contact with that material adhering to the wall of the pelleter.

3,779,684
CONTINUOUS CURING APPARATUS
Hugh Lorain Folkes, St. Leonards'-on-Sea Sussex, England, assignor to Dunlop Holdings Limited, London, England
Division of Ser. No. 45,604, June 12, 1970, Pat. No. 3,714,317, which is a continuation-in-part of Ser. Nos. 775,347, Nov. 13, 1968, abandoned, and Ser. No. 28,290, April 22, 1970, abandoned, which is a continuation of Ser. No. 592,131, Nov. 4, 1966, abandoned. This application July 20, 1972, Ser. No. 273,367
Claims priority, application Great Britain, Nov. 25, 1967, 53716/67; July 14, 1966, 31657/66; Nov. 10, 1965, 47594/65
Int. Cl. B29d *29/00*; **B29h** *7/22*
U.S. Cl. 425—233 **4 Claims**

An apparatus for heating and compressing an elongated article is provided. The invention comprises the use of a plurality of individual press units which are heated; the press units

are moved into heating and compression relationship with opposed surfaces of the article; each press unit is moved successively into engagement with the article and into contacting end to end relationship with the previous press unit, the units being moved relative to the surface only in a direction perpendicular to the surfaces when in contact with the surfaces; the



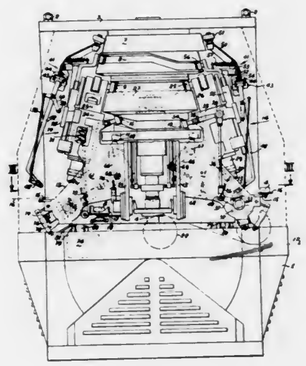
press units and the article are moved stepwise in the direction of the length of the article; the press units are continuously maintained in contact with the article until the end of the heating and compressing cycle; with the press unit finally successively being moved out of engagement with the thus produced elongated article.

3,779,685

ROTARY MACHINE FOR CONTINUOUSLY MOLDING AND PRESSING SOAP CAKES

Ottorino Pisoni, Viale Diaz, Busto Arsizio, Italy

Filed Sept. 7, 1971, Ser. No. 178,154
Claims priority, application Italy, Sept. 8, 1971, 29494 A/71
Int. Cl. B28b *15/00*
U.S. Cl. 425—236 **10 Claims**



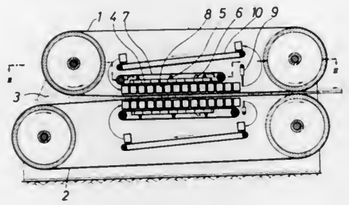
Soap cakes to be shaped in a mold are transported on a feeding conveyor to a loading zone of a rotary press where they are seized by grippers and placed on a lower die whose support forms part of a molding assembly rotating continuously about a vertical axis at the speed of the feeding conveyor which follows a path partly concentric with the orbit of the assembly. A plunger above the die support, forming part of the same assembly, carries an upper die which in a pressing zone descends onto the lower die to shape the soap cake deposited thereon. In an unloading zone, the shaped soap cake is transferred onto a discharge conveyor whose path is curved about the axis of rotation inside the orbit of the molding assembly. An array of six such assemblies are mounted on a pair of coaxial rings rotating therewith, these rings having teeth in mesh with the conveyors along the concentric portions of their paths. The conveyor speed therefore equals the speed of the molding assemblies along the loading and unloading zones, each of which extends over a quadrant of the assembly orbit whereas the pressing zone occupies two quadrants.

3,779,686

CONTINUOUS ACTION SHEET PRESS

Into Isak Kerttula, Luotsikatu 18 B, and Per Arno Jaatinen, Kaivosvoudintie 4 B, both of Helsinki, Finland

Filed Feb. 24, 1972, Ser. No. 229,008
Claims priority, application Finland, Feb. 25, 1971, 557/71
Int. Cl. B29j *5/04*; **B29c** *3/00*, *15/00*
U.S. Cl. 425—371 **8 Claims**



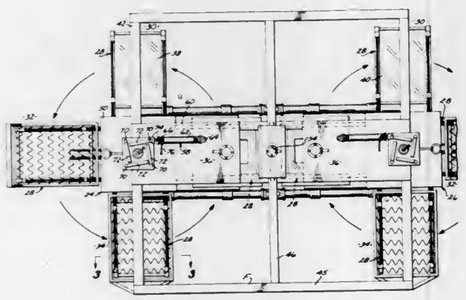
A continuous action sheet press wherein the sheet material to be pressed is conducted into a gap between two moving surfaces, at least one of which is urged towards the sheet material to be pressed, by the aid of a pressure chamber. According to the invention the width of the pressure chamber varies in the direction of travel of the sheet material to be pressed.

3,779,687

APPARATUS OF VACUUM FORMING

John A. Alesi, Santa Monica, Calif., assignor to Formex Manufacturing Inc., Santa Monica, Calif.

Division of Ser. No. 558,641, June 20, 1966, abandoned. This application May 14, 1970, Ser. No. 48,722
Int. Cl. B29c *17/00*
U.S. Cl. 425—383 **4 Claims**



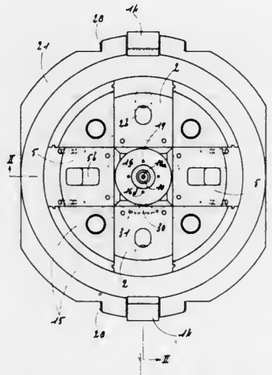
Apparatus for forming first and second sheets of heat-fusible plastic into a hollow structure when the sheets are heated to an initial temperature and mechanically prestretched into the cavities of first and second mold members. Vacuum is then applied between each of the sheets and such mold cavities to draw the sheets into their formed configuration. The sheets are then reheated to a higher temperature and the mold members urged together to effect fusing engagement of the sheets.

3,779,688

MOLD FOR FORMING PARTS OF COMPLEX SHAPE OF INJECTABLE OR THERMOSETTING PLASTIC MATERIAL

Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France

Continuation of Ser. No. 40,573, May 26, 1970, abandoned. This application May 9, 1972, Ser. No. 251,783
Claims priority, application France, May 29, 1969, 6917968
Int. Cl. B29c *7/00*
U.S. Cl. 425—441 **7 Claims**



In a mold for casting parts of complex shape having a central core and multiple flat elements parallel to each other and in spaced relation of the same type as cam units of injectable or thermosetting plastic material and for the automatic ejection of said parts during opening of the mold which can be employed in an automatic press and comprising a stationary portion, a first group of slides which are mounted on two slide-blocks displaceable within said stationary portion in opposite directions at right angles to the movement of opening of the mold and which serve to define the interval between the elements of the molded part and a second group of slides which are mounted on two further slide-blocks displaceable in opposite directions at right angles to the first and which serve to define the profiles of said part elements, said four slide-blocks being closed in the centripetal direction in the position of closure of the mold and maintained towards the center of said mold by the conical wall of a movable cap of the mold and separated at the time of opening of the mold by inclined columns rigidly fixed to said movable cap and adapted to form ramps which are intended to cooperate with inclined bores formed in said slide-blocks, the essential property which lies in the fact that the inclined bores are of greater diameter than the columns in order to provide said oolumns with play which can be taken up at the beginning of the opening travel of the mold so that the opening of said mold can be initiated prior to commencement of lateral displacement of the slide-blocks in the centrifugal direction.

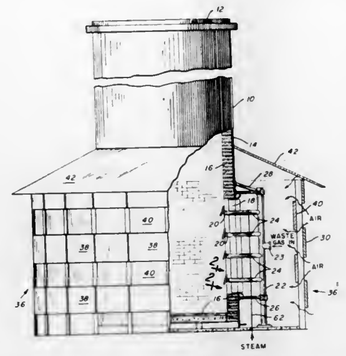
3,779,689

METHOD AND APPARATUS FOR NON-POLLUTING COMBUSTION OF WASTE GASES

Robert D. Reed; John Smith Zink; Robert E. Schwartz, all of Tulsa, Okla.; Horst Glomm, Frankfurt, Germany; John C. Corble, St. Albans, England, and Harold F. Koons, Tulsa, Okla., assignors to John Zinc Company, Tulsa, Okla.

Filed Jan. 10, 1972, Ser. No. 216,659
Int. Cl. F23n *1/00*
U.S. Cl. 431—89 **14 Claims**

A non-polluting waste-gas disposal system for processing plants or other operation subject to variable quantities of waste gas for disposal. The system includes a low-level burner normally adapted to handle the usual volumes of plant waste gas, required to be disposed, without visible flame, smoke or



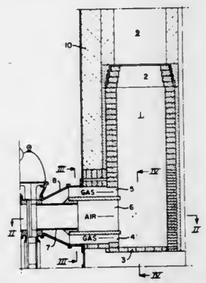
noise pollution. An elevated flare can be used in combination to consume gases in excess of the normal capacity of the low-level flare.

3,779,690

GASEOUS MIXING DEVICE FOR REGENERATOR HEATERS

Rolf Rossow, Bochum, Germany, assignor to Dr. C. Otto & Comp. SmbH, Bochum, Germany

Filed Sept. 27, 1971, Ser. No. 184,042
Claims priority, application Germany, Sept. 26, 1970, P 20 47 453.7
Int. Cl. F23e *5/18*
U.S. Cl. 431—173 **4 Claims**



A gaseous mixing device for heaters for blast furnace stoves and the like characterized in that the mixing device is formed entirely from refractory materials and is constructed so as to impart a swirling or rotational movement to a mixture of air and combustible gas to thoroughly admix the same before it is introduced into a combustion chamber.

3,779,691

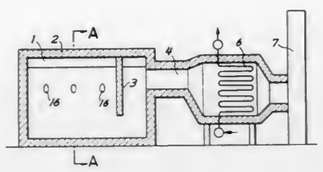
APPARATUS FOR BURNING HIGH VISCOSITY LIQUID FUELS

Masanobu Sakata; Yoji Kitaoka, both of Ichihara; Nobuo Itami, Okayama, and Yoshitada Tomoyasu, Tamano, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd. and Petrochemical Industries Limited, Tokyo, Japan

Division of Ser. No. 57,242, July 22, 1970, abandoned. This application May 10, 1972, Ser. No. 251,872
Claims priority, application Japan, May 8, 1970, 45/39449
Int. Cl. F23c *7/02*
U.S. Cl. 431—190 **1 Claim**

A furnace for burning highly viscous combustibles in which the materials are sprayed into a preheated combustion

chamber. The spraying device has a fuel-spraying nozzle which is associated with an annular discharge nozzle for spraying medium such as compressed gas, steam, etc. The spraying medium combines with the fuel exteriorly of the nozzle and is combined with primary air combustion air. A device is provided for spraying secondary air in the direction for accelerating the sprayed stream of fuel to sweep the refractory wall within the furnace for effecting complete combustion of any unburned particles deposited therein. The exhaust gases are discharged through a flue into a remote heat exchanger for recovering the heat of combustion prior to passage through the stack.



3,779,692

LIGHTER WITH A CAPACITOR DISCHARGE IGNITION SYSTEM

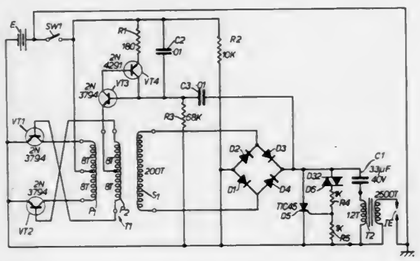
Walter Henderson Ballantyne, Egham, England, assignor to Dunhill Lighters Limited, London, England

Filed July 13, 1972, Ser. No. 271,266

Claims priority, application Great Britain, July 13, 1971, 32,869/71

Int. Cl. F23q *3/01*

U.S. Cl. 431—266 **9 Claims**



A smoker's lighter with a capacitor discharge ignition system is provided with a transistorised multivibrator and step-up transformer to increase the level of voltage from internal cells to a higher level for charging the capacitor. The output of the transformer is connected to a full-wave rectifier and an automatic discharge circuit is provided to discharge the capacitor when a predetermined voltage is reached.

3,779,693

CHARCOAL IGNITING APPARATUS

Neal D. McKenney, 777 Mulberry St., and John Dennis, Jr., 963 Walnut St., both of Macon, Ga.

Filed Mar. 15, 1972, Ser. No. 234,885

Int. Cl. F23q *13/04*

U.S. Cl. 431—327 **8 Claims**



Apparatus is disclosed to be placed in an outdoor charcoal barbeque or in an indoor fireplace below the charcoal or wood to ignite the charcoal or wood. The apparatus comprises a metal container having ceramic chips supported therein so that the chips can be soaked by ignitable fluid and ignited to provide a uniform heat to the charcoal, wood or other combustible material supported above the chips.

3,779,694

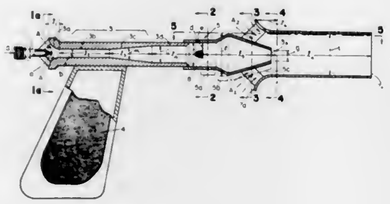
HEAT GUN

Dimiter S. Zagoroff, 13 Cliff St., Marblehead, Mass.

Filed Nov. 10, 1971, Ser. No. 197,207

Int. Cl. F23d *13/12, 15/02*

U.S. Cl. 431—347 **7 Claims**



Hand held heat gun producing heated air in 250° to 1,000° F range employs high performance internal combustion burner discharging exhaust gas at velocity above 4,000 feet per minute and temperature on order to of stoichiometric burning temperature, i.e. 3,450° F for propane fuel. High velocity exhaust gases enter mixing zone preferably in a divergent manner and with perimeter of gas flow cross-section at least 25 percent greater than the perimeter of a circle of equal area, to provide an extended gas-air interface The exhaust gas has a high volume pumping and mixing action upon ambient air, producing in a practical small distance a useful flow of treating air at the desired temperature. Preferably the burner outlet is of elongated form with decreasing cross-section towards outlet, e.g. a multiple legged outlet cross-section. Another form has a shower-head like series of small outlets, with diverging axes. Preferably a positioning means set a minimum distance between work piece and outlet, to ensure mixing. Where the exhaust gas stream is exposed to admission of increasing air

along the length, the positioning means sets the working temperature. Preferably a shield extends about the exhaust gas stream, preferably in the form of a tube with space for ambient air. With apertures along the tube length, the mass of air increases in mass and decreases rapidly in temperature there along, so length sets discharge temperature. With a closed wall tube the tube cross-section and its inlet in the vicinity of the burner outlet defines the amount of ambient air entrained and thereby sets the discharge temperature. Burners useful in this heat gun are of high capacity type with jet pump feed, pressure recovery passage and flame holder positioned at entry of fuel mixture into the burner chamber.

3,779,695

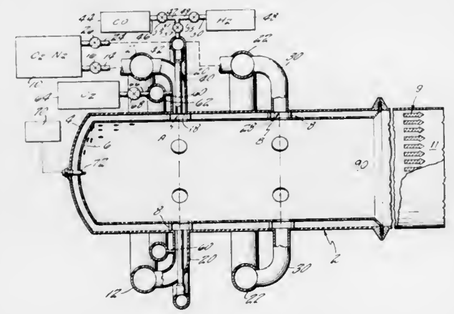
COMBUSTION CHAMBER FOR GAS DYNAMIC LASER

John Chamberlain, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 733,220, May 24, 1968, abandoned. This application Oct. 30, 1970, Ser. No. 73,624

Int. Cl. F23d *15/00*

U.S. Cl. 431—351 **8 Claims**



A combustion chamber for use with a nozzle in a gas dynamic laser to produce a proper specie in a lasing region downstream of said nozzle is formed having two radial injection planes spaced axially apart. At the first plane an oxidant is injected through a plurality of holes located circumferentially around the chamber with a fuel being injected by nozzles located concentrically within said holes. Oxygen and nitrogen, a diluent, are injected at the second radial plane. Means for injecting additional oxygen into the oxidant is provided at the first plane. In one modification, the oxidant is shown as O_2 with N_2 added while the fuel is the combination of CO and H_2. O_2 and N_2 also are injected at the second plane. In another modification, the oxidant injected at the first plane is also O_2 with N_2 added while the fuel is CO and H_2 with only N_2 being injected at the second plane. An ignition means is shown with both modifications. The combustion system burns CO and H_2 and O_2 and dilutes with N_2 in two stages. A mixing chamber extends downstream of said second plane.

3,779,696

PIPE HANDLING METHOD AND APPARATUS

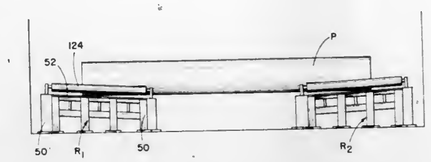
Ernest C. Poore, and John A. Goforth, both of Gadsden, Ala., assignors to Midwestern Specialties Ltd., Tulsa, Okla.

Division of Ser. No. 119,197, Feb. 26, 1971, Pat. No. 3,690,472. This application Apr. 25, 1972, Ser. No. 247,404

Int. Cl. B65g *11/00*

U.S. Cl. 432—6 **3 Claims**

An apparatus for moving relatively large diameter sections of coated pipe through a treating stage such as a heating chamber in a manner wherein the coated portions of the pipe secions are not engaged, thus protecting the coating during the treating operation. The coated pipe is initially received by an elevator apparatus which moves the pipe to an intermediate station for transfer to a conveyor apparatus which moves the coated pipe through the treatment area, such as an oven or the like for discharge therefrom subsequent to the treating or heating operation. The pipe is supported in a manner precluding damage to the beveled pipe ends and precluding engagement with the coated portions thus greatly facilitating the coating of large diameter pipe.



3,779,697

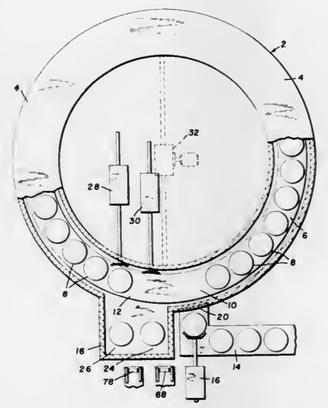
MEANS AND METHOD OF HEATING AND HANDLING LARGE COILED BILLET ROD FOR METAL ROLLING

Frank A. Alexander, Jr., West Boylston, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Feb. 28, 1972, Ser. No. 229,836

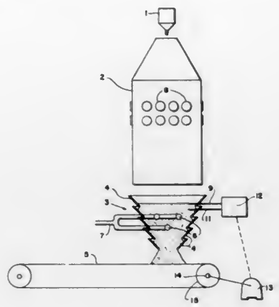
Int. Cl. F27b *9/14*

U.S. Cl. 432—8 **10 Claims**



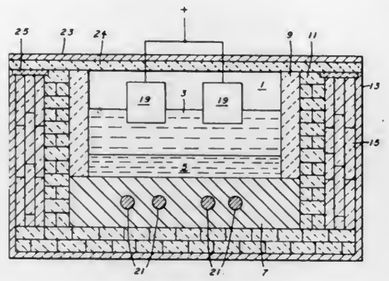
Means and method for reheating a very long coiled billet to rolling temperature in a furnace with a moving hearth. The furnace has at its terminal end a heated vestibule in which the coil remains at proper rolling temperature while it is being slowly unwound and delivered to the first stand of a rolling mill.

3,779,698
MAKING OF DEVITRIFIED PELLETS
Ernst A. Siemssen, Gwynedd, Pa., assignor to Selas Corporation of America, Dresher, Pa.
Filed June 14, 1972, Ser. No. 262,624
Int. Cl. F27b *1/02*
U.S. Cl. 432—13 7 Claims



Method and apparatus for making a devitrified light-weight aggregate. Particles of clay or a similar bloatable material are dropped through a tower furnace and bloated to spherical aggregate which is collected and held at temperature until it has devitrified.

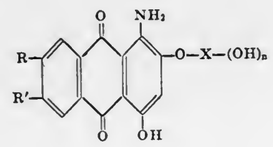
3,779,699
FURNACE STRUCTURE
Allen S. Russell, New Kensington, Pa., and Lester L. Knapp, Maryville, Tenn., assignors to Aluminum Company of America, Pittsburgh, Pa.
Division of Ser. No. 181,116, Sept. 16, 1971. This application Mar. 15, 1973, Ser. No. 341,719
Int. Cl. F23m *5/00*
U.S. Cl. 432—248 1 Claim



Furnace having a chamber for holding molten salt, such as alkali metal chloride and alkaline earth metal chloride, in which contact of the molten salts with a perimetric shell around that chamber is prevented by a glass barrier between that shell and the aforesaid chamber.

3,779,700
EXHAUSTION DYEING OF SYNTHETIC FIBER MATERIALS WITH ANTHRAQUINONE DYESTUFFS AND WATER-IMMISCIBLE HALOGENATED ALIPHATIC HYDROCARBONS
Peter Wegner, Koeln; Rutger Neeff, Leverkusen; Volker Hederich, and Gunter Gehrke, both of Koeln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed July 30, 1970, Ser. No. 59,728
Claims priority, application Germany, Aug. 1, 1969, P 19 39 095.5
Int. Cl. D06p *1/20*
U.S. Cl. 8—39 11 Claims

Exhaustion process for the dyeing of synthetic fibre materials from organic solvents, characterised in that anthraquinone dyestuffs containing hydroxyl groups, of formula



in which R and R′ indepentently of one another represent a hydrogen, fluorine or chlorine atom, X is a C_2 - C_6-alkanepolyyl radical and n is a number from 1 – 5, are used for the dyeing.

The dyestuffs are distinguished from the dyestuffs hitherto used for dyeing synthetic fibre materials from organic solvents by a significantly better affinity and an increased fastness to sublimation.

3,779,701
NON-AQUEOUS DYEING OF POLYAMIDES WITH WATER-SOLUBLE AMORIC DYESTUFFS DISSOLVED IN HALOGENATED HYDRO-CARBONS
Anton Zenhausern, Reinach, and Jakob Buhler, Muttenz, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Dec. 15, 1970, Ser. No. 98,455
Claims priority, application Switzerland, Dec. 16, 1969, 18708/69
Int. Cl. C09b *1/26*; D06p *1/20*
U.S. Cl. 8—39 8 Claims

A process for the non-aqueous dyeing or printing of nitrogen-containing fibre material, especially fibre material made from natural or synthetic polyamide, with certain water-soluble anionic anthraquinone dyestuffs from non-polar, aprotic organic solvents is disclosed. By said process even, strongly-coloured dyeings having good fastness properties are obtained; said process is moreover advantageous in that it can be carried out without the use of solubilising agents and without fire hazard in a uniform solvent which can be easily regenerated.

3,779,702
BRIGHT PINK, LAVENDER AND BLUE MINERAL DYEING SINGLE BATH PROCESS FOR CELLULOSICS
Charles J. Conner, Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed May 5, 1972, Ser. No. 250,560
Int. Cl. D06p *3/60*
U.S. Cl. 8—52 12 Claims

A certain cobalt organic salt was found to produce a water soluble aqueous complex with zirconyl ammonium carbonate, from which an insoluble pink deposit of cobalt and zirconia is deposited on cellulosics by heat. The deposit is bright pink and is completely resistant to hot water washings. The incorporation of varying amounts of copper metaborate into the aqueous cobalt complex produces compatible, uniform, soluble single bath complexes of copper, cobalt, and zirconia which produce lavender to bright blue insoluble deposits on cellulosics by heating (curing). By increasing the ratio of zirconia (ZrO_2) to cobalt (Co) by about 7 or 8 to 1, in the bath, lavender to bluish-pink deposits are produced by heat curing without copper. Using low ratios of approximately 1:1 of cobalt and zirconia, produces bright pink mineral pigments on heating (curing), while gradually increasing the copper ratio to cobalt, from 1:1 to 1.5 to 1, produces lavender to bright blue insoluble deposits on heating (curing). The copper containing mineral dyeings on cellulosic are fungicidal and algaecidal. Bright color shades, resistant to light and microorganisms, are desirable for the protection and sales appeal of textiles and other cellulosics.

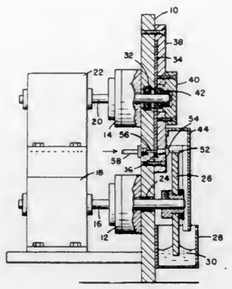
3,779,703
POLYOLEFIN FIBERS WITH AMINOSILONES POLYMERIZED WITHIN THE FIBERS
Giuliana C. Tesoro, Dobbs Terry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Division of Ser. No. 471,496, June 22, 1965, Pat. No. 3,542,502. This application Oct. 1, 1970, Ser. No. 77,350
Int. Cl. D06m *15/30*
U.S. Cl. 8—115.5 7 Claims

Improving the dyeability of polyolefin fibers by treating the polyolefin fibers with a solvent and a polymerizable aminosilane monomer and catalyzing the polymerization of the monomer within the fibers.

3,779,704
METHOD AND APPARATUS FOR SPACE DYEING STRAND MATERIAL
Richard MacHenry, Prospect Park, Pa., and Pei Tsing Chang, Wilmington, Del., assignors to FMC Corporation, Philadelphia, Pa.
Filed Feb. 14, 1972, Ser. No. 225,762
Int. Cl. D06p *5/00*
U.S. Cl. 8—149 11 Claims

The disclosed method and apparatus involve pulling a strand, e.g., a yarn, past a portion of the periphery of the wheel which is rotated so as to constantly pick up dye liquid from a bath into which a lower segment of the wheel extends. An air jet is directed toward the running strand across a peripheral segment of the wheel so as to blow dye liquid from the wheel onto the strand. A shield having apertures therein is

moved so as to alternately align apertures and solid areas with the air jet whereby the dye liquid is blown onto the yarn only



when an aperture in the shield is aligned with the jet to thus produce a strand having spaced dyed and undyed portions.

3,779,705

PROCESS FOR DYEING FIBERS OR FABRICS OF AROMATIC POLYAMIDES

Kazuo Kitamura; Fumiki Takabayashi, and Setsuo Yamada, all of Ibaraki, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 13, 1971, Ser. No. 171,771

Claims priority, application Japan, Aug. 14, 1970, 45/71249; Aug. 31, 1970, 45/76126; Dec. 16, 1970, 45/111713; Dec. 18, 1970, 45/113812

Int. Cl. D06p *1/68*

U.S. Cl. 8—173 **7 Claims**

A process for dip dyeing aromatic polyamide fibers or fabrics with acid dyes with good dyeability and levelling properties, without modifying measures which may cause deterioration of the desirable properties of the aromatic polyamides, which comprises dip dyeing fibers or fabrics of an unmodified aromatic polyamide in a dye bath comprising an acid dye of the monosulfonic acid, monosulfonic acid-carboxylic acid, disulfonic acid, disulfonic acid-carboxylic acid, or carboxylic acid and at least 1 percent by weight (based on the weight of the solution) of a neutral or acidic inorganic salt, in the presence of a swelling agent having a phenolic hydroxyl group, and alkali metal salts thereof; and soaping the dyeing obtained.

3,779,706

PROCESS FOR BULK STERILIZATION, MINIMIZING CHEMICAL AND PHYSICAL DAMAGE

Samuel V. Nablo, Lexington, Mass., assignor to Energy Sciences, Inc., Burlington, Mass.

Filed Oct. 4, 1971, Ser. No. 186,427

Int. Cl. A23l *3/26*; **A61l** *1/00*; **A23c** *3/06*

U.S. Cl. 21—54 R **4 Claims**

Technique for bulk-sterilizing a wide range of substances by pulsed monochromatic electron beams of rather critical irradiation dose values and rates that enable effective destruction of viable micro-organisms and the like but without significant chemical or physical damage to the substance.

3,779,707

SURGICAL STERILIZATION METHOD

Donald J. Tabone, 638 Benner Rd. No. 202, Allentown, Pa.

Filed May 28, 1971, Ser. No. 147,883

Int. Cl. A61l *1/00, 3/00*

U.S. Cl. 21—58 **3 Claims**

A method and apparatus for sterilizing articles such as surgical and dental instruments by immersing the articles in a container of boiling tetrachloroethylene. The container has a lower, heated portion, a cooled upper portion wherein vapor from the boiling liquid condenses, and an intermediate vapor column. Articles to be sterilized are cleaned and then submerged in the boiling liquid for up to about 16 minutes; then the articles are raised slowly through the vapor to thereby exit the container, sterile and dry. The container may be provided with a sliding lid, with thermostatically controlled high temperature cut-offs for the heating element disposed in the lower portion, and in the upper portion of the container.

ERRATUM

For Class 21—58 see:
Patent No. 3,779,791

3,779,708

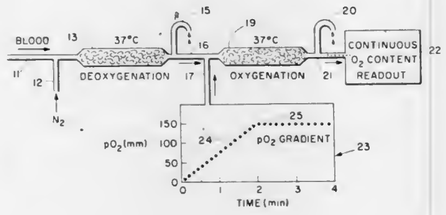
METHOD AND MEANS FOR DETERMINING OXYHEMOGLOBIN ASSOCIATION AND DISSOCIATION CURVES OF WHOLE BLOOD OR OTHER LIQUIDS

Alan H. Runck, Marblehead, and Cesare Robert Valeri, Boston, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 31, 1972, Ser. No. 222,226

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B **31 Claims**



A method of and apparatus for the automated measurement of the oxyhemoglobin association and dissociation curves of whole blood, erythrolysates or other liquids are described. The samples to be measured are studied in an environment of constant hydrogen ion concentration (pH) and temperature. They are initially deoxygenated by continuous flow washing and then are exposed to a linear gradient of increasing oxygen concentration to obtain the oxygenation curve. The samples are then oxygenated by continuous flow washing and next are exposed to a linear gradient of decreasing oxygen concentration to obtain the deoxygenation curve. The percentage of oxygen saturation and the oxygen tension of the sample are continuously determined substantially instantaneously by colorimetric analysis using indigo carmine reagent, to give the final oxygen association-dissociation curves.

3,779,709

DEVICE FOR REMOVING NOXIOUS SUBSTANCES DISCHARGED FROM CHIMNEYS

Kiichi Yamada, No. 15-12, 1-Chome, Jingumae, Shibuya-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 46,299, June 15, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,005

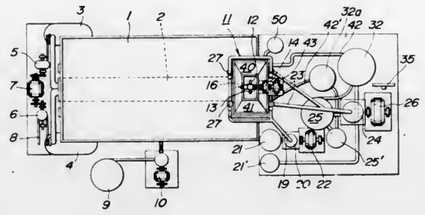
Claims priority, application Japan, Jan. 31, 1970, 45/8123

Int. Cl. B01d *47/06*

U.S. Cl. 23—260 **6 Claims**

A device for removing noxious substances discharged from chimneys and the like, which includes a pair of filter units disposed in each of two flues defined in the chimney, so as to be selectively put into service by a flip over vane. Each flue has two filter sections: a first section where a viscous liquid

cleanser for dust and other particles of the discharge is intermittently sprayed unto a porous filler disposed therein when the flue is in use, while a washing liquid is sprayed onto the filler for washing said particles away from the filler together with the liquid cleanser when the flue is not in use; and a



second section where a neutralizer is sprayed to the porous filler disposed therein for neutralizing acidic or basic components of the discharge when the flue is in use. Staggered V-shaped troughs are provided below each section to catch liquid draining from the respective fillers for recirculation while permitting flow of flue gas up the chimney.

3,779,710

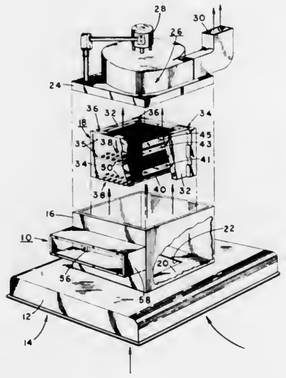
AIR CLEANING APPARATUS

Norman Burstein, Cherry Hill, and Richard C. Ditzler, Cinnaminson, both of N.J., assignors to Smokontrol Corporation of America, Cinnaminson, N.J.

Filed Mar. 22, 1971, Ser. No. 126,497

Int. Cl. B01d *53/00*; **F04b** *37/00*

U.S. Cl. 23—288 F **4 Claims**



Apparatus for removing polluting vapors from air by high temperature oxidation of the vapors in the presence of a precious metal catalyst employs a source of radiant energy for heating the catalyst and pollutants. The energy source is insulated from the polluted air as it moves past the catalyst by a quartz glass which surrounds the source. The catalyst is applied to a cellular refractory block which forms passages for the air. Alternatively, the catalyst is applied to glass tubes that serve as the insulating shield for a plurality of spaced heaters, with the spaces between the glass tubes serving as passages for the polluted air.

3,779,711

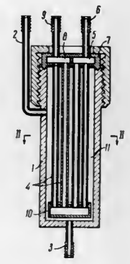
CATALYTIC REACTOR DESIGNED FOR CARRYING OUT CONJUGATE CHEMICAL REACTIONS

Vladimir Mikhailovich Gryaznov, Leninskie gory, zona, L., kv. 11; Alexandr Petrovich Mischenko, Khersonskaya ulitsa, 7, korpus 4, kv. 515; Viktor Sergeevich Smirnov, Kutuzovsky prospekt, 26, kv. 555, and Sergei Ivanovich Aladyshev, ulitsa Grimau, 7/2, korpus 4, kv. 77, all of Moscow, U.S.S.R.

Filed July 19, 1971, Ser. No. 163,709

Int. Cl. B01j *9/04*; **C07b** *3/00*; **C07c** *3/58*

U.S. Cl. 23—288 R **2 Claims**



A catalytic reactor for carrying out conjugate chemical reactions, comprising a housing, whose inner space is adapted for carrying out one of said conjugate reactions, and a system of thin-walled tubes designed for carrying out thereinside the other of said conjugate reactions and arranged freely inside the housing. The tubes are manufactured from a material that is selectively permeable to the common reactant of the conjugate reactions and catalytically active with respect to both conjugate reactions. The tubes are made fast in the reaction vessel lid which is provided with manifolds adapted for the introduction of the reactants and for the removal of the reaction products, the free ends of the tubes connected to the inlet manifold communicating with the free ends of the tubes connected to the outlet manifold.

3,779,712

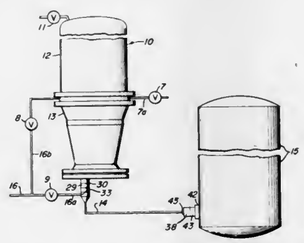
PARTICULATE SOLIDS INJECTOR APPARATUS

William Lemont Calvert, Westfield, and Richard Herman Handwerk, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,108

Int. Cl. B01j *9/20*; **B65g** *65/30, 53/40*

U.S. Cl. 23—288 E **9 Claims**



Apparatus is provided for injecting finely divided solid materials into a reaction zone. The apparatus includes a reservoir, selected means for advancing a predetermined particle size of solid materials to the lower portion of the reservoir, metering means for metering predetermined amounts of solid materials selected by the selecting means to gas entrainment

means and conduit means to deliver gas entrained solid material into a reaction chamber, the conduit means including a capillary tube having an inside diameter of .030 to .125 inches. A method for injecting finely divided solid materials into a polymerizing reaction chamber for producing polyolefin is also included.

3,779,713

DUCTILE CONSOLIDATED BERYLLIUM

John P. Denny, Shillington; Robert C. Solbach, Reading, and Pen George J. Jagaciak, Barrington, all of Pa., assignors to Kawecki Berylco Industries, Inc., New York, N.Y.

Filed Feb. 24, 1971, Ser. No. 118,516
Int. Cl. B22f 3/00
U.S. Cl. 29—182.5 4 Claims

A mass of consolidated beryllium particles is described having a ductility characterized by a tensile elongation of at least about 2 ½ percent in all three orthogonal directions.

3,779,714

DISPERSION STRENGTHENING OF METALS BY INTERNAL OXIDATION

Anil V. Nadkarni, Glen Burnie, and Erhard Klar, Pikesville, both of Md., assignors to SCM Corporation, Cleveland, Ohio

Filed Jan. 13, 1972, Ser. No. 217,506
Int. Cl. B22f 7/00; B23p 3/00
U.S. Cl. 29—182.5 18 Claims

Disclosed are methods and compositions for forming dispersion-strengthened metal products by the in situ internal oxidation of an alloy powder of a solute metal in a matrix metal. The matrix metal is relatively noble with respect to the solute metal so that the solute metal will be preferentially oxidized. The oxidant for the internal oxidation of said alloy powder is a mixture of a heat-reducible (i.e., reducible by the solute metal with heat) metal oxide (the metal moiety of which is different or the same as the matrix metal that is present in the alloy) present in proportion sufficient for substantial oxidation of all of said solute metal to solute metal oxide; and a hard, refractory metal oxide (the metal moiety of which is different from or the same as the solute metal present in the alloy). The alloy powder and the oxidant are intimately mixed and heated in an inert atmosphere for internal oxidation. Upon internal oxidation, the composite residue of spent oxidant comprises an in situ heat-reduced metal intimately associated with the refractory metal oxide, and such residue is coalesced with the rest of the mass by hot working.

3,779,715

HEAT RESISTANT HIGH STRENGTH COMPOSITE STRUCTURE OF HARD METAL PARTICLES IN A MATRIX, AND METHOD OF MAKING THE SAME

Charles F. Wendler, St. Clair Shores, and Charles S. Baum, Grosse Pointe Farms, both of Mich., assignors to Permanence Corporation, Detroit, Mich.

Division of Ser. No. 5,823, Jan. 15, 1970, Pat. No. 3,684,497.
This application June 23, 1972, Ser. No. 265,671
Int. Cl. C22c 29/00
U.S. Cl. 29—182.1 13 Claims

A high strength structure made of hard metal particles, such as metal carbide particles, brazed to each other in a porous lattice of a first brazing metal or alloy, the voids and spaces in the brazing metal or alloy being filled by a solidified second brazing metal or alloy of a melting point lower than the melting point of the first brazing metal or alloy. The second brazing metal or alloy may also contain a dispersion of hard metal particles, such as metal carbide particles, generally of a smaller size than that of the original hard metal particles. The structure is made by mixing a predetermined proportion of hard metal particles with the first brazing metal or alloy in the form of a powder, and by sintering in a furnace so as to obtain a substantially porous structure, followed by a second pass in the furnace of the porous structure covered with the second brazing metal or alloy in a powder form so as to impregnate the porous structure with the melted second brazing metal or alloy.

3,779,716

TANTALUM CARBIDE-TANTALUM FIBER COMPOSITE MATERIAL

Robert E. Riley, and James M. Taub, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 18, 1972, Ser. No. 218,686
Int. Cl. C22c 29/00
U.S. Cl. 29—182.8 1 Claim

The thermal stress resistance of refractory metal carbides is substantially improved by the addition of chopped metal fibers. A composite consisting of 50 vol percent TaC-50 vol percent chopped Ta wire shows approximately a 40 percent improvement in thermal stress resistance over that of pure TaC.

3,779,717

NICKEL-TANTALUM ADDITION AGENT FOR INCORPORATING TANTALUM IN MOLTEN NICKEL SYSTEMS

Robert A. Gustison, Reading, Pa., assignor to Kawecki Berylco Industries, Inc., New York, N.Y.

Filed July 12, 1972, Ser. No. 271,114
Int. Cl. B22f 3/02, 3/04
U.S. Cl. 29—192 R 4 Claims

A physical admixture of nickel powder and scrap tantalum powder is made to dissolve in molten nickel as rapidly as a conventional true master alloy of comparable proportions of these metals in pure form by pressing the admixture of the two metal powders under a pressure of at least 10,000 pounds per square inch.

3,779,718

CORROSION RESISTANT THERMOSTATIC LAMINATE

Leonard S. Maisner, Dearborn Heights, Mich., assignor to W. M. Chace Company, Detroit, Mich.

Filed Oct. 2, 1972, Ser. No. 294,086
Int. Cl. B23p 3/00
U.S. Cl. 29—195.5 3 Claims

An improvement is disclosed for a bimetal consisting essentially of a high expanding nickel-copper-manganese alloy with controlled ratios of nickel, copper, and manganese bonded along a common interface to a low expanding nickel-cobalt-iron alloy also having a narrow weight range for each component. The improvement comprises providing a corrosion resistant thermostatic laminate having high flexivity and high electrical resistivity by metallurgically bonding an alloy consisting essentially of from about 19 to about 23 percent nickel, from about 1.5 to about 3.5 percent chromium and the balance iron along a common interface to the side of the high expanding alloy that opposes the low expanding alloy.

3,779,719

DIFFUSION COATING OF JET ENGINE COMPONENTS AND LIKE STRUCTURES

Eugene V. Clark, Northridge; William J. Martin, Huntington Beach; Peter J. Plambeck, Torrance, and Maurice R. Commanday, Palos Verdes Estates, all of Calif., assignors to Chromalloy American Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 731,631, May 23, 1968, abandoned. This application Dec. 3, 1970, Ser. No. 94,991
Int. Cl. B32b 15/00, 15/02; C23c 9/02
U.S. Cl. 29—197 15 Claims

Greatly increased thermal fatigue cracking resistance of high temperature resistant base metals such as cobalt and nickel and their alloys used to fabricate jet engine components and like parts is realized by diffusion coating the base metal with chromium, silicon and aluminum in particular proportions to diffuse into the base metal to a uniform depth and distribution between and across intergranular boundaries in the base metal, enabling slowed initiation of thermal fatigue cracking in the diffusion coating as well as reduced corrosion in the base metal.

3,779,720

PLASMA SPRAYED TITANIUM CARBIDE TOOL STEEL COATING

John L. Ellis, Whiteplains; M. Kumar Mal, Nanuet, and Stuart E. Tarkan, Monsey, all of N.Y., assignors to Chromalloy American Corporation, West Nyack, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,497
Int. Cl. B32b 15/18
U.S. Cl. 29—195 A 7 Claims

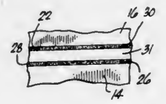
A composite article of manufacture is provided comprising a metal substrate having a plasma-deposited adherent coating of a titanium carbide tool steel containing by weight about 10 to 80 percent of primary grains of TiC and the balance essentially about 90 to 20 percent of a steel matrix, the matrix being characterized metallographically by an austenitic decomposition product containing martensite. The metal substrate is preferably aluminum, although other metal substrates, such as steel, can be coated. The method comprises quench-depositing the coating by plasma spraying onto the substrate such that the resulting coating is one characterized metallographically by the presence of martensite. Preferably, the titanium carbide grains should be rounded to assure a low friction surface.

3,779,721

COMPOSITE METAL HAVING BONDED MEMBERS OF BERYLLIUM

Virgil L. Herman, Torrance, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 6, 1970, Ser. No. 9,238
Int. Cl. B32b 15/00
U.S. Cl. 29—199 1 Claim



Two metallic surfaces in substantially uniform area contact with an intervening layer of a brazing alloy are joined by intermolecular migration of the alloy into both surfaces while the alloy is maintained in liquid form by prolonged furnace heating. Degradation of the metallic surfaces which would normally result from such prolonged heating due to the excessive migration of the brazing alloy into the base metal is prevented by a compatible metallic membrane applied to one or both sides of the stated intervening layer.

3,779,722

PROCESS FOR DESULFURIZING FUEL

David Tatum, 325 Dartmouth Ave., Swarthmore, Pa.

Filed Feb. 23, 1972, Ser. No. 228,617
Int. Cl. C10l 9/10; C10b 57/00; C10a 1/00
U.S. Cl. 44—1 R 6 Claims

A process for desulfurizing fuel includes producing spaced vortices of molten metal and passing the fuel with hydrogen donor material and a flux material through the spaced vortices to provide an interaction there-between.

3,779,723

THIXOTROPIC COMPOSITIONS

Glenn Fuller, and Alfred John Lawrence Toombs, both of Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 15, 1963, Ser. No. 302,444
Int. Cl. C10l 7/02
U.S. Cl. 44—7 C 14 Claims

Stable dispersions or suspensions of solid metal or metal hydride particles or powders in liquid hydrocarbons in mobile thixotropic suspensions are prepared by mixing metals and their hydrides into hydrocarbon slurries with a gellant of a monoester of a C_{4-18} hydrocarbyl mercapto methyl phosphonic acid.

3,779,724

NITROGEN-CONTAINING CARBOHYDRATE DERIVATIVES AND HYDROCARBON FUEL COMPOSITIONS CONTAINING SAME

Paul M. Kerschner, Trenton; Elmer J. Badin, Hightstown, and Aldo Cresti, New Brunswick, all of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Apr. 29, 1970, Ser. No. 33,039
Int. Cl. C10l 1/22
U.S. Cl. 44—63 6 Claims

Compounds useful as additives in hydrocarbon fuels are prepared by reacting the lactone of a carbohydrate acid with a N-hydrocarbylhydrocarbylenediamine in which the amino groups are separated by two or three methylene groups. The reaction products are the isomeric amides of the carbohydrate acid and the hydrocarbylenediamine and also the heterocyclic compounds obtained when the foregoing amides cyclize with elimination of a mole of water. Hydrocarbon fuel compositions containing these additives exhibit enhanced carburetor detergency and rust inhibiting properties.

3,779,725

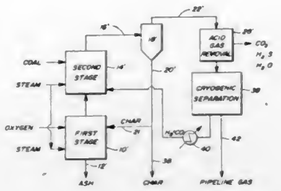
COAL GASSIFICATION

William P. Hegarty, and David L. Say, both of Wescoesville, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 6, 1971, Ser. No. 205,138
Int. Cl. C10j 3/00
U.S. Cl. 48—202 10 Claims

A method for producing a synthetic pipeline gas by reacting

a carbonaceous fuel in a gasifier to form a gas and thereafter subjecting the gas to additional process steps including a final



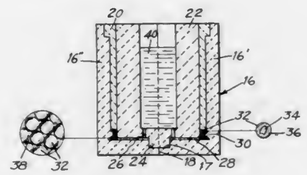
cryogenic separation of high methane content gas for use as the pipeline gas.

3,779,726

METHOD OF MAKING A METAL IMPREGNATED GRINDING TOOL

Reginald C. Fisk, West Boylston, and Edgar B. Carver, Whitinsville, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Mar. 7, 1969, Ser. No. 805,207
Int. Cl. B24d *3/10*
U.S. Cl. 51—295 **1 Claim**



Metal bonded abrasive tools are manufactured in which the abrasive grits are uniformly spaced and distributed throughout the tool, by encapsulating one or several abrasive grits in a porous layer of powdered metallic material and preferably sintering the layer, thereby forming individual abrasive grit containing particles which are then placed in a mold and the spaces between the particles filled with a conventional metallic bonding agent. Heat, and in some instances heat and pressure, is applied which permanently binds the mixture together in the desired form. The process is particularly well suited for the fabrication of metal bonded diamond wheels where the metal-bond to diamond-grit volume ratio is relatively high.

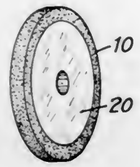
3,779,727

RESIN-BONDED ABRASIVE TOOLS WITH METAL FILLERS

Richard H. Siqui, Holden, and Harvey M. Cohen, Randolph, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 61,905, Aug. 7, 1970, abandoned. This application July 19, 1971, Ser. No. 163,976The portion of the term of this patent subsequent to May 23, 1989, has been disclaimed.
Int. Cl. C08g *51/12*; **C08h** *17/12*
U.S. Cl. 51—298 **5 Claims**

High ratios of metal removed to abrasive tool wear are achieved when resin-bonded diamond or cubic boron nitride abrasive tools include in the bond from 10 to 60 percent by volume of silver, silver coated copper, or copper powder in the presence of from 5 to 30 percent by volume of a solid lubricant. Other fillers such as finely divided metal oxides or carbide such as silicon carbide may be present in an amount of from 0 to 40 percent by volume, depending upon the total content of metal and lubricant. The diamond wheels or tools of this invention are particularly suitable for the dry grinding of carbide tools. The cubic boron nitride wheels employ metal clad boron nitride abrasive particles and are particularly suitable for the dry grinding of hard steel tools, that is, high speed steels such as T15, M2, M3, and M4. Solid lubricants useful in this invention include organic polymers such as



polytetrafluoroethylene, fluorinated ethylene polymers, chlorinated hydrocarbon, fluorinated ethylene propylene polyethylene styrene-butadiene, acrylonitrile-butadiene-styrene, polyurethane, polyforaldehyde, polycarbonate, and nylon and inorganic crystalline solids such as boron nitride, tungsten disulfide, graphite, metal coated graphite, molybdenum disulfide, niobium diselenide tungsten diselenide, and fluorinated graphite.

3,779,728

HIGH TEMPERATURE - HIGH STRENGTH ALLOY GLASS FIBER FORMING BUSHING

James H. Hansen, Rt. 3, and Ralph W. Getz, 421 Alford Dr., both of Newark, Ohio

Continuation-in-part of Ser. No. 884,689, Dec. 12, 1969, Pat. No. 3,622,289, Continuation of Ser. No. 192,293, Oct. 26, 1971. This application Mar. 13, 1973, Ser. No. 340,861
Int. Cl. C03b *37/02*
U.S. Cl. 65—1 **18 Claims**

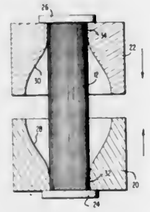
A high temperature-high strength alloy comprising platinum, rhodium and one or more metals consisting of molybdenum, tungsten, iridium, and rhenium is fabricated into apparatus adapted to receive and controllably emit molten material for attenuation into glass fibers.

3,779,729

METHOD OF FORMING COMPOSITE FIBER BUNDLE

John W. Hicks, Jr., Fiskdale, Mass., assignor to The Bendix Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 178,296, Mar. 8, 1962, Pat. No. 3,240,106. This application Mar. 14, 1966, Ser. No. 534,009
Int. Cl. C03c *27/06*; **C03b** *23/20*
U.S. Cl. 65—4 **4 Claims**



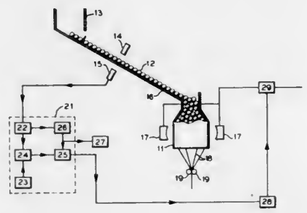
1. A method of forming a glass fiber device including the steps of: forming a fiber bundle comprising a plurality of parallel fibers, heating said fiber bundle to a working temperature, while at the working temperature forcing the ends of said bundle towards each other while contraining the ends of said bundle from radial movement in a plane normal to the longitudinal axis of said bundle to form a fused bundle of glass fibers having generally parallel ends of generally the original cross-section dimension and an outwardly curved bulbous center section immediately adjacent the ends of the bundle.

3,779,730

CONTROL FOR GLASS MARBLE, FEEDING, MELTING, AND FIBER FORMING UNIT

Dennis Lee Ramge, Waterville, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed Jan. 27, 1972, Ser. No. 221,314
Int. Cl. C03c *3/00*, *37/00*
U.S. Cl. 65—9 **8 Claims**



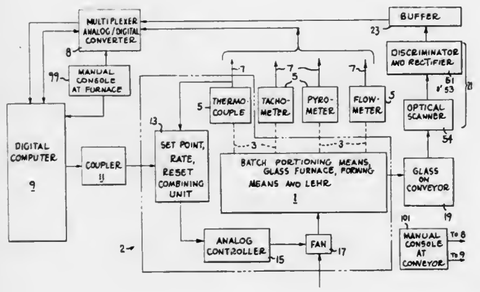
An automatic output control whereby the output of an inorganic thermoplastic material melting and fiber forming unit is controlled by adjusting the amount of heat applied to the melting unit in accordance with a control signal. The control signal is derived by comparing the actual rate of thermoplastic material entering the melting and fiber forming unit with a desired standard.

3,779,731

CONTROLLED GLASS MANUFACTURING PROCESS

E. Kears Pollock, Allison Park, and Forrest K. Umbel, Verona, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 7, 1972, Ser. No. 224,110
Int. Cl. C03b *5/24*
U.S. Cl. 65—29 **5 Claims**



Apparatus and a method for the control of a glass-making process are provided which minimize the occurrence of optical defects in the glass by the selective adjustment of some, but not all, of the control loops of the process responsive to a determination of which loops are critical.

3,779,732

METHOD OF MAKING GLASS LASERS OF INCREASED HEAT DISSIPATION CAPABILITY

Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 884,358, Dec. 11, 1969, Pat. No. 3,687,799. This application Apr. 16, 1971, Ser. No. 134,892The portion of the term of this patent subsequent to May 2, 1989, has been disclaimed.
Int. Cl. C03c *21/00*
U.S. Cl. 65—31 **14 Claims**

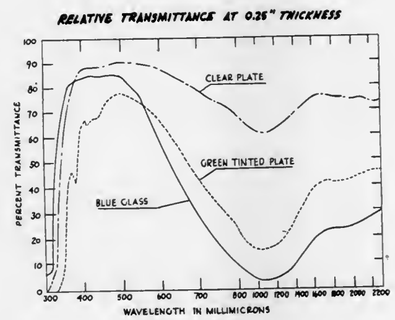
Glass lasers containing at least 1 mole percent of lithium oxide based on the total glass composition expressed in oxide content and having a compressive stress surface layer whereby increased strength and increased heat dissipation capability is obtained. The compressive stress surface layer has essentially the same composition as the remainder of the glass laser except that the concentration of lithium ions is less than the remainder of said glass laser, and the concentration of ions of a different alkali metal is greater than the remainder of the glass laser. Laser glasses are generally first acid washed and then contacted with a salt of an alkali metal other than lithium at an elevated temperature and for a sufficient period of time to replace a portion of the lithium ions in the surface of the glass laser with the ions of the different alkali metal and thereby form the compressive stress layer in the surface, but for a time insufficient to produce any substantial relaxation of the stress formed in the surface layer. As a result of this treatment there is developed on the surface of the glass laser a thin surface layer of low order tension and a thicker underlayer of high compressive stress. The tension surface layer is then removed by acid wash to expose the compression layer.

3,779,733

METHOD OF MANUFACTURING HEAT ABSORBING GLASS

Bhogaraju V. Janakirama-Rao, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 5,796, Jan. 26, 1970, Pat. No. 3,652,303. This application Nov. 30, 1971, Ser. No. 203,404
Int. Cl. C03b *5/16*, *3/04*
U.S. Cl. 65—32 **15 Claims**



An improved method of making a ferrous ion-containing, heat absorbing glass article is disclosed. The improvement resides in incorporating iron and tin in the glass, and establishing and maintaining during the glass melting, refining and forming period at least 80 percent of the iron in the glass in the ferrous state. Further, sufficient tin is maintained in the stannous state to act as an internal reducing agent to prevent oxidation of the ferrous ion to the ferric species in a subsequent glass reheating step.

3,779,734

METHOD OF MAKING COPPER-COLORED RUBY GLASS

Paul Simonfi, Turda, and Viorel Cristea, Timisoara, both of Romania, assignors to Fabrica de Sticlarie Turda, Turda, Romania

Continuation-in-part of Ser. No. 207,673, Dec. 13, 1971, abandoned, which is a continuation of Ser. No. 812,880, Apr. 2, 1969, abandoned.

Filed Apr. 24, 1972, Ser. No. 246,901

Int. Cl. C03b 5/16; C03c 3/20, 3/08

U.S. Cl. 65—136 3 Claims

A process for making copper-colored ruby glass in which a copper-tin alloy (bronze) is wetted with sodium silicate water glass solution and introduced into a soda-lime glass batch, together with potassium nitrate, as an oxidizing agent, and in the absence of reducing agents, melted at up to 1,480°C and in which ruby-red coloration appears upon rapid cooling.

3,779,735

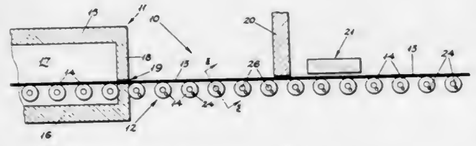
HEAT SINK FOR TUBULAR CONVEYOR ROLLS

Roger P. King, Waterville, Ohio, assignor to Libby-Owens-Ford Company, Toledo, Ohio

Filed July 19, 1971, Ser. No. 163,585

Int. Cl. C03b 29/04

U.S. Cl. 65—356 7 Claims



Reducing warping of tubular rolls employed in conveying sheet material at elevated temperatures. A liquid or gaseous medium is maintained within the interior of the rolls to act as a heat sink for equalizing the wall temperature circumferentially around and longitudinally along the rolls, thereby minimizing warping due to differentials in temperature.

3,779,736

1,3,4-THIADIAZINE HERBICIDES

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 4, 1971, Ser. No. 103,814

Int. Cl. A01n 9/12

U.S. Cl. 71—90 4 Claims

New N-substituted derivatives of 2-amino-5-tert.butyl-6H-1,3,4-thiadiazine are employed to combat undesired vegetation by both post- and pre-emergent application techniques. carbamyl substituted compounds are preferred.

3,779,737

2-(THIADIAZOLYL)-1,2,4-THIADIAZOLIDINE-3-5 DIONES AND 1-(THIADIAZOLYL)-1,3-DIAZOLIDINE-2,4,5-TRIONES AS HERBICIDES (AG-80)

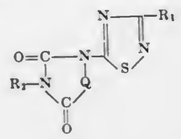
Alfred H. Miller, Somerset, N.J., assignor to Esso, Research and Engineering Company, Linden, N.J.

Division of Ser. No. 32,463, April 27, 1970, Pat. No. 3,651,075. This application Nov. 23, 1971, Ser. No. 201,565

Int. Cl. A01n 9/22

U.S. Cl. 71—90 17 Claims

Compositions of matter characterized by the following structural formula:



wherein R_2 can be one selected from the group consisting of hydrogen, C_1-C_8 alkyl, C_3-C_8 cycloalkyl, C_7-C_{10} aralkyl, C_1-C_4 dialkyl amino, C_6-C_{10} aryl optionally substituted by C_1-C_4 alkyl, C_3-C_8 alkene, C_3H_4 alkyne, chlorine, bromine or nitro; R_1 can be the same or different as R_2, and can also include C_1-C_4 alkylmercapto; and Q is one selected from the group consisting of C=O and S, have been shown to possess pesticidal activity especially pre- and post-emergent herbicidal activity.

3,779,738

HERBICIDAL PARA-TERT-BUTYLPHENYL UREA

Daniel Pillon; Pierre Poignant, both of Lyon, and Rodolphe Cafflero, Crezieu La Varenne, all of France, assignors to PERRO, Societe pour de Developpement et la Vente de Specialities Chimiques, Lyon, France

Filed Oct. 22, 1970, Ser. No. 83,230

Claims priority, application France, Oct. 27, 1969, 6936835

Int. Cl. A01n 9/20

U.S. Cl. 71—120 5 Claims

N-p-tert-butylphenyl-N'N'-dimethylurea, or PTBU, is found to have selective herbicidal activity.

3,779,739

PROCESS FOR MANUFACTURE OF LOW OXYGEN AND LOW SULPHUR STEEL

Toshio Adachi, and Kiyohide Hayashi, both of Nagoya, Japan, assignors to Daido Seiko Kabushiki Kaisha, Kuridashi, Nagoya-shi, Aichi-ken, Japan

Filed Dec. 22, 1970, Ser. No. 100,835

Claims priority, application Japan, Dec. 26, 1969, 44/104331

Int. Cl. C21c 5/52; C22b 9/10

U.S. Cl. 75—12 3 Claims

A process for manufacturing low oxygen and low sulphur steel in plasma arc furnace with or without induction heating under the condition of inert gas and special flux.

3,779,740

PROCESS FOR MANUFACTURE OF ULTRA LOW CARBON STEEL BY MEANS OF PLASMA ARC REFINING

Toshio Adachi, and Kiyohide Hayashi, both of Nagoya, Japan, assignors to Daido Seiko Kabushiki Kaisha, Aichi-ken, Japan

Continuation of Ser. No. 100,768, Dec. 22, 1970, abandoned. This application Feb. 9, 1973, Ser. No. 331,119

Claims priority, application Japan, Dec. 23, 1969, 44/103649

Int. Cl. C21c 5/52

U.S. Cl. 75—12 2 Claims

A process for manufacturing ultra low carbon steel containing less than 0.010 percent carbon characterized by refining a steel in a specially designed plasma arc and induction heated furnace, wherein the partial pressure of CO does not exceed 1.0 atmosphere pressure, and an inert gas atmosphere is maintained in the plasma-induction furnace. Small amounts of oxidizing agents may be added to oxidize carbon in the molten steel in the furnace.

3,779,741

METHOD FOR REDUCING PARTICULATE METAL ORES TO SPONGE IRON WITH RECYCLED REDUCING GAS

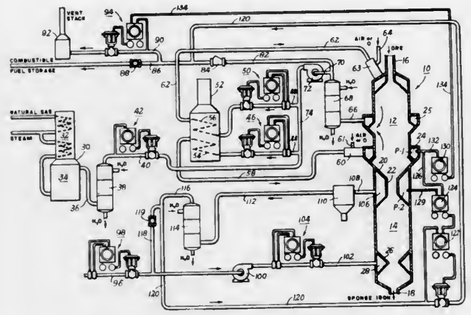
Juan Celada; Patrick W. MacKay, and Ramon de la Pena, all of Monterrey, N. L., Mexico, assignors to Fierro Esponja, S.A., Monterrey, N. L., Mexico

Filed Oct. 15, 1971, Ser. No. 189,560

Int. Cl. C21b 13/02

U.S. Cl. 75—35 11 Claims

A method and apparatus is disclosed for achieving improved reduction efficiency in the reduction of particulate metal ores, e.g., iron ore, in a vertical shaft, moving bed reactor having a reduction zone in which a hot reducing gas is caused to flow through a portion of the ore bed to reduce the metal ore thereof to metal, e.g., sponge iron. The improved efficiency is achieved by using a splitflow of reducing gas to the reduction zone of the reactor. In one embodiment of the invention separate reducing gas streams are supplied to the top and bottom of the reduction zone and combined near the center of the reduction zone and removed from the reactor. In



another embodiment of the invention reducing gas is fed to a point near the center of the reduction zone, caused to flow both upwardly and downwardly through the ore in the reduction zone and removed at points near the top and bottom of the reduction zone. By using the disclosed split-flow systems, the residence time of the metal-bearing material within the reactor can be reduced and the productivity of the reactor thereby increased.

3,779,742

METHOD OF REMELTING A FROZEN METAL PLUG IN THE CERAMIC NOZZLE OF A METALLURGICAL VESSEL

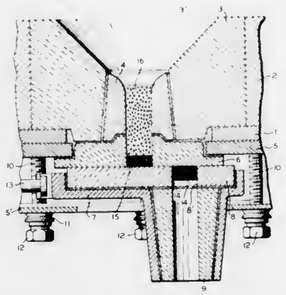
Hans-Reinhard Fehling, Zug, Switzerland; Horst Hase, Wiesbaden, and Hans-Joachim Kutzer, Wiesbaden-Rambach, both of Germany, assignors to Didier-Werke A.G., Wiesbaden, Germany

Filed Oct. 16, 1970, Ser. No. 81,289

Claims priority, application Germany, Dec. 4, 1969, P 19 60 801.6

Int. Cl. C21c 7/00

U.S. Cl. 75—46 8 Claims



A method of remelting a frozen metal plug in the ceramic nozzle of a metallurgical vessel, particularly a pouring ladle equipped with means for controlling the nozzle. An exothermic material that ignites at a temperature below the freezing temperature of the metal melt, is introduced into the outlet orifice of the closed nozzle.

3,779,743

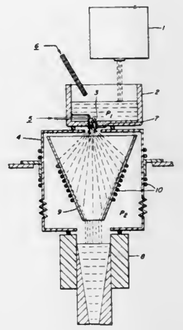
CONTINUOUS CASTING WITH IN-LINE STREAM DEGASSING

Robert G. Olsson, Edgewood Boro, and Ethem T. Turkdogan, Pittsburgh, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 148,551, June 1, 1971. This application Apr. 24, 1972, Ser. No. 247,036

Int. Cl. C21c 7/10; B22d 11/10

U.S. Cl. 75—49 9 Claims



In a continuous casting process, a tundish feeds a molten metal stream through a "vacuum" chamber in contact with the mold. Discrete gas bubbles are injected into the molten metal, prior to its exit through a nozzle orifice in the tundish, so that the bubbles are entrained with the metal entering the "vacuum" chamber. The expansion of the gas bubbles in the chamber breaks the metal stream into a spray of fine droplets with the concurrent removal of dissolved gases from the metal. The degassed metal is then fed into the top of the mold and is continuously cast.

3,779,744

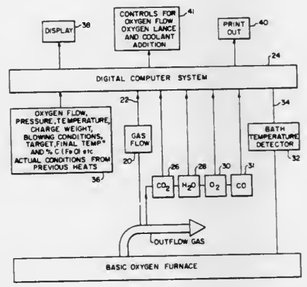
MODIFICATION AND IMPROVEMENT TO DYNAMIC BOF CONTROL

Lucius G. Matteson, Pittsburgh, and Norman R. Carlson, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 855,596, Sept. 5, 1969, abandoned. This application Apr. 5, 1972, Ser. No. 241,416

Int. Cl. C21c 5/30

U.S. Cl. 75—60 13 Claims



A method is disclosed for dynamically controlling the refining of a bath of iron of known weight by blowing it with oxygen containing gas to provide a desired final carbon level utilizing instantaneous values of carbon-oxidation rate to determine the end of the blow.

3,779,745
CARBIDE ALLOYS SUITABLE FOR CUTTING TOOLS AND WEAR PARTS

Erwin Rudy, Beaverton, Oreg., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation-in-part of Ser. No. 802,625, Feb. 26, 1969, Pat. No. 3,690,962. This application Sept. 7, 1972, Ser. No. 287,143

Int. Cl. C22c *27/00, 29/00*

U.S. Cl. 75—176 **5 Claims**

This invention relates to refractory metal bonded carbide alloys for use as cutting tools and in other applications where high hardness and abrasion resistance are required. The desired fine-grain, lamellar microstructure is obtained preferably by casting eutectic, or near-eutectic composition alloys of a Group IVa metal (titanium, zirconium, hafnium), tungsten and carbon which may contain certain alloying and inert materials. For selected applications, the composites may be fabricated by powder-metallurgical techniques.

3,779,746
CARBIDE ALLOYS SUITABLE FOR CUTTING TOOLS AND WEAR PARTS

Erwin Rudy, Beaverton, Oreg., assignor to Aerojet-General Corporation, El Monte, Calif.

Division of Ser. No. 802,625, Feb. 26, 1969, Pat. No. 3,690,962. This application Sept. 8, 1972, Ser. No. 287,307

Int. Cl. C22c *27/00, 29/00*

U.S. Cl. 75—176 **32 Claims**

This invention relates to refractory metal bonded carbide alloys for use as cutting tools and in other applications where high hardness and abrasion resistance are required. The desired fine-grain, lamellar microstructure is obtained preferably by casting eutectic, or near-eutectic composition alloys of a Group IV*a* metal (titanium, zirconium, hafnium), tungsten and carbon which may contain certain alloying and inert materials. For selected applications, the composites may be fabricated by powder-metallurgical techniques.

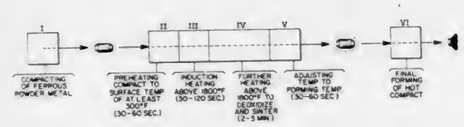
3,779,747
PROCESS FOR HEATING AND SINTERING FERROUS POWDER METAL COMPACTS

Robert L. Conta, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Sept. 5, 1972, Ser. No. 285,965

Int. Cl. B22f *3/24*

U.S. Cl. 75—200 **21 Claims**



An induction field is utilized for rapidly raising the temperature of a ferrous powder metal compact to a sintering temperature where the compact is deoxidized and its particles coalesced into a homogenous mass. In order to overcome a characteristic incubation period which delays initial increase in temperature of such a compact in an induction field, the outer surfaces of the compact are preheated for a relatively short time by known heating means to raise its surface temperature to about 400° F prior to subjecting the compact to a magnetic induction field. After the preheating step, heating in the induction field is used to raise the temperature of the entire compact to a level above 1,800° F, and this temperature is maintained for a sufficient period of time to deoxidize and sinter the compact. After the heating and sintering treatments, the compact is cooled to a temperature of about 1,500°–1,900 ° F for a final forming operation which establishes a useful, full, dense, finished shape.

3,779,748
METHOD OF PROTECTING IMAGES

Michael Mosehauser, Spencerport, and Orville C. Rodenberg, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 854,324, Aug. 29, 1969, abandoned. This application Aug. 11, 1971, Ser. No. 170,948

Int. Cl. G03g *13/20, 13/22*

U.S. Cl. 96—1 R **17 Claims**

A method is disclosed for applying a protective overcoat to developed images, such as a developed electrostatic charge pattern. The protective overcoat is applied electrophoretically from a dispersion of transparent resin particles in an electrically insulating carrier liquid. The process involves the formation of a developed image on an image-bearing member having associated therewith a conductive backing. An external electrical source is then provided. Next, an electrical field and a resulting electrical bias potential is provided between the electrical source and the conductive backing. While the bias potential is applied, a dispersion of transparent charge-bearing resin particles in an electrically insulating carrier liquid is applied to the member with the result that the resin particles are uniformly deposited over the image-bearing surface of the member.

3,779,749
METHOD OF CHARGING IN ELECTROPHOTOGRAPHY

Masamichi Sato, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 10, 1971, Ser. No. 179,349

Int. Cl. G03g *13/02, 13/22*

U.S. Cl. 96—1 C **3 Claims**



An electrophotographic material comprising a photoconductive isolating layer on an electrically conductive layer is charged without the need for grounding the sheet by simultaneously applying to the photoconductive side of the sheet a corona discharge of one polarity before the developing station and a corona discharge of the opposite polarity after the developing station.

3,779,750
ELECTROPHOTOGRAPHIC ELEMENT WITH A PHOTOCONDUCTIVE COPOLYMER

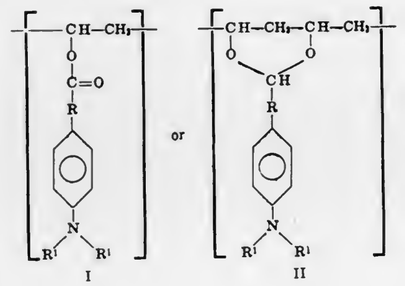
Stewart H. Merrill, and Thomas B. Brantly, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,037

Int. Cl. G03g *5/00*

U.S. Cl. 96—1.5 **14 Claims**

Novel polymeric photoconductors are described which have as a repeating unit thereof a moiety having formula I or II shown below:



wherein R^1 is an aromatic radical and R is an alkylene group having 0 or more carbon atoms. Photoconductive homopolymers and copolymers are described.

3,779,751
LIQUID CRYSTALLINE COMPOSITIONS

Werner E. L. Haas; John B. Flannery, Jr., both of Webster; Bela Mechlowitz, Rochester, and James E. Adams, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 13, 1971, Ser. No. 180,019

Int. Cl. G03g *5/00;* **G01n** *31/00;* **G02f** *1/78*

U.S. Cl. 96—1 E **10 Claims**

Liquid crystalline compositions having a cholesteric mesophase are disclosed. The compositions have extended mesomorphic ranges and are stable at relatively low temperatures. Uses of the novel compositions in various electro-optic applications are also disclosed.

3,779,752
PHOTOGRAPHIC PROCESSES AND PRODUCTS EMPLOYING BENZINDOLE PHTHALEINS AS OPTICAL FILTER AGENTS

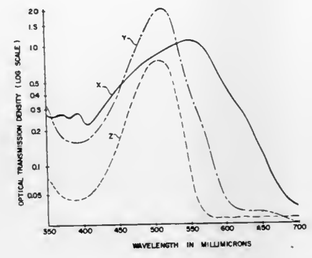
Stanley M. Bloom, Waban, and Paulina P. Garcia, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 30, 1971, Ser. No. 176,053

Int. Cl. G03c *1/84, 5/54, 7/00*

U.S. Cl. 96—3 **45 Claims**

This invention relates to a class of phthalein indicator dyes useful as optical filter agents in photographic processes to protect a selectively exposed photosensitive material from further exposure during processing in the presence of incident light.



Such dyes comprise 3,3-disubstituted phthalides and 3,3-disubstituted naphthalides wherein the 3,3 substituents are benzindole radicals.

3,779,753
PHOTOGRAPHIC PROCESSES AND PRODUCTS EMPLOYING AMINOMETHYL-SUBSTITUTED PHENOLIC PHTHALEINS AS OPTICAL FILTER AGENTS

Stanley M. Bloom, Waban; Elbert M. Idelson, Newton Lower Falls; Myron S. Simon, West Newton, and David P. Waller, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 2, 1971, Ser. No. 177,497

Int. Cl. G03c *5/54, 7/00, 1/84*

U.S. Cl. 96—3 **105 Claims**

This invention relates to a class of phthalein indicator dyes useful as optical filter agents in photographic processes to protect a selectively exposed photosensitive material from further exposure during processing in the presence of incident light. Such dyes comprise 3,3-disubstituted phthalides and 3,3-disubstituted naphthalides wherein the 3,3 substituents are p-hydroxy carbocyclic aryl radicals wherein one or both of the radicals possess a $-CH_2-NRR'$ group ortho to the p-hydroxy group and the $-CH_2-NRR'$ group(s) is capable of rendering the indicator dye substantially non-diffusible in aqueous solution.

3,779,754
PHOTOGRAPHIC PROCESSES AND PRODUCTS EMPLOYING 5-HYDROXY-4-AZAPHENANTHRENYL PHTHALEINS AS OPTICAL FILTER AGENTS

Elbert M. Idelson, Newton Lower Falls, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 2, 1971, Ser. No. 177,513

Int. Cl. G03c *1/84, 5/54, 7/00*

U.S. Cl. 96—3 **45 Claims**

This invention relates to a class of phthalein indicator dyes useful as optical filter agents in photographic processes to protect a selectively exposed photosensitive material from further exposure during processing in the presence of indicident light. Such dyes comprise 3,3-disubstituted phthalides and 3,3-disubstituted naphthalides wherein the 3,3 substituents are para-hydroxy polycyclic aryl radicals possessing a nitrogen atom included in the ring system adjacent to the para-hydroxy group.

3,779,755
PHOTOGRAPHIC PROCESS
Erwin Ranz; Heinz-Dieter Schutz; Hans Schellenberger, and Harald Von Rintelen, all of Leverkusen, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed July 14, 1971, Ser. No. 162,415
Claims priority, application Germany, July 18, 1970, P 20 35 798.6
Int. Cl. G03c 5/04
U.S. Cl. 96—27 E 7 Claims

The brightness and density distribution of an object can be digitally measured photographically by exposing a light-sensitive photographic material at a dot screen or the like and to the object to be measured, and photographically processing the exposed light-sensitive material to produce equidensity images in which different densities of the object are differently represented.

3,779,756
COLOR DEVELOPER SCAVENGER LAYER FOR DIFFUSION TRANSFER DYE IMAGE-RECEIVING ELEMENTS AND SYSTEMS
Charles F. Farran, Rochester, and Eugene F. Wolfarth, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 9, 1970, Ser. No. 88,215
Int. Cl. G03c 5/54
U.S. Cl. 96—29 D 22 Claims

A color developer scavenger layer comprising a photosensitive silver halide emulsion layer containing a nondiffusible coupler which is capable of forming an immobile product upon reaction with oxidized color developer is useful for reducing background stain in a dye image-receiving element of a color diffusion transfer system utilizing immobile couplers which form diffusible dyes. Various timing mechanisms are described for making the scavenger layer operative only after substantial development of the photosensitive element.

3,779,757
SILVER COMPLEX DIFFUSION TRANSFER PROCESS UTILIZING AN AROMATIC DISULFIDE
Emiel Alexander Hofman, Mortsel, and Robert Joseph Pollet, Vremde, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium
Filed Jan. 11, 1972, Ser. No. 216,964
Claims priority, application Great Britain, Jan. 12, 1971, 1,508/71
Int. Cl. G03c 5/54
U.S. Cl. 96—29 R 8 Claims

A method of stabilizing the image-tone of silver images formed according to the silver complex diffusion transfer process is described, which comprises either carrying out the diffusion transfer process in the presence of an aliphatic, aromatic or heterocyclic disulphide having at least one water-solubilizing group in acid or salt form or treating the image-receiving element subsequent to the formation therein of the silver complex diffusion transfer image with a solution of the said disulphide.

3,779,758
PHOTOSENSITIVE PROCESS FOR PRODUCING PRINTED CIRCUITS EMPLOYING ELECTROLESS DEPOSITION
Joseph Polichette, South Farmingdale, N.Y., assignor to Photocircuits Corporation, Glen Cove, N.Y.
Filed Mar. 25, 1969, Ser. No. 810,378
Int. Cl. G03c 5/00, 5/18
U.S. Cl. 96—36.2 9 Claims

An adhesive system which provides adhesive compositions to be applied to an insulating base and form printed images thereon. The adhesive compositions include agents which render them photosensitive, and receptive to electroless metals.

3,779,759
LITHOGRAPHIC PRINTING PLATES WITH LACQUER OF RESOLE-EPOXY RESIN COMBINATION
Leslie Edward Lawson, and Peter John Smith, both of Orpington, England, assignors to Howson-Algraphy Limited, Kent, England
Filed Aug. 17, 1971, Ser. No. 172,602
Claims priority, application Great Britain, Aug. 19, 1970, 40,015/70
Int. Cl. G03f 7/02
U.S. Cl. 96—33 12 Claims

A lacquer for lithographic printing plate production comprises a resinous material dissolved in an organic solvent. The resinous material comprises at least equivalent proportions of a resol resin and an epoxy resin and additional resol resin. The resol resin and the epoxy resin may be present as a mixture or they may be precondensed together. The lacquer readily accepts printing ink and may be stoved.

3,779,760
METHOD OF PRODUCING A STRIPED CATHODE RAY TUBE SCREEN
Senri Miyaoka, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 2, 1972, Ser. No. 294,483
Int. Cl. G03c 5/00
U.S. Cl. 96—36.1 7 Claims

A photographic method of forming light-absorbing stripes on a color cathode ray tube screen between light-emitting phosphor stripes by an optical shadowing technique in which the light-absorbing stripes are wider than the opaque parts of the shadow mask used to create the optical image. In order to create wider shadows, one set of exposures of the photosensitized screen is made from one set of positions of the light sources, and photographic and deposition steps are carried out to produce a first set of light-absorbing stripes. One edge of each stripe is in the desired location. The exposure process is repeated with the light sources slightly displaced so that, upon further development and deposition steps, a second set of light-absorbing stripes is produced that overlaps the first set so that the width of each stripe is correct and both edges are properly located. The space for light emission between adjacent stripes is therefore narrower than the beams that can strike these stripes by passing through the openings in the shadow mask.

3,779,761
PRESENSITIZED LIGHT-SENSITIVE LETTERPRESS PRINTING MAKEREADY
Daniel S. Dustin, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 218,238, Jan. 17, 1972, Pat. No. 3,703,362. This application Sept. 28, 1972, Ser. No. 292,863
Int. Cl. G03c 5/00, 11/00
U.S. Cl. 96—38.2 8 Claims

Novel presensitized light-sensitive makeready sheet material for letterpress printing is provided. This sheet material is comprised of a flexible backing overlaid in ascending order with a thermoexpansible layer and a pigmented light-sensitive system. The system can include negative-acting or positive acting light-sensitive materials.

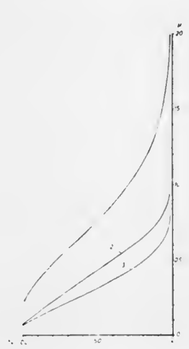
3,779,762
N-SUCCINIMIDE ADDITIVES FOR AZIDE IMAGING SYSTEMS
Hiei Ando, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 147,111, May 26, 1971, Pat. No. 3,716,367. This application Nov. 3, 1972, Ser. No. 303,575
Int. Cl. G03c 5/24
U.S. Cl. 96—48 R 4 Claims

Dry photoimaging processes and compositions employing 1,8-diazidonaphthalene and certain N-substituted succinimide additives in a permeable film-forming plastic are disclosed.

3,779,763
PHENOL COLOR COUPLERS
Philip T. S. Lau, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 3, 1972, Ser. No. 223,375
Int. Cl. G03c 7/00
U.S. Cl. 96—55 36 Claims

5-Aryl thiomethyl-2-amino phenols, 5-aryl sulfonylmethyl-2-amino phenols and 5-aryl selenomethyl-2-amino phenols having utility as color photographic couplers in light sensitive silver halide emulsions or in photographic color developing compositions, as well as photographic elements having coated thereon silver halide emulsion layers containing such couplers are disclosed; also disclosed is a process for producing the couplers by reacting (1) a 2-amino phenol with (2) formaldehyde and (3) an arylthiol, an arylsulfinic acid or an arylselenol.

3,779,764
SILVER HALIDE EMULSIONS FOR THE PRODUCTION OF REVERSAL COLORPHOTOGRAPHIC IMAGES
Franz Moll; Bernard Morcher, both of Koeln-Stammheim; Erich Reckziegel, Leverkusen, and Wilheim Saleck, Schildgen-Bergisch-Gladbach, all of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany
Continuation of Ser. No. 781,832, Dec. 6, 1968, abandoned. This application Nov. 10, 1971, Ser. No. 197,480
Claims priority, application Germany, Dec. 6, 1968, P 15 97 506.1
Int. Cl. G03c 5/50
U.S. Cl. 96—59 2 Claims



A silver halide emulsion mixture for the preparation of colorphotographic reversal images by the imagewise exposure and color development of red- green- and blue sensitive emulsion layers in at least one of which the emulsion is a mixture of a relatively highly sensitive silver halide and a relatively less sensitive silver halide emulsion wherein the less sensitive silver halide emulsion has an average grain size at least 50 percent of the average grain size of the more highly sensitive emulsion.

3,779,765
SILVER HALIDE EMULSIONS CONTAINING COUPLER SOLVENTS
Fred C. McCrossen, and Harland J. Osborn, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 31, 1972, Ser. No. 285,288
Int. Cl. G03c 7/00, 1/40
U.S. Cl. 96—56.5 29 Claims

A method of obtaining color records of improved heat stability, also novel photographic emulsions and elements characterized by using one or more aliphatic or trimellitic- or trimethyl 1,3 pentane-diol diesters, or corresponding polyesters, as permanent coupler solvents.

3,779,766
METHOD FOR DEVELOPING PHOTOGRAPHIC ELEMENTS
Nobuo Tsuji; Tatsuya Tajima; Takushi Miyazako; Yoshinori Tsuchiya, and Fumihiko Nishio, all of 210 Nakanuma, Minami-Ashigara-machi, Ashigara-Kamigun, Japan
Division of Ser. No. 838,812, July 3, 1969, Pat. No. 3,666,470. This application Feb. 25, 1971, Ser. No. 118,990
Claims priority, application Japan, July 4, 1968, 43/46708
Int. Cl. G03c 1/92, 5/26
U.S. Cl. 96—63 11 Claims

There is disclosed a method for developing a photographic element which comprises developing a photographic element having photographic layers in a developer containing a water-soluble fluorescent whitening agent, wherein at least one of said photographic layers contains a particular water-soluble polymer or copolymer. In addition, the instant invention also extends to the photographic printing element employed in the method recited above.

3,779,767
COLOR PHOTOGRAPHIC DEVELOPING METHOD AND DEVELOPER THEREFOR
Fumio Hasegawa; Takeo Emoto, and Satoshi Kurihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 18, 1972, Ser. No. 281,673
Claims priority, application Japan, Aug. 20, 1971, 46/63432
Int. Cl. G03c 5/30, 7/16
U.S. Cl. 96—66 R 6 Claims

In a color photographic developing method of silver halide color photographic materials by developing said materials with a developer solution containing 4-amino-3-methyl-N-ethyl-N-(β-methanesulfonamidoethyl)aniline sesquisulfate monohydrate as a developing agent, the crystallization of the developing agent in the developer solution is prevented by incorporating at least one crystallization preventing agent selected from the group consisting of lactose and hydroxypropylmethyl cellulose into the developer solution.

3,779,768
FLUOROCARBON SURFACTANTS FOR VESICULAR FILMS
Oswald James Cope, Santa Cruz, and Saul W. Chaikin, Menlo Park, both of Calif., assignors to Xidex Corporation, Sunnyvale, Calif.
Continuation-in-part of Ser. No. 55,976, July 17, 1970, abandoned. This application Aug. 26, 1971, Ser. No. 175,348
Int. Cl. G03c 1/52; G03f 7/08; G03c 1/76
U.S. Cl. 96—75 11 Claims

Fluorocarbon surfactants are added to vesicular films to improve the sensitivity thereof, while further maintaining very small vesicle size in the development image which results in films of improved resolution. The fluorocarbon surfactants contain a hydrophobic chain, which terminates in a hydrophilic head portion, which can be any of the types usually employed with hydrocarbon type dispersing agents.

3,779,769

SILVER HALIDE EMULSION CONTAINING A STABILIZING COMBINATION OF A 4-HYDROXY TETRAZAINDENE AND A MONO-BASICALLY SULFATED VINYL COPOLYMER

Edward P. Abel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,195
Int. Cl. G03c 1/28, 1/34, 1/48
U.S. Cl. 96—76 R 15 Claims

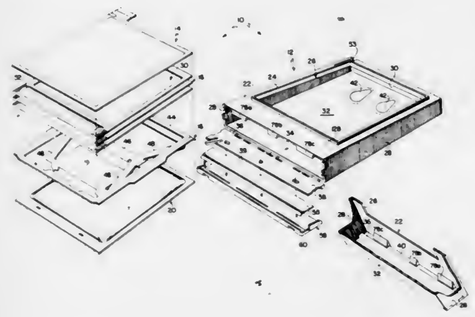
Photographic silver halide emulsions containing speed addenda may be stabilized by a fog-inhibiting combination comprising an azaindene and a monobasically sulfated vinyl copolymer.

3,779,770

PHOTOGRAPHIC FILM ASSEMBLAGE FOR A DIFFUSION TRANSFER FILM

William W. Alston, Somerville; John J. Driscoll, Andover, and Richard R. Wareham, Marblehead, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,701
Int. Cl. G03c 1/48
U.S. Cl. 96—76 C 26 Claims



A photographic film assemblage including a container, a plurality of self-developing film units within the container which are adapted to be sequentially exposed and treated with a liquid processing composition, and members associated with the container so as to form an integral part of the assemblage for controlling the distribution of the liquid processing composition during treatment of a film unit. A photographic apparatus with which the film assemblage is adapted to be used includes structure for locating the distribution control members in operative association with a film unit located in position for exposure and subsequent treatment with the liquid processing composition.

3,779,771

SILVER HALIDE PHOTOGRAPHIC ELEMENTS CONTAINING REMOVABLE ANTIHILATION LAYER

Kenneth G. Gatzke, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 14, 1972, Ser. No. 218,022
Int. Cl. G03c 1/84
U.S. Cl. 96—84 10 Claims

A silver halide photographic element which comprises a polyester support bearing on one surface thereof an antihalation layer which includes a continuous, compatible, solid mixture of anionic polymers including one polymer having a melting point below about 30° C, finely divided conductive carbon, and a particulate phase of a hard, water-insoluble wax.

3,779,772

METHOD OF MAKING EXPANDED FOOD PRODUCTS

John H. Forkner, 2116 Mayfair Dr. West, Fresno, Calif.

Continuation-in-part of Ser. No. 178,381, Sept. 7, 1971. This application Apr. 28, 1972, Ser. No. 248,748
Int. Cl. A23g 3/00
U.S. Cl. 99—86 5 Claims

Method for the manufacture of expanded confection products in which the confection material before expansion is made into the form of an aggregate of granules that are fused or bonded together to form a slug or wafer. This slug or wafer is heated to a plastic state and subsequently cooled. After cooling, the product is placed in contact with a mass of cooked dough, heated to soften the same followed by expanding with the aid of a partial vacuum.

3,779,773

STATIC CHARGE-PREVENTED PHOTOGRAPHIC LIGHT SENSITIVE ELEMENT

Takayuki Inayama; Wataru Ueno, and Nobuo Tsuji, all of 210 Nakanuma, Minani Ashigara-Machi, Ashigara Kamigun, Kanagawa, Japan

Filed Feb. 8, 1972, Ser. No. 224,598
Claims priority, application Japan, Feb. 8, 1971, 46/5062
Int. Cl. G03c 1/82
U.S. Cl. 96—87 A 11 Claims

A static charge-prevented photographic light sensitive element using an antistatic agent in combination with a dichlorophenylphenylsulfone. The combination can reduce the surface resistivity very more than in the case where the antistatic agent is used alone.

3,779,774

SILICONE SURFACTANTS FOR VESICULAR FILMS

Oswald James Cope, Santa Cruz, and Saul W. Chaikin, Menlo Park, both of Calif., assignors to Xidex Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 54,011, July 10, 1970, abandoned. This application May 9, 1972, Ser. No. 251,826
Int. Cl. G03c 1/52; G03f 7/08; G03c 1/76
U.S. Cl. 96—87 R 19 Claims

Silicone surfactants are added to vesicular film vehicles to improve the sensitivity thereof, while further maintaining very small vesicle size in the development image which results in films of improved resolution. Preferred silicone surfactants are polysiloxane-hydroxy substituted alkylenes and polysiloxane-hydroxy substituted oxyalkylenes in which the alkylene and oxyalkylene groups terminate with an amine function.

3,779,775

LIGHT-SENSITIVE MATERIALS

Toshio Chiba; Teruhiko Yonezawa; Jiro Kobayashi, and Goro Akashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 25, 1970, Ser. No. 92,878
Claims priority, application Japan, Nov. 26, 1969, 44-94928
Int. Cl. G03c 1/74, 1/52, 1/72
U.S. Cl. 96—88 9 Claims

A light-sensitive material comprising a support having thereon a porous plastic layer, with a light-sensitive substance and a binder present in the pores of said layer, is disclosed.

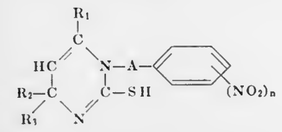
3,779,776

FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING A COLOR COUPLER AND A HETEROCYCLIC MERCAPTAN DESENSITIZER

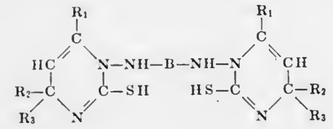
Willy Joseph Vanassche, Aartselaar; Robert Joseph Pollet, Vremde; Hendrik Alfons Borginon, Mortsel, and Herman Alberik Pattyn, Kapellen, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed July 7, 1972, Ser. No. 269,861
Claims priority, application Great Britain, July 30, 1971, 36017/71
Int. Cl. G03c 7/00, 1/36, 1/28, 1/40
U.S. Cl. 96—55 14 Claims

A direct-positive photographic color element is described wherein the fogged silver halide emulsion comprises a color coupler and a desensitizing agent or precursor of such desensitizing agent wherein said desensitizing agent has one of the following general formulae, a tautomeric form thereof or is a corresponding disulphide :



and



wherein:
R_1 is hydroxyl or C_1–C_5 alkyl,
R_2 is hydrogen or C_1–C_5 alkyl,
R_3 is C_1–C_5 alkyl or aryl,
A is a single bond or NH,
B is a phenyl or diphenyl sulphone group in which the or both phenyl group(s) is (are) substituted with one or more nitro groups, and
n is 1, 2, or 3.
The desensitizing agents are highly compatible with color couplers.

3,779,777

SILVER HALIDE EMULSION SENSITIZED WITH A POLYHEDRAL HALOBORANE

John Howard Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 9, 1971, Ser. No. 197,166
Int. Cl. G03c 1/28
U.S. Cl. 96—107 10 Claims

Photographic silver halide, negative-working developing-out emulsions are prepared which have their sensitivity increased by the addition during the precipitation of the silver halides, of at least one polyhedral haloborane containing 10 or 12 boron atoms, or a derivative thereof, which may contain heteroskeletal atoms such as carbon, nitrogen and sulfur and in which at least some or all of the hydrogen atoms normally attached to the boron atoms have been replaced with halogen atoms, e.g., chlorine, bromine or iodine.

3,779,778

PHOTOSOLUBILIZABLE COMPOSITIONS AND ELEMENTS

George H. Smith, Saint Paul, and James A. Bonham, Pine Springs, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1972, Ser. No. 224,918
Int. Cl. G03c 1/68
U.S. Cl. 96—115 R 25 Claims

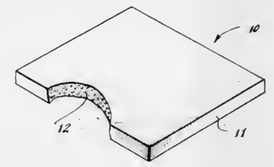
Novel photosolubilizable compositions and their preparation are described. These compositions comprise (1) a water-insoluble compound containing one or more acid-degradable groups, and (2) a photoinitiator comprising a photolyzable acid progenitor. Presensitized elements utilizing these photosolubilizable compositions are also provided.

3,779,779

RADIATION ETCHABLE PLATE

Robert M. Landsman, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 20, 1971, Ser. No. 145,315
Int. Cl. G03c 5/00
U.S. Cl. 96—36.3 9 Claims



A plate blank adapted to be selectively etched by radiant energy to form a desired relief pattern thereon for forming a relief printing plate or for decorative or artistic purposes consists of a sheet of thermoplastic material having voids therein that collapses within its own volume when heated to its softening temperature by applying a particular type of radiant energy, such as infrared radiation. A template of the desired pattern, made of material which reflects the type of radiant energy to be applied for collapsing the sheet material, is placed or formed on the surface of the sheet. The radiant energy thereafter heats and collapses the exposed areas of the sheet but is reflected from the areas that are shielded by the reflective template patterns which are therefore left in relief.

3,779,780

WRITING INK CONTAINING NONANOIC ACID

John J. Dyson, Janesville, Wis., assignor to The Parker Pen Company, Janesville, Wis.

Filed June 7, 1971, Ser. No. 150,783
Int. Cl. C09d 11/00, 11/02, 11/16
U.S. Cl. 106—27 7 Claims

A thin writing ink having a viscosity not exceeding 50 centipoises at 25° C. comprising a dispersion of a pigment in a molecular associated liquid vehicle wherein the total solids in said ink are between about 0.05% and 35% by weight.

3,779,781
COPPER ALUMINOSILICATE GLASS COMPOSITIONS

Nils Tryggve E. A. Baak, Princeton, N.J., and Charles F. Rapp, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 552,992, May 25, 1966, abandoned, which is a continuation-in-part of Ser. No. 465,381, June 21, 1965, abandoned. This application Nov. 12, 1970, Ser. No. 88,971

Int. Cl. C03c *3/04, 3/06, 3/08*

U.S. Cl. 106—52 **38 Claims**

Copper aluminosilicate glass compositions are disclosed possessing desirable properties including low coefficients of thermal expansion, relatively low melting temperatures, good resistance to thermal shock, good characteristics and good chemical durability. The glass compositions are based on the copper aluminosilicate glass system containing as the essential ingredients from 1.5 to 35 mole percent copper oxide, together with from 0.5 to 30 mole percent alumina and 50 to 94 mole percent silica. The remaining balance consists of other compatible ingredients used in glass making. Ternary compositions of copper oxide, alumina and silica contain at least 60 mole percent silica.

3,779,782
BENTONITE BINDER COMPOSITION

Donald V. Erickson, Virginia, and Eugene L. Palusky, Eveleth, both of Minn., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 20, 1971, Ser. No. 145,575

Int. Cl. C04b *33/12*

U.S. Cl. 106—72 **6 Claims**

A bentonite binder composition and method of preparation is disclosed. The binder composition is particularly useful for pelletizing iron ore fines. It is prepared by intimately combining and mixing wet bentonite in a stockpile with soda ash, the moisture in the wet bentonite bringing about reaction to form an improved binder after a suitable aging period.

3,779,783
MELTABLE COATING COMPOSITIONS, PARTICULARLY FOR FOODSTUFFS AND PHARMACEUTICAL PREPARATIONS

Heinrich Bunger, and Gustav Renckhoff, both of Witten-Bommern, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed June 18, 1971, Ser. No. 154,623

Claims priority, application Germany, Dec. 30, 1970, P 20 64 373.6; June 20, 1970, P 20 30 429.4

Int. Cl. C08b

U.S. Cl. 106—171 **13 Claims**

A coating composition especially suitable for foodstuffs and pharmaceutical preparations which comprises an acylated glyceride having an iodine value below 12 admixed in certain proportions with a cellulose propionate having an acetyl content less than about 6% by weight, a hydroxyl content less than about 3.0% by weight and a content of acyl groups having more than 3 carbon atoms of less than about 10% by weight.

3,779,784
COMPOSITE FIBERS OF ALKALI METAL HEXATITANATE AND RUTILE TiO_2

Robert Steele Emslie, deceased, late of Chadds Ford, Pa. (by Jean McPhaul Emslie, administratrix), assignor to E. I. Du-Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1972, Ser. No. 241,681

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **1 Claim**

A fibrous material is provided which is composed of composite fibers having a number average diameter of up to about 10 microns and an average length/diameter ratio of at least about 5/1. The fibers have a core of alkali metal hexatitanate



encapsulated by a shell of rutile TiO_2 and are essentially inert to aqueous 5% by weight HF solution. The fibrous material is particularly useful in the reinforcing of plastics.

3,779,785
FREE FLOWING WAX COATED PARTICULATE ETHYLENE-VINYL ACETATE COPOLYMERS

Claude J. Stiles, Tuscola, and Joseph Fischer, Urbana, both of Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed May 26, 1971, Ser. No. 147,252

Int. Cl. B44d *1/02*

U.S. Cl. 117—4 **8 Claims**

Particles of ethylene-vinyl acetate copolymers are coated with a low melting point hydrocarbon wax to render the particles tackless and free flowing. The wax is applied to the copolymer particles in an aqueous emulsion.

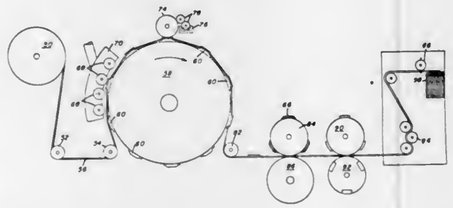
3,779,786
METHOD FOR MANUFACTURING APERTURE CARDS

Frederick F. Tone, Halley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 60,490, Aug. 3, 1970. This application Jan. 14, 1972, Ser. No. 217,880

Int. Cl. B44c *1/24*; **G09f** *1/10*

U.S. Cl. 117—4 **8 Claims**



A method of producing an aperture record card from a substantially continuous web of cardstock of predetermined thickness, each of the record cards having a shouldered aperture arranged to receive a film chip over the aperture. The method comprises the combination of the steps of supplying a substantially continuous web of the cardstock and conveying the web along a predetermined path. The web is embossed as it is moved along the path, for example about a rotating embossing drum, to raise a portion thereof above the surface of the surrounding web, with the center portion higher than the peripheral portion of the web. The web is then ground to form a rectangular ground area on the raised surface of the web and

a layer of a fluid-impermeable material, such as molten thermoplastic, is applied to the ground area of the web to seal and protect the surface of the web. The ground area is de-embossed and an aperture is formed through the web in the ground area.

3,779,787
METHOD FOR PRODUCING TOBACCO-SMOKE FILTERS

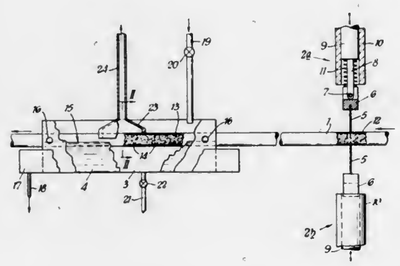
Fred Haslam; Henry George Horsewell, and Paul Henry Gannaway, all of Hampshire, England, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Sept. 17, 1971, Ser. No. 181,353

Claims priority, application Great Britain, Oct. 7, 1970, 47,706/70

Int. Cl. B44d *1/32*

U.S. Cl. 117—11 **4 Claims**



The invention is concerned with a method for the production of tobacco-smoke filters in which an additive is introduced into a rod of tobacco-smoke filter material from a liquid additive bath by means of holes pierced, for example by needles, in the said rod and creating a pressure differential between the rod and bath whereby the additive is drawn into the rod through the holes. The filter material may be an extruded open-cell foam material, such as polyethylene or polypropylene material. The pierced rod may be passed through a bath of the additive in such a manner that the additive is taken into the rod through the holes.

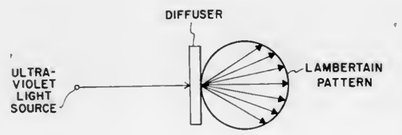
3,779,788
TRANSMITTING AND REFLECTING DIFFUSER

Lloyd S. Keafer, Jr., Yorktown; Ernest E. Burcher, and Leonard P. Kopia, both of Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 38,816, May 19, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,803

Int. Cl. C23c *13/04*; **C03c** *3/06*

U.S. Cl. 117—33.3 **4 Claims**



An ultraviolet grade fused silica substrate is coated with vaporized fused silica. The coating thickness is controlled, one thickness causing ultraviolet light to diffuse and another thickness causing ultraviolet light to reflect a near Lambertian pattern.

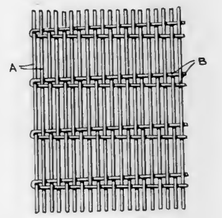
3,779,789
PRODUCTION OF PERVIOUS LOW DENSITY CARBON FIBER REINFORCED COMPOSITE ARTICLES

Im Keun Park, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 20, 1971, Ser. No. 135,698

Int. Cl. B44d *1/092*

U.S. Cl. 117—46 CB **9 Claims**



The efficient production of pervious low density carbon fiber reinforced composite articles is made possible through the use of the present invention. A fibrous open weave tape (as described) which is capable of undergoing conversion to a carbonaceous fibrous material is continuously passed in the direction of its length through a series of heating zones to form a fibrous carbon tape (preferably of graphitic carbon) wherein an open weave construction is maintained. At least one layer of the resulting fibrous open weave carbon tape may be impregnated with a thermosetting resinous material, and subsequently cured to form a pervious composite article.

The composite articles of the present invention exhibit a high specific modulus and strength, and are extremely lightweight. The lightweight composite articles may be utilized as structural elements, and are particularly suited for use as a facing sheet of an acoustic sandwich liner which serves as a noise suppression function in jet engines.

3,779,790
METAL PLATING OF SYNTHETIC POLYMERS

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 15,910, March 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 614,541, Feb. 8, 1967, abandoned. This application Dec. 8, 1971, Ser. No. 206,205

Int. Cl. C23c *3/02*

U.S. Cl. 117—47 A **20 Claims**

Synthetic polymers, having a non-macroporous surface, are plated with metals by pretreating the non-macroporous polymer surface with phosphorus in an organic solvent to deposit phosphorus at the polymer surface. The treated surface is then contacted with a metal salt or metal salt complex, to form a metal-phosphorus compound. The resulting surface is then either conductive or is capable of catalyzing the reduction of a metal salt to form a conductive surface. The resulting surfaces are readily electroplated by conventional techniques.

3,779,791
METHOD OF HEATING PAPER
Theodor Ploetz, Hoesel, and Edeltraud Solich, Viersen, both of Germany, assignors to Feldmuhle Anlagen-und Produktionsgesellschaft mit beschrankter Haftung, Duesselforf-Oberkassel, Germany
Continuation-in-part of Ser. No. 837,879, June 30, 1969, abandoned. This application Aug. 25, 1971, Ser. No. 174,987
Claims priority, application Germany, July 5, 1968, P 17 61 775.3
Int. Cl. A61l *13/00*
U.S. Cl. 21—58 4 Claims

Paper and paperboard essentially consisting of cellulosic fibers may be heated to temperatures greatly in excess of 100°C, as during dry sterilization, without becoming brittle or disintegrating, when impregnated with 2 percent to 25 percent of polyethyleneglycol of molecular weight 1,000 to 6,000 or polypropylene glycol. The impregnated paper is sterilized by heating to temperature of at least 180°C for a period of 40 minutes.

3,779,792
METHOD OF PROTECTING GLASS AGAINST FOGGING
Artur Stoy, and Renata Urbanova, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praha, Czechoslovakia
Filed Mar. 8, 1971, Ser. No. 122,225
Claims priority, application Czechoslovakia, Mar. 13, 1970, 1672-70
Int. Cl. C09k *3/18*; B32b *17/10*
U.S. Cl. 117—72 6 Claims

A method of protecting glass from becoming fogged by water or ice from condensed water vapour of the ambient atmosphere. The glass has applied thereto at least on one surface at least one coating comprising a hydrophilic polymeric salt having one ion covalently bonded and the other free. This coating is conveniently applied upon an intermediate base comprising a hydrophobic polymer which has good adhering properties with the glass surface.

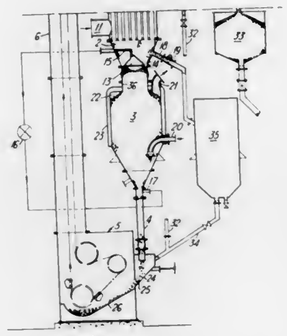
3,779,793
SCALE CONTROL
James W. Hughes; Thomas E. Sample, Jr., and Jack F. Tate, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 20, 1971, Ser. No. 210,137
Int. Cl. C23f *15/00*; B32b *27/40*
U.S. Cl. 117—72 18 Claims

This invention concerns methods of imparting properties of scale resistance to surfaces upon which adherent scale is normally prone to form during contact with mineralized waters through the use of novel, polyurethane-type resins, characterized by containing pendant polyoxyalkylene chains attached to a basic polyurethane skeletal network wherein the polyurethane is formed utilizing a blocked isocyanate.

3,779,794
POLYURETHANE SEALANT-PRIMER SYSTEM
G. William De Santis, East Brunswick, N.J., assignor to Essex Chemical Corporation, Clifton, N.J.
Division of Ser. No. 16,924, March 5, 1970, Pat. No. 3,707,521. This application Jan. 31, 1972, Ser. No. 222,398
Int. Cl. B32b *27/40*
U.S. Cl. 117—72 2 Claims

Polyurethane sealant-primer system comprising an isocyanate-reactive surface primer composition and a moisture-curable polyurethane sealant composition; method of making cured polyurethane seals with said system; cured polyurethane seals produced thereby.

3,779,795
DISTRIBUTION OF PELLETS
David Evans, and Alexander Bowen Simpson, both of Swansea, Wales, assignors to The International Nickel Company, Inc, New York, N.Y.
Filed June 23, 1971, Ser. No. 155,869
Claims priority, application Great Britain, July 7, 1970, 32,964/70
Int. Cl. B44d *1/02*; C23c *11/02*
U.S. Cl. 117—100 M 5 Claims



Variously sized metal pellets that are produced by decomposition of metal-containing gas, in process wherein pellets are continuously recirculated through a preheater and a reaction chamber, are preheated uniformly and then radially mixed after issuing from the preheater and before entrance to the reaction chamber.

3,779,796
SODIUM PROPIONATE COATED WITH SORBITAN HIGHER FATTY ACID ESTER AND PROCESS FOR ITS PREPARATION
Ryuzo Ueno, Nishinomiya; Tetsuya Miyazaki, Itami; Shigeo Inamine, Nishinomiya, and Saburo Kishi, Osaka, all of Japan, assignors to Ueno Fine Chemical Industries, Ltd., Osaka, Japan
Filed July 21, 1971, Ser. No. 164,808
Claims priority, application Japan, July 24, 1970, 45/64295
Int. Cl. B44d *1/00*, *5/08*
U.S. Cl. 117—100 A 5 Claims

Non-caking sodium propionate is obtained by coating sodium propionate with a sorbitan higher fatty acid ester such as sorbitan monolaurate. The coating is performed by adding 10–500 ppm by weight of the sorbitan higher fatty acid ester to an aqueous solution of sodium propionate, removing the aqueous medium from the resultant mixture, and drying it. An organic medium may be used instead of the aqueous medium. This coating prevents sodium propionate from caking during storage.

3,779,797
METHOD FOR THE IMPREGNATION AND SURFACE TREATMENT OF POROUS BOARD TYPE PRODUCTS
Alpo Eino Makinen, Touruniemi, Jyvaskyla, Finland
Filed Sept. 20, 1968, Ser. No. 761,128
Int. Cl. B44d *1/02*
U.S. Cl. 117—116 2 Claims

The method has been applied on board type products, which have been subjected to low pressure and effecting impregnation rapidly within a few seconds and polymerisation in hot press during 1 – 5 minutes, the impregnating medium generally consisting of a mixture of unsaturated polyester and styrene monomer. By regulating underpressure and viscosity and by using fillers the plastic quantity is regulated. The penetration depth of the impregnation medium is further controlled by regulating the temperature of the impregnating medium and the impregnating time. Improved absorption is achieved by vibrating the impregnating medium or the board.

3,779,798
CORROSION RESISTANT TINPLATE
Margaret A. Clinton, Pittsburgh, and Martin G. H. Wells, Bethel Park, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 730,669, April 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 560,315, June 24, 1966, abandoned. This application July 17, 1972, Ser. No. 272,609
Int. Cl. C23c *35/00*
U.S. Cl. 117—131 1 Claim

Tinplate of improved corrosion resistance comprises a steel base with a microstructure between the limits of martensitic-ferritic and fully martensitic provided with a coating of tin and an interfacial tin-iron alloy layer.

3,779,799
COATED WOVEN TEXTILE PRODUCT AND PROCESS THEREFOR
C. Trowbridge Kennedy; David J. Stout, and Harold E. Dodds, Jr., all of Waynesboro, Va., assignors to Thiokol Chemical Corporation, Bristol, Pa.
Continuation of Ser. No. 45,938, June 12, 1970, abandoned. This application Sept. 16, 1971, Ser. No. 181,226
Int. Cl. B32b *27/06*
U.S. Cl. 117—161 UZ 19 Claims

In a primary backing woven from synthetic yarns for tufted fabrics and other products, such as carpet and the like, an enhancement in the carpet and/or tufted fabrics tuft raveling resistance capabilities is obtained when the backing is coated with a polymeric substance which effectively reduces such tuft raveling to an acceptable degree. The preferred coating material is a copolymer of ethylene vinyl acetate, and is applied to the backing by any known method including spraying, immersing, brushing or rolling.

3,779,800
COATINGS CONTAINING PLASTIC PIGMENTS
Edward J. Heiser, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed May 27, 1968, Ser. No. 732,100
Int. Cl. D21h *1/28*; C08f *33/08*
U.S. Cl. 117—155 UA 2 Claims

A retain weight coating comprising a convenient binder such as starch and small colorless plastic particles which remain discrete and retain a diameter of about one wavelength of visible light. The coating, prepared by dispersing the plastic particles in an aqueous media containing the binder, may then be applied to a paper substrate in a conventional manner.

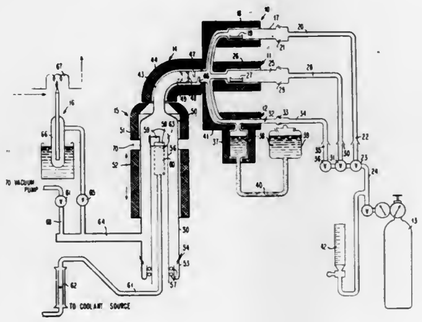
3,779,801
HIGH MOBILITY EPITAXIAL LAYERS OF PBTE AND $PB_{1-x}SN_xTE$ PREPARED BY POST-GROWTH ANNEALING
Henry Halloway, West Bloomfield, and Eleftherios Miltiadis Logothetis, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 26, 1971, Ser. No. 128,569
Int. Cl. B44c *1/18*; C23c *11/00*
U.S. Cl. 117—201 8 Claims

This invention teaches the preparation of lead tin telluride films when such films are deposited upon a cleaved base of barium fluoride. Barium fluoride supported epitaxial films of lead tin telluride are especially useful as a detector of radiation in the infra red region centered upon the 10 micron (100,000 Angstrom) wave length. Post-growth annealing has been found to give n-type layers of PbTe and $Pb_{1-x}Sn_xTe$ (with $x \approx 0.2$) with much larger low-temperature Hall mobilities than as-grown layers.

3,779,802
PROCESS FOR THE MANUFACTURE OF A WELDING WIRE, AND WELDING WIRE
Dominique Thomas Francois Streel, Ougree, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdoz en abrege "Cockerill", Seraing-lez-Liege, Belgium
Filed June 17, 1971, Ser. No. 153,952
Claims priority, application Belgium, June 24, 1970, 42,869
Int. Cl. B23k *35/00*; C23g *1/00*
U.S. Cl. 117—207 4 Claims

A process for the manufacture of a welding wire having a core of base welding steel provided with a covering of an additional element, which comprises depositing a coating of said additional element directly onto the core of base welding steel. Preferably the additional element is deposited by the method of evaporation under vacuum.

3,779,803
INFRARED SENSITIVE SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE
Robert E. Lee, Essex Junction, Vt.; Philip S. McDermott, Athens, Pa., and Edward S. Pan, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 877,312, Nov. 17, 1969, Pat. No. 3,642,529. This application Nov. 22, 1971, Ser. No. 201,224
Int. Cl. H01l *7/36*; B44d *1/18*
U.S. Cl. 117—211 4 Claims

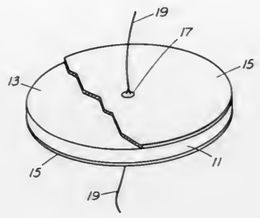


An infrared sensitive photoconductive material is produced by growing a ternary compound of the formulation $Hg_{(1-x)}Cd_xTe$ from a gaseous mixture of mercury, cadmium and tellurium onto a substrate which promotes polycrystalline growth and is chemically inert vis-a-vis the constituent gases. Suitable substrate materials are quartz, sapphire, and certain types of glass which are non-meltable at growth temperatures of the ternary compound. The method preferably grows the polycrystalline material from a gaseous mixture of mercury, cadmium and tellurium heated to a temperature which inhibits binary combinations and then is rapidly cooled to supersaturation very close to the surface of a solid amorphous substrate material although crystalline substrates may be used provided the lattice structure in growth is incompatible with the lattice of the ternary compound.

3,779,804
ELECTRODES FOR CERAMIC BODIES

Stephen F. Urban, Erie, N.Y., assignor to National Lead Company, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,632
Int. Cl. B44d 1/18; C23b 5/64
U.S. Cl. 117—212 7 Claims

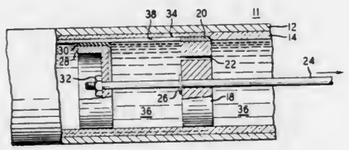


Inexpensive, solderable ohmic electrodes are produced on a semiconductive ceramic body by applying to each of the opposite faces of said body a coating of a liquid composition which consists of the reaction product of fine aluminum powder and an aqueous vehicle which contains a phosphate-chromate reaction product, drying said coatings and maturing them by heating said body in air to a temperature from about 590° to 950° C and thereafter applying, to at least a portion of the areas coated by said matured composition, a silver electrode paste and refiring said body at a lower temperature.

3,779,805
METHOD OF MAKING WAVEGUIDE MODE FILTER

Dietrich Anselm Alsberg, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1971, Ser. No. 144,748
Int. Cl. B44d 1/02, 1/18
U.S. Cl. 117—212 13 Claims



A waveguide mode filter comprising a dielectric-lined waveguide having a series of electrically lossy vanes in the lining parallel to the waveguide axis dissipates longitudinal and radial current components produced by unwanted modes and thereby suppresses such modes. A method of forming the vanes includes the steps of flooding the dielectric-lined waveguide interior with a solution containing lossy particles, drawing a cutting head through the waveguide to slice the dielectric lining so that the solution flows into the incisions and is trapped therein, and drawing a wiper through the waveguide to remove the excess solution.

3,779,806
ELECTRON BEAM SENSITIVE POLYMER T-BUTYL METHACRYLATE RESIST

Edward Gipstein; William Ainslie Hewett, both of Saratoga, Calif., and Harold A. Levine, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,875
Int. Cl. B44d 1/18; G03c 1/64
U.S. Cl. 117—212 16 Claims

Patterns, such as etch resistant resists, masks, are formed by degradation of a t-butyl methacrylate polymer coating, or film, under an electron beam in a predetermined pattern, followed by removal with a solvent, of the electron degraded product in the exposed areas.

3,779,807
PROCESS FOR APPLYING MULTIPLE MICROELECTRONIC LAYERS TO SUBSTRATE

Lynn J. Taylor, Haslett, and John D. Grier, Temperance, both of Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

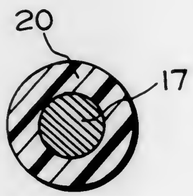
Filed Oct. 12, 1971, Ser. No. 188,475
Int. Cl. B44d 1/14
U.S. Cl. 117—215 22 Claims

There is disclosed a process for applying multiple microelectronic layers to a substrate which comprises applying at least two different fugitive vehicle systems to a substrate, each system comprising at least one microelectronic material dispersed in a film-forming, pyrolyzable, polymeric binder and a solvent for the binder, each solvent being capable of removal from the substrate at a temperature below the pyrolyzing temperatures of the polymer in its respective system and the polymer in each previously applied system. The polymeric binder of each applied system is insoluble in the polymeric binder and solvent of the subsequently applied system. Each solvent is appropriately vaporized from the substrate so as to form at least two layers of microelectronic material dispersed in a film of binder.

3,779,808
POLYESTER COATED WIRE

Steve G. Cottis, Amherst; Bernard E. Nowak, Lancaster, and James Economy, Buffalo, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 828,652, May 28, 1969, Pat. No. 3,669,738. This application Oct. 7, 1971, Ser. No. 187,339
Int. Cl. B44d 1/42; C09d 3/68
U.S. Cl. 117—232 8 Claims

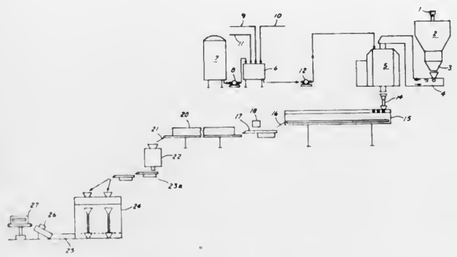


A wire insulated with an impervious oxybenzoyl polyester coating which can be produced by drawing the wire having a porous coating through a die.

3,779,809
METHOD OF PRODUCING FREEZE GROUND BROWN SUGER AND PRODUCT OF SAID METHOD

Marshall Battin, Golden, and Brooks M. Stein, Loveland, both of Colo., assignors to The Great Western Sugar Company, Denver, Colo.

Filed Aug. 20, 1971, Ser. No. 173,412
Int. Cl. C13f 3/00
U.S. Cl. 127—63 11 Claims

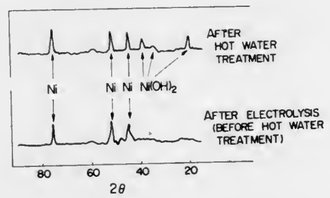


A method of increasing the flowability of brown sugar, which facilitates packaging of such sugar, which involves freezing a brown sugar mix within a range of from −50°C. to −10°C., preferably to about −20°C. to establish a brittle and hard frozen consistency. The hard frozen brown sugar is then subjected to a size reduction action to establish a grain size approximately the same as in the brown sugar before freezing. An end product is attained which has a bulk density of about 41 pounds per cubic foot and has free-flowing properties to facilitate packaging.

3,779,810
METHOD OF MAKING A NICKEL POSITIVE ELECTRODE FOR AN ALKALINE BATTERY

Koji Kanetsuki, Neyagawa; Minoru Yamaga, and Hiromichi Ogawa, both of Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 56,474, July 20, 1970, abandoned. This application May 18, 1972, Ser. No. 254,411
Int. Cl. H01m 43/04
U.S. Cl. 136—29 7 Claims

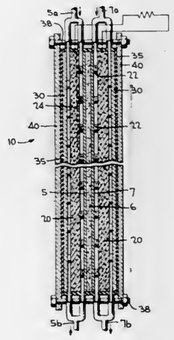


A method of making a nickel positive electrode for use in an alkaline battery by immersing, a porous sintered plaque of nickel in an aqueous solution of a nitrate, nitrite nitro compound, amino compound, ammonate or the like of nickel, cathodically polarizing the nickel plaque so as to cause the continuous deposition of an active material forming substance in the pores of the plaque without the accompanyment of the undesirable generation of hydrogen and then immersing the cathodically polarized nickel plaque in water above 65° C, preferably above 95° C, to convert the active material forming substance into nickel hydroxide and also to convert a part of the metallic nickel constituting the plaque into nickel hydroxide thereby filling the pores of the plaque with the active material within a short period of time with high efficiency.

3,779,811
MATRIX-TYPE FUEL CELL

Calvin L. Bushnell, South Glastonbury, and James K. Stedman, Glastonbury, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 16, 1971, Ser. No. 124,862
Int. Cl. H01m 27/02
U.S. Cl. 136—86 R 10 Claims

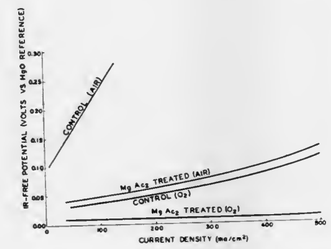


A compact electrochemical cell is described comprising an anode, a cathode, a matrix containing an ion-conductive electrolyte between the anode and cathode, and porous metal plates containing porous pins positioned adjacent each of said anode and cathode in order that the pins of the plates are in contact with said anode and cathode over the limited surface area of the pins. The electrolyte volume of the cell is controlled by electrolyte movement through the pins of the porous plate, thereby stabilizing the electrochemical performance of the cell.

3,779,812
HYDROPHILIC TREATMENT FOR HYDROPHOBIC GAS ELECTRODES

Romeo R. Witherspoon, Utica, Mich.; R. J. Wallace, and Lawrence B. Plant, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1970, Ser. No. 86,058
Int. Cl. H01m 13/08
U.S. Cl. 136—120 FC 8 Claims



Coating and infiltrating hydrophobic-type, gas electrodes with an alcohol-soluble, alkaline earth metal carboxylate and subsequently converting the carboxylate to its corresponding

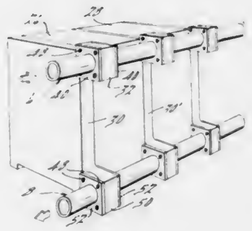
oxide or hydroxide for subsequent use in alkaline electrolyte gas depolarized cells. The alkaline earth metal oxide/hydroxide impregnated electrode has a plurality of electrolyte wettable paths extending into the otherwise hydrophobic structure which effectively extends the reactive surface area of the electrode without substantially reducing its hydrophobic properties.

3,779,813

MANIFOLD SYSTEM FOR ELECTRICAL ENERGY STORAGE SYSTEMS

Eugene W. Rabut, Utica, Mich., assignor to Occidental Energy Development Company, Madison Heights, Mich.

Filed Aug. 21, 1972, Ser. No. 282,185
Int. Cl. H01m 7/02
U.S. Cl. 136—161 **6 Claims**



A manifold system for circulating an aqueous electrolyte through a plurality of chambers of a plurality of cells of a secondary electrical energy storage system and which manifold system facilitates an assembly and disassembly of the cells and further assures a substantially uniform distribution of electrolyte to each of the individual cells.

3,779,814

THERMOELECTRIC DEVICES UTILIZING ELECTRICALLY CONDUCTING ORGANIC SALTS

Malcolm G. Miles, Ladue; James D. Wilson, University City, both of Mo., and Morrel H. Cohen, Chicago, Ill., assignors to Monsanto Company, St Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 318,447
Int. Cl. H01v 1/24
U.S. Cl. 136—236 **10 Claims**

Thermoelectric device such as generators and refrigerators are disclosed having as the N-type semiconductor material compounds or compositions having a cation which is tetrathiafulvalene or 2,5-cyclohexadiene-1,4-diylidene-bis-1,3-thiole or both, and an anion which is 7,7,8,8-tetracyano-p-quinodimethane or 11,11,12,12-tetracyano-2,6-naphthaquinodimethane or both.

3,779,815

APPLYING CHROMIC ACID-AMINO ACID, OR LACTAM, OR AMIDE COATING COMPOSITIONS TO METALS

Donald N. Hamilton, Painesville, and Alexander W. Kennedy, Chardon, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 41,665, May 21, 1970, abandoned, which is a continuation of Ser. No. 721,601, April 16, 1968, abandoned. This application Jan. 3, 1972, Ser. No. 215,085
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 **3 Claims**

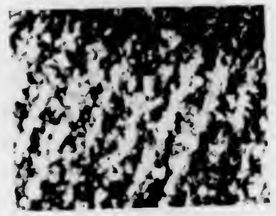
Corrosion-inhibiting, hexavalent-chromium-containing coating compositions for ferruginous metal surfaces are prepared with chromic acid in combination with a compound containing the structure —CONH—, or amino acid, or their mixtures, which are free from sulphur, hydroxyl, or halogen groups. After coating, the compositions are cured on the ferruginous surface at elevated temperature to augment the bonding of the resulting residue to such surface. Subsequently, surfaces containing typically less than 600 milligrams per square foot of the residue exhibit enhanced paint adhesion and, for weldable substrates retain weldability without deleterious effect to the corrosion resistance imparted by the residue.

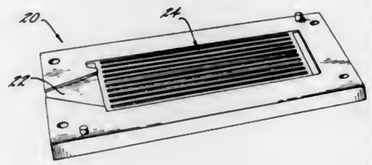
3,779,816

METHOD OF MAKING MOLD FOR FORMING OBJECTS

George W. Mao, St. Paul, Minn., assignor to Gould Inc., Mandota Heights, Minn.

Filed Aug. 26, 1971, Ser. No. 175,122
Int. Cl. C23f 7/06
U.S. Cl. 148—6.3 **6 Claims**





A mold for forming objects such as battery grids includes a cavity having a titanium layer with an adherent titanium oxide layer integrally formed thereon. The oxide layer is formed by heating the titanium layer under controlled oxidizing conditions to provide an oxide layer of a specified thickness which is tenaciously adherent to the unoxidized titanium.

3,779,817

METHOD OF PRODUCING QUENCHED AND TEMPERED HOLLOW STEEL STRUCTURAL MEMBERS OF POLYGONAL CROSS SECTION

Wade D. Brunko, Library, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1972, Ser. No. 291,854
Int. Cl. C21d 9/08
U.S. Cl. 148—12.4 **8 Claims**

Method of producing quenched and tempered hollow steel structural members of polygonal cross section includes the steps of hot rolling a hollow steel tube, austenitizing the tube, water quenching it, reheating the tube to a tempering temperature just below the lower critical transformation temperature, and rolling the tube to the desired polygonal cross section while holding the temperature of the member at the tempering temperature.

3,779,818

METHOD FOR PREVENTING THE FORMATION OF RUST ON THE SURFACE OF COILED STEEL STRIP AND AN INHIBITOR FOR ACCOMPLISHING SAME

Carlyle E. Shoemaker, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation of Ser. No. 830,120, June 3, 1969, abandoned. This application Apr. 1, 1971, Ser. No. 130,446
Int. Cl. C23f 7/00
U.S. Cl. 148—6.14 R **15 Claims**

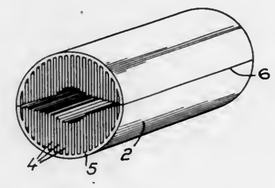
Method for preventing the formation of rust on coiled steel comprising temper rolling annealed cold rolled steel strip, coating the steel strip with a liquid phase-vapor phase corrosion inhibitor and coiling the steel strip. The liquid phase-vapor phase inhibitor consists of an aqueous solution of a non-volatile nitrite of an alkali metal or an alkaline earth metal or volatile amine which is soluble in water and not subject to auto-decomposition at ambient temperature. The volatile base compounds are, for example, ammonium hydroxide or ammonium carbonate. The nitrite radical is present in an amount of about 0.07% by weight up to the solubility of the nitrite compound. The base compound is about 0.1% by weight up to about 25% by weight of the aqueous solution. The aqueous solution has a pH of not less than about 8 to about 13.

3,779,819

PROPELLANT POWDER CHARGE HAVING FINNED INTERNAL CONFIGURATION

Jean-Pierre Thomas, and Jean Ramond, both of Saint-Medard-en-Jalles, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 22, 1971, Ser. No. 210,752
Claims priority, application France, Dec. 22, 1970, 7046134
Int. Cl. C06b 3/02
U.S. Cl. 149—2 **13 Claims**



A method of manufacturing a finned, one-piece propellant powder charge in which an extruded or moulded cylindrical block of propellant powder is split into two or more cylindrical sectors along one or more planes containing the longitudinal axis of the block. Each sector is machined to form longitudinal grooves parallel to a plane of symmetry of each sector so as to divide each sector into parallel longitudinal fins integrally connected at their bases to the rim of the respective sector. The machined sectors are then joined to reconstitute the cylindrical block and the sides of the reconstituted block is then coated with a combustion inhibitor.

3,779,820

PROPELLENT CHARGE COMPRISING NITROCELLULOSE

Robert Reid Stevely, Saltcoats, and William Snodgrass Webster, Beith, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 21, 1972, Ser. No. 282,057
Claims priority, application Great Britain, Sept. 16, 1971, 43,188/71
Int. Cl. C06b 5/00, 5/02
U.S. Cl. 149—2 **6 Claims**

A dry compacted Caseless Propellant Charge comprising in addition to the usual constituents of a propellant explosive, a proportion of nitrocellulose having an average nitrogen content of 11.0 to 12.0 percent by weight.

3,779,821

PRILLED AMMONIUM NITRATE COMPOSITION OF IMPROVED ANTI-SCATTERING PROPERTIES

Konoshuke Fujiki, Tokyo; Katsuaki Inafuku, Kitakyushu; Hiroshi Shimizu, Kitakyushu; Toshiharu Shigematsu, Kitakyushu, and Kazumi Kumura, Kitakyushu, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Sept. 15, 1972, Ser. No. 289,729
Claims priority, application Japan, Sept. 27, 1971, 46/75330
Int. Cl. C06b 1/04
U.S. Cl. 149—7 **5 Claims**

A prilled ammonium nitrate composition having blended with (1) a petroleum hydrocarbon having a boiling point of more than 150°C. and a melting point of less than 20°C. and (2) at least one anti-coagulant selected from (a) magnesium, barium, lead, calcium, zinc, copper, aluminum and cadmium salts of fatty acid of seven to 22 carbon atoms and a melting point of more than 40°C., (b) magnesium aluminate silicate and (c) a compound of the formula:

$$R_1—\overset{O}{\overset{\|}{C}}—NH—R_2—NH—\overset{O}{\overset{\|}{C}}—R_3$$

, and wherein R_1 and R_3 each represent alkyl groups having 10 to 20 carbon atoms and R_2 is an alkylene group having one to two carbon atoms, which composition is characterized by improved anti-caking and anti-scattering properties.

3,779,822

COMPOSITE PROPELLANT CONTAINING ORGANIC AMINE PERCHLORATES

Manfred Stammler, Carmichael; Willfred G. Schmidt, Sacramento, and Rolf S. Bruenner, Orangevale, all of Calif., assignors to Aerojet - General Corporation, Azuse, Calif.

Filed July 22, 1963, Ser. No. 297,179
Int. Cl. C06d 5/06
U.S. Cl. 149—19.4 **7 Claims**

1. A solid propellant composition comprising from about 5 percent to about 55 percent by weight of an organic cross-linked resin binder and from about 95 percent to about 45 percent by weight of an oxidizing composition comprising a compound having the general formula

$$(R)_m\ (NH_{4-m}X)_n$$

wherein R is an organic radical having a valence equal to n; X is selected from the group consisting of perchlorate and nitrate; n is an integer of from 1 to 2; and m is an integer of from 1 to 3 when n equals 1, and m is equal to 1 when n equals 2.

3,779,823

ABRASION RESISTANT GAS GENERATING COMPOSITIONS FOR USE IN INFLATING SAFETY CRASH BAGS

Raymond M. Price, 805 E. Third North, and Russell Reed, 508 Highland Blvd., both of Brigham City, Utah

Filed Nov. 18, 1971, Ser. No. 200,172
Int. Cl. C06d 5/06
U.S. Cl. 149—19 **33 Claims**

An abrasion resistant granular gas generating composition comprising a metallic azide, oxidizers for the azide, and a small amount of a novel cured polymeric binder having a relatively high oxygen content and prepared entirely from solid

binder ingredients having a melting point in the range of 45° C to 130° C. The compositions are resistant to abrasion during long storage periods and when ignited produce predominately non-toxic gases.

3,779,824
SOLID PROPELLANTS
John E. Mahan, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sept. 12, 1960, Ser. No. 55,602
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.9 **19 Claims**

A solid propellant composition comprising an oxidant of inorganic oxidizing salt and a binder of solid polymer formed by reacting in combination a compound containing 3 aziridinyl groups per molecule and a compound containing only 2 aziridinyl groups per molecule with an uncured polymer of a monomer selected from the group consisting of conjugated dienes having 4 to 12 carbon atoms per molecule, aryl-substituted olefins, pyridine and quinoline derivatives containing at least one member of the group consisting of vinyl and alphamethylvinyl, acrylic acid esters, alkacrylic acid esters, vinylfuran and vinylcarbazole, said uncured polymer containing per molecule at least one acid group of an element selected from the group consisting of carbon, sulfur, silicon, selenium, tin, antimony, tellurium and arsenic.

3,779,825
SOLID PROPELLANT COMPOSITION
Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jan. 4, 1960, Ser. No. 444
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 **19 Claims**

1. A solid propellant composition comprising: from 60 to 90 weight per cent of an oxidizer component selected from the group of solid inorganic oxidizing salts consisting of ammonium perchlorate, the alkali metal perchlorates, ammonium nitrate, the alkali metal nitrates, and mixtures thereof, at least a major portion of said oxidizer component being at least one of said perchlorates; from 10 to 40 weight per cent of a binder component comprised of a rubbery material selected from the group consisting of natural rubber, synthetic rubber polymers, and mixtures thereof; and from 0.1 to 8 weight per cent of a burning rate depressing agent selected from the group consisting of ammonium fluoborate, hydrazine dihydrochloride, barium periodate, and ferric oxalate.

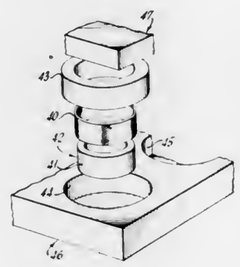
3,779,826
NITROCELLULOSE PROPELLENT COMPOSITIONS CONTAINING INORGANIC OXIDIZING AGENTS WITH ALUMINUM
Robert G. Shaver, Burke, Va., assignor to Atlantic Research Corporation, Fairfax, Va.
Filed Dec. 2, 1960, Ser. No. 73,452
Int. Cl. C06d *5/06*
U.S. Cl. 149—20 **12 Claims**

A double-base propellant is provided having reduced pressure and temperature sensitivity and also increased burning rate by incorporating aluminum of small particle size, e.g., about 3 microns, and a solid inorganic oxidizer salt of coarse particle size, e.g., about 150 microns into the propellant.

3,779,827
PROCESS FOR PRODUCING A FATIGUE RESISTANT TIRE CORD
Harold A. Blinn, Akron, and William T. Overby, Mogadore, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 20, 1971, Ser. No. 210,184
Int. Cl. B29h *9/04*; **B32b** *25/02*
U.S. Cl. 156—330 **5 Claims**

Relates to an improved method for the application of a liquid adhesive to a rubber reinforcing rod to minimize penetration of the adhesive into the interstices of the cord. The cord is passed into the adhesive which is in the form of a foam capable of wetting the surface of the cord. The adhesive is deposited on the surface of the cord. As the bubble structure of the foam collapses, a minimum amount of adhesive is deposited on the surface of the cord and substantially none in the interstices of the cord.

3,779,828
APPARATUS FOR BONDING BEARING LINERS
Gordon J. Clark, Bristol, Conn., assignor to Textron Inc., Providence, R.I.
Division of Ser. No. 873,161, Nov. 3, 1969, Pat. No. 3,668,040. This application July 8, 1971, Ser. No. 160,665
Int. Cl. G05g *15/02*
U.S. Cl. 156—358 **5 Claims**

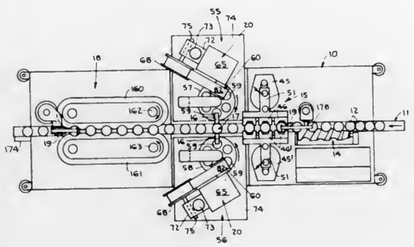


The invention contemplates maintenance of uniform controlled pressure and temperature at the zone of bonding a fabric or the like liner to a bearing ring or the like, the pressure and temperature being at the levels required for optimum curing of the particular thermosetting material involved. The pressure is developed by axial compression of an elastomeric plug, which is so constrained that radial loading of the lining on the bearing element necessarily results from hydrostatic deformation of the plug. The heat supplied for curing also causes the plug to expand, but the invention provides for automatic compensation for plug expansion so as to maintain substantially constant pressure loading on the liner in the course of a curing cycle. Means are disclosed for the bonding of a plurality of lined bearing elements in a single batch processing cycle.

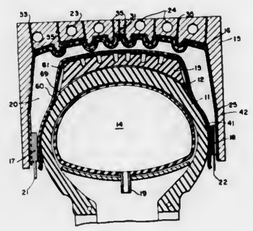
3,779,829
LABELING MACHINE
Edwin K. Wolff, Stockholm, N.J., assignor to NJM, Inc., Hoboken, N.J.
Filed Jan. 24, 1972, Ser. No. 219,986
Int. Cl. B32b *31/00*; **B65c** *9/00*
U.S. Cl. 156—361 **19 Claims**

The labeling machine comprises a pressure sensitive label dispenser for delivering either completely or partially released labels to label applicators on a label applying drum. The labels may be delivered directly to the applicators or to a stationary label holder having two spaced members for engaging spaced

portions of a precisely positioned supported label and between which moves the label applicators. If the labels are delivered to the label holder, the applicators successively strip the precisely registered labels from the holder before carrying them to a label applying station for application to articles moving along a given path. The applicators are so constructed and so oriented at the label applying station that they will move the labels at the applying station in a path parallel to the path of movement of the articles and at the same speed as the articles, and will apply such labels precisely to given areas of the articles.

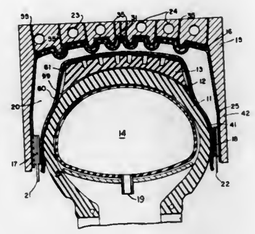


3,779,830
APPARATUS FOR RETREADING TIRES
Willi E. Reppel, Lewiston, Mass., assignor to Oliver Tire & Rubber Company, Oakland, Calif.
Division of Ser. No. 883,161, Dec. 8, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,602
Int. Cl. B29h *5/04*, *5/18*
U.S. Cl. 156—394 **9 Claims**



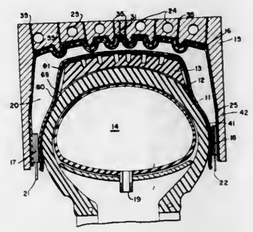
The specification discloses an apparatus and method for adapting a standard tire retreading mold to use the newer continuous precured and premolded tire tread in retreading tires. The apparatus and method also make it possible to adapt a single size standard tire retreading mold to retread a number of different size tires by use of a mold liner and a plurality of variably sized gasket sealing means.

3,779,831
APPARATUS FOR RETREADING TIRES
Willi E. Reppel, Lewiston, Mass., assignor to Oliver Tire & Rubber Company, Oakland, Calif.
Division of Ser. No. 883,161, Dec. 8, 1969. This application Sept. 22, 1971, Ser. No. 182,603
Int. Cl. B29h *5/04*, *5/18*
U.S. Cl. 156—394 **8 Claims**



The specification discloses an apparatus and method for adapting a standard tire retreading mold to use the newer continuous precured and premolded tire tread in retreading tires. The apparatus and method also make it possible to adapt a single size standard tire retreading mold to retread a number of different size tires by use of a mold liner and a plurality of variably sized gasket sealing means. The specification also discloses a new and improved tire retreading mold having two flat disks and an annular ring.

3,779,832
METHOD FOR RETREADING TIRES
Willi E. Reppel, Lewiston, Maine, assignor to Oliver Tire & Rubber Company, Oakland, Calif.
Division of Ser. No. 883,161, Dec. 8, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,814
Int. Cl. B29h *5/04*, *5/18*
U.S. Cl. 156—96 **14 Claims**

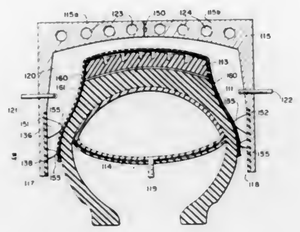


The specification discloses a method for retreading tires with continuous precured and premolded tread strips. A method of adapting a standard tire retreading mold to use the precured tread strip is also disclosed. The method makes it possible to adapt a single size retreading apparatus or existing mold to retread a number of different sized tires by using a retreading chamber larger than the tire, a flexible envelope around the exterior of the tire, and an inflatable means to expand the sidewalls of the tire laterally outward to engage sealing means mounted on the inner sidewalls of the retreading apparatus. In addition, vent means are provided to remove air trapped between the envelope and the tire.

3,779,833
APPARATUS FOR RETREADING TIRES

Willi E. Reppel, Lewiston, Maine, assignor to Oliver Tire and Rubber Company, Oakland, Calif.

Continuation of Ser. No. 883,161, Dec. 8, 1969, abandoned. This application Apr. 25, 1972, Ser. No. 247,488
Int. Cl. B29h 5/04, 5/18
U.S. Cl. 156—394 16 Claims

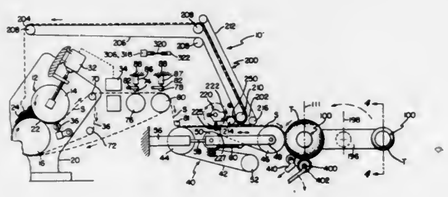


The specification discloses an apparatus for retreading a tire casing with a precured and premolded tire tread. The apparatus includes a flexible envelope which surrounds the tire and precured tread assembly from sidewall to sidewall to form with the walls of a multipart chamber device a fluid tight annular chamber surrounding the tread portion of the assembly. The apparatus includes means for inflating the interior of the assembly to laterally distend the sidewalls of the casing into engagement with sealing means mounted on the inner walls of the multipart chamber device.

3,779,834
TIRE BUILDING MACHINE

Paul E. Appleby, Cuyahoga Falls; Robert S. Riggs, Stow, and Christopher E. Christie, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 832,272, June 11, 1969, abandoned. This application June 21, 1971, Ser. No. 155,208
Int. Cl. B29h 17/10, 17/37
U.S. Cl. 156—405 6 Claims

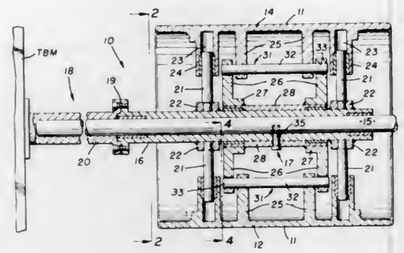


A mill for forming a thin sheet of a curable elastomer and a tire carcass receiving drum are combined in apparatus including a conveyor spaced from the mill and engageable with a tire carcass on the drum so as to rotate the drum and wind thereon a continuous plurality of convolutions of the sheet. Slitters located in a space traversed by the sheet between the mill and the conveyor and controlled by a profiling device to be movable in timed relation to the rotation of the carcass vary the width or widths of the sheet portion applied while a second conveyor diverts remaining portions of the sheet from the first conveyor for return to the mill.

3,779,835
BUILDING DRUM

Herb R. Lohr, Akron, and Toby Magos, Jr., Kent, both of Ohio, assignors to Akron Standard Division of Eagle-Picher Industries, Akron, Ohio

Filed June 3, 1971, Ser. No. 149,509
Int. Cl. B29h 17/14; B29k 17/16
U.S. Cl. 156—417 2 Claims

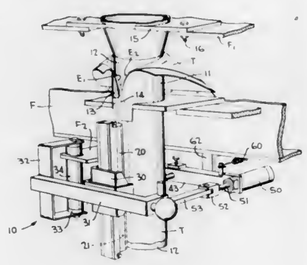


Building drum for tires, bands or laminate structures. Drum is driven by a rotary power shaft. Each segment for forming the building surface is post mounted for radial movement and carries cam followers engaging cam channels mounted coaxially of a hub connecting the drum to the power shaft. The segments are expanded by and collapsed by relative motion of the hub and the power shaft.

3,779,836
TUBE SEAMER WITH CLAMP ACTION

Nelson R. Henry, and Donald R. Middour, both of Decatur, Ga., assignors to The Woodman Company, Inc., Decatur, Ga.

Filed Mar. 26, 1971, Ser. No. 128,457
Int. Cl. B29d 23/00; B65b 9/06
U.S. Cl. 156—466 6 Claims



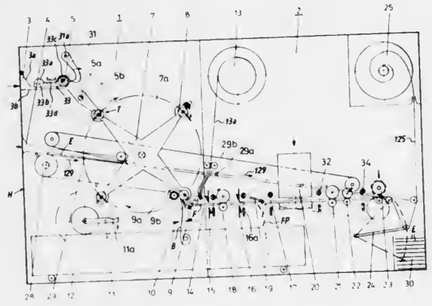
An arrangement is provided for forming the longitudinal seal or seam of a packaging tube by inward clamping movement of a heated sealing shoe and a backup shoe with equal and diametrically opposite force on opposite sides of the coaxial internal form or filling tube about which the packaging tube is formed or positioned. The pressing engagement of the sealing shoe against the overlapped edges of the film assures a uniform and secure seam and the backup shoe prevents misalignment of the depending filling tube by counteracting the pressing force. The opposite acting shoes are mounted on pivotal arms with 2:1 mechanical advantage gained by the fluid cylinder actuator that interconnects the free ends of the arms. Each pivot lies in a separate plane contiguous with the respective area of shoe engagement with the film on the filling tube to assure radial or straight-in movement; the two planes

thus being substantially parallel. The pivotal mounting arms are biased outwardly away from the tube and adjustable stop means is provided to assure equal withdrawal distance of the shoes. The biasing spring is on the backup arm so as to assure that nominal engagement of the sealing shoe precedes the backup shoe and that the engagement is gradual by virtue of the spring force, whereby the sealing shoe has a firm grip or seat on the overlapped edges of the film before sealing pressure is applied.

3,779,837
APPARATUS FOR SPLICING EXPOSED PHOTOGRAPHIC FILMS AND FOR ENCODING INFORMATION ON SPLICED-TOGETHER FILMS AND ASSOCIATED ENVELOPES

Wolfgang Zahn, Munich; Helmut Zangenfeind, Puchheim, and Erich Nagel, Anzing, all of Germany, assignors to Afga-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 28, 1972, Ser. No. 267,171
Claims priority, application Germany, June 30, 1971, P 21 32 573.5
Int. Cl. G03d 15/04
U.S. Cl. 156—505 25 Claims



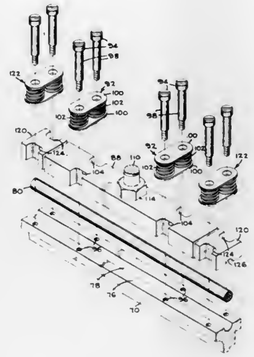
Drop-in cassettes for exposed photographic films and the customer envelopes from which the cassettes were removed are introduced through separate openings into a housing which is sealed against entry of light. The cassettes are moved into the range of a first conveyor system which transports the takeup spools upon removal from the cassettes, and thereupon the films upon unwinding from the takeup spools, along a first path past a splicing and on to an encoding station. The envelopes are transported stepwise and reach the encoding station simultaneously with the associated films to be provided with imprinted or otherwise encoded information which is also applied to splices between successive films. The spliced-together films are transported through a developing and print making apparatus to be thereupon separated from each other and reintroduced into the associated envelopes together with the corresponding prints, prior to being returned to customers or dealers. The number of steps performed by an envelope on its way to the encoding station equals the number of stations along which a cassette, the removed takeup spool and the unwound film move on the way of the film to the encoding station.

3,779,838
HEAT SEALING HEAD

Robert J. Wech, Green Bay, Wis., assignor to FMC Corporaton, San Jose, Calif.

Filed Nov. 12, 1971, Ser. No. 198,363
Int. Cl. B32b 31/00; H05b 1/00; B30b 15/34
U.S. Cl. 156—583 7 Claims

A heat sealing head eliminates the detrimental effects of thermal expansion by providing a construction accommodating longitudinal expansion and minimizing the effects of lateral expansion. A heater element is held to a sealing bar by spaced spring biased clamp blocks. Intermediate the clamp blocks, support bars cover the heater and are resiliently clamped to the sealing bar. A central post of each support bar connects to a rigid support beam which reciprocates to actuate the sealing bar. The heater element expands linearly under its clamp blocks, and the support bars expand linearly between the clamp blocks, thus eliminating warping stress and maintaining the active face of the sealing bar flat for optimum sealing, and in the illustrated embodiment, parallel to an oppositely disposed cooperating sealing bar having the same construction.



3,779,839
METHOD OF CONNECTING ALUMINUM OR ALUMINUM ALLOY MEMBERS

Masaharu Kaihu; Masumitu Soeda, and Hirosi Nakamura, all of Shimonoseki, Japan, assignors to Kobe Steel, Ltd., Fukiai-ku, Kobe-City, Japan

Filed July 14, 1971, Ser. No. 162,626
Claims priority, application Japan, July 25, 1970, 45/65112
Int. Cl. C23f 17/00; C23g 1/10
U.S. Cl. 156—3 2 Claims

A method of joining aluminum and/or aluminum alloy members by brazing in vacuum or an inert gas which includes the step of etching the aluminum or aluminum alloy and/or aluminum alloy brazing solder The a bath of etching solution to interd; ffusion fluorine ion in advance of brazing.

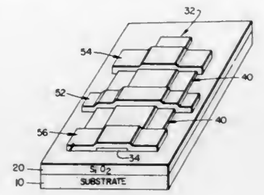
3,779,840
LAMINATION OF OLEFIN POLYMER TO VARIOUS SUBSTRATES

Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 764,915, Oct. 3, 1968, Pat. No. 3,629,025. This application Aug. 11, 1971, Ser. No. 172,885. The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.
Int. Cl. B32b 31/24, 27/38, 27/32
U.S. Cl. 156—3 6 Claims

Olefin polymers, such as polyethylene, are bonded to various substrates, such as metal, glass, plastic, paper, wood, by surface sulfonating the olefin polymer and adhering the surface sulfonated olefin polymer to the substrate with epoxy resin.

3,779,841
FABRICATION OF THIN FILM RESISTOR CROSSOVERS FOR INTEGRATED CIRCUITS
Thomas J. Sanders, Indialantic, Fla., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed July 21, 1972, Ser. No. 273,939
Int. Cl. B29c 17/08; C23f 1/02
U.S. Cl. 156—8 **6 Claims**



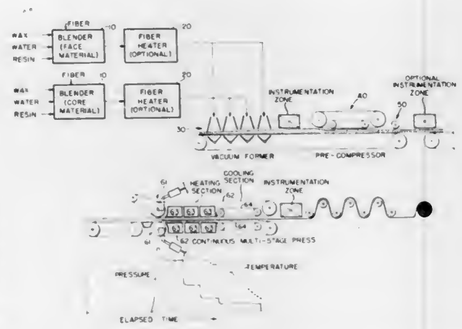
Thin film resistors with metal connector crossovers are fabricated on smooth nonconducting materials. The thin film resistor crossover regions are delineated by a photo-resist emulsion. After deposition of an insulator, the photo-resist material is chemically removed, leaving insulating material only in the crossover regions. Metal connectors and interconnectors are applied and delineated to the resistor and over the insulator respectively.

3,779,842
METHOD OF AND COMPOSITION FOR DISSOLVING METALLIC COPPER
John J. Grunwald, New Haven; Leo J. Slominski, Bristol; Adela Landau, Watertown, and Dilip G. Shah, Wolcott, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.
Filed Apr. 21, 1972, Ser. No. 246,151
Int. Cl. C23f 1/00
U.S. Cl. 156—18 **16 Claims**

A method of and composition for dissolving metallic copper and copper rich alloys are disclosed, wherein there is employed a peroxydiphosphate compound, preferably with an adjuvant copper acceptor or solubilizing agent, to provide a stable etchant system which operates well in either acid or alkaline medium.

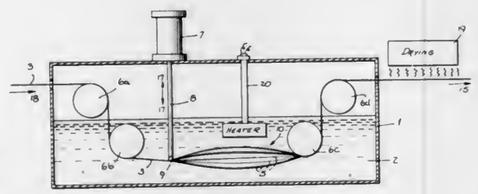
3,779,843
CONTINUOUS PROCESS FOR PRODUCING CONSOLIDATED LIGNOCELLULOSIC MATERIAL
Hans John Knapp, 2035 S.W. 58th Ave., Portland, Oreg.
Filed Jan. 21, 1971, Ser. No. 108,508
Int. Cl. B29j 5/04
U.S. Cl. 156—64 **5 Claims**

Hardboard and particleboard is continuously made by a continuous multi-stage press which allows humidified consolidated fibrous material to exit from the press without blisters or delamination and without the need of a subsequent humidification process. A control system is provided to insure that the end product has uniform properties. A preformed mat of moist fibrous material to which wax or other water repellent sealer and a thermosetting resin have been added is fed into a precompresser of conventional design wherein the mat is consolidated to an intermediate density without cure of the resin therein. From the precompresser the precompressed mat is fed into the nip of a continuous multi-stage press having multiple heat and pressure zones therein. Initially the mat is pressed momentarily to a pressure of up to 1,000 pli and then passed through subsequent sections of the press wherein the temperature and pressure are modified while the board is progressing through the press to (1) cure the resin in the consolidated material, and then (2) cool the consolidated mat while under pressure to prevent formation of gas pockets or blisters in the board. The cooling stage of the press is so designed to permit pressure release with sufficient moisture control in the board equal to the equilibrium moisture content control usually attained in a subsequent conventional humidification process. By this means it is possible to form a fiber mat with higher



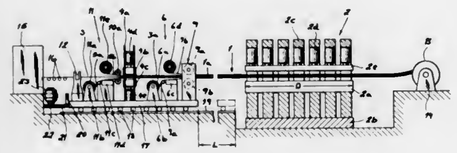
moisture content than feasible in a conventional curing cycle thereby obtaining better board properties because of the increased plastic flow under pressure. After formation of the mat, after precompression, and at the exit end of the press sensing means are provided to continuously measure properties of the board, particularly mass density, moisture content and thickness. The output values are compared with predetermined values and the amount of fiber, wax, resin, moisture, and the press conditions varied to obtain predetermined properties in the board.

3,779,844
METHOD AND APPARATUS FOR IMPROVING THE TENSILE STRENGTH OF A MULTIFILAMENT GLASS STRAND
Robert E. Dorsch, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.
Filed Dec. 10, 1971, Ser. No. 206,770
Int. Cl. B32b 31/16
U.S. Cl. 156—73 **12 Claims**



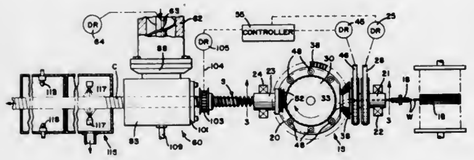
An apparatus and method for improving the tensile strength of a resin impregnated multifilament glass strand are disclosed. The glass strand is conveyed through an impregnating solution, simultaneously being maintained under tension while being vibrated. Each filament vibrates at its respective, natural frequency with the result that the glass strand separates into its component filaments thereby exposing a plurality of interstices to the solution so as to increase the amount of solution absorbed, whereby the tensile strength of the resin impregnated glass strand is improved.

3,779,845
METHOD FOR THE MANUFACTURE OF REINFORCED FLEXIBLE BELTS
Gerhard Hutz, Suchteln/Rheinland, and H. J. Bongers, Huls, near Krefeld, both of Germany, assignors to G. Siempelkamp & Co, Krefeld, Germany
Division of Ser. No. 611,626, Jan. 25, 1967, Pat. No. 3,607,561.
Filed Oct. 14, 1970, Ser. No. 80,809
Claims priority, application Germany, Jan. 26, 1966, S 101 638
Int. Cl. B29h 7/22
U.S. Cl. 156—87 **1 Claim**



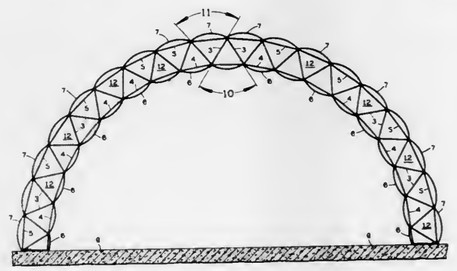
System for the production of steel-wire-reinforced flexible belts consisting at least of an elastomeric or synthetic-resin upper layer, a core in which the steel strands are embedded and a lower layer of such material bonded into a unitary laminate while the reinforcing strands are tensioned; the invention resides in the use of an equalizing press adapted to bond the core to the steel strands prior to the application of the upper and lower layers and the final laminating phase. A supply means for each of the outer layers is provided downstream of the equalizing press and the layer is, in turn, downstream of a further supply system adapted to sandwich the generally planar array of longitudinally extending tension steel strands between layers of the core material.

3,779,846
METHOD OF CONTINUOUSLY MANUFACTURING FLEXIBLE CONDUIT
Donald L. Kleykamp, West Carrollton, Ohio; Ivan Gaster; Vernon D. Browning, both of Waynesville, N.C., and Homer N. Holden, Sylva, N.C., assignors to Dayco Corporation, Dayton, Ohio
Division of Ser. No. 89,333, Nov. 13, 1970, Pat. No. 3,725,178.
This application Mar. 6, 1972, Ser. No. 231,935
Int. Cl. F16l 11/08
U.S. Cl. 156—144 **5 Claims**



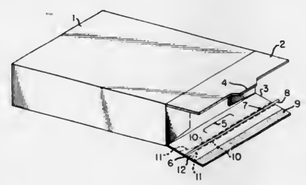
A wire is fed from a supply roll to a device which twists the wire on its longitudinal axis and continuously forms the twisted wire into a non-rotating helical coil. The coil is fed directly from the device through a plastic tube extruding head by a rotatable screw which extends within the coil, and a vacuum is created within the tube as it is extruded over the coil to shrink the tube between the turns of the coil. The coil reinforced tube may then be fed through a device which covers the tube with a continuous fabric member, and the covered tube is then fed through another extruder head which extrudes a second tube over the fabric member and shrinks the second tube onto the fabric member and the first tube. The coil feeding screw, the fabric member forming device, the extruders, and the tube feeding devices are driven at speeds correlated with the speeds of twisting and feeding the wire to provide a continuous conduit forming operation.

3,779,847
PROCESS OF ASSEMBLING FABRIC AND PLASTIC TO FORM A BUILDING STRUCTURE WHICH MAY BE INFLATED AND CHEMICALLY RIGIDIZED
Arthur A. Turner, 5500 S.W. 77 Ct., Miami, Fla.
Filed Dec. 20, 1971, Ser. No. 209,604
Int. Cl. E04b 1/345
U.S. Cl. 156—156 **7 Claims**



A compacted assembly of folded fiberglass fabric secured in a multiple pleated truss formation sewed between flat sheets of like material for inflatior forming a building of predetermined volume. The interstices in the fabric contain uniform distribution of uncured plastic resin. The assembly is covered with sheet plastic secured thereto for inflation. Following inflation of the voids within the assembly, the uncured resin is responsive to the introduction of a curing agent to all inner surfaces for curing the resin into a solid, resulting in a rigid high-strength self-supporting building or housing resistant to external stresses in any direction.

3,779,848
METHOD OF MAKING CONTAINER OPENING STRUCTURE COMPRISING FLEXIBLE TAPE AND PRESSURE-RUPTURABLE CAPSULES
Theodore Maierson, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Division of Ser. No. 879,039, Nov. 24, 1969, Pat. No. 3,599,859. This application Mar. 15, 1971, Ser. No. 124,542
Int. Cl. B32b 5/00, 31/00
U.S. Cl. 156—178 **4 Claims**



This disclosure is directed to container opening structures comprising a container wall member, such as a closure, e.g., a lid, to which there is attached at least one flexible closure tearing means accessible from the exterior of the container and a plurality of pressure-rupturable capsules, each of which contains a volatilizable core material, e.g., perfume or other

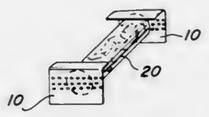
fragrance, located between the container wall or lid and the tearing means. Preferably, the tearing means is a flexible tape composed of a plurality of parallelly arranged monofilaments. The operation of the tearing means serves to rupture at least some of the capsules during opening of the container.

3,779,849

APPARATUS AND METHOD FOR MANUFACTURING JET IMPINGEMENT TYPE FILTERS FOR SMOKING ARTICLES

Hoyt S. Beard; Leslie E. Payne, and Colin S. McArthur, all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 13, 1971, Ser. No. 171,448
Int. Cl. H24d *1/06*
U.S. Cl. 156—212 **6 Claims**



This improved apparatus and process for manufacturing jet impingement type filters for smoking articles utilizes a normally substantially air impervious sheet material having a plurality of preformed smoke passing perforations therein and a rod of smoke pervious filter material. A tab of the perforated sheet material is positioned over the end of the rod of filter material by securing a peripheral portion of the perforated tab to the longitudinal surface of the filter rod adjacent an end whereby a major portion of the tab extends beyond the end and folding the major portion transverse the axis of the filter rod with peripheral areas extending radially outwardly from the longitudinal surface. These peripheral portions are further folded or draped over the longitudinal surface of the filter rod and secured thereto so as to form a cup-like enclosure or cap over the end.

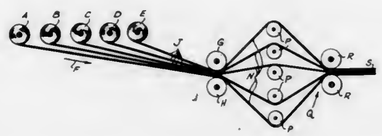
The preferred apparatus for assembling the filter comprises a female die, means for successively tabbing filter rods with the perforated sheet material and aligning the tabbed filter rods adjacent the opening in the female die with the tabs folded therebetween and means for effecting relative reciprocal movement whereby the female die cups or caps the tabs over the ends of successive filter rods. The resulting cupped-tab filter plugs are then disposed in gaseous communication with a smokable material such as a cigarette rod by, for example, an overwrap of conventional tipping paper.

3,779,850

SUPERIMPOSED EMBOSSED PACKING SHEETS

George Gerard, Point, N.J., assignor to Jiffy Manufacturing Co., Hiside, N.J.

Division of Ser. No. 68,745, Sept. 1, 1970, Pat. No. 3,668,055, which is a continuation of Ser. No. 676,573, Oct. 19, 1967, abandoned. This application Jan. 14, 1972, Ser. No. 218,031
Int. Cl. B31f *7/00*
U.S. Cl. 156—199 **3 Claims**



The disclosure of the present application relates to embossment between engraved rollers of a series or plurality of sheets of relatively heavypaper or similar matted fibrous materials to obtain varying patterns of rows of mound-like embossments which are arranged in successive areas, usually successive squares, longitudinally and then diagonally in respect to the main axis of the paper sheets. After embossment the sheets are passed through shorter or longer paths of travel before again being assembled so that their matching mounds and recesses will be offset in such a manner that they will not longer match.

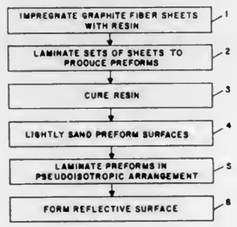
The disclosure further relates to the composite packing material and to a method and apparatus for making the same.

3,779,851

METHOD OF FABRICATING THIN GRAPHITE REINFORCED COMPOSITES OF UNIFORM THICKNESS

Julius Hertz, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Dec. 22, 1971, Ser. No. 210,694
Int. Cl. C09j *5/00*; **B32b** *5/12*
U.S. Cl. 156—309 **18 Claims**



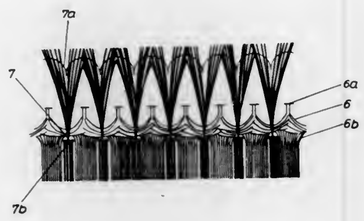
A method of making high strength, low thermal expansion thin composite structures of uniform thickness is disclosed. A plurality of resin impregnated graphite fiber sheets are laminated together to provide composite preforms. A plurality of the preforms are then bonded together in a pseudoisotropic arrangement between parallel plates. The resulting structures are especially useful as substrates for flat or slightly contoured mirrors.

3,779,852

TEXTILE FABRIC AND METHOD OF PRODUCING SAME

Siegfried Ploch; Walter Scholtis; Heinz Zschunke, and Dieter Scharch, all of Karl-Marx-Stadt, Germany, assignors to Forschunginstitut Fur Textiltechnologie, Karl-Marx-Stadt, Germany

Filed Feb. 23, 1971, Ser. No. 117,896
Int. Cl. B32b *7/04*; **D04h** *11/00*
U.S. Cl. 161—62 **4 Claims**



A textile fabric comprising a first mechanically consolidated fibrous web having first and second faces, arranged on the first face a second fibrous web folded upon itself to form pile tufts, fastening the second fibrous web to the first fibrous web fiber loops originating in the second fibrous web and forming stitches on the second face, and the second face having a plush surface comprised of fibers originating in the first web.

3,779,853

CRIMPABLE BICOMPONENT FILAMENT

Earl Herbert Olson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 5, 1972, Ser. No. 215,625
Int. Cl. D02g *3/00*; **C08g** *20/00*
U.S. Cl. 161—70 **7 Claims**

Improved bicomponent filaments for use in stretch hosiery are composed of a poly(hexamethylenedodecanedioamide) component and an N-alkyl substituted poly(hexamethylenedodecanedioamide) component. The filament are strong and develop a high crimp with high crimp recovery during knitting and subsequent hot finishing treatments.

3,779,854

POLYVINYLIDENE FLUORIDE LAMINATE CONSTRUCTION AND METHOD

Andrew Anthony Dukert, Ambler, and Alkis Christofas, Levittown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed June 18, 1971, Ser. No. 154,591
Int. Cl. B32b *27/06*
U.S. Cl. 161—156 **9 Claims**

A reinforced laminate construction utilizing a sheet-like flexible fibrous or porous matrix whose interstices are impregnated with a resin selected from the group consisting of vinylidene fluoride homopolymers, copolymers and terpolymers applied from a liquid carrier.

3,779,855

POROMERIC MATERIALS

Giorgio Fonzi, Saronno, and Silvio Vargiu, Sesto S. Giovanni, both of Italy, assignors to Societa Italiana Resine S. I. R. S. P. A., Milan, Italy

Filed Apr. 24, 1972, Ser. No. 246,577
Claims priority, application Italy, Apr. 30, 1971, 23911/71
Int. Cl. B32b *3/00, 31/00*; **D06n** *3/08*
U.S. Cl. 161—159 **11 Claims**

Poromeric materials for footwear and other purposes are made from a non-woven fabric, a porous layer of certain defined foamed resins, and a thin microporous surface film. The foam is obtained from lattices containing liquid unsaturated polyester resins and acrylic and/or acrylonitrile resins.

3,779,856

GLASS-CERAMIC AND METHOD FOR MAKING SAME

Perry P. Pirooz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 23, 1971, Ser. No. 165,744
Int. Cl. C03c *23/00, 3/22*
U.S. Cl. 161—164 **8 Claims**

High-strength glass-ceramics and a method of producing glass-ceramics having high strengths and good thermal shock resistance wherein a thermally crystallizable glass containing a nucleating agent capable of changing valency and which is more effective in the changed valency state is thermally in situ crystallized in a reducing atmosphere to form an at least partially crystalline glass-ceramic having a coefficient of thermal expansion which is considerably lower than that of the parent glass and having a high compressive stress layer on its surface.

3,779,857

TEXTILE LAMINATING COMPOSITIONS AND COMPOSITE TEXTILE STRUCTURES LAMINATED THEREWITH

Robert B. Hadgraft, East Ridge, and John J. Martin, Hixson, both of Tenn., assignors to Standard Brands Chemical Industries, Inc., Dover, Mass.

Continuation-in-part of Ser. No. 126,961, March 22, 1971, abandoned. This application Apr. 27, 1972, Ser. No. 248,269
Int. Cl. B32b *25/10, 25/16*
U.S. Cl. 161—88 **10 Claims**

A latex composition especially suitable as a base for textile laminating compounds comprising (1) an elastomeric polymer latex and (2) a ternary mixture of granular starch, urea and borax in which the weight ratio of starch to urea is between about 1.2:1 and 5:1 and the weight ratio of starch to borax is between about 1.5:1 and 12:1. Up to about 40 parts by weight (basis 100 parts by weight of dry polymer solids) of the ternary mixture are contained in the latex to which extremely high levels of inorganic filler may be added while maintaining a high degree of strength for textile laminating applications.

3,779,858

THERMALLY STABLE NON-BLISTERING POLYIMIDE LAMINATES

Roger A. Hiss, Flushing, Mich., and Harry E. Kime, Jr., Collingdale, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 120,766, March 3, 1971, abandoned. This application Sept. 24, 1971, Ser. No. 183,625
Int. Cl. B32b *17/10*
U.S. Cl. 161—170 **8 Claims**

Non-blistering polyimide laminates are formed from polyimide precursor impregnated sheets wherein the resultant polyimide laminate has a void volume of at least about 3.5% and not more than about 10%, as measured by mercury intrusion method, and the voids exist substantially in and around the fabric layer.

3,779,859

CRIMPABLE COPOLYAMIDE FILAMENTS

Earl Herbert Olson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 5, 1972, Ser. No. 215,683
Int. Cl. D02g *3/00*; **C08g** *20/00*
U.S. Cl. 161—173 **3 Claims**

Filaments which develop crimp when relaxed, of a copolymer composition comprising 6–12 nylon polymer units and N-substituted 6–12 nylon polymer units wherein the N-substituent is an alkyl group of 2 to 4 carbon atoms, from 15 to 50 percent of the nitrogen atoms in the copolymer being alkyl substituted. The filaments are particularly suitable for use in stretch hosiery. They provide a much softer feel and much lower snagging propensity than conventional stretch hose of 66 nylon, while avoiding undesirable characteristics of elastomeric filaments.

3,779,860

THERMAL AND ACOUSTICAL STRUCTURAL INSULATING COMPOSITION

Otto A. Oshida, Fountain Valley, and Michael Shawgo, Buena Park, both of Calif., assignors to Grefco, Inc., Philadelphia, Pa.

Filed Mar. 9, 1972, Ser. No. 233,285
Int. Cl. D21f *11/00*
U.S. Cl. 162—129 **14 Claims**

A coated thermally expanded mineral aggregate thermal and acoustical insulating structural composition and a process for its production is provided wherein a low consistency board furnish containing binder, defibrillated fibrous material and a relatively high percentage of glass reinforcing fibers is

deposited on the surface of a partially dewatered mat containing defibrillated fibrous material, binder and 50–85 percent thermally expanded mineral aggregate by weight of the total board composition, pressing and drying to produce an integrally formed multiply structural composition.

3,779,861
FIREPROOFING CELLULOSE-CONTAINING MATERIALS

James R. Jones, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed July 24, 1972, Ser. No. 274,327
Int. Cl. D21h *3/00*
U.S. Cl. 162—145 **7 Claims**

Cellulosic fiber-containing board products of improved fire-retardant characteristics are obtained by treating the cellulosic fibers with urea prior to board formation and decomposing the urea in situ, for instance in the dewatered mat during board fabrication. Cellulosic fiber-containing boards having improved flame-spread ratings are obtained when the cellulosic fibers and urea are reacted at temperatures in excess of the decomposition temperature of urea, i.e., temperatures above about 380° F., but below the temperature at which the cellulosic fibers degrade. Preferably, the fibers are treated with aqueous urea solutions prior to board formation

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3,779,862
FLEXIBLE, INTERMEDIATE TEMPERATURE, MINERAL WOOL BOARD

Henry A. Bomberger, Landisville, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

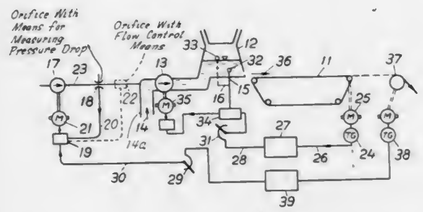
Filed Dec. 21, 1971, Ser. No. 210,593
Int. Cl. D21f *1/02*
U.S. Cl. 162—152 **2 Claims**

Mineral wool fibers are coated with a latex particle in a beater dispersion technique. The coated mineral wool fibers which are in a slurry are then processed to form sheets which are dried to produce a flexible mineral wool blanket.

3,779,863
STOCK FLOW CONTROL SYSTEM FOR FEEDING A PAPER MACHINE HEADBOX

Douglas Wahren, Taby, Sweden, assignor to Allmanna Svenska Elecktriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 12, 1970, Ser. No. 10,713
Claims priority, application Sweden, Feb. 18, 1969, 2196/69
Int. Cl. D21f *1/06, 1/08*
U.S. Cl. 162—253 **4 Claims**

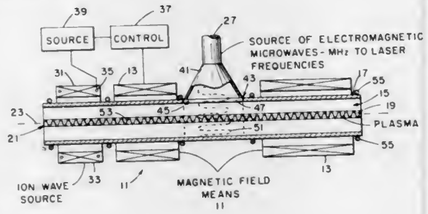


Stock feed to a paper machine headbox is controlled by a stock (fan) pump which is controlled to run at variable speeds, the input of stock to the pump originating from a thick stock containing conduit and a conduit containing mixing water. The speed of the pump motor is controlled by a signal from a control element which is responsive to measurements of the stock level or pressure within the headbox and an adjusted value of the forming wire speed. In addition, a thick stock pump located in the thick stock conduit is adjusted to run at a variable speed by a control device which is responsive to signals indicating the pressure drop across an orifice in the thick stock conduit and a signal based on the web speed. Alternatively, the thick stock pump may run at a constant speed and the control device can be used to control an orifice opening or throttling device located in the thick stock conduit between the pressure-drop determining orifice and the stock (fan) pump.

3,779,864
EXTERNAL CONTROL OF ION WAVES IN A PLASMA BY HIGH FREQUENCY FIELDS

Predhiman K. Kaw, Ahmedabad, India, and John M. Dawson, Princeton, N.J., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 29, 1971, Ser. No. 193,749
Int. Cl. G21b *1/00*
U.S. Cl. 176—1 **8 Claims**

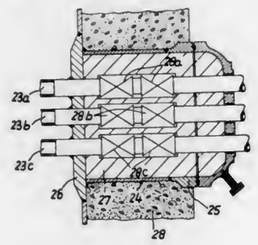


Apparatus and method for stabilizing plasma instabilities, in a magnetically confined plasma column by transmitting into the plasma high frequency electromagnetic waves at a frequency close to the electron plasma frequency. Said frequencies, e.g., are between the plasma frequency and 1.5 times said plasma frequency at a power level below the level for producing parametric instabilities in a plasma having temperatures from below 10 ev to about 10 KeV or more, at densities from below 10^{13} to above 10^{18} particles/cm^3. In another aspect, this invention also provides a plasma diagnostic.

3,779,865
FEED-THROUGH CONNECTION FOR A PRESSURE VESSEL, ESPECIALLY A NUCLEAR-REACTOR SHELL

Heinrich Gunter Schafstall, and Wolfgang Otto August Furste, both of Essen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 12, 1970, Ser. No. 79,909
Int. Cl. G21c 9/00
U.S. Cl. 176—38 **5 Claims**



The concrete shell of a nuclear reactor, through which conduits extend, is formed with a feed-through connector

anchored in the wall of the structure and traversing same. The connector includes a self-blocking safety snap-action conduit coupling surrounded by a containment including a metallic duct, a pressure reducing packing received in the duct around the conduit, and means for evacuating the annular space about the latter to eliminate leakage fluids.

3,779,866
MICROBIAL DEGRADATION OF POLYCHLORINATED BIPHENYLS

Edward N. Azarowicz, Vienna, Va., assignor to Bioteknike International, Inc., Alexandria, Va.

Filed Apr. 7, 1972, Ser. No. 242,192
Int. Cl. C12b *1/00*
U.S. Cl. 195—2 **29 Claims**

A process for the microbial degradation of polychlorinated biphenyls (PCBs) which comprises treating the PCBs with certain non-pathogenic, hydrocarbon-utilizing strains of Cladosporium cladosporioides, Candida lipolytica, Nocardia globerula, Nocardia rubra and/or Saccharomyces cerevisiae until the PCBs have been substantially degraded. The process is applicable degrading PCBs as they may be present as pollutants or contaminants in water, in industrial effluents, in various land areas such as industrial sites and the like or in varied laboratory or commercial installations. The process may also be used to clean up and degrade mixtures of PCBs and various hydrocarbon oils or petrochemicals whenever their presence constitutes a deleterious pollution.

3,779,867
PRODUCTION OF POLYNUCLEOTIDES

Yoshiki Katoh; Akira Kuninaka, and Hiroshi Yoshino, all of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Choshi-shi, Chiba-ken, Japan

Filed Feb. 1, 1971, Ser. No. 111,728
Claims priority, application Japan, Feb. 16, 1970, 45/12630
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 **4 Claims**

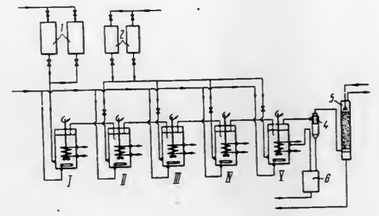
Production of polynucleotides by incubating one or more kinds of nucleoside diphosphate in the presence of one or more kinds of divalent cation with a cultured material of a strain of microorganism rich in extractable polynucleotide phosphorylase and poor in enzymes degrading nucleic acids and nucleoside diphosphates is described.

3,779,868
MICROBIOLOGICAL METHOD OF PRODUCING EDIBLE ACETIC ACID

Petr Ivanovich Nikolaev, Pulkovskaya ulitsa, 27, kv. 105; Jury Lazarevich Ignatov, ulitsa F. Poletaeva, 28, kv. 153; Sergei Ivanovich Smirnov, Shmidtovsky proezd, 9, kv. 29; Naum Izrailevich Oxengorn, ulitsa letchkka Babushkina, 27, kv. 8; Rimma Fominichna Gigineishvili, ulitsa Ulyanova, korpus 1, kv. 54; Klara Moissevna Dvorkina, pereulok, 11, kv. 3, and Akhmet Mukhsinyatovich Iskandyarov, Yartsevskaya ulitsa, 27, korpus 4, kv. 36, all of Moscow, U.S.S.R.

Filed July 15, 1971, Ser. No. 162,793
Int. Cl. C12d *1/02*; C12j *1/04*
U.S. Cl. 195—49 **4 Claims**

A microbiological method of producing edible acetic acid consists in cultivating acetic-acid bacteria in a continuous-growth process on a culture medium containing ethanol, acetic acid, mineral salts and water, under aeration; then the starting culture medium is continuously fed into the resultant culture liquid containing at least 2.5 vol. percent of acetic acid produced, at a flow rate necessary to maintain said acetic acid concentration; the resulting culture liquid is continuously discharged at the abovesaid flow rate for the ethanol to be further oxidized by acetic bacteria into acetic acid, the ethanol oxidation process being at least twice repeated depending upon the predetermined acetic acid concentration and occurring under aeration of the culture liquid and a simultaneous feeding of ethanol thereto in an amount sufficient to



obtain the required acetic acid concentration, the concentration values of both acetic acid and ethanol at each oxidation step being maintained constant.

The herein-disclosed method is applicable in the food industry.

3,779,869
ENZYME STABILIZATION

Mitchell Frank Zienty, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

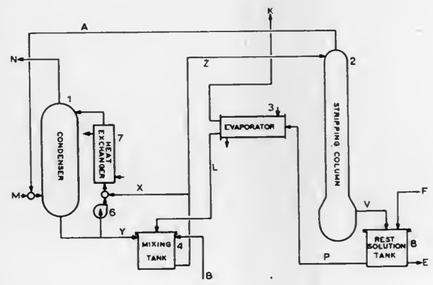
Filed May 13, 1971, Ser. No. 143,194
Int. Cl. C12d *13/10*
U.S. Cl. 195—68 **3 Claims**

The glucose isomerase activity contained within bacterial cells can be stabilized by treating the bacterial cells with glutaraldehyde. The resulting stabilized enzyme can be used for conversion of glucose to fructose and then reused for further conversions with minimum reduction in enzyme activity after each use.

3,779,870
RECOVERY OF ANHYDROUS HCL GAS BY EXTRACTIVE DISTILLATION WITH A HALIDE SALT

Sigmund Gudmundsen, Saetre I Hurum; Egil Ronaess, Porsgrunn; Sver Arne Kjolberg, Porsgrunn, and Glor Thorvald Mejdell, Prosgrunn, all of Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed July 19, 1971, Ser. No. 163,758
Claims priority, application Norway, July 17, 1970, 2816/70
Int. Cl. B01d *3/00*
U.S. Cl. 203—12 **9 Claims**



A process for the recovery of substantially anhydrous HCl gas from hydrous HCl gas employing extraction distillation in

the presence of one or more dissolved salts, characterized by

a. directly contacting and cooling the aqueous HCl gas in a condenser (1) with a recirculating hydrochloric acid solution of a strength above that of the azeotropic composition, which solution may contain dissolved one or more chlorides suitable for increasing the ratio of the volatility of HCl to that of H_2O, and by withdrawing the desired dehydrated HCl gas from the condenser,

b. distilling the condensed liquid from (a) in a stripping column (2) in the presence of at least 20 percent by weight of $MgCl_2$ (optionally, other suitable chlorides or mixtures of chlorides in an amount providing a similar ratio of volatility of HCl to that of H_2O), based on the mixture in the column, to strip off HCl, which preferably is recirculated to the process ahead of the condenser (1),

c. evaporating the liquid effluent from (b) to remove water from the system, and at least partly returning the evaporated solution to the process.

3,779,871

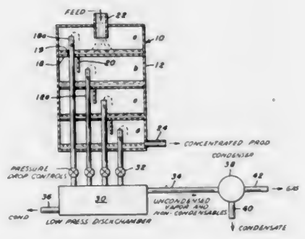
METHOD OF MULTIPLE EFFECT EVAPORATION

Melvin H. Brown, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 805,195, March 7, 1969, Pat. No. 3,575,817. This application Feb. 16, 1971, Ser. No. 115,160

Int. Cl. B01d *3/00, 3/06, 3/02, 3/08, 1/22, 1/26, 3/10, 3/28*

U.S. Cl. 203—88 **7 Claims**



A portion of an impure liquid is evaporated and the vapor condensed to provide a purified liquid product such as purified water. Evaporation is effected by a process employing a plurality of evaporative zones. According to the new arrangements, evaporation is effected in a plurality of zones and the vapor removed downwardly through elongate chambers. A downwardly decreasing thermal gradient is established in the unevaporated liquid by properly controlling the pressures in the evaporative zones. Heat is removed from the vapor as it is moved downwardly through this temperature gradient. The concentrated unevaporated liquid can also be recovered.

3,779,872

CATHODE SHEET FOR ELECTRODEPOSITION AND METHOD OF RECOVERING ELECTRODEPOSITED METALS

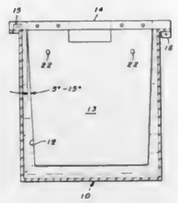
Howard B. Bomberger, Jr., Canfield, Ohio, assignor to RMI Company, Niles, Ohio

Filed June 15, 1972, Ser. No. 263,334

Int. Cl. C23b *7/02*; **B01k** *1/00*

U.S. Cl. 204—12 **11 Claims**

A cathode sheet of titanium for use in an electrodeposition process for metals, such as copper, and a method of recovering the metal. The sheet is thin and its width tapers in the downward direction. After a deposit of the metal has built up on both faces and around the side and bottom edges of the sheet, the sheet and deposit are taken from the electrodeposition apparatus. The deposit is heated to expand it to a greater extent than the sheet, allowing the deposit to be slipped off readily.



3,779,873

PROCESS FOR METAL COATING DIAMONDS

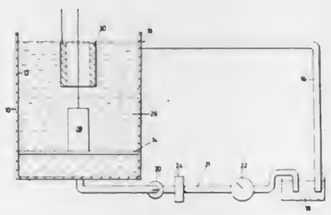
Bruce Ian Dewar, Johannesburg, Republic of South Africa, assignor to DeBeers Industrial Diamond Division Limited, Johannesburg, Republic of South Africa

Filed May 22, 1972, Ser. No. 255,574

Claims priority, application South Africa, June 1, 1971, 71/3502

Int. Cl. C23b *5/60*; **B01k** *3/00*

U.S. Cl. 204—20 **2 Claims**



A method of metal coating, particularly electrolytically, particulate material such as diamond, cubic boron nitride or the like which includes the steps of forming a bed of the material, fluidising the bed by passing a metal coating solution through it, and causing the metal to deposit on to the material.

3,779,874

NICKEL ELECTROPLATING BATHS

Walter Schenk, Bad Duerkheim, and Friedrich Hovemann, Hockenheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Division of Ser. No. 193,996, Oct. 29, 1971, Pat. No. 3,730,854. This application Oct. 13, 1972, Ser. No. 297,199

Int. Cl. C23b *5/08, 5/46*

U.S. Cl. 204—49 **5 Claims**

Stablized aqueous solutions of aliphatic unsaturated sulfonic acids which contain aliphatic chlorine compounds, and nickel-plating baths containing said stabilized aqueous solutions as brighteners.

3,779,875

PREPARATION OF GLYOXYLIC ACID

Daniel Michelet, Sainte-Foy-Les-Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Aug. 18, 1972, Ser. No. 281,741

Claims priority, application France, Aug. 20, 1971, 7130396

Int. Cl. C07b *29/06*; **C07c** *51/40, 53/08*

U.S. Cl. 204—76 **7 Claims**

In the cathodic reduction of oxalic acid to glyoxylic acid production of hydrogen is reduced when the catholyte contains oxalic acid and 0.001 percent – 1 percent of an adjuvant which is a tertiary amine or quaternary ammonium derivative having more than 11 carbon atoms and, the nitrogen of which is not part of an unsaturated heterocyclic ring, or a heterocyclic tertiary amine or quaternary ammonium derivative thereof, the heterocyclic ring being unsaturated, containing a nitrogen atom and at least five carbon atoms.

3,779,876

PROCESS FOR THE PREPARATION OF GLYOXYLIC ACID

Daniel Michelet, Sainte-Foy-Les-Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Aug. 18, 1972, Ser. No. 281,742

Claims priority, application France, Aug. 20, 1971, 7130395

Int. Cl. C07b *29/06*; **C07c** *51/40, 53/00*

U.S. Cl. 204—76 **12 Claims**

Glyoxylic acid is prepared by a process facilitating recovery of glyoxylic acid, the process being electrolytic reduction of oxalic acid in an electrolysis cell in which

a. the cathode is solid and metallic with a hydrogen overvoltage which is greater than the potential for the reduction of oxalic acid to glyoxylic acid,

b. the separating diaphragm is a cation exchange membrane,

c. the catholyte comprises an aqueous solution of oxalic acid which is free of a strong inorganic acid,

d. the catholyte moving in a closed path by being passed into the cathode compartment, over the surface of the cathode, being removed from there and being returned to the cathode compartment, and

e. the temperature of the catholyte is between 0° and 70°C.

3,779,877

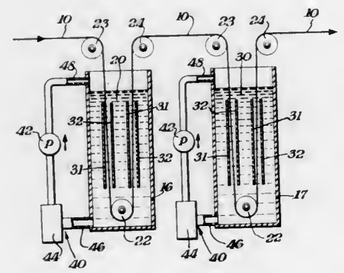
ELECTROLYTIC ETCHING OF ALUMINUM FOIL

Robert S. Alwitt, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Feb. 22, 1972, Ser. No. 227,951

Int. Cl. C23b *3/02, 1/00*

U.S. Cl. 204—129.75 **4 Claims**



A two stage electro-etch for increasing the effective surface area of high voltage aluminum foil comprises a first electro-etch in an alkali metal halide, preferably sodium chloride, followed by a second electro-etch in a neutral solution of a nitrate salt. The results produced with this process compare most favorably with the most advantageous processes known to the art today, and foils etched therein are less expensive to produce.

3,779,878

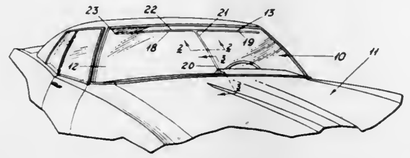
METHOD OF PRODUCING ANTENNA TYPE WINDSHIELDS

Howard R. Swift, Toledo; Ivan L. Soreghy, Swanton; George H. Thacker; Lazarus D. Thomas, both of Maumee; Paul T. Mattimoe, Toledo, and Theodore J. Motter, Genoa, all of Ohio, assignors to Libby-Owens-Ford Company, Toledo, Ohio

Division of Ser. No. 833,302, June 16, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 193,227

Int. Cl. C23b *1/00*; **B44d** *1/18*; **H01q** *1/40*

U.S. Cl. 204—140 **10 Claims**



A laminated glass windshield having incorporated with it an antenna of tarnished silver that is produced by applying a silver-frit paste to a surface of one glass sheet in a pattern of thin lines extending horizontally across the upper portion of the sheet toward the middle and then downwardly into a crescent shaped figure, firing the applied pattern to the glass, and treating the lines of the pattern with sulfur. The lower edges of the plastic interlayer and the other glass sheet in the windshield are cut out to facilitate connection with a lead wire.

3,779,879

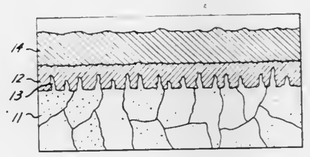
METHOD OF STRIPPING ALUMINIDE COATINGS

Bruce E. Scott, Wyckoff, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Dec. 11, 1972, Ser. No. 313,873

Int. Cl. B01k *1/00*

U.S. Cl. 204—146 **9 Claims**



A process for stripping aluminide coatings from metals and alloys of the iron group, by making the article to be stripped the anode in an electrolyte comprising an oxidizing acid, at a potential not higher than 2.4 volts.

3,779,880
PROCESS FOR PREPARING THIETANE DERIVATIVES

Atsuyoshi Ohno; Yutaka Ohnishi, both of Sagamihara, and Genichi Tsuchihashi, Tokyo, all of Japan, assignors to Sagami Chemical Research Center, Toyko, Japan

Continuation-in-part of Ser. No. 889,746, Dec. 31, 1969, abandoned. This application May 1, 1972, Ser. No. 249,215
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R 4 Claims

A process for preparing thietane derivatives which comprises reacting a thiocarbonyl compound with olefine by the irradiation of light having a wavelength above 3,000 A. The thiocarbonyl compound used is thiobenzophenone, the olefins used can be acrylonitrile, dichloroethylene, methylacrylate, dicyanoethylene, vinyl acetate, or alkenyl or substituted alkenyl benzene. The obtained thietane derivatives are useful as the starting materials for insecticides and sulfur containing polymers. Novel compounds, i.e., 3-cyano-2,2-diphenyl thietane; cis-3,4-dichloro-2,2-diphenyl thietane; trans-3,4-cichloro-2,2-diphenyl thietane; 3-methoxycarbonyl-2,2-diphenyl thietane; trans-3,4-dicyano-2,2-diphenyl thietane; 3-acetoxy-2,2-diphenyl thietane; 2,2,3-triphenyl-3-methyl thietane; 2,2,3-triphenyl-4-methyl thietane and 2,2,3-triphenyl thietane are given.

3,779,881
RADIATION GRAFTING OF POLY(ETHYLENE GLYCOL) DIMETHACRYLATE AND OTHER MONOMERS ONTO POLYESTER FIBERS

Ichiro Sakurada, Kyoto; Toshio Okada, and Yasunao Shimano, both of Osaka, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

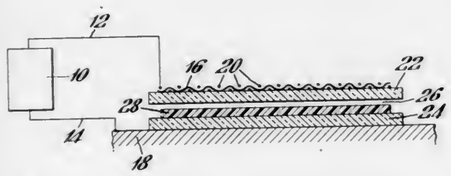
Filed Jan. 18, 1972, Ser. No. 218,815
Claims priority, application Japan, Jan. 22, 1971, 46/1571
Int. Cl. B01j *1/10, 1/12*
U.S. Cl. 204—159.15 5 Claims

A mixture of poly (ethylene glycol) dimethacrylate and an alkali metal salt of an ethylenically unsaturated organic acid is polymerized by means of an ionizing radiation on the surface and inside of a polyester fiber material such as poly (ethylene terephthalate) fiber. The treated polyester fiber material is provided with the antistatic and hygroscopic properties as well as durability by washing.

3,779,882
ELECTRODE METHOD FOR THE SURFACE TREATMENT OF THERMOPLASTIC MATERIALS

Louis Aaron Rosenthal, Highland Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,243
Int. Cl. C08f *47/22*; H01t *19/00*
U.S. Cl. 204—165 3 Claims

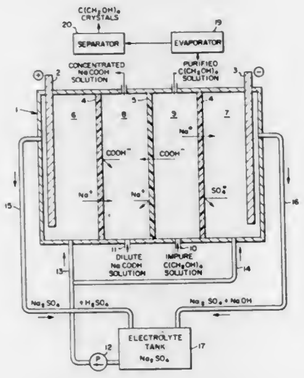


In the corona discharge surface treatment of a thermoplastic material body wherein said body is positioned in an air gap between a pair of electrodes across which a high voltage is impressed, the improvement which comprises employing as one of said pair of electrodes a wire mesh comprising a plurality of relatively small diameter conductors spaced to provide a uniform high gradient field and the other of said pair of electrodes being a solid base electrode.

3,779,883
PENTAERYTHRITOL PURIFICATION PROCESS

Allyn H. Heit, San Mateo, Calif., assignor to Sybron Corporation, Rochester, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,383
Int. Cl. B01d *13/02*
U.S. Cl. 204—180 P 12 Claims



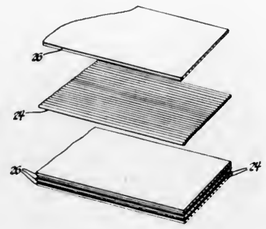
Formate salts such as sodium formate are removed from a pentaerythritol solution in an electrodialysis unit divided by a stack of alternating cation and anion permselective membranes into an anode compartment, a series of alternating concentration and dilution compartments, and a cathode compartment. The anode compartment is contiguous to a concentration compartment and, preferably, the cathode compartment is contiguous to a dilution compartment. The impure pentaerythritol solution passes through the dilution compartments; an electrically conductive liquid, preferably a dilute solution of the impurity in the pentaerythritol solution, passes through the concentration compartments; and an electrolyte containing a salt, preferably one with the same cation as the formate salt in the pentaerythritol solution, is circulated from a common tank through the anode and cathode compartments and back to the tank.

3,779,884
METHOD OF PRODUCING ZIRCONIUM DIFFUSION BARRIER IN TITANIUM-SILICON CARBIDE COMPOSITE MATERIALS

Nolan D. McMurray, Franklin, and Morris J. Tumey, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 156,365, June 24, 1971, Pat. No. 3,717,443.
This application Aug. 17, 1972, Ser. No. 281,477
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 3 Claims

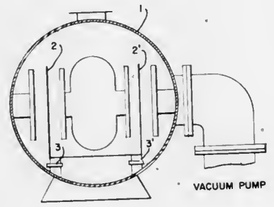
A composite article, comprising silicon carbide-containing reinforcing filaments in a titanium or titanium alloy matrix, is found to have increased strength when the filaments are initially provided with a thin coating of zirconium. The zirconium acts as a barrier to interdiffusion of titanium and silicon carbide and prevents weakening of the composite structure which would otherwise result from such interdiffusion.



3,779,885
APPARATUS AND METHOD FOR CATHODE SPUTTERING ON THE TWO SIDES OF A METALLIC SUPPORT HAVING LARGE DIMENSIONS

Pierre Labedan, Crepieux La Pape, and Robert Masotti, Lyon, both of France, assignors to PROGIL, Paris, France

Filed June 15, 1971, Ser. No. 153,217
Claims priority, application France, July 10, 1970, 7026730
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 3 Claims



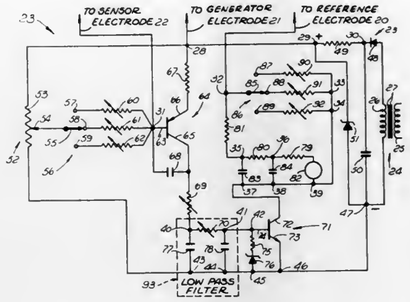
Apparatus and method for depositing thin layers by cathodic sputtering onto metallic supports wherein a rarefied gaseous enclosure is provided having an ionic bombardment stage and a cathodic sputtering stage with means for transferring the supports from the first stage to the second stage without cooling or admitting air, each stage acting simultaneously on both surfaces of the metal supports.

3,779,886
CONTROL AND INDICATOR CIRCUITS FOR COULOMETRIC TITRATORS

Art Murphy Dean Moen, Covina, and Jim Ray Robison, La Mirada, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,024
Int. Cl. G01n *27/44*
U.S. Cl. 204—195 T 8 Claims

A control circuit for a coulometric titrator having a recording voltmeter connected therein. The circuit utilizes two transistors of opposite conductivity types between which a low pass filter is connected. An emitter bias resistor is employed with one transistor. A zener diode and a resistor provides quiescent bias for the other transistor. The one transistor is provided with a base bias that is adjusted through the use of a potentiometer to cause both transistors to operate slightly above cut-off when the monitored fluid concentration is zero.

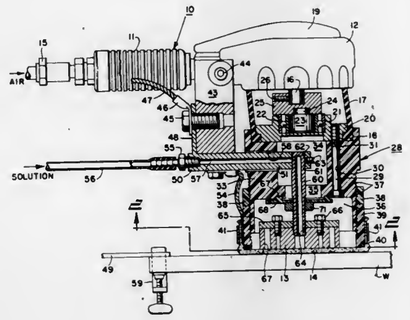


The zener, the filter and the one transistor emitter resistor all improve the signal-to-noise ratio at the voltmeter without reducing the voltmeter dynamic response or accuracy of indication. The extraordinary range of the instrument is, for this reason, down to two parts per billion.

3,779,887
VIBRATORY APPLICATOR FOR ELECTROPLATING SOLUTIONS

Anthony M. Gildone, Euclid, Ohio, assignor to Sifco Industries, Inc., Cleveland, Ohio

Filed Mar. 14, 1972, Ser. No. 234,590
Int. Cl. B23p *1/02*; C23b *5/76*
U.S. Cl. 204—224 R 11 Claims

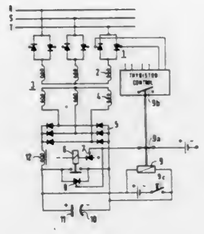


A vibratory tool for the brush electrotreatment of metal and especially for electroplating at increased rates of metal deposition as compared with non-vibratory tools. In one form, the apparatus comprises a hand tool having a plating terminal that is preferably fixed with respect to the tool. A housing encompasses the plating terminal and carries a porous dielectric cover in contact with the plating terminal. The cover is wet by electrolyte and rubbed over a workpiece. Power vibratory means positively moves the housing and porous cover with respect to the plating terminal while maintaining the contacting relation between the cover and terminal, so that in use the cover is vibrated with respect to both the workpiece and the plating terminal.

3,779,888
DEVICE FOR LIMITING THE SHORT-CIRCUIT ENERGY IN ELECTROLYTIC METAL-FORMING APPARATUS

Nils Bardahl, Erlangen, and Friedrich Gotz, Bubenreuth b. Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 17, 1967, Ser. No. 609,889
Int. Cl. B01k *3/00*; **B23p** *1/02*
U.S. Cl. 204—228 **3 Claims**

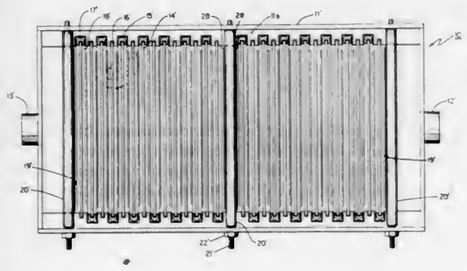


A device for limiting the short-circuit current between tool and workpiece of an electrolytic metal-forming machine in which an electrolyte is kept flowing through the gap between the workpiece and a shaped tool whose particular shape is to be imparted in a negative manner upon the workpiece. The tool and workpiece are connected to an alternating-current supply through an alternating-current controller and a rectifier in series with a smoothing reactor. A voltage sensing member is connected across the electrolyte gap between tool and workpiece in order to respond to a slight departure of the gap voltage from the rated operating voltage. When responding, the sensing member causes the alternating-current controller to block the further supply of alternating current and simultaneously releases a normally open power-current switch likewise connected across the electrolyte gap.

3,779,889
ELECTROLYTIC CELL FOR THE MANUFACTURE OF OXYHALOGENS

Richard E. Loftfield, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 7, 1972, Ser. No. 241,967
Int. Cl. B01k *3/04*
U.S. Cl. 204—268 **14 Claims**

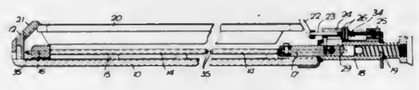


An electrolytic cell for generation of sodium hypochlorite and other products comprising a cell chamber and plurality of vertical spaced parallel electrically insulating partitions dividing said chamber into individual compartments, monopolar electrodes in the first and last compartments of the group, bipolar electrodes constructed of two spaced parallel straight segments closed at one end intermediate the terminal electrodes, positioned with the straight elements of the electrodes on opposite sides of each partition and with the closed end of adjacent electrodes on opposed lateral edges of adjacent partitions, and means for applying a decomposition electrical potential between the terminal electrodes in the first and last compartments, respectively. Means are provided for creating electrolyte flow in a side-to-side or top-to-bottom manner in each compartment as the electrolyte flows through the chamber. Alkali metal hypochlorite and other chemical compounds are produced by electrolyzing alkali metal halide and other electrolyte solutions which form a gas at the electrode surfaces during electrolysis of the solutions.

3,779,890
PLATING BOXES FOR HOLDING A STACK OF SEMI-CYLINDRICAL BEARING LINERS DURING PLATING

Clifford Edward Witney, Reading, Berkshire, and Charles William Stratford Present, Berkshire, both of England, assignors to Vandervell Products Limited, Berkshire, England

Filed Apr. 17, 1972, Ser. No. 244,483
Claims priority, application Great Britain, Apr. 20, 1971, 10,252/71; Apr. 29, 1971, 12,094/71; Aug. 9, 1971, 37,314/71
Int. Cl. C23b *5/70*
U.S. Cl. 204—297 R **9 Claims**



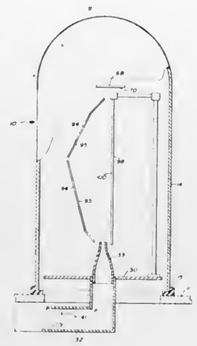
The disclosure relates to a plating box for holding a stack of bearing liners during plating. The box has a removable front wall with an elongate slot through which ions can pass. The box contains supports for a stack of liners to hold the stack with the parting faces of the liners against the front wall symmetrically on either side of the slot. A spring loaded presser holds the front wall against the parting faces of the liners.

3,779,891
TRIODE SPUTTERING APPARATUS

Bertalan J. Vegh, and Alfred E. Coates, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 817,635, April 21, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,585
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **2 Claims**

A triode sputtering apparatus to deposit material on the surface of an article. The apparatus comprises an enclosure means for evacuating the enclosure, a means for establishing an ion plasma in the enclosure. An ion target, including two members with surfaces of the material to be sputtered, is located in the enclosure with the surfaces facing the ion plasma. The target members are electrically biased so that ions from the plasma will impinge on their surfaces and sputter material therefrom. An article having a surface to be coated is mounted in the enclosure so that the surface faces the ion plasma and the sputtering surfaces of the target which are at an acute angle to the surface of the article. An electron funnel is used to funnel electrons being supplied to the plasma between the article and the target and an elongated anode is used to attract electrons from the plasma. The apparatus may be used to coat 11 by 11 inch glass plates with a metallic layer having substantially uniform optical density.



3,779,892
ELECTRONIC MEASUREMENT OF END POINT OF ASPHALT OXIDATION

Eric O. Forster, Scotch Plains; Alan D. Goldshine, West Orange, and Albert Gathman, Belmar, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

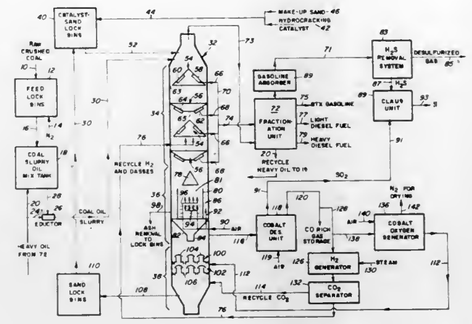
Continuation of Ser. No. 9,486, Feb. 9, 1970. This application July 12, 1972, Ser. No. 271,036
Int. Cl. C10g *1/00*
U.S. Cl. 208—6 **2 Claims**

An electronic measuring technique for use in determining the end point of a process, such as an air blowing process employed in the manufacture of asphalt by means of an electronic bridge circuit, a device for monitoring continuously certain electrical properties of the actual product, and a reference standard which simulates the preselected desired electrical properties of the product, such as oxidized asphalt, being manufactured. As the process progresses the difference between the sensed electrical properties of the actual product and those simulated by the reference standard decreases and becomes zero or nearly zero at the end point. When the difference is zero, provision is made for the process to be stopped automatically or manually, whereupon the product is transferred to its respective storage area.

3,779,893
PRODUCTION OF DESULFURIZED LIQUIDS AND GASES FROM COAL

Lawrence E. Leas, Simi, Calif.; Robert L. Leas, and Cecil J. Johnson, both of Columbia City, Ind., assignors to Leas Brothers Development Corporation, Columbia City, Ind.

Filed Mar. 21, 1972, Ser. No. 236,643
Int. Cl. C10g *1/08*
U.S. Cl. 208—10 **6 Claims**

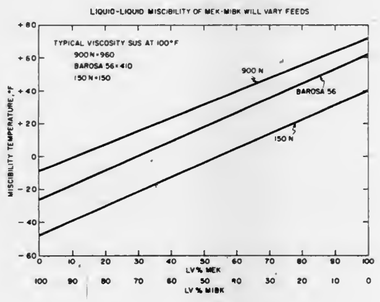


An integrated process for simultaneously recovering liquid and gaseous products from coal. A slurry is formed from crushed coal and recycled oil and is introduced to a three-zone reactor along with a hydrocracking catalyst and sand, the latter of which acts as a conveying medium. In the first zone, coal liquids are extracted and conveyed to a fractionation unit. In the second zone, the carbon coked on the solids is gasified with air creating a producer gas which flows upwardly countercurrent to the downward flow of the aforementioned mixture and supplying heat for the extraction stage. In the third stage, the remaining carbon is gasified with oxygen and carbon dioxide to a substantially nitrogen-free carbon monoxide. The carbon monoxide is desulfurized in a metal oxide bed.

3,779,894
IMMISCIBLE INJECTION OF SOLVENT IN DILUTION CHILLING OF WAXY OILS

John F. Eagen, and David A. Gudelis, both of Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 60,252, Aug. 3, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 234,405
Int. Cl. C10g *43/08*
U.S. Cl. 208—33 **17 Claims**



A dewaxing process is described comprising contacting a waxy lubricating oil with a dewaxing solvent in a chilling zone divided into a plurality of stages. The dewaxing solvent is injected into the chilling zone under conditions such that the solvent and oil are immiscible at the point of injection. At least a portion of the wax is precipitated from the oil and is separated therefrom under conditions such that the solvent and oil are miscible. Solvent injection is at a temperature preferably below 0°F. when the solvent comprises 40 volume percent methylethylketone and 60 volume percent methylisobutylketone.

3,779,895
TREATMENT OF HEAVY PETROLEUM OILS

Raymond F. Wilson, and Edward L. Cole, both of Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,773
Int. Cl. C10g *21/00*
U.S. Cl. 208—86 **12 Claims**

Metal and asphaltene-containing heavy petroleum oils are subjected to high temperature steam treatment and then contacted with a deasphalting solvent. The product is particularly suited for further catalytic treatment.

3,779,896
LUBE OIL MANUFACTURE

Robert A. Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

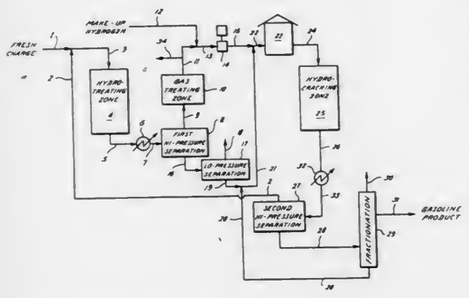
Continuation-in-part of Ser. No. 863,312, Oct. 2, 1969, abandoned. This application Aug. 4, 1971, Ser. No. 169,128
Int. Cl. C10g *37/00*
U.S. Cl. 208—86 **7 Claims**

Lubricating oils are prepared by subjecting a residuum containing petroleum fraction to simultaneous deasphalting-solvent refining using a solvent, e.g., furfural or N-methyl-2-pyrrolidone. The resulting raffinate is hydrocracked and then dewaxed. N-methyl-2-pyrrolidone is superior to furfural as a deasphalting-solvent refining agent because of its greater thermal stability and solvent capacity.

3,779,897
HYDROTREATING-HYDROCRACKING PROCESS FOR MANUFACTURING GASOLINE RANGE HYDROCARBONS

Richard E. Wrench, Houston, and Benjamin F. Smith, Jr., Groves, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,643
Int. Cl. C10g *23/00*
U.S. Cl. 208—89 **2 Claims**



A process for converting sulfur and nitrogen containing hydrocarbons boiling in the 400°–1,000° F. range into gasoline range hydrocarbons boiling below about 400° F. which comprises hydrotreating the sulfur and nitrogen containing hydrocarbons to yield a liquid hydrocarbon product containing less than 1 ppm nitrogen, and hydrocracking such hydrotreated hydrocarbon to yield gasoline boiling range product. The hydrotreating reaction is improved by employing pressures in the range of from about 1,200–1,500 psig and hydrogen to hydrocarbon ratios in the range of 10,000–20,000 SCF/B. By operating the hydrocracking reaction at a higher pressure than the hydrotreating reaction only one hydrogen circulation system is required wherein a hydrogen recycle gas is from the hydrocracking reaction effluent is charged to the hydrotreating reaction, wherein a gas stream comprising hydrogen, hydrogen sulfide and ammonia separated from the hydrotreating reaction effluent is treated to remove hydrogen sulfide and ammonia, wherein such treated gas is mixed with make-up hydrogen, compressed and recycled to the hydrocracking reaction.

3,779,898
CATALYTIC CRACKING OF HYDROCARBONS WITH ZEOLITE CATALYSTS

Douglas J. Youngblood, Groves, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 102,245
Int. Cl. B01j *9/20*; **C01b** *33/28*
U.S. Cl. 208—120 **6 Claims**

Significant improvements in catalyst activity and selectivity are achieved in the catalytic cracking of hydrocarbons with catalysts of the zeolite type when the ratio of fresh catalyst addition to catalyst loss is maintained above 1.5 and the catalyst is heat treated at between 1,300° and 1,600° F. for between 5 minutes and 24 hours. The heat treatment is performed on either the fresh catalyst being added or on the combined mixture of fresh catalyst and equilibrium catalyst. Increases in Texaco D + L activity of between 1 and 10 may be achieved with concomitant increases in naphtha selectivity with naphtha yield at constant conversion being increased as much as 5 volume percent.

3,779,899
HYDROGENATION OF AROMATIC HYDROCARBONS

David E. Mears, 212 Lido Pl., Fullerton, Calif.

Filed May 3, 1971, Ser. No. 139,924
Int. Cl. C10g *23/04*
U.S. Cl. 208—143 **5 Claims**

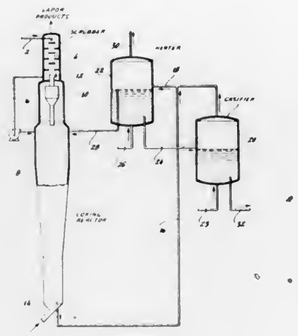
Aromatic hydrocarbons, particularly monocyclic hydrocarbons, are hydrogenated without substantial hydrocracking in the presence of a catalyst prepared by impregnating or ion-exchanging platinum onto a previously stabilized Y zeolite base, followed by drying and calcining at temperatures above 1,000° F. The final, high-temperature calcination gives markedly improved hydrogenation activity as compared to calcination at lower temperatures.

3,779,900
PROCESS FOR FLUID COKING AND COKE GASIFICATION IN AN INTEGRATED SYSTEM

Byron V. Molstedt, Baton Rouge, La., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Nov. 30, 1971, Ser. No. 205,775
Int. Cl. C10g *9/32*
U.S. Cl. 208—127 **6 Claims**

A method is provided for fluid coking and coke gasification in an integrated system. High temperature gases with entrained solids are delivered to a heating zone from the gasifier without the use of a cyclone, and mixed with either circulating coke from the reactor zone in a preferred embodiment, or with circulating coke from the heater zone in an alternative embodiment. The relatively cooler gaseous heater zone effluent is treated to separate gases and entrained solids.



3,779,901
HYDROTREATING OF HYDROCARBONS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 64,643, Aug. 17, 1973, which is a division of Ser. Nos. 839,643, July 7, 1969, Pat. No. 3,607,727, which is a continuation-in-part of Ser. No. 828,762, May 28, 1969, Pat. No. 3,578,584. This application June 12, 1972, Ser. No. 261,892
Int. Cl. C10g *23/02*
U.S. Cl. 208—143 **5 Claims**

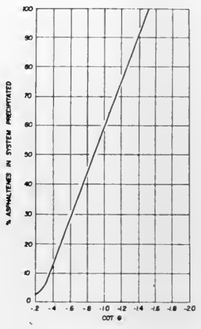
A process for hydrotreating hydrocarbons and mixtures of hydrocarbons utilizing a catalytic composite of a porous carrier material, a Group VIII noble metal component and a germanium component. Applicable to charge stocks containing sulfurous compounds and aromatic hydrocarbons, the hdrotreating conditions can be controlled to effect a particular end result including the ring-opening of cyclic hydrocarbons, desulfurization, denitrification, selective olefin saturation, etc.

3,779,902
PREPARATION OF MINERAL FREE ASPHALTENES

David L. Mitchell, and James G. Speight, both of Edmonton, Alberta, Canada, assignors to Canada Cities Service, Ltd.; Imperial Oil Limited; Atlantic Richfield Canada Limited and Gulf Oil Canada Limited; part interest to each

Filed May 21, 1971, Ser. No. 145,662
Int. Cl. C10g *21/00*
U.S. Cl. 208—251 **7 Claims**

Disclosed herein is an invention directed to a method of deasphalting in which a desired amount of asphalt is removed by adjusting the solvent power of the solvent-feed system to obtain a desired cotangent theta for the system. Also disclosed is the application of the cotangent theta principle to two-stage deasphalting of Athabasca bitumen.



3,779,903
HYDROCONVERSION PROCESS WITH A CATALYST HAVING A HYDROGENATION COMPONENT COMPOSITED WITH A HIGH DENSITY ALUMINA

Gerald S. Levinson, San Francisco, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 689,342, Dec. 11, 1967, abandoned, Division of Ser. No. 36,721, May 13, 1970, Pat. No. 3,673,112. This application Jan. 21, 1972, Ser. No. 219,790
Int. Cl. C10g *23/02*
U.S. Cl. 208—254 H **5 Claims**

Incorporation of 30–65 percent w of a hydrogenation metal component into a hydrogel which would yield on drying and calcining without the hydrogenation metals a xerogel of a high compacted bulk density (0.8–1.6 g/cc) low pore volume (0.15–0.45 cc/g) alumina results in a catalyst having a very high hydrogenation and denitrification activity. Up to about 10 percent fluoride is added to provide a cracking component. The hydrogenation metal component is selected from the oxides of nickel, molybdenum, tungsten, cobalt and mixtures thereof.

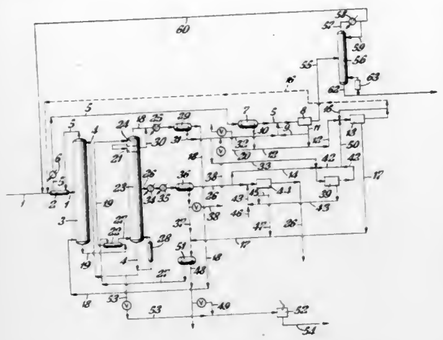
3,779,904
PROCESS FOR THE SEPARATION OF AROMATIC HYDROCARBONS FROM A MIXED HYDROCARBON FEEDSTOCK

Daniel John Kubek, North Tarrytown; Alexander Jean-Marie Kosseim, Yorktown Heights, and George Solomon Somekh, New Rochelle, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,404
Int. Cl. C10g *21/16*; **C07c** *7/10*
U.S. Cl. 208—333 **16 Claims**

The process involves a combination of continuous solvent extraction-steam distillation for the recovery of aromatic hydrocarbons from a mixed feedstock. The feedstock is contacted with a solvent-water mixture at temperatures in the range of about 75° to 200°C and the extract and raffinate streams are separated into their components. The purity of the aromatics recovered from the extract is improved by introducing light aliphatic hydrocarbons consisting essentially of

aliphatic and cycloaliphatic hydrocarbons of no more than five carbon atoms with the feedstock at the middle theoretical



stage of the extraction column. The light aliphatics are introduced in amounts in the range of 5 to 12 percent, based on the weight of the feedstock.

3,779,905

ADDING CORROSION INHIBITOR TO TOP OF CRUDE OIL STILL

Russell F. Stedman, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 20, 1971, Ser. No. 182,182
Int. Cl. C10g *7/00*
U.S. Cl. 208—348 **6 Claims**

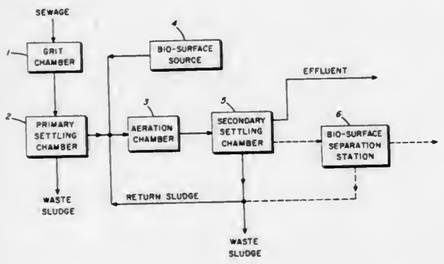
Avoiding corrosion by HCl of overhead condensing equipment from a crude column by injecting an amine containing at least 7 carbon atoms into the reflux being returned to the upper portion of the crude column. An amine hydrochloride is formed which is non-volatile and hydrocarbon soluble. Accordingly, it will be withdrawn from a lower section of the column and will not pass overhead into the communicating condensing equipment.

3,779,906

PLASTIC MOVING-SURFACE TREATMENT OF SEWAGE

Gilbert V. Levin, Chevy Chase, Md., assignor to Biospherics Incorporated, Rockville, Md.

Continuation-in-part of Ser. No. 2,496, Jan. 13, 1970, abandoned. This application Aug. 3, 1972, Ser. No. 277,504
Int. Cl. C02c *1/06*
U.S. Cl. 210—7 **11 Claims**



A process for the aerobic treatment of sewage. Raw sewage or the liquid portion of primary settled sewage and the sludge portion of secondary settled sewage are simultaneously aerated in the presence of a plurality of bio-surfaces - a bio-surface being a body capable of attracting and offering surface area for the growth of sewage treating microorganisms and also attracting the nutrients necessary for the growth of these microorganisms and the sewage organic materials to be degraded by the treatment process. The bio-surfaces, therefore, form favorable microenvironments where the microorganisms, their life-sustaining nutrients and organic matter in the sewage are brought together in concentrated fashion which promotes the capacity and rate of sewage treatment. The bio-surfaces comprise synthetic plastic surfaces preferably having a surface charge thereon.

3,779,907

LIQUID MEMBRANE PROCESS FOR THE SEPARATION OF AQUEOUS MIXTURES

Norman N. Li, Edison; Robert P. Cahn, Milburn, and Adam L. Shrier, Montclair, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 28,094, April 13, 1970, Pat. No. 3,617,546, and a continuation-in-part of Ser. No. 99,267, Dec. 17, 1970, Pat. No. 3,710,519. This application Aug. 25, 1971, Ser. No. 174,990. The portion of the term of this patent subsequent to Nov. 2, 1988, has been disclaimed.
Int. Cl. B01d *13/00*; **C02b** *1/46*, *1/60*
U.S. Cl. 210—22 **22 Claims**

This invention relates to a process for the removal of dissolved species from aqueous solutions, which comprises contacting said aqueous solution with an emulsion, said emulsion comprising an exterior phase which is characterized as being immiscible with said aqueous solution and yet permeable to said dissolved species, and an interior phase which contains a reactant capable of converting said dissolved species to a non-permeable form. The dissolved species permeate the exterior phase, into the interior phase where they are converted into nonpermeable forms and thus retained in the interior phase of said emulsion. The aqueous solution, depleted in said dissolved species, is separated from said emulsion and the emulsion cycled for reuse. In one preferred embodiment said dissolved species are ions, and an ion exchange compound is incorporated in the exterior phase of the emulsion, to promote the permeation of said ions through the exterior phase.

3,779,908

COALESCENCE OF WATER AND OLEOPHILIC LIQUID DISPERSIONS BY PASSAGE THROUGH A PERMEABLE, OLEOPHILIC LIQUID EQUILIBRATED, FOAM OF POLYURETHANE

Mercer Duane Gregory, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 235,846, March 17, 1972, abandoned. This application Mar. 19, 1973, Ser. No. 342,347
Int. Cl. B01d *17/04*
U.S. Cl. 210—23 **5 Claims**

Dispersions of an oleophilic liquid and water are coalesced by passing through a permeable, non-fibrous, consolidated bed of a polyurethane foam which is equilibrated with respect to sorption of the oleophilic liquid.

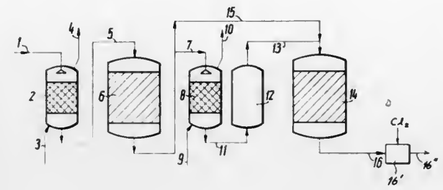
3,779,909

METHOD OF AND APPARATUS FOR THE PURIFICATION OF WATER CONTAINING ORGANIC CONTAMINANTS

Werner Wisfeld, Frankfurt Am Main; Hans Wirth, Dortelweil; Walter Lotz, and Alfred Kratz, both of Frankfurt Am Main, all of Germany, assignors to Laboratorium Fur Adsorptionstechnik GmbH, Frankfurt/Main, Germany

Filed July 22, 1971, Ser. No. 165,281
Claims priority, application Germany, Oct. 10, 1970, P 20 49 919.8
Int. Cl. C02b *1/14*, *1/36*
U.S. Cl. 210—29 **8 Claims**

Water containing organic contaminants is treated with an oxygen-containing gas and thereafter passed through a biologically effective active-carbon stage divided into at least two activated-carbon beds for biodegradation of the microorganisms in the raw water. Between these beds at least a major proportion of the water emerging from the first bed is treated with ozone before entering the next bed. The two beds constitute a



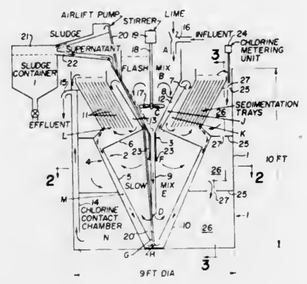
biological purification stage from which the effluent may be passed to an adsorption stage in which activated carbon is used to remove residual organic impurities by contact absorption. The final effluent is chlorinated with at least 0.05 mg/liter chlorine or treated with an equivalent quantity of another disinfectant.

3,779,910

LIQUID TREATMENT PLANT AND PROCESS, PARTICULARLY FOR WASTE WATER

James E. Chatfield, Beaconsfield, Quebec, Canada, assignor to Canadair Limited, St. Laurent, Montreal, Quebec, Canada

Filed Feb. 14, 1972, Ser. No. 225,937
Claims priority, application Canada, Apr. 13, 1971, 110150
Int. Cl. B01d *21/16*
U.S. Cl. 210—49 **4 Claims**



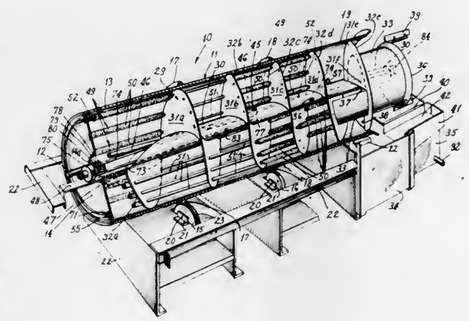
A treatment process and plant particularly adapted to be embodied in a compact package unit designed in particular to efficiently remove phosphorus and other pollutants from waste water. A treatment process wherein lime or other chemical coagulant is intimately mixed with an influent solution to coagulate the solute and to flocculate the suspended particles into a flocculation chamber wherein the mixture is subjected to raising through a field of suspended particles and to reseeding with deposited particles to encourage the flocculation. Thereafter, the mixture is caused to pass through curtains of falling floc and between sedimentation trays to deposit the particles. The unit is constructed and arranged to produce gravity flow serially and at predetermined individual velocities through the successive stages of the process to optimize the flocculation and deposition conditions therein.

3,779,911

WASTE TREATMENT APPARATUS

Hugo D. Freudenthal, Wantagh; Richard E. Townsend, Huntington; Peter K. Zawoiski, North Babylon, and Edward Schatz, Setauket, all of N.Y., assignors to Fairchild Industries, Germantown, Md.

Filed July 12, 1971, Ser. No. 161,608
Int. Cl. B01d *21/24*
U.S. Cl. 210—60 **8 Claims**

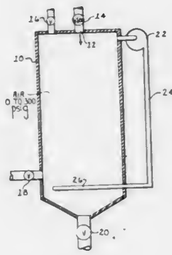


A waste treatment apparatus which includes a rotatable drum having an inlet at one end to receive the waste sewage to be treated within the drum and outlets for the treated waste at the opposite end. The rotatable waste treatment drum is inclined in a stationary frame so that the waste sewage will flow from the inlet toward the outlet during the treatment cycle, under the influence of gravity while being exposed to separate treatment stages in batches, separated within the drum by a helical member. The helical member is sealingly connected to the interior wall of the rotatable drum and to an axial hollow core member and forms a plurality of variably spaced convolutions that are formed about the axial hollow core member so that as the drum rotates the batches of waste sewage disposed in the lower segment of the drum between the convolutions of the helical member, are successively raised to a higher level as the drum is rotated and the waste is undergoing treatment. Clarified liquid effluent is removed during the treatment cycle through the hollow core member and part of the treated liquid effluent containing active microorganisms is introduced to the untreated waste entering the inlet end of the drum. Rotation of the drum and selective aeration of the waste sewage is controlled by a control system associated with the rotatable drum and the control system has chemical sensing and dispensing apparatus that sense the chemical concentrations or pH of the wastes being treated and add chemicals to the wastes when needed. The wastes are treated to produce a clarified liquid effluent and a sludge that are automatically separated and collected in separate containers and may be safely put to a useful purpose such as the replenishment of a water supply and use as a fertilizer. The treated and collected sludge is also dried so that it will be readily usable as a nutrient or fertilizer, or can be stored as an innocuous material.

3,779,912
WATER CLARIFICATION PROCESS USING SILICON-CONTAINING AMINOMETHYL PHOSPHONATES
Derek Redmore, Ballwin, and Frederick T. Welge, Webster Groves, both of Mo., assignors to Petrolite Corporation, Wilmington, Del.
Division of Ser. No. 80,124, Oct. 12, 1970, Pat. No. 3,716,569.
This application Oct. 2, 1972, Ser. No. 294,491
Int. Cl. C02b *1/20*
U.S. Cl. 210—54 5 Claims

Silicon-containing aminomethyl, or substituted aminomethyl, phosphonic acids and derivatives thereof. The silicon atom is silicone functional (i.e., has a -SiO- group) and is also attached to an alkyleneamino group which may have one or more amino groups (i.e., an alkylene-amin group having at least one N-H group) capable of reacting with a carbonyl compound (i.e., aldehyde or ketone) and phosphorous acid, or a derivative thereof, to form aminomethyl phosphonic acid. All, or less than all, of the N-H groups may be converted to aminomethyl phosphonic acids. The silicon-aminomethyl phosphonic acids may be monomeric, polymeric, or copolymeric. They are useful, for example, as corrosion inhibitors, scale inhibitors, water clarifiers and for other uses.

3,779,913
WATER TREATMENT
Waylan C. Martin, P.O. Box 1468, Monahans, Tex.
Filed June 6, 1972, Ser. No. 260,316
Int. Cl. C02b *1/28*
U.S. Cl. 210—63 13 Claims



To oxidate materials in water, a chamber is filled with air. Thereafter, raw water is pumped in, thus, compressing the air. Then the air from the top of the vessel is pumped to an air diffusion plate at the bottom. The operation is continued as a batch operation for the desired length of time and, thereafter, the treated water removed from the chamber.

3,779,914
COMPOSITION OF IMPROVED VISCOSITY CONTROL AND METHOD OF USE
Kenneth H. Nimerick, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 666,853, Sept. 11, 1967, abandoned. This application May 20, 1971, Ser. No. 145,495
Int. Cl. E21b *43/26*
U.S. Cl. 252—8.55 R 10 Claims

An aqueous composition is provided which can be employed as a fracturing fluid, to suspend particulate solids or the like. The composition can be formulated to have a certain initial viscosity value which will decrease after a certain period of time to a value below the initial viscosity value. The composition comprises, water, a water soluble organic polymer as a viscosity increasing agent and as a breaker a hydrazine or hydroxylamine compound or a mixture of such compounds.

3,779,915
ACID COMPOSITION AND USE THEREOF IN TREATING FLUID-BEARING GEOLOGIC FORMATIONS
Clare H. Kucera, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 138,775, April 29, 1971, abandoned, and a continuation-in-part of Ser. No. 701,821, Jan. 31, 1968, abandoned. This application Sept. 21, 1972, Ser. No. 290,888
Int. Cl. E21b *43/26, 43/27*
U.S. Cl. 252—8.55 C 8 Claims

A composition is provided which is especially useful as a fluid loss additive for acidic aqueous solutions. The composition is prepared by first mixing together an emulsifier, an oil soluble surfactant dispersing agent and a carrier oil. Clay particles are then dispersed in the mixture followed by an adhesive binder which functions to bind the clay particles together when screened out on a formation face.

3,779,916
ACIDIZING COMPOSITION
Curtis W. Crowe, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 4, 1971, Ser. No. 195,847
Int. Cl. E21b *43/27*
U.S. Cl. 252—8.55 C 3 Claims

An acid-in-oil emulsion having a greatly enhanced retardation rate is prepared by employing in the emulsion a mixture of an effective amount of an oil wetting surfactant, e.g., a saturated hydrocarbon sulfonate, and an emulsifier, e.g., an alkylaryl sulfonic acid or water soluble salt thereof.

3,779,917
OIL RECOVERY WITH VINYL SULFONIC ACID-ACRYLAMIDE COPOLYMERS
Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Nov. 26, 1971, Ser. No. 209,479
Int. Cl. E21b *43/20*
U.S. Cl. 252—8.55 D 10 Claims

Copolymers of alkali metal vinyl sulfonates and their alkyl derivatives with acrylamides which copolymers have high molecular weights can be formed and partially hydrolyzed to provide mobility control agents for secondary recovery of petroleum. Optionally, these copolymers can be treated with formaldehyde to effect methylolation and can additionally be treated with inorganic sulfites to effect sulfitation. Preferably, prior to use in oil recovery, the copolymers are partially hydrolyzed.

3,779,918
LUBRICANT-CONTAINING POLYMERIC SYNTHETIC RESIN COMPOSITION
Hiroshi Ikeda, and Takao Kawakita, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Higashi-ku, Osaka, Japan
Filed May 5, 1969, Ser. No. 821,626
Claims priority, application Japan, May 4, 1968, 43-29634; Sept. 9, 1968, 43-64345
Int. Cl. C10m *7/30, 7/26*
U.S. Cl. 252—12.6 14 Claims

An oil-containing or lubricant-containing molded plastic composition comprising a lubricant adsorbent carrier having a surface area of at least 0.01 m^2/g, and being selected from the group consisting of a non-fusible naturally occurring inorganic powder, a synthetic high molecular weight material, a naturally occurring high molecular weight material, and mixtures thereof in admixture with a lubricant, said carrier being blended with a base plastic material selected from the group consisting of a synthetic resin and a mixture of at least two synthetic resins is disclosed.

3,779,919
SYNTHETIC AIRCRAFT TURBINE OIL
Edwin L. Patmore, Fishkill; David D. Reed, Lagrangeville; Frederick G. Oberender, Wappingers Falls, and John W. Nebzydoski, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Aug. 21, 1972, Ser. No. 282,181
Int. Cl. C10m *1/38, 1/32*
U.S. Cl. 252—33.6 10 Claims

Synthetic lubricating oil composition comprising a major portion of an aliphatic ester-base oil having lubricating properties formed from the reaction of a pentaerythritol or trimethylolpropane and an organic monocarboxylic acid containing an amine salt of a substituted rhodanine.

3,779,920
LUBRICATING OIL COMPOSITION
Donald L. Devries, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Feb. 5, 1971, Ser. No. 113,041
Int. Cl. C10m *1/32, 1/40*
U.S. Cl. 252—33.4 32 Claims

The incorporation of at least one of certain nitrogen-oxygen containing compounds into lubricating oil compositions comprising mineral oil of lubricating viscosity and at least one alkali metal and/or alkaline earth metal carbonate overbased sulfonate and/or phenate improves the wear properties of the lubricating composition toward metals, in particular silver. These lubricating oil compositions may be used by maintaining a lubricating amount of the composition on the components of an internal combustion engine, in particular a railroad diesel engine having silver components, requiring lubrication.

3,779,921
SYNTHETIC AIRCRAFT TURBINE OIL
Edwin L. Patmore, Fishkill; Frederick G. Oberender, Wappingers Falls, and David D. Reed, Lagrangeville, all of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Aug. 21, 1972, Ser. No. 282,182
Int. Cl. C10m *1/38, 1/32*
U.S. Cl. 252—33.6 10 Claims

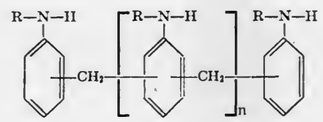
Synthetic lubricating oil composition comprising a major portion of an aliphatic ester-base oil having lubricating properties formed from the reaction of a pentaerythritol or trimethylolpropane and an organic monocarboxylic acid containing a thio-oxazolidinedione, a thiazolidinedione or the corresponding amine salt.

3,779,922
BARIUM-CONTAINING DISPERSIONS AND PROCESS
William M. LeSuer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Continuation-in-part of Ser. No. 118,489, Feb. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 864,894, Oct. 8, 1969, abandoned, Continuation-in-part of Ser. No. 681,028, Nov. 6, 1967, Pat. No. 3,515,669, said Ser. No. 118,489, is a continuation-in-part of Ser. No. 64,632, Aug. 17, 1970, abandoned, which is a division of Ser. No. 864,894, Oct. 8, 1969, abandoned. This application June 19, 1972, Ser. No. 264,095
Int. Cl. C10m *1/32, 3/26*
U.S. Cl. 252—34.7 3 Claims

Process for preparing barium-containing dispersions in essentially inert diluents by contacting a basically reacting barium compound with carbon dioxide in the presence of a stabilizing agent and promoter. A typical process comprises carbonating a mixture of barium hydroxide monohydrate, heptyl phenol, and the reaction product of polyisobutenyl-substituted-succinic anhydride and an alkylene polyamine. The barium-containing dispersions thus produced are useful as additives for fuels and lubricants.

3,779,923
ALKYLATED METHYLENEDIANILINE TARS
Robert Archie Gardiner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 20, 1972, Ser. No. 219,526
Int. Cl. C10m *1/34*
U.S. Cl. 252—50 5 Claims

Alkylated methylenedianiline tars having the formula



wherein each R is independently a secondary 2-alkyl radical having from about three to about 10 carbon atoms and *n* is from about 0.7 to about 1.2.

3,779,924
PROCESS FOR PREPARING ELECTROPHOTOGRAPHIC LIQUID DEVELOPING COMPOSITIONS
Jonas J. Chechak, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 1, 1971, Ser. No. 130,519
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 16 Claims

An electrophotographic liquid developer may be prepared by admixture of a dye and a mordant therefor in the presence of (1) a suitable binder, (2) a solvent for the binder and (3) a liquid precipitation medium; the solvent for the binder is substantially removed; and the resultant dope is added to a suitable liquid carrier to form a dispersion of finely divided toner particles in the liquid carrier. The toner particles thus formed contain a dye-mordant salt precipitate dispersed in the binder.

3,779,925
PIEZOELECTRIC CERAMIC COMPOSITIONS
Hiromu Ouchi; Masamitusu Nishida, and Katsuo Nagano, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 8, 1971, Ser. No. 187,850
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 11 Claims

Piezoelectric ceramic compositions having high mechanical strength, high electrical breakdown strength, high coercive force, high electromechanical coupling coefficient and high

mechanical quality factor, and comprising the solid solution in the system

PbO—54.8–50.1 mol %
MnO_2—9.3–0.2 mol %
Nb_2O_5—7.3–0.2 mol %
Li_2O—3.8–0.1 mol %
TiO_2—24.8–14.8 mol %
ZrO_2—26.8–14.8 mol %

and Nb_2O_5/Li_2O mol ratio is a value selected from the range $4.0000 \geqq Nb_2O_5/Li_2O \geqq 3.1428$ and $2.8636 \geqq Nb_2O_5/Li_2O \geqq 1.8421$.

3,779,926

TONERS AND PROCESS FOR PREPARING SAME

John W. Merck, Tyrone, Pa., and John D. Nixon, Annapolis, Md., assignors to SCM Corporation, New York, N.Y.

Continuation of Ser. No. 633,642, Feb. 23, 1967, abandoned, which is a continuation of Ser. Nos. 447,758, April 13, 1965, abandoned, and Ser. No. 447,759, April 13, 1965, abandoned. This application Oct. 3, 1969, Ser. No. 866,080

Int. Cl. G03g *9/00*

U.S. Cl. 252—62.1 **8 Claims**

The compositions (toners) are useful in electrostatic printing and xerography and are a mixture of base and modifier particles with the base particles having a dielectric constant K and the modifier particles being of a normally solid, inert, non-hygroscopic, inorganic compound which compound has a dielectric constant K′ of at least 10 and sufficient to give a K′/K ratio of at least 2 and an electropositive metal containing moiety chemically associated with an electronegative moiety. The metal of the electropositive moiety has a work function of up to about 2.5 electron volts. The toner has a charge/mass ratio at least about 50 percent greater than that of the base particles in their unmodified state.

3,779,927

HEAT TRANSFER AGENT COMPOSITION

Edward R. Howell, Freeport; Harold B. Wood, Jr., Lake Jackson, both of Tex., and Richard S. Sayad, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 766,979, Oct. 11, 1968, abandoned. This application Apr. 26, 1971, Ser. No. 137,589

Int. Cl. C09k *3/02*

U.S. Cl. 252—75 **12 Claims**

Amine-initiated copolymers of ethylene oxide and propylene oxide containing a small but effective amount of an alkaline pH buffering agent are effective heat transfer agents in the removal of excess solder from electronic circuit boards.

3,779,928

AUTOMATIC TRANSMISSION FLUID

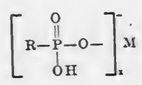
Raymond C. Schlicht, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,410

Int. Cl. C09k *3/00*

U.S. Cl. 252—75 **9 Claims**

Automatic transmission fluid comprising at least 86 weight percent of a mineral lubricating oil and 0.01 to 5.0 weight percent of an alkanephosphonic acid salt represented by the formula:



in which R is a straight chain or predominantly straight chain aliphatic radical having from about 11 to 40 carbon atoms, M is zinc, calcium or an alkyl ammonium radical having the formula:



in which R″ is a polymethylene radical having from two to four carbon atoms, R′ is an alkyl radical having from six to 20 carbon atoms and x is 1 or 2 equal to the valence of M, and a method for operating an automatic transmission.

3,779,929

CLEANING COMPOSITION

Roger L. Abler, White Bear Lake, and Gary A. Gardner, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 23, 1972, Ser. No. 228,755

Int. Cl. C11d *17/04*

U.S. Cl. 252—90 **9 Claims**

Cleaning compositions based upon higher fatty alcohol detergents such as sodium lauryl sulfate and having particular utility for removing soil and stains from carpets, upholstery, etc., and for imparting stain resistance to the cleaned surface are improved by the addition of certain anionic surfactants without which the compositions could cause respiratory irritation to an unprotected user, especially in unventilated closed areas.

3,779,930

FLUIDS

Percival George Ernest Alcorn, Hawthorn, and Keith Gordon Neill, Kew, Victoria, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed May 26, 1971, Ser. No. 147,231

Claims priority, application Australia, Oct. 9, 1970, 1507/70; Oct. 9, 1970, 2813/70

Int. Cl. C09k *3/00*; **C10m**

U.S. Cl. 252—77 **4 Claims**

New compositions of use as hydraulic fluids comprising a compound of general formula I:

$$R_1(O - Alk)_n - OR_2 \qquad I$$

wherein Alk is an alkylene or aralkylene group containing from 1 to 9 inclusive carbon atoms in a straight or branched chain, R_1 and R_2, separately, is an alkyl, substituted alkyl or aralkyl group containing from 1 to 10 inclusive carbon atoms in a straight or branched chain and n is an integer from 1 to 10 inclusive, said compound having a viscosity at −40° C. of less than 1800 centistokes; and at least one additive.

3,779,931

COMPOSITIONS USEFUL IN THE AQUEOUS COLD-BLEACHING OF TEXTILES INCLUDING OPTICAL BRIGHTENERS

Walter Fries, Erkrath-Unterbach; Helmut Bloching, Monheim-Baumberg; Hilden Rhld, Monheim-Baumberg, and Dieter Jung, Monheim-Baumberg, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed Sept. 27, 1971, Ser. No. 184,213

Claims priority, application Germany, Dec. 10, 1970, 2060762; July 12, 1971, 2134691

Int. Cl. C11d *7/54*

U.S. Cl. 252—99 **8 Claims**

Compositions useful in the aqueous cold-bleaching of textiles comprising (1) from 3 to 100 percent by weight of a bleaching component comprising (a) from 95 to 99.99 percent by weight of a mixture of (i) a percompound yielding H_2O_2 in aqueous solution and (ii) an activator for active oxygen selected from the group consisting of N-acyl and O-acyl compounds having 2 to 9 carbon atoms in the acyl, said activator having an activating action of at least 3 in the Per-Acid Formation Test, said percompound and said activator being present in such ratio that from 0.01 to 4 mols of said activator are present for each gram-atom of active oxygen in said percompound, and (b) from 0.01 to 5 percent by weight of at least one optical brightener selected from the group consisting of 4,4′-bis-(azolyl)-stilbene-2,2′-disulfonic acids, stilbyl-naphthotriazoles, bis-(benzoxazolyl)-derivatives, 2-benzoxazolyl-4,5-naphthothiophene compounds, diphenyl-distyryl compounds and water-soluble acid addition salts thereof, and (2) from 0 to 97 percent of other customary ingredients of bleaching agents or washing agents having a bleaching effect.

3,779,932

SOLID WASHING COMPOSITIONS

Brian George Jaggers, 33 Park Dr., Romford; Keith Frederick Ufton, 261 Henley Rd., Ilford, and Horst Richard Wagner, 14 Kettleway Way, Ongar, all of England

Filed June 29, 1971, Ser. No. 158,048

Claims priority, application Great Britain, July 1, 1970, 31,862/70

Int. Cl. C11d *9/00*

U.S. Cl. 252—108 **26 Claims**

Solid washing compositions such as detergent, soap, bath salt or water softening compositions are perfumed by incorporation thereinto of a monomeric titanate or zirconate ester of a perfumery alcohol or phenol of formula MA_4, where M is titanium or zirconium and the groups A are the same or different organic groups at least one of which is a group of formula [— O — R] where R is the residue of a perfumery alcohol or phenol. Said esters provide slow release of aroma by hydrolysis under the conditions of use of said compositions.

3,779,933

ALKALINE OVEN CLEANING COMPOSITION

Howard L. Eisen, Fair Lawn, N.J., assignor to Glamorene Products Corporation, Clifton, N.J.

Continuation of Ser. No. 776,261, Nov. 15, 1968, abandoned, which is a continuation-in-part of Ser. No. 517,114, Dec. 28, 1965, abandoned. This application July 29, 1971, Ser. No. 167,450

Int. Cl. A21b *3/16*; **C11d** *1/32, 7/06*

U.S. Cl. 252—118 **1 Claim**

An alkali metal hydroxide and water solution having incorporated therein nitrogen-containing anionic surfactants combined with a polyhydric alcohol to form the active concentrate of a composition for cleansing food residue and soil from preheated surfaces of cooking ovens, grilles and the like. The particular anionic surfactants present in the concentrate have the important function of inhibiting the corrosive action of the concentrate on the human skin and mucuous tissues and consist specifically of the sodium salts of the condensation product of coconut fatty acids with a complex of polypeptides and amino acids derived from proteins (Maypon SK), of a complex of polypeptides and amino acids derived as a hydrolysate from proteins (Polypeptide No. 37) and of an amido methylated lauric acid (Sodium N-Lauroyl Sarcosinate Sarkosyl NL–97). The concentrate may include a thickening agent to render it surface adhering and additionally may be packaged in an aerosol container for expulsion therefrom by a propellant with or without a foam-forming and foam-stabilizing agent.

3,779,934

PROCESS AND AGENTS FOR THE CLEAR RINSE IN MECHANICAL DISHWASHING

Theodor Altenschopfer, Dusseldorf-Holthausen; Heimold Batka, Dusseldorf-Reisholz; Gunter Jakobi, Hilden; Peter Krings, Krefeld, and Hans-Jurgen Lehmann, Mettmann, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed Dec. 7, 1971, Ser. No. 205,723

Claims priority, application Germany, Dec. 18, 1970, 2062464

Int. Cl. C11d *7/08*; **C23g** *1/02*; **B01f** *17/00*

U.S. Cl. 252—142 **10 Claims**

Process for rinsing of dishes in dishwashing machines having one or several clear-rinsing cycles using an aqueous solution of an adduct of from 3 to 30 mols of ethylene oxide to alkanediols with a linear alkane chain of from 10 to 20 carbon atoms and having vicinal, non-terminal hydroxyls, as well as clear-rinsing agents for use in the process.

3,779,935

INHIBITION OF CORROSION

Lee A. McDougall; Thomas E. Richards, and James R. Looney, all of Houston, Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed July 12, 1971, Ser. No. 161,994

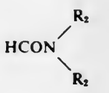
Int. Cl. C11d *7/48*; **C23f** *11/16*

U.S. Cl. 252—149 **15 Claims**

Corrosion of ferrous metals by corrosive acids at elevated temperatures is inhibited by adding to the corrosive acid a composition comprising effective amounts of at least one acetylenic alcohol, a quaternary ammonium compound and/or an amine, a surfactant, an organic solvent, and a formic acid compound selected from the group consisting of formate esters of the structure:

HCOOR

where R is a mono-aryl group, an alkyl group having 1 to 6 carbon atoms, cyclo-alkyl residues having 5 to 6 carbon atoms, alkenyl and alkynyl groups having 2 to 6 carbon atoms which may contain functional groupings selected from —C—OH, —OH, =C=O, —COOH, —SH, and NH_2 and formamides of the structure:



Where R_2 is hydrogen, mono-aryl groups, an alkyl group having 1 to 6 carbon atoms, cyclo-alkyl residues having 5 to 6 carbon atoms, alkenyl and alkynyl groups having 2 to 6 carbon atoms which may contain functional groupings selected from —C—OH, —OH, =C=O, —COOH, —SH, and NH_2.

The composition suitably contains a surfactant and an organic solvent.

3,779,936

CALCIUM CHLORIDE AND POLYETHYLENE GLYCOL DESICCANT BRIQUETTE

Roscoe L. Pearce, Midland; Gerald C. Stalker, Bay City, and John L. Arnold, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 142,994, May 13, 1971, abandoned. This application Feb. 4, 1972, Ser. No. 223,519

Int. Cl. B01d *53/26*

U.S. Cl. 252—194 **5 Claims**

Disclosed is an improved method for the briquetting of calcium chloride. The method involves intermixing polyethylene

glycol with the calcium chloride fines to be briquetted. The use of polyethylene glycol, which ranges in molecular weight from 1000 to 200,000 and is employed in an amount of from 0.1 to 10 weight percent of the calcium chloride, provides briquettes having distinct advantages over calcium chloride briquettes prepared without such an additive.

3,779,937

OPTICAL FILTER LAYER

Rainer Kitzing, Villars-sur-Glane; Max Marthaler, Marly-le-Petit, and Alfred Oetiker, Fribourg, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

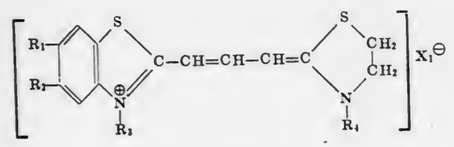
Filed Dec. 27, 1972, Ser. No. 318,814

Claims priority, application Switzerland, Dec. 31, 1971, 19241/71

Int. Cl. F21v 9/02; G02b 5/20

U.S. Cl. 252—300 7 Claims

Optical filter layer containing in polyvinyl alcohol a filter dyestuff of the formula



wherein R_1 and R_2 denote hydrogen atoms, halogen atoms or lower alkyl groups, R_3 and R_4 denote hydrocarbon radicals which may carry further substituents and X_1 denotes an anion. The filter layers possess a very good fastness to light.

3,779,938

METHOD FOR PROCESSING SCRAP FISSILE MATERIAL INTO A FORM SUITABLE FOR SHIPPING

Everett A. Weakley, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 18, 1972, Ser. No. 281,662

Int. Cl. C09k 3/00

U.S. Cl. 252—301.1 R 3 Claims

Scrap fissile materials and pyrophoric solids are added to a slurry of water and a nonburnable cementing material, masonry cement being preferred, and the resulting agglomeration is poured into a metal can. After the cementing material has been allowed to set to form a solid block within the can, the metal can is sealed with a metal lid. The scraps are thereby encapsulated in the solid cement block preventing exposure to the atmosphere and are held in a fixed lattice in the solid block thereby eliminating any fire hazard and eliminating any potential criticality. The scrap material, held in the billet so produced, is in a form suitable for safely shipping to a fuel scrap recovery plant which is located at a substantial distance from the place at which the scrap is produced. Upon arrival at the scrap recovery plant, the metal can is peeled from the solid block. The solid block is inserted whole or broken into smaller chunks and the chunks inserted into a high temperature oven and roasted to decompose the cementing material and convert the fissile material to the oxides. The fissile material is then leached from the oxides in the roasted product with acid which also decomposes any remaining cementing material. The fissile material is subsequently purified by extraction.

3,779,939

LIQUID LASER SOLUTION FORMED WITH A NEODYMIUM SALT IN PHOSPHORUS OXYCHLORIDE

Erhard J. Schmitschek, Munich, Germany, and John A. Trias, La Mesa, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1971, Ser. No. 111,128

Int. Cl. C09k 1/36, 1/62

U.S. Cl. 252—301.4 P 3 Claims

An improved liquid lasing solution is prepared by introducing neodymium trifluoroacetate into phosphorus oxychloride. Some Lewis acid is also desirably included in the solution in an amount to increase solubility of the neodymium III phosphorus dichloridate formed, optimize the intensity of fluorescense of the liquid lasing solution and enhance its operative efficiency. Preferably, Lewis acid of the form zirconium tetrachloride is employed and the neodymium (III) phosphorus dichloridate formed as a result of the dissolution of the neodymium trifluoroacetate in the phosphorus oxychloride is in a mole proportionality relative to the zirconium tetrachloride of not less than 1. The new liquid laser solution is highly stable over relatively long periods of time, does not degrade under flash excitation, and obviates certain undesirable absorption characteristics of comparable prior art liquid lasing compositions.

3,779,940

POLYISOCYANURIC ACID EMULSIFYING AGENTS AND DERIVATIVES

Perry A. Argabright, Larkspur, and C. Travis Presley, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Feb. 9, 1972, Ser. No. 224,904

Int. Cl. C08g 22/00

U.S. Cl. 252—312 7 Claims

A mixture of molecules containing all of the following groups exhibit surface activity: isocyanurate, hydrogen-substituted isocyanurate, metal substituted isocyanurate, and at least one group selected from the class consisting of a monovalent organic radical selected from the following: isocyanate urethane (-$NHCO_2R'$), urea (-NHCONHR'), amino (-NH_2, -NHR', or -NR_2').

3,779,941

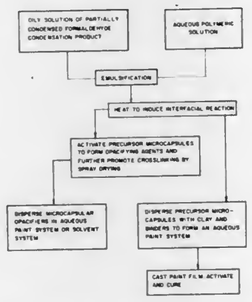
WATER-RESISTANT MICROCAPSULAR OPACIFIER SYSTEM AND PRODUCTS

Mabrin P. Powell, Chicago, Ill., assignor to Champion International Corporation, New York, N.Y.

Filed July 17, 1970, Ser. No. 55,925

Int. Cl. B01j 13/02; B44d 1/02; C09d 5/00

U.S. Cl. 252—316 23 Claims



Microcapsules having controlled structural integrity are produced by a process which involves admixing oil-soluble, partially-condensed thermosetting condensation polymer-containing oily solution and a water-soluble polymer-containing aqueous solution and causing a chemical reaction between the polymers at the resulting oil/water interface. The microcapsules are activated by expelling the oily core material and replacing it with air and cured to provide opacifiers having excellent water resistance and may be employed as opacifying agents in coatings and particularly in paint films.

3,779,942

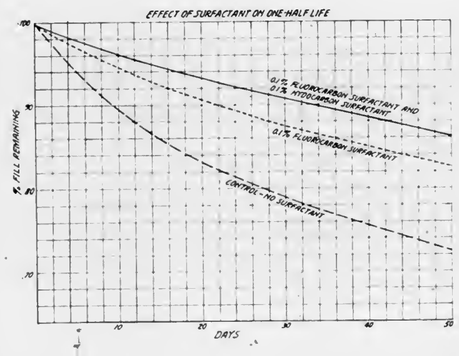
CAPSULES AND PROCESS FOR FORMING CAPSULES

Theodore F. Bolles, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 4, 1970, Ser. No. 95,036

Int. Cl. B01j 13/02; B29c 13/00; B44d 1/02

U.S. Cl. 252—316 8 Claims



Capsules having an improved vapor barrier together with improved shell thickness, uniformity and strength comprise a central core of liquid fill material surrounded and enclosed by an outer shell, said shell containing at least one soluble surfactant in particular, sodium dioctylsulfosuccinate, sodium carboxymethyl cellulose, sorbitan sesquioleate, silicones, interpolymer of methyl vinyl ether and maleic anhydride, mixtures thereof, or fluorocarbon compounds.

3,779,943

PROCESS FOR REACTIVATING AN ALUMINIUM TRICHLORIDE CATALYST

Benedetto Calcagno; Marcello Ghirga, and Lucio Di Fiore, all of Milan, Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Continuation of Ser. No. 841,844, July 15, 1969, abandoned. This application Sept. 20, 1971, Ser. No. 182,256

Claims priority, application Italy, July 22, 1968, 19272 A/68

Int. Cl. B01j 11/80; C07c 0/356

U.S. Cl. 252—411 R 2 Claims

The liquid aluminium trichloride-hydrocarbon complex formed from a catalytic process is reactivated by instantaneously vaporizing it under conditions such as to form no more than 25 wt. percent of normally gaseous products, e.g., at atmospheric pressure and 300° to 500° C, and the vaporized products are condensed and the normally liquid catalytic products are recovered. The complex can be used for catalysing the alkylation of benzene with propylene tetramer.

3,779,944

BUTADIENE POLYMERIZATION CATALYST

Charles Cozewith, Westfield, and Erik G. M. Tornqvist, Roselle, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 788,908, Jan. 3, 1969, Pat. No. 3,642,758. This application Aug. 27, 1971, Ser. No. 175,758.

The portion of the term of this patent subsequent to May 16, 1989, has been disclaimed.

Int. Cl. C08d 1/14

U.S. Cl. 252—429 B 6 Claims

Process utilizing Ziegler-type catalyst system for polymerizing butadiene to high molecular weight polybutadienes possessing varying proportions of trans-1,4 units, in the range of 50–90 percent comprising: an organoaluminum compound, a Lewis base, and a $Ti(halogen)_3{\cdot}nAlI_3$ composition. The polymers thus obtained exhibit outstanding properties as elastomers when cross-linked and as thermo-elastic polymers in the uncured state.

3,779,945

MIXTURES OF 3-(3,5-DIALKYL-4-HYDROXYPHENYL)-PROPIONIC ACID ESTERS OF ALKANEDIOLS

Martin Dexter, Briarcliff Manor; John D. Spivack, Spring Valley, and David H. Steinberg, Bronx, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 861,475, Sept. 26, 1969, Pat. No. 3,644,482, which is a continuation-in-part of Ser. No. 359,460, April 13, 1964, abandoned, which is a continuation-in-part of Ser. No. 276,192, April 29, 1963, abandoned, which is a continuation-in-part of Ser. No. 164,618, Jan. 5, 1962, abandoned, which is a continuation-in-part of Ser. No. 148,738, Oct. 30, 1961, abandoned. This application Oct. 9, 1970, Ser. No. 79,621. The portion of the term of this patent subsequent to Feb. 22, 1989, has been disclaimed.

Int. Cl. B01j 11/16

U.S. Cl. 252—404 6 Claims

Mixtures of 3-(3,5-dialkyl-4-hydroxyphenyl)-propionic acid esters are stabilizers of organic material against thermo-oxidative ageing. They are prepared by conventional esterification techniques. A typical embodiment is a mixture of 2,2,4-trimethyl-1,6-hexanediol bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate] and 2,4,4-trimethyl-1,6-hexanediol bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate].

3,779,946

PRODUCTION OF TRANSITION METAL-CONTAINING SUPPORTED CATALYSTS

Ludwig Dorn; Manfred Mengel, both of Cologne, and Gerhard Heinze, Schildgen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 30, 1971, Ser. No. 167,792

Claims priority, application Germany, Aug. 5, 1970, P 20 38 884.5

Int. Cl. B01j 11/44

U.S. Cl. 252—448 9 Claims

The process for the production of bead-form silica-containing supported catalysts containing transition metals in ionic or elemental form which comprises mixing a filler comprising an alkaline earth metal silicate with an aqueous dispersion of an inorganic oxide hydrate, converting this mixture into a solid bead-form granulate, calcining the granulate, at a temperature of about 500° to 750° C., and then treating the product with a solution of a transition metal salt, whereby the alkaline earth metal ions present in the granulate are replaced at least in part by transition metal ions. The aqueous dispersion is preferably silica sol and the filler calcium silicate, possibly admixed with kaolin, montmorillonite or attapulgite. After ion exchange, the granulate may be treated with hydrogen to reduce the transition metal ion.

3,779,947
METHOD OF CATALYST MANUFACTURE

Roy T. Mitsche, Island Lake, and John C. Hayes, Palatine, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 30, 1971, Ser. No. 214,398
Int. Cl. B01j *11/08, 11/22, 11/06*
U.S. Cl. 252—466 PT 6 Claims

An acid salt of tin is admixed with an acid salt of aluminum in aqueous solution. The pH is adjusted to form a coprecipitate which is washed substantially free of acid anions. The washed precipitate is formed into shaped particles, dried and calcined, and impregnated with a platinum group metal.

3,779,948
VITREOUS COMPOUNDS WITH BISTABLE ELECTRICAL CHARACTERISTICS

Jean Loriers, Meudon, and Rudolf Heindl, Fontenay Aux Roses, both of France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche Anvar, Paris, France

Filed July 28, 1971, Ser. No. 166,777
Claims priority, application France, July 31, 1970, 70.28387
Int. Cl. H01c *7/10*
U.S. Cl. 252—521 10 Claims

A new class of vitreous compounds having bistable electrical characteristics, that is to say, two different states of electric resistance is described.

The new class of vitreous compounds can be represented by the general formula (1):

$$Ca_{2-x-2z}Ln_zNa_{2+x+z}Al_{1-y}Fe_yV_3O_{12-x}F_x \quad (1)$$

wherein the letters have the usual meaning of the elements in the Periodic Table with the exception of Ln which designates as a whole a rare earth belonging to the group of lanthanides, such as lanthanum La, or yttrium Y, whereas x, y and z each represent numbers between 0 and 1, which can separately and simultaneously be zero, which are connected by relations of ionic equilibrium, and preferably respond to the inequalities

$x < 0.15$
$y < 0.5$
and
$z < 0.3$

An example of compound having the formula (1) is $Ca_2Na_2AlV_3O_{12}$ (II)

3,779,949
NEW ADDUCTS, CONTAINING EPOXIDE GROUPS, FROM POLYEPOXIDE COMPOUNDS AND BINUCLEAR N-HETEROCYCLIC COMPOUNDS

Daniel Porret, Binningen; Juergen Habermeier, Allschwil, and Hans Batzer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy AG

Filed Nov. 1, 1971, Ser. No. 194,569
Int. Cl. C08g *30/14*
U.S. Cl. 260—2 N 5 Claims

New "advanced" adducts, containing epoxide groups, from (1) polyepoxide compounds which on an average contain more than one epoxide group in the molecule, and (2) less than one equivalent of NH groups for every epoxide equivalent of the polyepoxide compound (1) of a binuclear, five or six-membered, unsubstituted or substituted N-heterocyclic compound with an endocyclic NH group in each nucleus, the heterocyclic rings being linked by a divalent aliphatic, cycloaliphatic or araliphatic radical, preferably an alkylene radical, which may be interrupted by oxygen atoms, e.g. the reaction product of 2 mols of diomethane-diglycidyl ether and 1 mol of 1,1'-methylene-bis-(5,5-dimethyl-hydantoin). The epoxide resins "advanced" by means of such nitrogen compounds have a good storage stability and excellent electrical properties.

3,779,950
EPOXY RESIN COMPOSITIONS

Leo S. Kohn, Schenectady, and Robert W. Smearing, Ballston Lake, N.Y., assignors to General Electric Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,107
Int. Cl. C08g *30/10, 30/14*
U.S. Cl. 260—2 EC 9 Claims

The shelf life of epoxy resin compositions useful for adhesives, varnishes, injection molding and the like and containing phenolic cure accelerator is increased by blocking all or part of the hydroxyl groups of the cure accelerator with aromatic monoisocyanate.

3,779,951
METHOD FOR EXPANDING MICROSPHERES AND EXPANDABLE COMPOSITION

Robert J. Streu, Essexville, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 82,102, Oct. 19, 1970. This application Nov. 21, 1972, Ser. No. 308,500
Int. Cl. B01j *13/02*; C08j *1/14, 1/26*
U.S. Cl. 260—2.5 B 11 Claims

Thermoplastic microspheres are readily expanded to low densities by heating in water in the presence of a glycol or glycol derivative.

3,779,952
METAL-CONTAINING POLYMERS

William J. Leonard, Jr., San Francisco, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,736
Int. Cl. C08f *29/34, 47/08*
U.S. Cl. 260—2.5 R 7 Claims

Porous, metal-ion-chain-bridged polymeric products having surface areas of at least 5 $m.^2/g.$ useful as catalysts and for molecular separations are prepared by contacting Group III–B–V–A metal ions and a dilute, polar, non-aqueous solution of a polymerized ethylenically-unsaturated carboxylic acid and thereafter removing residual solvent from the resulting precipitate forming the porous metal/polymeric product.

3,779,953
FLAME-RETARDANT POLYURETHANES CONTAINING 1,2,5,6 - TETRABROMO-3,4-DIHYDROXYHEXANE

Anthony Joseph Papa, Saint Albans, W. Va., and William Robert Proops, Claymont, Del., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,295
Int. Cl. C08g *22/08, 51/58*
U.S. Cl. 260—2.5 AJ 10 Claims

Polymer compositions normally susceptible to burning are rendered flame-retardant by the incorporation therein of 1,2,5,6 - tetrabromo - 3,4 - dihydroxyhexane. In particular, a higher melting stereoisomeric form of the latter compound provides essentially scorch-free, self-extinguishing polyurethane foams which exhibit a good overall combination of physical and mechanical properties.

3,779,954
BENZAZIMIDE COMPOUNDS AS BLOWING AGENTS

Wolf-Dieter Wirth, Odenthal-Hahnenberg, and Erwin Müller and Harry Röhr, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,169
Claims priority, application Germany, Jan. 23, 1971, P 21 03 198.1
Int. Cl. C08j *1/20*
U.S. Cl. 260—2.5 R 12 Claims

The invention relates to the use of compounds of benzazimide or a substituted benzazimide as blowing agents to produce cellular and porous articles based on synthetic resins, particularly on thermoplastic resins.

3,779,955
NON-BURNING RESINOUS COMPOUNDS AND STRUCTURES PREPARED FROM FURAN RESINS

Robert C. Wade, Ipswich, Mass., assignor to Resitron Corporation, Beverly, Mass.

No Drawing. Continuation of abandoned application Ser. No. 174,999, Aug. 25, 1971. This application Jan. 31, 1972, Ser. No. 222,332
Int. Cl. C08g *11/00, 41/04*
U.S. Cl. 260—2.5 F 4 Claims

Non-burning resinous compositions which are useful in bulk, as foams, as coatings, or as adhesives are provided by reacting aqueous phosphoric acid with non-reducing polyhydric compounds, such as ethylene glycol, propylene glycol, glycerine, and polyvinyl alcohol, and then reacting the complex thus formed with a furfuryl alcohol-containing compound, such as furfuryl alcohol or furfuryl alcohol-urea-formaldehyde condensates. Not less than about 3 percent of phosphorus is required in the final composition to give the desired non-burning characteristics. These compositions are hydrophobic and maintain their structural integrity after water immersion. Preferably, these compositions contain a ratio of furan resin to phosphoric acid-polyhydric compound complex of greater than 1 to 1. The reaction mixture may contain a pneumatogen and surfactant.

3,779,956
PROCESS FOR REDUCING FLAMMABILITY OF POLYURETHANE FOAMS

Edward L. Morehouse, New City, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Dec. 24, 1969, Ser. No. 888,067, now Patent No. 3,686,254. Divided and this application Apr. 12, 1972, Ser. No. 243,454
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AH 11 Claims

This invention relates to the use of modified siloxane-polyoxyalkylene block copolymer foam stabilizers in the production of open-cell flexible polyether polyurethane foam having reduced flammability. The block copolymers are modified with certain silicon-bonded organic groups (e.g., $C_6H_5CH_2CH_2$— or bicycloheptyl groups) which increase the bulk surface tension of the block copolymers.

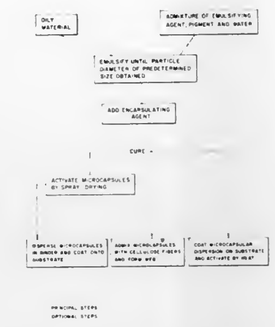
Open-cell flexible polyether polyurethane foams are produced commercially from reaction mixtures containing polyurethane-forming reactants, a catalyst for the reaction of the polyurethane-forming reactants to produce the polyurethane, a blowing agent and a siloxane-polyoxyalkylene block copolymer foam stabilizer. Such foams are, to some extent, flammable and are used in applications (e.g., automobile seat cushions and household furniture cushions) where fire creates a hazard. Accordingly, it is desirable to reduce the flammability of such foams.

3,779,957
MICROCAPSULAR OPACIFIER SYSTEM

Anthony E. Vassiliades, Deerfield, Edward F. Nauman, Lake Forest, and Shrenik Shroff, Chicago, Ill., assignors to Champion International Corporation, New York, N.Y.

Application Apr. 29, 1969, Ser. No. 820,267, now Patent No. 3,669,899, which is a continuation-in-part of application Ser. No. 786,337, Dec. 23, 1968, now Patent No. 3,585,149. Divided and this application Apr. 20, 1972, Ser. No. 246,083
Int. Cl. B44d *1/02*; B01j *13/02*; C09d *5/00*
U.S. Cl. 260—2.5 B 32 Claims

Opacifiers comprising air-containing microcapsules having an average particle diameter of predetermined size with pigment particles incorporated in the microcapsular structure provide highly opaque surfaces when coated onto and/or incorporated into fibrous and non-fibrous substrates. The opacifiers are produced by heating liquid-containing precursor microcapsules, which contain the pigment particles in their structure, at temperatures sufficient to expel the liquid and provide air in the microcapsules.



3,779,958
METHOD OF PREPARING A PHENOL FORMALDEHYDE AMINE MICROPOROUS SHEET

Katsumi Ohba, Kanagawa, Japan, assignor to W. R. Grace & Co., Cambridge, Mass.

No Drawing. Filed July 15, 1971, Ser. No. 163,095
Int. Cl. C08g *9/00, 22/48*; H01m *3/00*
U.S. Cl. 260—2.5 F 10 Claims

Microporous resinous sheets particularly useful as battery separators are prepared from phenol/formaldehyde/amine resinous pre-products.

3,779,959
METHOD OF MAKING PHENOLIC RESIN FOAMS

Peter Pinten, Totilastr. 2, Cologne-Deutz, Germany; and Franz Weissenfels, Am Grafenkreuz 17; and Hans Jünger, Ziethstr. 190, both of Siegburg, Germany

No Drawing. Filed Nov. 26, 1965, Ser. No. 510,088
Claims priority, application Germany, Dec. 17, 1964, D 46,078
Int. Cl. C08g *53/08*
U.S. Cl. 260—2.5 F 3 Claims

1. A method of controlling the volume of the individual pores of a foam plastic prepared from an aqueous mass containing at least 70% by weight of a phenol aldehyde resin containing a liquid organic low-boiling blowing agent for producing the foam, a surface-active agent and an acid-hardening agent which comprises (a) preparing a plurality of samples of said foam plastic, the samples having a differing relationship in their respective pore volumes, said plurality being prepared by varying the relative proportion of castor oil rendered water-soluble by ethoxylation to ethoxylated nonyl phenol in said aqueous mass, (b) selecting a sample relative to such other samples which corresponds to the pore volume desired in the final foam plastic, and (c) preparing said final foam plastic from said aqueous mass containing the relative proportion of the selected sample, the combined amount of said castor oil and said ethoxylated nonyl phenol being between 0.5 and 5% referred to the phenol-aldehyde resin.

3,779,960

PROCESS FOR PRODUCING SYNTHETIC RUBBER LATEX HAVING HIGH POLYMER CONCENTRATION AND LOW VISCOSITY

Yoshihiko Araki and Hideo Hayashi, Yokohama, Japan, assignors to Nippon Oil Company Limited, Tokyo, Japan

No Drawing. Filed Dec. 28, 1971, Ser. No. 213,168
Claims priority, application Japan, Dec. 29, 1970, 46/121,056
Int. Cl. C08f *1/13, 1/84*
U.S. Cl. 260—8 8 Claims

A process is disclosed for producing a synthetic rubber latex having relatively high polymer concentration and low viscosity by polymerizing aliphatic conjugated diolefins or mixtures of these diolefins and vinyl compounds in an emulsion polymerization system. The process is characterized by the use of certain non-ionic water-soluble polymeric colloids in prescribed amounts, which colloids exhibit perculiar effect upon the quality of resulting latex. The polymerization is further conducted in the presence of certain water-soluble metal salts which contribute for limited amounts to the production of high quality latexes contemplated by this invention.

3,779,961

LACQUER BINDERS

Rolf Dhein, Krefeld-Bockum, and Hans-Jurgen Meissner and Rolf Kuchenmeister, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,486
Claims priority, application Germany, Aug. 4, 1970, P 20 38 768.2
Int. Cl. C08g *5/20*
U.S. Cl. 260—19 U 4 Claims

The invention of the present application are binders for aqueous lacquers, which can be applied in the customary manner, but especially according to the electrodeposition lacquering process. A further subject of the invention is a process for the manufacture of such binders.

3,779,962

STABILIZER-LUBRICANT COMBINATIONS FOR HALOGEN-CONTAINING POLYMERS

Gunter Koenen, Kirchfeld 15, Lendersdorf, near Duren, Germany, and Alfred Szczepanek, Gurzenicher Strasse 45, Duren-Rolsdorf, Germany

No Drawing. Continuation-in-part of application Ser. No. 865,213, Oct. 9, 1969, which is a continuation-in-part of application Ser. No. 619,150, Feb. 28, 1967, both now abandoned. This application Oct. 9, 1970, Ser. No. 79,660
Int. Cl. C08f *45/56, 45/62*
U.S. Cl. 260—23 XA 11 Claims

Dust-free, stabilizer-lubricant compositions for halogen-containing polymers, particularly polyvinyl chloride, contain a free-flowing homogeneous melt of a metal-free organic material compatible with the polymer, a basic lead salt of an inorganic or an organic acid, and optionally a calcium, barium or strontium soap of a C_{8-22} monocarboxylic acid.

3,779,963

PROCESS FOR INTRODUCING FUNCTIONAL SUBSTITUENTS ONTO A POLYMER BACKBONE USING MILD OXIDATIVE CONDITIONS

Fred H. Ancker, Warren, N.J., and Dale F. Pollart, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 66,630, Aug. 24, 1970, which is a continuation-in-part of application Ser. No. 610,461, Jan. 20, 1967, which in turn is a continuation-in-part of application Ser. No. 528,349, Feb. 18, 1966, all now abandoned. This application June 30, 1972, Ser. No. 267,996
Int. Cl. C08f *27/00, 27/22*
U.S. Cl. 260—23 H 1 Claim

Process for grafting low molecular weight functionally substituted organic compounds to polyolefins by free radical combination reactions under mild oxidative conditions.

3,779,964

ASPHALT RUBBERIZING COMPOSITIONS

Duane W. Gagle, Homer L. Draper, and Richard J. Bennett, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,869
Int. Cl. C08c *11/68*
U.S. Cl. 260—28.5 AS 6 Claims

The low temperature ductility of asphalts is improved by incorporation of a small amount of a blend comprising rubber, a heavy residual petroleum oil high in aromatics, and carbon black. Asphalts containing a liquid oil-rubber-carbon black blend can be used in paving compositions and the like.

3,779,965

EXTRUDED DISC GASKET FOR ALCOHOLIC BEVERAGE BOTTLE CAPS

John William Lefforge, Lynnfield, Mass., and George Crawford Keller, Derry, N.H., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,168
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 B 19 Claims



A gasket excellently adapted for use in caps for bottles containing beverages of high alcoholic content can be prepared by admixing a molten thermoplastic polymer, a petroleum oil, a completely saturated paraffinic wax or polyethylene wax, a particulate titanium dioxide pigment, and an antioxidant, forming the resulting melt into a sheet having a thickness of about 3–7 mm., cooling said sheet to solidify the melt, chopping the cooled solid sheet into small particles, charging the particles into an extruder, extruding to form a sheet about 0.01–0.03 inch (i.e., ca. 10–30 mils), cutting the sheet into discs, and inserting and seating the discs into caps which have been preheated to about 250° F. Block copolymers having end segments of polystyrene and center segments of polybutadiene or polyisoprene can be used as the thermoplastic polymer for making the gaskets.

3,779,966

POLYMERIZABLE WATER-IN-OIL EMULSIONS

Charles Earl Weeks, St. Paul, and Golden Fred Watts, Rosemount, Minn., assignors to Ashland Oil, Inc., Houston, Tex.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,167
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 NR 16 Claims

Polymerizable water-in-oil emulsions of thermosettable polyester resins containing cyclic ortho-positioned dicarboxylic acid moieties which can be consistently cured to a water-extended polymer with a copolymerizable vinyl monomer solvent using low cobalt promoter levels in a cure system containing a peroxy-free radical generating catalyst, and an aromatic tertiary amine and a cobalt compound as a copromoters.

3,779,967

STORAGE STABLE CONCENTRATED AQUEOUS EMULSIONS PREPARED FROM A MIXTURE OF METHYLHYDROGEN SILOXANE AND METHYL POLYSILOXANE, AN AMINATED POLYMER AND AN EPOXY COMPOUND

Michel Camp, Lyons, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,325
Claims priority, application France, Sept. 29, 1969, 6933126
Int. Cl. C08g *47/10;* C08j *1/46*
U.S. Cl. 260—29.2 M 10 Claims

Storage-stable aqueous emulsions containing less than 80% water contain a methylhydrogenopolysiloxane/methylpolysiloxane mixture, an emulsifier and 1.5 to 30%, based on the weight of polysiloxane, of a curable reaction product of (a) an aminated polymer having repeat units

$$—NR—(C_nH_{2n}NR)_x—A—$$

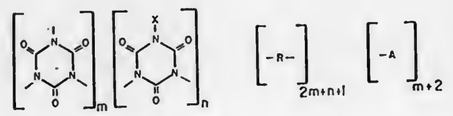
where R is H or C_1–C_4 alkyl, $n > 2$, x=1–7 and A=—CO—, —CS—, —CO—Q— or —CO—Q'—CO— where Q=C_2–C_6 alkylene and Q'=a divalent radical; and (b) a compound having at least one halohydrin or epihalohydrin group or at least two ethylene oxide groups. Dilution of the emulsion and addition of convention catalysts gives a bath suitable for waterproofing textiles in a manner resistant to repeated rubbing and washing.

3,779,968

GEL COMPOSITION

Perry A. Argabright, Larkspur, and C. Travis Presley, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Aug. 23, 1971, Ser. No. 173,892
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 BM 8 Claims



A gel composition sufficiently stable to support its own weight having elasticity and cohesive character produced by contacting, at a pH above 7, polyvinyl alcohol with a compound which contains more than one isocyanurate salt group.

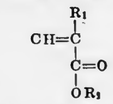
3,779,969

FRICTION REDUCING IN FLOWING HYDROCARBON FLUIDS

Robert Clayton Slagel, Pittsburgh, and Arnold Eugene Bloomquist, Bethel Park, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Original application Aug. 6, 1970, Ser. No. 61,852, now Patent No. 3,654,994. Divided and this application Dec. 21, 1971, Ser. No. 210,626
Int. Cl. C08f *3/64, 3/66, 29/46*
U.S. Cl. 260—29.6 E 10 Claims

This disclosure is directed to a method and composition useful in reducing the friction loss in flowing hydrocarbon fluids. The composition is an emulsion consisting essentially of a homopolymer or copolymer of



where R_1 is H or CH_3 and R_2 is an alkyl group of 8 to 18 carbon atoms, a glycol and water. The method comprises mixing the emulsion with the hydrocarbon fluid and then adding a lower alkyl alcohol which causes the polymer to be transferred from the emulsion phase to a hydrocarbon solution.

3,779,970

THICKENED LATEX COATINGS WITH IMPROVED FLOW AND LEVELING PROPERTIES

Syamalarao Evani and Robert H. Lalk, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,393
Int. Cl. C08f *41/02, 41/12*
U.S. Cl. 260—29.6 RW 12 Claims

The improvements of this invention are obtained by adding to a latex coating a water soluble salt of a polymeric material which is an ester of a carboxylic polymer having about 28 to 62.5 weight percent of pendant carboxylic acid groups (—COOH) and certain nonionic surfactants wherein about 0.5 to 10 percent of the acid groups are esterified with the surfactant.

3,779,971

LATEX-MODIFIED MORTAR COMPOSITIONS

Jerry E. Isenburg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 120,325, Mar. 2, 1971, which is a division of application Ser. No. 868,596, Oct. 22, 1969, which in turn is a continuation-in-part of application Ser. No. 610,497, Jan. 20, 1967, all now abandoned. This application July 24, 1972, Ser. No. 274,584
Int. Cl. C04b *13/24;* C08f *45/24;* E04g *21/20*
U.S. Cl. 260—29.6 S 2 Claims

The invention is directed to high strength portland cement mortar compositions modified with certain vinylidene chloride polymer latexes and containing in addition, specified types of finely divided naturally occurring carbonate materials composed of a natural carbonate consisting of the minerals calcite, dolomite and magnesite which may comprise a continuous gradation from calcium carbonate through calcium magnesium carbonate to magnesium carbonate. It has unexpectedly been found that the addition of such carbonate materials greatly enhances the workability of the latex-modified portland cement mortar compositions without adversely affecting the strength characteristics of such compositions.

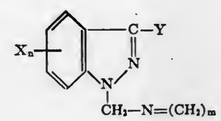
3,779,972

PRESERVATIVES FOR AQUEOUS COMPOSITIONS WHICH CONTAIN ADDITION POLYMERS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Original application Nov. 22, 1971, Ser. No. 201,194, now abandoned. Divided and this application Mar. 15, 1973, Ser. No. 341,561
Int. Cl. C08d *11/00;* C08f *45/64;* C09d *5/14*
U.S. Cl. 260—29.6 MN 9 Claims

Aqueous compositions that are subject to decomposition and spoilage by the action of bacteria are preserved by incorporating in them a small amount of a compound having the structural formula



wherein X represents halogen, nitro, acoylamino, aroylamino, (halobenzylidene)amino, or methyleneimino; Y represents hydrogen, halogen, acoylamino, or methyleneimino; m is a number in the range of 4 to 8; and n is a number in the range of zero to 4. Illustrative of these compounds are N-(5,7-dichloroindazolyl - N^1 - methyl) piperidine and N-(3-chloro-5-nitroindazolyl-N^1-methyl) hexamethyleneimine.

3,779,973
PRESERVATIVES FOR AQUEOUS COMPOSITIONS WHICH CONTAIN ADDITION POLYMERS

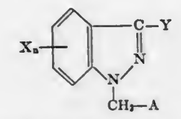
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Original application Nov. 22, 1971, Ser. No. 201,194, now abandoned. Divided and this application Mar. 15, 1973, Ser. No. 341,562

Int. Cl. C08d *11/00;* **C08f** *45/64;* **C09d** *5/14*

U.S. Cl. 260—29.6 MN **9 Claims**

Aqueous compositions that are subject to decomposition and spoilage by the action of bacteria are preserved by incorporating in them a small amount of a compound having the structural formula



wherein X represents halogen, nitro, acoylamino, aroylamino, (halobenzylidene)amino, or methyleneimino; Y represents hydrogen, halogen, acoylamino, or methyleneimino. A represents halogen; and *n* represents a number in the range of zero to 4. Illustrative of these compounds is N¹-chloromethyl-5,7-dichloroindazole.

3,779,974
SULFONATED BUTYL RUBBER LATICES

Addison W. Hubbard, Scotch Plains, and Kenneth W. Powers, Berkeley Heights, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Sept. 26, 1972, Ser. No. 292,415

Int. Cl. C08d *5/00*

U.S. Cl. 260—29.7 B **10 Claims**

A rubber latex of sulfonated butyl rubber containing >0.5 mole percent SO_3H is prepared by forming an emulsion of a solution of sulfonated butyl rubber in a suitable solvent using non-ionic emulsifiers and thereafter stripping off the solvent to leave a latex of sulfonated butyl rubber dispersed in water. Prior to stripping the solvent, the emulsifiers are removed from the system by centrifugation, the sulfonated butyl rubber being self-emulsifiable, once it has been dispersed. Plasticizers are added to the latex to prevent cracking of films prepared therefrom.

3,779,975
SULFONE-ESTER COMPOUNDS AS PLASTICIZERS FOR POLYVINYL CHLORIDE RESINS

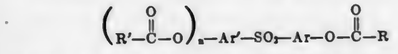
John R. Clark, Nutley, and Claire Bluestein, Glen Rock, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Original application Oct. 24, 1969, Ser. No. 869,362. Divided and this application Dec. 13, 1971, Ser. No. 207,548

Int. Cl. C08f *45/46*

U.S. Cl. 260—30.8 R **3 Claims**

Sulfone-ester compounds of the general formula



where *n* is 0 or 1, Ar and Ar′ represent aryl radicals, and R and R′ represent long chain aliphatic radicals. Compounds encompassed by the above formula are suitable as plasticizers for polyvinyl chloride resins.

3,779,976
ACRYLIC POLYMER MODIFIED POLYVINYL FLUORIDE COATING COMPOSITIONS

Henry J. De Marsico, Glassboro, N.J., Daniel Strugar, Brunswick, Ohio, and Dao-Tsing Wu, Villanova, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 47,558, June 18, 1970. This application Oct. 22, 1971, Ser. No. 191,905

Int. Cl. C08f *45/34*

U.S. Cl. 260—32.8 R **7 Claims**

Coating compositions comprising particulate polyvinyl fluoride, acrylic polymer, and an organic solvent for the acrylic polymer which is a nonsolvent for the polyvinyl fluoride, having good rheology are provided.

3,779,977
THERMOSETTING NONAQUEOUS DISPERSION POLYMERS

Darrell D. Hicks, Jeffersontown, Ky., assignor to Celanese Coatings Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 751,026, Aug. 8, 1968. This application Aug. 4, 1971, Ser. No. 169,052

Int. Cl. C08c *11/22;* **C08f** *45/28*

U.S. Cl. 260—33.6 UA **8 Claims**

Heat curable coating compositions useful in primers and can coatings are made from a dispersion of an acrylonitrile copolymer in a liquid butadiene homopolymer or copolymer and an inert, relatively non-polar organic hydrocarbon liquid.

3,779,978
POLYBROMO-CYCLOALIPHATIC ETHERS AS FLAME RETARDANT PLASTICIZERS

Paul M. Kerschner, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Original application Dec. 29, 1967, Ser. No. 694,423, now Patent No. 3,631,112. Divided and this application June 4, 1971, Ser. No. 150,212

Int. Cl. C08f *45/42*

U.S. Cl. 260—33.2 R **6 Claims**

A unique group of high boiling water insoluble polyhaloalkyl and cycloalkyl ethers is described, all of which are useful as external plasticizers and flame retarders for thermoplastic organic polymers, such as polyethylene, polystyrene and polymethylmethacrylate.

These plasticizer/flame retarder compositions are advantageously produced by adding a solution of halogen, such as bromine, in a lower aliphatic alcohol to a multiunsaturated aliphatic or cycloaliphatic hydrocarbon and then adding sufficient water to the reaction mixture to separate the desired product as an insoluble lower liquid phase.

3,779,979
PROCESS FOR THE PREPARATION OF NOVEL HIGH CHLORINATED BUTYL RUBBER AND VULCANIZABLE COMPOSITIONS CONTAINING THE SAME

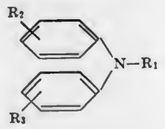
Shozo Tsuchiya, Kawasaki, Japan, assignor to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Dec. 21, 1971, Ser. No. 210,335

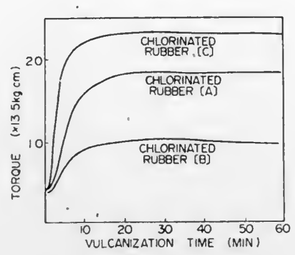
Int. Cl. C08c *11/22, 11/24;* **C08d** *5/04*

U.S. Cl. 260—33.6 A **7 Claims**

A process for the preparation of chlorinated isobutylene-multiolefin copolymer in which more than one but not exceeding 2 chlorine atoms per one double bond in the copolymer are introduced by chlorinating the copolymer in the presence of a diarylamine derivative of the formula



wherein R_1 represents a hydrocarbon residue of 1–20 carbon atoms and R_2 and R_3 each represent hydrogen or a hydrocarbon residue of 1–20 carbon atoms.



The chlorinated copolymer exhibits particularly improved co-vulcanizability, heat stability and adherability.

3,779,980
POLY(VINYL CHLORIDE) HOMOPOLYMER COMPOSITES—FREEZE-DRY TECHNIQUE FOR PREPARATION

Harmon L. Liebman and Shirley A. Liebman, Lancaster, and Gary W. Paddison, York, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 8, 1971, Ser. No. 205,874

Int. Cl. C08f *47/00*

U.S. Cl. 260—34.2 **6 Claims**

Poly(vinyl chloride) homopolymer composites having improved rheological properties are readily prepared by adding plasticizers and stabilizers to aqueous dispersions of the poly(vinyl chloride) homopolymer particles and freeze-drying the dispersions. Other additives such as finely divided pigments may be incorporated by mixing prior to freeze-drying to produce preblended binder systems. The invention is concerned with homopolymers of poly(vinyl chloride) resin which are prepared by either suspension or bulk polymerization techniques.

3,779,981
SIZING COMPOSITION AND GLASS FIBERS TREATED THEREWITH

John E. Ward, Houghton, Mich., assignor to Owens-Corning Fiberglas Corporation

No Drawing. Original application Apr. 3, 1970, Ser. No. 25,584, now Patent No. 3,652,326. Divided and this application Nov. 15, 1971, Ser. No. 198,940

Int. Cl. C08g *51/10*

U.S. Cl. 260—40 R **10 Claims**

A sizing for glass fibers, comprising water soluble epoxy resins, an organosilane, polyvinyl acetate copolymer and a lubricant is provided, whereby the sized glass fibers in the form of strands, possess excellent integrity.

3,779,982
DIELECTRIC LAYER COMPOSITION

Carolyn J. Camp, Livermore, and Robert O. Lindblom, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,299

Int. Cl. C08f *45/04;* **C08g** *45/04*

U.S. Cl. 260—41 R **6 Claims**

A dielectric layer for use on electroconductive papers, particularly at relatively high humidities, consisting of 15 to 85 volume percent of a copolymer of vinylidene chloride and at least one other olefinically unsaturated monomer, 8 to 77 volume percent of an epoxy resin having an epoxy equivalent weight between 400 and 60,000, and, optionally, 0 to 42 volume percent of a pigment.

3,779,983
ACRYLIC FIBERS AND FILMS WHICH PARTICULARLY ARE SUITED FOR THERMAL STABILIZATION

Andrew Di Edwardo, Parsippany, Robert Dix, Wayne, and John Riggs, Berkeley Heights, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed June 1, 1972, Ser. No. 258,788

Int. Cl. C08f *27/06*

U.S. Cl. 260—45.7 S **12 Claims**

An improved process is provided for the production of stabilized acrylic fibers and films. A minor quantity of an alkali metal salt of an organic sulfonate is provided in intimate association with an acrylic fibrous material or film and is incorporated therein in a non-polymerized form. Upon heating (preferably while present in an oxygen-containing atmosphere) the thermal stabilization reaction is promoted by the presence of the alkali metal salt of an organic sulfonate. The resulting stabilized fibrous material or film is flexible and non-burning, and may be utilized as a fire resistant fiber, fabric or film, or optionally carbonized or carbonized and graphitized to form a carbonaceous fibrous material or film.

3,779,984
HALOGENATED CARBONATES AS FIRE RETARDANTS FOR POLYESTERS

Jurgen H. Exner, Eric R. Larsen, and Jeffrey A. Gunsher, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Aug. 3, 1970, Ser. No. 60,778, now Patent No. 3,688,001. Divided and this application July 14, 1972, Ser. No. 272,016

Int. Cl. C08g *51/54*

U.S. Cl. 260—45.7 R **10 Claims**

New halogenated carbonates containing halogenated neopentyl groups have been found which are extremely useful as fire retardant additives for polyesters.

3,779,985
STABILIZATION OF FLUORINE-CONTAINING VINYL POLYMERS

Gunther Heuser, Troisdorf-Oberlar, Gregor Weisgerber, Konigswinter, and Erich Behr, Troisdorf, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed Sept. 22, 1971, Ser. No. 182,864

Claims priority, application Germany, Nov. 30, 1970, P 20 58 823.2

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 R **5 Claims**

Improved heat stabilization and ultraviolet light stabilization for fluorine-containing vinyl polymers such as polyvinyl fluoride by the admixture with such polymers of a mixture of a polyol, a polynuclear phenol and an hydroxy benzophenone. It is preferred to establish the stabilizer mixture of 0.15 to 1.0 weight percent of the polyol, 0.05 to 0.5 weight percent of the polynuclear phenol, and 0.3 to 1.0 weight percent by weight of the hydroxy benzophenone, each related to the polymer being stabilized. The proportion of stabilizer as a whole is 0.1 to 5.0 percent by weight related to the polymer weight.

3,779,986
CURABLE COMPOSITIONS

Stanley D. Smith, Northfield, Ohio, and Stephen B. Hamilton, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 104,488, Jan. 6, 1971, now Patent No. 3,689,454. This application Aug. 21, 1972, Ser. No. 282,337

The portion of the term of the patent subsequent to Sept. 5, 1989, has been disclaimed and dedicated to the Public

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **20 Claims**

Fluid organopolysiloxanes which are vulcanizable at room temperature to silicone elastomers are prepared by

mixing a novel titanium catalyst such as the propanedioxy bis(ethylacetoacetonate) complex of titanium, a cross-linking agent such as methyltrimethoxysilane and a silanol chain-stopped polydiorganosiloxane fluid having a viscosity of 1,000 to about 10,000 centipoises at 25° C. in the absence of moisture. These compositions are stable, free-flowing fluids in the absence of moisture but cure to the rubbery solid elastic state upon exposure to moisture. The compositions are particularly useful as adhesives and sealants in the construction of electronic equipment in that they do not give off corrosive by-products when curing.

3,779,987

PROCESS FOR PRODUCING DIORGANOPOLYSILOXANE POLYMERS

John S. Razzano, Troy, N.Y., assignor to General Electric Company

No Drawing. Filed Oct. 12, 1972, Ser. No. 296,797

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R **14 Claims**

A process for producing diorganopolysiloxane polymers having a viscosity of 1000 to 200,000,000 centipoises at 25° C. and an aromatic content of 1 to 50 mole percent comprising mixing a first cyclic polysiloxane with a second cyclic polysiloxane in the presence of 1 to 90 parts based on 100 parts of said first cyclic polysiloxane of a linear diorganopolysiloxane additive having a viscosity of 10,000 to 200,000,000 centipoises at 25° C., where the organo groups in the linear diorganopolysiloxane are selected from the class consisting of alkyl, cycloalkyl, mononuclear aryl, mononuclear alaryl, mononuclear aralkyl, alkenyl, binuclear aryl and mixtures theerof wherein less than 50 mole percent of the organo radicals may be aromatic and no more than 50 mole percent of the organo radicals may be selected from alkenyl; heating the mixture to temperatures in the range of 110–175° C. to drive off moisture; adding up to 50 parts per million of an alkali metal hydroxide to the mixture; and equilibrating the resulting mixture at a temperature in the range of 140 to 200° C. until the desired reaction product is obtained.

3,779,988

POLYEPOXIDE-POLYSILOXANE COMPOUNDS, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE

Heinz Rembold, Arleshelm, Dieter Baumann, Birsfelden, and Jurgen Habermeier, Pfeffingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,376

Claims priority, application Switzerland, Sept. 16, 1971, 13,603/71

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **4 Claims**

New polyepoxide-polysiloxanes are obtained if linear or branched polysiloxanes which contain not more than 4 reactive H atoms and/or alkoxy groups per molecule are esterified or trans-esterified, according to processes which are in themselves known, with cycloaliphatic epoxide-alcohols which contain at least one epoxide group located on a cycloaliphatic ring or ring system and at least one hydroxyl group in the molecule.

The new cycloaliphatic polyepoxide-polysiloxanes can be cured with conventional epoxide resin curing agents, especially cycloaliphatic polycarboxylic acid anhydrides, to give flexible to rubbery-elastic mouldings which show very low water absorption coupled with excellent dielectric properties and high tracking resistance and arcing resistance.

3,779,989

LIGHT-SENSITIVE POLYMERS CONTAINING A PHENYL-DIARYLCYCLOPROPENE MOIETY, THEIR PREPARATION AND USE

Donald H. Wadsworth and William C. Perkins, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 19, 1971, Ser. No. 164,044

Int. Cl. C08f *3/64, 7/04, 27/00*

U.S. Cl. 260—47 UP **19 Claims**

A novel class of light-sensitive polymers contain a diarylcyclopropene moiety, such as a diarylcyclopropenium ion or a diarylcyclopropenyl group, directly attached to a phenyl group of a polymer backbone. The polymers are useful in preparing photomechanical images and for other purposes.

3,779,990

PROCESS FOR THE PRODUCTION OF SHAPEABLE POLYMERS CONTAINING COO-SILYL GROUPS

Gerd Greber, Binningen, and Roland Darms, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,262

Claims priority, application Switzerland, Feb. 26, 1971, 2,902/71

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **6 Claims**

The invention relates to a process for the production of shapeable polymers containing COO-silyl groups, especially polyamide-imides and polyimides containing COO-silyl groups, said process comprising treating polyamide acids with suitable silylating agents, as well as the novel polymers obtained by said process and their use for the production of shaped structures such as films, fibres, coatings, adhesives and the like. The polymers prepared according to the invention are distinguished by an inherent viscosity of from 0.1 to 4.0 and their improved solubility in organic solvents which facilitates the processing of said polymers.

3,779,991

SILICON-HYDANTOIN-ESTER RESINS

Jerome A. Preston, Angola, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.

No Drawing. Continuation-in-part of application Ser. No. 58,173, July 24, 1970, now Patent No. 3,681,282. This application July 28, 1972, Ser. No. 275,922

The portion of the term of the patent subsequent to Aug. 1, 1989, has been disclaimed

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 E **13 Claims**

Resin composition comprising the reaction product of a reactive hydantoin based compound, a polycarboxylic acid, and tris (2-hydroxyethyl) isocyanurate. The resin provides a low cost, cured enamel for electrical conductors characterized by high thermal stability and a low coefficient of friction when it contains linear, reactive organo silicon material.

3,779,992

INTERPOLYMERIZATION OF ETHYLENE WITH OTHER VINYL MONOMERS IN AQUEOUS EMULSION

Joseph K. Liu, Pierrefonds, Quebec, Canada, and Maurice Douek, Los Angeles, Calif., assignors to Gulf Oil Canada Limited, Toronto, Ontario, Canada

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,076

Int. Cl. C08f *1/13*

U.S. Cl. 260—63 UY **19 Claims**

An improvement in low pressure aqueous emulsion interpolymerization of ethylene with other vinyl monomers is disclosed wherein Mn^{+3} bisulfite redox initiator is used under specific conditions.

3,779,993

POLYESTERS AND POLYESTERAMIDES CONTAINING ETHER GROUPS AND SULFONATE GROUPS IN THE FORM OF A METALLIC SALT

Charles J. Kibler and Gerald R. Lappin, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Application Feb. 27, 1970, Ser. No. 15,193, now Patent No. 3,734,874, which is a continuation-in-part of abandoned application Ser. No. 695,339, Jan. 3, 1968. Divided and this application Feb. 15, 1973, Ser. No. 332,859

Int. Cl. C08g *17/06, 20/30*

U.S. Cl. 260—75 S **34 Claims**

Water-dissipatable, meltable polyesters and polyesteramides derived from monomer components which include dicarboxylic acid, hydroxycarboxylic acid, aminocarboxylic acid, aminoalcohol, glycol, diamine or combinations of such monomer components wherein at least a part of the total of all such monomer components is a poly(ethylene glycol), and at least a part of said total is one or more of said monomer components substituted with one or more sulfonate metal salt groups. A typical polyester is composed of 80 mole parts of isophthalic acid, 10 mole parts of adipic acid, 10 mole parts of 5-sodiosulfoisophthalate, 20 mole parts of ethylene glycol and 80 mole parts diethylene glycol. Such polymers are useful as adhesives, coating materials, films, packaging materials and other products which can be dissolved, dispersed or otherwise dissipated in cold water, hot water or aqueous solutions.

3,779,994

METHOD FOR PREPARING POLYURETHANE FROM POLYISOCYANATE AND POLYALKANOLAMINE USING A BLOCKING ACID SALT

Louis L. Wood, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 26, 1972, Ser. No. 300,937

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 AQ **4 Claims**

The invention disclosed is a method for preparing new curable water soluble polymers. The product polymers upon being cured are characteristically water insoluble and when applied to fibers provide useful wet strength additives.

3,779,995

THERMOPLASTIC AN DTHERMOSETTING ALLYL CARBAMATE RESINS

Bobby F. Danneis and Alvin F. Shepard, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 42,883, June 2, 1970, which is a continuation-in-part of application Ser. No. 788,008, Dec. 30, 1968, now Patent No. 3,557,249. This application Dec. 6, 1971, Ser. No. 205,378

Int. Cl. C08g *22/16, 51/40*

U.S. Cl. 260—77.5 MA **33 Claims**

Novel allyl resins are produced by reacting at an elevated temperature an addition product of an allylic alcohol and an organic diisocyanate. The products may be produced in one step by heating an allyl carbamate intermediate prepared from the components in a ratio sufficient to provide about 1.4 to about 2.2 isocyanato groups per hydroxyl group, or in two steps by reacting an intermediate prepared from a stiochiometric mixture of components with additional diisocyanate so that the total ratio of components in the product is sufficient to provide about 1.4 to about 2.2 isocyanato groups per hydroxyl group. When mixed with a free radical catalyst the products of the invention are useful for many purposes such as in the production of reinforced and laminated plastic articles, and in the preparation of molded articles.

3,779,996

POLYAMIDEIMIDES FROM UNSATURATED ANHYDRIDES

Denis R. Pauze, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 91,138, Nov. 19, 1970. This application Sept. 11, 1972, Ser. No. 288,223

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 AM **24 Claims**

The properties of unsaturated anhydride chain-blocked polyamideimides containing free carboxyl and amine groups are improved by reacting with the uncured material polyisocyanate.

3,779,997

POLY(HEXASUBSTITUTED MELAMINES)

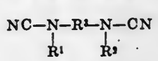
Bruce A. Langager, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed June 12, 1972, Ser. No. 261,924

Int. Cl. C08g *33/02*

U.S. Cl. 260—77.5 R **14 Claims**

Poly(hexasubstituted melamines) prepared by the Lewis acid catalyzed polymerization of alkylene bis-(N-substituted cyanamides) of the formula



wherein R^1 and R^2 are broadly alkyl or aryl and R^3 is alkylene, such polymers being curable to a storable B-stage as well as fully cured condition, having excellent high temperature stability and being useful as structural adhesives or binders.

3,779,998

PROCESS FOR THE POLYMERIZATION OF LACTAMS

Karl-Heinz Hermann, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 2, 1971, Ser. No. 159,499

Claims priority, application Germany, July 4, 1970, P 20 33 265.4

Int. Cl. C08g *20/10*

U.S. Cl. 260—78 L **9 Claims**

A process for the polymerization of a lactam having at least 7 ring members in the presence of a catalytic quantity of an inorganic or organic oxy acid of phosphorus wherein the catalyst is added to the monomeric lactam melt of at least 200° C. under rapid stirring and the catalyst-containing lactam melt is subsequently heated to a polymerization temperature of from 280 to 340° C.

3,779,999

PROCESS FOR THE PREPARATION OF BRANCHED CONJUGATED DIENE COPOLYMERS

John L. Snyder, Long Beach, Mary J. Papavasiliou, Gardena, and Roger H. Mann, Corona del Mar, Calif., assignors to Shell Oil Company, Houston, Tex.

No Drawing. Continuation-in-part of abandoned application Ser. No. 102,194, Dec. 28, 1970, which is a continuation-in-part of application Ser. No. 759,518, Sept. 12, 1968, now Patent No. 3,551,392. This application Dec. 27, 1971, Ser. No. 211,941

Int. Cl. C08d *5/02, 5/04*

U.S. Cl. 260—78.4 D **3 Claims**

Conjugated diene polymers having a branched molecular configuration are prepared by first polymerizing a conjugated diene with an alkyl lithium initiator and thereafter coupling the first polymer with a diester of dicarboxylic acids with monohydric alcohol to form a low molecular weight polymer having satisfactory coagulation characteristics, driability, and processability.

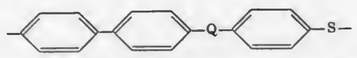
3,780,000

AROMATIC POLYMERS WITH THIOETHER GROUPS

Ronald George Feasey, Knebworth, and John Brewster Rose, Letchworth, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 29, 1971, Ser. No. 193,982
Int. Cl. C08g *15/00, 23/00*
U.S. Cl. 260—79.3 M 2 Claims

An aromatic polymer comprising units having the formula



where Q is —CO— or —SO_2— and may vary from unit to unit in the polymer chain, either alone or copolymerised with other units.

3,780,001

(HYDROCARBONTHIO)OXAMIDE VULCANIZATION RETARDERS

Pyong-Nae Son, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,653
Int. Cl. C08c *9/00, 11/54;* C08d *9/00*
U.S. Cl. 260—79.5 A 11 Claims

(Hydrocarbonthio)oxamides are efficient, non-blooming vulcanization retarders. The compounds are prepared by the reaction of oxamide (or oxanilide) with a hydrocarbon sulfenyl chloride.

3,780,002

BROAD MOLECULAR WEIGHT BUTYL RUBBER PROCESS

Edward N. Kresge, Watchung, and Francis P. Baldwin, Summit, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation of abandoned application Ser. No. 778,824, Nov. 25, 1968. This application Feb. 19, 1971, Ser. No. 117,122
Int. Cl. C08d *1/14, 3/04, 3/10*
U.S. Cl. 260—85.3 R 5 Claims

Butyl rubbers of broad molecular weight distribution are prepared using a catalyst system which comprises a halide of the Group II or Group III metals in conjunction with the tetrahalide of a metal selected from Group IV or alternately, boron trifluoride in conjunction with an aluminum compound selected from the group consisting of aluminum tribromide and aluminum triiodide.

3,780,003

POLYMERS OF ALKOXY AND HYDROXY ALKYL ACRYLATES OR METHACRYLATES

Donald Edwin Seymour, London, and Nicholas Mario da Costa, Harlow, England, assignors to Hydron Limited, London, England

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,379
Claims priority, application Great Britain, Oct. 22, 1968, 50,044/68; Dec. 20, 1968, 60,754/68
Int. Cl. C08f *15/16*
U.S. Cl. 260—86.1 E 4 Claims

This invention relates to copolymers and provides copolymer obtainable by copolymerising (a) at least one alkoxy alkyl acrylate or methacrylate with (b) at least one hydroxy alkyl acrylate or methacrylate or at least one different alkoxy alkyl acrylate or methacrylate and optionally with a minor amount of a further monomer. The invention also provides a process for making such copolymers.

3,780,004

PROCESS FOR THE ACCELERATED ALCOHOLYSIS OF ETHYLENE-VINYL ESTER INTERPOLYMERS IN THE SOLID PHASE

John M. Hoyt, Karl Koch, and Mathew Williams, Jr., Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 25, 1972, Ser. No. 292,220
Int. Cl. C08f *27/14*
U.S. Cl. 260—87.3 8 Claims

Process for the alcoholysis of ethylene-vinyl acetate and other ethylene-vinyl ester interpolymers in the solid phase, wherein the hydrolysis is carried out in a reaction medium comprising a mixture of a low-boiling alcohol, a hydrocarbon solvent, and an aprotic dipolar solvent. Use of a reaction medium incorporating a dipolar aprotic solvent provides markedly increased alcoholysis rates as compared with processes utilizing reaction media absent such constituent. Aprotic dipolar solvents which may be used in the alcoholysis medium include dimethylformamide, dimethylacetamide, dimethyl sulfoxide, tetrahydrothiophene dioxide, N-methylpyrrolidone, hexamethylphosphoric triamide, tetramethylurea, and acetonitrile.

3,780,005

CATALYST FOR THE PRODUCTION OF COPOLYMER

Charles Cozewith and Samuel B. Robison, Westfield, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Continuation of abandoned application Ser. No. 822,726, May 7, 1969. This application Oct. 4, 1971, Ser. No. 186,522
Int. Cl. C08f *15/04*
U.S. Cl. 260—88.2 R 8 Claims

A catalyst useful for copolymerizing ethylene and a higher alpha olefin is composed of an alkyl aluminum, and the reaction product of a vanadium compound and an aluminum alkoxy compound.

3,780,006

REMOVAL OF MONOMER FROM ACRYLAMIDE POLYMERS WITH SULFUR DIOXIDE

Maurice L. Zweigle, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,640
Int. Cl. C08f *3/90, 15/02, 47/00*
U.S. Cl. 260—89.7 R 5 Claims

Residual unreacted acrylamide is removed from water-soluble and water-swellable polymers and copolymers of acrylamide by treating the polymer with at least one mole of sulfur dioxide per mole of residual monomer. Polymers containing ten parts per million or less of monomer are thereby obtainable.

3,780,007

POLYMERIZATION OF VINYLIDENE FLUORIDE IN AQUEOUS SUSPENSION

John P. Stallings, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 887,754, Dec. 23, 1969. This application Jan. 6, 1972, Ser. No. 215,938
Int. Cl. C08f *3/22*
U.S. Cl. 260—92.1 R 11 Claims

An improved process for polymerizing vinylidene fluoride in aqueous suspension utilizes reaction pressures attained by the application of hydrostatic pressure in addition to that exerted by the monomer at the reaction temperature. The hydrostatic pressure is supplied by the periodic injection of sufficient quantities of water to maintain liquid-full reactor conditions throughout the reaction and to compress and densify the gaseous monomer to a degree which continuously assures its uniform dispersion in the aqueous reaction medium. Optimum yields of high molecular weight, highly crystalline polymer product are obtained from batch processes in 0.5 to 6 hours. The process is easily adapted to the continuous production of poly(vinylidene fluoride).

3,780,008

IN SITU INITIATOR POLYMERIZATION OF VINYL CHLORIDE

Edwin Studley Smith, Cuyahoga Falls, and Emmett J. Glazer, Stow, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,363
Int. Cl. C08f *1/60, 3/30*
U.S. Cl. 260—92.8 W 3 Claims

Relates to the reduction in time required for the polymerization of vinyl monomer by initiators formed in situ from a component present in less than all of the monomer in the monomer phase reacting with a component present in the water phase.

3,780,009

PROCESS FOR POLYMERIZING CYCLOOLEFINS TO POLYALKENAMERS

Gino Dall'Asta, San Giuliano Milanese, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,405
Claims priority, application Italy, Dec. 16, 1970, 33,074/70
Int. Cl. C08f *1/56*
U.S. Cl. 260—93.1 4 Claims

There is disclosed a process for polymerizing cycloolefins to polyalkenamers in contact with catalysts prepared by mixing transition metal compounds and hydrides or organometallic compounds (which may be halogenated) of metals belonging to Groups I, II, III–A and IV–A of the Mendelyeev Periodic Table, and which also include carbon dioxide as activator of the catalytic mixture.

3,780,010

METAL-COBALT CARBONYL COMPLEXES

James H. Tsai, Sarnia, Ontario, and Glenn H. Anderson, Corunna, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application June 22, 1970, Ser. No. 48,486. Divided and this application Apr. 3, 1972, Ser. No. 240,842
Int. Cl. C08d *3/04, 3/06*
U.S. Cl. 260—94.3 5 Claims

Complexes of metal-cobalt carbonyl moiety represented by the empirical formula, $\{X_{y-n}(A)_zM[Co(CO)_4]_n\}$, wherein, for example, X is bromine, A is tetrahydrofuran, M is tin, y is 4, z is an average number of 0.5 to 1, and n is 2 are provided by reacting lower metal halide such as tin dibromide with octacarbonyldicobalt in the presence of tetrahydrofuran. The complexes are useful catalysts in the polymerization of olefins such as norbornadiene.

3,780,011

CATALYST AND CATALYTIC PROCESS

Thomas J. Pullukat, Des Plaines, and Mitsuzo Shida, Barrington, Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,907
Int. Cl. C08f *1/70, 3/06, 3/08*
U.S. Cl. 260—94.9 D 23 Claims

A catalyst containing chromium oxide supported on a difficultly reducible carrier as its major component and also including metal of the class consisting of titanium, boron, vanadium and mixtures of these in which the catalyst is particularly useful for polymerizing olefins and particularly those of from 2 to 8 carbon atoms so as to predetermine the structure, composition, physical and chemical properties and uses and applications of the resulting polymers by the components of the catalyst, with the result that the polymer desired is produced in the reactor rather than by post-treatment of the polymer or blending of two or more polymers with different properties in an attempt to achieve a blend of the desired properties. The disclosure also includes the method of polymerizing at least one olefin by a particle form or slurry process utilizing the new catalyst with the polymerization taking place in an inert diluent in which the resulting polymer is substantially insoluble at the temperature and pressure of polymerization. The new catalysts can also be used in solution form polymerization.

The catalyst includes chromium oxide plus an oxygenated metal compound of titanium, boron or vanadium or combinations of these. Examples of such catalysts are chromium oxide plus titanium, chromium oxide plus boron, chromium oxide plus vanadium, chromium oxide plus titanium and boron and chromium oxide plus titanium and vanadium. In each of these the titanium, boron and vanadium are oxygenated and preferably prepared by treating the organic compounds, and specifically esters, of these metals with oxygen.

3,780,012

PRODUCTION OF TALL OIL ROSIN PENTAERYTHRITOL ESTERS HAVING IMPROVED COLOR

William Richard Smith, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 18, 1972, Ser. No. 316,146
Int. Cl. C09f *1/04*
U.S. Cl. 260—97.5 4 Claims

There is provided a process for improving the color of a tall oil rosin pentaerythritol ester by pretreating a tall oil rosin with from 0.5% to 2.5% paraformaldehyde at a temperature of from 140° C. to 180° C. for from one to three hours, distilling the same, and thereafter effecting the esterification of the so-treated tall oil rosin with pentaerythritol at a temperature ranging from about 250° C. to 300° C.

3,780,013

PREPARATION OF COLOR IMPROVED TALL OIL ROSIN PENTAERYTHRITOL ESTERS

William Richard Smith, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 18, 1972, Ser. No. 316,148
Int. Cl. C09f *1/04*
U.S. Cl. 260—97.5 4 Claims

There is provided a process for improving the color of a tall oil rosin pentaerythritol ester by adding a phenol sulfide incrementally to tall oil rosin and pentaerythritol during the said rosin pentaerythritol ester formation.

3,780,014

OCTAPEPTIDE INTERMEDIATE TO GONADOTROPIN RELEASING HORMONE

George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed Sept. 16, 1971, Ser. No. 181,197
Int. Cl. C07c *103/52;* C07g *7/00;* C08h *1/00*
U.S. Cl. 260—112.5 8 Claims

The synthesis of the octapeptide Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-amide carrying easily removable protective groups on the Ser, Tyr, Arg and Trp moieties is described; the correspondingly protected heptapeptide is used as the starting material. The octapeptide, upon removal of any protective group on the amino-N of the tryptophane moiety is an important intermediate for the preparation of the gonadotropin-releasing hormone.

3,780,015
PROCESS FOR PREPARING LYSINE CONTAINING PEPTIDES

Ralph F. Hirschmann, Scotch Plains, and Daniel F. Veber, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,384

Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*

U.S. Cl. 260—112.5 **4 Claims**

A process for preparing peptides containing lysine wherein the terminal amino group of lysine is protected by a pyridyl - 4 - methyloxycarbonyl group during formation of the peptide and removing this group with zinc in acid.

3,780,016
DIPEPTIDE ANTIBIOTIC AND METHOD FOR THE PRODUCTION THEREOF

Richard M. Gale and David H. Lively, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,386

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **2 Claims**

Dipeptide antibiotic, fumarylcarboxyamido - L-2,3-diaminopropionyl-L-alanine is produced by culturing the organism *Streptomyces collinus* NRRL 5332 under submerged aerobic fermentation conditions and is isolated by chromatography of the filtered fermentation broth over activated carbon, followed by chromatography of the active fractions obtained therefrom over acid-washed alumina. The antibiotic displays significant activity against *Salmonella gallinarum* and *Trichomonas vaginalis.*

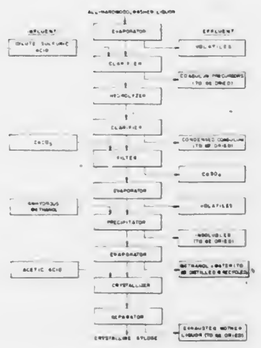
3,780,017
PRODUCTION OF CRYSTALLINE XYLOSE

Howard A. Spalt, Geneva, Chung Ying Chu, St. Charles, and Paul Niketas, Carpentersville, Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed Feb. 25, 1971, Ser. No. 118,768

Int. Cl. C13k *9/00*

U.S. Cl. 260—209 R **6 Claims**



Method of isolating crystalline xylose from an aqueous plant extract containing monosaccharides of which at least 50 percent is xylose, which comprises concentrating said extract to a first syrup, dissolving said syrup in a water-miscible alcohol, removing insoluble materials from the alcohol solution, evaporation of the alcohol solution to a second syrup, diluting said second syrup with acetic acid to form a solution containing at least 25 percent acetic acid, and separating the crystalline xylose which is precipitated from said solution.

3,780,018
DERIVATIVES OF GENTAMICIN C_1

Masataka Konishi, Yokohama, and Hiroshi Tsukiura, Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed June 26, 1972, Ser. No. 266,170

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **13 Claims**

Derivatives of gentamicin C_1 have been prepared which possess substantially improved antibacterial activity. A example of such an agent is 1-[L-(—)-γ-amino-α-hydroxybutyryl]gentamicin C_1 [IIIa, BB-K62].

3,780,019
PRODUCTION OF ERYTHROMYCYLAMINE COMPOUNDS

Eric Wildsmith, Chamberley, England, assignor to Lilly Industries, Ltd., London, England

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,400

Claims priority, application Great Britain, Apr. 13, 1970, 17,529/70

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 E **8 Claims**

Erythromycylamine compounds are produced by reduction of an erythromycin oxime, using transition metal ions which are in a low valency state and of suitable redox potential, to the corresponding imine, reduction of the latter producing the desired erythromycylamine.

3,780,020
ERYTHROMYCIN AZINE DERIVATIVES

Delme Evans, Chalfont St. Peter, England, assignor to Lilly Industries Limited, London, England

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,223

Claims priority, application Great Britain, Sept. 30, 1970, 46,402/70

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 E **3 Claims**

Erythromycin azine derivatives are useful in the treatment of bacterial, amoebic and trichomonal infections in mammals and birds, and are prepared by reacting erythromycin hydrazone or erythromycin B hydrazone with an appropriate ketone or aldehyde.

3,780,021
CHEMICAL PROCESSES USING ORGANO-THALLIUM COMPOUNDS

Edward C. Taylor, Princeton, N.J., and Alexander McKillop, East Anglia, Norwich, England (both of 1500 Spring Garden St., Philadelphia, Pa. 19101)

No Drawing. Original application Jan. 25, 1968, Ser. No. 700,352, now Patent No. 3,626,018. Divided and this application Feb. 4, 1971, Ser. No. 112,812

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R **4 Claims**

Thallous salts of β-dicarbonyl compounds, prepared by reaction of the β-dicarbonyl compounds with a thallous alkoxide, are treated with alkyl halides to give C-alkyl products in high yield, with acyl halides at room temperature to give C-acyl products, and with acyl halides at low temperatures to give O-acyl products. Thallous phenolates

are esterified with acyl or aroyl halides. Anhydrides are also prepared, as are biaryls and bi-sec-alkyls. N-heterocyclics, including purines and pyrimidines, are N-alkylated. Lactams are O-acylated or N-alkylated.

3,780,022
OXYGENATED POLYMETHYLENEIMINES

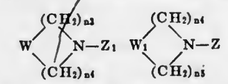
Gunther S. Fonken, Galesburg, Milton E. Herr, Kalamazoo, and Herbert C. Murray, Hickory Corners, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 666,991, Sept. 11, 1967, now Patent No. 3,556,943, dated Jan. 19, 1971, which is a continuation-in-part of abandoned application Ser. No. 453,204, May 4, 1965. This application Oct. 26, 1970, Ser. No. 84,253

Int. Cl. C07d *41/04, 99/04*

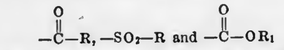
U.S. Cl. 260—239 B **1 Claim**

Oxygenated polymethyleneimines of the formulae



wherein n_3 is a whole number from 1 to 3, inclusive, n_4 is a whole number from 3 to 5, inclusive, and n_5 is a whole number from 6 to 8, inclusive, in which the sum of n_3 and n_4 is not less than 5 and not greater than 7 and the sum of n_4 and n_5 is 11; W is selected from the group consisting of carbonyl, hydroxymethylene, acyloxymethylene, methylhydroxymethylene, phenylhydroxymethylene, alkylenedioxymethylene, and cyclicaminomethylene; W_1 is selected from the group consisting of carbonyl, hydroxymethylene, acyloxymethylene and alkylenedioxymethylene; Z_1 is selected from the group consisting of hydrogen, cycloalkyl, cyanomethyl, 2-aminoethyl, 2-guanidinoethyl,

in which R is aryl and R_1 is aralkyl, and the pharmacologically acceptable acid addition salts of those compounds wherein the group, >N—Z_1 is an amino radical; and Z is selected from the group consisting of



in which R and R_1 have the meanings given above. The compounds of the above formulae and their acid addition salts are particularly valuable as central nervous system stimulants.

3,780,023
2-ARALKYLAMINO-4,5-DIHYDRO-3H-1,3-BENZODIAZEPINES

John T. Suh, 3709 W. Scenic Drive, 111 N., Mequon, Wis. 53092, and Richard A. Schnettler, 6234 W. Donges Lane, Brown Deer, Wis. 53223

No Drawing. Filed June 30, 1972, Ser. No. 268,129

Int. Cl. C07d *53/04*

U.S. Cl. 260—239 BD **9 Claims**

The 2-aralkylamino - 4,5 - dihydro-3H-1,3-benzodiazepines and their pharmaceutically acceptable acid addition salts are central nervous system depressants possessing tranquilizing activity. A compound disclosed is 2-benzylamino-4,5-dihydro-3H-1,3-benzodiazepine hydrochloride.

3,780,024
2-AMINOALKYLAMINO-4,5-DIHYDRO-3H-1,3-BENZODIAZEPINES

John T. Suh, 3709 W. Scenic Drive, 111 N., Mequon, Wis. 53092, and Richard A. Schnettler, 6234 W. Donges Lane, Brown Deer, Wis. 53223

No Drawing. Filed June 30, 1972, Ser. No. 268,130

Int. Cl. C07d *53/04*

U.S. Cl. 260—239 BD **9 Claims**

The 2 - aminoalkylamino-4,5-dihydro-3H-1,3-benzodiazepines and their pharmaceutically acceptable acid addition salts are antihypertensive agents. Compounds disclosed are 2-N,N-dimethylaminoethylamino-4,5-dihydro-3H-1,3-benzodiazepine dihydrochloride and 2-N,N-dimethylaminopropylamino - 4,5 - dihydro - 3H-1,3-benzodiazepine dihydrochloride.

3,780,025
SILICON COMPOUNDS CONTAINING LACTAM STRUCTURES

John Thompson, Barry, Wales, assignor to Midland Silicones Limited, Reading, Berkshire, England

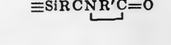
No Drawing. Filed Apr. 30, 1971, Ser. No. 139,187

Claims priority, application Great Britain, May 4, 1970, 21,377/70

Int. Cl. C07d *41/06;* **C08g** *47/02, 47/10*

U.S. Cl. 260—239.3 R **11 Claims**

Organosilicon compounds containing lactam structures defined by the general formula



where R is alkylene or alkenylene of 3 to 18 carbon atoms and R′ is alkylene of 2 to 15 carbon atoms are useful as sizing agents for glass fibers and fabrics and as intermediates for preparing modified nylon type materials exhibiting improved physical properties. The lactam structure is introduced into the organosilicon compound by reaction of an organosilicon compound containing ≡SiH with a lactam substituted at the nitrogen atom by an alkenoyl or alkynoyl group.

3,780,026
BIOCHEMICAL ALDOSTERONE SYNTHESIS

Eiji Kondo, Ikeda, Takashi Mitsugi, Senboku, and Kazuo Tori, Kobe, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Application Feb. 16, 1971, Ser. No. 115,842, now Patent No. 3,709,789, which is a division of application Ser. No. 790,834, Jan. 13, 1969, now Patent No. 3,631,031, which in turn is a continuation-in-part of abandoned application Ser. No. 555,220, June 6, 1966. Divided and this application Aug. 9, 1972, Ser. No. 279,266

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **6 Claims**

Corticosterone or esters thereof is treated with the enzymes of Corynespora fungus to obtain novel 18-hydroxycorticosterone inter- and/or intra-molecular acetals and/or acylates thereof accompanied with several monohydroxycorticosterones, then the product is treated with acid or mixture of acid and acylating agent to form ether bridge between positions 11 and 18, finally the 18-deoxyaldosterone derivatives obtained are treated again with the enzymes of Corynespora fungus to prepare aldosterone, 18-dehydroaldosterone, 9α-hydroxy-11β,18-epoxy-4-androstene-3,17-dione.

3,780,027
ANTHRANILIC ACID DERIVATIVES

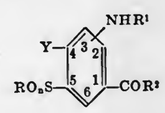
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,061

Int. Cl. A61k *27/00;* **C07d** *5/16*

U.S. Cl. 260—239.6 **4 Claims**

Aminobenzoic acids of the structure



having saluretic and diuretic properties are described. These compounds are prepared by amidation of a 2-halo analog thereof or by alkylation of the free amino compound.

3,780,028

DIPHENYLMETHYL 7β - (D - 2,2 - DIMETHYL-3-NITROSO - 5 - OXO - 4 - PHENYL-1-IMIDAZOLIDINYL)-3-METHYL-CEPHEM-4-CARBOXYLATE

Takayuki Naito, 4–24–19 Nishi-shinjuku Shinjuku-ku, Tokyo, Japan; Jun Okumura, 1–21–2–101 Utsukushigaoka, Midori-ku, Yokohama, Japan; and Hideaki Hoshi, 1–24–15 Minami, Meguroku, Tokyo, Japan

No Drawing. Filed July 26, 1972, Ser. No. 275,399

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **1 Claim**

The antibacterial agent cephalexin is prepared from readily available hetacillin by the consecutive steps of nitrosation to give N-nitrosohetacillin, oxidation as with $NaIO_4$ below pH 5 to give the corresponding sulfoxide, conversion to its benzhydryl ester which is then rearranged by heat, preferably with a catalyst present, to give the benzhydryl ester of N-nitrosohetacephalexin, conversion to its free acid and finally cleavage to give cephalexin as by zinc and acetic acid or Raney nickel and hydrogen or, preferably, hydrogen chloride in dioxane.

3,780,029

AZINE COMPOUNDS

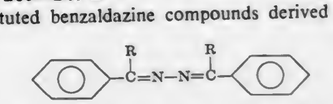
Taras Jaskewycz, 76A Fach St., Box Hill, Victoria 3128, Australia

No Drawing. Filed Oct. 27, 1970, Ser. No. 84,511

Int. Cl. C07d *55/22*

U.S. Cl. 260—240 B **10 Claims**

Substituted benzaldazine compounds derived from



find use as optical brightening agents in the detergent, textile and paints industries. Preferred substituents of the benzyl group are dichloro triazinyl amino and other substituted triazinyl amino groups. Also of use is diamino benzaldazine. One preferred composition is obtained as the reaction product of a mixture of diamino benzaldazine, diamino stilbene and cyanuryl chloride.

Although diamino benzaldazine itself is known many of the substituted compounds are novel.

3,780,030

1,2,3-BENZOXATHIAZIN-4(3H)-ONE 2-OXIDES AND THEIR PREPARATION

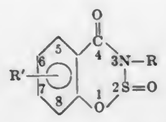
Leo R. Morris, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 29, 1971, Ser. No. 194,053

Int. Cl. C07d *95/00*

U.S. Cl. 260—243 R **7 Claims**

1,2,3-benzoxathiazin-4(3H)-one 2-oxides corresponding to the formula



wherein R represents H, phenyl, halophenyl, nitrophenyl, or halonitrophenyl and R′ represents H, halo, dihalo, or phenyl. The compounds are prepared by reacting a corresponding salicylamide or salicylanilide with thionyl chloride, advantageously in the presence of a solvent such as benzene or methylene chloride and, if desired, in the presence of an acid acceptor such as pyridine or a lower trialkylamine. The compounds are useful as pesticides.

3,780,031

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

Burton G. Christensen, Scotch Plains, N.J., and William J. Leanza, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,054

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **6 Claims**

A process for preparing 7-acylamino-7-methoxy cephalosporins is provided which comprises reacting a 7-imino-7-methoxy cephalosporin with a substituted acetic acid halide, and recovering the product.

3,780,032

7-[D-(α-AMINO-α-PHENYL-, 2 - THIENYL- AND 3-THIENYLACETAMIDO] - 3-[S-(1-METHYL - 1,2,3-TRIAZOL - 4 - YL)CARBONYL]THIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACIDS

John Michael Essery and Lee Cannon Cheney, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Feb. 25, 1972, Ser. No. 229,548

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **44 Claims**

7 - [D - (α-amino-α-phenyl-, 2-thienyl- and 3-thienylacetamido)]-3-[S-(1-methyl - 1,2,3 - triazol - 4-yl)carbonyl]-thiomethyl-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria. Also included in this invention are the corresponding pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl and phenacyl esters of such acids and their nontoxic, pharmaceutically acceptable acid addition salts.

3,780,033

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

George G. Hazen, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,051

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **6 Claims**

A process for preparing 7-acylamino - 7 - methoxy cephalosporin is provided which comprises methoxylating a substituted 7 - [1 - loweralkoxyethylideneamino]-cephalosporin, then hydrolyzing to remove the imino linkage. The final products have antibacterial activity.

3,780,034

PROCESS FOR PREPARING SUBSTITUTED CEPHALOSPORINS

Burton G. Christensen, Scotch Plains, and Raymond A. Firestone, Fanwood, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,052

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **9 Claims**

A process for preparing 7-acylamino-7-methoxy cephalosporins is provided which comprises oxidizing a 7-substituted ethylideneamino-7 - methoxy cephalosporin. The final compounds have antibacterial activity.

3,780,035

PHENOTHIAZINE AND DIBENZOCYCLOHEPTANE DERIVATIVES

Michio Nakanishi, Oita, Takanori Oe, Fukuoka, and Toshio Seki, Oita, Japan, assignors to Yoshitomi Pharmaceutical Ind., Ltd., Osaka, Japan

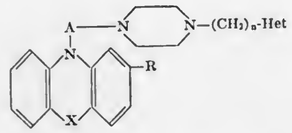
No Drawing. Filed Apr. 10, 1972, Ser. No. 242,769

Claims priority, application Japan, Apr. 10, 1971, 46/22,550

Int. Cl. C07d *93/14*

U.S. Cl. 260—243 A **10 Claims**

N,N-disubstituted piperazine compounds of the formula



wherein X is —S—, —CH_2—CH_2— or —CH=CH—, R is H, C_{1-4} alkyl, methoxy, methylthio, acetyl, trifluoromethyl or halogen, A is C_{2-4} alkylene, *n* is 0, 1, 2 or 3 and Het represents furyl, pyridyl or thienyl, and pharmaceutically acceptable acid addition salts thereof are useful as psychotropic agents.

3,780,036

ALKYLTHIOCARBONATES OF S-DIALKYLAMINO HALOTRIAZINES

Pierre Prognon, Portet-sur-Garonne, Robert Scuflaire and Francois Mathey, Ballancourt-sur-Essone, and Oleg Gryszkiewic-Trochimowski, La Feret-Alais, France, assignors to Azote et Produits Chimiques S.A., Paris, France

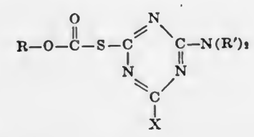
No Drawing. Filed Mar. 10, 1972, Ser. No. 233,710

Claims priority, application France, Mar. 10, 1971, 7108243

Int. Cl. C07d *55/46*

U.S. Cl. 260—249.5 **7 Claims**

Alkylthiocarbonates of S-dialkylamino halotriazines



wherein

X is a halogen, preferably bromine and especially chlorine;
R is a linear or branched alkyl group of 1 to 12 carbon atoms, preferably of 1 to carbon atoms;
R′ is a linear or branched alkyl group of 1 to 5 carbon atoms; and where
R and R′ can be the same or different,

and methods for their preparation, and methods of using same as pesticides.

3,780,037

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

George G. Hazen, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,055

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **8 Claims**

A process is provided for preparing 7-acylamino-7-methoxy cephalosporins, which comprises methylating a substituted 7[1 - loweralkoxyethylideneamino]-7-hydroxy cephalosporin, then hydrolyzing to remove the imino linkage. The final products have antibacterial activity.

3,780,038

PROCESS OF PREPARING AN AMINO THIAZOLYL DISULFIDE USING WET 2-MERCAPTOBENZOTHIAZOLE

Richard Leshin and William L. Cox, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,056

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 **7 Claims**

In a known process for preparing 2-(4-morpholinodithio)-benzothiazole using 2-mercaptobenzothiazole along with morpholine, sulfur, an inert organic solvent such as isopropyl alcohol and an oxidizing agent, the improvement wherein wet 2-mercaptobenzothiazole is substituted for dry 2-mercaptobenzothiazole.

3,780,039

4-β-HYDROXYETHYL-as-TRIAZINES

Donald L. Trepanier, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 26, 1972, Ser. No. 266,301

Int. Cl. C07d *55/10*

U.S. Cl. 260—248 AS **10 Claims**

Substituted 4-(β-hydroxyphenethyl)-1,4,5,6-tetrahydro-as-triazines are prepared by the reaction of a trialkylorthoformate with a substituted 2-(β-hydroxyphenethylamino)alkylhydrazine such as 1-[2-(β-hydroxyphenethylamino)ethyl]-1-methylhydrazine. The novel triazine compounds have pharmacological activity as antidepressants as indicated by their antagonism of reserpine and their potentiation of amphetamine.

3,780,040

2-SUBSTITUTED-3,4-DIHYDROQUINAZOLINES

Richard A. Schnettler, 6234 W. Donges Lane, Brown Deer, Wis. 53223, and John T. Suh, 3709 W. Scenic Drive, 111 N., Mequon, Wis. 53092

No Drawing. Filed June 2, 1972, Ser. No. 259,076

Int. Cl. C07d *99/06*

U.S. Cl. 260—256.5 **5 Claims**

The 2-substituted-3,4-dihydroquinazolines and their pharmaceutically acceptable acid addition salts are useful antihypertensive agents. A compound disclosed is 2-[N-(N′ - 2 - thienoylpiperazino)] - 3,4 - dihydroquinazoline hydroiodide hydrate.

3,780,041

N(2,4,6-TRIIODO-3-ACETYLAMINO METHYL) PHENYL GLUTARIMIDE OR SUCCINIMIDE

James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 841,604, July 14, 1969, now Patent No. 3,660,408, which is a continuation-in-part of abandoned application Ser. No. 715,583, Mar. 25, 1968. This application Sept. 16, 1971, Ser. No. 181,248

Claims priority, application Canada, Mar. 18, 1969, 46,086

Int. Cl. C07d *29/20*

U.S. Cl. 260—281 **5 Claims**

Cyclic imides and anilic acids of 2,4,6-triiodoanilines bearing a substituted amino group in the 3-position are prepared by decarboxylation of the corresponding compounds bearing a carboxyl group in the 5-position. The products are useful as intermediates and as cholecystographic agents.

3,780,042

1-METHYL-3-HYDROXYMETHYL-2,4-DIOXO-1,3-DIHYDROQUINAZOLINES

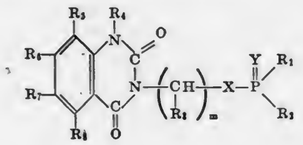
Daniel D. Rosenfeld, East Brunswick, and Martin L. Gorbaty, Elizabeth, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original application Apr. 22, 1970, Ser. No. 31,008, now Patent No. 3,681,352. Divided and this application May 22, 1972, Ser. No. 255,473

Int. Cl. C07d *51/48*

U.S. Cl. 260—260 **3 Claims**

Uracil phosphates containing a fused aromatic ring have been shown to possess insecticidal activity. The structures of these compounds can be characterized as follows:



wherein R_5, R_6, R_7 and R_8 can be the same or different and can equal hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, halogen, cyano, thiocyano, nitro, C_2–C_6 carboalkoxy, C_1–C_6 haloalkyl, C_2–C_6 acyl, C_1–C_6 alkylsulfoxide and sulfone, C_1–C_6 thioalkyl, C_1–C_6 alkoxy, C_1–C_6 alkylamino and C_2–C_6 dialkylamino, C_1–C_6 sulfonamido and carboxylic acid; X is O or S; Y is O or S; m is 1 or 2; R_1 is C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_6–C_{10} aryl, C_6–C_{10} aryloxy and C_1–C_6 alkyl; R_2 is C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_6–C_{10} aryl, C_6–C_{10} aryloxy, and C_1–C_6 alkyl; R_3 is hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, C_1–C_6 haloalkyl and C_6–C_{10} haloaryl; R_4 is hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, C_1–C_6 haloalkyl, C_6–C_{10} haloaryl, C_1–C_6 alkylamino, C_2–C_6 dialkylamino, C_2–C_6 acyl, C_1–C_6 alkylsulfoxide or sulfonyl, C_1–C_6 alkoxy, C_2–C_6 alkyloxyalkyl and C_2–C_6 alkylthioalkyl.

3,780,043

ISOQUINOBENZAZEPINES

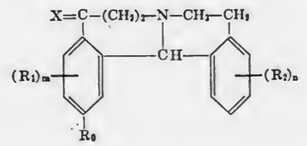
Heinz Werner Gschwend, Millburn, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 882,300, Dec. 4, 1969. This application June 11, 1971, Ser. No. 152,421

Int. Cl. C07d *35/08*

U.S. Cl. 260—286 R **5 Claims**

5,6,8,9,10,14b-hexahydroisoquino[1,2 - a][2]benzazepines, e.g. those of the formula



X=H_2, HOH or O

R_0=alkyl, OH, SH, alkoxy, alkylmercapto, alkanoyloxy or alkanesulfonyloxy

$R_{1,\ 2}$=H, R_0, halogen, CF_3, NO_2 or an amino group

m,n=1 or 2

and therapeutically acceptable functional derivatives thereof are antidepressants and tranquilizers.

3,780,044

1-[3-[5,11-DIHYDRODIBENZ[b,e][1,4]OXAZEPIN-5-YL]PROPYL]-PHENYLPIPERIDINOLS

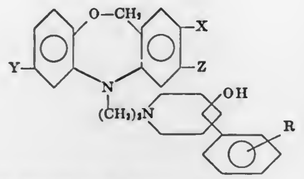
Harry L. Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Sept. 22, 1972, Ser. No. 291,422

Int. Cl. C07d *87/54*

U.S. Cl. 260—293.58 **2 Claims**

Compounds of the formula



are effective antibacterial agents.

3,780,045

PREPARATION OF ORGANOLITHIUM COMPOUNDS

Constantinos G. Screttas, Athens, Greece, assignor of a fractional part interest to The National Hellenic Research Foundation, Athens, Greece

No Drawing. Filed Aug. 29, 1972, Ser. No. 284,473

Int. Cl. C07d *29/10*

U.S. Cl. 260—293.51 **19 Claims**

The process of lithiating an organo halide by reacting it with lithium reagent so as to replace one or more halogen atoms of the organo halide with lithium atoms and form lithium halide by-product is improved by employing as the lithium reagent an addition compound of lithium and an aromatic hydrocarbon containing at least 2 aromatic rings that are either joined together, fused together, or conjugated to each other. For example, 1,4-dichlorobenzene can be reacted in tetrahydrofuran at −50° C. with the addition compound of lithium and naphthalene to give a 93% yield of 1,4-phenylene dilithium, according to the following equation:

$$p\text{-}C_6H_4Cl_2+4Li^+C_{10}H_8^{\cdot-}\rightarrow p\text{-}C_6H_4Li_2+4C_{10}H_8+2LiCl$$

3,780,046

HERBICIDAL N-(2-PICOLYL) SUBSTITUTED 2,6-DINITROANILINES

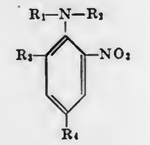
Lester L. Maravetz, Westfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Original application Feb. 24, 1970, Ser. No. 18,407, now Patent No. 3,686,230, dated Aug. 22, 1972. Divided and this application June 26, 1972, Ser. No. 268,227

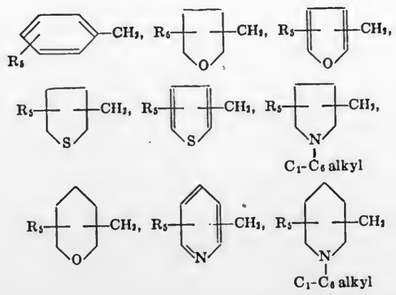
Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 F **4 Claims**

The compounds of the subject invention are represented by the following generic formula



wherein R_1 is selected from the group consisting of



wherein R_5 is H; C_1–C_6 alkyl, alkenyl, haloalkyl, halogen, NO_2; R_2 is hydrogen, C_1–C_6 straight or branched chain alkyl, alkenyl, or alkynyl, C_3–C_6 cycloalkyl, C_4–C_{10} cycloalkylalkyl, C_1–C_6 alkoxyalkyl, C_1–C_6 hydroxyalkyl, C_1–C_6 haloalkyl, C_1–C_6 cyanoalkyl, C_2–C_6 acylalkyl, C_1–C_6 alkylmercaptoalkyl, and related sulfoxide and sulfone analogs; R_3 is H, NO_2, halogen, C_1–C_6 alkyl; and R_4 is H, C_1–C_6 alkyl, haloalkyl, cycloalkyl, halogen, CF_3, NO_2, C≡N, $CH_3S(O)_x$, $C_2H_5S(O)_x$, $C_3H_7S(O)_x$, wherein x is 0, 1 or 2, $SO_2NR_6R_7$ wherein R_6 and R_7 can be the same as R_2 or R_6 and R_7 when taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, aziridino, or morpholino ring.

3,780,047

DERIVATIVES OF PYRAZOLO[3',4'-2,3]PYRIDO [4,5-e]b-BENZO-1,5-DIAZEPINES

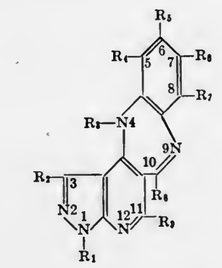
Theodor Denzel, Nuremberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed July 5, 1972, Ser. No. 268,995

Int. Cl. A61k *27/00;* **C07d** *53/04*

U.S. Cl. 260—296 P **12 Claims**

The new pyrazolo[3',4'-2,3]pyrido[4,5-e]b-benzo-1,5-diazepines having the general formula



are useful as central nervous system depressants. These compounds also increase the intracellular concentration of adenosine-3',5-cyclic monophosphate.

3,780,048

1-HYDROXY-2-(SUBSTITUTED ANILINO) QUINOLIZINIUM BROMIDES

Robert J. Alaimo and Marvin M. Goldenberg, Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

No Drawing. Filed July 12, 1972, Ser. No. 270,960

Int. Cl. A61k *27/00;* **C07d** *39/12*

U.S. Cl. 260—296 B **7 Claims**

1 - hydroxy - 2 - (substituted anilino)quinolizinium bromides are useful as anti-inflammatory agents.

3,780,049

NICKEL COMPLEXES OF DIOXIMES AND PROCESSES FOR THEIR MANUFACTURE

Stefan Hari, Allschwil, and Karl Ronco, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

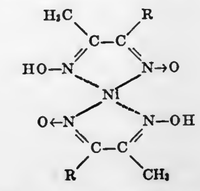
No Drawing. Filed July 7, 1971, Ser. No. 160,562

Claims priority, application Switzerland, July 27, 1970, 11,325/70

Int. Cl. C07d *91/44*

U.S. Cl. 260—299 **2 Claims**

Nickel complexes of dioximes of the formula



wherein R denotes a heterocyclic radical are useful for coloring plastics and lacquers in fast yellow shades.

3,780,050

2-THIOBENZOXAZOLYL AND 2-THIOBENZOTHIAZOLYL TRIFLUORO BUTENYL COMPOUNDS

Mervin E. Brokke, Moraga, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Nov. 20, 1969, Ser. No. 877,538, now Patent No. 3,697,536, which is a division of application Ser. No. 490,664, Sept. 27, 1965, now Patent No. 3,513,172. Divided and this application Dec. 8, 1971, Ser. No. 208,032

Int. Cl. C07d *85/48, 91/44*

U.S. Cl. 260—306 **2 Claims**

Compounds of the formula

$$CF_2{=}CFCH_2CH_2{-}R$$

in which R is a member selected from the group consisting of 2-thiobenzoxazoyl, 2-thiobenzothiazolyl, phthalimido, and N-thiazolidyl dione. The compounds are useful as nematocides.

3,780,051

CERTAIN 2-(THIAZOL-2-YL)-3,5-DIOXO-4-METHYL-1,2,4-THIADIAZOLIDINES

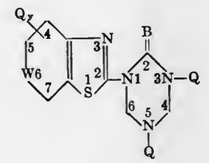
Arnold D. Litt, North Plainfield, and John E. Englehart, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original application May 25, 1970, Ser. No. 40,368, now Patent No. 3,096,101. Divided and this application June 9, 1972, Ser. No. 261,458

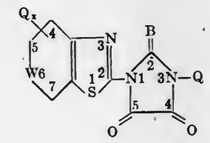
Int. Cl. C07d *99/02*

U.S. Cl. 260—306.8 F **5 Claims**

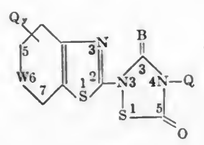
Compounds being selected from the group represented by the following structural formulae:



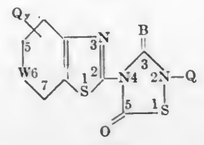
(I)



(II)



(III)



(IV)

where W can be CHR_3, O, or $S(O)_n$ and where n can be 0, 1 or 2, or N—R_4. R_3 can be hydrogen or C_1–C_6 alkyl and R_4 can be R_3, nitro, amino, or O. Q at different positions can be different and is selected from the group consisting of hydrogen, C_1 to C_{10} alkyl, C_3 to C_{10} alkenyl, C_4 to C_{10} alkynyl, C_3 to C_8 cycloalkyl, C_1 to C_7 alkoxy, C_3 to C_{10} cycloalkoxy, C_1 to C_{10} alkylthio, C_1 to C_{10} alkylamino, C_2 to C_{20} dialkylamino, C_3 to C_{10} cycloalkylamino, C_2 to C_{20} dicycloalkylamino. Each of the above mentioned hydrocarbon groups may be optionally substituted by halogen, hydroxy, C_1 to C_4 alkoxy, sulphonamido, C_1 to C_4 alkylthio, nitro, cyano, thiocyano or perhaloalkyl; C_6 or C_{10} aryl, C_6 or C_{10} aryloxy, C_6 or C_{10} arylthio where the aforementioned groups may be optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio, halogen, hydroxy, nitro, cyano, or carboalkoxy. Q may also be cyano, sulphonamido, C_1 to C_6 carboalkoxy, perfluoroalkyl, nitro, mercapto, C_4 to C_9 heteroaryl or C_1 to C_{10} acyloxy optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkylthio, halogen, nitro, cyano, carboalkoxy, thiocyano or perhaloalkyl. When Q is C_1 to C_{10} alkyl, y may take values from O to 6. y may take values from 0 to 4 for all other definitions of Q. B may be O or S.

3,780,052

TRIAZOLINE PHOSPHATES

Tony Cebalo and John L. Miesel, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed July 19, 1972, Ser. No. 273,224

Int. Cl. A01n *9/36;* **C07f** *9/08*

U.S. Cl. 260—308 C **6 Claims**

A class of 5-oxo(thioxo)-3-fluoroalkyl-4-substituted-Δ^2-1,2,4-triazolin-1-yl vinyl phosphates have insecticidal and acaricidal utility.

3,780,053

PHOSPHORUS DERIVATIVES OF TRIAZOLIN-5-ONES AND THIONES

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed July 19, 1972, Ser. No. 273,247

Int. Cl. C07f *9/16, 9/40*

U.S. Cl. 260—308 C **6 Claims**

A defined class of novel 5 - oxo(thioxo) - 1,3 - (alkyl, alkenyl or cycloalkyl) - Δ^2 - 1,2,4-triazolin - 4 yl methyl phosphorus derivatives are useful as insecticides, acaricides, and anthelmintics.

3,780,054

TRIAZOLINE 4-PHOSPHATES

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed July 19, 1972, Ser. No. 273,248

Int. Cl. A01n *9/36;* **C07f** *9/08*

U.S. Cl. 260—308 C **6 Claims**

A class of novel 5-oxo(thioxo)-3-fluoroalkyl-1-substituted-Δ^2-1,2,4-triazolin-4-yl vinyl phosphates have insecticidal and acaricidal utility.

3,780,055

HERBICIDAL 1H-INDAZOLE-4,7-DIONES AND BENZIMIDAZOLE-4,7-DIONES

Ian D. Entwistle, Peter J. Williams, and Barry R. J. Devlin, Sittingbourne, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,400

Claims priority, application Great Britain, Feb. 17, 1970, 7,527/70

Int. Cl. C07d *49/18, 49/36*

U.S. Cl. 260—309 **4 Claims**

1H-indazole-4,7-diones, benzo(d)isoxazole-4,7-diones, benzo(d)triazole-4,7-diones, and benzimidazole - 4,7 - diones substituted in the 5- and 6-positions, are used for the control of weeds.

3,780,056

ACYL HYDANTOIN PHOSPHOROTHIOATES

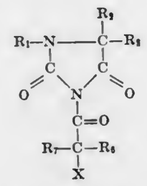
Gophal H. Singhal, 612 Ardsleigh Drive, Westfield, N.J., and Joseph H. Lesser, 3901 62nd St., Woodside, N.Y.

No Drawing. Original application Apr. 23, 1970, Ser. No. 31,405, now abandoned. Divided and this application Dec. 17, 1971, Ser. No. 209,385

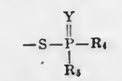
Int. Cl. C07f *9/06*

U.S. Cl. 260—309.5 **6 Claims**

Acyl hydantoin derivatives defined by the following structural formula:



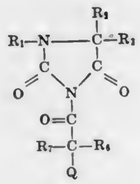
wherein R_1 is one selected from the group consisting of C_1–C_6 lower alkyl, optionally substituted by chlorine, bromine, C_1–C_6 alkoxy and C_1–C_6 alkylthio; C_3–C_6 alkenyl, C_3–C_6 alkynyl, C_3–C_8 cycloalkyl, phenyl optionally substituted with chlorine, bromine, trifluoromethyl or NO_2. R_2 and R_3 can be the same or different and either one is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 chloroalkyl, phenyl optionally substituted with chlorine or nitro and C_1–C_4 alkoxy. X is one selected from the group consisting of chlorine, bromine, fluorine and a moiety defined by



wherein Y can be either O or S and R_4 and R_5 can be the same or different and selected from the group consisting of C_1–C_6 alkoxy, C_1–C_6 alkyl, C_1–C_6 alkylthio, phenyl optionally substituted with chlorine or bromine, phenoxy optionally substituted with chlorine or bromine; R_6 and R_7 can be the same or different and can be selected from the group consisting of hydrogen, and C_1–C_6 alkyl.

Organic compounds represented by this structure have been found to have pesticidal, particularly insecticidal, activity.

Compounds represented by the following structure:



have been found to possess post-emergence herbicidal activity. In this structure, R_1, R_2, R_3, R_7 and R_6 are defined as hereinabove, and Q is one selected from the group consisting of chlorine, bromine and fluorine.

3,780,057

PYRAZOLONE PIGMENTS

Christoph Frey, Oberwil, Basel, Switzerland, assignor to Ciba-Geigy AG

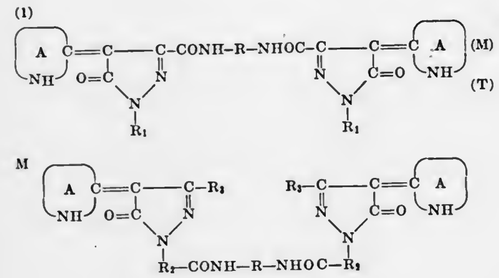
No Drawing. Filed Aug. 19, 1970, Ser. No. 65,332

Claims priority, application Switzerland, Sept. 2, 1969, 13,260/69

Int. Cl. C07d *49/14, 57/00*

U.S. Cl. 260—310 A **5 Claims**

Pyrazolone pigments of the formula



in which A represents a heterocyclic ring fused to at least one benzene ring, R represents a direct bond or an organic residue, R_1 represents a hydrogen atom, or an alkyl or aryl group, R_3 represents an alkylene or arylene residue and R_3 represents an alkyl or carboxylic acid ester group, are valuable pigments coloring plastics and lacquers in fast yellow to red shades.

3,780,058

2-PYRAZOLINE-1-CARBOXAMIDE SULFONAMIDE DERIVATIVES

Zdzislaw Brzozowski, 9 m 1 Sniadeckich St.; and Stefan Angielski, 10 m 1 Hoene-Wronskiego St., both of Gdansk-Wrzeszcz, Poland; and Czeslaw Wojcikowski, 86 c m 95 Pomorska St., Gdansk-Oliwa, Poland

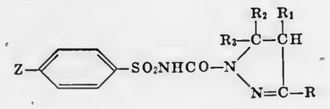
Filed Sept. 16, 1971, Ser. No. 181,009

Claims priority, application Poland, Sept. 19, 1970, P 143,319

Int. Cl. C07d *49/10*

U.S. Cl. 260—310 D **2 Claims**

2-pyrazoline - 1 - carboxamide sulfonamide derivatives having the general formula:



in which Z is hydrogen, halogen or lower alkyl, and R, R_1, R_2, R_3 are each hydrogen or lower alkyl. These sulfonamide compounds have a hypoglycemic effect and are obtained by reacting a 2-pyrazoline derivative such as HN—CR^2R^3—CHR^1—CR=N with an arylsulfonylurea such as Z—$C_6H_4SO_2NHCONH_2$ or with an arylsulfonylisocyanate such as Z—$C_6H_4SO_2NCO$ or by the thermal decomposition of the molecular combination of the 2-pyrazoline derivative and the arylsulfonylurea.

3,780,059

DIBENZOOXAZEPINES AND DIBENZOTHIAZEPINES

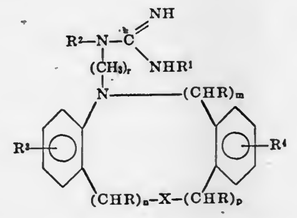
Harry L. Yale and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of application Ser. No. 17,972, Mar. 9, 1970, now Patent No. 3,657,275, which is a continuation-in-part of abandoned application Ser. No. 551,560, May 20, 1966. This application Aug. 17, 1971, Ser. No. 172,569

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 D **4 Claims**

Therapeutically active compounds utilizable as ataractic agents and as sedatives and hypotensive agents having the formula



wherein R, R^1 and R^2 are hydrogen, lower alkyl, phenyl or phenyl-lower alkyl; R^3 and R^4 are hydrogen, halogen, lower alkyl, trifluoromethyl, or lower alkoxy; X is oxygen or sulfur; r is 2 to 5; m is 0 or 1; n and p are each 0, 1 or 2; provided that the sum of $m+n+p$ being from 1 to 3, and that when m equals 1 and n and p are each 0, X is sulfur.

3,780,060

BENZOFURO[2,3-c]PYRROLES

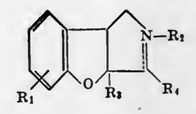
Sylvester Klutchko, Hackettstown, John Shavel, Jr., Mendham, and Maximilian von Strandtmann, Rockaway, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,330

Int. Cl. C07d *27/30, 27/36*

U.S. Cl. 260—326.5 B **6 Claims**

Compounds of the following formula are disclosed:



(I)

wherein

R_1=hydrogen, hydroxy, acyloxy, (1–6c) alkoxy, alkyl or halogen.

R_2=hydrogen, alkyl, substituted alkyl or aralkyl, acyl or non-existant or $CH_3{}^+I^-$ (when double bond is between the positions indicated).

R_3 and R_4=alkyl.

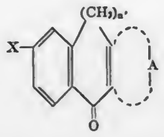
These compounds are useful as skeletal muscle relaxants or as a mild tranquilizer.

3,780,061
TRICYCLIC KETONIC COMPOUNDS

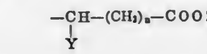
Andre Allais, 65 Rue du Garde-Chasse 93, Les Lilas, France; Lucien Nedelec, 45 Boulevard de l'Ouest 93, Le Raincy, France; Jacques Guillaume, 42 Avenue de Savigny 93, Aulnay-sous-Bois, France; and Daniel Frechet, 45 Rue Lecourbe 75, Paris, France

No Drawing. Filed May 19, 1972, Ser. No. 255,045
Claims priority, application France, May 21, 1971, 18,377
Int. Cl. A61k *27/00*; C07d *63/18, 69/76*
U.S. Cl. 260—332.2 A 20 Claims

Possibly racemic or optically active tricyclic ketonic compounds having the formula



wherein X is hydrogen, halogen or trihalomethyl, *n'* is 2 or 3 and A represents the remainder of a benzene ring or also, when *n'* is 2, the remainder of a thiophene ring whose sulfur is α to the carbon atom attached to the ketone carbon atom, said benzene ring or said thiophene ring being substituted in a position β to the carbon atom attached to the ketone carbon atom by an alkanoic substituent having the formula



where Y is hydrogen or alkyl having 1 to 3 carbon atoms, *n* is 0, 1 or 2 and Z is hydrogen, lower alkyl, lower hydroxyalkyl, acetonide of lower hydroxyalkyl, di-lower alkylamino-lower alkyl, N-heterocyclic-aminoalkyl, alkali metal or alkali earth metal, and the process of preparation. These tricyclic ketonic compounds have a clear analgesic action and a remarkable anti-inflammatory action without a secondary ulcerigenic effect.

3,780,062
INDOLINE DERIVATIVES

Ado Kaiser, New-Frenkendorf, Wolfgang Koch, Riehen, Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,487
Claims priority, application Switzerland, Oct. 30, 1970, 16,050/70
Int. Cl. C07d *27/38*
U.S. Cl. 260—326.11 R 4 Claims

Indoline derivatives substituted in the 1-position with hydrogen, alkanoyl, benzoyl, alkoxy-carbonyl or o-nitrophenylthio, in the 2-position with a carboxy or ester group and the 5- and 6-positions with an alkanoyloxy or alkoxy group, which are useful as hypotensive, antipyretic and anti-Parkinson agents.

3,780,063
SUBSTITUTED AMINOETHYL INDOLES AND METHOD OF PREPARATION

George Edward Van Lear, Suffern, and Albert Carl Dornbush, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 21, 1972, Ser. No. 265,006
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 6 Claims

The preparation and properties of dibromoethylaminoindoles are described. They are useful for their activity against both gram-negative and gram-positive bacteria.

3,780,064
THIOLPULVINIC ACID DERIVATIVES

Joseph Weinstock, Phoenixville, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed June 30, 1972, Ser. No. 267,762
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 10 Claims

Thiolpulvinic acid derivatives having anti-arthritic activity prepared by treating the corresponding pulvinic acid dilactone with an active derivative of the appropriate mercaptan.

3,780,065
PHENYLVULPINIC ACID DERIVATIVES

Blaine M. Sutton, Hatboro, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 188,555, Oct. 13, 1971. This application Aug. 10, 1972, Ser. No. 279,597
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 10 Claims

Phenylvulpinic acid derivatives having anti-arthritic activity prepared by alcoholysis of the corresponding phenylpulvinic acid dilactone.

3,780,066
PREPARATION OF ALKENYL SUBSTITUTED HALOGENATED UNSATURATED POLYBASIC ACID ANHYDRIDES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,578
Int. Cl. C07c *57/14, 61/16*
U.S. Cl. 260—345.9 10 Claims

Alkenyl-substituted halogenated polybasic acid anhydrides are prepared by condensing an alkene containing at least 3 carbon atoms or a cycloalkene with polyhalo-substituted unsaturated polybasic acid anhydrides in the presence of free radical-generating compounds at elevated temperatures to produce the desired products.

3,780,067
PROCESS FOR THE PREPARATION OF 4-CHLORO-N-FURFURYL - 5 - SULFAMOYL-ANTHRANILIC ACID

Haim Yellin and Eliezer Konfino, Ramat Gan, Israel, assignors to Assia Chemical Laboratories Ltd., Tel Aviv, Israel

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,251
Int. Cl. C07d *5/16*
U.S. Cl. 260—347.2 8 Claims

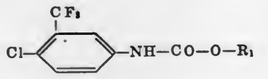
A process for the preparation of 4-chloro-N-furfuryl-5-sulfamoyl-anthranilic acid comprising reacting an alkali salt of 3-sulfamoyl-4,6-dichlorobenzoic acid, in the absence of water, with about 3 equivalents of furfurylamine at a temperature of from 120 to 140° C. and thereafter acidifying the alkali salt obtained to produce the desired compound.

3,780,068
N-(3-TRIFLUOROMETHYL - 4-CHLOROPHENYL)-O-FURFURYL AND TETRAHYDROFURFURYL CARBAMATE

Adolf Hubele, Riehen, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Original application Feb. 4, 1969, Ser. No. 796,571, now Patent No. 3,676,457. Divided and this application May 30, 1972, Ser. No. 258,120
Claims priority, application Switzerland, Feb. 6, 1968, 1,765/68
Int. Cl. C07c *5/16*
U.S. Cl. 260—347.4 2 Claims

The invention relates to compounds of the general formula

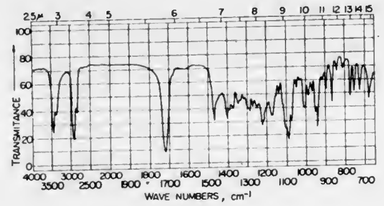


wherein R_1 represents an aralkyl or aralkenyl residue or a phenyl radical having 4 or 5 substituents or a 5- to 6-membered heterocycle which may be bound over an alkyl residue. The compounds are used for combating various types of pests, preferably bacteria and fungi.

3,780,069
DIKETOCORIOLIN B AND PROCESS FOR THE PRODUCTION THEREOF

Hamao Umezawa and Tomio Takeuchi, Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Feb. 10, 1971, Ser. No. 114,246
Claims priority, application Japan, Feb. 13, 1970, 45/11,965
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 C 2 Claims



Diketocoriolin B having anti-bacterial and anti-tumor activities and process for producing the same by culturing aerobically a microorganism capable of producing coriolin B in a nutrient medium, recovering the accumulated coriolin B and oxidizing said compound with an oxidizing agent.

3,780,070
4-AZIDO-17α-ALKINYL-4-GONEN-17β-OL-3-ONES AND METHOD FOR THEIR PREPARATION

Elliot L. Shapiro, Cedar Grove, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed Sept. 21, 1972, Ser. No. 291,113
Int. Cl. C07c *173/10*
U.S. Cl. 260—349 10 Claims

4 - azido - 17α - alkinyl - 4 - gonene - 17β - ol - 3-ones having contraceptive activity are prepared by treating the corresponding 4,5-oxido-4,5-dihydro derivative with an alkali metal azide in slightly acidic aqueous alkanol. A preferred compound is 4-azido - 17α - ethinyl-4-estren-17β-ol-3-one.

3,780,071
PROCESS FOR THE MANUFACTURE OF 2,5-DIACYL AMINO-1,4-BENZOQUINONES

Stefan Hari, Allschwil, and Karl Ronco, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed June 9, 1971, Ser. No. 151,530
Claims priority, application Switzerland, June 11, 1970, 8,808/70
Int. Cl. C07c *103/02*
U.S. Cl. 260—396 R 9 Claims

Process for the manufacture of 2,5-diacylamino-1,4-benzoquinones, especially 2,5 - dibenzoylamino-1,4-benzoquinones by acylation of 2,5-diamino-1,4-benzoquinones with carboxylic acid halides in the presence of a Friedel-Crafts catalyst.

3,780,072
3-ENOLETHERS OF Δ^1-3-KETO-5α-STEROIDS AND PROCESS FOR THEIR PREPARATION

Rinaldo Gardi, Carate Brianza, and Pier Paolo Castelli, Monza, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 830,841, June 5, 1969, which is a continuation-in-part of application Ser. No. 640,419, May 22, 1967, both now abandoned. This application Nov. 26, 1971, Ser. No. 202,572
Claims priority, application Germany, Nov. 18, 1966, P 15 93 698.8
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.45 27 Claims

New ethers of 3-hydroxy-$\Delta^{1,3}$-5α-steroids, namely 3-enol ethers of Δ^1-3-keto-5α-steroids, are prepared by submitting to pyrolysis tri-ethers of 1α,3,3-tri-hydroxy-5α-steroids optionally in the presence of an alcohol or a phenol.

3,780,073
3-OXIMES OF 19-NORTESTOSTERONE ESTERS

Arvin P. Shroff, Piscataway, N.J., assignor to Ortho Pharmaceutical Corporation

No Drawing. Continuation-in-part of applications Ser. No. 843,201, July 18, 1969, now Patent No. 3,629,415, and Ser. No. 193,174, Oct. 27, 1971, said application Ser. No. 843,201 being a division of application Ser. No. 635,308, Apr. 20, 1967, now Patent No. 3,532,689, which is a continuation-in-part of applications Ser. No. 502,384, Oct. 22, 1965, now abandoned, and Ser. No. 563,081, July 6, 1966, now Patent No. 3,437,674. This application Nov. 15, 1971, Ser. No. 198,992
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 8 Claims

3-oximes of 17-α-ethynyl 19-nortestosterone esters have post-coital activity for the suppression of reproduction.

3,780,074
PREPARATION OF ALKADIENOIC ACID ESTERS

Michael G. Romanelli, New York, N.Y., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of applications Ser. No. 808,672 and Ser. No. 808,673, both Mar. 19, 1969, now Patents Nos. 3,670,029 and 3,670,032 respectively. This application June 3, 1971, Ser. No. 149,774
Int. Cl. C07c *67/00, 69/52*
U.S. Cl. 260—410.9 R 12 Claims

Esters of alkadienoic acids are prepared through the reaction of C_4–C_{12} aliphatic, acyclic, conjugated diolefins with a C_1–C_{20} monohydroxy alcohol and either gaseous carbon monoxide or gases containing carbon monoxide in the presence of a catalyst system including zerovalent palladium. A preferred catalyst system is comprised of a zerovalent palladium material and a phosphine activator. The reaction is conducted at moderate temperature and pressure conditions. The alkadienoic acid esters and their hydrogenated derivatives are useful as solvents, brake fluids and plasticizers.

3,780,075
SEPARATION PROCESS

Emmanuel Joseph Dufault, Pittsford, and David Andrew Heeks, Rochester, N.Y., assignors to Syron Corporation, Rochester, N.Y.

Filed Feb. 5, 1971, Ser. No. 112,952
Int. Cl. C11b *1/12*
U.S. Cl. 260—412.6 10 Claims

The stickwater produced in processes for centrifugally separating fat bearing animal material, such as low tem-

perature mechanical rendering processes, is split into a high fat fraction and a low fat fraction by heating the stickwater to a temperature above about 220° F., preferably from 260° F., to 300° F., and holding the heated stickwater quiescent in a pressurized separator, whereby the stickwater separates into an upper layer containing most of the fat and insoluble defatted solids in the stickwater and a lower layer comprising water and dissolved defatted solids.

3,780,076

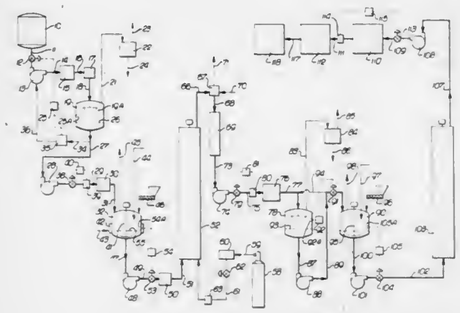
OIL TREATMENT PROCESS

Basil T. Papahronis, Fullerton, and Walter P. Gibble, La Habra, Calif., assignors to Hunt-Wesson Foods, Inc., Fullerton, Calif.

Filed Feb. 18, 1971, Ser. No. 116,456

Int. Cl. C07f *5/10*

U.S. Cl. 260—420 **17 Claims**



A continuous method of treating refined unbleached soybean oil to produce a stable frying oil. The method comprises, in the following sequence, preheating the oil, degassing the oil, heating the oil to a higher temperature, adding a copper chromite catalyst to the oil, heating the oil to the catalytic reaction temperature and contacting it with carbon dioxide, degassing and cooling the oil, filtering the oil, and bleaching and deodorizing the oil.

3,780,077

PROCESS FOR PREPARING LEAD (IV)-ACETATE

Werner Schwarze, Frankfurt, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed July 14, 1971, Ser. No. 162,682

Claims priority, application Germany, July 17, 1970, P 20 35 559.3

Int. Cl. C07f *7/24*

U.S. Cl. 260—436 **10 Claims**

Process for preparing lead (IV)-acetate by oxidizing lead (II)-acetate in the presence of cobalt ions, manganese ions or mixtures of cobalt and manganese ions wherein the improvement consists essentially of reacting the lead (II)-acetate with about 10–40% peracetic acid by weight at a temperature below about 110° C. to form lead (IV)-acetate. The lead (IV)-acetate is useful for oxidizing certain organic chemicals.

3,780,078

METHOD OF PRODUCING π-ALLYLIC NICKEL COMPLEXES

Konstantin Mikhailovich Anikeev, Sredneokhtinsky prospekt 25/19, kv. 18; Boris Davidovich Babitsky, ulitsa Krasnogo Kursanta 7, kv. 9; Alexi Matveevich Verblovsky, Onezhskaya ulitsa 4, kv. 31; Tamara Nikolaevna Kozhenets, Moskovsky prospekt 79, kv. 39; Vitaly Abramovich Kormer, ulitsa Zheleznovodskaya 62, kv. 2; Mark Iosifovich Lobach, Annikov prospekt 28, kv. 52; and Viktoria Vladimirovna Markova, ulitsa Bolotnaya 11, kv. 18, all of Leningrad, U.S.S.R.; and Ervin Mikhailovich Rivin, Leninsky prospekt 17, kv. 44, Voronezh, U.S.S.R.

No Drawing. Filed July 28, 1971, Ser. No. 166,988

Claims priority, application U.S.S.R., Aug. 3, 1970, 1456941

Int. Cl. C07f *15/04*

U.S. Cl. 260—439 R **4 Claims**

A method of producing π-allylic nickel complexes by reacting nickel tetracarbonyl with diene hydrocarbons in the presence of proton acids. The reaction is effected on heating in a solvent which is inert in respect to said reagents with simultaneous removal of the evolving carbon monoxides.

3,780,079

IRON CHELATE COMPOUND OF TRIS(HYDROXYMETHYL)PHOSPHINE OXIDE AND NITRILOTRIACETIC ACID OR ALKALI METAL SALTS

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Application July 13, 1970, Ser. No. 54,662, now Patent No. 3,655,573, which is a continuation-in-part of abandoned application Ser. No. 680,011, Nov. 2, 1967. Divided and this application Sept. 27, 1971, Ser. No. 184,204

Int. Cl. C07f *15/02*

U.S. Cl. 260—439 R **3 Claims**

Mixtures of tris(hydroxymethyl)phosphine oxide, and nitrilotriacetic acid as well as the alkali metal salts thereof, exhibit marked synergism as sequestrant compositions over a broad pH range. The sequestrant compositions are useful as additives for detergents, metal cleaning baths, peroxide compositions and dyes. The chelate products are useful in the field of agriculture for the introduction of trace elements into plant life and especially in the treatment of iron chlorosis in plants.

3,780,080

SILYL MALEATES AND POLYSILOXANE MALEATES

Abe Berger and Terry G. Selin, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Original application May 17, 1971, Ser. No. 144,306. Divided and this application Dec. 18, 1972, Ser. No. 316,063

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 B **2 Claims**

Silyl maleates and fumarates and polysiloxane maleates and fumarates useful as glass sizing agents are prepared in accordance with the present invention. The silyl maleates and polysiloxane maleates and fumarates are formed by reacting either the cis- or trans-1,2-bis-carbalkoxyethylenes having an unsaturated alkenyl group therein with a hydrogen silane or hydrogen polysiloxane in the presence of a platinum catalyst.

3,780,081

1-(CYANOALKOXY) PHENOXY-3-AMINO-2-PROPANOLS

David James Le Count and Christopher John Squire, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 1, 1972, Ser. No. 248,809

Claims priority, application Great Britain, May 7, 1971, 13,720/71

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **6 Claims**

New 1-amino-3-cyanoalkoxyphenoxy- or 3-acylalkoxyphenoxy-2-propanol derivatives, processes for their manufacture and pharmaceutical compositions containing them. The compounds possess β-adrenergic blocking activity and are useful in the treatment of heart diseases and other conditions in man. Representative of the compounds disclosed is 1-m-(3-cyanopropoxy)phenoxy - 3 - isopropylamino-2-propanol.

3,780,082

PROCESS FOR THE PREPARATION OF 4-OXOCAPRONITRILE

Johannes J. M. Deumens and Siemen H. Groen, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,512

Claims priority, application Netherlands, Sept. 11, 1970, 7013453

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.1 **5 Claims**

Schiff bases derived from acetone and aliphatic lower alkyl primary amine are employed in the reaction of acrylonitrile and an excess of acetone in a liquid medium in the disclosed process for the preparation of 4-oxocapronitrile. The catalysts have a boiling point below 150° C. and are easily recovered from the reaction mixture. The product 4-oxocapronitrile is a starting material in the preparation of α-pipecoline.

3,780,083

PROCESS FOR PREPARING α-MONO-CYANOETHYLATED BUTANONE

Johannes J. M. Deumens, Geleen, and Petrus A. M. J. Stijfs, Oirsbeek, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,319

Claims priority, application Netherlands, Feb. 19, 1971, 7102202

Int. Cl. C07c *121/02, 121/34*

U.S. Cl. 260—465.1 **8 Claims**

Schiff bases derived from butanone and an aliphatic primary amine are catalysts in the preparation of α-mono-cyanoethylated butanone by reacting acrylonitrile with at least an equimolar quantity of acrylonitrile in the presence of an acid. The α-mono-cyanoethylated butanones, such as 4-methyl-5-oxohexane nitrile and 5-oxoheptane nitrile are produced with only minor amounts of contaminant's that are easily removed. The α-mono-cyanoethylated butanones are useful for the preparation of diamines, ketocarboxylic acids or keto-amides.

3,780,084

PREPARATION OF CYANOALKANE CARBOXYLIC ACIDS

Sijbrandus E. Schaafsma, Beek, and Johannes H. A. Hofman, Maastricht, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Apr. 26, 1972, Ser. No. 247,535

Claims priority, application Netherlands, May 1, 1971, 7105979

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.4 **7 Claims**

Omega-cyanoalkane carboxylic acids are prepared in the high yields by reacting a 1-hydroxycycloalkyl peroxide with the corresponding alkanone and hydrogen cyanide at a reaction mixture pH of between about 3–6 in the presence of a water soluble cuprous cyanide complex as catalyst in the disclosed process.

3,780,085

MALONONITRILE OXIME DERIVATIVES

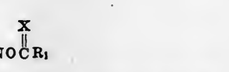
John E. Engelhart, Westfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Original application Apr. 15, 1970, Ser. No. 28,982, now Patent No. 3,694,482. Divided and this application June 15, 1972, Ser. No. 263,033

Int. Cl. C07c *121/30, 121/00*

U.S. Cl. 260—465.4 **7 Claims**

Derivatives of malononitrile oxime characterized by the following structural formula:



wherein X can be oxygen or sulfur; R_1 is taken from the group consisting of OR_2, SR_3, NR_4R_5 and C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl or C_3–C_{10} cycloalkyl; R_2, R_3, R_4 and R_5 can be hydrogen or C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl or C_3–C_{10} cycloalkyl. The above-mentioned C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl and C_3–C_{10} cycloalkyl in R_1, R_2, R_3, R_4 and R_5 may be unsubstituted or substituted by halogen, nitrile, nitro, thiocyano, perhalo, C_1–C_4 alkoxy and C_1–C_4 thioalkyl.

3,780,086

PROCESS FOR PRODUCING ADIPONITRILE BY DIMERIZATION ON AN AMALGAM

Freddy Marechal, Wezembeek-Oppen, and Henri Lefebvre, Jemeppe-sur-Sambre, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed June 29, 1971, Ser. No. 158,054

Claims priority, application France, June 29, 1970, 7024085

Int. Cl. C07c *121/26*

U.S. Cl. 260—465.8 A **6 Claims**

A high effective rate of utilization of the active metal of an amalgam used in dimerization or polymerization reactions is obtained by removing the chromium and nickel ions from the liquid phase containing the material to be dimerized or polymerized prior to contact thereof with the amalgam.

3,780,087

GLYCOLATES FROM ACETALS

Jonathan Morris Kliegman, Charleston, and Robert Keith Barnes, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 25, 1972, Ser. No. 283,743

Int. Cl. C07c *69/66*

U.S. Cl. 260—468 K **8 Claims**

Glycolates are produced by pyrolysis of the corresponding acetal of glyoxal in contact with a strong acid catalyst.

3,780,088

ALPHA-UREIDOCYCLOHEXADIENYLALKYLENE CARBOXYLIC ACIDS

Raymond Curry Erickson, Metuchen, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Original application Nov. 17, 1969, Ser. No. 877,478, now Patent No. 3,720,664. Divided and this application Oct. 19, 1972, Ser. No. 298,974

Int. Cl. C07c *127/14*

U.S. Cl. 260—468 J **5 Claims**

This invention relates to α-ureidocyclohexadienylalkylene-penicillins as well as their salts and compositions containing them, which are useful an antibacterial agents.

3,780,089

SUBSTITUTED UREIDOPHENYL THIOUREAS

Arno Widdig, Blecher, Engelbert Kuhle, Bergisch Gladbach, Klaus Sasse, Schildgen, Hans Scheinpflug, Leverkusen, Ferdinand Grewe, Burscheid, and Helmut Kaspers and Paul-Ernst Frohberger, Leverkusen, Germany, assignors to Bayer Aktiengeselschaft, Leverkusen, Germany

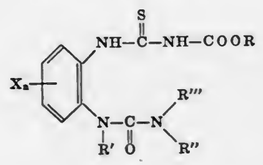
No Drawing. Filed Nov. 13, 1970, Ser. No. 89,500

Claims priority, application Germany, Nov. 29, 1969, P 19 60 029.4

Int. Cl. C07c *157/06*

U.S. Cl. 260—470 **4 Claims**

Ureidophenyl thioureas of the formula:



(I)

in which

each X independently stands for a halogen atom, alkyl with 1–4 carbon atoms or alkoxy with 1–4 carbon atoms,

n stands for 0, 1 or 2,

R stands for alkyl with 1–12 carbon atoms,

R' and R'' each stands independently for a hydrogen atom or alkyl with 1–4 carbon atoms, and

R''' stands for a hydrogen atom, alkyl with 1 or 2 carbon atoms (which may carry at least one substituent selected from halogen, cyano, alkoxy with up to 4 carbon atoms and alkoxycarbonyl with up to 5 carbon atoms), alkyl with 3 to 18 carbon atoms (which carries at least one substituent selected from halogen, cyano, alkoxy with up to 4 carbon atoms and alkoxycarbonyl with up to 5 carbon atoms), cycloalkyl with 5 to 8 ring carbon atoms, aralkyl (the aryl moiety of which may carry at least one substituent selected from halogen, lower alkyl and lower alkoxy), phenyl (which may carry at least one substituent selected from halogen, lower alkyl and lower alkoxy), acyl with up to 18 carbon atoms (which may be substituted by halogen and/or lower alkyl), aroyl (which may carry at least one substituent selected from halogen, lower alkyl and lower alkoxy), alkylsulfonyl with up to 18 carbon atoms, arylsulfonyl (which may carry at least one substituent selected from halogen, amino, lower alkyl and lower alkoxy) or dialkylamino with up to 4 carbon atoms, which possess fungicidal properties and which may be produced by conventional methods.

3,780,090

N-HALOGENOACYL PHENYL AMINO ACID ESTERS

Keiichiro Akiba, Ikeda, Takeo Satomi, Amagasaki, Akira Fujinami, Ashiya, Yasuhisa Asano, Minoo, Nobuyuki Kameda, Takarazuka, Akihiko Mine and Naganori Hino, Toyonaki, and Kohshi Tateishi, Minoo, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka-shi, Osaka, Japan

No Drawing. Filed Mar. 15, 1972, Ser. No. 235,044

Claims priority, application Japan, Mar. 15, 1971, 46/14,609

Int. Cl. C07c *103/32*

U.S. Cl. 260—471 A **4 Claims**

N-halogenoacylanilino acids and ester derivatives are disclosed. The compounds exhibit herbicidal properties.

3,780,091

ARYL-N-ALKYLCARBAMATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 29, 1971, Ser. No. 217,696

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C **1 Claim**

Novel substituted aryl-N-alkylcarbamates are disclosed. The compounds are useful as insecticides.

3,780,092

MONOMERIC EMULSION STABILIZERS

Carlos M. Samour, Wellesley Hills, and Mildred C. Richards, Wakefield, Mass., assignors to The Kendall Company, Walpole, Mass.

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,899

Int. Cl. C07c *101/12, 101/16, 101/20*

U.S. Cl. 260—482 R **3 Claims**

A novel class of monomeric emulsion stabilizers consists of certain types of ethylenically-unsaturated radicals covalently linked to a quaternary nitrogen atom which in turn is covalently linked to a lipophilic radical. Such monomers will polymerize with other ethylenically-unsaturated radicals forming self-stabilized, surfactant-free polymeric dispersions.

3,780,093

PERFLUOROALKYL COMPOUNDS

Horst Jaeger, Bettingen, and Paul Schaefer, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,545

Claims priority, application Switzerland, Aug. 24, 1970, 12,591/70

Int. Cl. C07c *69/52*

U.S. Cl. 260—486 H **2 Claims**

Perfluoroalkyl compounds are provided in which the perfluoroalkyl radical is bonded through a linear or cyclic aliphatic radical to the carboxylic group of an aliphatic unsaturated carboxylic acid. These products and their polymerization products are useful for finishing various substrates, especially for the production of aliphatic finishes on paper, leather, non-wovens and textiles.

3,780,094

PREPARATION OF ESTERS OF AROMATIC ALCOHOLS

Jack L. Herz, Scarsdale, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed May 15, 1969, Ser. No. 825,078

Int. Cl. C07c *67/00*

U.S. Cl. 260—488 CD **16 Claims**

A novel procedure is provided for synthesizing esters of aromatic alcohols by oxidizing an alkyl- or polyalkyl-aromatic hydrocarbon in the presence of a carboxylic acid anhydride, under controlled conditions. High conversions of the desired aromatic ester product are obtained and such product can be readily converted to the corresponding alcohol by hydrolysis. The ester products are used as organic intermediates in the preparation of the corresponding alcohols of known commercial utility. The esters are also useful in the preparation of perfumes and are excellent solvents in organic reactions.

3,780,095

ACYLATED ANILINO-CARBOXYLIC ACIDS AND THEIR SALTS

Kurt Klemm, Allensbach, Walter Krastinat and Richard Riedel, Constance, and Wolfgang Schoetensack, Hegne, Germany, assignors to BYK-Gulden Lomberg Chemische Fabrik GmbH, Constance, Germany

No Drawing. Filed Apr. 8, 1970, Ser. No. 26,113

Int. Cl. C07c *101/44, 101/72*

U.S. Cl. 260—518 A **22 Claims**

Acylated anilino-carboxylic acids which are effective chloretics and their manufacture.

3,780,096

PROCESS FOR RECOVERING COBALT AND MANGANESE OXIDATION CATALYSTS

Thomas F. Johnson, Penn Hills Township, Allegheny County, and James H. Schelling, Franklin Township, Westmoreland County, Pa., assignors to United States Steel Corporation

No Drawing. Filed July 1, 1971, Ser. No. 159,014

Int. Cl. C07c *63/02;* **C01g** *45/00, 51/00*

U.S. Cl. 260—524 R **2 Claims**

A mineral acid is added to a mixture containing an oxidation catalyst and a carboxylic acid to precipitate the oxidation catalyst.

3,780,097

PURIFICATION OF ALKALI METAL SALTS OF AROMATIC CARBOXYLIC ACIDS

Richard C. Doss and Donald G. Kuper, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,177

Int. Cl. C07c *51/48, 51/42*

U.S. Cl. 260—525 **10 Claims**

Water insoluble impurities are separated from an aqueous mixture of an alkali metal salt of an aromatic carboxylic acid containing such impurities in suspension by contacting the aforesaid mixture with a cationic acrylamide copolymer, e.g. a quaternary salt of a vinylpyridine/acrylamide copolymer. Filtration and settling time rates are significantly improved by the use of said cationic acrylamide copolymers.

3,780,098

PROCESS FOR OXIDIZING CYCLOHEXANONE AND CYCLOOCTANONE

Wyndham Morris, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 7, 1969, Ser. No. 805,369

Claims priority, application Great Britain, Mar. 13, 1968, 12,232/68

Int. Cl. C07c *51/18, 55/04*

U.S. Cl. 260—531 R **16 Claims**

Production of aliphatic α-ω-dicarboxylic acids e.g. adipic acid by oxidizing aliphatic ketones or ketone/alcohol mixtures in liquid phase with molecular oxygen gas using a catalyst consisting of a combination of a vanadium compound with a compound of at least one of the metals cobalt, iron, manganese or copper. Acetic acid is a preferred solvent. The process is advantageously operated in two or more steps, with the temperature in the first step higher than in subsequent steps.

3,780,099

PROCESS FOR PREPARING CHELATING AGENTS

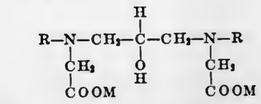
Patricia M. Scanlon, Arlington, Mass., and Jon C. Thunberg, Amherst, N.H., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Original application June 14, 1971, Ser. No. 152,987, now Patent No. 3,689,544. Divided and this application Apr. 25, 1972, Ser. No. 247,392

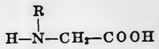
Int. Cl. C07c *99/00*

U.S. Cl. 260—534 E **6 Claims**

A chelating agent having the formula



wherein; R is an alkyl group having about 1–20 carbon atoms, hydrogen, $—CH_2CH_2OH$, or $—CH_2COOM$; and M is an alkali metal cation, is prepared by; (a) adjusting the pH of a first aqueous system consisting essentially of water and an amino acid having the formula



or an alkali metal salt of the acid to about 6–10.5 to form a second aqueous system consisting essentially of the alkali metal salt of the amino acid dissolved in water, and adjusting the temperature of the second aqueous system at about 65–105° C.; and (b) admixing epichlorohydrin with the second aqueous system while; (i) maintaining the pH of the resulting mixture at about 6–10.5; and (ii) maintaining the temperature of the resulting mixture at about 65–105° C. for about 30–180 minutes to form a third aqueous system consisting essentially of an aqueous solution of the chelating agent.

3,780,100

PROCESS FOR PREPARING CHELATING AGENTS

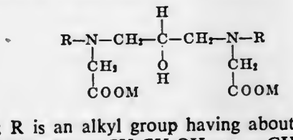
Patricia M. Scanlon, Arlington, Mass., and Jon C. Thunberg, Amherst, N.H., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Original application June 14, 1971, Ser. No. 152,987, now Patent No. 3,689,544. Divided and this application Apr. 25, 1972, Ser. No. 247,391

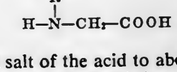
Int. Cl. C07c *99/00*

U.S. Cl. 260—534 E **6 Claims**

A chelating agent having the formula



wherein; R is an alkyl group having about 1–20 carbon atoms, hydrogen, $—CH_2CH_2OH$, or $—CH_2COOM$; and M is an alkali metal cation, is prepared by; (a) adjusting the pH of a first aqueous system consisting essentially of water and an amino acid having the formula



or an alkali metal salt of the acid to about 6–10.5 to form a second aqueous system consisting essentially of the alkali metal salt of the amino acid dissolved in water, and adjusting the temperature of the second aqueous system at about 65–105° C.; and (b) admixing epichlorohydrin with the second aqueous system while; (i) maintaining

the pH of the resulting mixture at about 6–10.5; and (ii) maintaining the temperature of the resulting mixture at about 65–105° C. for about 30–180 minutes to form a third aqueous system consisting essentially of an aqueous solution of the chelating agent.

3,780,101

BICYCLIC COMPOUNDS

Hermann Bretschneider and Kraft Hohenlohe-Oehringen, Innsbruck, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Nov. 19, 1971, Ser. No. 200,602

Int. Cl. C07c *127/00*

U.S. Cl. 260—553 D **6 Claims**

Hypoglycemically active 1-[2-hydroxy-2,3,3-trimethyl-7-anti-norbornyl]-3-(arylsulfonyl)ureas are described.

3,780,102

SUBSTITUTED CINNAMAMIDES

Michel Bayssat, Louis Fontaine, and Marcel Grand, Lyon, France, assignors to Lipha Lyonnaise Industrielle Pharmaceutique, Lyon, France

No Drawing. Original application Mar. 31, 1970, Ser. No. 24,359, now Patent No. 3,659,014. Divided and this application Sept. 10, 1971, Ser. No. 179,572

Claims priority, application France, Apr. 2, 1969, 6910054

Int. Cl. C07c *103/30*

U.S. Cl. 260—558 R **23 Claims**

The present invention concerns new cinnamamides of formula:



(I)

in which R_1 and R_3 are hydrogen, a lower alkyl or lower alkoxy radical; R_2 is hydrogen, a halogen, a lower alkyl or lower alkoxy radical; R_4 and R_5 are hydrogen or a lower alkyl radical; R_6 is hydrogen, a lower alkyl or lower hydroxyl alkyl radical aryl radical or

$$C_2H_5NH—COO—C_2H_4—$$

R_7 and R_8 are hydrogen, a low alkyl or lower hydroxy, alkyl radical; R_9 is hydrogen, a lower alkyl or lower hydroxy alkyl radical; R_{10}=halogen, a hydroxy radical except when R_1 to R_9=H and R_1, R_2, R_3=CH_3O, R_4=CH_3 and R_5 to R_9=H, a lower alkyl radical, a lower hydroxyalkyl radical, NH_2—COO, a lower alkyl radical —NH—COO and aryl radical —NH—COO. The invention is relative to preparation processes and medicine containing as active principle a cinnamamide of Formula I, in which the radicals R_1 to R_9 have the same meanings as above and R_{10}=halogen, a hydroxy radical—except when R_1, R_2, R_3=CH_3O, R_4=CH_3 and R_5 to R_9=H—lower hydroxy alkyl, NH_2COO, lower alkyl —NHCOO—aryl—NHCOO.

3,780,103

ALKYLHYDROXYBENZYLAMIDES

Martin Knell, Ossining, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 30, 1967, Ser. No. 626,927

Int. Cl. C07c *103/38*

U.S. Cl. 260—559 A **7 Claims**

N-(alkylhydroxybenzyl)alkan- or alkenamides, which are stabilizers of organic materials susceptible to oxidative deterioration, are obtained through condensation of an alkylhydroxybenzyl alcohol and an alkanenitrile, alkanedinitrile, or alkenenitrile, the product in the last instance being optionally subjected to an addition reaction with an alkane mercaptan. A typical embodiment is N-(3,5-di-t-butyl-4-hydroxybenzyl)dodecanamide.

3,780,104

PHENOXY ACETALS

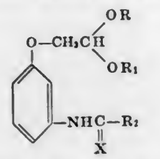
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,541

Int. Cl. C07c *103/38*

U.S. Cl. 260—562 R **10 Claims**

Meta-phenoxy acetals having the formula



in which X is oxygen or sulfur, R and R_1 are independently lower alkyl, R and R_1 taken together are ethylene or trimethylene, R_2 is alkyl, monocyclohexylamino, monoalkylamino, monoalkenylamino, dialkylamino, alkoxy, alkylthio, haloalkyl, substituted-phenyl wherein said substituents are methyl, monochloro or dichloro. The compounds are useful as herbicides.

3,780,105

ALKANOYLACETANILIDES

Elbert M. Idelson, Newton Lower Falls, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Application Dec. 1, 1969, Ser. No. 881,323, now Patent No. 3,629,336, which is a continuation-in-part of abandoned application Ser. No. 487,054, Sept. 13, 1965. Divided and this application Mar. 12, 1971, Ser. No. 123,893

Int. Cl. C07c *103/38*

U.S. Cl. 260—562 K **2 Claims**

Ligands or co-ordinating agents which will form a co-ordination complex with a metal and which also include a silver halide developing function particularly a paradihydroxyphenyl silver halide developing function or a substituted derivative thereof, thereby making them additionally useful in photography.

3,780,106

PROCESS FOR PREPARING 5-(γ-TERTIARYAMINO-PROPYLIDENE-DIBENZO[a,d]CYCLOHEPTENES

David Taub and Robert D. Hoffsommer, Jr., Metuchen, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of abandoned application Ser. No. 837,359, June 27, 1969. This application June 29, 1972, Ser. No. 267,348

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.8 TC **2 Claims**

5 - (γ- tertiaryaminopropylidene) - dibenzo[a,d]cycloheptenes, such as amitriptyline or cyclobenzaprine are prepared via a Grignard reaction with a 5-N-alkylimino-5H-dibenzo[a,d]-10,11-dihydrocycloheptene alkiodide salt or 5-N-alkylimino-5H-dibenzo[a,d]cycloheptene alkiodide salt. These latter intermediates are prepared from 10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-one or the corresponding 10,11-unsaturated compound by reaction with an alkylamine to yield the corresponding alkylimine which is then treated with an alkyliodide. The compounds of the present invention are useful as antidepressants or tranquilizers in the treatment of mental disorders.

3,780,107

CONTINUOUS PROCESS FOR PRODUCING LONG CHAIN AMINES

Bohdan S. Polanskyj, South Orange, and Jack M. Solomon, West Caldwell, N.J., Daniel R. Chisholm, Mount Vernon, N.Y., and Bernard R. Bluestein, Glen Rock, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,470

Int. Cl. C07c *87/04, 87/14, 87/127*

U.S. Cl. 260—583 P **8 Claims**

Long chain amines are produced in a continuous process at atmospheric pressures by reacting long chain C_6 to C_{26} monochlorinated or monobrominated hydrocarbons with a stoichiometric excess of lower molecular weight alkyl, alkylene or alkanol amines by adding reactants so as to continuously maintain said stoichiometric excess of amine and continuously withdrawing from the liquid reaction mixture long chain amine product and unreacted ingredients and separating said product therefrom.

3,780,108

CAGED KETONE

John R. E. Hoover, Glenside, and Robert John Stedman, Paoli, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Application Oct. 4, 1966, Ser. No. 584,077, now Patent No. 3,536,761, which is a continuation-in-part of abandoned application Ser. No. 408,360, Nov. 2, 1964. Divided and this application Oct. 7, 1970, Ser. No. 78,930

Int. Cl. C07c *49/36*

U.S. Cl. 260—586 A **1 Claim**

Disclosed is the compound

hexacyclo[6.2.1.1^{3,6}.0^{4,10}.0^{5,9}]dodecan-11-one

and its use as an intermediate in the preparation of the corresponding caged amines having virus inhibiting properties.

3,780,109

2-ALKYL-3-(2-NORBORNYL)-PROPANALS

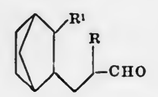
Alfred A. Schleppnik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,879

Int. Cl. C07c *47/34*

U.S. Cl. 260—598 **9 Claims**

2-alkyl-3-(2′-norbornyl)-propanals characterized by the structural formula



wherein R^1 represents hydrogen or methyl, and R represents a lower alkyl group are prepared by a crossed aldol condensation of 5-norbornene-2-carboxaldehyde or norbornane-2-carboxaldehyde with aliphatic aldehyde in a basic medium. The resulting product is dehydrated to form the 2 - alkyl-3-(2′-norborn(en)yl)-prop-2-en-1-als which are subsequently hydrogenated. The compounds have very pleasant, strong and long lasting woody odors and are useful as compounds in fragrance compositions.

3,780,110

METHOD FOR PREPARING 3-FLUORO-SALICYLALDEHYDE

Walter A. Gay, Cheshire, and Maurice A. Raymond, Northford, Conn., assignors to Olin Corporation, New Haven, Conn.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,276

Int. Cl. C07c *45/00*

U.S. Cl. 260—600 **9 Claims**

An integrated method for preparing 3-fluorosalicylaldehyde by reacting ortho-fluorophenol with a boron-containing compound and a formaldehyde source material.

3,780,111

REDUCTION OF TRIPHENYLPHOSPHINE OXIDE WITH IRON TO TRIPHENYLPHOSPHINE

David A. Young and Kent C. Brannock, Kingsport, Tenn.; said Young assignor of a fractional part interest to Eastman Kodak Company

No Drawing. Filed July 28, 1972, Ser. No. 276,270

Int. Cl. C07f *9/50*

U.S. Cl. 260—606.5 P **5 Claims**

A process for reducing trihydrocarbon phosphorus oxide to trihydrocarbon phosphorus by reacting the trihydrocarbon phosphorus oxide with a halo-complexing agent forming an adduct of trihydrocarbon phosphorus dihalide with the agent. The adduct is heated to its decomposition temperature in a halobenzene solvent having a boiling point higher than the decomposition temperature of the adduct to separate the trihydrocarbon phosphorus dihalide from the complex. The dihydrocarbon phosphorus dihalide is then reduced with iron forming trihydrocarbon phosphorus.

3,780,112

SUBSTITUTED ETHYLENE BIS(PHOSPHINE OXIDES)

Kurt Weinberg, Bergen, N.J., and James E. McKeon, Westchester, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 9, 1972, Ser. No. 279,270

Int. Cl. C07f *9/02*

U.S. Cl. 260—606.5 P **10 Claims**

A process for the production of substituted ethylene bis(phosphine oxides) which comprises contacting a substituted phosphine halide with diethylene glycol at a temperature of −25° C. to 100° C. in the presence of an acid acceptor to produce the corresponding phosphinous ester, and thereafter heating the phosphinous ester at temperatures of 100° to 400° C.

3,780,113

PREPARATION OF ORGANIC SULPHUR COMPOUNDS

Donald J. Martin, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 825,951, May 19, 1969. This application Dec. 10, 1971, Ser. No. 208,047

Int. Cl. C07c *149/06*

U.S. Cl. 260—609 R **8 Claims**

Hydrogen sulfide and an essentially hydrocarbon compound having an olefinic linkage are reacted in the presence of a free radical initiating compound and a pentavalent phosphorus compound.

3,780,114

METHOD FOR THE PREPARATION OF 1,2,4,5-TETRAHYDROXYBENZENE

Sylvain Achiel Raoul Dewaele, Evergem, Belgium, assignor to S.A. Texaco Belgium N.V., Brussels, Belgium

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,139

Int. Cl. C07c *37/06*

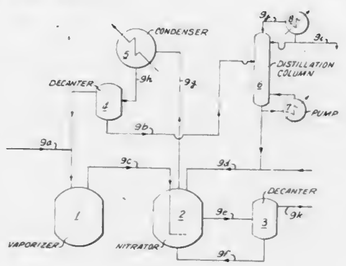
U.S. Cl. 260—621 H **4 Claims**

1,2,4,5-tetrahydroxybenzene is prepared by the catalytic hydrogenation of 2,5-dihydroxy-p-benzoquinone over a hydrogenation catalyst in a mutual solvent in yields of 70 to 90 mole percent. The starting material is readily prepared from hydroquinone. The final product finds utility, e.g. as a dispersant.

3,780,115
PROCESS FOR PRODUCING NITROPARAFFINS
Pierre Lhonore, Douai, Guy Cohen, Paris, and Bernard Jacquinot, Douai, France, assignors to Societe Chimique de la Grande, Paroisse, Azote et Produits Chimiques, Paris, France
Filed Oct. 19, 1972, Ser. No. 299,173
Claims priority, application France, Oct. 29, 1971, 38,964
Int. Cl. C07c *79/04*
U.S. Cl. 260—644 **9 Claims**

The invention relates to a process for the production of nitroparaffins from hydrocarbons higher than methane, by nitration with nitrogen peroxide in the presence of oxygen, introduced in the form of air, wherein the nitration is carried out at a pressure which is between 8 and approximately 14 bars, the reactant gases being preheated under the reaction pressure and introduced into the reaction zone between 150 and 330° C., the gaseous effluents originating from the nitration zone being subjected to a rapid cooling or quenching.

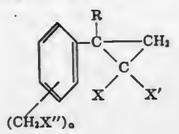
3,780,116
METHOD FOR NITRATION OF AROMATIC HYDROCARBON COMPOUNDS
Prakash Nath Sahgal, Baroda, India, assignor to Zaverchand & Company, Baroda, Gujarat, India
Filed June 15, 1972, Ser. No. 262,935
Int. Cl. C07c *79/10*
U.S. Cl. 260—645 **6 Claims**



A process and apparatus for nitration of an aromatic hydrocarbon such as benzene or toluene in which the hydrocarbon is vaporized and bubbled through aqueous nitric acid in a reaction vessel at a temperature which may vary from 50 to 100° C. A mixture of nitric acid and nitrated hydrocarbon which is formed is continuously withdrawn from the reaction vessel and fed to a separator where the nitrated hydrocarbon is separated and withdrawn and the nitric acid is returned to the reaction vessel.

3,780,117
HALOMETHYL SUBSTITUTED DERIVATIVES OF DIHALOPHENYLCYCLOPROPANE
Herman A. Bruson, Woodbridge, and Howard L. Plant, Milford, Conn., assignors to Olin Corporation, New Haven, Conn.
No Drawing. Original application Sept. 30, 1968, Ser. No. 763,932, now Patent No. 3,598,857. Divided and this application Jan. 22, 1971, Ser. No. 108,958
Int. Cl. C07c *25/00*
U.S. Cl. 260—650 R **3 Claims**

Halomethyl substituted derivatives of dihalophenylcyclopropanes having the formula:



wherein X, X', X'' are each selected from the group consisting of chlorine, bromine, iodine; R is selected from the group consisting of hydrogen or alkyl of from 1 to 5 inclusive carbon atoms and *n* is an integer of from 1 to 2 inclusive; are prepared by reacting formaldehyde and an acid, such as hydrobromic acid, with a dihalocarbene adduct of styrene.

3,780,118
PREPARATION OF DIHYDROCARBON BERYLLIUM COMPOUNDS
David R. Carley, 2824 Cedarcrest Ave. 70816; Byron R. Lowrance, Rte. 2, Box 229 70815; and Jesse Roger Mangham, 2035 Glendale Ave. 70808, all of Baton Rouge, La.
No Drawing. Filed Dec. 17, 1962, Ser. No. 246,867
Int. Cl. C07f *3/00*
U.S. Cl. 260—665 R **6 Claims**

This invention relates to an improved process for the preparation of organoberyllium compounds and more particularly to improvements in the method of preparing organoberyllium compounds with the use of Grignard reagents.

3,780,119
PROCESS FOR CATALYTIC INTRA-MOLECULAR REARRANGEMENT OF DIMETHYL NAPHTHALENE
Keizo Shimada, Takeo Nishikawa, Toshiaki Harada, and Shizuo Nagahama, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan
No Drawing. Filed May 31, 1972, Ser. No. 258,405
Int. Cl. C07c *5/24*
U.S. Cl. 260—668 A **4 Claims**

Isomers of dimethyl naphthalene are produced in high yields by catalytic intra-molecular rearrangement at above 260° C. using a specific mordenite catalyst containing a metal form of mordenite, the metal being selected from Li, Na, K, Mg, Ca, Sr, Ba, Zn and Al, and being in an amount above 20% by weight. The above dimethyl naphthalene is selected from 1,5-dimethylnaphthalene, 1,6-dimethyl naphthalene, 2,6-dimethyl naphthalene and mixtures thereof.

3,780,120
PROCESS FOR MANUFACTURING LINEAR ALKYL BENZENES
Benedetto Calcagno, Milan, Roberto Canavesi, Bollate, and Natale Bertolini, Milan, Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy
No Drawing. Filed Mar. 22, 1972, Ser. No. 236,999
Claims priority, application Italy, Mar. 23, 1971, 22,112/71
Int. Cl. C07c *3/52*
U.S. Cl. 260—671 B **6 Claims**

Linear alkyl benzenes are prepared, by catalytic alkylation of benzene by chloro-paraffins, in a process in which recycled paraffins are subjected to hydrogenation to ensure that a high-grade product with respect to chlorine content and odor is produced.

3,780,121
DISPROPORTIONATION OF ALKYLAROMATICS
Robert M. Suggitt, Wappingers Falls, John T. Brandenburg, Hopewell Junction, and John M. Crone, Jr., Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Sept. 2, 1971, Ser. No. 177,483
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **15 Claims**

Alkylaromatic hydrocarbons are disproportionated in the presence of a composite catalyst composed of a hydrogen mordenite and a Group I–B metal. The composite catalyst may additionally contain a Group VI–B metal.

3,780,122
ALKYLAROMATIC TRANSALKYLATION UTILIZING ALUMINA DEFICIENT MORDENITE
Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation of application Ser. No. 69,976, Sept. 4, 1970, which is a continuation-in-part of application Ser. No. 729,550, May 16, 1968, both now abandoned. This application July 10, 1972, Ser. No. 270,395
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **14 Claims**

Alkylaromatic hydrocarbons are transalkylated utilizing a mordenite type catalyst wherein the silica to alumina mole ratio of the mordenite has been increased to greater than about 10:1.

3,780,123
DISPROPORTIONATION OF ALKYLBENZENES
Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed May 15, 1972, Ser. No. 253,637
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **19 Claims**

Alkylbenzenes are disproportionated in the presence of a composite catalyst composed of a hydrogen mordenite, alumina and a sulfided Group VIII metal.

3,780,124
MOLECULAR SIEVE 13X CATALYZED ISOMERIZATION OF α-PINENE—IMPROVEMENT OF CATALYST ACTIVITY BY IODINE
Curry Beach Davis, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.
No Drawing. Filed Feb. 26, 1973, Ser. No. 335,843
Int. Cl. C01b *33/28*; C07c *13/00*; C09f *3/02*
U.S. Cl. 260—675.5 **8 Claims**

α-Pinene, β-pinene, or turpentine is isomerized at temperatures ranging from about 140° C. to 200° C. in the presence of a potassium 13X zeolite-iodine catalyst mixture to yield predominantly dipentene and minor amounts of terpinolene and camphene.

3,780,125
ISOMERIZATION OF ALPHA-PINENE-CONTAINING FEED BY ZEOLITE
Edward Andrew Takacs, 4 Ave. C, South Norwalk, Conn. 06854
No Drawing. Filed Dec. 18, 1972, Ser. No. 316,147
Int. Cl. C01b *33/28*; C07c *13/00*; C09f *3/02*
U.S. Cl. 260—675.5 **10 Claims**

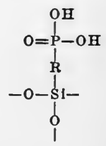
There is disclosed a process for preparing dipentene by effecting the isomerization of a pinene containing feed at a temperature of from about 140° C. to about 200° C. for more than about one-half hour in the presence of less than about 10%, based on the weight of the said feed, of a zeolite molecular sieve catalyst of either the 13X- or 13Y-type containing an alkali metal cation, such as sodium, potassium, lithium, rubidium, or cesium, said catalyst being activated by adjusting the pH of an aqueous slurry to a range from about 5.0 to about 10 prior to use.

3,780,126
OXIDATIVE DEHYDROGENATION IN THE PRESENCE OF CRYSTALLINE, PROVOSKITE TYPE MANGANESE COMPOUNDS
Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Continuation-in-part of abandoned application Ser. No. 743,600, July 10, 1968. This application Mar. 26, 1971, Ser. No. 128,540
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 D **10 Claims**

Process for the oxidative dehydrogenation of dehydrogenatable organic compounds by heating the compounds with oxygen (and optionally halogen) in the presence of a solid crystalline catalyst containing manganese and at least two other metals, one of which is a light metal having an oxidation state of 1^+ or 2^+. Manganese compounds of the perovskite structure are preferred catalysts.

3,780,127
CATALYTIC PROCESS FOR DEHYDRATION OF ALCOHOLS
Frank G. Young, Charleston, and Leroy R. Pennington, Winfield, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Oct. 2, 1972, Ser. No. 293,767
Int. Cl. C07c *1/24*
U.S. Cl. 260—682 **9 Claims**

A process for the dehydration of alcohols, e.g., of ethanol to produce ethylene comprising vaporizing ethanol in the presence of a non-linear polymer catalyst composition consisting essentially of a recurring unit having the following structural formula:



wherein R is an unsubstituted or substituted straight or branched chain divalent saturated alkylene radical having 2 to 10 carbon atoms or an unsubstituted or substituted divalent aryl radical having 1 to 3 benzene rings wherein the substituents for the alkylene radical can be halogen or a phenyl radical and the substituents for the aryl radical can be halogen or straight or branched chain saturated alkyl radicals having 1 to 5 carbon atoms; and recovering ethylene.

3,780,128
SYNTHETIC LUBRICANTS BY OLIGOMERIZATION AND HYDROGENATION
Ronald L. Shubkin, Oak Park, Mich., assignor to Ethyl Corporation, Richmond, Va.
No Drawing. Filed Nov. 3, 1971, Ser. No. 195,443
Int. Cl. C07c *5/02*
U.S. Cl. 260—683.9 **19 Claims**

Oligomers of normal —C_{6-16} alpha-olefins as lubricants can be made by reacting C_{6-16} normal-alpha-olefins or mixtures thereof at a temperature of from about 10–60° C. using an alcohol-promoted boron trifluoride catalyst in which boron trifluoride is used in molar excess of the alcohol. Preferably, additional boron trifluoride is injected into the reaction liquid phase during the course of the oligomerization. Stability of the resultant product is improved by catalytic hydrogenation. The products have a low pour point and high viscosity index.

3,780,129
DEHYDROGENATION PROCESS
Heinz G. Friedrich, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Filed Apr. 10, 1972, Ser. No. 242,761
Int. Cl. C07c *5/18*
U.S. Cl. 260—683.3 **13 Claims**

An improved dehydrogenation process for the production of diolefins by the dehydrogenation of aliphatic hydrocarbons by contacting the hydrocarbon compound with a catalyst containing chromic oxide, alumina, nickel and lithium.

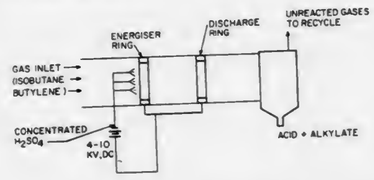
3,780,130
GAS-FOG ALKYLATION WITH STRONG SULFURIC ACID AND PROMOTER

Jaydee W. Miller, Wallingford, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 150,607, June 7, 1971, now Patent No. 3,717,686, dated Feb. 20, 1973. This application May 5, 1972, Ser. No. 250,718

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.63 **11 Claims**



A process for alkylation of gaseous C_2–C_5 monoolefin with gaseous C_4–C_6 branched paraffin comprises contacting the mixed gases at alkylation conditions with a fog or mist of strong sulfuric acid and a promotor. The promoter may be red oil or spent acid from a conventional sulfuric acid alkylation or from a previous run of the present process. Preferably, the catalyst and hydrocarbon reactants are maintained in a concurrent flow. For C_3 or C_4 acyclic monoolefin and C_4 or C_5 isoparaffin, the preferred alkylation conditions include a temperature in the range of about 30–80° F. and a pressure about atmospheric (e.g., 5–25 p.s.i.a., typically 14–20 p.s.i.a.). The feed mole ratio, paraffin to olefin, can be in the range of 1:1 to 60:1, typically 2:1 to 30:1. Liquid paraffin (e.g., isobutane) can be injected into the reactor in order to control the reaction temperature. Preferably, the liquid acid droplets have a mean diameter in the range of 5–50 microns, typically 10–25 microns. An advantage of the present process is a substantial savings in distillation costs required to separate isobutane from the product.

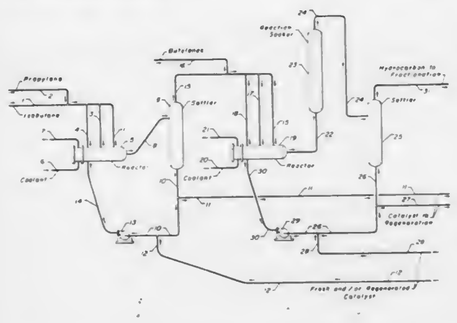
3,780,131
ISOPARAFFIN ALKYLATION WITH A LIGHTER OLEFIN AND SUBSEQUENTLY WITH A HEAVIER OLEFIN

Jay E. Sobel, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 7, 1972, Ser. No. 269,907

Int. Cl. C07c *3/52, 3/54*

U.S. Cl. 260—683.45 **13 Claims**



A process for alkylating an isoparaffin with a lighter olefin and a heavier olefin by contacting the isoparaffin with the lighter olefin and a first alkylation catalyst in a first alkylation zone, contacting the hydrocarbon effluent from the first alkylation zone with the heavier olefin and a second alkylation catalyst in a second alkylation zone, and recovering the product of the process from the hydrocarbon effluent from the second alkylation zone.

3,780,132
PRIMER COMPOSITION CONTAINING EPOXIDE RESINS, PHENOL FORMALDEHYDE RESIN, TETRAALKYL SILICATES, AND SILANE COUPLING AGENTS

James E. Lohr, Wallingford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 170,288, Aug. 9, 1971. This application Dec. 22, 1971, Ser. No. 211,085

Int. Cl. C08g *45/08*

U.S. Cl. 260—831 **7 Claims**

The primer composition is utilized as a primer for aluminum sheets which are bonded together with an epoxy adhesive or as a primer for an aluminum sheet which is bonded to an aluminum honeycomb structure; the primer is a solution containing a heat reactive phenol/formaldehyde resin, one or more epoxy resins, a tetraalkyl silicate and a silane coupling agent.

3,780,133
DIPHENOL CONTAINING POLYESTERS DERIVED FROM TRIS (2 - HYDROXYALKYL)ISOCYANURATES

John M. Kolyer, Convent, and Albert A. Kveglis, Pine Brook, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Oct. 30, 1968, Ser. No. 771,999, now Patent No. 3,632,837. Divided and this application May 24, 1971, Ser. No. 146,477

Int. Cl. C08g *17/06, 17/14, 20/32*

U.S. Cl. 260—857 R **11 Claims**

Incorporation of a diphenol in a polyester reaction product of a tris(2-hydroxyalkyl)isocyanurate and a polycarboxylic acid avoids gel formation and provides a thermo-oxidatively stable polyester with excellent adhesion properties.

3,780,134
VINYL HALIDE RESIN COMPOSITIONS CONTAINING ABS AND MBS GRAFT POLYMERS

Thor J. G. Louning, Suffield, Conn., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed May 30, 1972, Ser. No. 257,860

Int. Cl. C08f *41/12*

U.S. Cl. 260—876 R **4 Claims**

Polyblends of vinyl halide resin, graft copolymers having a styrene/acrylonitrile superstrate and a butadiene substrate, and graft copolymers having a styrene/methyl methacrylate superstrate and a butadiene substrate. Film and sheet material formed from such blends are characteristically semi-rigid and display unusually high flex endurance.

3,780,135
INTRODUCING CATALYST INTO A REACTOR

Robert J. Perry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 21, 1970, Ser. No. 56,931

Int. Cl. C08f *1/42*

U.S. Cl. 260—878 B **7 Claims**

A material charge required in a batch reaction is introduced into and maintained in a dispersion zone in uniform, low-concentration, dispersed form until required in the batch reaction zone, at which time the entire charge is introduced into said batch reaction zone in a single step.



3,780,136
PROCESS TO REDUCE THE AMOUNT OF LOW-MOLECULAR-WEIGHT AND AMORPHOUS POLYMERS FORMED DURING THE PREPARATION OF OLEFIN COPOLYMERS

Habet M. Khelghatian, Springfield, Pa., James L. Jezl, St. Charles, Ill., and Louise D. Hague, Wilmington, Del., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,943

Int. Cl. C08f *1/38, 1/44, 15/04*

U.S. Cl. 260—878 B **4 Claims**

Pretreating of a catalyst under polymerization conditions with a single olefin prior to its use for copolymerizing a mixture of olefins reduces the low-molecular-weight and amorphous material formed during the polymerization process.

3,780,137
METHOD FOR SEPARATING NICKEL CONTAMINANT FROM HYDROGENATED CONJUGATED DIENE POLYMERS

Howard L. Hassell, San Leandro, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,297

Int. Cl. C08d *5/02;* **C08f** *27/24*

U.S. Cl. 260—880 B **7 Claims**

A method is provided for removing nickel contamination from organic polymers by contacting them with gaseous carbon monoxide at temperatures from about −20° to +200° C. to form nickel carbonyl, then volatilizing the nickel carbonyl from the polymer. Optionally, hydrogen sulfide may also be present in the carbon monoxide to promote carbonylization of nickel compounds.

3,780,138
METHOD FOR SEPARATING METAL CONTAMINANT FROM ORGANIC POLYMERS

Howard L. Hassell, San Leandro, James C. Watson, Torrance, and Benjamin W. Shaw, San Pedro, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,526

Int. Cl. C08f *27/24*

U.S. Cl. 260—880 B **8 Claims**

A method is provided for separating metal catalyst contaminants from organic polymers, typically polymers derived from dienes and/or vinyl arenes, by treatment with an aqueous solution of citric acid, an oxidant, and optionally, a lower aliphatic alcohol, then separating the aqueous phase to remove the contaminating metal. Alternatively, the polymer may be contacted with an oxidant before treatment with the aqueous solution.

3,780,139
SEGMENT COPOLYMERS OF 1,3-DIENES AND AROMATIC VINYL COMPOUNDS

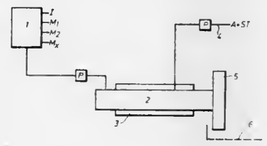
Hubert Sutter, Cologne-Flittard, Karl Nothen, Leverkusen, and Friedrich Haas, Cologne-Buchheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 812,080, Apr. 1, 1969. This application Oct. 18, 1971, Ser. No. 190,101

Claims priority, application Germany, Apr. 25, 1968, P 17 70 261. 3

Int. Cl. C08f *19/06, 19/08, 15/04*

U.S. Cl. 260—880 B **4 Claims**



A process for continuously producing segment copolymers from 1,3-dienes and aromatic vinyl compounds in the absence of a solvent with lithium organic compounds as catalysts by using a self-cleaning multiple shaft screw extruder as the polymerization vessel.

3,780,140
ETHYLENE/CARBON MONOXIDE POLYMER COMPOSITIONS

Clarence Frederick Hammer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 6, 1971, Ser. No. 169,792

Int. Cl. C08f *29/12*

U.S. Cl. 260—884 **11 Claims**

Copolymers of certain amounts of ethylene, carbon monoxide and one or more termonomers copolymerizable therewith to produce solid products. The copolymers are useful as molding resins and as blending resins. Blends of these copolymers with solid organic polymers such as polyvinyl chloride wax, etc., are compatible and are useful as molding resins. These blends may be used, for example, to produce flexible films and rigid or semirigid articles.

3,780,141
CROSSLINKED VINYL HALIDE POLYMERS AS FLAME RETARDANT ADDITIVES FOR THERMOPLASTICS

Jung Il Jin, Irvington, and Paul Kraft, Spring Valley, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,632

Int. Cl. C08f *29/22, 29/24*

U.S. Cl. 260—897 C **15 Claims**

There are disclosed fire retardant polyblends comprising thermoplastic polymers intimately admixed with a

crosslinked copolymer of a vinyl halide, preferably a crosslinked vinyl chloride copolymer. These fire retardant polyblends may be utilized in a variety of coating, impregnating and especially molding applications wherein it is desired to provide fire retardancy to the resulting end product.

3,780,142

FLAME-RETARDANT POLYOLEFIN COMPOSITIONS

Yoshikatsu Ogawa, Takatsuki, Haruhiko Hisada, Yao, and Takeshi Kasahara, Sakai, Japan, assignors to Marubishi Yuka Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,202

Claims priority, application Japan, July 20, 1971, 46/53,587

Int. Cl. C09k *3/28*

U.S. Cl. 260—897 A **5 Claims**

Highly durable flame-retardant polyolefin compositions contain from 3 to 10% based on the weight of the polyolefin of at least one magnesium dibromopropyl phosphate of the formula:

$$(C_3H_3Br_2O)_m\overset{O}{\overset{\|}{P}}(O\tfrac{1}{2}Mg)_n$$

wherein m and n are 1 or 2 and $m+n=3$.

3,780,143

O-(4-CHLOROBENZYL), S(PROPARGYL)ETHYL-PHOSPHONODITHIOATE

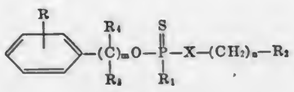
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,410

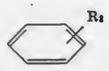
Int. Cl. A01n *9/36;* **C07f** *9/08, 9/16*

U.S. Cl. 260—956 **1 Claim**

New compounds having the generic formula:



wherein R can be selected from the group consisting of hydrogen, nitro, halogen, alkoxy, alkyl and dioxyalkynyl; R_1 can be selected from alkyl and alkoxy; X can be sulfur or oxygen, n is zero or one and R_2 can be selected from hydrogen, thioalkyl, cyano, thioalkyl, thioalkylaryl, alkynyl, and a mono or multisubstituted group represented by



wherein R_3 can be selected from hydrogen, alkyl, thioalkyl, nitro, halogen, cyano and mixtures thereof; R_4 can be hydrogen or alkyl; R_5 can be hydrogen or alkyl; m is a whole number ranging between 1 and 4; provided that when n is zero then R_2 is



The compounds are useful as insecticides and miticides.

3,780,144

HALOGENATED ETHYLENICALLY UNSATURATED PHOSPHATES

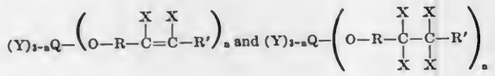
Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

No Drawing. Continuation of abandoned application Ser. No. 785,335, Dec. 19, 1968. This application Sept. 10, 1971, Ser. No. 179,543

Int. Cl. A01n *9/36;* **C07f** *9/08;* **C08f** *45/58*

U.S. Cl. 260—956 **13 Claims**

This invention deals with new phosphorus-containing esters having the formulas



wherein

n is an integer having a value of 1 to 3,

Q is P or PO,

R is a divalent hydrocarbon having at least one and no more than 10 carbon atoms,

X is chlorine or bromine,

R' is X or R'',

R'' is hydrogen or a monovalent hydrocarbon having at least one and no more than 20 carbon atoms, and

Y is X, OR'' or NR''_2.

These new esters are useful particularly as fire retardants, agricultural chemicals, fuel additives, plasticizers, monomers and intermediates for the synthesis or other useful derivatives.

3,780,145

TRIPHENYL PHOSPHATES

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,095

Int. Cl. C07f *9/12;* **C10m** *1/46*

U.S. Cl. 260—966 **2 Claims**

Triphenyl phosphates in which an average of at least one phenyl group per molecule is substituted with at least one alkyl group containing from 6–30 carbon atoms have been found to be excellent lubricants and functional fluids having much lower pour points and higher viscosity indices than conventional phosphate esters.

3,780,146

PROCESS FOR PREPARING DI-ISOPROPYL-PHOSPHONOMETHYL ACRYLATES OR METHACRYLATES

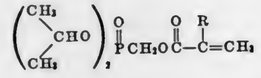
Peter Gohborn, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,192

Int. Cl. C07f *9/40*

U.S. Cl. 260—971 **10 Claims**

A process is described, for the preparation of compounds of the formula



wherein R is selected from the group consisting of hydrogen and lower alkyl, which comprises (1) reacting di-isopropyl phosphite with aqueous formaldehyde, in the

presence of a base, and thereafter (2) reacting the product of step (1) with an alkyl acrylate of the formula



wherein R is as above described and R' is lower alkyl.

3,780,147

METHOD FOR MAKING HIGH FLOW POROUS REVERSE OSMOSIS MEMBRANES CONTAINING LIPIDS

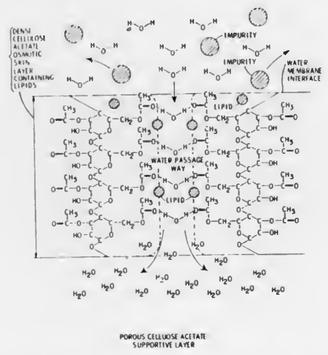
Regis R. Stana, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application May 13, 1969, Ser. No. 824,115, now Patent No. 3,593,855. Divided and this application Dec. 9, 1970, Ser. No. 96,311

The portion of the term of the patent subsequent to Feb. 29, 1989, has been disclaimed

Int. Cl. B29d *27/04;* **C08b** *17/36, 21/04*

U.S. Cl. 264—49 **9 Claims**



A semi-permeable membrane containing a supportive layer and a lipid containing osmotic skin layer of polymeric film forming cellulosic material is made by (1) admixing film forming cellulosic material, solvent, swelling additive and lipid to provide a casting solution (2) casting a film from the solution (3) drying the film (4) leaching the film to form a semi-permeable osmotic skin membrane containing a residue of lipid, and (5) optionally curing the membrane.

3,780,148

PROCESS FOR ENHANCING THE INHERENT VISCOSITY OF BISPHENOL POLYESTERS

Winston J. Jackson, Jr., Herbert F. Kuhfuss, and John R. Caldwell, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 11,902, Feb. 16, 1970, now Patent No. 3,684,766, dated Aug. 15, 1972, which is a continuation-in-part of abandoned application Ser. No. 817,137, Apr. 17, 1969. This application June 19, 1972, Ser. No. 263,810

The portion of the term of the patent subsequent to Aug. 15, 1989, has been disclaimed

Int. Cl. C08g *17/08*

U.S. Cl. 264—141 **4 Claims**

A bisphenol polyester with an inherent viscosity of at least about 0.5 is produced by the steps of (1) preparing a bisphenol polyester with an inherent viscosity of at least about 0.1, (2) comminuting the prepared polyester, (3) contacting the comminuted polyester with a crystallizing agent, and (4) heating the crystallized polyester in the presence of an inert gas or under reduced pressure to increase the inherent viscosity to at least 0.5. Preferably a copolyester of bisphenol A, terephthalic and isophthalic acid is used and the heating step is accomplished by fluidizing or polymerizing under reduced pressure the crystallized polymer in the same vessel as used for crystallization.

3,780,149

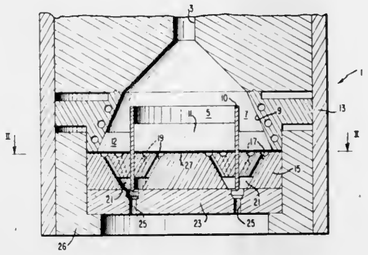
CONJUGATE SPINNING PROCESS

Herbert W. Keuchel, Long Valley, and Walter J. Polestak, Summit, N.J., assignors to Celanese Corporation

Filed Feb. 7, 1966, Ser. No. 525,680

Int. Cl. B29f *31/10*

U.S. Cl. 264—168 **3 Claims**



Crimped filaments are prepared by subjecting two streams of the same polymer to different temperature or shear forces and extruding the polymer as separate streams through the same spinnerette orifices.

3,780,150

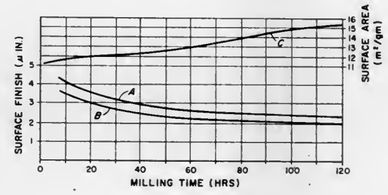
USE OF MENHADEN OIL TO DEFLOCCULATE DRY GROUND ALUMINA IN MANUFACTURE OF SUBSTRATES

Harold Wilbur Stetson, Newtown, Pa., and Warren Joseph Gyurk, Pluckemin, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Application May 6, 1970, Ser. No. 37,373, now Patent No. 3,698,923, which is a continuation of abandoned application Ser. No. 634,370, Apr. 27, 1967. Divided and this application Apr. 27, 1972, Ser. No. 248,238

Int. Cl. C04b *33/18, 35/10*

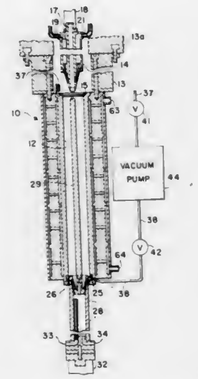
U.S. Cl. 264—63 **8 Claims**



Dry ground alumina is ball milled with an azeotropic solvent mixture, a grain growth inhibitor, and periodic

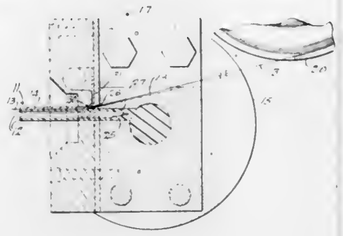
additions of menhaden oil until the surface area of the alumina is increased to 12 to 15 m.²/gm. This material is then mixed with additional solvent, polyvinyl butyral and a plasticizer mixture to form a slip. The slip is de-aired and formed into a thin film on a moving support tape with doctor blade. After drying the film is removed and formed into substrates of the desired shape. The substrates are supported on a flat surface and covered with a flat body of sufficient weight to prevent warping during firing. The surface finish of the fired substrates is less than 3.5 in.

3,780,151
EVACUATED, DISPLACEMENT COMPRESSION MOLDING
Wilbur C. Heier, Hampton, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Nov. 11, 1971, Ser. No. 197,689
Int. Cl. B29c *25/00;* **B29d** *1/00;* **B29g** *1/00*
U.S. Cl. 264—102 **14 Claims**



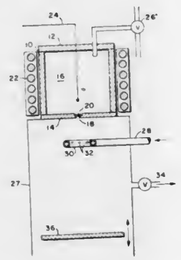
A process of molding long thin-wall tubular bodies from thermosetting plastic molding compounds wherein the tubular body lengths may be several times the diameters. The process is accomplished by loading a predetermined quantity of molding compound into a female mold cavity closed at one end by a force mandrel. After closing the other end of the female mold with a balance mandrel, the loaded cavity is evaculated by applying a vacuum of from one-to-five mm. pressure for a period of fifteen-to-thirty minutes. The mold temperature is raised to the minimum temperature at which the resin constituent of the compound will soften or plasticize and a pressure of 2500 p.s.i. is applied by the balance mandrel on the load within the cavity for a period of from five-to-fifteen minutes. While maintaining this vacuum, temperature, and balance mandrel pressure, a pressure of approximately 3500 p.s.i. is applied by the force mandrel onto the compound load to thereby displace the balance mandrel. This normally requires three-to-five minutes for the force mandrel to complete its stroke. The mold temperature is then increased to and maintained at 300–350° F. for a period of thirty-to-sixty minutes while maintaining the vacuum and pressure of both mandrels. The force mandrel is force-cooled to effect its thermal shrinkage for easy removal from the tubular article which is left in the female mold. The balance mandrel is then used to push the molded tubular article from the female mold. A mold insert may be attached to the female mold to permit molding of exterior spiral threads on one end of the molded article.

3,780,152
METHOD FOR PRODUCING TRIM STRIP ASSEMBLY
Charles E. Friesner, Pemberville, Ohio, assignor to Industrial Plastic Specialties Company, Chelsea, Mich.
Filed Mar. 23, 1971, Ser. No. 127,168
Int. Cl. B29f *3/00*
U.S. Cl. 264—174 **8 Claims**



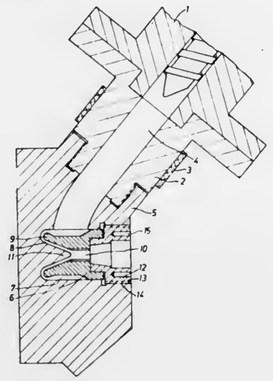
A method and apparatus for producing a trim strip assembly is disclosed. The trim strip includes a thermoplastic base member, a superimposed strip, and a plastic top coating. The superimposed strip may be of plastic, metal or foil. The apparatus includes extruders and a die having three passageways. A first passageway receives the extruded base member, a second passageway intersects the first passageway and receives the superimposed strip, and a third passageway intersects the second passageway a predetermined distance from the intersection of the first and second passageways.

3,780,153
LOW VISCOSITY MELT SPINNING PROCESS
Wilbur J. Privott, Jr., and Robert E. Cunningham, Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 599,539, Dec. 6, 1966. This application Oct. 2, 1969, Ser. No. 863,311
The portion of the term of the patent subsequent to Feb. 6, 1990, has been disclaimed
Int. Cl. B28b *3/20*
U.S. Cl. 264—176 F **12 Claims**



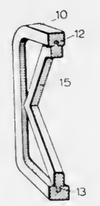
Continuous length fibers are formed from inorganic molten materials of low melt viscosity. The continuous fibers are obtained by extruding a free-falling stream, film-stabilizing the stream against the disruptive effects of surface tension pending solidification, and decelerating the solidified stream at a selected point intermediate of a first point (D_a) upstream of which an imposed stream decelerating force causes disruptions in the stream continuity and a second point (D_b) downstream of which the net tensional force acting upon stream results in substantially uniform finite length fibers.

3,780,154
PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION AND/OR COVERING OF EXTRUDED SECTIONS
Karl Heinz Muller, Leverkusen, Klaus Richter, Cologne-Dellbruck, and Harry Rohr, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed June 15, 1971, Ser. No. 153,303
Claims priority, application Germany, June 20, 1970, P 20 30 578.6
Int. Cl. B28b *3/20*
U.S. Cl. 264—176 R **20 Claims**



Extruded sections are covered with plasticised synthetic plastics material in an extruder nozzle, by having the plastic synthetic plastics material first of all flowing from outside around the extruder nozzle, then guided opposite to the ejection direction, and then deflected into the duct of the extruder nozzle.

3,780,155
METHOD OF ASSEMBLING A CHAIR BACK
William R. Byrd, 4007 Venice Drive 16506, and Richard W. Byrd, 2936 W. 15th St. 16505, both of Erie, Pa.
Continuation-in-part of abandoned application Ser. No. 772,152, Oct. 31, 1968. This application Mar. 3, 1971, Ser. No. 129,963
Int. Cl. B29c *27/20;* **B29d** *12/00*
U.S. Cl. 264—230 **3 Claims**



A process of making a chair including molding a frame having a groove, molding a splat having a tongue, allowing the splat to cool, placing the frame in a cold liquid, supporting the frame on a support frame so that it will not distort, stretching the frame over the splat so that the tongues on the splat enter the grooves on the frame and allowing the splat and frame to cool whereby the frame and splat shrink into a tight integral form. Glue may be placed in the groove.

3,780,156
PROCESS FOR MAKING FILLED METHYL METHACRYLATE ARTICLES
Donald D. Cameron, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 3, 1972, Ser. No. 240,823
Int. Cl. B29c *3/00;* **C08f** *45/10*
U.S. Cl. 264—300 **14 Claims**

Disclosed herein is a process for making a highly filled polymethyl methacrylate article containing 50 to 80 percent by weight of particulate hydrate of alumina and 4 to 20 percent by weight of glass filaments.

3,780,157
PROCESS FOR THE PRODUCTION OF REINFORCED POLYAMIDE HOLLOW ARTICLES
Wilhelm Hechlhammer, Kurt Schneider, and Friedrich Fahnler, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Dec. 29, 1971, Ser. No. 213,828
Claims priority, application Germany, Dec. 30, 1970, P 20 64 598.1
Int. Cl. B29c *5/04*
U.S. Cl. 264—310 **7 Claims**

The invention relates to a process for the production of reinforced polyamide hollow articles which comprises polymerizing a lactam having at least 5 ring members in the group consisting of a carbodiimide, cyanamide, mono-, polyisocyanate and a masked isocyanate after fibres have been introduced into the mould and heated to the required polymerization temperature in the mould which rotates during the polymerization about two intersecting axes.

3,780,158
PROCESS FOR RECOVERING HIGH PURITY FREE FLOWING CRYSTALLINE MANGANESE DIOXIDE FROM IMPURE MANGANESE NITRATE SOLUTIONS
Jay Y. Welsh, Catonsville, Md., assignor to Diamond Shamrock Corporation, Cleveland, Ohio
No Drawing. Filed June 23, 1972, Ser. No. 265,589
Int. Cl. C01g *45/02, 45/08*
U.S. Cl. 423—49 **10 Claims**

High purity, uniformly free flowing, pyrolusite crystals of manganese dioxide are obtained from crude impure manganese nitrate solution by adjusting the pH, heating and filtering the solution to remove precipitates. The treated solution is then combined with pure manganese dioxide to form a slurry which is vigorously agitated and heated at a rate of heat input controlled to decompose the manganese nitrate and provide high purity free flowing pyrolusite crystals of manganese dioxide, nitrogen dioxide and water vapor.

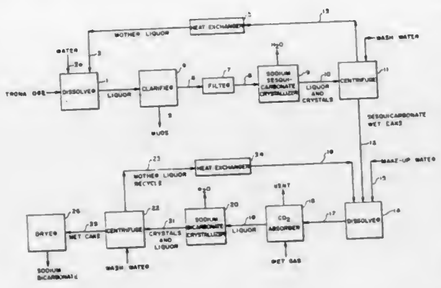
3,780,159
PROCESS FOR RECOVERING MANGANESE VALUES FROM LOW GRADE OXIDIZED MANGANESE CONTAINING ORES
Jay Y. Welsh, Catonsville, Md., assignor to Diamond Shamrock Corporation, Cleveland, Ohio
No Drawing. Filed June 23, 1972, Ser. No. 265,588
Int. Cl. C01g *45/02, 45/08*
U.S. Cl. 423—49 **11 Claims**

Manganese values are recovered from low grade oxidized manganese containing ore by contacting and leaching the ore with a solution prepared by dissolving and dispersing nitrogen dioxide in an aqueous medium and recovering an impure aqueous manganese nitrate solution. Impurities are removed from the nitrate solution by treatment with an alkaline agent and heat and the treated solution is heated to decomposition temperatures whereby substantially pure manganese dioxide, nitrogen dioxide and water vapor are formed. The nitrogen dioxide and water vapor formed by decomposition can be recycled to dissolve and disperse said materials in the aqueous medium.

3,780,160
CARBONATION PROCESS FOR THE MANUFACTURE OF SODIUM BICARBONATE

Richard W. Waggener, Green River, and James D. Taylor, Rock Springs, Wyo., assignors to Intermountain Research and Development Corporation, Green River, Wyo.

Filed Aug. 2, 1971, Ser. No. 168,306
Int. Cl. B01d 9/02; C01d 7/10
U.S. Cl. 423—186 3 Claims



Sodium bicarbonate is produced from trona by dissolving trona in an aqueous solvent, removing insolubles from the resulting solution, crystallizing sodium sesquicarbonate, dissolving the sodium sesquicarbonate crystals in an aqueous solvent, carbonating the sodium sesquicarbonate solution and crystallizing sodium bicarbonate from the carbonated solution.

3,780,161
PROCESS FOR CONCENTRATING SOLUTIONS

Yves Berquin, Paris, Pierre Duval, Grand Couronne, and Jean-Claude Alleton, Rouen, France, assignors to Azote et Produits Chimiques, Toulouse, France

Filed Feb. 2, 1971, Ser. No. 111,887
Claims priority, application France, Feb. 2, 1970, 7003465; June 26, 1970, 7023714
Int. Cl. C01b 15/16, 25/16, 25/26
U.S. Cl. 423—310 11 Claims

To concentrate solutions such as phosphoric acid, droplets thereof are entrained in a high velocity ascending current of hot gas such as flue gas, air, etc., optionally containing a reactant gas such as ammonia. The entrained droplets are passed to a decelerating zone where the velocity profile of the gas is such that continuous circulation of droplets is possible, with droplets proximate the axis of said zone being entrained upwardly and droplets proximate the side of said zone falling downwardly where they can be re-entrained by entering hot gas. In this manner it is possible to recirculate the droplets and control the extent of concentration within a reasonably dimensioned apparatus and without any difficult separation problem because of excessively small droplets.

3,780,162
PREPARATION OF PHOSPHONITRILIC CHLORIDE

Charles R. Bergeron and James T. F. Kao, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed June 5, 1972, Ser. No. 259,669
Int. Cl. C01b 25/10
U.S. Cl. 423—300 11 Claims

Process for the preparation of phosphonitrilic chloride from phosphorus pentachloride and ammonia in the presence of hydrogen chloride by carrying out the process under a pressure of hydrogen chloride ranging from 10 to about 40 p.s.i.g. The reaction product produced in good yield is a low molecular weight polymeric mixture primarily of cyclic trimer and tetramer.

3,780,163
PROCESS FOR REMOVING IRON CARBONYL WITH OZONE

Robert H. Callighan and John O. Hawthorne, Penn Hills Township, Allegheny County, Pa., assignors to United States Steel Corporation

No Drawing. Filed June 5, 1972, Ser. No. 259,983
Int. Cl. B01d 53/34
U.S. Cl. 423—210 11 Claims

Liquids and gases containing iron carbonyl contaminants may have these carbonyls reduced by reaction with up to stoichiometric amounts of ozone to convert the carbonyls into ferrous carbonate.

3,780,164
PURIFICATION OF YELLOW PHOSPHORUS

Fritz Muller, Knapsack, Karl-Heinz Stendenbach, Ruhl-Pingsdorf, Gerhard Hartlapp, Hermulheim, Wilhelm Forst, Tiengen, and Hermann Schrodter, Hermulheim, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed July 9, 1971, Ser. No. 161,021
Claims priority, application Germany, July 17, 1970, P 20 35 432.9
Int. Cl. C01b 25/02, 25/04
U.S. Cl. 423—322 5 Claims

Purification of yellow phosphorus, which may have been produced by electrothermal means, by intimately mixing liquid phosphorus with sulfuric acid.

A phosphorus/sulfuric acid-mixture coming from a stirring zone is conveyed to a heated separating zone, in which the mixture is separated, at a temperature at least as high as the melting point of phosphorus, into an upper layer of liquid phosphorus and a lower layer of sulfuric acid; the two layers are cooled down to a temperature lower than the melting point of phosphorus and the lower layer of sulfuric acid is discharged; the upper layer of solidified phosphorus is melted by supplying heat thereto and delivered to a wash zone, in which the phosphorus is water-washed and freed from adhering sulfuric acid.

3,780,165
SYNTHESIS OF CHLORINE FLUOROSULFATE AND BROMINE (I) FLUOROSULFATE

Carl J. Schack, Chatsworth, and Richard D. Wilson, Canoga Park, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,369
Int. Cl. C01b 17/45
U.S. Cl. 423—466 4 Claims

This application discloses new processes for the preparation of chlorine fluorosulfate and bromine (I) fluorosulfate. Chlorine fluorosulfate is prepared by the reaction of chlorine monofluoride with sulfur trioxide. Bromine (I) fluorosulfate is prepared by the reaction of bromine with chlorine fluorosulfate.

3,780,166
PROCESS OF CATALYTICALLY REACTING SO_2 TO FORM SO_3 AND OF PRODUCING SULFURIC ACID

Herbert Drechsel, Frankfurt am Main, Karl-Heinz Dorr, Mainz (Rhine), and Hugo Grimm and Gustav Rowedder, Frankfurt am Main, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 8, 1969, Ser. No. 839,823
Claims priority, application Germany July 11, 1968, P 17 92 015.9
The portion of the term of the patent subsequent to Apr. 18, 1989, has been disclaimed
Int. Cl. C01b 17/76
U.S. Cl. 423—522 8 Claims

A process of catalytically reacting SO_2-containing gas to form SO_3 in a catalytic plant including a plurality of catalyst stages and in which SO_3 is condensed between catalyst stages forming sulfuric acid, characterized in that:

(a) the SO_3-containing gas leaving the first of two successive stages is transferred along a closed flow path into the second of said two stages;
(b) a partial stream is separated from said transferred stream and cooled, and SO_3 is condensed from the partial stream;
(c) said partial stream following said condensing is combined with the balance of said transferred stream and and the combined stream is introduced into the second catalyst stage.

3,780,167
PROCESS FOR SOLVENT EXTRACTION OF ORES

Henry H. Wheeler, Jr., Newport Beach, Calif., assignor to William M. Lansdale and Francis E. Wingate, fractional part interest to each

Continuation of abandoned application Ser. No. 738,930, June 21, 1968. This application July 30, 1971, Ser. No. 167,780
Int. Cl. C01b 17/08
U.S. Cl. 423—578 12 Claims

A continuous process for extraction of valuable minerals from a mineral-bearing ore by a water-immiscible solvent which has a density less than that of water and in which the mineral is soluble. Following solvent extraction of the mineral from the ore, water is added to the ore-solvent mixture to flocculate residual gangue and separate the gangue from the mineral-rich solvent prior to treatment of the latter for separation of the mineral from the solvent.

3,780,168
PROCESS FOR THE REGENERATION OF ALUMINUM OXIDE

Gerhard Käbisch and Wolfgang Kunkel, Rheinfelden, Baden, Germany, assignors to Deutsche Gold- und Silber-Scheideansalt vormals Roessler, Frankfurt, Germany

No Drawing. Filed July 7, 1971, Ser. No. 160,510
Claims priority, application Germany, July 23, 1970, P 20 36 553.1
Int. Cl. C01b 15/02; C01f 7/02
U.S. Cl. 423—588 13 Claims

Aluminum oxide which has been inactivated in the anthraquinone process for the production of hydrogen peroxide is regenerated by treating with an alkaline acting solution.

3,780,169
MANUFACTURE OF BERYLLIUM HYDRIDE

David R. Carley, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Sept. 26, 1962, Ser. No. 227,632
Int. Cl. C01b 6/00
U.S. Cl. 423—645 18 Claims

The invention relates to a process for the preparation of beryllium hydride by reacting a diorganoberyllium compound with hydrogen under elevated temperature and pressure.

3,780,170
TASTELESS METHENAMINE MANDELATE

Frank W. Goodhart, Morristown, and James Ronald Draper, Dover, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed July 3, 1972, Ser. No. 268,371
Int. Cl. A01n 17/00; A61k 9/00
U.S. Cl. 424—35 5 Claims

A substantially tasteless methenamine mandelate suspension contains particles of methenamine mandelate enveloped in a coating of ethyl cellulose and at least one secondary coating ingredient including hydrogenated castor oil, paraffin, and/or a polyethylene glycol polymer or mixture of polyethylene glycol polymers. The coating is applied from a solvent solution, using conventional spray drying techniques. The coated methenamine mandelate particles are suspended in a vegetable oil vehicle to which a suspension stabilizer may be added. This suspension is stable, palatable and therapeutically active, upon oral administration, for the treatment of urinary infections. The addition of artificial sweeteners to mask the normally unpleasant taste of methenamine mandelate is not required. Flavor, coloring and relatively small amounts of sugar may be added to the suspension to provide specific taste qualities, if desired.

3,780,171
INGESTIBLE POLYMERIC COMPOSITIONS

Klaus Irmscher, Michael Klockow, Werner Mehrhof, Klaus Pfitzner, Dieter Randaj, Herbert Nowak, and Karl-Otto Freisberg, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Dec. 15, 1970, Ser. No. 98,441
Claims priority, application Germany, Dec. 27, 1969, P 19 65 133.3; Oct. 10, 1970, P 20 49 938.1
Int. Cl. A61k 27/00
U.S. Cl. 424—79 4 Claims

Ingestion of effective amounts of a polymeric composition comprising at least one synthetic, non-toxic, water insoluble granular cross-linked polymer which is inert to digestive enzymes and contains ionizable amino groups, and has a macroporous structure, a swelling volume of less than 5 ml./g. in water and a maximum grain size of 0.5 mm. and which exhibits, after equilibration with air of 100% relative humidity at 25° C., a moisture content of less than 50% by weight, produces a lowering of cholesterol and triglyceride blood levels. The polymeric compositions exhibit lipid-binding and bile-acid binding effects and lipase inhibition.

3,780,172
ANTIBIOTIC NO. 1308 AND PROCESS FOR PRODUCING THE SAME

Isao Takeda, Tokyo, Masayuki Mizuno, Saitama, Toshiaki Sugawara and Yukiji Shimojima, Tokyo, and Sadayuki Horiguchi, Kanagawa, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 19, 1971, Ser. No. 190,477
Claims priority, application Japan, Nov. 17, 1970, 45/100,705
Int. Cl. A61k 21/00
U.S. Cl. 424—122 2 Claims

New antibiotic No. 1308 useful for controlling the growth of molds, particularly rice blast molds, having the elementary analysis values of C, 67.62%, H, 9.67% and the balance O, a melting point from 128° to 132° C., a molecular weight of 770, optical rotation of $[\alpha]_D^{18}$ —50.5 (c.=2 in methanol), and the infrared and ultraviolet absorption spectra shown in the accompanying FIGS. 1 and 2.

The antibiotic is obtained by culturing Streptomyces 1308 (NRRL 5318) in a medium containing a carbon source, a nitrogen source and inorganic salts, and recovering the resulting active substance from both mycelium and culture filtrate.

3,780,173
PARTRICIN METHYL ESTER

Tiberio Bruzzese, 7 Via Monte Cervino 20149, and Rodolfo Ferrari, 8 Via Biella 20143, both of Milan, Italy

Filed Nov. 1, 1971, Ser. No. 194,692
Claims priority, application Great Britain, Nov. 3, 1970, 52,271/70
Int. Cl. A61k 21/00
U.S. Cl. 424—122 1 Claim

Methyl partricin, a new polyenic antibiotic agent is described herein. This material is obtained by the reaction

of partricin with diazomethane. It possesses good antifungal activity with low toxicity.

3,780,174
ANTIBIOTIC A477 AND PROCESS FOR PREPARATION THEREOF
Robert L. Hamill, New Ross, Michael E. Haney, Jr., West Lafayette, and William Max Stark, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Oct. 27, 1971, Ser. No. 192,838
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 **3 Claims**

The basic, nitrogenous antibiotic A477 produced by culturing Actinoplanes sp. NRRL 3884 under submerged aerobic fermentation conditions forms crystalline salts with mineral and organic acids which as the free base or as such salts inhibits the growth of microorganisms. A477 and salts thereof are particularly useful in controlling the growth of cariogenic organisms and additionally are useful in promoting the growth of chickens.

3,780,175
SILYLMETHYL THIOPSEUDOUREA SALTS
Sandor Barcza, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Original application Feb. 24, 1970, Ser. No. 13,819, now Patent No. 3,637,735, dated Jan. 25, 1972. Divided and this application July 9, 1971, Ser. No. 161,272
Int. Cl. A61k *27/00*
U.S. Cl. 424—184 **7 Claims**

The compounds are tri-substituted silylmethyl thiopseudourea salts, e.g., 1,3 - dimethyl - 2-trimethylsilylmethylthiopseudourea hydrochloride, and are useful as pharmaceuticals. Said compounds are obtainable by reacting a suitable trisubstituted halomethylsilane with a thiourea.

3,780,176
PREDOMINANTLY AQUEOUS SUBSTITUTED TRIAMCINOLONE COMPOSITIONS
Fu-Dah Young, River Edge, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Oct. 5, 1971, Ser. No. 186,789
Int. Cl. A61k *17/00*
U.S. Cl. 424—239 **7 Claims**

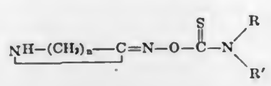
Aqueous solutions and gels of triamcinolone type steroids, in particular triamcinolone acetonide, are disclosed which are suitable for eye-ear treatment or as topical preparations in gel form.

3,780,177
17-BUTYRATE, 21 - ESTER DERIVATIVES OF 6α,9α-DIFLUOROPREDNISOLONE, COMPOSITIONS AND USE
Alberto Ercoli, Milan, and Rinaldo Gardi, Carate Brianza, Milan, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Application June 30, 1970, Ser. No. 51,378, which is a continuation-in-part of applications Ser. No. 735,509 and Ser. No. 735,537, both June 10, 1968, all now abandoned. Divided and this application Nov. 10, 1971, Ser. No. 197,476
Claims priority, application Italy, June 6, 1967, 17,274/67, 17,277/67
Int. Cl. A61k *17/00*; **C07c** *167/00*
U.S. Cl. 424—243 **14 Claims**

There have been prepared the new 17-butyrates, 21-esters of 6α,9α-difluoroprednisolone useful as anti-inflammatory agents. They may be mixed with suitable pharmaceutical carriers to obtain pharmaceutical compositions for the systemic and local treatment of inflammatory conditions and diseases.

3,780,178
FUNGICIDAL COMPOSITIONS AND METHODS OF KILLING FUNGI USING ALKYLENIMINE-2-OXIMES
Marvin Theodore Tetenbaum, Convent, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Dec. 14, 1971, Ser. No. 207,959
Int. Cl. A01n *9/12, 9/22*
U.S. Cl. 424—244 **3 Claims**

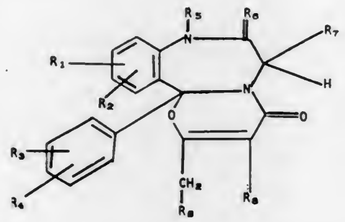
Alkylenimine-2-oximes having the general formula:



wherein *n* is 2 to 10 and R and R' are selected from the group consisting of hydrogen, alkenyl, alkyl, cycloalkyl, aryl, and substituted aryl, are effective on controlling soil nematodes and plant diseases caused by microorganisms such as plant pathogenic fungi.

3,780,179
ANIMAL FEED FOR OBTAINING INCREASED PRODUCTION IN ANIMALS
Robert J. Collins, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed Aug. 9, 1971, Ser. No. 170,327
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 **6 Claims**

An animal feed comprising a compound of the group consisting of an oxazinobenzodiazepine of the formula:



Formula 1

wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, alkyl and alkoxy of 1 to 6 carbon atoms, inclusive, halogen, $-CF_3$, $-NO_2$ and $-CN$; wherein R_5 is selected from the group consisting of hydrogen, alkyl defined as above, and benzyl; wherein R_6 is selected from the group consisting of $=O$ and $=S$; wherein R_7 is selected from the group consisting of hydrogen, alkyl defined as above, and alkoxy defined as above; and wherein R_8 is selected from the group consisting of hydrogen, alkyl defined as above, and phenyl in combination with the nutrient feed.

3,780,180
N-SUBSTITUTED AMINO-N-NITROSO-AMINOACETONITRILES IN THE TREATMENT OF HYPERTENSION
Paul L. Anderson, Dover, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of abandoned application Ser. No. 41,056, May 27, 1970. This application Feb. 4, 1971, Ser. No. 326,405
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 **4 Claims**

Certain known N-substituted amino-N-nitroso-aminoacetonitrile, e.g., N - morpholino-N-nitroso-aminoacetonitrile, have been found to be useful as hypotensive/antihypertensive agents.

3,780,181
PREPARATION OF ACTIVE DRY YEAST
William E. Trevelyan, Epsom Downs, England, assignor to The Distillers Company (Yeast) Limited, Morden, Surrey, England
Continuation-in-part of application Ser. No. 78,304, Oct. 5, 1970, which is a continuation-in-part of application Ser. No. 699,781, Jan. 23, 1968, both now abandoned. This application Sept. 5, 1972, Ser. No. 286,133
Claims priority, application Great Britain, Feb. 18, 1967, 7,861/67
Int. Cl. A23j *1/18*; **C12c** *11/32*
U.S. Cl. 426—18 **11 Claims**

Active dry yeast is prepared by continuously feeding crumbly yeast into a mill containing a high speed rotor wherein the yeast is disintegrated to a particle size less than 1.7 mm. predominantly by air turbulence without substantial breakdown of the yeast cells. Thereafter, the disintegrated yeast is dried to a dry matter content of at least 92%.

3,780,182
METHOD FOR IMPARTING CHEESE-LIKE FLAVOR TO PROTEINACEOUS MATERIALS
John D. Johnson, Evanston, and Dean L. Southworth, Glenview, Ill., assignors to Kraftco Corporation, New York, N.Y.
No Drawing. Filed Jan. 18, 1971, Ser. No. 107,530
Int. Cl. A23c *19/12*; **A23l** *1/26*
U.S. Cl. 426—33 **11 Claims**

Method for imparting an enhanced cheese-like flavor to proteinaceous materials. A cheese protein source and a fat source are mixed together to provide a substrate. The fat source is a triglyceride fat having at least about 3 percent by weight of the fat of C_{10} or lower saturated fatty acid moieties. The substrate is then subjected to elevated temperature conditions and is thereafter inoculated with an esterase. The inoculated substrate is fermented to split off and free at least part of the C_{10} and lower fatty acid moieties. The fermented substrate is then combined with a proteinaceous material and is dried to provide a powdered product with an enhanced cheese-like flavor.

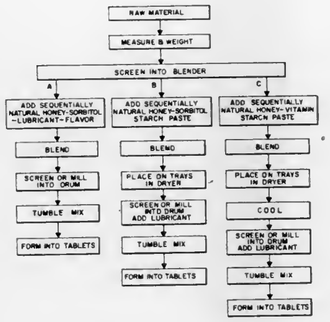
3,780,183
PLANT PROTEIN PRODUCT AND PROCESS
George Wheeler Edwards and Arrie Wood Edwards, both of Rte. 4, Kay Drive, Jackson, Tenn. 38301
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,714
Int. Cl. A23k *1/00*
U.S. Cl. 426—50 **15 Claims**

Alfalfa and clover, containing natural protein, is treated with an aqueous basic solution, the resulting extract is digested at a pH of about 6 to 14 with pancreatin and the undissolved material is separated from the aqueous digested extract to form an edible product.

3,780,184
FLAVORED OILS AND FOOD PRODUCTS CONTAINING THE SAME
James J. Broderick, River Edge, N.J., and Seymour A. Marcus, Brooklyn, N.Y., assignors to H. Kohnstamm Company, Inc., New York, N.Y.
No Drawing. Filed Mar. 15, 1971, Ser. No. 124,457
Int. Cl. A23l *1/26*
U.S. Cl. 426—65 **12 Claims**

A method for the preparation of an edible oleophilic flavor composition which comprises reacting at a temperature of from about 175° F. to 450° F., a reaction mixture consisting of (1) an amino reactant selected from the group consisting of a sulfur-containing polypeptide, cysteine, cystine or salts thereof, (2) a ribonucleotide and (3) an edible oil, and recovering the flavor base reaction product derived therefrom.

3,780,185
COMPOSITION OF MATTER INCLUDING DRIED HONEY
Murray E. Fields, Phoenix, Ariz., assignor to Honey Tein Products, Inc., Phoenix, Ariz.
Filed Sept. 30, 1970, Ser. No. 76,755
Int. Cl. A23l *1/08, 1/26*
U.S. Cl. 426—72 **14 Claims**



A non-sticky product embodying honey is prepared by admixing, blending and screening soy protein isolate, non-fat dried milk, sugar and dried honey. Sorbitol and natural honey are then added and the resultant mixture is blended, screened and tumble mixed. The product may be formed into tablets or wafers.

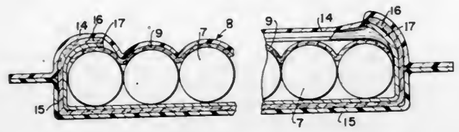
3,780,186
ALL-CORN ALIMENTARY PASTE FOODSTUFF
William A. Troy, Park Forest, Ill., assignor to Swift & Company, Chicago, Ill.
No Drawing. Filed Dec. 2, 1970, Ser. No. 94,616
Int. Cl. A23l *1/16*
U.S. Cl. 426—93 **12 Claims**

A process for producing an alimentary corn paste foodstuff suitable for making extrusion or macaroni type products comprising a mixture of substantially equal amounts of regular nongelatinized corn flour and pregelatinized corn flour plus a minor amount of an edible oil or fat as a lubricant, salt, and optional ingredients which mixture may be processed to produce items similar to paste like products made traditionally from certain wheat flours. The corn products thus produced may be cooked, partially cooked, or uncooked.

3,780,187
HEAT-AND-SERVE PACKAGES FOR PRECOOKED SAUSAGE AND THE LIKE
John C. Bard and Russell H. Maas, Madison, Wis., assignors to Mayer, Oscar & Company, Inc., Madison, Wis.
Continuation-in-part of application Ser. No. 775,000, Nov. 12, 1968, now Patent No. 3,619,215. This application July 19, 1971, Ser. No. 163,667
The portion of the term of the patent subsequent to Nov. 9, 1988, has been disclaimed
Int. Cl. B65b *25/06*
U.S. Cl. 426—113 **11 Claims**

Heat-and-serve packages of precooked sausage and the like include a disposable, heatable tray formed with foldable sides from sheet material capable of retaining melted fat, with links or patties of precooked or prefried sausage or the like laid flatwise on the bottom of the tray. The sides of the tray are folded downwardly and inwardly

over the margins of the precooked sausage links or patties and the assembly is enclosed in a disposable film envelope, being preferably evacuated and hermetically sealed. In use, the outer film or envelope is removed, the sides of the tray are folded up and the tray is inserted in an oven, or placed on a hot plate whereby the sausage contents are heated and acquire the characteristic flavor



of sausage fried or cooked in the usual manner. Single or multiple trays may be sealed in an envelope formed of barrier film. A single tray may be folded and multiple trays may be separable into smaller trays. While the invention is particularly useful for precooked sausage, other heat-and-serve items that exude or release fat or liquid on heating may constitute the contents.

3,780,188

METHOD OF INCREASING PROTEIN CONTENT OF WHEAT FLOUR BASED BAKED AND FRIED PRODUCTS AND COMPOSITIONS FOR PREPARING SAME

Cho C. Tsen and William J. Hoover, Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,239
Int. Cl. A21d *2/16, 2/26, 13/06*
U.S. Cl. 426—152 **16 Claims**

A protein fortified composition for preparing wheat flour based bread, baked goods and fried dough products, and a method of incorporating protein supplements into bread or other baked or fried product doughs containing wheat flour without adversely affecting the product volume, texture, shelf life, crumb grain or organoleptic properties of the bread, or baked or fried product produced therefrom, by adding to the dough ingredients from 0.1% to 3% of either the sodium or calcium salts of an acyl lactylate of C_{14}–C_{22} fatty acids, or ethoxylated mono- and diglycerides of C_{14}–C_{18} fatty acids (polyoxyethylene (20) mono- and diglycerides of the fatty acids) along with the protein supplement. The protein additives may for example be selected from the group consisting of soy flour, soy isolates, nonfat milk solids, whey products, fish protein concentrate, cottonseed, flour, chick pea flour, sesame seed flour, corn-soy-milk blend flour, wheat protein concentrate, wheat gluten, defatted wheat germ, Torula yeast, wheat-soy blend flour, edible single cell proteins, and mixtures thereof. Generally the quantity of protein supplement added does not significantly exceed that required to furnish a quantity of protein essentially equal to that provided by the wheat flour in the dough.

3,780,189

SWEETENING COMPOSITIONS AND METHOD FOR USE THEREOF

Don Scott, Skokie, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 823,482, May 9, 1969. This application Sept. 13, 1971, Ser. No. 180,061
Int. Cl. A23l *1/26*
U.S. Cl. 426—212 **19 Claims**

Novel compositions containing a sweet dipeptide and known sweetening agents possess enhanced sweetening potency and are useful for the sweetening of edible materials.

3,780,190

ARTIFICIAL SWEETENING COMPOSITION

Paul Kracauer, New York, N.Y., assignor to American Sweetener Corp., New York, N.Y.

No Drawing. Filed May 3, 1971, Ser. No. 139,838
Int. Cl. A23l *1/26*
U.S. Cl. 426—213 **4 Claims**

An essentially non-caloric artificial sweetening composition comprises a minor amount of a soluble saccharin compound and a major amount of a soluble citrate as an extender and de-bittering agent. The flavor of the composition may be further enhanced by the addition of small amounts of d-galactose, acidic buffering agents and alkaline chlorides.

3,780,191

PROCESS FOR REDUCING THE FAT CONTENT OF MEATS

Herbert R. Langer, 94 Carroll St., Manchester, N.H. 03102, and Arthur W. Langer, Jr., 175 Oakwood Road, Watchung, N.J. 07060

No Drawing. Filed Oct. 22, 1971, Ser. No. 191,772
Int. Cl. A22c *18/00*
U.S. Cl. 426—231 **19 Claims**

The fat content of fat-containing meat is reduced by comminuting a frozen portion of the meat, thereby obtaining substantially discrete frozen meat particles and substantially discrete frozen fat particles. The particles are then mechanically separated into a substantially meat particle phase and a substantially fat particle phase.

3,780,192

CURING OF MEATS

Wilson E. Danner, Linden, Paul A. Hammes, Westfield, and Charles W. Everson, Warren, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of applications Ser. No. 98,484, Dec. 15, 1970, and Ser. No. 314,896, Dec. 13, 1972, both now abandoned. This application Mar. 27, 1973, Ser. No. 345,429
Int. Cl. A23b *1/02;* **A23l** *3/34*
U.S. Cl. 426—266 **4 Claims**

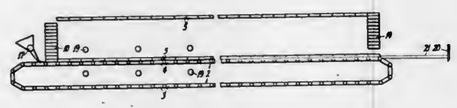
The curing of meats with a nitric oxide curing medium and an enediol or a diketone reducing agent in the presence of iron or an iron salt accelerates the curing and affords a meat product of improved color and color stability.

3,780,193

PRODUCTION OF WAFFLES AND LIKE FOOD PRODUCTS

David Charles De Jersey, East Bentleigh, Victoria, Australia, assignor to C. L. De Jersey & Sons Proprietary Limited, Moorabbien, Victoria, Australia

Continuation of abandoned application Ser. No. 476,582, Aug. 2, 1965. This application Apr. 24, 1970, Ser. No. 29,745
Claims priority, application Australia, Aug. 3, 1964, 47,680/64; Aug. 6, 1964, 47,819/64
Int. Cl. A21d *13/08*
U.S. Cl. 426—505 **12 Claims**



A method and apparatus for the continuous production of waffles and like products in the form of a continuous moving strip for severing into individual waffle units, in which dough mixture is fed to the trailing end of an endless moving succession of upper and lower co-acting molding and cooking plates between which the continuous strip

of waffles is molded and cooked, wherein the trailing end of the strip is progressively formed by a directly-downward moving of the upper trailing plate of said endless succession of plates co-acting with the registering lower plate and by said co-acting trailing plates being maintained pressed together during the period of initial molding and cooking of the dough mixture.

3,780,194

α,β-UNSATURATED ALDOXIME SWEETENERS

Edward M. Acton, Menlo Park, Morris A. Leaffer, Palo Alto, and Herbert Stone, Menlo Park, Calif., assignors to Sanford Research Institute, Menlo Park, Calif.

No Drawing. Filed Nov. 15, 1971, Ser. No. 198,939
Int. Cl. A23l *1/26*
U.S. Cl. 426—342 **2 Claims**

The oximes 1-cyclopentene-1-carboxyaldehyde syn-oxime, 1-cyclohexene-1-carboxaldehyde syn-oxime, and tiglaldehyde syn-oxime are found to have utility as artificial sweeteners owing to their sweet taste properties and good water solubilities. These oximes have potential application in low-calorie foods and beverages, particularly when used in combination with sucrose.

3,780,195

ENCAPSULATION PROCESS

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Balchem Corporation, State Hill, N.Y.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,637
Int. Cl. A23l *1/26;* **B01j** *13/02;* **B44d** *1/02*
U.S. Cl. 426—350 **10 Claims**

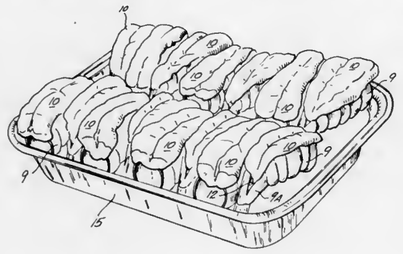
A process for encapsulating an active material in a shell composition in which the capsule composition is formed by dispersing an active material and a shell composition in a solvent for the shell composition. Capsules are prepared by forming the capsule composition into particles containing the active material as a dispersed phase in a solution of the shell composition and removing the solvent from the shell composition solution. A lower molecular weight polyglycol is employed to desolventize the shell composition. Removal of solvent is conducted without extracting a substantial proportion of active material from the capsules. If desired, the desolventizing operation can be accelerated by first dispersing the capsule composition in a viscous white mineral oil in which the capsule composition forms discrete particles, and then admixing the resulting mixture with an anhydrous polyglycol containing a sufficient quantity of mutual solvent to render the mineral oil and polyglycol at least partially compatible.

3,780,196

METHOD OF PACKING SHRIMP

Edward H. Domecki, 2140 NE. 30th St., Lighthouse Point, Fla. 33064

Filed Feb. 29, 1972, Ser. No. 230,385
Int. Cl. A22c *29/00;* **B65b** *25/22*
U.S. Cl. 426—393 **6 Claims**



The shrimp is decapitated and the shell covering its body is severed longitudinally along its dorsal side with the cut extending through the first five segments and partially through the sixth segment, leaving the telson intact. The meat of the shrimp is then lifted from the shell but is left attached to the end portions of the sixth segment and the telson. The vein and roe are completely removed and the meat is placed on top of the shell. It is packed in an aluminum tray with the meat resting on the shell, wrapped and then frozen.

3,780,197

BALANCED COFFEE FLAVORS

Arthur Stefanucci, Clifton, and Slawko Yadlowsky, Manville, N.J., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 58,689, July 27, 1970, now Patent No. 3,700,462. This application Apr. 25, 1972, Ser. No. 247,496
The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed
Int. Cl. A23f *1/02*
U.S. Cl. 426—473 **26 Claims**

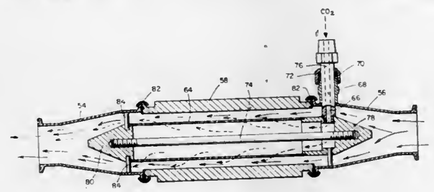
High quality coffee is divided into portions and each portion roasted to a separate and discernible average roast color, the roasted portions are ground with at least one portion ground to a fine particle size; the ground high quality coffee is combined with low quality coffee ground to a coarse particle size to provide coffee products having either an improved flavor character by enhancing the flavor of the high quality coffee and/or by masking the undesirable flavor character of the low quality coffee, or to provide lower cost products.

3,780,198

SYSTEM FOR CARBONATING BEVERAGES

Leo F. Pahl, Pasadena, and Norman H. Jones, Baltimore, Md., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed June 7, 1971, Ser. No. 150,379
Int. Cl. A23l *1/00*
U.S. Cl. 426—477 **22 Claims**



In-line carbonation of beverages in a system comprising a blender, a cooler and a filler. A carbon dioxide diffusion-type injector located in the line between the blender and filler diffuses carbon dioxide into the blended beverage while the beverage flows through the injector at a substantially uniform flow rate. The injector comprises a microporous tubular member.

3,780,199

MANUFACTURE OF RICOTTA CHEESE

Donald R. Carswell, Lake Bluff, Ill., assignor to Kraftco Corporation, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,611
Int. Cl. A23c *19/02*
U.S. Cl. 426—495 **4 Claims**

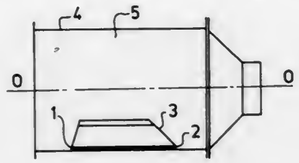
An improved method for manufacture of Ricotta cheese is provided. In the method, Ricotta cheese curd and whey are pumped to a whey drainage screen having a particular mesh size. After whey has been drained from the curd, the curd is pumped against a predetermined back pressure to a holding tank. Thereafter, the curd is packaged into suitable containers while it is hot.

ELECTRICAL

3,780,200
HEATING APPARATUS FOR PLASTIC EXTRUDERS

Karel Maurer, Hradec Kralove, and Ladislav Benda, Plotiste Nad Labem, both of Czechoslovakia, assignors to Tesla, Narodni podnik, Praha, Czechoslovakia

Filed Nov. 18, 1971, Ser. No. 199,861
Int. Cl. F27d *11/04*
U.S. Cl. 13—23 **13 Claims**

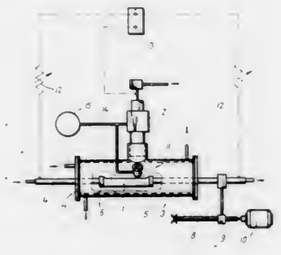


A heating unit comprising a chamber in which are located at least two electrodes. The electrodes each comprising a first portion matching and secured to the interior wall of the chamber and a second portion extending radially inward toward the central axis.

3,780,201
PLASMA KILN

Vladimir Dembovsky, Ostrava, Czechoslovakia, assignor to Vysoka Skola Banska Ostrava

Filed Feb. 6, 1973, Ser. No. 330,025
Int. Cl. H05b *7/00*
U.S. Cl. 13—31 **4 Claims**



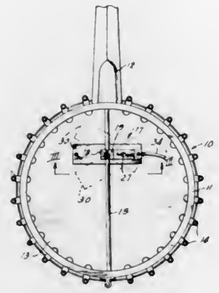
A plasma kiln with a horizontal cristallizer moved within reach of a plasma torch, provided with parallel supply conductors of electric current to both ends of the cristallizer and with observation means of the cristallizer connected to the supply of the working gas of the plasma torch.

3,780,202
MOUNTING BRACKET FOR PICKUP IN A STRINGED MUSICAL INSTRUMENT

Clement R. Law, Chicago, Ill., assignor to Clement R. Law and Joseph F. Law, Chicago, Ill.

Filed June 19, 1972, Ser. No. 263,860
Int. Cl. G10h *1/00, 3/00*
U.S. Cl. 84—1.04 **3 Claims**

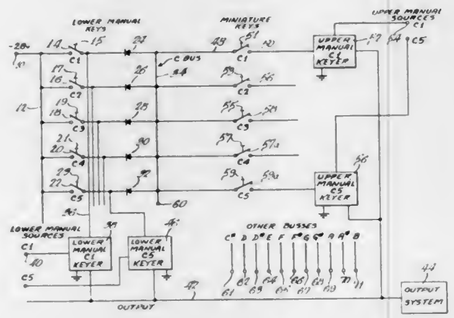
A mounting bracket for mounting a pickup head for an amplifier within a banjo or other stringed instrument, the bracket being arranged to be adjustably positionable along a pair of spaced rods which extend in parallel relation across the frame of the instrument beneath the head thereof, with a support engaging the rods and being adjustably positionable therealong. A plate is carried by the support and is pivotally supported from the support. A pickup is secured to the plate and is positionable in the vicinity of the head in widely adjustable relationship with the head.



3,780,203
ORGAN SYSTEM FOR AUTOMATICALLY PRODUCING RUNS OF VARIOUS CHARACTER

Adelore F. Petrie, Arlington Heights, Ill., assignor to Hammond Corporation, Deerfield, Ill.

Filed Jan. 16, 1973, Ser. No. 324,238
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.17 **5 Claims**

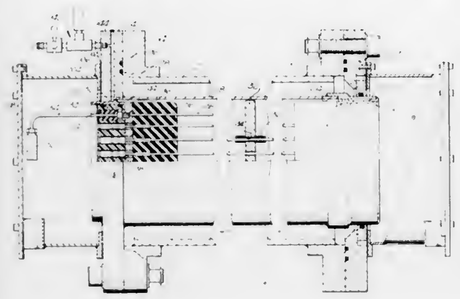


An electronic organ system which automatically plays an arpeggio, a glissando, or a whole tone scale of notes when a supplementary miniature keyboard is stroked. The miniature keyboard is under the control of the lower keyboard, (the control keys) such that holding control keys determines which miniature keys are live (will play). If no control keys are held, all miniature keys are live. If control keys in one whole tone scale only are held, all miniature keys in the same whole tone scale are live. Others are dead. If control keys in both whole tone scales are held, only the same keys and those in octave relation thereto in the miniature keyboard are live.

3,780,204
ELECTRICAL PENETRATION ASSEMBLY

Leland W. Oliver, Phoenix; Francis H. Ingham, Scottsdale, and Edward G. Dubell, Phoenix, all of Ariz., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 25, 1972, Ser. No. 256,807
Int. Cl. H01b *17/26*
U.S. Cl. 174—11 R **9 Claims**



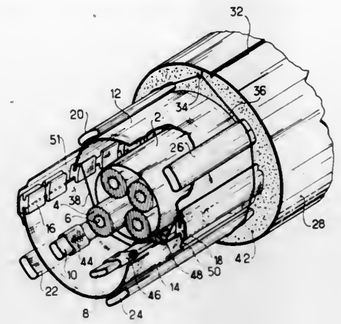
An electrical penetration assembly for installation in a containment wall formed of a nozzle extending through the wall and terminating in flanges at each end thereof. A canister assembly formed of a pipe member is positioned within the nozzle and extends through the containment wall. A glass-sealed hermetic header is positioned in the pipe member at the first end thereof and is secured to the pipe member at one end. A plurality of electrical conductors, terminating in electrical contacts, extend through the header and are sealed thereto, each of the conductors extending through the header to the other end of the pipe member. Means are provided for supporting the conductors in the pipe member. Electrical contact terminals terminate the electrical conductors at the other end of the header. In addition, means are provided for securing the electrical contact terminal means to the other end of the pipe member. The securing means at the other end of the pipe member may comprise a second glass-sealed hermetic header. Electrical connection to the electrical contact in the header is made by individual electrical contacts. The first end of the pipe member is positioned at the external side of the containment wall, and a flange member is secured to the pipe end and adapted to be fastened to one of the nozzle flanges. In addition, a channel is formed in the flange member, the channel providing means for pressurizing the interior of the pipe member. Means are provided for determining leakage in the assembly. A terminal housing is secured to the flange member, the terminal housing providing environmental and mechanical protection for the terminal area.

3,780,205
THERMAL INSULATION DEVICE FOR A VERY LOW-TEMPERATURE LINE

Marcel Aupoix, 10 rue Maublanc, Paris, France (75015); Francois Muisson-Franckhauser, 94 Blvd. de France, Brettigny-sur-Orge, France (91220); Jean-Marie Leroux, 5 rue Eugene Delacroix, Grenoble, and Roger Prost, Domaine Saint-Hugues, Saint-Egreve, both of France (38)

Filed Aug. 23, 1972, Ser. No. 283,133
Claims priority, application France, Aug. 23, 1971, 7130534
Int. Cl. H01v *11/00*
U.S. Cl. 174—15 C **8 Claims**

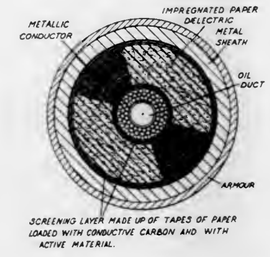
Thermal insulation device for a very low-temperature line comprising a thermal screen around the line, a pulverulent insulating material and an outer casing surrounding the whole device. The thermal screen consists of two half-shells made of an invariable alloy and assembled longitudinally by means of thermally and electrically insulating spacers so as to enable the degassing of the pulverulent insulating material from the inside of the screen.



3,780,206
ELECTRIC CABLES

Edward Henry Reynolds, London, England, assignor to British Insulated Callender's Cables Limited, London, England

Division of Ser. No. 20,670, March 18, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,553
Int. Cl. H01b *9/02, 3/48*
U.S. Cl. 174—36 **3 Claims**



A conductive or semiconductive fibrous sheet material used as an electric screen in contact with the dielectric fluid of high voltage cables having a fluid impregnated dielectric is loaded both with conductive carbon and with at least one active, finely divided material selected from the group consisting of aluminium oxide and such other metallic oxides, hydrated metal oxides, metal hydroxides, metal carbonates and basic metal carbonates as have adsorptive powers comparable with that of active finely divided aluminum oxide. The dielectric is free of any adsorbent.

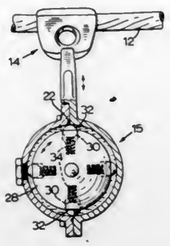
3,780,207
VIBRATION DAMPER

Noble Wellington Crosby, Trenton, and Robert Clinton Walker, Newmarket, Ontario, both of Canada, assignors to Lacal Industries Limited, Newmarket, Ontario, Canada

Continuation-in-part of Ser. No. 163,882, July 19, 1971. This application July 5, 1972, Ser. No. 269,188
Int. Cl. H02g *7/14*
U.S. Cl. 174—42 **12 Claims**

This invention concerns a vibration damper for a suspended cable comprising a housing, means for clamping said housing to a suspended cable, said housing having a sealed chamber, an inertia member in said sealed chamber, resilient means in said sealed chamber compressible in the spacing between said

sealed chamber wall and said inertia member and maintaining said inertia member spaced from the wall of said sealed chamber under static conditions, said resilient means being compressible as said housing member moves with respect to



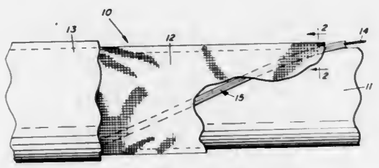
said inertia member under conditions of vibration of said housing, a viscous damping fluid in said sealed chamber, said viscous damping fluid having a viscosity to dampen vibration as it is displaced in said chamber by said inertia member under conditions of vibration.

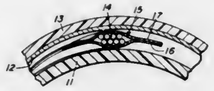
3,780,208

COMPOSITE HOSE HAVING A GROUNDING WIRE ENCLOSED IN A SLEEVE AND WRAPPED ABOUT THE CORE TUBE OF THE HOSE

Dewey E. Whittaker, Ravenna, and Charles D. Jenks, Kent, both of Ohio, assignors to Samuel Moore & Company, Mantua, Ohio

Filed June 5, 1972, Ser. No. 259,661
Int. Cl. F16l *11/12*
U.S. Cl. 174—47 **12 Claims**





A composite hose adapted for conveying pressurized pulsating fluids is provided with a grounding wire secured to a protective sleeve helically wound about the core tube of the hose and adapted to slip as a unit relative to the core tube and surrounding fibrous reinforcing sheath as the hose expands radially in response to pulsating pressure.

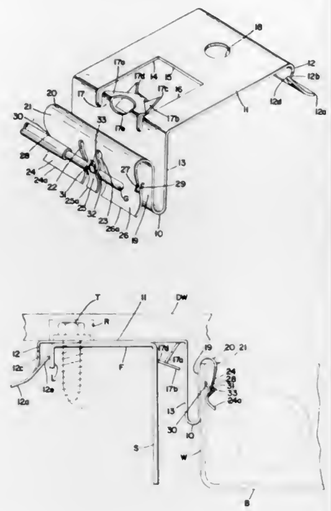
3,780,209

CLIP FOR SECURING CONDUIT BOXES TO METAL DRY WALL STUDS

Jerome T. Schuplin, Parma Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio

Filed Sept. 27, 1972, Ser. No. 292,813
Int. Cl. H02g *3/08*; **F16b** *2/24*
U.S. Cl. 174—51 **17 Claims**

A one-piece clip is provided which can be quickly and easily secured to the flange of a channel stud and to a conduit box without the aid of fastening means other than that which is an integral part of the clip. The clip is provided with barbs or prongs which engage the web and flange lip of the stud for preventing displacement of the clip relatively to the stud and box. A feature of the invention is the provision of means formed integrally with the clip for the securement to the clip



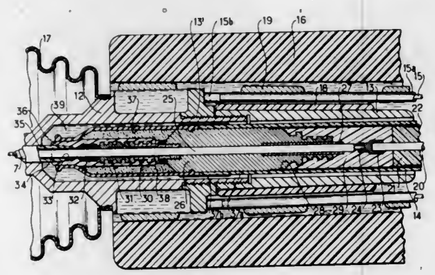
of the ground wire of a three wire system, as well as means in the clip for receiving a screwdriver or the like for the purpose of biasing portions of the clip away from other portions, whereby to facilitate attachment of the clip to the stud and box.

3,780,210

CONNECTION DEVICE FOR SUBMARINE REPEATER

Lucien Rocton, Malakoff, France, assignor to Campagnie Industrielle des Telecommunications Cit-Alcatel,, Paris, France

Filed Dec. 18, 1972, Ser. No. 316,027
Int. Cl. H02g *15/14*
U.S. Cl. 174—70 S **8 Claims**



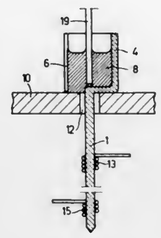
Connection device for connecting a submarine repeater and a coaxial cable having an outside conductor made of aluminum, comprising particular means to be implemented for connecting a repeater to a submarine cable of the coaxial type whose outer conductor is made of aluminum, these means being imposed by the necessity of avoiding the forming of an electrochemical couple between the aluminum of the line cable and the copper of the connecting cable of the repeater having sea water as its electrolyte.

3,780,211

INSULATING PRINTED-CIRCUIT BOARD HAVING PIN-SHAPED CONNECTING MEMBERS

Francis Vernet, 49, rue Gay-Lussac, Paris, France

Filed Dec. 29, 1971, Ser. No. 213,252
Claims priority, application France, Jan. 8, 1971, 7100487
Int. Cl. H05k *1/10*
U.S. Cl. 174—68.5 **4 Claims**



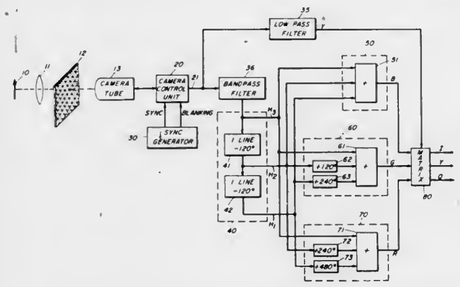
A printed circuit board having connection members mounted thereon. Connecting wires of circuit elements are inserted into sleeves of the connection members which are inserted in the insulating printed-circuit board. The connecting wires are then connected by means of solder carried in the sleeves. The sleeves project from one side of the board, and pin-shaped sections of the connection member project from the other side of the board.

3,780,212

COLOR FILTER AND SINGLE TUBE COLOR TELEVISION CAMERA SYSTEM UTILIZING SAME

William E. Glenn, Jr., Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,892
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.4 ST **18 Claims**



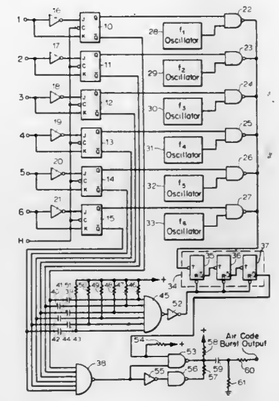
A system for generating three coherent color component signals representative of the color content of a scene. A color stripe filter is disposed in the optical path of the scene, the filter having three sets of parallel stripes, each set having a different characteristic color and a different orientation in the plane perpendicular to the optical path. Means are provided for electronically scanning the image projected through the filter in a line pattern and for generating signals representative of the filtered image. Delay means responsive to the output of the scanning means simultaneously derive first, second, and third video signals generated during three successive scanlines. Further provided are first, second, and third combining means, each of which combines the three video signals in a different phased relationship to generate one of the coherent color component signals. In a preferred embodiment of the invention, yellow, cyan, and magenta colored stripes are utilized to derive the red, green and blue primary color signals.

3,780,213

AIR CODE BURST GENERATOR

Hyacint E. Harna, Cicero, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 20, 1971, Ser. No. 209,975
Int. Cl. H04n *1/44*; **H03k** *1/00*
U.S. Cl. 178—5.1 **12 Claims**



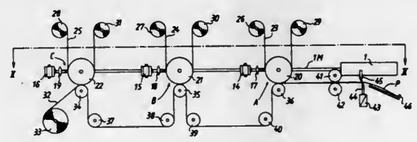
An air code burst generator for a subscription television system generates a discrete-frequency burst signal for each of a plurality of different applied code pulses. A higher harmonically-related continuous-wave signal is generated by a crystal controlled oscillator and divided down to the burst frequency by a counter, which is reset to an initial counting state upon the receipt of each code pulse to insure proper phasing of the transmitted burst signals. A novel output circuit maintains a predetermined average output level in the absence of burst signals.

3,780,214

METHOD AND APPARATUS FOR MAKING COLOR PRINTS ON PAPER

Friedrich Bestenreiner, Grunwald; Josef Helmberger, Munich; Rudolf Muller, Deisenhofen, and Walter Simm, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 16, 1971, Ser. No. 172,158
Claims priority, application Germany, Aug. 17, 1970, P 20 40 665.9
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.2 R **34 Claims**



Color prints of multicolored originals are obtained on absorbent paper by exposing recording layers each of which consists of a differently pigmented material to the action of electrooptically regulated laser beams so that the thermal images formed by the beams are representative of correspondingly colored portions of the original. The thermal images are applied to a strip of paper so that the differently colored images of the same original overlie each other. The recording layers can be provided on the paper strip or on discrete expendable or reusable flexible carriers which are transported across the paths of the respective laser beams. Such beams are produced by a 10.6μ-CO_2 laser which emits a main beam and by partly

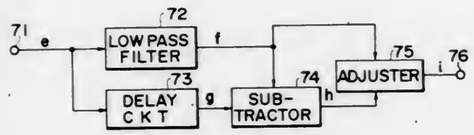
and fully reflective mirrors which are placed into the path of the main laser beam. The recording layers may consist of liquid, pasty or pulverulent material.

3,780,215

CIRCUIT FOR COMPENSATING SHARPNESS OF PICTURE IN COLOR TELEVISION RECEIVER

Akira Shibata, Higashi-Koganei, and Masanori Oguino, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 17, 1970, Ser. No. 90,404
Claims priority, application Japan, Nov. 24, 1969, 44/93584
Int. Cl. H04n *9/00, 5/14*
U.S. Cl. 178—5.4 R **1 Claim**



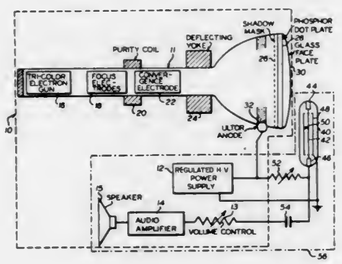
A circuit for compensating the sharpness of the picture in a color television receiver comprising a delay circuit and a low-pass filter applied respectively with the luminance signal in a video signal, and a subtractor connected to the delay circuit and the low-pass filter to receive the respective outputs from them whereby to impart a preshoot and an overshoot to the luminance signal.

3,780,216

APPARATUS FOR DETECTING IONIZATION RADIATION EMANATING FROM A TELEVISION RECEIVER

Frank Viscardi, 16 Benson Rd., Glen Rock, N.J.

Filed July 13, 1971, Ser. No. 162,050
Int. Cl. H04n *9/16, 5/44*
U.S. Cl. 178—5.4 R **7 Claims**



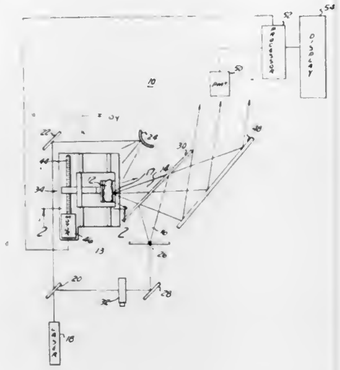
An apparatus for detecting ionization radiation, such as x-ray radiation, emanating from a television receiver such as the color picture tube, voltage regulator tube and high voltage rectifier tube thereof. The apparatus includes a detection means, such as a Geiger counter tube. This tube is operatively connected in parallel to the high voltage supply that drives the picture tube and the audio portion of the receiver for providing an aural alarm signal through the speaker in response to the detection of radiation above a minimum allowable level. If the high voltage rises, such as due to failure of the high voltage regulation circuit, the sensitivity in the Geiger tube rises, as does the amount of radiation, which causes a distinct aural alarm through the speaker.

3,780,217

HETERODYNE IMAGING DEVICE FOR PROVIDING HIGH RESOLUTION IMAGES

Takeo Sawatari, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 11, 1972, Ser. No. 252,232
Int. Cl. H04n *1/26, 7/18*
U.S. Cl. 178—6 **10 Claims**



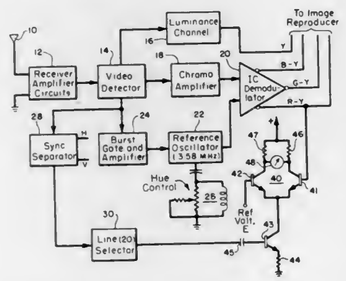
Several heterodyne microscopes are illustrated herein in which light from a point source is directed to interfere with light scattered from an object to provide a large area interference pattern representing a point on that object. Scanning apparatus varies the interference pattern to represent different object points. Conventional heterodyne signal processing apparatus processes light from the interference pattern to provide an image. The resolution of the image is determined by the size of the point source and by the percentage of the area of the interference pattern from which the processing apparatus receives signals. A high resolution image is obtained by using a small pinhole aperture to provide the point source and by using a diffusive surface to receive and scatter light from the interference pattern to the signal processing apparatus.

3,780,218

CIRCUIT FOR ESTABLISHING CORRECT HUE SETTING IN COLOR TELEVISION USING VIRS SIGNAL

John L. Rennick, Elmwood Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 20, 1971, Ser. No. 173,439
Int. Cl. H04n *9/46*
U.S. Cl. 178—5.4 HE **1 Claim**



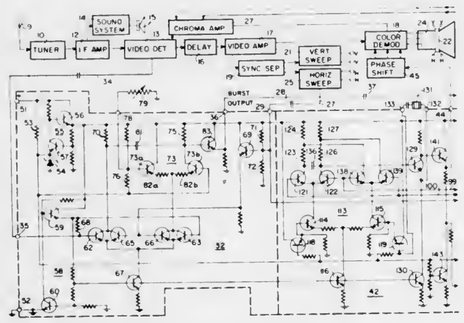
A circuit arrangement for a color television receiver for indicating correct hue control setting by utilizing a VIR signal component included as part of the received television signal. A differential amplifier is gated on during the occurrence of the VIR signal whereby an appropriate output of the receiver's demodulator, e.g., the R-Y color-difference output, is compared with a suitable reference voltage and a control voltage developed if there are any phase differences between the chrominance reference information included in the VIR signal and the color burst signal controlling the output frequency of the reference oscillator. In one embodiment a metering circuit is connected between respective outputs of the differential amplifier as a visual indication for setting the conventional viewer-operated hue control. In another embodiment, a closed or phase locked loop is utilized to effect any necessary hue corrections automatically.

3,780,219

SIGNAL PROCESSING CIRCUIT

John J. O'Toole, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 1, 1972, Ser. No. 258,846
Int. Cl. H04n *9/44, 9/48*
U.S. Cl. 178—5.4 HE **20 Claims**



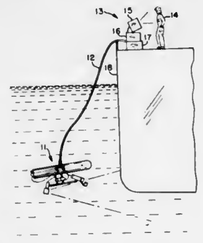
A color television receiver has an integrated circuit burst amplifier and hue control, voltage controlled subcarrier oscillator, APC detector and ACC detector. Simplified filtering and adjustment of the components on the integrated circuit minimizes the bonding pads required for the circuit and reduces the number of external components normally required.

3,780,220

REMOTE CONTROL UNDERWATER OBSERVATION VEHICLE

Ronald B. Fugitt, Power; Richard W. Uhrich, and Jimmy L. Held, both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1972, Ser. No. 280,703
Int. Cl. G03b *17/08;* **H04n** *7/18*
U.S. Cl. 178—6.8 **11 Claims**



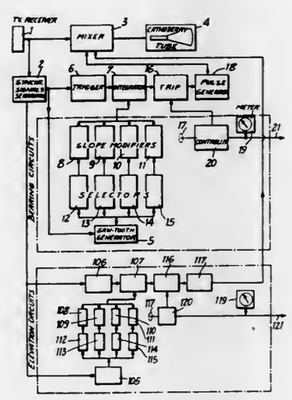
The submarine vehicle is connected to a surface operating station by means of a control tether. The control tether contains conduits supplying hydraulic fluid under pressure as well as electrical power to the submarine vehicle. The submarine vehicle is controlled in depth by means of a buoyancy chamber comprising two telescoping chambers which are displaced with respect to each other by means of an internal motor means. A support system attached to the buoyancy chamber provides mounting for a camera to view the underwater location surrounding the submarine vehicle. A combination navigation instrument is mounted on the submarine vehicle and cooperates with the camera to provide an indication of heading and inclination of the vehicle as well as a number of turns the vehicle has made since its launch.

3,780,221

MEASURING OF THE COORDINATES OF A SUBJECT THROUGH A TELEVISION RECEIVER

Jean Raymond Narbaits-Jaureguy, 1, Rue Louis Mercier, Malakoff, France

Filed June 8, 1964, Ser. No. 373,577
Claims priority, application France, June 7, 1963, 63937296
Int. Cl. H04n *3/00*
U.S. Cl. 178—6.8 **2 Claims**

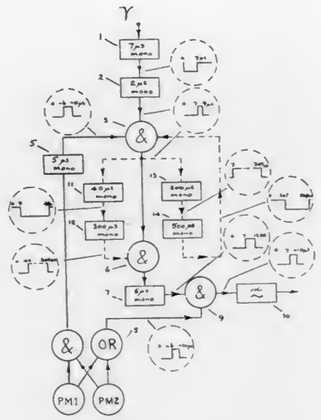


1. Apparatus for measuring the bearing or elevation of a target displayed on a television screen, comprising a television camera for scanning the area of the target and providing a video signal to a receiver with a cathode ray tube, and, for each bearing or elevation axis, a first saw-tooth generator energised respectively during the synchronisation cycle of the receiver by a synchronising signal, a plurality of selectors comprising triggers successively actuated by a plurality of separate increasing voltages of said saw-tooth signal, a corresponding plurality of slope modifiers each comprising in series an electronic switch and a capacity or a resistance placed in parallel with respect to each other, an integrator R/C incorporating these capacities or resistances and providing a distorted saw-tooth signal, a trip circuit which operates when the voltage of said distorted saw-tooth signal exceeds an adjustable reference voltage and provides a pip signal, a voltmeter measuring said reference voltage, a generator of short pulses of predetermined length energized by said latter trip circuit, and a mixer for adding the video signal and said short pulse and suppling the whole to the T.V. receiver.

3,780,222
ELECTRONIC WEAVE COMPENSATION

Barry Thomas Pickstock, London, and Denis Manktelow Neale, Brentwood, both of England, assignors to EVR Enterprises, London, England

Filed Mar. 13, 1972, Ser. No. 234,166
Claims priority, application Great Britain, Mar. 12, 1971, 6,772/71
Int. Cl. H04n *5/36*
U.S. Cl. 178—7.2 **3 Claims**

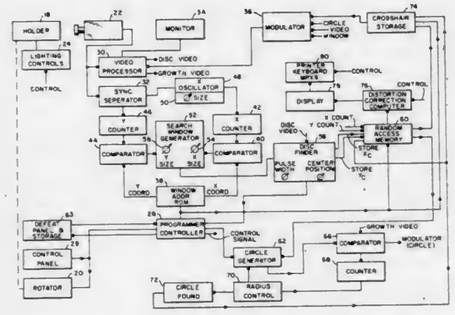


In a system for reproducing television signals from a photographic record medium in which the film is scanned by a flying spot scanner as it is transported through a film gate, apparatus for reducing the effect of lateral weave of the film as it passes through the gate. The effect of weave in the finally reproduced television signal is reduced by generating a weave compensation signal representative of the deviation of the film record medium from a standard datum, and then using that signal to effect an appropriate transverse movement of the scanning raster as to compensate for transverse movement of the film as it passes the scanning gate.

3,780,223
ANTIBIOTIC SENSITIVITY MEASUREMENT SYSTEM

Russell C. Perry, Smithtown, N.Y., assignor to Artek Systems Corp., Farmingdale, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,351
Int. Cl. G06f *3/05*; **G06m** *11/04*; **H04n** *7/18*
U.S. Cl. 178—6.8 **20 Claims**

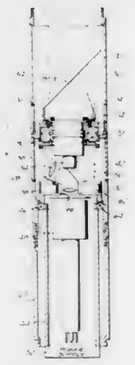


An antibiotic sensitivity measurement system which measures and displays the size of zones of inhibition which develop around discs of antibiotics on a microbiological diffusion assay. The system first accurately locates the actual centers of each disc by generating a search window and finding each disc from a digitized picture within the window. The system then generates a plurality of concentric circles at predetermined increments about each center until a required number of coincident points are detected between the circles and the digitized perimeter of the zones.

3,780,224
OPTICAL SYSTEM FOR TELEVISION CAMERA

Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,883
Int. Cl. H04n *5/26*
U.S. Cl. 178—7.2 **8 Claims**



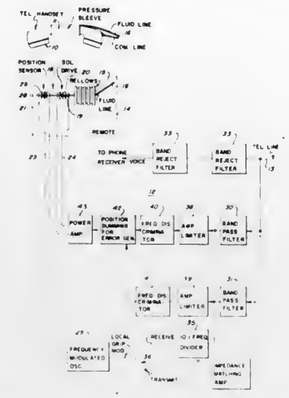
An electro-optical mast system having a plurality of cameras mounted in a vertical array, each of the cameras being operable to view a predetermined portion of 360° in a horizontal plane. Switching means are provided for alternately switching one of the cameras to an operable condition. Each of the cameras may have a field of view formed of a pair of opposed acute angles and switching means are provided for the field of view for switching the field of view from one of the acute angles to another of the acute angles. In addition, an overhead camera may be provided having a field of view whose axis is perpendicular to the horizontal plane. Moreover, each of the cameras may have a movable mirror associated therewith. The mirror is rotated in azimuth and elevation for target tracking operation of the camera in combination with a telescopic lens.

3,780,225
TACTILE COMMUNICATION ATTACHMENT

Thomas D. Shannon, 486 Broadway, New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,892
Int. Cl. H04m *1/21*
U.S. Cl. 179—2 A **13 Claims**

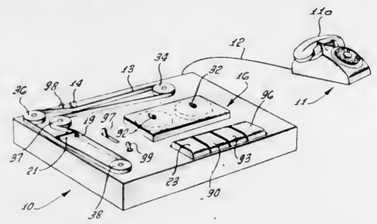
A tactile communication device including a responsive grip attachment and a control unit which are electro-mechanical in operation and are intended to be used at least in pairs, to establish or permit tactile communication between two or more parties. The two devices form a closed loop feedback control system whose output to each party is the pressure and volume variations of the responsive grip attachment experienced by both parties.



3,780,226
TELEPHONE ANSWERING APPARATUS

Sava W. Jacobson, 4915 Tyrone Ave., Sherman Oaks, Calif.

Filed Nov. 3, 1971, Ser. No. 195,400
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 R **30 Claims**



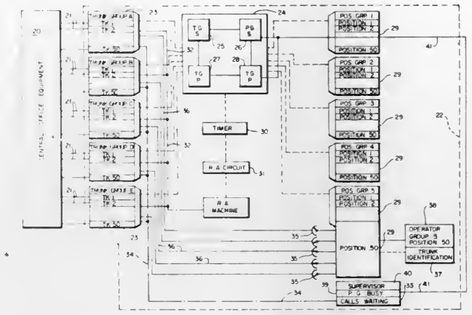
A telephone answering apparatus uses an announcement tape loop driven continously throughout an answering cycle by the same mechanism which drives a tape cassette for recording incoming messages. Upon occurrence of a ringing signal, the drive mechanism is energized, the telephone line is loaded inductively and the announcement is provided via an amplifier to the line. When an electrically conductive segment on the tape loop reaches a first set of contacts, a flip-flop is set to disable the amplifier and unsaturate a record head which then records the unamplified incoming message on the cassette tape. The answering cycle terminates when the tape loop conductive segment reaches another set of contacts. Provision is made to record a new announcement using the telephone as a microphone.

3,780,227
TELEPHONE CALL ANSWERING AND ALLOTTING TRANSFER SYSTEM

Robert M. Pirnie, Jr., and Robert M. Pirnie, III, both of Montgomery, Ala., assignors to Communication Equipment & Contracting Co., Inc.

Filed Feb. 22, 1972, Ser. No. 227,736
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 C **2 Claims**

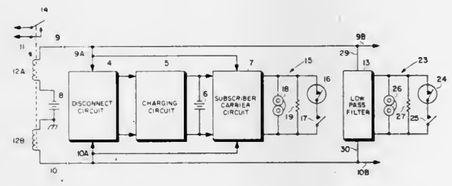
The present disclosure is directed to a telephone call answering system where a customer installation has a plurality of incoming trunk lines and a plurality of operator serviced position circuits in which incoming calls are directed to available operator positions through a trunk and position preference and selector circuit which is actuated by a calling trunk circuit. If all operator positions are busy after a predetermined time, a timer connects a recorded announcement machine into the calling circuit to advise the calling trunk that all positions are busy and to await an operator. The first free operator is automatically connected to any calling trunk.



3,780,228
AUTOMATIC DISCONNECT CIRCUIT FOR REDUCING DIAL PULSE DISTORTION CAUSED BY SUBSCRIBER CARRIER EQUIPMENT

James A. Stewart, Menlo Park, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 1, 1972, Ser. No. 230,704
Int. Cl. H04h *1/08*
U.S. Cl. 179—16 A **13 Claims**

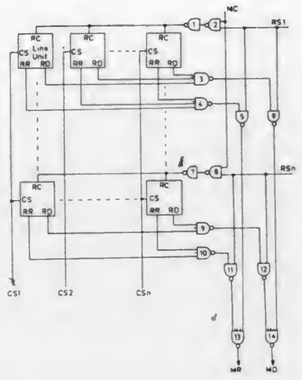


A local subscriber battery is connected through a battery charging circuit, a disconnect circuit, and a cable pair to a central office talking battery. The disconnect circuit includes a pair of transistor switches that are connected in series between associated lines of the cable pair and the charging circuit for selectively blocking line current to the latter at the start of a dial pulse; a first resistor-capacitor network for detecting initiation of a dial pulse; and a second resistor-capacitor network for controlling the operation of the switches. The second network is responsive to operation of the first network for holding the switches open to prevent charging current flowing on the cable pair for a prescribed time interval after detection of the leading edge of a dial pulse. This ensures that the contacts of the A-pulsing relay in the central office drop out in response to the dial pulse.

3,780,229
IDENTIFICATION OF SIGNALLING LINES BY SCANNING

Peter George Main, Seoul, South Korea, assignor to Sperry Rand Australia, Canberra, Australia

Filed Mar. 1, 1972, Ser. No. 230,809
Int. Cl. H04q *3/72*
U.S. Cl. 179—18 FF **6 Claims**

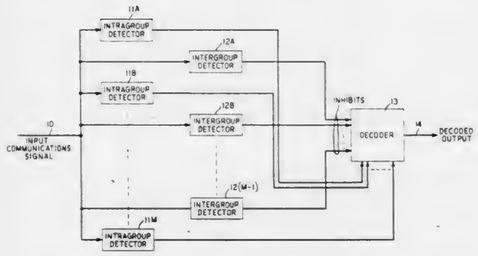


Automatic detection and location of a change of electrical state occurring on one of a plurality of lines by the use of individual bistable devices connected to the lines, the bistable devices having outputs connected in matrix-form and wherein a discriminating signal is repeatedly applied via a control logic to the outputs of a diminishing fraction of the total number of bistable devices, the control logic responding to a signal from a gate connected to detect the changed state of a bistable device located in the fraction of the total bistable devices next to be searched by the application of the discriminating signal.

3,780,230
MULTIFREQUENCY TONE RECEIVER

Edward George Bowen, Laurence Harbor, and George Wilmer Dick, Colts Neck, both of N.J., assignors to Bell Telephone Labortories, Incorporated, Murray Hill, N.J.

Filed Nov. 10, 1972, Ser. No. 305,277
Int. Cl. H04m *1/50*
U.S. Cl. 179—84 VF **15 Claims**

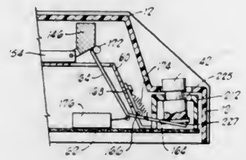


Apparatus for detecting the presence in a communication signal of each of a predetermined plurality of multifrequency tones, which might for example encode alpha-numeric symbols, without the use of sharply tuned bandpass filters. Each frequency in a multifrequency tone is selected from a different one of a plurality of frequency groups. Two or more first frequency detectors respond to and identify valid frequencies within each frequency group. One or more second frequency detectors monitor undesired signal energy between frequency groups which can generate spurious intra-group frequencies. A symbol decoder, jointly responsive to first and second detectors, is arranged to be inhibited by any of the second detectors when significant undesired signal energy appears.

3,780,231
RECORDER HAVING MANUALLY ACTUATED MEANS FOR PIVOTAL VERTICAL MOVEMENT OF THE HEAD INTO OPERATING POSITION

Lawrence R. De Bell, Bethany, and David D. Price, Jr., Oklahoma City, both of Okla., assignors to Economy Co., Oklahoma City, Okla.

Filed Mar. 31, 1972, Ser. No. 239,944
Int. Cl. G11b *21/02, 5/54*
U.S. Cl. 179—100.2 CA **11 Claims**

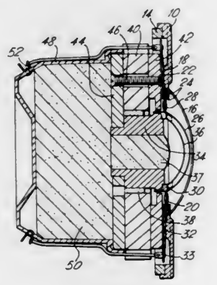


A tape transport device, particularly adapted for usage of standard-sized cassettes, that has an improved drive system and control system which contributes to higher reliability as well as economy of manufacture. The tape transport device includes a three motor drive system operating in conjunction with a lever-actuated control bar carrying both the reproducing transducer and capstan idler, and which may also carry a recording head for special designed usages. Control actuation members function in integral interaction with a printed circuit assembly which forms the underclosure of the transport device and imparts advantageous mechanical and electrical circuit characteristics to the device.

3,780,232
LOUDSPEAKER DIAPHRAGM

Leslie Russell Ward, Bildeston, England, assignor to Rola Celestion Limited, Suffolk, England

Filed Jan. 4, 1972, Ser. No. 215,332
Claims priority, application Great Britain, Jan. 4, 1971, 331/71
Int. Cl. H04r *7/02*
U.S. Cl. 179—181 R **9 Claims**

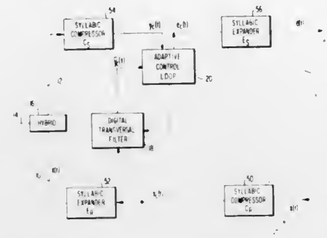


A diaphragm assembly for an electro-acoustic transducer has a central soft dome portion with a semi-rigid surround such that both the dome and surround can undergo substantial excursions. An electro-acoustic transducer incorporating the diaphragm has a totally enclosed chamber to the rear of the voice coil. The diaphragm assembly is particularly suited to the frequency range of 500 c/s to 5 Kc/s at powers of up to 50 watts.

3,780,233
ADPATIVE ECHO CANCELLERS WITH COMPANDORS

Samuel J. Campanella, Gaithersburg; Henri G. Suyderhoud, Potomac, and Michael Onufry, Jr., Gaithersburg, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Sept. 20, 1971, Ser. No. 181,779
Int. Cl. H04b *63/20*
U.S. Cl. 179—170.2 **5 Claims**

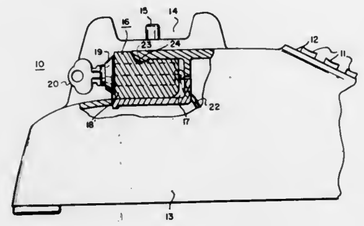


An echo canceller with compandors results in improved echo return loss enhancement. The incoming signal is compressed prior to its application to a digital transversal filter. The filter produces an approximation of the integral of the syllabically compressed incoming signal times a replica of the impulse response of an echo return path including a compressor. The echo signal is also syllabically compressed and applied to an adaptive control loop wherein the approximation is subtracted from the echo and the replica of the impulse response is varied in accordance with the difference obtained.

3,780,234
LOCK FOR PRESS BUTTON TELEPHONE

John K. Roof, Sun City, Ariz., assignor to Woodrow T. Morrow, Paradise Valley, Ariz.

Filed Apr. 20, 1972, Ser. No. 245,947
Int. Cl. H04m *1/66*
U.S. Cl. 179—189 R **3 Claims**



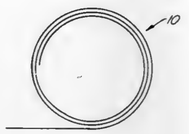
A lock for prohibiting the transmitting of outgoing telephone calls on a Touch Tone telephone without interferring with incoming calls.

3,780,235
ROADBED APPARATUS FOR MODEL VEHICLES

Herman F. Deyerl, P.O. Box 3721, Santa Monica, Calif., and Robert J. Reynolds, 1543 Pine Valley, Ann Arbor, Mich.

Filed July 11, 1972, Ser. No. 270,654
Int. Cl. B60l *1/00*
U.S. Cl. 191—13 **9 Claims**

Apparatus that provides a roadbed for electrically powered model vehicles wherein the running surface of the roadbed comprises conducting elements for transmitting electrical signals to the vehicles for steering and speed control. The roadbed is constructed and arranged in more than one modification each of which facilitates packaging and storage of the

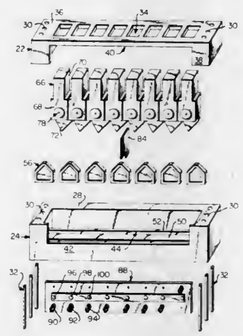


game set. Accessories are also provided for mounting on the roadbed.

3,780,236
PUSH BUTTON SWITCH ASSEMBLY WITH SLIDABLE INTERLOCKING MEANS PREVENTING SIMULTANEOUS OPERATION OF TWO OR MORE PUSHBUTTONS

Wayne B. Gross, Glastonbury, Conn., assignor to General Signal Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 867,325, Oct. 17, 1969, abandoned. This application May 18, 1971, Ser. No. 144,553
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 EA **12 Claims**



A switch assembly with a housing having fixed contacts, push button means reciprocable within the housing, movable contact means disposed within the push button actuator means and slide transfer motion means disposed between adjacent push button actuator means to prevent operation of more than one push button at a time.

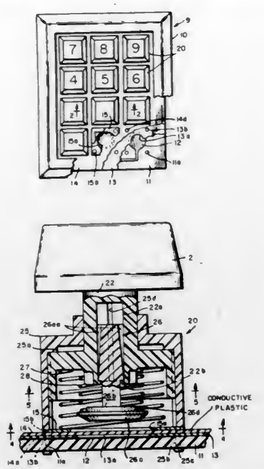
3,780,237
KEYBOARD SWITCH ASSEMBLY WITH MULTI-SECTIONAL KEY ACTUATOR

Richard E. Seeger, Jr., Topsfield, and John G. Coulter, Reading, both of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed Oct. 16, 1972, Ser. No. 297,721
Int. Cl. H01h *17/14, 3/12*
U.S. Cl. 200—5 A **8 Claims**

A keyboard array including a board having a conductive pattern thereon, a resilient conductive layer, a first or external plunger supported in a housing and slidable therein, a second or internal plunger supported in the external plunger and first

resilient biasing means urging the first plunger towards the housing and away from the conductive layer and a second



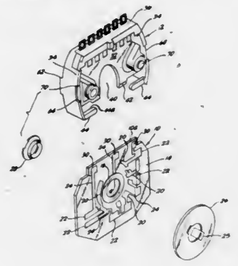
resilient biasing means urging the second plunger away from the first plunger and towards the conductive layer.

3,780,238

MULTI SECTIONAL ROTARY WAFER SWITCH ASSEMBLY WITH IMPROVED SUPPORT AND TERMINAL CONNECTOR FOR THIN CIRCUIT MODULE

Roy G. Brant, Huntington Beach, and Stephen K. Shepard, Pasadena, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 27, 1971, Ser. No. 212,061
Int. Cl. H01h *21/78*; **H05k** *1/07*
U.S. Cl. 200—11 DA **12 Claims**



A carrier and terminal connector for a nonconductive circuit module in the form of a thin wafer having oppositely disposed flat surfaces and an electrical cicuit network deposited on at least one surface thereof including terminal pads positioned along at least one edge thereof. The carrier, terminal connector and non-conductive circuit module are used in a multi-sectional rotary wafer switch assembly. A conductive rotor engages printed circuit terminal paths disposed on the face of the circuit module.

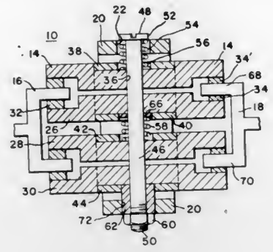
3,780,239

ELECTRICAL CONTACT ASSEMBLY

Edward F. Guidosh, Hubbard, Ohio, assignor to Westinghouse Electric Corporation, Gateway Center, Pittsburgh, Pa.

Filed Oct. 27, 1972, Ser. No. 301,688
Int. Cl. H01h *19/58*
U.S. Cl. 200—11 B **6 Claims**

Electrical contact assembly having at least four contact structures. Each contact structure is positioned around a centering bolt. Compressed springs are located between each inner contact structure and between the upper contact structure and the upper end of the centering bolt. A sleeve is located between the lower contact structure and the lower end



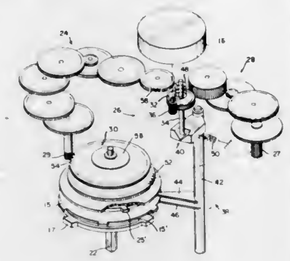
of the centering bolt. The centering bolt extends through openings in a contact carrier. Movement of the contact structures in a direction parallel to the axis of the centering bolt is provided by changing the compression of the springs and/or moving the centering bolt.

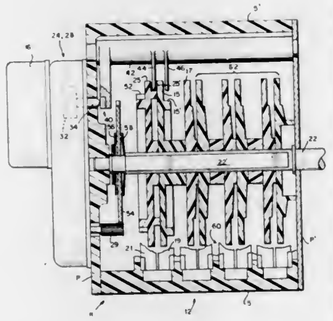
3,780,240

MECHANICALLY ACTUATED PULSER TIMER

Richard W. Stafford, Clayton, and Maurice E. Schuder, Indianapolis, both of Ind., assignors to P. R. Malloy & Co. Inc., Indianapolis, Ind.

Filed May 15, 1972, Ser. No. 253,286
Int. Cl. H01h *43/10*
U.S. Cl. 200—38 R **9 Claims**





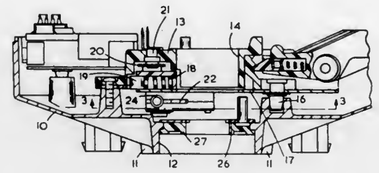
A clutch selectively couples a first set of cams to a constant speed timer motor, the clutch being activated in response to the first set of cams and a second set of cams.

3,780,241

SELF CANCELLING DIRECTION INDICATOR SWITCHES

Edward Cryer, Higham, Nr. Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 24, 1972, Ser. No. 246,584
Claims priority, application Great Britain, Apr. 29, 1971, 12,248/71
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.27 **2 Claims**



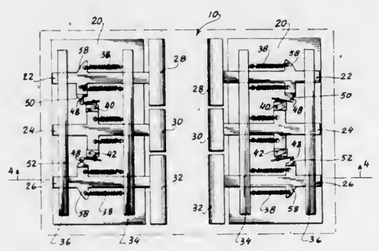
A self-cancelling direction indicator switch for a road vehicle comprising a body for attachment to a vehicle. An operating member is movable with respect to the body to complete the indicator lamp circuits in respective positions of the operating member relative to the body, and there is provided cancelling means for returning the operating member to a neutral position. The cancelling means is carried by the body and includes first and second annular members secured together, and defining an external groove by means of which the annular members are held captive on an inwardly projecting portion of the body. The first annular member includes an inwardly directed key for engagement in a slot in the steering shaft, and a projection on the first annular member effects return of the operating member to its neutral position when the steering shaft is rotated relative to the body.

3,780,242

SAFETY DEVICE FOR INDUSTRIAL MACHINES WITH IMPROVED MECHANICAL SENSOR AND ASSOCIATED CIRCUIT BREAKER ASSEMBLY

Jack Bendror, Sands Point, N.Y., assignor to Robbins and Bendror Associates, Inc., Port Washington, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,767
Int. Cl. H01h *3/16*; **H02h** *1/00*
U.S. Cl. 200—61.41 **12 Claims**



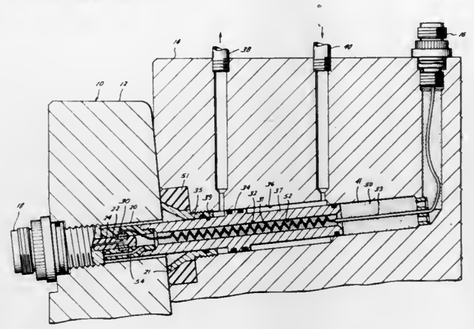
A safety device for industrial machines, having a plurality of individually movable mechanical sensor elements, sensing means for sensing relative movement between mechanical sensor elements, and circuit making and breaking means controlled by the sensing means, whereby the circuit making and breaking means is actuated to stop the machine on which the safety device is installed, when one of the mechanical sensor elements encounters an obstruction, such as an operator's hand, and relative movement between mechanical sensor elements results.

3,780,243

APPARATUS FOR MAKING AND BREAKING AN ELECTRICAL UNDERWATER CONNECTION BETWEEN RELEASABLE UNDERWATER MEMBERS

Paul C. Koomey, and Douwe de Vries, both of c/o P.O. Box 1637, both of Houston, Tex.

Filed Oct. 12, 1972, Ser. No. 296,880
Int. Cl. H01h *35/38, 33/60*
U.S. Cl. 200—82 R **7 Claims**



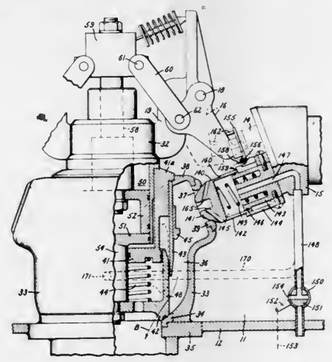
An apparatus for making and breaking an electrical underwater connection between releasable first and second members of an underwater connector by providing a fixed electrical contact on the first member and a movable electrical contact on the second member with means for moving the movable contact into and out of engagement with the fixed contact and penetratable sealing means on each of the members protecting the electrical contacts from water but allowing passage of the movable contacts into and out of engagement with the fixed contact. Piston and cylinder means on the second member for carrying the movable contact for making and breaking the electrical connection. A fluid bypass between both ends of the piston for allowing bypass of a flowable non-water soluble insulating compound between the male and female members as the piston is reciprocated.

3,780,244

GAS BLAST CIRCUIT BREAKER OF THE AXIAL BLAST TYPE

John W. Beatty, Newtown Square, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 18, 1972, Ser. No. 298,639
Int. Cl. H01h *33/82*
U.S. Cl. 200—148 B **9 Claims**



A gas-blast circuit breaker comprises arcing contacts connected in parallel with the usual current-carrying contacts and

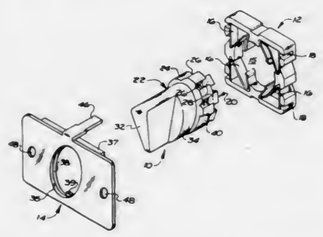
means for separating the arcing contacts to establish an arc therebetween after the current-carrying contacts have separated. One of the arcing contacts comprises an orifice through which the arc extends and through which a gas blast is developed by the opening of a blast valve downstream therefrom. The other arcing contact comprises a movable contact blocking flow through the orifice until the pressure downstream from the orifice has fallen in response to blast-valve opening to a sufficiently low level that critical flow will take place through the orifice immediately following separation of the arcing contacts and establishment of the arc therebetween.

3,780,245

ROTARY SWITCH WITH ENLARGED SHAFT JOURNALED IN AND REMOVABLE THROUGH SWITCH COVER

Elmer J. Beddow, Wichita, Kans., assignor to Elec-Iron, Inc., Wichita, Kans.

Filed July 10, 1972, Ser. No. 270,141
Int. Cl. H01h *19/14*
U.S. Cl. 200—155 R **10 Claims**



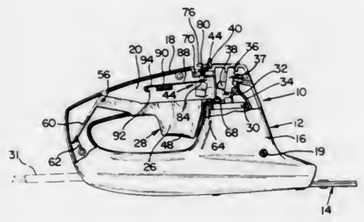
An electrical switch characterized by a series of rotatable contacts and fixed contacts in a switch body capable of making and breaking several circuits including an integrally formed one-piece rotary contact carrier, handle and enlarged connecting shaft with the width of the handle portion being no wider than the diameter of the connecting shaft so that the handle can be passed through the opening in the switch cover plate.

3,780,246

HAND-OPERATED TOOL WITH SWITCH ACTUATOR HAVING THREE-POSITION LOCK-OFF ASSEMBLY

Jacobus J. Beckering, Phoenix; Edwin J. Weber, and Ralph J. Secoura, both of Baltimore, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 22, 1972, Ser. No. 282,768
Int. Cl. H01h *21/10, 21/50*
U.S. Cl. 200—157 **7 Claims**



A portable, hand-operated, electric power tool such as a power shear for trimming grass or the like in which a switch actuator assembly includes a trigger on a handle for turning the tool "on" and "off". The trigger is normally biased "off" and can be manually operated to the "on" position when the operator has his hand on the tool handle. Means is provided to automatically lock the trigger temporarily in the "off" position when the operator removes his hand from the tool handle, and requires intentional release to reactivate the tool. The locking means is further constructed for permanent locking when the tool is stored between uses.

3,780,247

CONTACT ELEMENT HAVING NOBLE WEAR AREA

Robert M. Healy, Warrenville, and Ralph J. Hovey, Glen Ellyn, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 815,609, May 14, 1969, abandoned.
This application May 18, 1972, Ser. No. 254,815
Int. Cl. H01h *1/06*
U.S. Cl. 200—166 C **4 Claims**



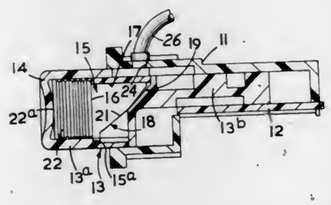
Electrical contact member having a limited surface area designed for active wearing engagement with another contact element, such limited area only having a relatively hard layer of noble metal affixed thereto, and the rest of the surface of the member having a relatively soft uniform layer of noble metal thereon, the structure of which corresponds to a self limiting immersion ion exchange deposition of that noble metal.

3,780,248

ELECTRICAL SWITCHES

Rex Martin, 263 Wensley Rd., Blackburn, Lancashire, England

Filed Feb. 23, 1972, Ser. No. 228,642
Claims priority, application Great Britain, Mar. 20, 1971, 7,541/71
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 A **7 Claims**



An electrical switch provided with a transparent, slidable, on-off operating member and a prism mounted in the operating member. The prism has a reflecting surface formed of two

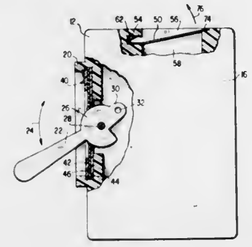
mutually inclined portions, each portion being disposed to reflect an image of one of a pair of legends indicating the operative condition of the switch so that either of the two images can be viewed at the end of the operating member depending upon the condition of the switch.

3,780,249

DUST SEAL HIGH PERFORMANCE BREAKER

George S. Harper, Cambridge, Md., assignor to Airpax Electronics Incorporated, Cambridge, Md.

Filed Apr. 28, 1972, Ser. No. 248,406
Int. Cl. H01h *9/04*
U.S. Cl. 200—168 G **17 Claims**



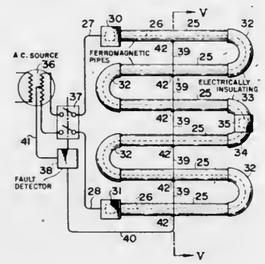
Disclosed is a high performance dust or explosion proof electrical circuit breaker. In one embodiment the breaker is provided with a dust seal flap for venting arcing gases to atmosphere while at the same time substantially reducing the entry of dust and dirt into the breaker housing. In a second embodiment the dust seal is replaced by a fine mesh screen for increased safety when the breaker is used in an atmosphere which may present a danger of explosion.

3,780,250

APPARATUS FOR HEATING THE SURFACE OF CONSTRUCTIONS

Masao Ando, Yokohamashi, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed Nov. 2, 1971, Ser. No. 194,966
Int. Cl. H05b *9/00, 1/02*; **H02h** *1/02*
U.S. Cl. 219—10.49 **1 Claim**



An economical apparatus is provided for heating the surface of constructions such as a road, floor, wall, etc. which comprises at least two juxtaposed ferromagnetic pipes having a wall thickness of at least twice the skin depth of a.c. flowing therethrough and an insulated electric wire passing in series through each inside of said ferromagnetic pipes, both the ends of which are connected to an alternating current source. When an alternating current is passed through said insulated electric wire, a secondary current is induced along both the inner and outer skin portions of said ferromagnetic pipes and heat is generated therein.

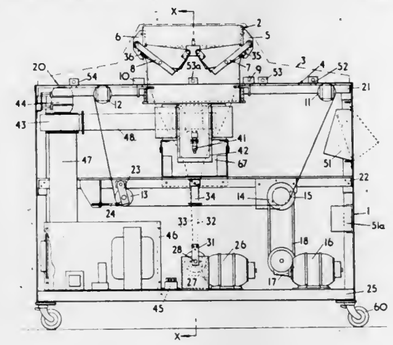
Further, the electrically neutral points of the ferromagnetic pipes are connected to each other by an electric conductor and a fault detecting means responsive to a flow of current in the conductor is provided to disconnect the insulated wire from the alternating current source upon occurrence of an electrical fault in the apparatus.

3,780,251

MICROWAVE HEATING APPARATUS

David Montgomery Kee, London, England, assignor to Micromatic Systems Limited, London, England

Filed Jan. 3, 1972, Ser. No. 215,053
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **10 Claims**



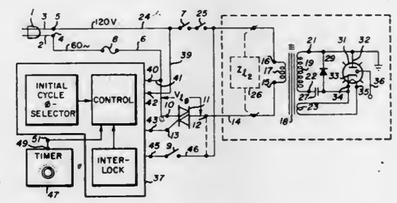
Microwave heating apparatus includes a microwave energy source feeding microwave energy to a cavity tuned to resonate at the frequency of the source. The cavity has aligned inlet and outlet ports and doors for closing the inlet and outlet ports during heating of an article within the cavity. Means are provided for inhibiting operation of the source while either door is not fully closed, and there is also provided an arrangement for transporting articles to be heated through the cavity. The microwave source may be a klystron coupled to the cavity through a cylindrical launch tube whose length is variable for tuning the cavity. A system is provided for sensing the presence of an article at preselected points on its path along the transport arrangement, and is connected to control circuitry for controlling operation of the arrangement. The apparatus may include manually operable means for setting a preselected heating time, or a system for automatically terminating heating on the detection of a predetermined radiation level in the cavity.

3,780,252

MICROWAVE OVEN POWER SUPPLY CIRCUIT

Paul Wythe Crapuchettes, Woodside, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Filed July 20, 1972, Ser. No. 273,615
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **17 Claims**



A microwave oven power supply includes a synchronous switch and a phase control circuit. The switch is electrically

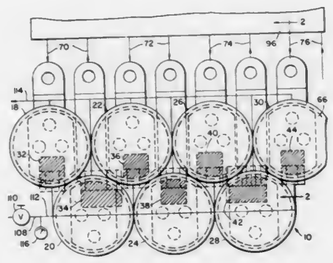
connected in series with the supply lines which, until actuated, maintains normally open the path for current flow to the transformers and other electrical components found within the oven power supply. An On-Off switch and interlocks are in series with the power line and an electrical circuit completed through the phase control circuit inhibits the operation of the power circuit until it is desired to commence cooking operations. The phase control circuit determines the proper phase of the applied line voltage for which the synchronous switch should be initiated. By design, this phase control circuit is matched to the transformer characteristics and senses the magnitude of the applied line voltage so that initial conduction of the synchronous switch falls within a preselected range which has been determined to minimize transient voltage spikes and/or in-rush current transients. In this way, the initiation of current flow in the high voltage transformer and filament transformer and other oven elements is delayed until the sinusoidal voltages of the power line are in the phase relationship that I have determined to be proper.

3,780,253

STRUCTURE FOR AND METHOD OF MESH WELDING

Charles Senn, 12633 Wilfred, Detroit, Mich.

Filed Feb. 16, 1973, Ser. No. 333,217
Int. Cl. B23k *11/10*
U.S. Cl. 219—58 **9 Claims**



A plurality of cylindrical welding guns for welding wire mesh in contact with each other staggered on each side of a linear transversely extending member of the wire mesh having off-center electrodes secured thereto with welding portions engageable with the wire mesh and insulated fixed electrodes positioned beneath the welding guns and wire mesh, which welding guns and electrodes secured thereto in conjunction with said fixed electrodes are adapted to produce welds at any of 2, 3, 4 and 6 inch spacing on simultaneous actuation of all of the welding guns through a single actuating media circuit having a single intake and a single outlet manifold, with all welding guns electrodes active as either welding electrodes or to provide a return circuit for welding electrodes during welding operations at all spacings, said welding guns beins constructed and arranged to permit location of all transformer structure therefor on one side of the welding guns without special clearance structure.

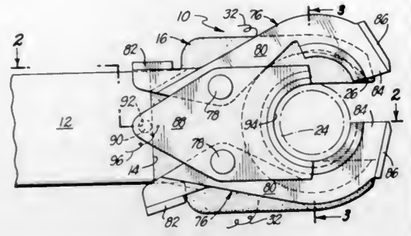
3,780,254

MULTI-ARC PIPE WELDING

Henry V. Rygiol, 3146 Purer Rd., Escovdido, Calif.

Filed Mar. 17, 1972, Ser. No. 235,705
Int. Cl. B23k *31/06*
U.S. Cl. 219—61 **3 Claims**

Pipe, tubing and the like can be satisfactorily welded without the use of tack welds, restraining clamps or the like so as to be in a desired alignment through the use of a plurality of separate electrodes mounted equidistant from one another around a ring-like area or path where a weld is to be created. Such electrodes are preferably mounted upon a holding means which in turn is rotatably mounted on a mounting member. Rotating means are provided for rotating the holding means around the path or area where a weld is to be created as



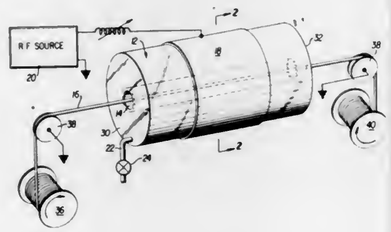
separate welding currents are supplied to the electrodes through appropriate supply means.

3,780,255

APPARATUS FOR HEAT TREATMENT OF SUBSTRATES

Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,014
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **19 Claims**



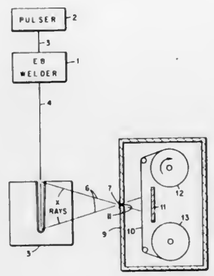
An apparatus for more efficiently creating high temperatures, particularly for the treatment of substrates. A central passage extends through the envelope and one electrode is disposed in the central passage. A second electrode is disposed around the envelope so that the electrodes are separated at least in part by the envelope. The gas conditions within the envelope are made to differ from the gas conditions exteriorly thereof and a radio frequency signal applied to the electrodes to excite the gas within the envelope to thereby generate a gaseous plasma. The amplitude of the radio frequency signal is, however, insufficient to generate a plasma outside the chamber defined by the envelope. Since the plasma does not contact the electrodes, the current flow between the electrodes is minimized and contamination of the gas by the electrodes is prevented. In addition, the surface area of the electrode in the central passage is substantially less than the surface area of the outer electrode thereby creating a plasma within the envelope which is more concentrated in the vicinity of the centrally disposed electrode. The plasma appears to induce a current in the centrally disposed electrode transverse to the axis thereof. This current is an order of magnitude higher than the average RF current between the electrodes and localized heating of the substrate is thus provided. A radio frequency balun transformer is provided for adjusting the power applied to the electrodes.

3,780,256

METHOD FOR PRODUCING SPIKE-FREE ELECTRON BEAM PARTIAL PENETRATION WELDS

Glenn L. Mara, Cupertino, Calif., and Robert C. McMaster, Delaware, Ohio, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 8, 1972, Ser. No. 278,858
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EM **4 Claims**



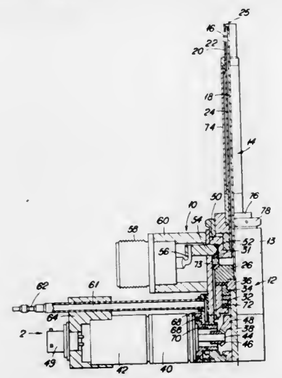
A technique is provided for prevention of "spiking" in electron beam partial penetration welds which involves pulsing the electron beam so as to prevent achievement of steady state conditions which cause such spiking. The rate of pulsing required is determined by the electron beam oscillation frequency which is a function of total beam power, beam power density, welding speed, and the properties of the particular material being welded.

3,780,257

ARC WELDING TORCHES FOR TUBE PLATE WELDING

Kenneth Stevens, Richmond, England, assignor to Foster Wheeler John Brown Boilers Ltd., London, England

Filed Sept. 1, 1972, Ser. No. 285,842
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R **8 Claims**



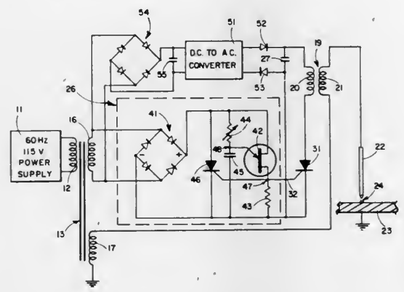
The torch described herein is for making internal bore welds. It has a stem carrying a non-consumable electrode and a body from which the stem projects. To make a weld, the stem is inserted into a bore so that the electrode is positioned near the join to be welded and the electrode is orbited around the join while an arc is maintained to make the weld. The stem has a core of high heat conductivity which is in contact with both the electrode and a heat sink block in the torch body. Provision is also made for the passage of inert shielding gas from the body and along the stem to the region of the electrode, this core and/or block having an extended surface area over which the inert shielding gas is arranged to pass so as to assist in cooling these and consequently the electrode.

3,780,258

ALTERNATING CURRENT ARC POWER SOURCE HAVING OPPOSITE POLARITY IGNITION PULSE

William F. Iceland, Los Alamitos, and Joseph W. Cuzzupoli, El Toro, both of Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 17, 1971, Ser. No. 154,114
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 R **6 Claims**



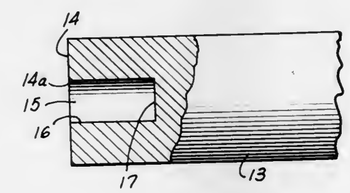
An alternating current arc welding having an alternating voltage power source for feeding energy to the welding arc and having a means for coupling, in series with the power source, a relatively high voltage impulse during the time the alternating voltage increases in absolute value so that the arc is re-ignited at the same phase angle during each half cycle.

3,780,259

NONCONSUMABLE TUNGSTEN ELECTRODE FOR ARC WELDING

Robert J. Meyer, Willoughby Hills, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 6, 1971, Ser. No. 187,063
Int. Cl. B23k *35/00*
U.S. Cl. 219—145 **2 Claims**

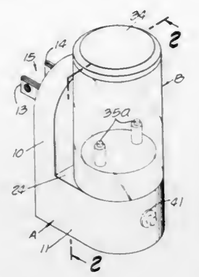


A nonconsumable tungsten or tungsten alloy electrode for arc welding having a cylindrical body ending in a planar end surface characterized by a cavity on the center line of the end surface to produce an annular flat surface at the electrode tip. The cavity is preferably a cylindrical cavity having a diameter in the range of 25 to 50 per cent of the diameter of the electrode and the cavity may terminate in a flat bottom or a conical portion. The tip configuration formed by the cavity improves the dimensional stability of the tip so that the arc formed during welding is concentrated and stabilized at the centerline of the electrode.

3,780,260
COMBINATION NIGHT LIGHT AND LIQUID VAPORIZER

Edwin C. Elsner, P.O. Box 112, Kanosh, Utah

Filed Aug. 4, 1972, Ser. No. 278,063
Int. Cl. F22b *1/28*
U.S. Cl. 219—271 10 Claims

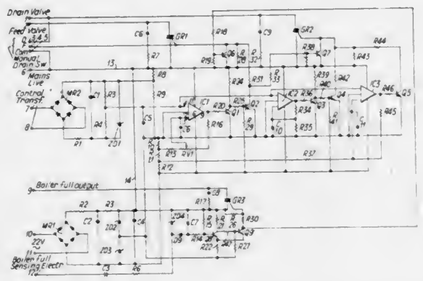


A combination night light and vaporizer for liquids in which a plug-in electric wall bracket removably receives a throw-away container in the form of a dispensing package containing the vaporizable liquid. An electric lamp in the bracket provides a heat source for vaporizing the liquid in the container as well as the illumination for the night light, the lamp being controlled through an energizing circuit which includes an electric flow path in the vaporizable liquid between spaced electrodes built into the container, and an overriding manually operable switch enables the establishing of a circuit between the electrodes when there is no liquid in the container and it is desired to energize the lamp for use as a night light.

3,780,261
AUTOMATIC CONTROL FOR ELECTRODE BOILERS

Raymond Herbert Eaton-Williams, Beech House, Pendennis Rd., Sevenoaks, England

Filed May 19, 1972, Ser. No. 255,058
Claims priority, application Great Britain, May 19, 1971, 15,886/71; Mar. 10, 1972, 11,287/72
Int. Cl. F24h *1/00*
U.S. Cl. 219—324 11 Claims

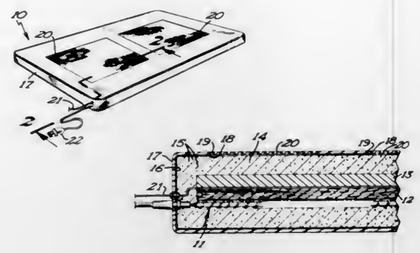


An electronic controller for an electrode boiler in which the heating current passing through an electrode depends upon the water level in the boiler, in which circuitry controls feed and drain valves to carry out an automatic repetitive cycle to feed water into the boiler to a predetermined level, to sense when boiling has reduced the level to another predetermined point, to open the drain valve to allow a quantity of water to drain out to remove solid matter precipitated during boiling, then to re-open the feed valve to restore the original level so that boiling may recommence. An alternative feed, boil, feed, drain cycle is provided.

3,780,262
THERMAL BANK

Robert L. Rudd, 1915 Prior Ave. N., St. Paul, Minn.

Filed July 28, 1972, Ser. No. 276,141
Int. Cl. H05b *1/00*; F24h *7/00*
U.S. Cl. 219—341 5 Claims

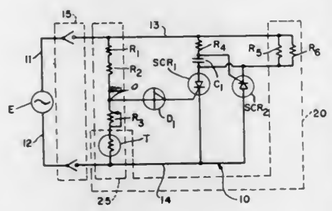


A thermal bank is comprised of a granular mass of polyvinyl chloride which surrounds a heating mechanism such as an electrical resistance heater or a conduit containing heated fluid. The granular polyvinyl chloride mass is formed by treating commercial dry flaked polyvinyl chloride with a small amount of stabilizer which causes the powder to form granules having interstices therebetween. The granular polyvinyl chloride mass not only serves as a high temperature insulator but also serves as an excellent heat storage system. A metallic foil surrounds the polyvinyl chloride mass and serves as a radiation shield, and an air impervious outer cover surrounds the foil and prevents convection losses from the mass. The thermal bank may be constructed as a heating pad provided with a window in the foil and plastic covers to permit controlled dissipation of the heat. The thermal bank may also be constructed as the primary storage center for heating a building structure deriving its heat from solar energy during the day and releasing it gradually during the night.

3,780,263
THERMAL CONTROL APPARATUS

Roman Kuzyk, 436 Schiller Ave., Trenton, N.J.

Filed May 10, 1972, Ser. No. 252,079
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 8 Claims

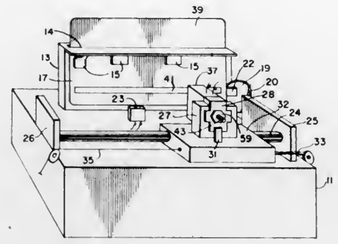


Thermal control apparatus for controlling the temperature of a photo-developing bath including electrically powered filaments disposed in the bath and energized by a control circuit responsive to the temperature of the bath. The control circuit includes a voltage divider connected across two leads connected to a conventional house outlet having the control point thereof connected to a four layer diode. The output signal from the diode is connected to gate the first of two opposite polarity silicon controlled rectifiers, with the second rectifier being capacitor-connected to gate at the end of the pulse of the first rectifier. The upper leg of the voltage divider includes a positive thermal coefficient resistor thermally coupled to the first rectifier and the lower leg includes a thermistor thermally responsive to the temperature of the bath.

3,780,264
ELECTROMAGNETIC READ/WRITE APPARATUS FOR STATIONARY CARDS

Nicholas Kondur, Jr., Rolling Meadows, Ill., and Lawrence P. Kobylarz, Howell, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 3, 1971, Ser. No. 120,457
Int. Cl. G06k *7/08*
U.S. Cl. 235—61.11 D 7 Claims

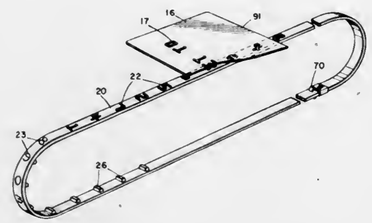


An apparatus for reading or writing a line of electro-magnetically encoded information across a stationary card. A resilient card aligning cam urges the card against a reference edge while a read/write head traverses the card, the cam having a ramp for preventing the head from catching the edge of the card as it moves from its rest position. The head is mounted by a single bolt through a head holder, the bolt being centered in complementary curved surfaces of the head and head holder for adjustability of the head.

3,780,265
APPARATUS FOR SENSING EMBOSSED INDICIA

Larry W. Lind, Spring Valley, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Feb. 22, 1972, Ser. No. 227,756
Int. Cl. G06k *7/04*
U.S. Cl. 235—61.11 C 6 Claims

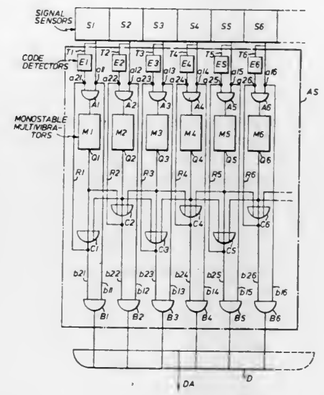


Apparatus for sensing and producing an electrical output corresponding to the numerals on a standard credit card. The apparatus employs a plurality of sensing belts, one for each digit to be sensed on the credit card. The belts are driven by friction clutches and are forced into contact with the numeral positions on the credit card by a bias button. Where the device is employed on the back side of the credit card, the belts contain raised numerals that pass over the corresponding depression of the numeral position on the credit card. When the proper numeral reaches the number area on the credit card, it drops in place, and locks up, to override the friction clutch. The belt includes an electrical contact, positioned by the belt lock up in a particular numeral, and therefore electrically identifies that numeral. A particular numeral order is provided for use with credit cards employing the Farington Font to avoid false sensing.

3,780,266
APPARATUS FOR SCANNING SIGNALS

Udo Mudsam, Konstanz; Ernst Reuter, Allensbach, and Stefan Maslowski, Aufheim, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 23, 1972, Ser. No. 228,548
Claims priority, application Germany, Feb. 25, 1971, P 21 08 837.9
Int. Cl. G06k *5/04*, *7/08*
U.S. Cl. 235—61.11 D 10 Claims

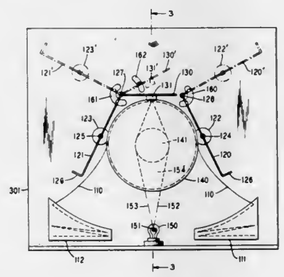


An apparatus for scanning signals along at least one track includes signal pickup device which is not guided on the track. The track may be subjected to transverse displacements relative to the pickup device. The pickup device is a plurality of signal sensors arranged in a row transverse to the track for scanning the track to detect information signals from the track. The number of sensors is selected so that at least one of the sensors detects the information signals during all transverse displacements and at least one other of the sensors is in a zone immediately adjacent the track. A selector circuit which is responsive to signals from all of the sensors is arranged to pass information signals from the sensors to a disjunctive circuit.

3,780,267
OPTICAL TAPE READER USING CYLINDRICAL LENS AS TAPE DRIVE WHEEL

David William Hagelbarger, Morris Township, Morris County, and Peter Steve Kubik, South Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed May 23, 1972, Ser. No. 256,089
Int. Cl. G02b *3/06*; G06k *7/10*
U.S. Cl. 235—61.11 E 8 Claims



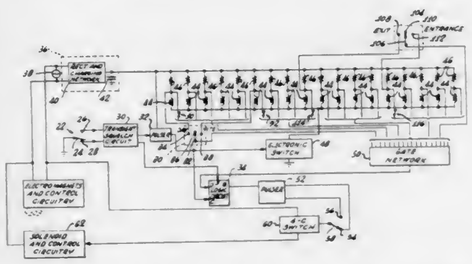
A device is described for electrooptically reading the holes in a punched record tape. A highly polished transparent wheel

is utilized as the tape drive mechanism. Two pressure rollers located on opposite sides of this wheel along with beveled edges on the rim thereof maintain the record tape in proper alignment as it passes under photoelectric detection circuitry. A source of light is located below the transparent wheel and diametrically opposite the photodetection circuitry. The hub of the transparent drive wheel acts as a cylindrical lens to focus the light on the photodetectors. By detecting the amount of light transmitted through the record tape, the presence or absence of holes therein is ascertained and the information represented thereby is recovered.

3,780,268
STATIC CARD READER AND CONTROL SYSTEM FOR ACCESS APPARATUS

Waldo I. Rogers, Arcadia; Robert J. Fox, Los Angeles, and Eric W. Moulton, Santa Monica, all of Calif., assignors to Rusco Industries, Inc., Pasadena, Calif.

Filed Jan. 4, 1973, Ser. No. 320,905
Int. Cl. G06k *7/08; G11b 5/00*
U.S. Cl. 235—61.11 D **6 Claims**

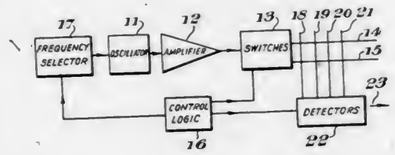


A coded card is located at one end of a plurality of parallel sensors, each having a coil in series with a respective resistor, the junctions of such coils and resistors being connected to a gate network. A second card is inserted at the opposite ends of the sensors, and a switch actuated thereby effects operation of control circuitry to cause a voltage pulse to be applied across all resistoricoil combinations, simultaneously. Both cards have magnetized spots perpendicular to the card surfaces, and such spots are aligned with respective sensors. only where the fields of each pulsed coil and the spot aligned therewith are in the same relation, e.g., opposing, the gate network effects operation of a solenoid of access apparatus.

3,780,269
DATA READING SYSTEMS

Bernard A. Hunn, Berkhamstead, and Christopher Humphreys, Luton, both of England, assignors to Revenue Systems Limited, Harpenden, England

Filed June 13, 1972, Ser. No. 262,196
Int. Cl. G06k *7/08;* **H01f** *5/00;* **H04q** *5/12*
U.S. Cl. 235—61.11 H **13 Claims**

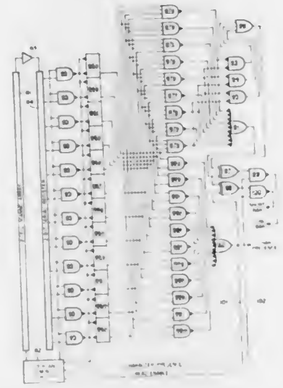


A reading system is described for use with cards bearing data constituted by the resonant frequencies of a number of spiral elements. The reading system includes a number of drive lines equal to the number of rows of spiral elements on the cards and a number of detector lines equal to the number of columns of spiral elements on the cards. The drive lines and the detector lines are arranged at right angles to each other so that there is minimum coupling between them. Varying frequencies are applied to the drive lines and, when a spiral element resonant at the frequency applied to a drive line is located at the intersection of that drive line and one of the detector lines, a signal will be induced in the drive line and can be used to control reading apparatus.

3,780,270
BAR/HALF-BAR OPTICAL CODE READER

Hubert D. Faulkner, Irving, and Stanley D. Requa, Dallas, both of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed June 20, 1972, Ser. No. 264,608
Int. Cl. G06r *7/10*
U.S. Cl. 235—61.11 E **15 Claims**



A moving image of a series of vertical bars and half-bars is projected onto a columnar array of photosensitive elements. Signals from each element are amplified and compared with a threshhold value to produce light or dark output signals for each element. The output signals are decoded by logic gates which include a first group of four input NAND gates and a second group of two input NAND gates. Each one of the first group of NAND gates has each of its four inputs connected from four adjacent photosensitive element outputs while each one of the second group of NAND gates has each of its two inputs connected from two adjacent photosensitive element outputs. An output signal from one or more of said first group of NAND gates is indicative of a full bar while an output from one or more of said second group of NAND gates is indicative of a character present and a half-bar if none of the gates of the first group are operated.

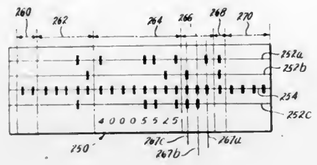
3,780,271
ERROR CHECKING CODE AND APPARATUS FOR AN OPTICAL READER

Patrick J. Sharkitt, Silver Spring, Md., and Richard R. Hayden, Washington, D.C., assignors to Sigma Systems, Inc., Arlington, Va.

Filed Sept. 29, 1972, Ser. No. 293,556
Int. Cl. G06f *11/10;* **G06k** *5/00*
U.S. Cl. 235—61.11 E **14 Claims**

An error checking code and apparatus for use with an optical reader for reading an octal digital code which contains a

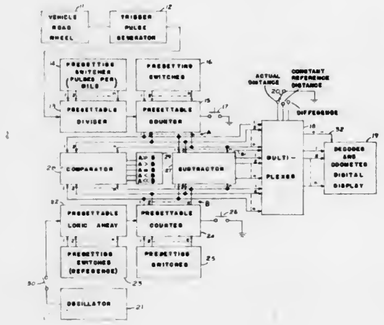
data digit field, an error checking count field and a parity field. The reader is designed for self-positioning over a code bearing label and the apparatus comprises a simple logical circuitry to insure the correct reading of the optical code.



3,780,272
ELECTRONIC ODOMETER AND COMPARATIVE RATE INDICATOR

Thomas E. Rohner, 717 N. Park, West Liberty, Iowa

Continuation-in-part of Ser. No. 194,725, Nov. 1, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,198
Int. Cl. G01c *22/02*
U.S. Cl. 235—150.2 **10 Claims**



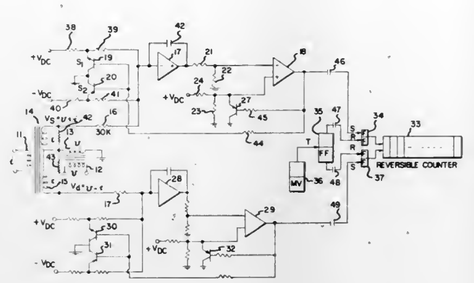
An impulse generator coupled to a road wheel provides pulses to the input of a divider, and pulses are supplied from the divider to a counter for storing coded signals indicating the distance traveled on a trip. An oscillator supplies signals through a logic array to another counter for storing additional signals corresponding to the desired distance for the elapsed time. The signals are compared to provide the difference between the two stored distances, and means are provided for selectivly displaying actual distance, desired distance, or their difference.

3,780,273
ANALOG-TO-DIGITAL WATTMETER MULTIPLIER

Douglas Walter Turrell, North Wales, Pa., assignor to Leeds & Northrop Company, North Wales, Pa.

Filed June 12, 1972, Ser. No. 262,120
Int. Cl. G06g *7/16, 7/18;* **G01r** *11/32*
U.S. Cl. 235—150.52 **4 Claims**

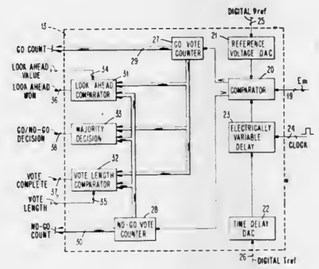
Operational amplifier circuitry converts two analog input signals into a digital output representing the product. Two pulse forming channels generate two pulse trains, one having a frequency representing the square of the difference between the input signals and the other having a frequency representing the square of the sum of the two input signals. The difference between these frequencies is obtained in a reversible counter. The count in the counter over a given period of time represents the product of the two input signals. Where the two input signals are voltage and current, the circuit obtains a digital output representing watts in accordance with the quarter square multiplication principle.



3,780,274
MEASUREMENT METHOD AND SYSTEM

Leon J. Thompson, deceased, late of Poughkeepsie, N.Y. (by Margaret Thompson, voluntary administratrix, Poughkeepsie); Carl J. Kugler, Jr., Pleasant Valley, and Garland H. Latta, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1972, Ser. No. 252,075
Int. Cl. H03k *13/20*
U.S. Cl. 235—151.31 **8 Claims**

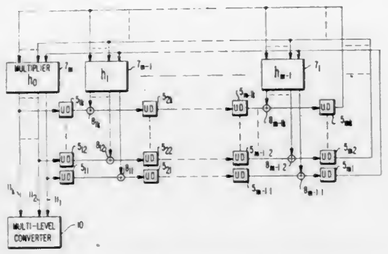


Measurement system for resolving a digital measurement of an unknown analog variable in a noise spectrum in which the spectrum is greater than or less than the least significant weighted value of the digital system. The measurement method of binary approximation is employed until the measuring system indicates once that on a comparison of vote counts the ratio of the unknown analog variable to the binary approximation has a given relationship to a predetermined criteria related to the noise spectrum. Thereafter, an incremental approximation is utilized once the criteria has been initially met to carry out a comparison of the unknown analog variable with an incremented reference and within the predetermined criteria until a voting procedure indicates that the criteria has been successively met for a given number of times. While this voting procedure takes place, the values resulting from the approximations are accumulated for the given number of successive votes. From this accumulation, the value of the unknown variable is calculated. A look-ahead procedure is also included in the system for accelerating the realization of the initial comparison with the prescribed criteria.

3,780,275
DEVICE TO GENERATE PSEUDO-RANDOM MULTI-LEVEL PULSE SEQUENCE

Katsuhiro Nakamura, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed July 7, 1971, Ser. No. 160,495
Claims priority, application Japan, July 8, 1970, 45/60095
Int. Cl. G06f 1/02
U.S. Cl. 235—152 **5 Claims**

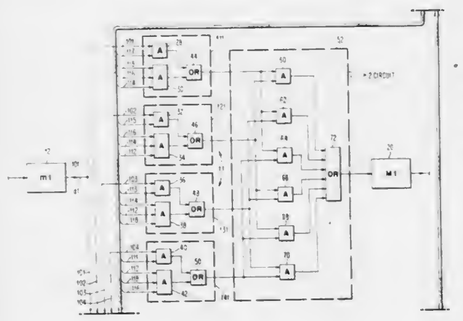


A device for generating a random pulse sequence provides the randomness of the occurrence of each pulse level in the pulse sequence. In general, it is known that the randomness of the binary pulse train is achieved by logical circuits operating on the Galois field GF(2). However, how to generate a random multi-level pulse train was not known heretofore. The multi-level pulse generator presented here comprises unit delay elements such as flip-flops arranged in a plurality of lines and rows and logical circuits to perform logical operations on the outputs from the unit delay elements on the Galois extension field GF(p^k). (p is a prime number)
The randomness of this output is mathematically assured.

3,780,276
HYBRID REDUNDANCY INTERFACE

William C. Carter, Ridgefield, Conn., and Aspi B. Wadia, Shrub Oak, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1972, Ser. No. 264,666
Int. Cl. G06f 11/00
U.S. Cl. 235—153 AE **7 Claims**



The interface disclosed herein is capable of operating in the TMR/S (triple modular redundancy with sparing), the comparison, and the simplex modes. The interface controls the interconnection between $m_1, \ldots, m_n$ identical sending modules and $M_1, \ldots, M_n$ identical receiving modules. To this end, there are provided $1, \ldots, n$ control registers which comprise $1, \ldots, n$ bits and an $(n+1)^{th}$ control register which comprises a single bit R_x. The register bits are employed to provide n^2 forcing functions for the outputs $d_1, \ldots, d_n$ of the sending modules which are represented by the following logical equation:

$$f_{ji} = d_j R_{ij} V \overline{R}_{ij} \overline{R}_{i|j+1|_n} \ldots \overline{R}_{i|j+n-2|_n}$$

wherein j is the bit number, $1, \ldots, n$, i is the register number $1, \ldots, n$, the symbol $|\ |_n$ signifies modulo n and V represents the OR function. The n^2 forcing functions are respectively applied in sets of n viz., $f_1 i, f_2 i, \ldots, f_n i$ $i = 1, 2, \ldots, n$ to $(1, \ldots, n)^{th}$ threshold function circuits, each of the latter circuits producing a "1" output when ≥ 2 of the inputs thereto are "1", the outputs of the $(1, \ldots, n)^{th}$ threshold function circuits being applied to the $M_1, \ldots, M_n)^{th}$ receiving modules, respectively. From the register settings and the sending module outputs, there are generated pairs represented by the logical equation

$C_{ij} = (d_i V \overline{R}_{ij} V \overline{R}_{ji} V R_x, d_j R_{ij} R_{ji} V R_x)$ for $j = i+1$ ($i = 1, 3, 5, \ldots n-1$)

$C_{ij} = (d_i V R_{ij} V R_{ji}, d_j R_{ij} R_{ji})$ for $j \neq i+i$

wherein the ij pair in the first equation can take the values of $13, 14, \ldots, 1n, 24, \ldots, 2n, \ldots, (n-2)n$. From the pairs, (ij), there are generated register triggers having the following equations:

$A_1 = \oplus / C_{12} \Lambda_M C_{13} \Lambda_M C_{14} \Lambda_M \ldots \Lambda_M C_{1n}$
$A_2 = \oplus / C_{21} \Lambda_M C_{23} \Lambda_M C_{24} \Lambda_M \ldots \Lambda_M C_{2n}$
.
.
.
$A_n = \oplus / C_{1n} \Lambda_M C_{2n} \Lambda_M C_{3n} \Lambda_M \ldots \Lambda_M C_{1n-1)n}$

wherein the symbol Λ_M represents the morphic AND function called the RCCO in U.S. Pat. No. 3,559,167, the symbol $\oplus$ signifies the exclusive OR function on the pair of lines that are outputs of the morphic AND. The $(A_1, \ldots, A_n)^{th}$ triggers are applied to the $(1, \ldots, n)^{th}$ bits of the registers respectively, to switch the bits to the opposites of their initial binary states whereby, upon the generation of a register trigger A_j and the consequent switching of register bits $R_{1j}, \ldots, R_{nj}$ to their opposite binary states, sending module m_j is disconnected from operation.

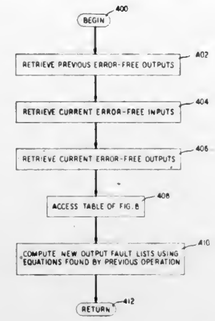
To operate the interface in the TMR/S mode, initially all of the bits of the $(1, \ldots, n)^{th}$ registers are initially set to the 1 state and the bit of the $(n+1)^{th}$ register is set to the 0 state. To operate the interface in the comparison mode, all the bits bearing the same numerical designation as the sending module which are to be compared in the registers bearing the same numerical designations as the sending modules which are to be compared are initially set to the 1 state with all of the other bits set to the 0 state. To operate in the simplex mode, all of the bits in the $(1, \ldots, n)^{th}$ registers except those bearing the same numerical designation as that borne by the register in which they are contained are set to the 0 state, the excepted bits being set to the 1 state. Also, in the simplex mode of operation, the bit of the $n+1^{th}$ register is set to the 1 state.

3,780,277
APPARATUS FOR PROPAGATING INTERNAL LOGIC GATE FAULTS IN A DIGITAL LOGIC SIMULATOR

Douglas Byron Armstrong, Two North Twp., Boulder Cty., Colo., and Richard Glenn South, Boonton, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 13, 1972, Ser. No. 271,501
Int. Cl. H03k 5/18; G06f 15/20
U.S. Cl. 235—153 AC **3 Claims**

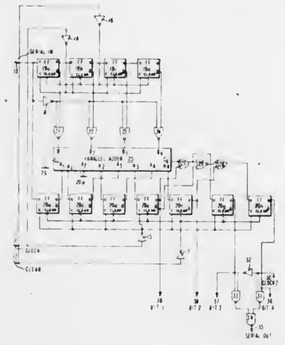
An improved apparatus and method for propagating faults in a digital logic fault simulator. The method is a more accurate way of propagating internal faults through logic gates and flip-flops that are on loops, that is, gates and flip-flops having at least one input that can be traced back to their outputs. Internal faults are propagated through a loop gate by using the faulty input bit patterns to the gate to access a list of all possible internal faults of the gate in order to determine which internal faults should be propagated through it. Internal faults are propagated through loop flip-flops by accessing an equation table to determine the correct relationship of the current output fault lists to the previous output fault lists, the current input fault lists, and the internal faults of the flip-flops.



3,780,278
BINARY SQUARING CIRCUIT

John L. Way, La Canada, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 10, 1971, Ser. No. 122,812
Int. Cl. G06f 7/52
U.S. Cl. 235—164 **15 Claims**



An apparatus and method for squaring digital binary numbers which operates in cycles starting with the most significant bit followed by the less significant bits in sequence. If the bit being operated upon is a ONE, the smaller number formed from the bits having greater significance than this bit are added to the square of this smaller number (previously determined). The significance of each bit in this sum is increased by two and ONE placed at its least significant bit. However if the bit being operated upon is a ZERO; then the significance of each bit of the square of the smaller number formed from the bits having greater significance than this bit is increased by two and ZERO's placed in the least significant positions.

3,780,279
MEANS FOR EXTENDING THE IDENTIFICATION RANGE OF RADIO EQUIPMENTS USING REPETITIVE CODED IDENTIFICATION SIGNALS

Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

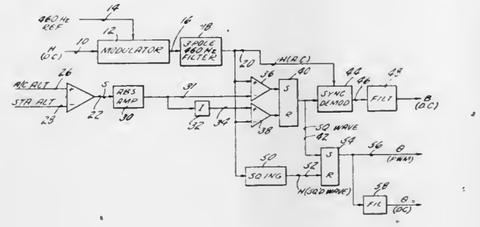
Filed Jan. 17, 1972, Ser. No. 218,194
Int. Cl. G06f 7/38
U.S. Cl. 235—164 **5 Claims**

A signal processing means coherently adds a repetitively received code sequence to that previously received while incoherently adding accompanying noise and generates a replica of the code sequence which is "pulled up" out of the noise level. Complementary percentages of a code sequence currently received and that previously received and stored are continuously added on a repetitive coherent basis by either analog or digital means.

3,780,280
RESOLUTION OF A TRIANGLE FROM HYPOTENUSE AND ONE SIDE

John E. Games, Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 3, 1972, Ser. No. 268,255
Int. Cl. G06g 7/22, 7/78
U.S. Cl. 235—190 **5 Claims**



A DC voltage having an amplitude proportional to the length of one side of a right triangle is compared with a sine wave, of arbitrary frequency, having a peak value proportional to the length of the hypotenuse of the triangle so as to generate a square wave of the same frequency as the sine wave, and having a phase relationship to the sine wave which is proportional to the angle opposite the known triangle side. The square wave is then used as the phase reference for synchronously demodulating the sine wave, the average value of the demodulator output being equal to the base, or unknown side, of the triangle. In addition, the sine wave may be squared-up and the original square wave and the squared-up wave used to set and reset a bistable device to provide a pulsewidth modulation indication of the angle opposite the known side. This may be filtered to provide a DC voltage proportional to the angle.

3,780,281
DEMOUNTABLE LIGHT FIXTURE FOR BATHROOM CABINET

Ernest F. Ohlhauser, West Chester, and Robert Boggild, Cincinnati, both of Ohio, assignors to The Celotex Corporation, Tampa, Fla.

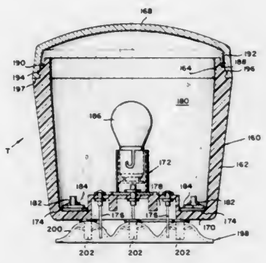
Filed Mar. 29, 1972, Ser. No. 239,089
Int. Cl. F21v 33/00; A47b 97/00
U.S. Cl. 240—4.1 5 Claims

An attachable-demountable light fixture for a wall cabinet having a swing mirror door, e.g. a bathroom medicine cabinet, as well as a cabinet-light fixture combination, Where the cabinet is reversible, i.e. symmetrical about a horizontal plane, so that it can be mounted with the mirror hinge either on the right or on the left, the light fixture is attachable identically without regard to the orientation of the hinge. The fixture is provided with a sleeve element at each side, telescopingly engageable with the front face frame of the cabinet and automatically interlocked therewith. The fixture comprises a sheet metal encasement for a light source, open at the top, and having a translucent front panel for light diffusion. The translucent panel comprises a portion arranged to diffuse the light downwardly, and a portion arranged to diffuse the light outwardly and downwardly.

3,780,282
WATERPROOF TAIL AND CLEARANCE LIGHT

D. Richard Riley, P.O. Box 1663, Riverside, Calif., and Earl A. Andren, 920 N. Main St., Riverside, Calif.

Filed Sept. 11, 1972, Ser. No. 287,874
Int. Cl. B60q 1/30
U.S. Cl. 240—8.3 13 Claims

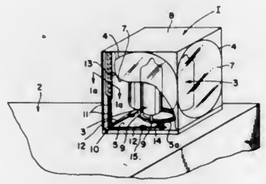


A waterproof tail or clearance light assembly comprising: a base member having internal and external surfaces; a lamp assembly secured to the base member internal surface; the lamp assembly including electrical leads extending through the base member to the base external surface; a cap member having a lens, the cap member cooperating with said base member to form a closed receptacle; one of the members including a shoulder portion and a circular sealing portion projecting from the shoulder portion in endwise fashion, the sealing portion having its diameter at the shoulder greater than its diameter at the free end thereof; the sealing portion being provided with O-ring retaining means and an O-ring positioned in the retaining means around the sealing portion; the other of the members being provided with an annular mating portion having an annular rim, the mating portion cooperating with the sealing portion to fit telescopically around the sealing portion and the rim abutting the shoulder portion; and means for securing the cap member to the base member; whereby when the cap member is secured to the base member, the sealing portion cooperates with the mating portion to compress the O-ring thereby rendering the receptacle formed by the base and cap members water tight.

3,780,283
PERCUSSION-IGNITABLE FLASH UNIT HAVING CONTACT-ACTUABLE PRE-ENERGIZED STRIKERS AND PHOTOGRAPHIC APPARATUS USING SUCH UNITS

Joseph V. Poweska, Rochester, and Jeffrey R. Stoneham, Hilton, both of N.Y., assignors to Sylvania Electric Products, Inc., Danvers, Mass.

Continuation of Ser. No. 813,524, April 4, 1969, abandoned, which is a division of Ser No. 766,751, Oct. 11, 1968, Pat. No. 3,596,581. This application Mar. 6, 1972, Ser. No. 232,303
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 3 Claims

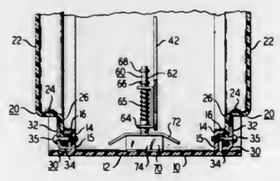


A flash unit having percussion-ignitable flash lamps and individual striker elements releasably retained in a pre-energized condition. The individual striker elements are mounted on the unit at a location for selective percussion firing of individual lamps upon striker release and individual access sites are provided on the unit to allow selective release of individual holding elements. A photographic apparatus cooperates with such units to effect selective release of individual striker elements in synchronization with picture-taking operations.

3,780,284
LAMP ENCLOSURE

Fred Arlington Dewhirst, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 4, 1972, Ser. No. 241,013
Int. Cl. F21v 17/00
U.S. Cl. 240—41 R 5 Claims

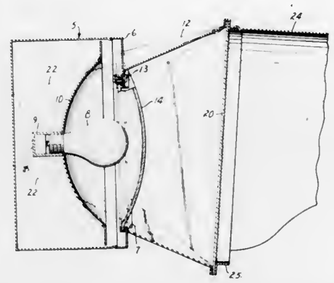


The lamp enclosure comprises a rectangular open-ended casing having an inverted L-shaped flange circumscribing its inside surface adjacent to each end thereof, the lateral leg of each flange extending toward the adjacent end. A domed translucent lens is positioned within each end of the casing, and each lens has an outwardly turned rim around its perimeter that is placed in engagement with the lateral leg of the adjacent flange. A rectangular retaining ring is placed over each rim and fastened to the adjacent flange to hold each lens in place. A lamp holder assembly is pivotally secured to the inside surface of the casing and it includes a latch having a spring-loaded bolt for engaging an opening in a catch plate mounted in juxtaposition therewith, the catch plate having an inclined ramp to the front and back of the opening.

3,780,285
TRAFFIC LIGHT CONVERSION KIT

Roger H. Appeldorn, White Bear Township, and Gunnar R. Ljungkull, White Bear Lake, Ramsey County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 24, 1972, Ser. No. 274,343
Int. Cl. F21r 13/04
U.S. Cl. 240—41.3 6 Claims

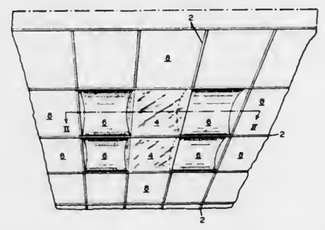


A kit which may be added to a conventional eight inch traffic signal to convert the traffic signal to a larger, i.e., 12 inch signal. The kit comprises a light diffusing roundel of colored glass positioned within the focus of a front positive Fresnel-type lens.

3,780,286
CURVED VAULT LUMINAIRE SYSTEM

Stephen T. Alexieff, and James C. Ollinger, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Sept. 20, 1972, Ser. No. 290,757
Int. Cl. F21v 13/00; E04b 5/52; E04f 19/06
U.S. Cl. 240—78 LD 5 Claims



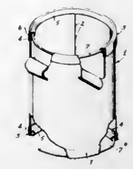
A normally flat lighted suspended ceiling system has been modified to incorporate the use of curved ceiling panels and lighting fixtures which have three-sided lenses. The light fixture will provide light through its normally downwardly facing lens. In addition, the curved ceiling panel permits the light fixture to transmit light from the sides of the lighting fixture. This provides an improved uniformity of illumination of both the ceiling and the area below the ceiling.

3,780,287
NEW LAMP SHADE

Jose Ramon Fauri, Pablo Alcover St. 55 & 57, Barcelona, Spain

Filed Mar. 23, 1972, Ser. No. 237,483
Int. Cl. F21v 1/06
U.S. Cl. 240—108 D 1 Claim

A generally tubular lamp shade of flexible sheet material is provided with a flexible elastic ring embracing and secured to each of its upper and lower edges. Each ring has an inwardly extending resiliently bendable flange normally reversely curved to define an annular passage in which a metal ring is held by the resilience of the flange. The flange can be flexed to release the metal ring for removal so that the lamp shade may

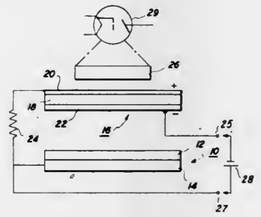


be flattened for storage or shipment and the metal ring may be reinstalled to erect the lamp shade for use.

3,780,288
APPARATUS FOR MINIMIZING IMAGE SMEAR DUE TO ION CAUSED UNDERCUTTING

Vernon W. Dryden, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed July 6, 1971, Ser. No. 159,904
Int. Cl. G01n 21/34; H01j 37/26; H05g 1/60
U.S. Cl. 250—315 7 Claims



Apparatus for minimizing the smear of an image formed by xeroradiography. In one embodiment, a distributed capacitor, positioned adjacent to and substantially parallel to a sensitized plate and electrically connected thereto, is charged before an object is exposed to penetrating radiation, the electric field generated by the charged capacitor minimizing image smear. In a second embodiment, a metal electrode is coupled to the conductive substrate which comprises part of the sensitized plate via a lumped capacitor, the electric field generated between the metal electrode and plate mininizing image smear.

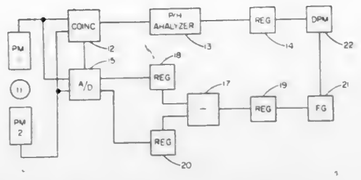
3,780,289
QUENCH CORRECTION IN LIQUID SCINTILLATION COUNTING

Gerardus Huibrecht Kulberg, Amstelveen, and Roedolf Hendrik Deinert, Mijdrecht, both of Netherlands, assignors to G. D. Searle & Co., Chicago, Ill.

Filed Feb. 10, 1972, Ser. No. 225,234
Int. Cl. G01t 1/20
U.S. Cl. 250—362 13 Claims

A means for determining counting efficiency in a liquid scintillation system. Pulse amplitudes are accumulated as are the number of pulses contributing thereto. The accumulated pulse amplitude sum is divided by the accumulated number of pulses to produce an average pulse amplitude for the pulses measured. The average pulse amplitude may be correlated to

average detection efficiency by an ascertainable function. Through average efficiency of detection the actual rate of



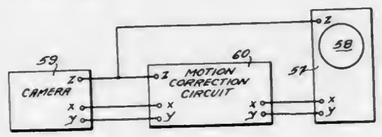
radioactive disintegrations may be computed from the count rate measured.

3,780,290

RADIATION CAMERA MOTION CORRECTION SYSTEM

Paul B. Hoffer, Chicago, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 28, 1972, Ser. No. 238,766
Int. Cl. G01j *39/18*
U.S. Cl. 250—303 **8 Claims**



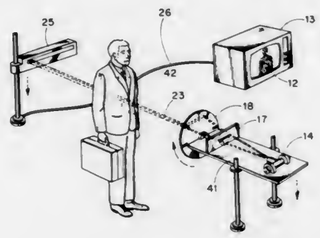
The invention determines the ratio of the intensity of radiation received by a radiation camera from two separate portions of the object. A correction signal is developed to maintain this ratio at a substantially constant value and this correction signal is combined with the camera signal to correct for object motion.

3,780,291

RADIANT ENERGY IMAGING WITH SCANNING PENCIL BEAM

Jay A. Stein, Framingham, and Roderick Swift, Belmont, both of Mass., assignors to American Science & Engineering Inc., Cambridge, Mass.

Filed July 7, 1971, Ser. No. 160,363
Int. Cl. G01t *1/20*
U.S. Cl. 250—363 **12 Claims**



A pencil beam of X-rays scans an object along a line of direction before an X-ray detector to produce an image of the line along a picture tube. By relatively displacing the object scanned and the line of scan in a direction transverse to the line of scan, a sequence of lines appear on the display to produce an image of concealed objects, such as guns.

3,780,292

APPARATUS FOR MEASURING THE NEUTRON FLUX IN A NUCLEAR REACTOR

Erich Klar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 72,460, Sept. 15, 1970, abandoned.
This application Mar. 17, 1972, Ser. No. 235,787
Claims priority, application Germany, Sept. 16, 1969, P 19 46 758.4
Int. Cl. G01t *3/00*; **G21c** *17/00*
U.S. Cl. 250—390 **4 Claims**



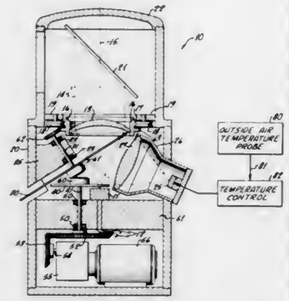
An apparatus for measuring the neutron flux in the active region of a nuclear reactor has a plurality of individual neutron absorbing probes insertable into the active region of the reactor. One of the probes extends over the entire length of the active region and the remainder of the probes extend over progressively shorter lengths respectively of the active region. The probes have respective portions outside of the active region and a cable connection means is connected to these portions.

3,780,293

DUAL BEAM RADIOMETER FOR CLEAR AIR TURBULENCE MEASUREMENT

Edward F. Flint, 1400 S. Orange, Fullerton, Calif.

Filed Mar. 6, 1972, Ser. No. 232,147
Int. Cl. G01j *5/02*
U.S. Cl. 250—339 **19 Claims**



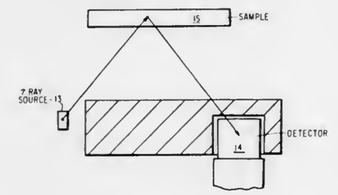
An improved dual beam radiometer comprising radiation detecting means; a source of reference radiation; a rotating chopper for alternately passing radiation from the atmosphere and reflecting radiation from the reference source onto the detecting means; a rotating filter disc having four sectors interposed in the radiation path between the rotating chopper and the detecting means for controlling the wavelength of the radiation applied to the detecting means; the rotating filter disc being operative, synchronously with the rotating chopper, to periodically change the wavelength of the atmospheric radiation and the wavelength of the reference radiation applied to the detecting means; and means for controlling the temperature of the reference source as a function of atmospheric temperature adjacent to the radiometer.

3,780,294

APPLICATIONS OF NUCLEAR RESONANCE FLUORESCENCE OF GAMMA RAYS TO ELEMENTAL ANALYSIS

Brian David Sowerby, Kirrawee, Australia, assignor to Australian Atomic Energy Commission, Congee, New South Wales, Australia

Filed May 5, 1971, Ser. No. 140,448
Claims priority, application Australia, May 6, 1970, 1105
Int. Cl. G01n *23/00*
U.S. Cl. 250—364 **6 Claims**



A method is provided for using nuclear resonance fluorescence of gamma rays for element analysis. The method involves irradiating a sample with gamma rays of the required critical energy and at the same time detecting the resonantly scattered radiation from the sample.

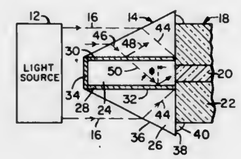
The technique is particularly adaptable to borehold prospecting, on-stream analysis in industry, the exploration of the ocean floor for mineral deposits, the analysis of the surface of planets and so forth.

3,780,295

LIGHT SOURCE COUPLER FOR OPTICAL WAVEGUIDE

Felix P. Kapron, Elmira, and Donald B. Keck, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,587
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **17 Claims**



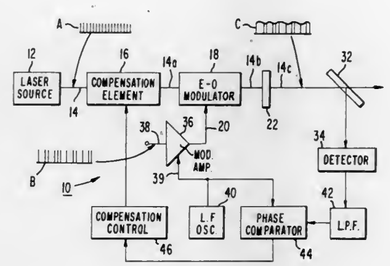
A light coupler for transferring optical wave energy to or from an optical waveguide. This coupler comprises a core of transparent material surrounded by a thin layer of transparent cladding material having a thickness less than a few wavelengths. A conically shaped member which surrounds the transparent layer has its base disposed adjacent to the end of the optical waveguide. The refractive index of the transparent layer is lower than that of the core and the conical member. To couple light to the waveguide, a light beam directed at the tapered surface of the conically shaped member is refracted thereby toward the transparent layer where a portion thereof tunnels into the core and is thereafter coupled into the waveguide. When it is utilized as an output coupler, light radiates from the tapered surface at an angle dependent upon the mode of propagation in the waveguide.

3,780,296

AUTOMATIC OPTICAL BIAS CONTROL FOR LIGHT MODULATORS

Armand Waksberg, and John Irving Wood, both of Dollard Des Ormeaux, Quebec, Canada, assignors to RCA Limited, Ste. Anne De Bellevue, Quebec, Canada

Filed Dec. 22, 1972, Ser. No. 317,740
Int. Cl. G01j *1/20*
U.S. Cl. 250—201 **4 Claims**



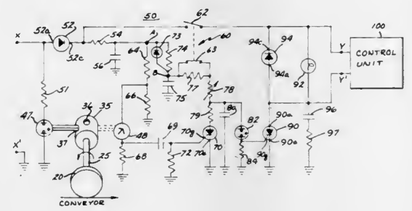
In an electro-optic laser beam modulation system wherein the polarization modulation of the laser beam is converted into intensity modulation by an analyzer positioned in the path of the beam, a photo detector detects a portion of the output beam to provide an error signal which is a function of any change in the average intensity of the output beam from a given value. The error signal is used to control the birefringence of an optical compensation element, which is positioned in the path of the laser beam, to return the intensity of the output beam to the given value.

3,780,297

CONVEYOR SPEED MONITOR

Fred Geary, Holland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,137
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 R **20 Claims**

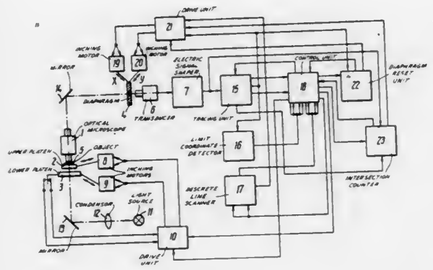


Light chopping means are coupled to a conveyor belt such that as the speed of the conveyor belt varies, a light path between a source of light and a photo-resistance cell is interrupted at a frequency directly related to the conveyor belt speed. The photo cell is coupled in an electrical circuit for detecting speed variations by detecting the resulting frequency variations of the light pulses. The electrical circuit provides an indicating signal when the speed of the conveyor belt reaches a predetermined level and also develops a control signal which can be employed for automatically regulating drive apparatus or other equipment associated with the conveyor system.

3,780,298
SCANNING METHOD AND A SCAN MICROSCOPE FOR ITS REALIZATION

Zhora Melkonovich Agadzhanian, Puschino, Mikroraion "V", 9, kv. 51, Moskovskaya oblast; Genrikh Romanovich Ivanitsky, ulitsa Festivalnaya, 15, Korpus 4, kv. 12, Moscow, and Alvian Matveevich Shamarov, Puschino, Mikroraion "V", 6, kv. 22, Moskovskaya oblast, all of U.S.S.R.

Filed July 15, 1971, Ser. No. 162,797
Int. Cl. G05b *1/00*
U.S. Cl. 250—202 2 Claims



A scanning method in which an object under investigation is stopped as soon as its outline is intersected by the optical axis of a fixed optical system and the outline of the object is traced out. After that, the image of the object is line-scanned within a rectangle in which the image is inscribed, while an indication that the next object has come into view is given by the equality of intersections of the object outline by the optical axis both when the object and when its image are displaced.

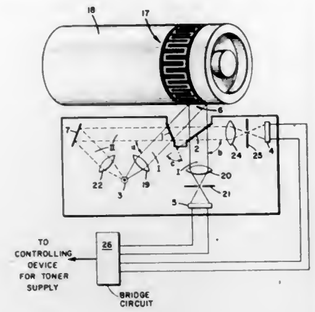
A scanning microscope using the above-mentioned method which has a tracing unit to trace out the outline of the object, while a limit-coordinate detector determining the extreme rectangular X- and Y-coordinates of the outline of the object "memorizes" these coordinates in the subsequent line scanning, the travel of the diaphragm of the optical microscope is limited by the extreme rectangular coordinates of the image. In the microscope, provisions are made for resetting the diaphragm to the starting position in which the outline of the object is intersected by the optical axis of the optical microscope, while an intersection counter determining how many times the diaphragm of the optical microscope intersects the outline of the object gives an unambiguous indication when the object leaves the scanned zone.

3,780,299
DEVICE FOR THE PRODUCTION OF A MEASURING SIGNAL OR CONTROL

Hartmut Bock, Fischbach/Taunus, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Aug. 7, 1972, Ser. No. 278,213
Claims priority, application Germany, Aug. 6, 1971, P 21 39 324.8
Int. Cl. G01n *21/48*
U.S. Cl. 250—209 10 Claims

A device for the production of a measuring or control signal, which device has a radiation source and a receiver for the measuring radiation, modified by the measured point, and for the unmodified reference radiation as well as a device for converting the receiver values into the measuring or control signal, characterized in that the device has an outlet window section and an inlet window section and that the radiation source, the receiver, and the window sections are so arranged that the measuring radiation and the reference radiation

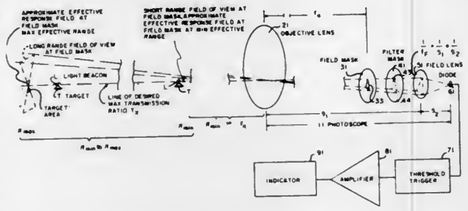


emerge or enter each at the same place through the window sections but form an angle there with one another.

3,780,300
RADIATION SENSITIVE HIT DETECTION ARRANGEMENT

Michael A. Kott, Marlboro, Mass., assignor to AAI Corporation, Cockeysville, Md.

Continuation of Ser. No. 888,266, Dec. 29, 1969, abandoned.
This application Jan. 12, 1972, Ser. No. 217,048
Int. Cl. G01j *1/20*
U.S. Cl. 250—237 R 38 Claims



A hit detecting and indicating arrangement for a target having a light source thereon, in which the hit detection and indicating arrangement includes a light sensitive detection element with a digital gray scale filter for attenuating the light energy from the target light source as a generally inverse square function of the distance of the photoscope from the light source. The photoscope includes a lens system and a field mask, the field mask having a generally triangular field aperture which defines the maximum area of light transmission through the digital filter.

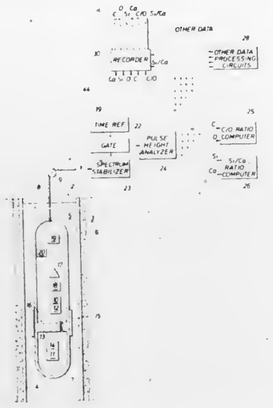
3,780,301
PULSED NEUTRON LOGGING SYSTEMS FOR DETECTING GAS ZONES

Harry D. Smith, Jr.; Dan M. Arnold, and Ward E. Schultz, all of Bellaire, Tex., assignors to Texaco Inc., Houston, Tex.

Filed Sept. 20, 1971, Ser. No. 182,036
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 R 12 Claims

An illustrative embodiment of the invention estimated methods and apparatus for producing inelastic neutron scattering logs of earth formations surrounding a well borehole. The gamma rays emitted by nuclei of at least carbon, oxygen, silicon and calcium which are excited by inelastically scattered fast neutrons are observed by energy separation and are individually logged as a function of borehole depth. The silicon/calcium and carbon/oxygen inelastic gamma ray counts

ratios are also logged as a function of borehole depth. Low hydrogen content of the formations may be stimated by detecting a high count rate in each of the four energy windows and then by comparing the Si/Ca and C/O ratios in these re-

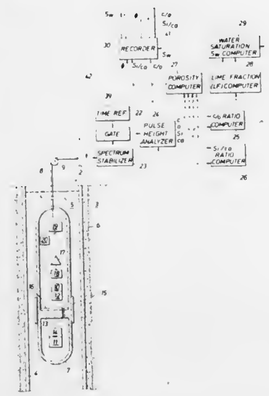


gions to the Si/Ca and C/O ratios for a known water sand, the relative abundance of limestone in the low hydrogen content formations may be estimated thus distinguishing gas zones from water saturated low porosity limestone.

3,780,302
PULSED NEUTRON LOGGING SYSTEM

Dan M. Arnold; Ward E. Schultz, and Harry D. Smith, Jr., all of Houston, Tex., assignors to Texaco Inc., Houston, Tex.

Filed Sept. 20, 1971, Ser. No. 182,035
Int. Cl. G01t *1/16*
U.S. Cl. 250—301 19 Claims

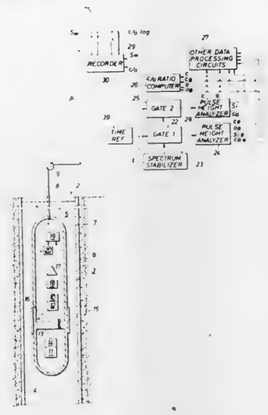


An illustrative embodiment of the invention includes improved nuclear well logging methods and apparatus for investigating subsurface earth formations. A pulsed neutron generator is used to irradiate the earth formations and the gamma rays caused by the inelastically scattered neutrons are observed in four energy windows. The carbon/oxygen ratio and the silicon/calcium ratio and the counting rate in each window are obtained and used to resolve ambiguities in the oil/water content of the formations by appropriately combining the measurements to obtain the lime factor or fraction and the water saturation S_w of the formations, which quantities are then recorded as a function of the borehole depth.

3,780,303
PULSED NEUTRON LOGGING WITH BACKGROUND COMPENSATION

Harry D. Smith, Jr.; Dan M. Arnold, and Ward E. Schultz, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 182,037
Int. Cl. G01t *1/16*
U.S. Cl. 250—301 12 Claims

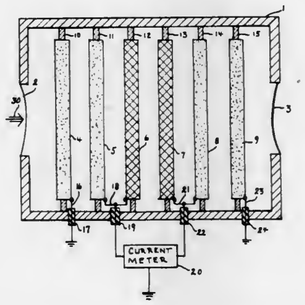


An illustrative embodiment of the present invention includes method and apparatus for improved pulsed neutron logging. The use of very high repetitive rates in pulsed neutron logging using the inelastic gamma ray energy spectrum leads to lingering thermal neutrons from previous high energy neutron pulses. By gating pulses produced by the thermal background pupulation through the same energy windows chosen for observation in the primary logging function just prior to beginning a neutron pulse, storing the counts, and subtracting the counts from those occurring during the neutron pulse in the energy windows of interest, an improved, compensated, inelastic nuetron interaction log may be provided.

3,780,304
CHARGE ACCUMULATION GAMMA RADIATION DETECTOR

Arthur R. Frederickson, Red Acre Rd., Stow, Mass., and Arnold D. Morris, 456 Grove St., Braintree, Mass.

Filed Jan. 28, 1972, Ser. No. 221,666
Int. Cl. G01t *1/16*
U.S. Cl. 250—336 10 Claims



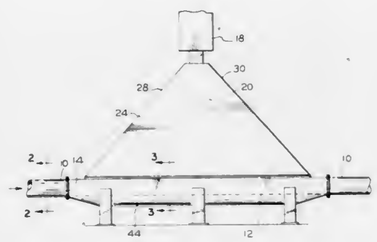
A gamma ray detector is provided which utilizes the charge accumulation at interfaces effect to measure γ-ray intensities. The detector includes a multiplicity of electrically conductive plates mounted in a vacuum chamber. All the plates are sub-

stantially parallel to each other. The gamma beam passes successively through all the plates. An electrical current flowing between the inner plates is a measure of the γ-beam intensity.

3,780,305
APPARATUS FOR TREATING WOOD CHIPS WITH ELECTRONS

David Free, West Vancouver, Canada, assignor to Radiation Development Co., Ltd., Vancouver, British Columbia, Canada

Continuation-in-part of Ser. No. 93,060, Nov. 27, 1970, abandoned. This application Nov. 9, 1972, Ser. No. 305,073
Int. Cl. H01j *37/30*
U.S. Cl. 250—400 **7 Claims**

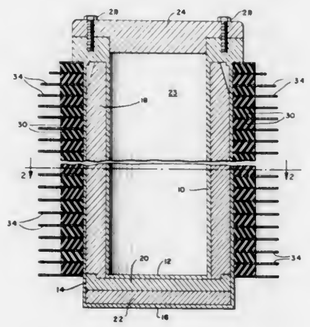


Apparatus for irradiating wood chips with electrons includes electron generator with means to inject electrons into conduit through which chips are pneumatically conveyed.

3,780,306
RADIOACTIVE SHIPPING CONTAINER WITH NEUTRON AND GAMMA ABSORBERS

Clifford J. Anderson, Buckeystown, Md., and Reuben W. Peterson, Wilmington, Del., assignors to National Lead Company, New York, N.Y.

Filed May 27, 1971, Ser. No. 147,519
Int. Cl. G21f *1/00*
U.S. Cl. 250—428 **15 Claims**

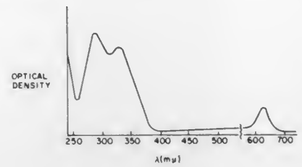


The shipping container includes inner and outer shell means having gamma radiation shielding means disposed between the shell means. Neutron radiation shielding means is disposed outwardly of the gamma radiation shielding means. Heat conducting means is disposed in engagement with the outer shell means and is interspaced with the neutron radiation shielding means to conduct heat therethrough.

3,780,307
LIQUID CRYSTALLINE COMPOSITIONS HAVING INDUCED OPTICAL ACTIVITY

Franklin D. Saeva, Fairport, and Joseph J. Wysocki, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1971, Ser. No. 191,671
Int. Cl. G02f *1/26*
U.S. Cl. 250—484 **8 Claims**

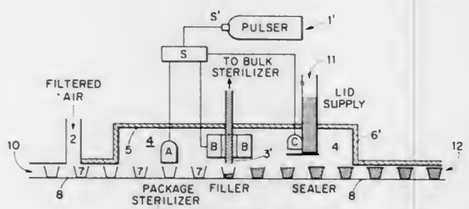


The electronic transitions of extrinsically optically inactive materials become circularly dichroic when these materials are introduced into an optically negative liquid crystalline environment thereby providing unusual and highly advantageous properties in such compositions. The circularly dichroic optical properties induced in the normally extrinsically optically inactive materials can be utilized for imaging, optical filter and other related applications.

3,780,308
PROCESS AND APPARATUS FOR SURFACE STERILIZATION OF MATERIALS

Sam V. Nablo, Lexington, Mass., assignor to Energy Sciences, Inc., Burlington, Mass.

Filed June 7, 1971, Ser. No. 150,464
Int. Cl. H01j *37/00*
U.S. Cl. 250—492 **17 Claims**



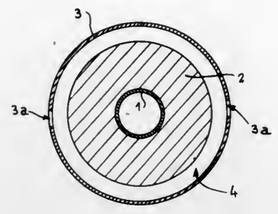
This disclosure deals with the surface sterilization and/or surface treatment of containers and other articles the walls of which have a high specific energy absorption for relatively low energy electrons, by transmitting such low energy electrons to such containers as they move through a sterile gaseous zone, only slightly to penetrate the container walls to effect surface sterilization or treatment thereof, while substantially absorbing the electrons within the walls to minimize X-ray generation.

3,780,309
INSULATED CONTAINER FOR RADIOACTIVE AND LIKE SUBSTANCES

Camille Bochard, Lyon (Rhone), France, assignor to Robatel S.L.P.I., Geneve (Rhone), France

Filed July 28, 1970, Ser. No. 59,037
Int. Cl. G21f *1/00*
U.S. Cl. 250—507 **7 Claims**

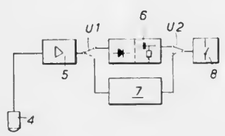
A double-walled container for radioactive material having an outer metal casing and an inner wall of lead and, in the space between the walls, an insulating material which is a solid mass of a mixture of hydrated alumina and hydrated iron oxide. The solid mass of insulating material may be formed in the space by pouring a mixture of an aqueous suspension of alumina trihydrate and particulate mild steel or iron into the space and allowing the mixture to set. The insulating material is effective in removing heat from the lead shield and in preventing heat reaching the lead shield from a source external of the container.



3,780,310
APPARATUS FOR DETECTING UNPREPARED POSTAGE STAMPS

Heinz Hudler, Ketzergasse 389, Vienna, Austria

Filed Mar. 21, 1972, Ser. No. 236,619
Claims priority, application Austria, Mar. 30, 1971, A 2691/71
Int. Cl. G01n *21/30*
U.S. Cl. 250—555 **10 Claims**



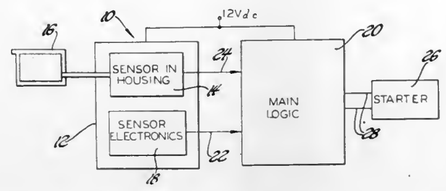
There is disclosed an optical arrangement for detecting regular, non-specially-prepared postage stamps for machines which accordingly face or orient the articles for automatic sorting. Detection is limited to the serrated edges common to all existing stamps, which serrations may easily be made into a code. A light source is arranged to impinge radiation at an acute angle relative to the direction of document travel. Thereby the sides of the serrations parallel to this direction are highly illuminated. A photoelectric sensor receives the train of light pulses emitted by the sides of the stamp serrations, which are fed to an amplifier and on to a pulse counting circuit, which serves to operate a deflector.

3,780,311
BREATH ALCOHOL DETECTOR AND AUTOMOTIVE IGNITION INTERLOCK EMPLOYING SAME

Verne R. Brown, Ann Arbor, Mich., assignor to Environmental Metrology Corporation, Ann Arbor, Mich.

Filed June 14, 1972, Ser. No. 262,852
Int. Cl. H01h *35/00*
U.S. Cl. 307—10 R **16 Claims**

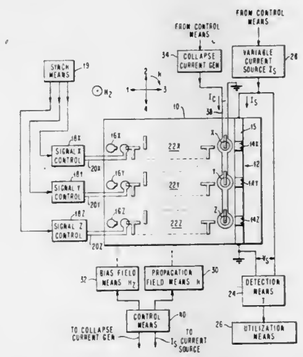
A breath alcohol detector in an automotive ignition system interlock such that an operator cannot start the automobile engine until he has passed a breath alcohol test. A solid state, fast acting sensor is employed in a special housing together with circuitry for requiring a breath sample of at least five seconds. A dual mode system is also disclosed whereby the sensor is switched into a carbon monoxide detection mode after engine is started.



3,780,312
THRESHOLD LOGIC USING MAGNETIC BUBBLE DOMAINS

Yeong S. Lin, Mount Kisco, and Ying L. Yao, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,147
Int. Cl. H03k *19/168*; **G11c** *11/14*
U.S. Cl. 307—88 LC **28 Claims**



A threshold logic device is provided using magnetic bubble domains. The presence and absence of bubble domains are the logic inputs to the device and the logic gate itself is comprised of a plurality of series connected sensing elements. Magnetoresistive sensing devices are particularly suitable. Each sensing element is given a particular geometry or thickness in order to achieve weighting of the logic inputs. The threshold of the device is internal in an associated detector and can be varied by changing the measuring current through the sensing elements in the case of magnetoresistive sensing elements. Depending on the sum of the weighted inputs being at least equal to the threshold value, or less than this value, the binary output of the device will be one or zero, respectively.

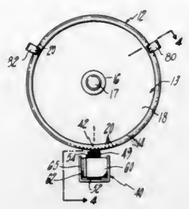
3,780,313
PULSE GENERATOR

John Richard Wiegand, Valley Stream, N.Y., assignor to Milton Velinsky, Plainfield, N.J. and John R. Wiegand, Valley Stream, N.Y.; a part interest to each

Continuation-in-part of Ser. No. 91,066, Nov. 19, 1970. This application June 23, 1972, Ser. No. 265,681
Int. Cl. H03k *1/00*
U.S. Cl. 307—106 **14 Claims**

A pulse generator to provide a series of pulses through the switching of a magnetic domain in a two domain wire. The generator includes a read-out head having magnets and an in-

ductive pick-up. As the wire from a rotor is moved past the read head, a first magnetic field in the read head switches a first domain in the wire. When the wire is next to the inductive pick-up, the net magnetic field on the wire is minimum and the magnetic bias on the first domain due to the magnetization of



the second domain causes a switching of the second domain and the induction of a pulse in the pick-up coil. A second magnetic field is in opposition to the first magnetic field. The two magnetic fields are so positioned that they substantially cancel each other out at the area in front of the pick-up thereby determining the location where the second domain switches.

3,780,314

VEHICLE COLLISION DETECTING APPARATUS

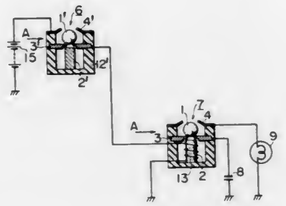
Fumiyuchi Inose, Kokubunji; Tomoji Inui, Katsuta; Sadao Kobayahi, Hachioji, and Shotaro Shibata, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 220,661, Jan. 25, 1972, abandoned. This application Oct. 24, 1972, Ser. No. 300,225

Claims priority, application Japan, Jan. 28, 1971, 46/2976

Int. Cl. H01h *35/00*

U.S. Cl. 307—121 **16 Claims**



A collision detecting apparatus comprising a sphere of magnetic material normally held stationary by the attractive force of a magnet and a switch adapted to be closed when said sphere of magnetic material is moved overcoming said attractive force by virtue of the force of a collision, wherein the attractive force of said magnet tends to be relatively large under the normal driving conditions of a vehicle, while said attractive force is made to be relatively small by a signal indicative of the occurrence of a collison, whereby the apparatus may not be operated by any noise produced while the vehicle is running, but is capable of positively coming into operation upon the occurrence of a collision.

3,780,315

AUTOMATIC CONTROL SYSTEM FOR DISHWASHING APPARATUS

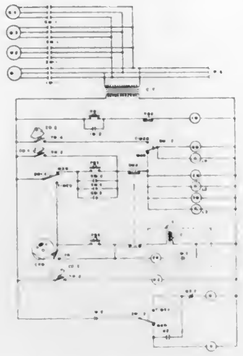
David G. Blakeslee, Western Springs, Ill., assignor to G. S. Blakeslee & Co., Chicago, Ill.

Filed Oct. 26, 1972, Ser. No. 301,063

Int. Cl. H01h *43/10*

U.S. Cl. 307—141 **8 Claims**

A control system for a commercial dishwashing apparatus of the orbital conveyor type having washing and rinsing sections is designed to automatically operate the pump units for the washing and rinsing sections in a timed sequence and operate an electrical signal means to indicate when the soiled ware in the conveyor is cleaned and ready for removal. After



all the soiled ware on the conveyor has been passed through the washing and rinsing sections, the pump units are sequentially stopped and the electrical signal means changes to inform the operator that the automatic operation is terminated.

3,780,316

DATA DISTRIBUTION LINE ARRANGEMENT

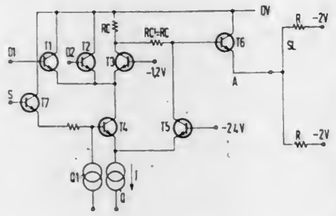
Wilhelm Wihelm, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 17, 1971, Ser. No. 144,074

Claims priority, application Germany, May 26, 1970, P 20 25 740.3

Int. Cl. H03k *17/00*

U.S. Cl. 307—209 **3 Claims**



A data distribution line arrangement with transmitting and receiving gates which are connected to a distribution line wherein the transmitting gates respectively provide data to the distribution line during unique time intervals and a transmitting gate has an output connected to the distribution line. The transmitting gate may be conditioned to three states, two of which states are characterized by a small impedance value and the third state being characterized by a large impedance value.

3,780,317

TRANSISTORIZED COMPARATOR CIRCUIT

Takao Kurata, and Atsushi Oritani, both of Kobe-shi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

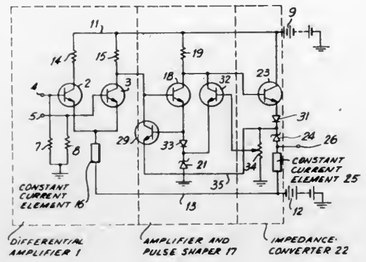
Filed July 29, 1971, Ser. No. 167,125

Claims priority, application Japan, July 31, 1970, 45/67184

Int. Cl. H03k *5/20, 5/08, 19/30*

U.S. Cl. 307—235 R **8 Claims**

A comparator circuit comprises a differential amplifier for providing the difference between signals supplied to its inputs. An amplifier and pulse shaper has a transistor connected to the differential amplifier for amplifying and shaping the output signal of the differential amplifier. An impedance converter connected to the output of the amplifier and pulse shaper transistor transmits output signals at low output impedance. A negative feedback path is provided between the



output of the impedance converter and the input of the amplifier and pulse shaper transistor. The negative feedback path is operational when the voltage between its input and output is substantially zero and is non-operational when the voltage between its input and output is different from zero.

3,780,318

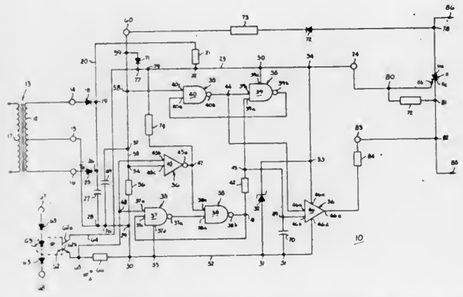
ZERO CROSSING SCR FIRING CIRCUIT NETWORK

Everett Wendall Werts, Normal, and Charles Richard Wetter, Bloomington, both of Ill., assignors to General Electric Company, New York, N.Y.

Filed June 26, 1972, Ser. No. 266,233

Int. Cl. H03k *17/72*

U.S. Cl. 307—252 UA **5 Claims**



A firing circuit for providing time zero crossing firing of a load-controlling SCR, adapted particularly for firing a load-controlling SCR connected in circuit relationship in a single phase of a multi-phase electrical system, including an electrical power supply, a first quad section integrated circuit means connected in circuit relationship with the power supply and including a first flip flop and a second flip flop, a second dual section integrated circuit means connected in circuit relationship with the first integrated circuit means, a photo isolator to accept a logic input from another logic system and including at least one light emitting diode connected in circuit relationship with the aforesaid logic system and a photo transistor coupled to the light emitting diode and connected in circuit relationship with the first and second integrated circuit means, and a load-controlling SCR connected in circuit relationship with the first and second integrated circuit means such that zero crossing firing of the SCR is provided in accordance with a two step process which is initiated when a logic input is fed to the firing circuit through the photo isolator and regardless of when during the cycle the logic input is supplied.

3,780,319

BISTABLE MULTIVIBRATOR

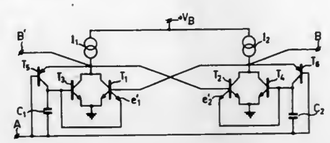
Arpad Korom, Zurich, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 20, 1972, Ser. No. 290,649

Claims priority, application Netherlands, Sept. 30, 1971, 7113388

Int. Cl. H03k *3/286*

U.S. Cl. 307—288 **4 Claims**



Bistable multivibrator comprising two stages. Each stage comprises a switching transistor and a control transistor the collector emitter paths of which are connected in parallel. The bases and the collectors of the switching transistors of the two stages are cross coupled, and a trigger signal is applied to the bases of the two control transistors via two capacitive elements. The collector base path of each of the two control transistors is shunted by the emitter collector path of an auxiliary transistor of opposite conductivity type the base of which is connected to the trigger input. This provides a highly stable circuit, whilst in addition when the circuit is in integrated circuit form the surface area required for the capacitive elements is a minimum.

3,780,320

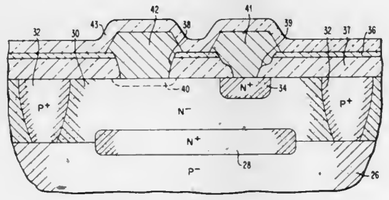
SCHOTTKY BARRIER DIODE READ-ONLY MEMORY

Jack A. Dorler, Wappingers Falls; John L. Forneris, Peekskill, and Donald J. Swietek, Middletown, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,976

Int. Cl. H01l *19/00*

U.S. Cl. 307—303 **7 Claims**

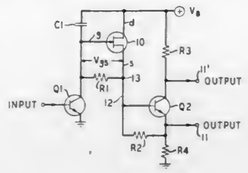


A monolithic Schottky barrier diode read-only memory comprising a semiconductor substrate having more than one separate and distinctly functional integrated circuit means located thereon. A plurality of Schottky barrier diodes comprising a more than one metal system contact the semi-conductor substrate for forming a plurality of Schottky barrier diode junctions. A separate Schottky barrier diode comprising a corresponding more than one metal system is incorporated into the other separate and distinctly functional integrated circuit means for addressing the Schottky barrier diode and sensing information therefrom. Interconnection metallurgy corresponding to the more than one metal system connects the plurality of separate and distinctly functional integrated circuit means and forms a continuous electrical path with the more than one metal system forming the Schottky barrier diodes.

3,780,321
LINEAR DISCHARGE CIRCUIT

Norman Eugene Lentz, North Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 2, 1972, Ser. No. 294,455
Int. Cl. H03k 3/26
U.S. Cl. 307—304 4 Claims

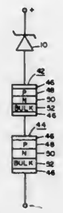


A capacitor is linearly discharged through a series circuit formed by the drain-source path of a field effect transistor and a resistor. Linear discharge is provided by maintaining a fixed voltage across the resistor, and this is accomplished by connecting the gate-source junction of the field effect transistor in parallel with the resistor; the gate-to-source voltage will be constant provided only that the source current is constant and this is assured by means of a constant current generator connected to the field effect transistor source lead.

3,780,322
MINIMIZED TEMPERATURE COEFFICIENT VOLTAGE STANDARD MEANS

Cecil Kent Walters, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 856,646, Sept. 10, 1969, abandoned. This application July 15, 1971, Ser. No. 165,775
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 307—318 6 Claims



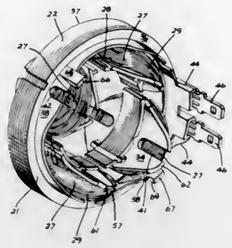
To minimize the change in breakdown voltage of the series connection of one or more reverse biased diodes and one or more forward biased diodes with change in temperature, bulk semiconductive material is connected in series with a reverse biased diode or may be made part of the forward or reverse biased diode, or may be added to the material thereof.

3,780,323
INSULATINGLY COVERED DYNAMOELECTRIC MACHINE

Carl E. Swain, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sept. 15, 1971, Ser. No. 180,757
Int. Cl. H02k 1/04
U.S. Cl. 310—43 2 Claims

Insulation systems as well as winding retaining means for dynamoelectric machines having winding accommodating magnetic cores and methods of making same are described. Ground insulation system may include one or more formed in situ insulation members with portions thereof providing retainer means for constraining windings accommodated by a magnetic core from undesired movement. With tongue shape retainer means, access means may also be provided for facilitating the removal of defective winding turns accommodated on a given core. With formed in situ insulating members, retainer means for terminals and terminal boards may be

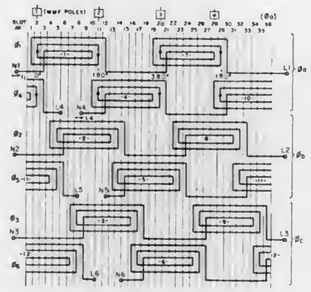


provided along with winding retainer means, by little effort and expense. Similarly, spacer and other means may be provided. In one exemplification, formed in situ insulation system, coupled with molded housing means for winding turns provide substantially improved isolating insulation system for winding turns.

3,780,324
ADJUSTABLE SPEED INDUCTION MOTOR SYSTEM

Jack E. Greenwell, Reno, Nev., assignor to Lear Motors Corporation, Reno, Nev.

Division of Ser. No. 144,897, May 19, 1971. This application June 5, 1972, Ser. No. 259,973
Int. Cl. H02k 3/00
U.S. Cl. 310—180 15 Claims



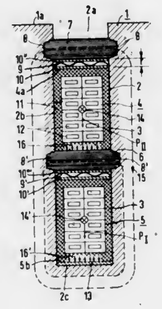
An electric induction motor/control system providing the desirable high starting torque and wide speed characteristics of direct current motors. The stator of the induction motor has two specially interrelated winding sets per phase. The motor windings are supplied with unidirectional current pulses from silicon controlled rectifiers that are programmed to provide advantageous modes of operation for the motor. The unique relation and interaction between the motor windings hereof and the associated electronic circuitry results in high power factor, good efficiency, and self-clearing SCR commutation action. The preferred motors use a squirrel cage rotor with no commutator, brushes, or slip rings. The complementary stator winding arrangements are not voltage limited, and thereby permit the construction of large power motor systems. Practical motor ratings are from fractional to over 500 horsepower, at speeds ranging from 600 to 40,000 rpm, and higher. With selective control circuitry the motors hereof can be operated: (a) at constant output torque over a wide speed range; (b) at constant horsepower over a selected speed range; (c) with traction output characteristics similar to that of series motors; (d) at constant speed; (e) and with direct speed reversal in any

of these modes. The motor systems require little maintenance, and may be hermetically sealed.

3,780,325
APPARATUS FOR LOCKING STATOR WINDING CONDUCTORS OF TURBOGENERATORS IN POSITION

Georg Frankenhauser, Mulheim/Ruhr, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim/Ruhn, Germany

Filed June 12, 1972, Ser. No. 261,652
Claims priority, application Germany, June 18, 1971, P 21 30 201.2
Int. Cl. H02k 3/48
U.S. Cl. 310—214 3 Claims

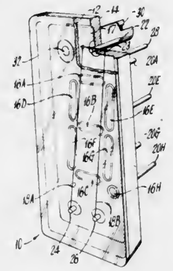


Apparatus for locking the stator winding conductors of turbogenerators in position comprises inserts between the upper and lower conductor bars. The inserts are supplemental retaining wedges and associated leaf springs and intermediate components. The supplemental retaining wedges, the leaf springs and the intermediate components are positioned in a radial interspace between the supplemental retaining wedges and the upper surface of the lower bar. This exerts a radial retaining pressure on the lower bar, regardless of the upper bar, and further results in a reduction of the pulsating pressure stress of the bars and permits wider limits for the lowest feasible number of slots.

3,780,326
SYMBOL DISPLAY TUBE WITH AUXILIARY ELECTRODE

Rein Raago, Morristown, N.J., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Aug. 25, 1971, Ser. No. 174,666
Int. Cl. H01j 1/72, 1/88, 63/00
U.S. Cl. 313—108 R 8 Claims

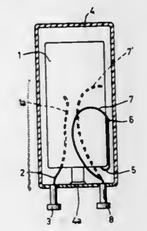


An evacuated envelope having a transparent display face contains a plurality of selectively energizable, phosphor-coated anode display elements for presenting a symbol display, with an auxiliary electrode disposed either behind or coplanar with said display elements and electrically insulated therefrom. A cathode comprising one or more filaments is situated in front of said display elements, i.e., between the display elements and the display face of the envelope, to provide a direct electron beam to the phosphor-coated surfaces of the display elements.

3,780,327
GLOW DISCHARGE STARTER

Adrianus Petrus Vervaart; Cornelis Machiel Verheij, and Hermanus Maria Jongerius, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,911
Claims priority, application Germany, Dec. 29, 1971, G 71 49 219.8
Int. Cl. H01j 1/88
U.S. Cl. 313—151 2 Claims



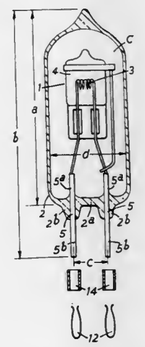
The invention relates to a glow discharge starter which is provided with a built-in fuse.

According to the invention the fuse has a resilient contact member exerting a pulling force on the part to be melted and this in a direction which is parallel to the wall of a tubular part of the starter in which the glow discharge is effected. In the case of a starter provided with a tightly fitting synthetic material jacket the fuse described may avoid risk of fire.

3,780,328
LIGHTING UNIT FOR USE UNDERWATER AND IN WET ENVIRONMENT

Michael Gordon Boddy, Newark; Graham Sewell, Huddersfield, and Michael Sewell, Bingham, all of England, assignors to Electronic Control & Surveillance Limited, Grantham, England

Filed Dec. 30, 1971, Ser. No. 214,239
Int. Cl. H01j 61/30
U.S. Cl. 313—184 4 Claims



An underwater lighting unit comprises a low voltage tungsten-halogen lamp within an outer envelope of borosilicate

glass, with an evacuated cavity between the two. The envelope is designed to withstand 8,000 p.s.i. in water. Connections are made onto metal pins sheathed in glass sleeves or protrusions integral with the envelope.

The pins are inserted into receptacles embedded in an insulating core within a shell of a free flooding lampholder. Rubber sleeves on the pins are compressed into spaces between the sleeves and the bottoms of recesses in the glass core. There are spring contact clips between the pins and bores in the pin receptacles.

3,780,329
40 WATT FLUORESCENT LAMP

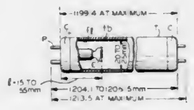
Hitoshi Otsuka, Hirakata; Kazumasa Nohmi, and Masao Hommo, both of Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma City, Osaka Pref., Japan

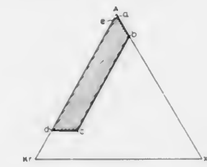
Filed Nov. 7, 1972, Ser. No. 304,418

Claims priority, application Japan, Nov. 12, 1971, 46/106232

Int. Cl. H01j *61/16*

U.S. Cl. 313—185 **4 Claims**





Luminous flux and luminous efficiency of a 40 watt fluorescent lamp comprising a ballast specified by the I.E.C. Publication 82 (covering Ballast for fluorescent lamps) is greatly improved by employing an improved tube characterized by:

having the nominal tube length of 1,200 mm and the inner diameter of 20 mm to 25 mm,

provided inside at each end of the tube with an electrode E having the length *l* of 15 mm to 55 mm inward (, from the end face of each cap C as measured as shown in FIG. 2,)

and containing mixed rare gas inside the tube, the rare gas having composition ratio represented by any point within a diagonal region defined by connecting the following points (a) to (e) and (a) with straight lines in the following order, on a trilinear chart for xenon, krypton and argon mixture:

a.	Xe: 1%,	Kr: 0%,	A: 99%
b.	Xe: 15%,	Kr: 0%,	A: 85%
c.	Xe: 15%,	Kr: 65%,	A: 20%
d.	Xe: 0%,	Kr: 80%,	A: 20%
e.	Xe: 0%,	Kr: 5%	A: 95%

the pressure of the mixed gas being between 1.0 mmHg and 3.5 mmHg at the temperature of 20°C.

3,780,330
20 WATT FLUORESCENT LAMP

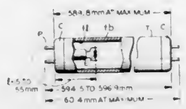
Hitoshi Otsuka, Hirakata; Kazumasa Nohmi, and Masao Hommo, both of Takatsuki City, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma City, Osaka, Japan

Filed Nov. 7, 1972, Ser. No. 304,419

Claims priority, application Japan, Nov. 12, 1972, 46/106231

Int. Cl. H01j *61/16*

U.S. Cl. 313—185 **6 Claims**





Luminous flux and luminous efficiency of a 20 watt fluorescent lamp comprising a ballast specified by the I.E.C. Publication 82 (covering Ballast for fluorescent lamps) is greatly improved by employing an improved tube characterized by:

having a nominal tube length of 590 mm and an inner diameter of 20 mm to 25 mm,

provided inside each end of the tube with an electrode E having a length l of 15 mm to 55 mm inward (from the end face of each cap C as measured as shown in FIG. 2,)

and containing mixed rare gas inside the tube, the rare gas having a composition ratio represented by any point within a diagonal region defined by connecting the following points (*a*) to (*e*) and (*a*) with straight lines in the following order, on a trilinear chart for xenon, krypton and argon mixture:

(a)	Xe: 2%,	Kr: 0%,	A:98%
(b)	Xe:15%,	Kr: 0%,	A:85%
(c)	Xe:15%,	Kr:65%,	A:20%
(d)	Xe:0%,	Kr:80%,	A:20%
(e)	Xe:0%,	Kr:10%,	A:90%,

the pressure of the mixed gas being between 1.0 mmHg and 3.5 mmHg at a temperature of 20°C.

3,780,331
APPARATUS AND METHOD FOR ELIMINATING MICROCRACKS IN ALUMINA CERAMIC DISCHARGE DEVICES

William J. Knochel, West Orange; Leo C. Werner, Cedar Grove, both of N.J., and Francis C. M. Lin, Flushing, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 22, 1972, Ser. No. 291,489

Int. Cl. H01j *61/06*

U.S. Cl. 313—219 **10 Claims**

A ceramic discharge device including an outer vitreous envelope sealed to a metallic base, a pair of lead-in conductors connected to the base and extending into the envelope with one of the lead-in conductors connected to one end of an alumina arc tube mounted within the outer envelope and the other lead-in conductor forming a portion of a support frame for the arc tube and being connected to the other end of the arc tube. The lead-in conductor forming a portion of the support frame being constructed of stainless steel and having a chrome oxide coating formed on its surface. Additionally, a

non-photoelectron emissive element forming a photoelectron collector electrically connected to the first lead-in conductor may be interposed between the arc tube and the second lead-



in conductor forming a portion of the frame and, if desired, the lower portion of the frame may be surrounded by a quartz or ceramic sleeve.

3,780,332
ELECTRON DISCHARGE DEVICES

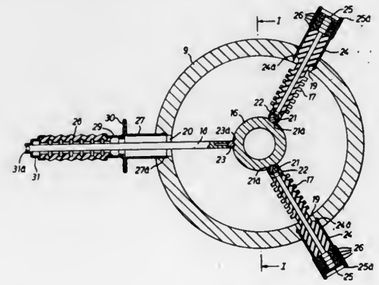
Frederick Henry Gale, Hillingdon, and Roy David Cooper, Boscombe, both of England, assignors to EMI-Varian Limited, Middlesex, England

Filed Apr. 4, 1972, Ser. No. 240,951

Claims priority, application Great Britain, Apr. 14, 1971, 9,399/71; Jan. 10, 1972, 6,221/72

Int. Cl. H01j *1/88, 19/42*

U.S. Cl. 313—252 **5 Claims**



An electron discharge device comprises an evacuated envelope in which a component, such as a focusing electrode, is supported. The envelope is provided with an aperture which is hermetically sealed by a closure member and said closure member is arranged to apply pressure, either directly or indirectly, to the component so as to urge the component against another part of the device. By this means, the component is supported in a desired position within the envelope.

3,780,333
LAMP FILAMENT SUPPORT MEANS

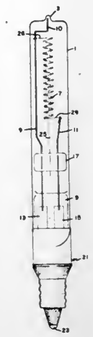
John E. Flynn, Danver, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 15, 1972, Ser. No. 315,539

Int. Cl. H01j *1/96*

U.S. Cl. 313—274 **1 Claim**

A single ended quartz halogen lamp having a coiled coil filament supported and axially aligned by a U-hook arrangement formed in each lead-in wire. The U-hooks are pressed between the coils of the filament to bear against a solid metal spud pro-



vided in each end of the filament. The configuration of the hook is such that the coil of the filament can pass through without being damaged in the process.

3,780,334
VACUUM TUBE FOR GENERATING A WIDE BEAM OF FAST ELECTRONS

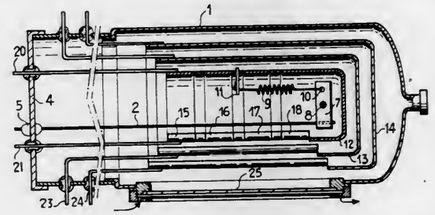
Hubert Leboutet, Paris, France, assignor to Thomson - CSF, Paris, France

Filed May 31, 1972, Ser. No. 258,440

Claims priority, application France, June 9, 1971, 7120938

Int. Cl. H01j *29/46, 33/00*

U.S. Cl. 313—299 **7 Claims**



A vacuum tube for producing a wide high-uniformity beam of fast accelerated electrons. The tube comprises an evacuated enclosure provided with an electron transparent window and containing an elongated cathode, accelerator electrodes and a control electrode formed by sleeves electrically insulated from one another and brought to separately adjustable potentials.

3,780,335
QUARTZ GLASS PINCH SEAL OF INCREASED COMPRESSIVE STRENGTH

Karl Stadler, Rebdorf, Germany, assignor to Patent-Treuhand-Gesellschaft Fur Elektrische Gluhlampen m.b.H., Munich, Germany

Filed June 6, 1972, Ser. No. 260,089

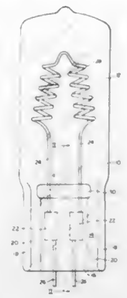
Claims priority, application Germany, June 9, 1971, G 71 22 367.1

Int. Cl. H01j *5/02, 17/16, 61/30*

U.S. Cl. 313—318 **4 Claims**

An electric incandescent lamp of the halogen type including an envelope of quartz glass having an external press seal composed of a flat mid-section limited by two plane parallel faces and two flanges extending parallel to the lamp axis and enclosing the mid-section so that the cross section of the seal in a

plane perpendicular to the lamp axis is of I-shape. The lamp is provided with leads sealed into the press seal in the form of metal foil seals with outer lead wires protruding from the bottom end of the press seal as base contacts and including in the press seal, where it merges with the envelope body, a transverse depression or corrugation extending across substantially the entire width of the press seal.

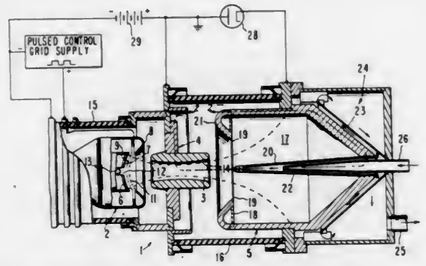


3,780,336

HIGH POWER BEAM TUBE HAVING DEPRESSED POTENTIAL COLLECTOR CONTAINING FIELD-SHAPING PROBE

Robert Henry Giebeler, Sunnyvale, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Aug. 24, 1972, Ser. No. 283,431
Int. Cl. H01j *23/02*
U.S. Cl. 315—5.38 **5 Claims**



An efficient high power beam tube includes a gridded convergent flow electron gun for forming and projecting a beam of electrons through a centrally apertured accelerating anode to a fly-trap type depressed beam collector structure. A tapered conductive probe is axially disposed within the beam collector for cooperation with a collector focus electrode structure to shape the equipotentials at the mouth of the fly-trap beam collector, in the presence of space charge depression within the collector, such as to retain laminar electron flow and uniform current density transversely across the beam as the beam decelerates and expands into the beam collector structure, whereby increased depressed collector efficiency is obtained.

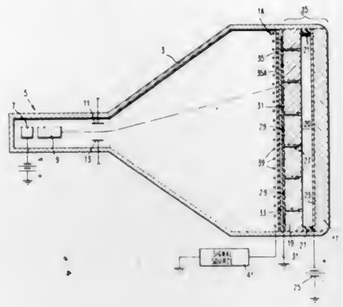
3,780,337

FIELD-EFFECT STORAGE TUBE WITH EAS-DISCHARGE OUTPUT

Benjamin Kazan, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1972, Ser. No. 265,018
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **15 Claims**

A field-effect storage cathode ray tube is provided with a gas-discharge panel arrangement for display output. A transparent conductive mesh is mounted within the panel adjacent the transparent front plate thereof, and an array of conductive pins extend through the panel backplate from within the panel to the other surface of the backplate. A conductive mesh pattern is formed upon the outer surface of the panel backplate in a manner so that each of the respective mesh openings surround a respective pin. A layer of semiconductor material is deposited over the mesh and the backplate exposed by the mesh openings, and a layer of insulation is deposited upon the layer of semiconductor. A charge pattern written on the layer of insulation acts to increase local conductivity in the semiconductor, causing increased current flow between local pins and adjacent mesh. Current flow through the pins determines a pattern of light emission corresponding to the charge pattern.

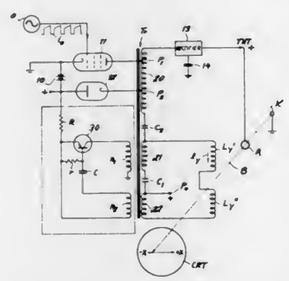


3,780,338

DEFLECTION SYSTEM FOR COLOR-TELEVISION TUBE

Jacques Bernard, Noisy le Sec, France, and Franco Gatti, Pavia, Italy, assignors to Ates Componenti Elettronici S.p.A., Milano, Italy

Filed Jan. 25, 1971, Ser. No. 109,112
Claims priority, application Italy, Jan. 23, 1970, 19713 A/70
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 R **9 Claims**



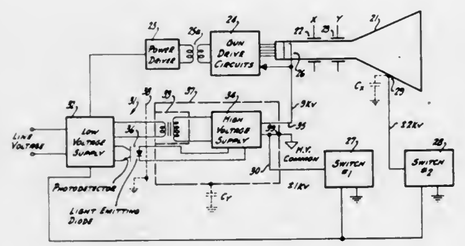
The beam of a cathode-ray tube, especially in a color-television system, is horizontally deflected by a sawtooth-current generator which comprises an autotransformer winding on a common core with four further windings, two of these windings being also capacitively coupled to the autotransformer winding and forming, together with an interposed condenser, part of a reactive loop including the coils of an electromagnetic yoke. The autotransformer winding is intermittently energized by an electronic switch, consisting of a pentode and a diode, in series with a portion of that winding across a source of direct current and feeds a rectifier for supplying a high positive potential to an accelerating anode of the associated cathode-ray tube. The two remaining windings are respectively inserted in the input circuit and in the output circuit of a normally blocked transistor which is unblocked during the flyback stroke to deliver additional energy to the circuit reactances for utilization during the next scan.

3,780,339

HIGH SPEED SWITCHING CIRCUIT FOR DRIVING A CAPACITIVE LOAD

Alfred J. Mayle, Palo Alto, Calif., assignor to Computer Power Systems, Inc., Sunnyvale, Calif.

Filed May 3, 1971, Ser. No. 139,775
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **7 Claims**



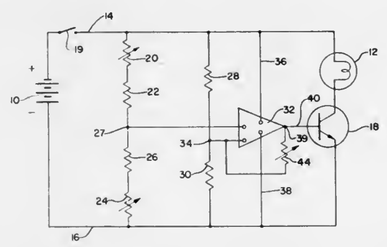
A high speed switching circuit especially useful for driving a capacitive load includes two dc voltage sources of equal magnitude which are selectively coupled to a capacitive load such as a multicolor cathode ray display tube. The polarity of voltage on the capacitive load is switched positive to negative and vice versa by coupling the capacitive load to an inductor and allowing the subsequent transfer of energy to switch the polarity of the stored voltage on the capacitive load.

3,780,340

LIGHT SOURCE WITH SELECTABLE INTENSITY BANDWIDTH

William Munro, Taunton, Mass., assignor to Analog Monitors, Inc., Winthrop, Mass.

Filed June 18, 1971, Ser. No. 154,297
Int. Cl. H05b *39/04*
U.S. Cl. 315—151 **4 Claims**



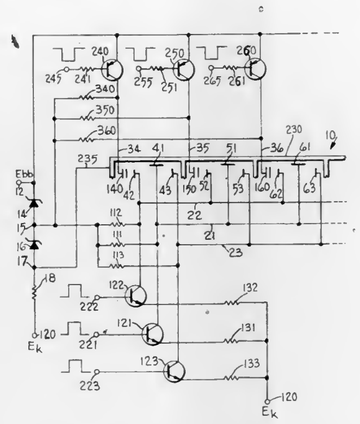
A light source having a selectable intensity bandwith comprising a lamp, a photosensitive element responsive to the lamp, switching means responsive to the photosensitive element for energizing the lamp below a first selected intensity and for de-energizing the lamp above a second selected intensity, the first and second selected intensities defining the intensity bandwith.

3,780,341

CIRCUIT FOR OPERATING MULTIPLE POSITION DISPLAY DEVICES

George Ernest Holz, North Plainfield, and Felix Dieterman, Piscataway, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 85,662, Oct. 30, 1970, abandoned.
This application Feb. 13, 1973, Ser. No. 332,162
Int. Cl. H05b *43/00*
U.S. Cl. 315—169 TV **20 Claims**



The circuit of the invention is adapted for operating multiple-position display devices having several groups of display cathode segments or elements positioned in a row, with corresponding segments in each group connected in common, an anode electrode associated with each group of display segments, and an auxiliary electrode being common to and electrically isolating the groups of segments. The cathode segments, together with an anode, can be selectively energized to display a character at any desired cathode group or position and the auxiliary electrode inhibits electrical discharge between the cathode segments and any other than the associated anode. The circuit includes a separate driver circuit for each cathode and for each anode and a circuit for biasing the "OFF" cathodes, the "OFF" anodes, and the auxiliary screen electrode a predetermined difference in potential from the anode supply voltage and independent of the amount of current conducted by the cathodes or by the auxiliary electrode itself.

3,780,342

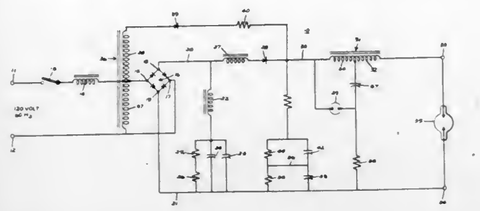
BALLAST APPARATUS FOR STARTING AND OPERATING ARC LAMPS

Norman C. Grimshaw, and Thomas G. West, both of Fort Wayne, Ind., assignors to General Electric Company, Indianapolis, Ind.

Filed Mar. 1, 1972, Ser. No. 230,766
Int. Cl. H05b *37/00*
U.S. Cl. 315—173 **9 Claims**

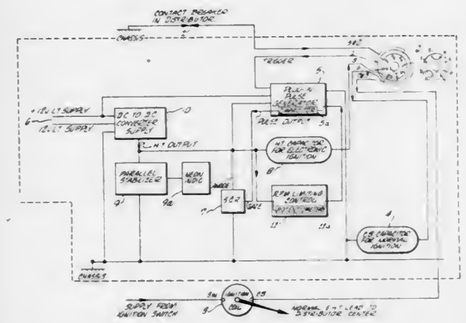
Ballast apparatus for starting and operating arc lamps includes a full wave rectifier having its input connected in series with a ballasting reactor across the terminals of an alternating current supply. A filter circuit is connected across the output of the full wave rectifier so that a filtered D.C. voltage equal to the peak supply voltage appears at the output of the rectifier bridge. A lamp supply circuit, connecting the bridge output with input terminals for connection to the arc lamp, includes a series connection of a choke coil and a first autotransformer. A second autotransformer has its primary connected in series with the ballasting reactor across the A.C. supply terminals and its secondary connected to the lamp supply circuit

between the choke coil and the first autotransformer. A value low capacitance is connected across the lamp supply circuit at the junction between the choke coil and the first autotransformer and, with the second autotransformer, provides a



signal of low energy but at a voltage level substantially higher than the peak supply voltage. A start capacitor is connected in loop with the primary of the first autotransformer and a switch for providing a starting pulse to strike an arc in the arc lamp.

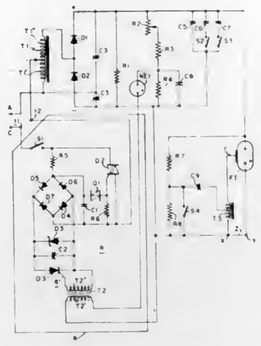
3,780,343
IGNITION SUPPORT SYSTEM
Frederick Ryan Stonham, 45 Clarke Ave., Hove, England
Filed May 12, 1971, Ser. No. 142,601
Int. Cl. F02p *1/00, 11/04*
U.S. Cl. 315—211 **6 Claims**



An ignition control system for a vehicle in which a high voltage capacitor is charged from the vehicle battery through a D.C. to D.C. converter and discharged through the ignition coil upon the firing of a silicon controlled rectifier by a pulse generator controlled by the contact breaker of the vehicle distributor.

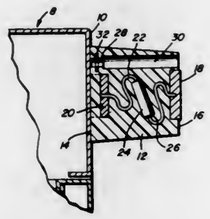
3,780,344
CHARGE REGULATING CIRCUIT FOR FLASH LAMP STORAGE CAPACITOR
Fredrick W. Paget, Hamilton, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.
Filed Sept. 7, 1971, Ser. No. 178,066
Int. Cl. H05b *37/00*
U.S. Cl. 315—241 P **13 Claims**

A flash lamp for photographic exposures discharges from one or more high voltage storage capacitors charged from an alternating current source under the control of a charge regulating circuit. The regulating circuit comprises a bridge rectifier charging a regulator capacitor to the threshold voltage of an SBS-triac combination connecting the AC source to a step up transformer whose rectified output charges the flash lamp storage capacitors. A neon lamp sensing the voltage on the storage capacitors is transformer coupled to an SCR which shunts the regulating capacitor preventing the regulating



capacitor from applying threshold voltage to the SBS and triac and stopping charge of the storage capacitors.

3,780,345
STATIC ELECTRICITY DESHOCKER
Ernest Earman, Jr., 108 Walnut St., West, Alexandria, Va.
Filed Sept. 14, 1972, Ser. No. 288,985
Int. Cl. H05f *3/02*
U.S. Cl. 317—2 R **6 Claims**

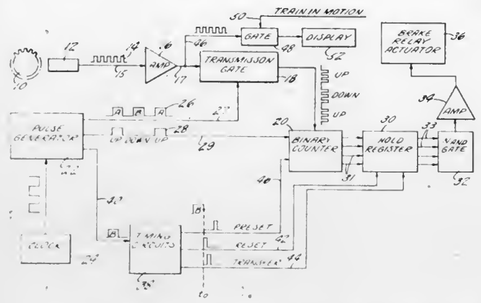


A static electricity discharging, arresting and shock eliminating device characterized by a body of any suitable configuration, shape, color and design made of non-conductive and insulative material, plastics for example together with a permanent magnet embedded therein. The body in a preferred embodiment, has an inward end surface designed and adapted to be supportively fastened on a relatively stationary supporting and grounding surface and an outward end surface embodying means indicative of a place or locale which, under ordinary circumstances, would be contacted or touched with the hand or finger. Discharge means is incorporated in the body through the medium of which built-up static electricity is intercepted, arrested and reduced to non-shocking state. The discharge means features an appropriate resistor which serves to slow up the flow of static electricity discharged from the user. The permanent magnet serves as a method of attaching the lead wire from the resistor, a contact point for electrical current flow to a metal surface and a means for securing the deshocker to a ferrous metal surface.

3,780,346
DIGITAL ANTI-SPIN AND ANTI-SLIDE SYSTEM FOR MOVING VEHICLES
Robert G. Gagnon, Ellington, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed July 3, 1972, Ser. No. 268,231
Int. Cl. G01p *3/42*
U.S. Cl. 317—5 **6 Claims**

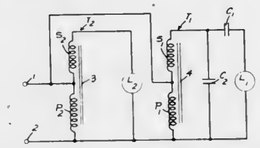
A magnetic pickup located in close proximity to a gear mounted on a vehicle wheel or axle produces a series of pulses

indicative of wheel velocity. A binary up/down counter is set to a preselected binary count, and the wheel velocity pulses are alternatively directed to the up and down inputs of the counter for equivalent intervals of time. Any count remaining



in the counter after the up and down counts which differs from the preselected count indicates acceleration or deceleration of the wheel, and the appearance of a binary one in any one of several preselected bits in the counter at the end of a counting cycle cause the application or release of the wheel brakes.

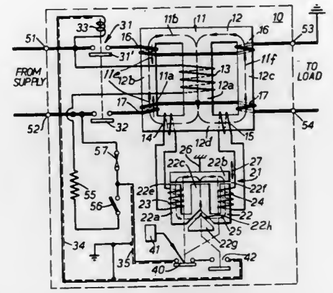
3,780,347
POWER FACTOR CORRECTION IN A LEAD/LAG BALLAST CIRCUIT
David H. Riesland, Danville, Ill., assignor to General Electric Company, Indianapolis, Ind.
Filed Sept. 27, 1972, Ser. No. 292,555
Int. Cl. H02h *7/04*
U.S. Cl. 317—9 PF **5 Claims**



A ballast circuit which comprises an autotransformer and capacitors in a lead/lag circuit arrangement is provided to control current through at least a pair of gaseous discharge lamps. The lead circuit, which comprises a lead primary winding and a lead secondary winding connected to a power capacitor, controls a lead lamp. The lag circuit, which comprises a lag primary winding and a lag secondary winding, controls the current in a lag lamp. A shunt capacitor is connected across the series arrangement comprising the lead primary winding and the lead secondary winding. This shut capacitor provides additional power factor correction to above 90 percent power factor and is further used to tune the circuit for minimum impedance to a selected harmonic which is present in the lead circuit.

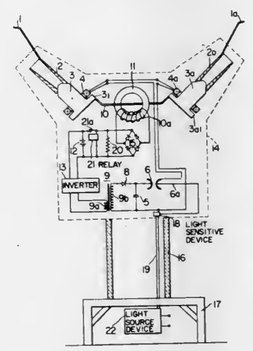
3,780,348
SELF-CONTROLLED DIFFERENTIAL SECTIONALISER FOR THE PROTECTION OF LOW VOLTAGE ELECTRIC POWER CONSUMERS
Panayotis Coroneou Loukidis, Alkminis St. 8 Gallithea, Athens, Greece
Filed July 20, 1972, Ser. No. 273,537
Claims priority, application Greece, July 20, 1971, 42,911; Apr. 22, 1972, 44,765
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **9 Claims**

A sectionalizer apparatus for disconnecting a load circuit from a supply in response to the occurrence of unbalanced currents in the leads connecting the load to the supply comprises a differential transformer including two magnetic circuits with current primary windings in series with the supply leads and producing zero magnetization when the supply currents are balanced and equally magnetized by a voltage primary winding connected to the supply. Secondary windings on the two magnetic circuits supply respective energizing



windings on the two magnetic circuits of a magnetic balance device having contact means connected in the energizing circuit for the operating coil of a contactor controlling the connection of the supply to the load so that unbalanced load currents cause disconnection of the load from the supply. Overvoltage, under-voltage and over-current protection may also be provided by the device.

3,780,349
HIGH-TENSION CIRCUIT BREAKER
Yoshio Nitta; Nobuaki Kiyokuni, and Kikuo Kawasaki, all of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan
Filed Oct. 24, 1972, Ser. No. 300,339
Claims priority, application Japan, Jan. 18, 1972, 47/7148
Int. Cl. H02h *1/00*
U.S. Cl. 317—58 **11 Claims**

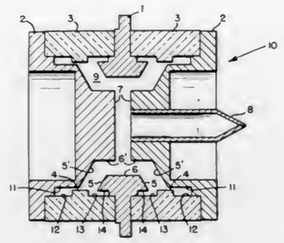


In a high-tension circuit breaker including, in the high-tension side thereof insulated from the ground side by porcelain insulating tubes or the like, a contact mechanism which operates interrupting contacts of the circuit breaker utilizing electric energy stored in a capacitor, there is provided means for charging the capacitor from the high-tension line voltage of the circuit breaker. Various modifications of the charging means are also described.

3,780,350
SURGE ARRESTER

David M. Sanger, Livingston, and Joseph E. Langan, North Caldwell, both of N.J., assignors to General Signal Corporation, Rochester, N.Y.

Continuation of Ser. No. 53,463, July 9, 1970, abandoned.
This application Dec. 16, 1971, Ser. No. 208,991
Int. Cl. H02h 3/22
U.S. Cl. 317—61.5 4 Claims

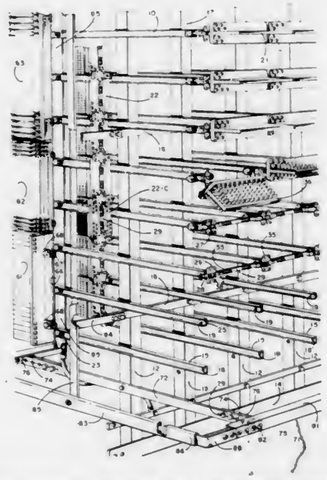


A surge protection device has been provided having a central ground electrode disposed midway between spaced terminal electrodes. The improvement includes a ground electrode having a central annular opening and line terminal electrodes axially disposed at opposite sides of the ground electrode, each line terminal electrode being formed with an annular boss extending partly within the opening of the ground electrode. Means including insulative spacers between electrodes forms an air tight cavity for gas in the vicinity of bosses and the annular opening of the electrodes for discharge of the surges through said cavity.

3,780,351
UNIVERSAL MOUNTING FRAME AND SYSTEM FOR TELEPHONE DISTRIBUTION EQUIPMENT

Garland R. Salmon, and George W. Newton, both of Durham, N.C., assignors to Newton Instrument Company, Durham, N.C.

Filed Dec. 15, 1972, Ser. No. 315,657
Int. Cl. H02b 1/02
U.S. Cl. 317—119 7 Claims

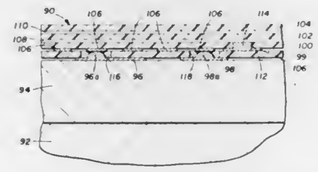


This invention is directed to a mounting frame and to a system of cooperating hardware which is adapted to mount different makes of telephone distribution equipment such as terminal blocks and protectors. Terminal blocks may be mounted in vertical, horizontal, or mixed configurations, and either fixed or with bidirectional pivoting.

3,780,352
SEMICONDUCTOR INTERCONNECTING SYSTEM USING CONDUCTIVE PATTERNS BONDED TO THIN FLEXIBLE INSULATING FILMS

James O. Redwanz, 1027 Larch Brook, Dallas, Tex.

Division of Ser. No. 093,912, Nov. 30, 1970, Pat. No. 3,662,230, which is a continuation of Ser. No. 739,855, June 25, 1968, abandoned. This application Apr. 10, 1972, Ser. No. 242,468
Int. Cl. H01l 5/00
U.S. Cl. 317—101 CM 9 Claims

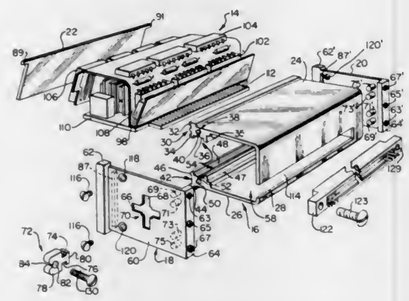


A highly reliable, low cost packaging system for one or more semiconductor chips each having metal contact pads on at least one face. A rigid support is provided for the semiconductor chip and also the large leads which are used to connect the packaged device in an external circuit. A set of thin metallic film strips are bonded to a thin flexible dielectric sheet for support. The set of metal strips interconnects the contact pads on the semiconductor chips and selected leads to electrically interconnect the semiconductor device and the leads. Where a plurality of semiconductor devices are used, a plurality of dielectric sheets can be stacked and electrical connections made between the different layers of metal film strips through openings in the dielectric sheets. Several processes for assembling the packages are also described.

3,780,353
PANEL METER CONSTRUCTION

Bernard M. Gordon, Magnolia; Brant W. Becker, Sudbury, and Charles Prescott, Wilmington, all of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

Filed July 5, 1972, Ser. No. 269,031
Int. Cl. H02b 1/62
U.S. Cl. 317—101 DH 8 Claims



A panel meter housing comprises an extrusion of definite length in the form of an open sided channel having integral upper, lower and rear walls. An integral rail is provided at the forward margin of the upper and lower walls. The definite length of extrusion is separated from an indefinite length of extrusion, the definite length being slightly longer than the width dimension of a panel meter component package to be mounted within the housing. The panel meter component package is inserted within the channel, the upper and lower rails operating to retain the package. Sidewalls having like profiles are mounted to the opened sides of the channel to form the panel meter housing. Each sidewall is formed with a cruciform opening which is adapted to receive a fastener for universal mounting of the panel meter housing.

3,780,354
VACUUM TYPE CIRCUIT BREAKER COMPRISING SERIES-CONNECTED VACUUM INTERRUPTERS, INDIVIDUAL ONES OF WHICH ARE READILY REMOVABLE AND REPLACEABLE

William T. Sharp, Philadelphia, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Mar. 7, 1972, Ser. No. 232,568
Int. Cl. H02b 1/04
U.S. Cl. 317—103 4 Claims



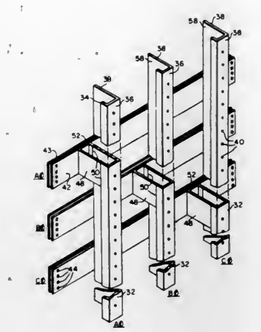
A vacuum-type circuit breaker comprises a plurality of vacuum circuit interrupters stacked one above the other and electrically connected in series. For mounting the interrupters, a pair of horizontally-spaced, vertically-extending channels of insulating material are provided. Extending horizontally between the webs of the channels are a plurality of interrupter-supporting plates, to which the interrupters are respectively secured. Each of these plates is detachably connected to the webs and, when detached, is removable laterally of the channels from the space between the webs to permit the plate together with its associated interrupter to be removed from the circuit breaker.

3,780,355
METAL ENCLOSED SWITCHGEAR WITH J-SHAPED VERTICALLY DISPOSED CONDUCTORS

John G. Salvati; Louis N. Ricci, both of Beaver Falls, and Carl R. Merola, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 17, 1973, Ser. No. 324,263
Int. Cl. H02b 1/20
U.S. Cl. 317—120 8 Claims

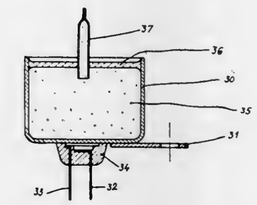
Each section of a three-phase metal-enclosed switchgear unit is provided with main through horizontal bus and generally J-shaped vertical section bus. The J-shaped vertically extending risers are connected to the horizontal main through bus, and feed circuit breakers or other branch bus circuit controlling devices mounted in the switchgear unit. A small section of the J-shaped bus is turned around and butt welded to the back of the J-shaped vertical section bus, where a connection to the main through horizontal bus is desired.



3,780,356
COOLING DEVICE FOR SEMICONDUCTOR COMPONENTS

Nikolaus Laing, Hofener Weg, 35–37 7141 Aldingen near Stuttgart, Germany

Continuation of Ser. No. 6,273, Jan. 27, 1970, abandoned.
This application May 10, 1972, Ser. No. 252,081
Claims priority, application Austria, Feb. 3, 1969, 1961691
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 9 Claims



A device for cooling a semiconductor component comprising a chamber enclosing a non-metallic crystal forming material which experiences a phase change at a temperature which corresponds to the desired operating temperature of the semiconductor component and wherein the material is in thermal communication with the semiconductor component.

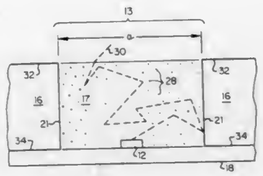
3,780,357
ELECTROLUMINESCENT SEMICONDUCTOR DISPLAY APPARATUS AND METHOD OF FABRICATING THE SAME

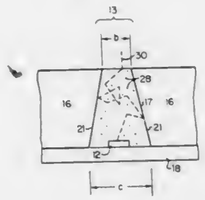
Roland H. Haitz, Portola Valley, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 16, 1973, Ser. No. 333,431
Int. Cl. H05b 33/00
U.S. Cl. 317—234 R 10 Claims

This electroluminescent semiconductor display apparatus utilizes a light-emitting semiconductor device surrounded by a molded white plastic body and transparent material containing scattering centers for diffusing the light emitted from the

semiconductor over a large area. The light-emitting device is placed on a base material and a white plastic body is positioned about the device to provide a corridor for light from the device to the upper surface of the body. This pathway is filled with transparent material containing scattering centers, e.g., a mixture of epoxy and glass powder. Light emitted from the device passes up through the corridor diffusely reflecting from the sides of the body and being scattered by the diffusion centers in the transparent material. Thus, at the upper surface of the body, the corridor appears as an essentially uniformly illuminated surface. In the above described manner, a very intense, nearly point source of light emitted from an electroluminescent semiconductor device is diffused to less intense, more uniform illumination over a much larger surface of a display apparatus, thereby obviating the need for large-area light-emitting devices.





3,780,358

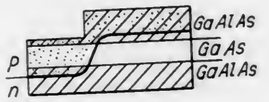
GALLIUM ARSENIDE LASERS

George H. B. Thompson, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,840

Int. Cl. H01b *33/00*

U.S. Cl. 317—235 R **1 Claim**



A semiconductor injection laser device is provided with a narrow junction structure between layers of GaAs and GaAlAs which confines current flow and optical energy to minimize losses. Particular doping and layer growing techniques provide a central strip or ridge in the p-n junction extending between the end faces of the two layers. In one variation the junction crosses an intermediate GaAs layer between two outer GaAlAs layers.

3,780,359

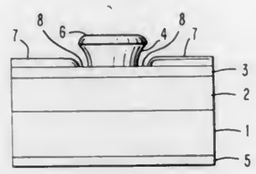
BIPOLAR TRANSISTOR WITH A HETEROJUNCTION EMITTER AND A METHOD FABRICATING THE SAME

William P. Dumke, Chappaqua; Vincent L. Rideout, Mohegan Lake, and Jerry M. Woodall, White Plains, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,620

Int. Cl. H01l *3/20, 9/12*

U.S. Cl. 317—235 R **8 Claims**



An improved heterojunction transistor and a method of fabricating the same is provided. The device is comprised of liquid phase epitaxially grown binary compound layers of group IIIA-VB semiconductor materials which serve as collector and base regions and of a ternary compound layer of group IIIA-VB semiconductor material which serves as the heterojunction emitter.

3,780,360

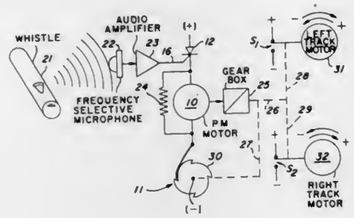
SHAFT POSITIONING MEANS

Leo Bruce Hempell, Almonte, Ontario, Canada, assignor to David Green Associates Limited, Ottawa, Ontario, Canada

Filed Dec. 15, 1971, Ser. No. 208,299

Int. Cl. H02k *29/02*

U.S. Cl. 318—138 **9 Claims**



Means for sequentially positioning a shaft in different angular positions which enables slower operation than a stepping switch, eliminates the need for cam-operated holding contacts and operates on a DC source. An SCR and momentary interrupter are connected in series with a DC motor and battery. A gate signal to the SCR starts the motor rotating which drives the momentary interrupter until the shaft reaches a predetermined angular position at which time the momentary interrupter momentarily opens and closes the circuit so the SCR stops conducting and the motor stops until another pulse is applied to the gate of the SCR. The momentary interrupter comprises a conductive cam on which a contact slides. Drop-off portions on the cam momentarily interrupt the circuit.

3,780,361

CONTROL CIRCUIT FOR AN INVERTER INCLUDING A CONTROLLED THYRISTOR IN AN INTERMEDIATE DIRECT CURRENT CIRCUIT

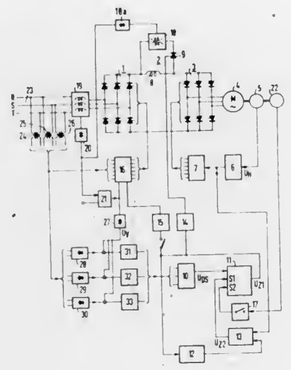
Herbert Poppinger, and Klaus Hubner, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 22, 1972, Ser. No. 228,195

Claims priority, application Germany, Mar. 13, 1971, P 21 12 185.7

Int. Cl. H02r *7/62*

U.S. Cl. 318—171 **5 Claims**



In current converter motors, signals dependent on the rotor positions are applied to a synchronized and self-resettable timing circuit arrangement for the timed activation of a controlled thyristor. A shift in the blocking period of the rectifier toward the cycle-cutoff of the controlled inverter is also effected thereby. A mean effective value is additionally applied to the current regulating circuit which is derived from the current flowing through the controlled thyristor.

3,780,362

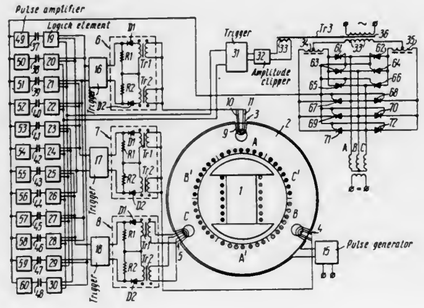
METHOD FOR CONTROL OF A BRUSHLESS MOTOR

Boris Alexandrovich Stromin, ulitsa Sportivnaya, 25, kv. 52, and Boris Konstantinovich Baranov, spusk Gertsena, 11, kv. 26, both of Novocherkassk, U.S.S.R.

Filed Feb. 15, 1972, Ser. No. 226,455

Int. Cl. H02k *29/00*

U.S. Cl. 318—254 **17 Claims**



A method for control of a rectifier motor, which is a combination of a rotating machine and a frequency (and phase) changer, and a device for its realisation, consisting in that the control signals applied to the rectifying element of the frequency changer in phase with the processes taking place in the synchronous machine are derived by sampling the magnetic field of the stator core of the synchronous machine, for which purpose on the back of the stator core there are arranged magneto-sensitive elements connected to a signal comparison unit, so that a rectifier motor can be reliably controlled at low values of rotational e.m.f.s, at zero values of the rotational e.m.f.s in particular.

3,780,363

BRUSHLESS DYNAMO ELECTRIC MACHINE, PARTICULARLY ELECTRIC MOTOR

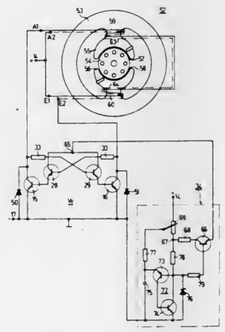
Benno Doemen, and Rolf Muller, both of St. Georgen, Germany, assignors to Papst-Motoren KG, St. Georgen/Schwarzwald, Germany

Filed May 1, 1972, Ser. No. 248,879

Claims priority, application Germany, May 3, 1971, P 21 21 551.0

Int. Cl. H02k *29/00*

U.S. Cl. 318—254 **8 Claims**



An a-c motor structure, such as a shaded pole motor, hysteresis motor or the like, has a pair of main motor windings, which are selectively connected by controllable semi-conductor switches, such as switching transistors, to the supply terminals of a d-c source. To prevent switching currents from flowing in the non-energized winding, and effect a braking torque, a pair of switching amplifiers are provided which are controlled by the main motor windings and, in turn, have only low back current. To provide for rapid starting, the switching amplifiers are energized from the d-c source over a controlled semi-conductor switch, an oscillator controlling the switching rate thereof, the oscillator being voltage-sensitive and increasing in frequency with increasing supply voltage, and being likewise connected to the d-c motor terminal. The motor windings may be wound to be bifilar, tightly coupled inductively by the motor core structure, with diodes bypassing the switching transistors, poled oppositely to the conduction path of the switching transistors.

3,780,364

DUAL-TACH CAPSTAN SPEED CONTROL

Joseph D. Henderson, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

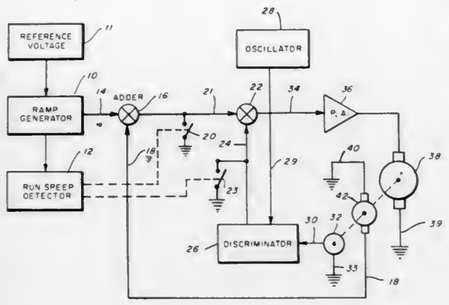
Filed July 6, 1972, Ser. No. 269,511

Int. Cl. H02p *5/16*

U.S. Cl. 318—271 **8 Claims**

This invention describes an improved system for controlling the speed of a capstan which drives magnetic tape in a tape handling system. A d.c. tachometer and a digital tachometer are driven by the capstan motor. A first servo takes as two in-

puts the output of the d.c. tachometer and a ramp voltage (either up or down) and controls the drive motor to follow the ramp voltage. An oscillator and a counter provide pulses at a preselected time interval and the digital tachometer provides pulses at a time interval dependent upon the speed of the drive motor. A second servo utilizes these two inputs to provide an



output voltage which is a function of the difference between the periods of these two pulses and controls the speed of the drive motor in accordance with this difference voltage. Means are provided to apply the d.c. servo while the tape is being speeded up or slowed down or is stopped. While the tape is at running speed, it is controlled by the second servo.

3,780,365

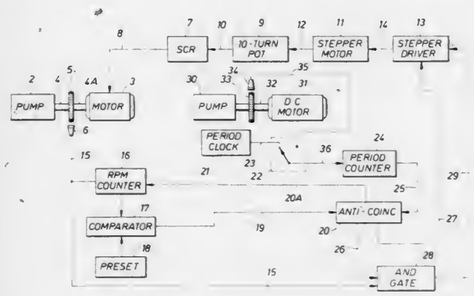
DIGITAL METHOD AND SYSTEM FOR MATERIAL HANDLING

Lawrence C. Porter, Palos Verdes Peninsula, and Kenneth E. Graves, Saratoga, both of Calif., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 733,712, May 31, 1968, Pat. No. 3,590,227 and Ser. No. 733,533, May 31, 1968, Pat. No 3,600,533. This application Nov. 18, 1970, Ser. No. 90,752

Int. Cl. G06g *7/57*; **H02p** *5/00*

U.S. Cl. 318—318 **18 Claims**



Methods and apparatus are disclosed for controlling fluid flow in a flow system as a function of the rpm of a pump shaft and as a function of the mass transfer rate of another material. In one form of the invention, a pulse train is established having a frequency indicative of the rpm of the shaft of the pump. This frequency is compared with a preselected frequency, and any difference is translated into a functionally related number of error or correction pulses. The pump motor is provided with a stepper-type adjustment circuit which corrects the rpm of the motor and pump drive shaft in response to, and as a function of, the number of error pulses.

3,780,366

ELECTRIC CONTROL APPARATUS

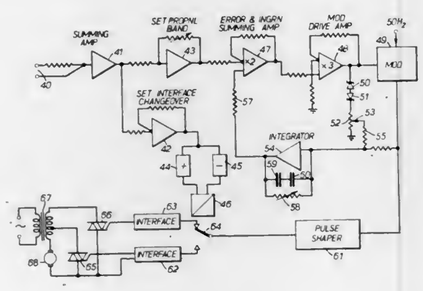
Ian Henderson, Alton, England, assignor to Printed Motors Limited, Hampshire, England

Filed July 19, 1972, Ser. No. 273,293

Claims priority, application Great Britain, July 19, 1971, 33,767/71; Sept. 9, 1971, 42,132/71

Int. Cl. H02p *5/16*

U.S. Cl. 318—345 **5 Claims**



A motor control circuit especially suitable for low inertia motors in which the motor is energised by a succession of full power half wave pulses. For speed control the pulses are applied to the motor in forward reverse direction as the speed falls below or above the desired speed.

3,780,367

WINDSCREEN WIPING SYSTEMS FOR ROAD VEHICLES

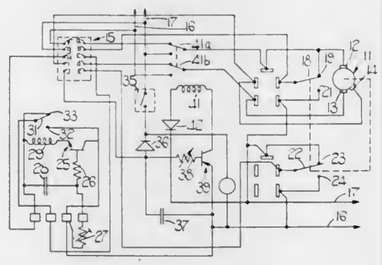
William David Holt, Colne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 18, 1971, Ser. No. 144,613

Claims priority, application Great Britain, June 9, 1970, 27,810/70

Int. Cl. H02p *1/04*; **B60s** *1/08*

U.S. Cl. 318—444 **4 Claims**



In a windshield wiping system for a road vehicle a wiper motor has associated therewith a manually operable switch having an off position and an on position in which it energises the wiper motor. The switch has a further position in which it energises the motor so that there is a delay between successive wipes, and movement of the switch to said further position operates means for operating the wiper motor for a number of cycles before the intermittent action commences.

3,780,368

METHOD OF MARKING AND SUBSEQUENTLY LOCALIZING, INDENTIFYING AND RECORDING PHYSICAL OBJECTS

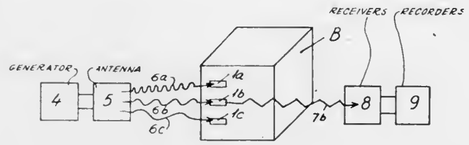
Allan Northeved, Bagsvoerd, and Hans Vinter, Klampenbord, both of Denmark, assignors to Svejsecentralen, Glostrup, Denmark

Filed Feb. 19, 1971, Ser. No. 116,956

Claims priority, application Denmark, Feb. 20, 1970, 857/70

Int. Cl. G01s *9/56*; **G08b** *21/00*

U.S. Cl. 343—6.5 SS **1 Claim**



Physical objects within a group of such objects are all provided with identical electronic marking devices, each comprising a predetermined set, common to the group as a whole, of mutually independent electronic marking circuits, each marking circuit comprising a passive circuit for receiving electrical energy from a surrounding electromagnetic field and a circuit for transmitting electromagnetic signals in response to the reception of electrical energy in said receiving circuit. Each individual marking circuit is designed to radiate its own characteristic output signals and is selectively tuned only to do so when receiving its own characteristic input signals. Each marking circuit further contains at least one component which is destroyed or changed when the field intensity of the characteristic input signals exceeds a predetermined value. Each individual object is then separately coded by subjecting it to an electromagnetic coding field supplying a characteristic subcombination of input signals specific to the object in question and having a high enough field intensity so that a corresponding subcombination of marking circuits are selectively destroyed or changed. When later subjected to an electromagnetic searching field comprising the total combination of input signals for the common set of marking circuits, individual objects may be identified and recorded by means of the characteristic subcombination of output signals from the remaining, intact marking circuits, which identify the object in question according to a predetermined identification and coding system for the group of objects as a whole.

3,780,369

RADAR

Werner Auer, Heidelberg-Wieblingen, and Olaf Schreiber, Ulm/Donau, both of Germany, assignors to Telefunken Patentverwertungs-G.m.b.H., Ulm/Donau, Germany

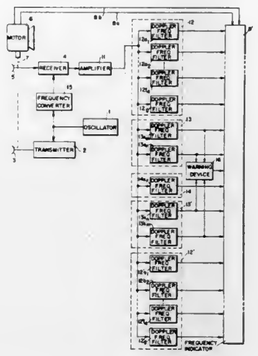
Filed May 25, 1964, Ser. No. 370,125

Claims priority, application Germany, May 25, 1963, T 24054

Int. Cl. G01s *9/44*

U.S. Cl. 343—9 **23 Claims**

1. In combination: means located at an operating site for transmitting signals and for receiving those signals which are reflected by moving targets; and means connected to said transmitting and receiving means for processing those of the received signals which are reflected by targets beginning only at such time as any particular target approaching the operating site first comes to within a predetermined distance of the operating site which predetermined distance is a direct function of the radial speed of the respective target relative to the operating site, in consequence of which signals reflected by targets approaching the operating site at a relatively high speed are first processed when such targets are relatively far away from the operating site whereas signals reflected by targets which are approaching the operating site at a relatively slow speed are first processed while such targets are relatively



close to the operating site, said processing means comprising a plurality of Doppler frequency filters each of which is assigned to a given speed range, said filters being assigned to successively slower speed ranges and having successively wider band widths.

3,780,370

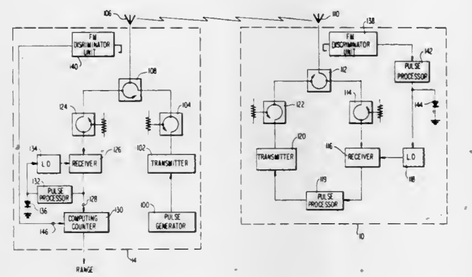
ELECTRONIC RANGE MEASURING METHOD AND APPARATUS

Hewett Maxwell Reeves, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Mar. 11, 1971, Ser. No. 123,227

Int. Cl. G01s *7/40*, *9/56*

U.S. Cl. 343—17.7 **42 Claims**

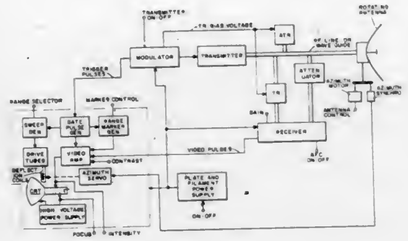


A method and apparatus for electronically providing information as to the distance between two spaced locations, the information being particularly useful for determining and controlling position in offshore operations such as pipeline and cable laying, surveying and other such operations requiring extremely accurate position information. The range information provided by the present invention is extremely accurate since the system dynamically eliminates errors due to unpredictably varying equipment introduced signal delays as well as the relatively fixed signal delays introduced by the equipment. This results in the extremely accurate position information required for offshore operations when the system is utilized to determine the range to two locations from the unknown offshore position so that the unknown position can be determined by conventional trigonometric techniques.

3,780,371
ELECTRONIC COUNTER-COUNTERMEASURES SYSTEM

William H. Rymes, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 28, 1969, Ser. No. 846,310
Int. Cl. G01s 7/26; H01j 29/26
U.S. Cl. 343—18 E 1 Claim

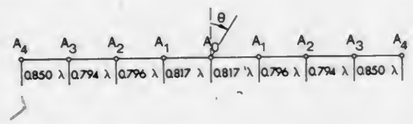


A countermeasure for confusion type electronic countermeasure techniques, when such countermeasures are used to jam radar detection of a relatively stationary target, is disclosed. By use of a two-color two-persistence cathode ray tube display, the target will appear in a color sharply contrasting from the color display of the jamming noise, thereby allowing for an effective determination of target range.

3,780,372
NONUNIFORMLY OPTIMALLY SPACED ANTENNA ARRAY

Hillel Unz, c/o Electrical Engineering Dept. University of Kansas, Lawrence, Kans.

Filed Jan. 17, 1972, Ser. No. 218,495
Int. Cl. H01q 21/00
U.S. Cl. 343—844 6 Claims



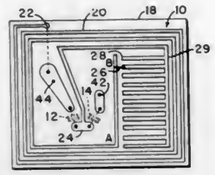
The object of this invention is to provide a new nonuniformly spaced antenna array, where the most optimum positions of the array elements, and their corresponding amplitudes, are systematically determined by a rigorous synthesis technique of the given radiation pattern, and/or its requirements and specifications, in order to achieve it with the minimum possible number of array elements. This new array will be designated the Nonuniformly, Optimally Spaced Antenna Array, or in short, the NOSA Array.

3,780,373
NEAR FIELD SPIRAL ANTENNA

Paul F. G. Holst, and William R. Brobeck, both of Richmond, Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Nov. 21, 1972, Ser. No. 308,374
Int. Cl. H01q 1/36
U.S. Cl. 343—788 9 Claims

A near field antenna is formed of a coil printed on an insulating board mounted in parallel fixed spaced relationship to its own ground plane. The coil is capacitively shunt tuned and capacitively coupled serially to a coaxial line. A planar ferrite

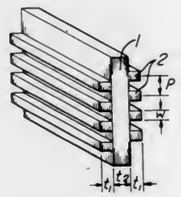


sheet may be incorporated to enhance the sensitivity of the antenna. The printed coil is provided with means for adjustably fixing its length.

3,780,374
RADOME WITH MATCHING LAYERS

Yoshizo Shibano, and Shohachiro Yamashita, Konshana-ku, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 8, 1972, Ser. No. 232,897
Claims priority, application Japan, Mar. 11, 1971, 46/13622
Int. Cl. H01q 1/42
U.S. Cl. 343—872 8 Claims



A radome wall with matching layers wherein a single layer dielectric plate having a dielectric constant of ϵ_r is sandwiched by two dielectric matching layers having the dielectric constant of $\sqrt{\epsilon_r}$. One form of providing the matching layers is with strips of the same dielectric material as the plate. The strips may be spaced in parallel or parallel lattice form with a spacing pitch P between adjacent strips in order to obtain the equivalent dielectric constant of the matching layer $\sqrt{\epsilon_r}$. The thickness of the core is also determined to be an odd multiple of λ/4 in order to obtain broader frequency band characteristics.

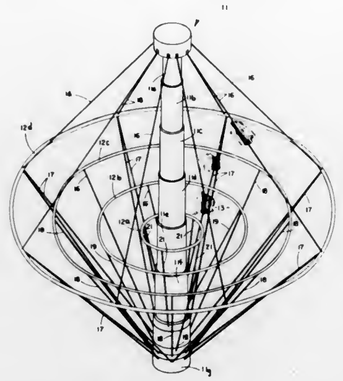
3,780,375
DEPLOYABLE PARABOLIC ANTENNAS

Alan F. Cummings, Downey; Ernest F. Binz, Palos Verdes Estates, and Gene G. Freeman, Santa Ana, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Nov. 26, 1971, Ser. No. 202,313
Int. Cl. H01q 15/20
U.S. Cl. 343—915 8 Claims

A deployable parabolic antenna is formed of a plurality of resilient rings disposed concentrically about an extensible boom wherein the outer ring is tied by a first group of tension members to the top of the boom and, also, by a second group of tension members tied to the bottom of the pole, thereby rigidly supporting the outer ring with respect to the pole. The inner rings are tied to the bottom of the pole by respective

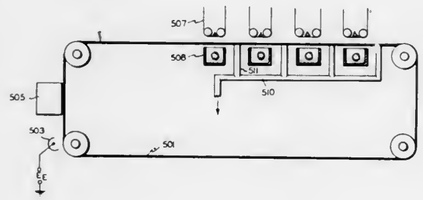
groups of tension members and to each other and the outer ring by a net-like metallic fabric member which is stretched to form a concave surface that approaches the shape of a paraboloid when fully deployed. Since the rings are resilient and the fabric and tension members are flexible, the assembly can be folded about the boom to form a compact mass for storage.



3,780,376
METHOD AND APPARATUS FOR SINGLE AND MULTICOPY CRT COMPUTER PRINT-OUT

Gerald L. Pressman, San Jose, and Thomas D. Kittredge, South San Francisco, both of Calif., assignors to Electroprint, Inc., Palo Alto, Calif.

Division of Ser. No. 776,146, Nov. 15, 1968, Pat. No. 3,647,291. This application July 28, 1971, Ser. No. 167,052
Int. Cl. G03g 15/00
U.S. Cl. 346—74 CR 11 Claims

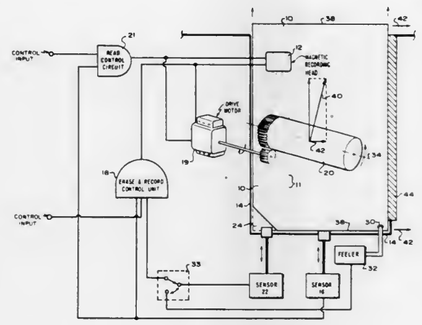


The invention relates to apparatus and methods for constituting or reproducing images through the use of a multilayered screen consisting of an array of apertures from computer information sources. A propulsion field directs charged particles through the screen to a receiving medium preferably spaced at a distance from the screen. Charge distribution on the screen controls the flow of particles through the apertures, some of which are in effect blocked, partially blocked, unblocked, and enhanced, depending on the local charge level. Thus, it is possible to produce patterns of varying tone without contact with the printed or effected substrate. The computer output information may be transferred to the screen optically as from the face of a cathode ray tube or electrically from a direct reading cathode ray tube to establish the charge distribution. The former imaging station utilizes a photoelectric insulative layer overlying a conductive layer for the screen whereas the latter employs a non-light sensitive insulative layer overlying the conductive layer.

3,780,377
MAGNETIC CARD READER-RECORDER APPARATUS WITH PROVISION FOR AVOIDING UNDESIRED ERASURES

Richard B. Osgood, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 137,643, April 26, 1971, abandoned, which is a continuation of Ser. No. 749,078, July 31, 1968, abandoned. This application May 4, 1972, Ser. No. 250,401
Int. Cl. G11b 15/04
U.S. Cl. 346—74 M 1 Claim

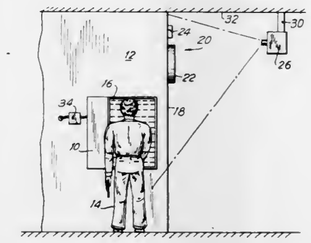


A magnetic card containing important informational data that is to be preserved is physically altered by, for example, clipping one of its corners. This physical change in a card located in the operational position for recording or reading is detected by a sensor, which thereupon disables the recording mechanism to prevent inadvertent obliteration of the important informational data contained on the card. A linear guide fixed with respect to a magnetic recording head aligns the card as the card is driven past the recording head by a cylindrical capstan. This cylindrical capstan is angled slightly with respect to the end edges of the rectangular card in the plane of the card so as to apply a lateral force component to the card and thus hold it against the linear guide.

3,780,378
TIMECLOCK SURVEILLANCE SYSTEM

Harris J. Simonson, New York, N.Y., assignor to Comsec Corporation, New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,132
Int. Cl. G01d 9/42
U.S. Cl. 346—107 R 8 Claims



A timeclock surveillance system according to which a camera photographs an individual operating a timeclock while at the same time photographing an indication of the time and date, so that with the resulting photograph it is possible to check that an individual operating a timeclock is the proper individual for the particular card on which the time is punched by the timeclock.

DESIGNS

DECEMBER 18, 1973

229,587
FACE SHIELD FOR A HELMET
Patrick E. Haggerty, Jr., 5019 Shadywood Lane, Dallas, Tex. 75209
Filed Sept. 3, 1971, Ser. No. 177,925
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233



229,588
NECKTIE
Carol A. Lussier, 20 Horta Drive, West Warwick, R.I. 02893
Filed Dec. 10, 1971, Ser. No. 206,978
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—351

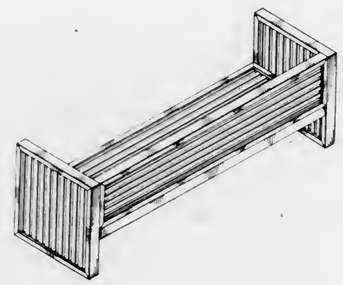
229,589
COMBINED TABLE AND TRAY
Walter Gregorutti, Ministro Brin 2864, Lanus (O), Buenos Aires, Argentina
Filed Nov. 30, 1971, Ser. No. 203,508
Claims priority, application Argentina Sept. 24, 1971
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—4



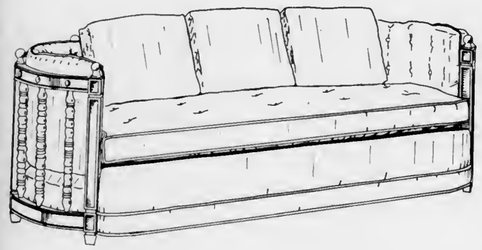
229,590
CHILD'S SWING SEAT
Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Equipment Company, Grinnell, Iowa
Filed Aug. 31, 1970, Ser. No. 24,769
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—11



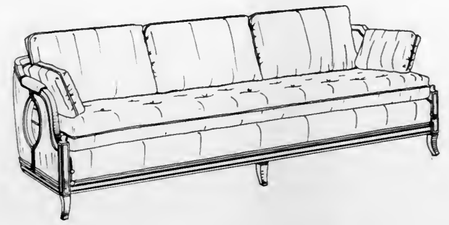
229,591
FURNITURE SEAT
Robert J. Trail, 1402 N. 11th, Tacoma, Wash. 98403, and Spencer T. Wolfe, Gig Harbor, Wash. (7518 Bridgeport Way W., Tacoma, Wash. 98467)
Continuation-in-part of design application Ser. No. 19,872, Oct. 31, 1969. This application July 18, 1972, Ser. No. 272,900
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—60



229,592
SOFA
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,202
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62



229,593
SOFA
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,201
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



229,594
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,227
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



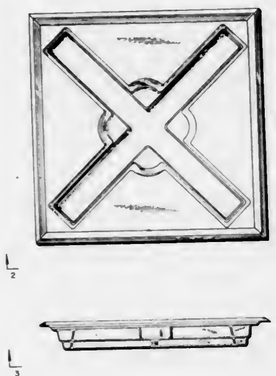
229,595
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,230
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



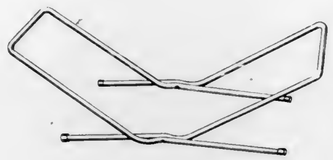
229,596
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,231
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



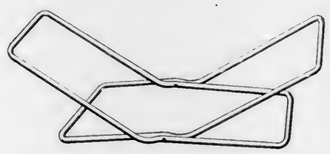
229,597
TREE HOLDER
Patrick H. Wastal, 3842 Catalina St., Los Alamitos, Calif. 90720
Filed May 26, 1971, Ser. No. 147,277
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D6—105



229,598
FRAME FOR A HAMMOCK
James L. Westrich, Algoma, Wis., assignor to Gleason Corporation, Milwaukee, Wis.
Filed Apr. 3, 1972, Ser. No. 240,892
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198



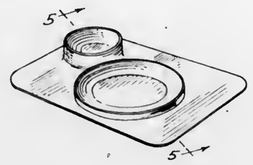
229,599
FRAME FOR A HAMMOCK
James L. Westrich, Algoma, Wis., assignor to Gleason Corporation, Milwaukee, Wis.
Filed Apr. 3, 1972, Ser. No. 240,893
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198



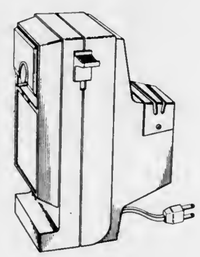
229,600
GARMENT HANGER
Ralph LaRue DuBois, 4242 E. 111th St., Tulsa, Okla. 74136
Filed Nov. 13, 1972, Ser. No. 305,939
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—248



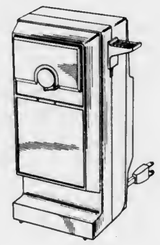
229,601
DISPOSABLE MEAL SERVING UNIT
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.
Filed Mar. 9, 1971, Ser. No. 122,643
Term of patent 1 4years
The portion of the term of the patent subsequent to May 1, 1987, has been disclaimed and dedicated to the Public
Int. Cl. D7—*99*
U.S. Cl. D7—38



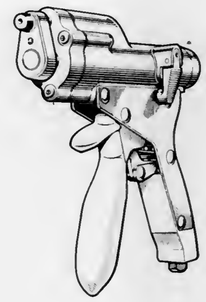
229,602
COMBINED CAN OPENER AND KNIFE SHARPENER
Alan F. Eckel, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Apr. 6, 1972, Ser. No. 241,891
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—35



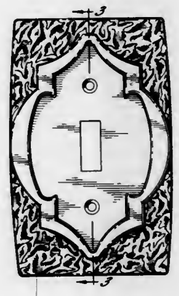
229,603
CAN OPENER
Alan F. Eckel, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Apr. 6, 1972, Ser. No. 241,894
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—36



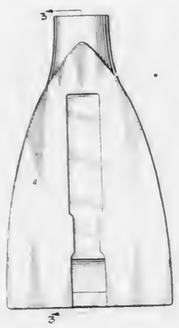
229,604
RIVET GUN
Gabriel M. LaPointe, Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.
Filed July 22, 1971, Ser. No. 165,434
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—68



229,605
PLATE HARDWARE
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,871
Term of patent 14 years
Int. Cl. D13—*03;* D8—*99*
U.S. Cl. D8—179



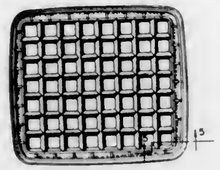
229,606
BOTTLE
Dean H. Buchtel, Canton, Ohio, assignor to Robert C. Dye, Frank L. Buchtel, Harold H. Kehoe, and Edwin W. Oldham, fractional part interest to each
Filed Nov. 29, 1971, Ser. No. 203,127
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60



229,607
BOTTLE OR SIMILAR ARTICLE
James Patrick Casey and John Wesley Fine, Jr., Kansas City, Mo., assignors to Ethyl Development Corporation, Kansas City, Mo.
Filed May 24, 1972, Ser. No. 256,624
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—167



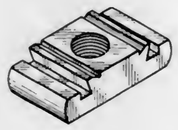
229,608
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Dec. 16, 1971, Ser. No. 209,018
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



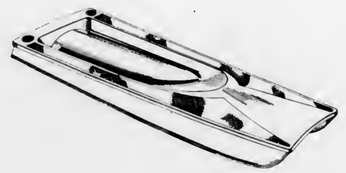
229,609
CASTER
William H. Tacke, Wyoming, Mich., and Frank Fontana, Stratford, Conn., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed June 19, 1972, Ser. No. 264,197
Term of patent 14 years
Int. Cl. D8—*08, 09*
U.S. Cl. D8—226



229,610
CLINCH NUT
Katsumi Shinjo, 8, 6-chome, Asahiminamidori, Nishinariku, Osaka, Japan
Filed Sept. 7, 1971, Ser. No. 178,546
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—273

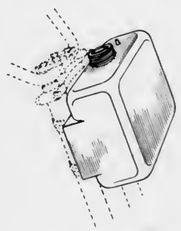


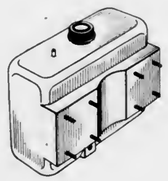
229,611
SAILBOAT HULL
Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation, San Juan Capistrano, Calif.
Filed Jan. 24, 1972, Ser. No. 220,542
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—70



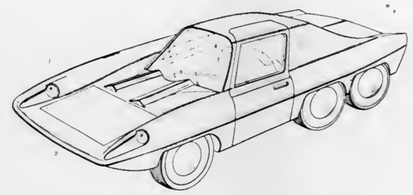


229,612
MOTORCYCLE AUXILIARY TANK
Ronald L. German, 5131 Blairwood Drive, La Palma, Calif. 90623
Filed Feb. 9, 1973, Ser. No. 331,301
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—155

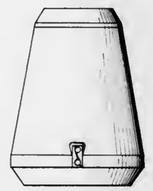




229,613
VEHICLE
Delles T. Davis, Abilene, and Bruce D. Motlong, Midland, Tex., assignors to Research Fuels, Inc.
Continuation-in-part of abandoned design application Ser. No. 24,450, Aug. 12, 1970. This application Nov. 11, 1971, Ser. No. 198,058
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3 G

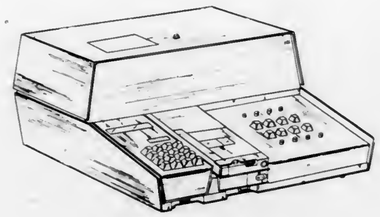


229,614
WATER SOFTENER HOUSING
Radford G. King, Torrance, and Frank A. Holler, Santa Monica, Calif., assignors to Conaqua, Inc., Culver City, Calif.
Filed Oct. 21, 1971, Ser. No. 191,572
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

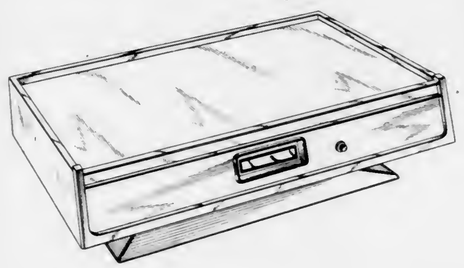




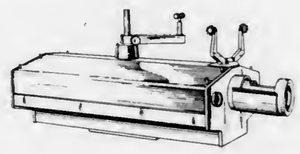
229,615
COMBINED DATA ENTRY AND DISTRIBUTION TERMINAL
George E. Chadima, Jr., 3624 Skylark Lane SE., Cedar Rapids, Iowa 52403
Filed Feb. 4, 1971, Ser. No. 112,838
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



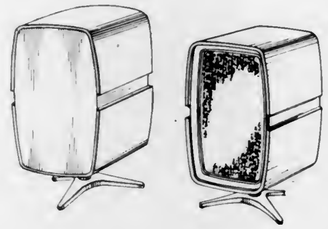
229,616
STEREO SYSTEM HOUSING
Arthur Robson, Jericho, N.Y., assignor to Morse Electro Products Corp., Brooklyn, N.Y.
Filed Aug. 23, 1972, Ser. No. 282,985
Term of patent 14 years
Int. Cl. D14
U.S. Cl. D26—14 B



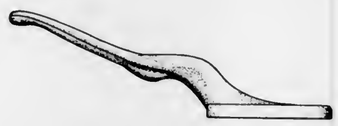
229,617
HOLOGRAPHIC LASER HOUSING
Eduard Gregor, Pacific Palisades, Calif., assignor to Union Carbide Corporation, New York, N.Y.
Filed Sept. 5, 1972, Ser. No. 286,759
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D26—14 L



229,618
SPEAKER HOUSING
Makoto Teruachi, Yasunobu Nakamura, Osamu Sugihara, Tadashi Sumino, Kuzuhiro Ueda, and Kiyoshi Suzuki, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 17, 1971, Ser. No. 209,497
Claims priority, application Japan June 18, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



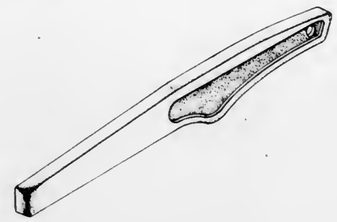
229,619
HANDLE FOR A GROOMING AID FOR PETS
Robert W. Sleith, Wilbraham, Mass., assignor to Suburban Plastics, Inc., Three Rivers, Mass.
Filed Sept. 20, 1971, Ser. No. 182,293
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40



229,620
HANDLE FOR A PET GROOMING COMB
Robert W. Sleith, Wilbraham, Mass., assignor to Suburban Plastics, Inc., Three Rivers, Mass.
Filed Sept. 20, 1971, Ser. No. 182,294
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40



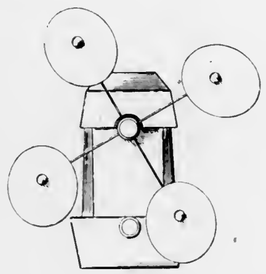
229,621
HANDLE FOR A PET GROOMING COMB
Robert W. Sleith, Wilbraham, Mass., assignor to Suburban Plastics, Inc., Three Rivers, Mass.
Filed Sept. 20, 1971, Ser. No. 182,295
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40



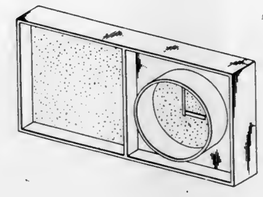
229,622
GOLF CLUB HEAD
Robert S. Bartron, Liss, England, assignor to Robert R. Shaefer, Arlington, Va.
Filed Dec. 10, 1971, Ser. No. 206,984
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GH



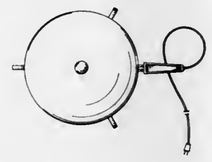
229,623
MOBILE TOY FOR INFANTS
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed Dec. 30, 1971, Ser. No. 214,509
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AP



229,624
CLOCK
Timothy W. Jagemann, 4572 Via Marina, Marina Del Rey, Calif. 90291
Filed May 17, 1972, Ser. No. 254,347
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



229,625
COOKER
Robert W. Thomas, Wichita, Kans., assignor to William D. Devore and R. A. Devore
Filed Nov. 5, 1971, Ser. No. 196,254
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1 F



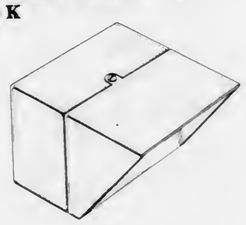
229,626
PLATE OR SIMILAR ARTICLE
Johanna Grams, Bremen, Germany, assignor to Porzellan-Handels-GmbH, Berlin, Germany
Filed July 27, 1971, Ser. No. 166,431
Claims priority, application Germany Feb. 1, 1971
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 F

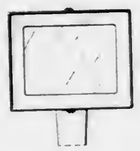


229,627
DESK LAMP
Stephen W. Morris, 1354 Eastshore Drive, Alameda, Calif. 94501
Filed May 24, 1972, Ser. No. 256,629
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 F

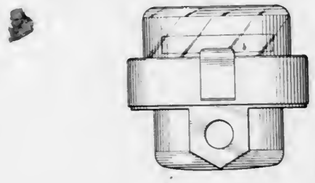


229,628
LAMP
Neil I. Wolfson, 98 Business St., Boston, Mass. 02136
Filed July 11, 1972, Ser. No. 270,701
Term of patent 14 years
Int. Cl. D26—*03*
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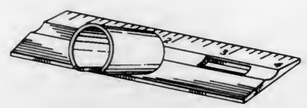




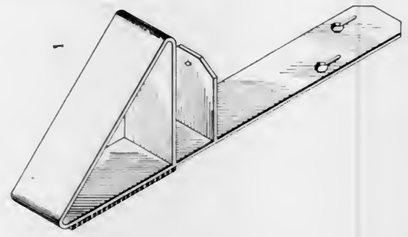
229,629
PRESSURE GAUGE
John Vander Horst, Lakewood, Colo., assignor to Wilkerson Corporation, Englewood, Colo.
Filed June 21, 1971, Ser. No. 155,394
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



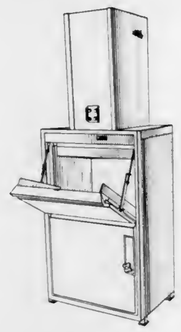
229,630
FINGER-OPERATED INDICATING DEVICE
Sherwin L. Watford, 590 E. Buchtel Ave., Akron, Ohio 44304
Filed Aug. 25, 1972, Ser. No. 283,741
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 A



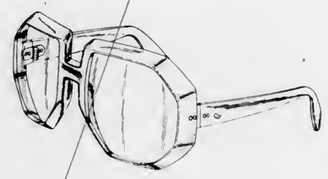
229,631
SHINGLING BRACKET
Russell S. Smith, Alford, Mass. (R.F.D. 3, Great Barrington, Mass. 01230)
Filed Oct. 6, 1971, Ser. No. 187,212
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D54—1 A



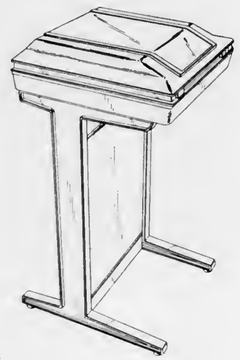
229,632
TRASH AND WASTE COMPACTOR
Ira J. Jackson, Overland Park, Kans., and Leroy D. Williams, Kansas City, Mo., assignors to Trans-World Compacters, Inc., Overland Park, Kans.
Filed Feb. 25, 1972, Ser. No. 229,618
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 B



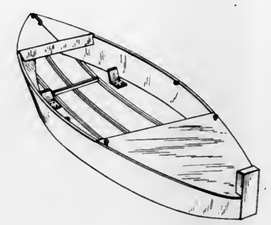
229,633
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Oct. 19, 1972, Ser. No. 298,972
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F



229,634
ELECTRONIC DATA PRINTER
Harold William Bermender, Jr., 38 Ridge Road, Hamden, Conn. 06517
Filed July 1, 1971, Ser. No. 159,091
Term of patent 7 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



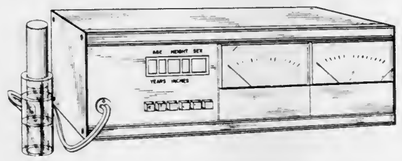
229,635
BOAT
Calvin A. Swilley, Rte. 2, Box 9D, Haynesville, La. 71038
Filed June 16, 1972, Ser. No. 263,619
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1 Q



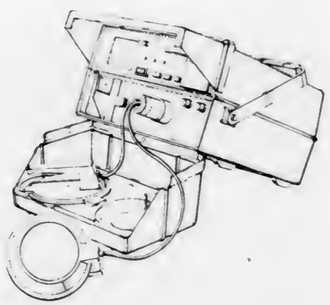
229,636
CASING FOR A PEN OR THE LIKE
Eugene Defores, Nantes, France, assignor to Societe Le Foyer, Paris, France
Filed Nov. 24, 1971, Ser. No. 202,050
Claims priority, application France May 25, 1971
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B



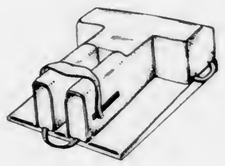
229,637
SPIROMETER
John Y. Pun, Richmond, Calif., assignor to Comprehensive Health Testing Laboratories, Inc., San Francisco, Calif.
Filed Oct. 7, 1971, Ser. No. 187,597
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F



229,638
PORTABLE COMBINED HEARTBEAT-MONITOR AND DEFIBRILLATOR UNIT
Harold H. Kawaguchi, Seattle, Wash., assignor to Physio-Control Corporation, Seattle, Wash.
Filed Jan. 29, 1973, Ser. No. 327,657
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F



229,639
PATIENT POSITIONING CUSHION
James N. Woog, 3545 Yukon Ave., St. Louis Park, Minn. 55426
Filed Nov. 11, 1971, Ser. No. 198,102
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 H



229,640
FLUID DISPENSING COMB
Jacob Vander Meer, 662 Lake Drive SE., Grand Rapids, Mich. 49503
Filed July 10, 1972, Ser. No. 269,984
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



229,641
SIGNBOARD PANEL
Jesse C. Robertson, Rte. 3, Box 194, Springfield, Oreg. 97477
Filed Aug. 25, 1971, Ser. No. 175,016
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 G





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TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF DECEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Olliges, James R., Sr., 3,779,050.
A/S Hoyer-Ellefsen: *See—*
Greve, Gottfred, 3,779,024.
AAI Corporation: *See—*
Kott, Michael A., 3,780,300.
AB Kelva: *See—*
Nilsson, Erling Ingvar, 3,779,438.
Abbott Laboratories: *See—*
Flouret, George Rogelio, 3,780,014.
Abel, Edward P., to Eastman Kodak Company. Silver halide emulsion containing a stabilizing combination of a 4-hydroxy tetrazaindene and a mono-basically sulfated vinyl copolymer. 3,779,769, Cl. 96-76.00r.
Abendroth, Paul; and Reiser, Kurt, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Ink fountain in an inking mechanism for printing machines. 3,779,165, Cl. 101-365.000.
Abildskov, Dale R.: *See—*
Ashton, Larry J.; and Abildskov, Dale R., 3,779,487.
Abler, Roger L.; and Gardner, Gary A., to Minnesota Mining and Manufacturing Company. Cleaning composition. 3,779,929, Cl. 252-90.000.
ACF Industries, Incorporated: *See—*
Schipper, Dennis J.; Ried, Harold T.; and Rollins, Dallas, W., 3,779,172.
Ackerman, James H., to Sterling Drug Inc. N(2,4,6-triiodo-3 acetylamino methyl)phenyl glutarimide or succinimide. 3,780,041, Cl. 260-281.000.
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Adachi, Toshio; and Kayashi, Kiyohide, to Daido Seiko Kabushiki Kaisha. Process for manufacture of ultra low carbon steel by means of plasma arc refining. 3,779,740, Cl. 75-12.000.
Adams, James E.: *See—*
Haas, Werner E. L.; Flannery, John B., Jr.; Mechlowitz, Bela; and Adams, James E., 3,779,751.
Adams, Kenneth D., to Singer Company, The. Sewing machine with hook timing and skip stitch mechanisms. 3,779,187, Cl. 112-158.00r.
Adams, Victor J., to Motorola, Inc. Apparatus for equalizing the flow rate of molding compound into each of a series of mold cavities. 3,779,506, Cl. 249-110.000.
ADAR (Hauts-de-Seine): *See—*
Legrandgerard, Jean Marcel, 3,779,271.
Adee, Raymond A.; Brooks, Dean P.; and Anderson, John Dale, to Hesston Corporation. Stack forming loader. 3,779,158, Cl. 100-250.000.
Advex Corporation: *See—*
Boggs, Beryl A., 3,779,472.
Aerojet-General Corporation: *See—*
Eggington, Wilfred J., 3,779,334.
Rudy, Erwin, 3,779,745.
Rudy, Erwin, 3,779,746.
Stammler, Manfred; Schmidt, Willfred G.; and Bruenner, Rolf S., 3,779,822.
AFA Corporation of Florida, The: *See—*
Malone, Carl L., 3,779,464.
Agadzhanian, Zhora Melkonovich; Ivanitsky, Genrikh Romanovich; and Shamarov, Alvian Matveevich. Scanning method and a scan microscope for its realization. 3,780,298, Cl. 250-202.000.
Agfa-Gevaert AG: *See—*
Moll, Franz; Morcher, Bernard; Reckziegel, Erich; and Saleck, Wilhelm, 3,779,764.
Agfa-Gevaert Aktiengesellschaft: *See—*
Bestenreiner, Friedrich; Helmberger, Josef; Muller, Rudolf; and Simm, Walter, 3,780,214.
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.
Ranz, Erwin; Schutz, Heinz-Dieter; Schellenberger, Hans; and Von Rintelen, Harald, 3,779,755.
Zahn, Wolfgang; Zangenfeind, Helmut; and Nagel, Erich, 3,779,837.
Agfa-Gevaert N.V.: *See—*
Hofman, Emiel Alexander; and Pollet, Robert Joseph, 3,779,757.
Vanassche, Willy Joseph; Pollet, Robert Joseph; Borginon, Hendrik Alfons; and Pattyn, Herman Alberik, 3,779,776.
Ahern, Charles J.; Datwyler, Walter F.; and Presley, Rex W., to Bendix Corporation, The. Fluid stepper motor. 3,779,673, Cl. 418-61.000.
Ahmling, Macrus P. Skid pallet. 3,779,571, Cl. 280-19.000.
Air Heaters, Inc.: *See—*
Muckelrath, Ernest R., 3,779,230.
Air King Corporation: *See—*
Swimmer, James A.; and Harris, Martin, 3,778,970.
Air Products and Chemicals Inc.: *See—*
Hegarty, William P.; and Say, David L., 3,779,725.
Air Products and Chemicals, Inc., mesne: *See—*
Iceland, William F.; and Cuzzupoli, Joseph W., 3,780,258.
Air Techniques Incorporated: *See—*
Kauer, George C., Jr.; and Brooks, Louis E., 3,778,967.
Airpax Electronics Incorporated: *See—*
Harper, George S., 3,780,249.
Akashi, Goro: *See—*
Chiba, Toshio; Yonezawa, Teruhiko; Kobayashi, Jiro; and Akashi, Goro, 3,779,775.
Akeley, Lloyd T., to Beckman Instruments, Inc. Flow metering run with office plate. 3,779,076, Cl. 73-211.000.
Akers, Robert M.; and Westfall, Harold L. Awning control apparatus. 3,779,302, Cl. 160-68.000.
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Akron Standard, division of Eagle-Picher, Industries, Inc.: *See—*
Lohr, Herb R.; and Magos, Toby, Jr., 3,779,835.
Akzona Incorporated: *See—*
Ostertag, Karl; Nilgens, Heinrich; and Scheiber, Herbert, 3,778,909.
Aladyshev, Sergei Ivanovich: *See—*
Gryaznov, Vladimir Mikhailovich; Mischenko, Alexandr Petrovich; Smirnov, Viktor Sergeevich; and Aladyshev, Sergei Ivanovich, 3,779,711.
Alaimo, Robert J.; and Goldenberg, Marvin M., to Morton-Norwich Products, Inc. 1-Hydroxy-2-(substituted anilino) quinolizinium bromides. 3,780,048, Cl. 260-296.000.
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Alexipfe, Stephen T.; and Ollinger, James C., to Armstrong Cork Company. Curved vault luminaire system. 3,780,286, Cl. 240-78.01d.
Align-A-Wrist Company, The: *See—*
Benoun, Samuel M.; and David, Roger F., 3,779,550.
ALKEM GmbH: *See—*
Stoll, Wolfgang, 3,778,885.
All-Steel Inc.: *See—*
Beaver, Donald V., 3,779,622.
Allais, Andre; Nedeleo, Lucine; Guillaume, Jacques; and Frechet, Daniel. Tricyclic ketonic compounds. 3,780,061, Cl. 260-332.20a.
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Alleton, Jean-Claude: *See—*
Berquin, Yves; Duval, Pierre; and Alleton, Jean-Claude, 3,780,161.
Allied Chemical Corporation: *See—*
Kolyer, John H.; and Kveglis, Albert A., 3,780,133.
Tetenbaum, Marvin Theodore, 3,780,178.
Allmanna Svenska Elecktriska Aktiebolaget: *See—*
Wahren, Douglas, 3,779,863.
Allnutt, Anthony John: *See—*
Bertoya, Hastings Charles Maxim; Ross, Donald Mackenzie; Brook, Richard Anthony; Allnutt, Anthony John; and Semos, Robert Ernest, 3,779,649.
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Brown, Melvin H., 3,779,871.
Russell, Allen S.; and Knapp, Lester L., 3,779,699.
Wilson, Richard C., 3,779,551.

Alwitt, Robert S., to Sprague Electric Company. Electrolytic etching of aluminum foil. 3,779,877, Cl. 204-129.750.

Alyea, Harold M.: *See—*
Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, 3,779,275.

Amasino, Richard L.; and Johrde, Paul S., to Westinghouse Electric Corporation. Method of securing dynamoelectric machine coils by slot wedge and filler locking means. 3,778,891, Cl. 29-596.000.

Ambassador International, Inc.: *See—*
Owen, Andrew Alden, 3,778,925.

American Cyanamid Company: *See—*
Ando, Hiei, 3,779,762.
Van Lear, George E.; and Dornbush, Albert Carl, 3,780,063.
Young, Fu-Dah, 3,780,176.

American Cystoscope Makers, Inc.: *See—*
Levine, Melvin, 3,779,513.

American Science & Engineering Inc.: *See—*
Stein, Jay A.; and Swift, Roderick, 3,780,291.

American Stress Wire Corporation: *See—*
Andrews, James S., 3,778,869.

American Sweetener Corp.: *See—*
Kracauer, Paul, 3,780,190.

Analog Monitors, Inc.: *See—*
Munro, William, 3,780,340.

Ancker, Fred H.; and Pollart, Dale F., to Union Carbide Corporation. Process for introducing functional substituents onto a polymer backbone using mild oxidative conditions. 3,779,963, Cl. 260-23.00h.

Andalman, Avrum N.: *See—*
Schwartz, Sidney M.; and Andalman, Avrum N., 3,779,504.

Anderson, Clifford J.; and Peterson, Reuben W., to National Lead Company. Radioactive shipping container with neutron and gamma absorbers. 3,780,306, Cl. 250-428.000.

Anderson, Glenn H.: *See—*
Tsai, James H.; and Anderson, Glenn H., 3,780,010.

Anderson, John Dale: *See—*
Adee, Raymond A.; Brooks, Dean P.; and Anderson, John Dale, 3,779,158.

Anderson, Paul L., to Sandoz-Wander, Inc. N-substituted amino-N-aminoacetonitriles in the treatment of hypertension. 3,780,180, Cl. 424-248.000.

Anderson, Reg A., Chandler, Ronald W.; Mueller, Frederick N.; and Osborn, Norbert L., to Tetradyne Corporation, mesne. Concrete placement. 3,779,519, Cl. 259-147.000.

Anderson, Rodney J. Disposable cooking pot. 3,779,231, Cl. 126-373.000.

Anderson, Vernon A.: *See—*
Cushman, Charles R.; Hale, James C., and Anderson, Vernon A., 3,779,070.

Ando, Hiei, to American Cyanamid Company. N-succinimide additives for azide imaging systems. 3,779,762, Cl. 96-48.00r.

Ando, Masao, to Chisso Corporation. Apparatus for heating the surface of constructions. 3,780,250, Cl. 219-10.490.

Andreae & Mayer GmbH: *See—*
Borner, Helmut, 3,779,358.

Andren, Earl A.: *See—*
Riley, D. Richard, and Andren, Earl A., 3,780,282.

Andrews, James S., to American Stress Wire Corporation. Apparatus for detensioning stranded cable. 3,778,869, Cl. 24-115.00r.

Andrews, Robert W.: *See—*
Shields, Michael A.; and Andrews, Robert W., 3,778,886.

Angielski, Stefan *See—*
Brzozowski, Zdzislaw; Angielski, Stefan; and Wojcikowski, Czeslaw, 3,780,058.

Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich. Method of producing π-allylic nickel complexes. 3,780,078, Cl. 260-439.00r.

Anonima Castelli s.a.s. di Casare Castelli & C.: *See—*
Piretti, Giancarlo, 3,779,176.

Anton, Robert P.; and Anton, Vernon P. Fishing bait retainer. 3,778,920, Cl. 43-44.400.

Anton, Vernon P.: *See—*
Anton, Robert P.; and Anton, Vernon P., 3,778,920.

Appeldorn, Roger H.; and Ljungkull, Gunnar R., to Minnesota Mining and Manufacturing Company. Traffic light conversion kit. 3,780,285, Cl. 240-41.003.

Appleberry, Walter T., to McDonnell Douglas Corporation. Adjustment fastener. 3,778,957, Cl. 52-758.00d.

Appleby, Paul E.; Riggs, Robert S.; and Christie, Christopher E., to Goodyear Tire & Rubber Company, The. Tire building machine. 3,779,834, Cl. 156-405.000.

Applied Communication Inc.: *See—*
Kirchgessner, Robert W., 3,779,634.

Araki, Yoshihiko; and Hayashi, Hideo, to Nippon Oil Company Limited. Process for producing synthetic rubber latex having high polymer concentration and low viscosity. 3,779,960, Cl. 260-8.000.

Aramaki, Kuninori: *See—*
Muramatsu, Tateo; and Aramaki, Kuninori, 3,779,020.

Arbed S.A. Arbed-Felten & Guelleaume Vereinigte Drahtwerke: *See—*
Hellerich, Walter, 3,778,949

Arbon, Dennis Charles, to Crosweller, Walker, & Company, Limited. Ablutionary appliances. 3,779,467, Cl 239-538.000.

Arendt, Hans Fritz. Roll press for removing the water from laundered washing or other textiles. 3,779,154, Cl. 100-155.00r.

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Argabright, Perry A.; and Presley, C. Travis, to Marathon Oil Company. Gel composition. 3,779,968, Cl. 260-29.6hm.

Arizona Chemical Company: *See—*
David, Curry Beach, 3,780,124.
Smith, William Richard, 3,780,012.
Smith, William Richard, 3,780,013.

Armond, John Walter: *See—*
Schuftan, Paul Maurice; Armond, John Walter; Leader, John Henry; and Davis, George James, 3,779,028.

Armstrong Cork Company: *See—*
Alexipfe, Stephen T.; and Ollinger, James C., 3,780,286.
Bomberger, Henry A., 3,779,862.
Jones, James R., 3,779,861.
Liebman, Harmon L.; and Liebman, Shirley A., 3,779,980.

Armstrong, Douglas Byron; and South, Richard Glenn, to Bell Telephone Laboratories, Incorporated. Apparatus for propagating internal logic gate faults in a digital logic simulator. 3,780,277, Cl. 235-153.0ac.

Armstrong, Michael Pearson, to Coal Industry Patents Limited. Sizing screens. 3,779,381, Cl. 209-271.000.

Arnold, Dan M.: *See—*
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., 3,780,301.
Smith, Harry D., Jr.; Arnold, Dan M., and Schultz, Ward E., 3,780,303.

Arnold, Dan M.; Schultz, Ward E.; and Smith, Harry D., Jr. Pulsed neutron logging system. 3,780,302, Cl. 250-301.000.

Arnold, John L.: *See—*
Pearce, Roscoe L.; Stalker, Gerald C.; and Arnold, John L., 3,779,936.

Arnold, William C.: *See—*
Esch, Robert L.; Arnold, William C.; Skelton, Billy K.; Saxon, Michael D.; Murphy, Jerome A.; and Jaques, Roy J., 3,778,880.

Artek Systems Corporation: *See—*
Perry, Russell C., 3,780,223.

Artzer, Charles W.: *See—*
Doyle, William F.; and Artzer, Charles W., 3,779,174.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Takeda, Isao; Mizuno, Masayuki; Sugawara, Toshiaki; Shimojima, Yukiji; and Horiguchi, Sadayuri, 3,780,172.

Asano, Yasuhisa: *See—*
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,780,090.

Ashland Oil, Inc.: *See—*
Weeks, Charles Earl; and Watts, Golden Fred, 3,779,966.

Ashton, Larry J.; and Abildskov, Dale R. Light weight contoured load carrying structure. 3,779,487, Cl. 244-123.000.

Assia Chemical Laboratories Ltd.: *See—*
Yellini, Haim; Konfino, Eliezer; and Gan, Ramat, 3,780,067.

Ates Componenti Electtronici S.p.A.: *See—*
Bernard, Jacques; and Gatti, Franco, 3,780,338.

Atlantic Research Corporation: *See—*
Shaver, Robert G., 3,779,826.

Atlantic Research Corporation, mesne: *See—*
Henderson, Charles B., and Hoglund, Richard F., 3,779,008.

Atlantic Richfield Company: *See—*
Devries, Donald L., 3,779,920.
Mitchell, David L.; and Speight, James G., 3,779,902.

Atom Manufacturing Co., Inc.: *See—*
Pond, Robert B., 3,778,976.

Audet, Jean P. Single control device for simultaneous control of three or more coordinate functions. 3,779,095, Cl. 74-471.0xy.

Auer, Werner; and Schreiber, Olaf, to Telefunken Patentverwertungsgesellschaft m.b.H. Radar. 3,780,369, Cl. 343-9.000.

Augat, Inc.: *See—*
Yeo, Herbert G., 3,779,291.

Aupoix, Marcel; Moisson-Franckhauser, Francois; Leroux, Jean-Marie; and Prost, Roger, to Compagnie, General d'Electricite. Thermal insulation device for a very low-temperature line. 3,780,205, Cl. 174-15.00c.

Australian Atomic Energy Commission: *See—*
Sowerby, Brian David, 3,780,294.

Auto-Mat Corporation: *See—*
Hope, Richard P.; and Long, Henry B., 3,779,367.

Autometrics Co.: *See—*
Cushman, Charles R.; Hale, James C.; and Anderson, Vernon A., 3,779,070.

Avco Corporation: *See—*
Holst, Paul F. G.; and Brobeck, William R., 3,780,373.
Ritter, Henry, 3,779,596.
Rygg, Gregers G., 3,778,983.

Avery, Thomas L. Ratchet wrench tool head positioner. 3,779,107, Cl. 81-177.800.

AWT Systems, Inc.: *See—*
Staffin, Herbert K.; and Staffin, Robert, 3,779,181.

Aypes, Waldemar A., to Becton, Dickinson and Company. Sealed assembly for separation of blood components and method. 3,779,383, Cl. 210-84.000.

Ayres, Waldemar; Walker, Evelyn; Holderith, William; Benson, Carl; and Bandrowski, James, to Becton, Dickinson and Company. Method and apparatus for measuring precise micro quantities of fluid samples. 3,779,083, Cl. 73-425.04p.

Azaruwicz, Edward N., to Bioteknike International Inc. Microbial degradation of polychlorinated biphenyls. 3,779,866, Cl. 195-2.000.

Azote et Produits Chimiques: *See—*
Berquin, Yves; Duval, Pierre; and Alleton, Jean-Claude, 3,780,161.

Azote et Produits Chimiques S.A.: *See—*
Prognon, Pierre; Scuflaire, Robert; Mathey, Francois; and Grysckiewic-Trochimowski, Oleg, 3,780,036.

Baak, Nils Tryggve E. A.; and Rapp, Charles F., to Owens-Illinois, Inc. Copper aluminosilicate glass compositions. 3,779,781, Cl. 106-52.000.

Babitsky, Boris Davidovich: *See—*
Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich, 3,780,078.

Baccus, James A.: *See—*
Martin, Gerald; Baccus, James A.; and Gurman, Marvin, 3,779,202.

Backstein, Gunter; and Petzsch, Lothar, to Rheinmetall G.m.b.H. Detonating cap safety devices. 3,779,169, Cl. 102-78.000.

Badin, Elmer J.: *See—*
Kerschner, Paul M.; Badin, Elmer J.; and Cresti, Aldo, 3,779,724.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Schenk, Walter, and Hovemann, Friedrich, 3,779,874.

Baghy, John F., to Bell & Howell Company. Bonding an insulator to an inorganic member. 3,778,896, Cl. 29-603.000.

Bailey, Eric, to International Computers Limited. Punch mechanisms. 3,779,111, Cl. 83-23.000.

Baker Hydro, Inc.: *See—*
Johnson, Charles S., 3,779,667.

Baker Perkins Inc.: *See—*
Elson, Ronald D.; Krenke, Norman O.; and Ingram, Charles E., 3,779,363.
Loomans, Bernard A., 3,779,522.

Baker Perkins Limited: *See—*
Edwards, Albert, 3,779,520.

Balassa, Leslie L., to Balchem Corporation. Encapsulation process. 3,780,195, Cl. 99-140.00r.

Balchem Corporation: *See—*
Balassa, Leslie L., 3,780,195.

Baldwin, Francis P.: *See—*
Kresge, Edward N.; and Baldwin, Francis P., 3,780,002.

Baldwin, Philip Sidney. Master cylinders. 3,779,018, Cl. 60-575.000.

Baliski, Stephen: *See—*
Norman, Harry H., 3,779,058.

Ball, Rowland E., to Borg-Warner Corporation. Protective overspeed torque coupling. 3,779,354, Cl. 192-104.000.

Ballantyne, Walter Henderson, to Dunhill Lighters, Limited. Lighter with a capacitor discharge ignition system. 3,779,692, Cl. 431-266.000.

Balogh, Erno: *See—*
Taher, Mohammed Amin El; Balogh, Erno; and Boltrek, Henry, 3,779,360.

Balsbaugh, Paul H. Log splitter and tube bender. 3,779,295, Cl. 144-193.00a.

Bandrowski, James: *See—*
Ayres, Waldemar; Walker, Evelyn; Holderith, William; Benson, Carl; and Bandrowski, James, 3,779,083.

Baranov, Boris Konstantinovich: *See—*
Stromin, Boris Alexandrovich; and Baranov, Boris Konstantinovich, 3,780,362.

Barber-Colman Company: *See—*
Olson, Raymond L.; and Yone, Harold R., 3,778,996.

Barcza, Sandor, to Sandoz-Wander, Inc. Silylmethyl thiopseudourea salts. 3,780,175, Cl. 424-184.000.

Bard, John C.; and Maas, Russell H., to Mayer, Oscar, & Company, Inc. Heat-and-serve packages for precooked sausage and the like. 3,780,187, Cl. 426-113.000.

Bard, Melvern O., to Western Auto Supply Company. Store display fixture assembly. 3,779,394, Cl. 211-134.000.

Bardahl, Nils; and Gotz, Friedrich, to Siemens Aktiengesellschaft. Device for limiting the short-circuit energy in electrolytic metal-forming apparatus. 3,779,888, Cl. 204-228.000.

Bardong, Helmut: *See—*
Weiss, Paul; Bardong, Helmut; and Frank, Wolfgang, 3,779,307.

Bardorff, Wolfgang Muller: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.

Barker, John H.; Dribelbis, Norman C.; and Stevens, Keith B., Sr., to International Business Machines Corporation. Gate mechanism for card reader. 3,779,542, Cl. 271-60.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Grein, Hermann, 3,779,471.

Barnes, Robert Keith: *See—*
Kleigman, Jonathan Morris; and Barnes, Robert Keith, 3,780,087.

Barnes, Thomas Carl; and Knapp, Malcolm Hubert, to General Electric Corporation. Emergency lubrication supply system. 3,779,345, Cl. 184-6.400.

Barriva, Raoul M. Refrigeration booster. 3,779,029, Cl. 62-138.000.

Barry, Claude; and Ratte, Patrice, to Institut de Recherches de la Siderurgie Francaise. Method and apparatus for establishing the firing temperature curve of a sintering charge. 3,779,077, Cl. 73-341.000.

Barson, Clifford Ward, to Dunlop Limited. Tire testing machine. 3,779,073, Cl. 73-146.000.

Bartling, Gerhard; and Schon, Rudolf, to SKF Kugellagerfabriken GmbH. Device for open end spinning. 3,778,990, Cl. 57-58.950.

Bartoo, Otto Floris: *See—*
Cameron, James Brisbane; Walton-Knight, Bernard Piet; Bartoo, Otto Floris; and Molijn, Joannes Cornelius, 3,778,882.

Batka, Heimold: *See—*
Altenschopfer, Theodor; Batka, Heimold; Jakobi, Gunter; Krings, Peter; and Lehmann, Hans-Jurgen, 3,779,934.

Baton-Williams, Raymond Herbert. Automatic control for electrode boilers. 3,780,261, Cl. 219-324.000.

Battersby, Robert J.; and Mucciante, Louis L., to Honeywell Inc. Combination gas valve. 3,779,459, Cl. 236-15.00a.

Battin, Marshall V.; and Stein, Brooks M., to Great Western Sugar Company, The. Method of producing freeze ground brown sugar and product of said method. 3,779,809, Cl. 127-63.000.

Batzer, Hans: *See—*
Porret, Daniel; Habermeier, Juergen; and Batzer, Hans, 3,779,949.

Baum, Charles S.: *See—*
Wendler, Charles F.; and Baum, Charles S., 3,779,715.

Baum, Charles S., to Permanence Corporation. Tire stud. 3,779,299, Cl. 152-210.000.

Bauman, Jack L., to International Harvester Company. Seed control gate for planters. 3,779,428, Cl. 222-498.000.

Baumann, Dieter: *See—*
Rembold, Heinz; Baumann, Dieter; and Habermeier, Jurgen, 3,779,988.

Baxter Laboratories, Inc.: *See—*
Martinez, Felix Jesus, 3,778,973.

Bayer Aktiengesellschaft: *See—*
Dhein, Rolf; Meissner, Hans-Jurgen; and Kuchenmeister, Rolf, 3,779,961.
Dorn, Ludwig; Mengel, Manfred; and Heinze, Gerhard, 3,779,946.
Hechlhammer, Wilhelm; Schneider, Kurt; and Fahnler, Friedrich, 3,780,157.
Hermann, Karl-Heinz, 3,779,998.
Kuntz, Egon; Esser, Paul; and Muschelknautz, Egar, 3,778,907.
Muller, Karl Heinz; Richter, Klaus; and Rohr, Harry, 3,780,154.
Sutter, Hubert; Nothen, Karl; and Haas, Friedrich, 3,780,139.
Wegner, Peter; Neeff, Rutger; Hederich, Volker; and Gehrke, Gunter, 3,779,700.
Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,780,089.
Wirth, Wolf-Dieter; Muller, Erwin; and Rohr, Harry, 3,779,954.

Bayssat, Michel; Fontaine, Louis; and Grand, Marcel, to Lipha Lyonnaise Industrielle Pharmaceutique. Substituted cinnamides. 3,780,102, Cl. 260-558.00r.

Baz, Angel Davila. Mineral mining machines. 3,779,603, Cl. 299-34.000.

Beard, Hoyt S.; Payne, Leslie E.; and McArthur, Colin S., to Reynolds, R. J., Tobacco Company. Apparatus and method for manufacturing jet impingement type filters for smoking articles. 3,779,849, Cl. 156-212.000.

Beard, Thomas N., to Shell Oil Company. Method of producing hydrocarbons from an oil shale formation containing nahcolite. 3,779,601, Cl. 299-4.000.

Beard, Thomas N.; and Van Meurs, Peter, to Shell Oil Company. Process for solution mining nahcolite. 3,779,602, Cl. 299-5.000.

Beatty, John W., to General Electric Company. Gas blast circuit breaker of the axial blast type. 3,780,244, Cl. 200-148.00b.

Beaver, Donald V., to All-Steel Inc. Unitary panel leg arrangement for office furniture. 3,779,622, Cl. 312-194.000

Becker, Arno, to Bruckner Apparatebau GmbH. Apparatus for the wet treatment of a textile web. 3,779,049, Cl. 68-158.060.

Becker, Brant W.: *See—*
Gordon, Bernard M.; Becker, Brant W.; and Prescott, Charles, 3,780,353.

Beckering, Jacobus J.; Weber, Edwin J.; and Secoura, Ralph J., to Black and Decker Manufacturing Company, The. Hand-operated tool with switch actuator having three-position lock-off assembly. 3,780,246, Cl. 200-157.000.

Beckman Instruments, Inc.: *See—*
Akeley, Lloyd T., 3,779,076.

Brant, Roy G.; and Shepard, Stephen K., 3,780,238.

Becton, Dickinson and Company: *See—*
Aypes, Waldemar A., 3,779,383.
Ayres, Waldemar; Walker, Evelyn; Holderith, William; Benson, Carl; and Bandrowski, James, 3,779,083.

Beddow, Elmer J., to Elec-Tron, Inc. Rotary switch with enlarged shaft journaled in and removable through switch cover. 3,780,245, Cl. 200-155.00r.

Beezer, Earl. Adjustable motion transmitting device. 3,779,089, Cl. 74-53.000.

Behr, Erich: *See—*
Heuser, Gunther; Weisgerber, Gregor; and Behr, Erich, 3,779,985.

Beka St-Aubin S.A.: *See—*
Tschannen, Hans, 3,779,612.

Bell & Howell: *See—*
Porazinski, Robert F., 3,779,484.

Bell & Howell Company: *See—*
Bagby, John F., 3,778,896.
Rabin, Albert M., 3,779,114.

Bell Telephone Laboratories, Incorporated: *See—*
Alsberg, Dietrich Anselm, 3,779,805.
Armstrong, Douglas Byron; and South, Richard Glenn, 3,780,277.
Bowen, Edward George; and Dick, George Wilmer, 3,780,230.
Chang, Herbert Yu-Pang; Elliott, Roger Alan; Senese, Daniel John; and Smith, Thomas Loyd, 3,779,458.
Dewhirst, Fred Arlington, 3,780,284.
Hagelbarger, David William; and Kubik, Peter Steve, 3,780,267.
Lentz, Norman Eugene, 3,780,321.
Pinnow, Douglas Arthur; and Van Uitert, Le Grand Gerard, 3,779,627.

Bellwood, Frederick J.: *See—*
Straujups, John E.; and Bellwood, Frederick J., 3,778,963.

Bemiss, Robert P., to Robalex, Inc. Boilable bakeable package and method. 3,779,447, Cl. 229-14.00b.

Benda, Ladislav: *See—*
Maurer, Karel; and Benda, Ladislav, 3,780,200.

Bendix Corporation, The: *See—*
Ahern, Charles J.; Datwyler, Walter F.; and Presley, Rex W., 3,779,673.
Dawson, Juan C., 3,779,647.
Esch, Robert L.; Arnold, William C.; Skelton, Billy K.; Saxon, Michael D.; Murphy, Jerome A.; and Jaques, Roy J., 3,778,880.
Hicks, John W., Jr., 3,779,729.
Sanatari, Takeo, 3,780,217.
Shupe, David M., 3,779,631.
Watson, Edwin B.; and Fuller, Harlan I., 3,779,225.

Bendror, Jack, to Robbins and Bendror Associates, Inc. Safety device for industrial machines with improved mechanical sensor and associated circuit breaker assembly. 3,780,242, Cl. 200-61.041.

Bene, Pierre Yves. Method of manufacturing a sink comprising a bench and a basin. 3,778,884, Cl. 29-512.000.

Bennett, Richard J.: *See—*
Gagle, Duane W.; Draper, Homer L.; and Bennett, Richard J., 3,779,964.

Bennett, Robert A., 1/2 to Mattern, Ware and Davis. Statistical hook and loop area fasteners. 3,778,870, Cl. 24-204.00r.

Benoun, Samuel M.; and David, Roger F., to Align-A-Wrist Company, The. Wrist brace. 3,779,550, Cl. 273-54.00b.

Benson, Carl: *See—*
Ayres, Waldemar; Walker, Evelyn; Holderith, William; Benson, Carl; and Bandrowski, James, 3,779,083.

Benson, Gustav E.; and Yakuboff, Paul D., to Owens-Corning Fiberglas Corporation. Apparatus for impregnating and coating fibrous strands. 3,779,207, Cl. 118-109.000.

Bercovitz, John H., Jr.: *See—*
Rose, Boyd W.; and Bercovitz, John H., Jr., 3,779,159.

Berger, Abe; and Selin, Terry G., to General Electric Company. Sieve mateates and polysiloaxane mateates. 3,780,080, Cl. 260-448.20b.

Bernard, Alain Clair: *See—*
Bernard, Alain Clair, 3,779,676.

Bernard, Alain Clair, to Bernard, Alain Clair. Apparatus for making the composite product. 3,779,676, Cl. 425-11.000.

Bernard Golay S.A.: *See—*
Berney, Jean-Claude, 3,778,998.

Bernard, Jacques; and Gatti, Franco, to Ates Componenti Elecltronici S.p.A. Deflection system for color-television tube. 3,780,338, Cl. 315-23.00r.

Bernard, John E., Jr. Ventilator device. 3,779,149, Cl. 98-2.160.

Berney, Jean-Claude, to Bernard Golay S.A. Variable capacitor for adjusting the frequency of a quartz-crystal clock. 3,778,998, Cl. 58-23.0ao.

Bernstein, Jack: *See—*
Yale, Harry L.; and Bernstein, Jack, 3,780,059.

Berolnon, Charles R.; and Kao, James T. F., to Ethyl Corporation. Preparation of phosphonitrilicchloride. 3,780,162, Cl. 423-300.000.

Berquin, Yves; Duval, Pierre; and Alleton, Jean-Claude, to Azote et Produits Chimiques. Process for concentrating solutions. 3,780,161, Cl. 423-310.000.

Bertagni, Jose Juan. Diaphragm for sound transducers, method and apparatus for manufacturing it. 3,779,336, Cl. 181-31.00b.

Berthier, Rene Marie. Installation for controlling the condition of water in concrete structures. 3,778,948, Cl. 52-302.000.

Berthold, Gunter, to Veb Petrolchemisches Kombinat Schwedt. Chromatographic apparatus and method. 3,779,069, Cl. 73-23.100.

Bertin & Cie: *See—*
Bertin, Jlan Henry, 3,779,333.

Bertin, Jlan Henry, to Bertin & Cie. Multi-cushion and multi-fan system for surface effect machines. 3,779,333, Cl. 180-121.000.

Bertolini, Bollate Natale: *See—*
Calcagno, Benedetto; Canavesi, Roberto; and Bertolini, Bollate Natale, 3,780,120.

Bertoya, Hastings Charles Maxim; Ross, Donald Mackenzie; Brook, Richard Anthony; Allnutt, Anthony John; and Semos, Robert Ernest, to Sira Institute. Method of and an electro-optical system for inspecting material. 3,779,649, Cl. 356-200.000.

Besant, Colin Bowden: *See—*
Jebb, Alan; and Besant, Colin Bowden, 3,778,905.

Besson, Louis Pierre Albert, to Chabas & Besson S.A. Process and apparatus for calibrating and surfacing tubes. 3,779,064, Cl. 72-283.000.

Best, John S., to Dow Chemical Company, The. Method of making sodium chloride concentrate from sea water. 3,779,030, Cl. 62-58.000.

Bestenreiner, Friedrich; Helmberger, Josef; Muller, Rudolf; and Simm, Walter, to Agfa-Gevaert Aktiengesellschaft. Method and apparatus for making color prints on paper. 3,780,214, Cl. 178-5.20r.

Bethlehem Steel Corporation: *See—*
Humphries, Darral V., 3,778,994.
Padjen, George; Helman, Robert W.; and Brugger, Joseph A., 3,779,056.
Shoemaker, Carlyle E., 3,779,818.

Bethsold, Karl R., to Honeywell Information Systems, Inc. Process of mass soldering electrical components to circuit boards having runs formed from insulated magnet wire. 3,778,883, Cl. 29-495.000.

Betschart, Alois, Jr. Self-releasing ski-binding. 3,779,570, Cl. 280-11.35r.

Betts, Paul J., to Morse, Browne, Company. Laboratory drainboard. 3,779,392, Cl. 211-75.000.

Bieri, Hans: *See—*
Tinnes, Bernhard; and Bieri, Hans, 3,779,431.

Big Jon, Inc.: *See—*
Emory, John E., Sr.; and Emory, John E., Jr., 3,778,918.

Bigelow, John Howard, to Du Pont de Nemours, E. I., and Company. Silver halide emulsion sensitized with a polyhedral haloborane. 3,779,777, Cl. 96-107.000.

Binz, Ernest F.: *See—*
Cummings, Alan F.; Binz, Ernest F.; and Freeman, Gene G., 3,780,375.

Biospherics Incorporated: *See—*
Levin, Gilbert V., 3,779,906.

Bioteknike International Inc.: *See—*
Azaruwicz, Edward N., 3,779,866.

Birch Brothers Inc.: *See—*
Straujups, John E.; and Bellwood, Frederick J., 3,778,963.

Birke, Gerhard, to Haas, W. Ernst, & Sohn, Firma. Scrubber for removing particulate matter from gaseous fluid. 3,778,982, Cl. 55-290.000.

Bishop, William T., to Hercules Incorporated. Collector composition for ore flotation. 3,779,380, Cl. 209-166.000.

Bisinella, Angelo J.; and Nosek, Roy F., to Pettibone Corporation. Apparatus for lining the walls of metallurgical vessels with prepared refractory material. 3,779,679, Cl. 425-110.000.

Black and Decker Manufacturing Company, The: *See—*
Beckering, Jacobus J.; Weber, Edwin J.; and Secoura, Ralph J., 3,780,246.
Ostroski, Richard J., 3,778,892.

Black Clawson Company, The: *See—*
Notbohm, Willard C., 3,778,908.

Black, James A.: *See—*
Black, James A.; and Farwell, Harry Russell, 3,779,160.

Black, James A.; and Farwell, Harry Russell, to Black, James A. Printing press and web registry system. 3,779,160, Cl. 101-115.000.

Blackwell, Jennings P., to Phillips Petroleum Company. Solid propellant composition. 3,779,825, Cl. 149-18.000.

Blair, Bruce A., to International Farm Systems, Inc. Incubative animal confinement system. 3,779,210, Cl. 119-18.000.

Blake, David E.: *See—*
Pressman, Gerald L.; Frohbach, Hugh; and Blake, David E., 3,779,166.

Blakeslee, David G., to Blakeslee, G. S., & Co. Automatic control system for dishwashing apparatus. 3,780,315, Cl. 307-141.000.

Blakeslee, G. S., & Co.: *See—*
Blakeslee, David G., 3,780,315.

Blanc, Ferdinand H. Jean. Feed dog awl assembly. 3,779,184, Cl. 112-2.000.

Blecken, William E., to Ingersoll-Rand Company. Transferential pin. 3,778,940, Cl. 52-116.000.

Blinn, Harold A.; and Overby, William T., to Goodyear Tire & Rubber Company, The. Process for producing a fatigue resistant tire cord. 3,779,827, Cl. 156-330.000.

Bloching, Helmut: *See—*
Fries, Walter; Bloching, Helmut; Rhld, Hilden; and Jung, Dieter, 3,779,931.

Bloom, Stanely M.; and Garcia, Paulina H., to Polaroid Corporation. Photographic processes and products employing benzindole phthaleins as optical filter agents. 3,779,752, Cl. 96-3.000.

Bloom, Stanley M.; Idelson, Elbert M.; Simon, Myron S.; and Waller, David P., to Polaroid Corporation. Photographic processes and products employing aminomethyl-substituted phenolic phthaleins as optical filter agents. 3,779,753, Cl. 96-3.000.

Bloomquist, Arnold Eugene: *See—*
Siagel, Robert Clayton; and Bloomquist, Arnold Eugene, 3,779,969.

Bluestein, Bernard R.: *See—*
Polanskyj, Bohdan S.; Solomon, Jack M.; Chisholm, Daniel R.; and Bluestein, Bernard R., 3,780,107.

Bluestein, Claire: *See—*
Clark, John R.; and Bluestein, Claire, 3,779,975.

Bochard, Camille, to Robatel S.L.P.I. Insulated container for radioactive and like substances. 3,780,309, Cl. 250-507.000.

Bock, Erwin; and Theml, Oskar, to Siemens Aktiengesellschaft. Method of producing magnetic core parts. 3,778,897, Cl. 29-609.000.

Bock, Hartmut, to Kalle Aktiengesellschaft. Device for the production of a measuring signal or control signal. 3,780,299, Cl. 250-209.000.

Bockenstette, Kenneth R., to Vanguard Industries, Inc. Molded plastic fastener. 3,779,374, Cl. 206-56.0df.

Boddy, Michael Gordon; Sewell, Graham; and Sewall, Michael, to Electronic Control & Surveillance Limited. Lighting unit for use underwater and in wet environment. 3,780,328, Cl. 313-184.000.

Bode, Kurt, to Rollei-Werke Franke & Heidecke. Film winding mechanism for motion picture apparatus. 3,779,092, Cl. 74-122.000.

Boeing Company, The: *See—*
Caley, Lloyd E.; Hill, Horace E.; and Phillips, Joseph L., 3,779,664.
Klees, Garry W., 3,779,282.

Boggild, Robert: *See—*
Ohlhauser, Ernest F.; and Boggild, Robert, 3,780,281.

Boggs, Beryl A., to Advex Corporation. Surface driven winder. 3,779,472, Cl. 242-18.0dd.

Boissevain, Matthew G.; and Kahlin, Erik B., to Measurex Corporation. Cable carrier with removable plastic links. 3,779,003, Cl. 59-78.100.

Boll, Dietmar: *See—*
Reis, Walter; Pfenning, Helmut; and Boll, Dietmar, 3,779,067.

Bolles, Theodore F., to Minnesota Mining and Manufacturing Company. Capsules and process for forming capsules. 3,779,942, Cl. 252-316.000.

Bolt Associates, Inc.: *See—*
Chelminski, Stephen V., 3,779,335.

Bolt, Beranek and Newman, Inc.: *See—*
Hayden, Richard Earle; and Chanaud, Robert Charles, 3,779,338.

Boltrek, Henry: *See—*
Taher, Mohammed Amin El; Balogh, Erno; and Boltrek, Henry, 3,779,360.

Bombardier Limited: *See—*
Perreault, Jules, 3,779,327.

Bomberger, Henry A., to Armstrong Cork Company. Flexible, intermediate temperature, mineral wool board. 3,779,862, Cl. 162-152.000.

Bomberger, Howard B., Jr., to RMI Company. Cathode sheet for electrodeposition and method of recovering electrodeposited metals. 3,779,872, Cl. 204-12.000.

Bondi, Herman H. Marble hanger for crypt front. 3,778,942, Cl. 52-134.000.

Boneau, David F., to Phillips Petroleum Company. Production method. 3,779,315, Cl. 166-268.000.

Bongers, H. J.: *See—*
Hutz, Gerhard; and Bongers, H. J., 3,779,845.

Bonham, James A.: *See—*
Smith, George H.; and Bonham, James A., 3,779,778.

Boom, Abraham A., to Celanese Corporation. Apparatus for heat treatment of substrates. 3,780,255, Cl. 219-121.00p.

Borg-Warner Corporation: *See—*
Ball, Rowland E., 3,779,354.

Borginon, Hendrik Alfons: *See—*
Vanassche, Willy Joseph; Pollet, Robert Joseph; Borginon, Hendrik Alfons; and Pattyn, Herman Alberik, 3,779,776.

Borner, Helmut, to Andreae & Mayer GmbH. Actuating mechanism for vending automats. 3,779,358, Cl. 194-75.000.

Bott, Lawrence L., to Nalco Chemical Company. Secondary recovery of petroleum. 3,779,316, Cl. 166-276.000.

Boudreau, Alban M., to Hedstrom Co. Infant's dressing table securement. 3,779,540, Cl. 269-328.000.

Bourns, Inc.: *See—*
Hluchan, Stephen Andrew; and Tainter, Leland B., Jr., 3,779,075.

Bowen, Edward George; and Dick, George Wilmer, to Bell Telephone Laboratories, Incorporated. Multifrequency tune receiver. 3,780,230, Cl. 179-84.0vf.

Bowen, Mat M.: *See—*
Roche, Joseph R.; and Bowen, Mat M., 3,779,264.

Boyd, James C. Tool retainer for chipping hammers. 3,779,567, Cl. 279-19.100.

Brackmann, Warren A.; and Di Ianni, Daniel, to Rothmans of Pall Mall Canada, Limited. Tobacco stream manufacture. 3,779,252, Cl. 131-84.00b.

Brandenburg, John T.: *See—*
Suggitt, Robert M.; Brandenburg, John T.; and Crone, John M., Jr., 3,780,121.

Brane, Earl P., to Laurtech International Company, mesne. Water softener valve assembly with regeneration capability. 3,779,281, Cl. 137-625.290.

Brannock, Kent C.: *See—*
Young, David A.; and Brannock, Kent C., 3,780,111.

Brant, Roy G.; and Shepard, Stephen K., to Beckman Instruments, Inc. Multi sectional rotary wafer switch assembly with improved support and terminal connector for thin circuit module. 3,780,238, Cl. 200-11.0da.

Brantly, Thomas B.: *See—*
Merrill, Stewart H.; and Brantly, Thomas B., 3,779,750.

Brenner, Robert A.; and Cuthbert, Victor W., to Whirlpool Corporation. Rotating silverware basket for dishwasher. 3,779,258, Cl. 134-138.000.

Bressington, Edwin Thomas: *See—*
Christie, Gerald Anthony; and Bressington, Edwin Thomas, 3,778,856.

Bretschneider, Hermann, to Hoffmann-La Roche Inc. Bicyclic compounds. 3,780,101, Cl. 260-553.00d.

Breyer, Eberhard, to Siemens Aktiengesellschaft. Apparatus for measuring tensile stresses in continuously fed webs of material. 3,779,074, Cl. 73-144.000.

Brianza, Carate: *See—*
Gardi, Rinaldo; Brianza, Carate; and Castelli, Pier Paolo, 3,780,072.

Bridgestone Tire Company Limited: *See—*
Muramatsu, Tateo; and Aramaki, Kuninori, 3,779,020.

Brignola, Dominic J.: *See—*
Pickerell, Fred T.; and Brignola, Dominic J., 3,779,413.

Brion, Jacques, to Commissariat a l'Energie Atomique. Tire incinerator. 3,779,183, Cl. 110-18.00r.

Bristol-Myers Company: *See—*
Essery, John Michael; and Cheney, Lee Cannon, 3,780,032.
Konishi, Masataka; and Tsukiura, Hiroshi, 3,780,018.

British Insulated Callenders Cables Limited: *See—*
Reynolds, Edward Henry, 3,780,206.

British Leyland Truck & Bus Ltd.: *See—*
Fowler, Gerald, 3,778,958.

British Oxygen Company Limited, The: *See—*
Schuftan, Paul Maurice; Armond, John Walter; Leader, John Henry; and Davis, George James, 3,779,028.

British Steel Corporation: *See—*
Morgan, Hubert Davies, 3,779,034.

Britt, Robert Gordon. Variable explosion-displacement rotary engine. 3,779,216, Cl. 123-8.490.

Brix, John R. Board game apparatus. 3,779,554, Cl. 273-131.00b.

Broheck, William R.: *See—*
Holst, Paul F. G.; and Brobeck, William R., 3,780,373.

Broberg, Dewey O., Jr. Engine noise depressing assemblies. 3,779,342, Cl. 181-56.000.

Brockman, William H.; and Greer, Mary H., to Iowa State University Research Foundation, Inc. Micromanipulator system. 3,779,400, Cl. 214-1.0bd.

Broderick, James J.; and Marcus, Seymour A., to Kohnstamm, H., Company, Inc. Flavored oils and food products containing the same. 3,780,184, Cl. 426-65.000.

Broides, Israel. Mat cutting machine. 3,779,119, Cl. 83-581.000.

Brokke, Mervin E., to Stauffer Chemical Company. 2-Thiobenzoxazolyl and 2-thiobenzothiazolyl trifluoro butenyl compounds. 3,780,050, Cl. 260-306.000.

Brook, Richard Anthony: *See—*
Bertoya, Hastings Charles Maxim; Ross, Donald Mackenzie; Brook, Richard Anthony; Allnutt, Anthony John; and Semos, Robert Ernest, 3,779,649.

Brooks, Dean P.: *See—*
Adee, Raymond A.; Brooks, Dean P.; and Anderson, John Dale, 3,779,158.

Brooks, Kenneth John: *See—*
Lewis, Brynley; Miller, George Langham; Brooks, Kenneth John; and Goss, Arthur George, 3,779,006.

Brooks, Louis E.: *See—*
Kauer, George C., Jr.; and Brooks, Louis E., 3,778,967.

Brother Kogyo Kabushiki Kaisha: *See—*
Sakakura, Shiro; and Ito, Naotake, 3,779,185.

Browatzki, Kurt: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.

Brown & Root, Inc.: *See—*
Reeves, Hewett Maxwell, 3,780,370.

Brown & Williamson Tobacco Corporation: *See—*
Haslam, Fred; Horsewell, Henry George; and Gannaway, Paul Henry, 3,779,787.

Brown, Larry P.; and Rhoades, Vaughan W., to Cities Service Oil Company. Apparatus for containing highly corrosive materials under pressure. 3,779,421, Cl. 220-63.000.

Brown, Melvin H., to Aluminum Company of America. Method of multiple effect evaporation. 3,779,871, Cl. 203-88.000.

Brown, Verne R., to Environmental Metrology Corporation. Breath alcohol detector and automotive ignition interlock employing same. 3,780,311, Cl. 307-10.00r.

Browning, Vernon D.: *See—*
Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., 3,779,846.

Bruckner Apparatebau GmbH: *See—*
Becker, Arno, 3,779,049.

Bruenner, Rolf S.: *See—*

Stammler, Manfred; Schmidt, Willfred G.; and Bruenner, Rolf S., 3,779,822.

Brugger, Joseph A.: *See—*
Padjen, George; Helman, Robert W.; and Brugger, Joseph A., 3,779,056.

Brummer, Josef, to Heberlein & Co., AG. Twist tube for a false-twist device. 3,778,991, Cl. 57-77.300.

Bruninga, Kenneth J., to Nelson Irrigation Corporation, mesne. Step-by-step rotary sprinkler head with quick-change and color-coded nozzle insert. 3,779,462, Cl. 239-230.000.

Brunko, Wade D., to United States Steel Corporation. Method of producing quenched and tempered hollow steel structural members of polygonal cross section. 3,779,817, Cl. 148-12.400.

Bruno, C., & Son, Inc.: *See—*
Hoey, Fred A., 3,779,126.

Bruson, Herman A.; and Plant, Howard L., to Olin Corporation. Halomethyl substituted derivatives of dihalophenylcyclopropane. 3,780,117, Cl. 260-650.00r.

Bruzzese, Tiberio; and Ferrari, Rodolfo. Partricin methyl ester. 3,780,173, Cl. 424-122.000.

Bryan, James W. Automatic liquid dispenser for flush tanks and the like. 3,778,850, Cl. 4-227.000.

Brzozowski, Zdzislaw; Angielski, Stefan; and Wojcikowski, Czeslaw. 2-Pyrazoline-1-carboxamide sulfonamide derivatives. 3,780,058, Cl 260-310.00d.

BTR Industries Limited: *See—*
Cameron, James Brisbane; Walton-Knight, Bernard Piet; Bartoo, Otto Floris; and Molijn, Joannes Cornelius, 3,778,882.

Buchbinder, Albert J.: *See—*
Buchbinder, Robert I.; and Buchbinder, Albert J., 3,779,379.

Buchbinder, Robert I.; and Buchbinder, Albert J., to Devco Management, Inc., mesne. Automatic corrugated waste picker. 3,779,379, Cl. 209-102.000.

Buck, Gordon H., to Mattel, Inc. Audible game. 3,779,552, Cl. 273-88.000.

Buckbee Mears Company: *See—*
Johnson, E. Curtis, 3,778,899.

Budge, William W.; and Donald, Malcolm, to Pacific Mariculture, Inc. Oyster growing apparatus and method. 3,779,209, Cl. 119-4.000.

Budzyna, Edward S., to Rockwell International Corporation. Weft carrier guide. 3,779,288, Cl. 139-122.00r.

Buhrmann, Wayne H.; and Fix, Sidney R., to Goodyear Tire & Rubber Company, The. Cooling system including reinforced hose. 3,779,308, Cl. 165-51.000.

Bunger, Heinrich; and Renckhoff, Gustav, to Dynamit Nobel Aktiengesellschaft. Meltable coating compositions, particularly for foodstuffs and pharmaceutical preparations. 3,779,783, Cl. 106-171.000.

Bunker-Ramo Corporation, The: *See—*
Healy, Robert M.; and Hovey, Ralph J., 3,780,247.

Bunten, Theodore M., to Repco Products Corporation. Guide element for baseboard radiation. 3,779,309, Cl. 165-55.000.

Burcher, Ernest E.: *See—*
Keafer, Lloyd S., Jr.; Burcher, Ernest E.; and Kopia, Leonard P., 3,779,788.

Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; Krohn, Hellmut; and Stein, Hermann, to Diamler-Benz Aktiengesellschaft. Device for prevention of spinning of the driven wheels of a motor vehicle. 3,779,331, Cl. 180-82.00r.

Burland, Oliver J. Supporting bar assembly for vehicle. 3,779,436, Cl 224-42.10g.

Burnand, W. E., & Son Limited: *See—*
Strawson, Kenneth Horace, 3,779,120.

Burnett, William W. Measuring attachment for motor vehicle wheels. 3,779,456, Cl. 235-95.000.

Burroughs Corporation: *See—*
Holz, George Ernest; and Dieterman, Felix, 3,780,341.
Kondur, Nicholas, Jr.; and Kobylarz, Lawrence P., 3,780,264.
Wasielewski, Leonard; and Kinner, James L., 3,779,544.
Wojtowicz, Edward A.; Hunter, James R.; and Lazzarotti, S. James, 3,779,546.

Burstein, Norman; and Ditzler, Richard C., to Smokontrol Corporation of America. Air cleaning apparatus. 3,779,710, Cl. 23-288.00f.

Bushnell, Calvin L.; and Stedman, James K., to United Aircraft Corporation. Matrix-type fuel cell. 3,779,811, Cl. 136-86.00r.

BYK Gulden Lomberg Chemische Fabrik GmbH: *See—*
Klemm, Kurt, 3,780,095.

Byrd, Richard W.: *See—*
Byrd, William R.; and Byrd, Richard W., 3,780,155.

Byrd, William R.; and Byrd, Richard W. Method of assembling a chair back. 3,780,155, Cl. 264-230.000.

Caffiero, Rudolphe: *See—*
Pillon, Daniel; Poignant, Pierre; and Caffiero, Rudolphe, 3,779,738.

Cahn, Robert P.: *See—*
Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., 3,779,907.

Calcagno, Benedetto; Ghirga, Marcello; and Di Fiore, Lucio, to Societa Italiana Resine S.p.A. Process for reactivating an aluminum trichloride catalyst. 3,779,943, Cl. 252-411.00r.

Calcagno, Benedetto; Canavesi, Roberto; and Bertolini, Bollate Natale, to Societa Italiano Resine S.I.R. S.p.A. Process for manufacturing linear alkyl benzenes. 3,780,120, Cl. 260-671.00b.

Calcato, Inc.: *See—*
James, Maurice L., 3,778,962.

Caldwell, John R.: *See—*
Jackson, Winston J.; Kuhbuss, Herbert F.; and Caldwell, John R., 3,780,148.

Caley, Lloyd E.; Hill, Horace E.; and Phillips, Joseph L., to Boeing Company, The. Drill with guide tip. 3,779,664, Cl. 408-225.000.

Calgon Corporation: *See—*
Siagel, Robert Clayton; and Bloomquist, Arnold Eugene, 3,779,969.

Callahan, John William; and Capdeville, Martin J., to Pennwalt Corporation. Abrading apparatus with rotary index table. 3,778,935, Cl. 51-8.000.

Callinghan, Robert M.; and Hawthorne, John W., to United States Steel Corporation. Process for removing iron carbonyl with ozone. 3,780,163, Cl. 423-210.000.

Calvert, William Lemont; and Handwerk, Richard Herman, to Union Carbide Corporation. Particulate solids injector apparatus. 3,779,712, Cl. 23-288.00e.

Camacho, Salvador L. Refuse converting method apparatus utilizing long arc column forming plasma torches. 3,779,182, Cl. 110-8.00r.

Cambou, Andre Paul, to Societe Anonyme de Telecommunications. Translating winder for electric cables. 3,779,480, Cl. 242-158.00r.

Cambria, Emanuel F.: *See—*
Hurst, George H.; and Cambria, Emanuel F., 3,779,096.

Cameron, Donald D., to Du Pont de Nemours, E. I., and Company. Process for making filled methyl methacrylate articles. 3,780,156, Cl. 264-300.000.

Cameron, James Brisbane; Walton-Knight, Bernard Piet; Bartoo, Otto Floris; and Molijn, Joannes Cornelius, to BTR Industries Limited. Method of making handrails. 3,778,882, Cl. 29-450.000.

Camp, Carolyn J.; and Lindblom, Robert C., to Dow Chemical Company, The. Dielectric layer composition. 3,779,982, Cl. 260-41.00r.

Camp, Michel, to Rhone-Poulenc S.A. Storage stable concentrated aqueous emulsions prepared from a mixture of methylhydrogen siloxane and methyl polysiloxane, an aminated polymer and an epoxy compound. 3,779,967, Cl. 260-29.20m.

Campanella, Samuel J.; Suyderhuud, Henri G.; and Onufry, Michael, Jr., to Communications Satellite Corporation. Adaptive echo cancellers with compandors. 3,780,233, Cl. 179-170.002.

Campbell, Sterling A.: *See—*
Nau, Richard A.; and Campbell, Sterling A., 3,779,452.

Canada Cities Service, Ltd.: *See—*
Mitchell, David L.; and Speight, James G., 3,779,902

Canadian Limited: *See—*
Chatfield, James E., 3,779,910.

Canavesi, Roberto: *See—*
Calcagno, Benedetto; Canavesi, Roberto; and Bertolini, Bollate Natale, 3,780,120.

Canon Kabushiki Kaisha: *See—*
Tchiyanagi, Toshikazo, 3,779,633.

Canton Company of Baltimore. *See—*
Talbert, William Lewis, 3,779,115.

Cantone, Natale. Agricultural machine for tilling the soil. 3,779,320, Cl. 172-60.000.

Canup, Robert E., to Texaco Inc. High frequency continuous wave ignition system. 3,779,226, Cl. 123-148.00e.

Capdeville, Martin J.: *See—*
Callahan, John William; and Capdeville, Martin J., 3,778,935.

Caperton, Charles B. Coupling means for sewer rod. 3,779,658, Cl. 403-343.000.

Caraway, Guy C. Adjustable speed projector with synchronized sound recorder. 3,779,632, Cl. 352-17.000.

Carborundum Company, The: *See—*
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, 3,779,808.

Cardinal Industries, Incorporated: *See—*
Staub, Donald C., 3,779,607.

Carless, Ernest Lee. Record album storage cabinet. 3,779,621, Cl. 312-15.000.

Carley, David R.; Lowrance, Byron R.; and Mangham, Jesse Roger. Preparation of dihydrocarbon beryllium compounds. 3,780,118, Cl. 260-66.00r.

Carley, David R., to Ethyl Corporation. Manufacture of beryllium hydride. 3,780,169, Cl. 423-645.000.

Carlson, Norman R.: *See—*
Matteson, Lucius G.; and Carlson, Norman R., 3,779,744

Carlson, Ronald H., to Hooker Chemical Corporation. Iron chelate compound of tris (hydroxymethyl) phosphine oxide and nitrilotriacetic acid or alkali metal salts. 3,780,079, Cl. 260-439.00r.

Carmichael, Paul D.: *See—*
Pogonowski, Ivo C.; and Carmichael, Paul D., 3,779,019.

Caro, Inc.: *See—*
Study, Jon A., 3,779,164.

Carr, Herbert F.: *See—*
Tussey, Jimmy D.; Oakes, George W.; Carr, Herbert F.; and Melnick, Irving, 3,779,243.

Carroll, George. Pneumatic device for moving articles. 3,779,401, Cl. 214-1.0bb.

Carswell, Donald R., to Crafteo Corporation. Manufacture of ricotta cheese. 3,780,199, Cl. 99-116.000.

Carter, William C.; and Wadia, Aspi B., to International Business Machines Corporation. Hybrid redundancy interface. 3,780,276, Cl. 235-153.0ae.

Carver, Edgar B.: *See—*
Fisk, Reginald C.; and Carver, Edgar B., 3,779,726.

Casale, William R.; Saltz, Fred; and Schreck, George R., to International Business Machines Corporation. Form run-out and jam detector for printer. 3,779,440, Cl. 226-74.000.

Case, Richard P.: *See—*
Ostenberg, Ramon K.; and Case, Richard P., 3,779,090.

Castelli, Pier Paolo: *See—*
Gardi, Rinaldo; Brianza, Carate; and Castelli, Pier Paolo, 3,780,072.

Caterpillar Tractor Company: *See—*
Dezelan, Joseph E., 3,779,133.
Kennicutt, Robert B.; Sitton, Ellis A.; and Yancey, John W., 3,779,615.

Catitti, Aldo: *See—*
Soglia, Luciano; Catitti, Aldo; Di Marino, Ciampino; and Sacerdoti, Giancarlo, 3,779,618.

Cavicchi, Roland. Wheel wrench adapter. 3,779,106, Cl. 81-177.00b.

Cebalo, Tony; and Miesel, John L., to Lilly, Eli, and Company. Triazoline phosphates. 3,780,052, Cl. 260-308.00c.

Celada, Joan; MacKay, Patrick W.; and de la Pena, Ramon, to Fierro Esponja S.A. Method for reducing particulate metal ores to sponge iron with recycled reducing gas. 3,779,741, Cl. 75-35.000.

Celanese Coatings Company: *See—*
Hicks, Darrell B., 3,779,977.

Celanese Corporation: *See—*
Bonn, Abraham A., 3,780,255.
Di Edwardo, Andrew; Dix, Robert; and Riggs, John, 3,779,983.
Keuchel, Herbert W.; and Polestak, Walter J., 3,780,149.
Park, Im Keon, 3,779,789.

Celotex Corporation, The, mesne: *See—*
Ohlhauser, Ernest F.; and Boggild, Robert, 3,780,281.

Centre National de Recherches Metallurgiques Centrum Voor Research in de Metallurgic: *See—*
Hancart, Jules; and Houbart, Ivan, 3,779,646.

Centre National d'Etudes Spatiales: *See—*
Regipa, Robert, 3,779,443.

Ceskoslovenska akademic ved: *See—*
Stoy, Artur; and Urbanova, Renata, 3,779,792.

Chabas & Besson S.A.: *See—*
Besson, Louis Pierre Albert, 3,779,064.

Chabee, George G., to Cumberland Engineering Company, Inc. Knife holder and knife therefor. 3,779,123, Cl. 83-698.000.

Chaikin, Saul W.: *See—*
Cope, Oswald James; and Chaikin, Saul W., 3,779,774.
Cope, Wswald James; and Chaikin, Saul W., 3,779,768.

Chamay, Anthony Joseph; and Johnston, Richard Paul, to General Electric Company. Combined thrust reversing and throat varying mechanism for a gas turbine engine. 3,779,010, Cl 60-226.00a.

Chamberlain, John, to United Aircraft Corporation. Combustion chamber for gas dynamic laser. 3,779,695, Cl. 431-351.000.

Champion International Corporation: *See—*
Powell, Mahrin P., 3,779,941
Vassiliades, Anthony E., Nauman, Edeard F., and Shroff, Shrenik, 3,779,957.

Chanaud, Robert Charles. *See—*
Hayden, Richard Earle; and Chanaud, Robert Charles, 3,779,338.

Chandler, Ronald W.: *See—*
Anderson, Reg A., Chandler, Ronald W.; Mueller, Frederick N.; and Osborn, Norbert I., 3,779,519.

Chaney, Donal W.: *See—*
Herpich, William A.; and Chaney, Donal W., 3,779,409.

Chang, Herbert Yu-Pang, Elliott, Roger Alan; Senese, Daniel John, and Smith, Thomas Loyd, to Bell Telephone Laboratories, Incorporated. Self-checking decision logic circuit. 3,779,458, Cl. 235-153.0bg

Chang, Pei Tsing. *See—*
MacHenry, Richard, and Chang, Pei Tsing, 3,779,704.

Chaput, Victor B., 1/2 to Simoneau, Alex. Pocketed gear differential 3,779,101, Cl 74-711.000.

Charlton, William D. Trailer hitch 3,779,653, Cl. 403-3.000.

Chase, W. M. Company: *See—*
Maisner, Leonard S., 3,779,718.

Chatfield, James E., to Canadian Limited. Liquid treatment plant and process, particularly for waste water. 3,779,910, Cl. 210-49.000.

Chechak, Jonas J., to Eastman Kodak Company. Process for preparing electrophotographic liquid developing compositions. 3,779,924, Cl. 252-62.100.

Chelminski, Stephen V., to Bolt Associates, Inc. Confined-liquid seismic exploration methods and systems. 3,779,335, Cl. 181-.5nc.

Chemplex Company: *See—*
Pullakat, Thomas J., and Shida, Mitsuzo, 3,780,011.

Cheney, Lee Cannon: *See—*
Essery, John Michael, and Cheney, Lee Cannon, 3,780,032.

Cheney, Stanley O. Convertible snow vehicle trailer. 3,779,572, Cl. 280-21.00r.

Chevalier, Arthur A., to Marathon Oil Company. Cable catcher. 3,779,347, Cl. 188-65.200.

Chiba, Toshio; Yonezawa, Teruhiko; Kobayashi, Jiro; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Light-sensitive materials. 3,779,775, Cl. 96-88.000.

Chicago Bridge & Iron Company: *See—*
Sudduth, Jackie Wayne, 3,778,969.

Chicago Fire Brick Company: *See—*
Philander, Herber C., 3,778,950.

Chimura, Toshihiko, to Sony Corporation. Magnetic recording and reproducing apparatus. 3,779,482, Cl. 242-190.000.

Chisholm, Daniel R.: *See—*
Polanskyj, Bohdan S.; Solomon, Jack M.; Chisholm, Daniel R.; and Bluestein, Bernard R., 3,780,107.

Chisso Corporation: *See—*
Ando, Masao, 3,780,250.

Chlipalski, Adam. Apparatus for handling liquid filled flexible pouches. 3,778,972, Cl. 53-159.000.

Chomerics, Inc.: *See—*
Seeger, Richard E., Jr.; and Coulter, John G., 3,780,237.

Chookazian, Mark. Gasket for joining plastic tubes. 3,779,564, Cl. 277-80.000.

Chow, Philip Y., to Santa Fe International Corporation. Mooring and oil transfer apparatus. 3,778,854, Cl. 9-8.00p.

Christensen, Borge; and Hansen, Hans, said Christensen assor. to Ingeniorfirmaet Borge Christensen Kastanialle and said Hansen assor. to Ingeniorfirmaet Hans Hansen. Automatic packing device for pallet stacks and the procedure peculiar hereto. 3,778,960, I. 53-29.000.

Christensen, Burton G.; and Leanza, William J., to Merck & Co., Inc. Process for preparing cephalosporin compounds. 3,780,031, Cl. 260-243.00c.

Christensen, Burton G.; and Firestone, Raymond A., to Merck & Co., Inc. Process for preparing substituted cephalosporins. 3,780,034, Cl. 260-243.00c.

Christensen, Walter L., to Graco Metal Products, Inc. Swing operated music box. 3,779,124, Cl. 84-94.00c.

Christie, Christopher E.: *See—*
Appleby, Paul E.; Riggs, Robert S.; and Christie, Christopher E., 3,779,834.

Christie, Gerald Anthony; and Bressington, Edwin Thomas, to Salient Engineering Limited. String lasting. 3,778,856, Cl. 12-7.900.

Christofas, Alkis: *See—*
Dukert, Andrew Anthony; and Christofas, Alkis, 3,779,854.

Chromalloy American Corporation: *See—*
Ellis, John L.; Mal, N. Kumar; and Tarkan, Stuart E., 3,779,720.
Palmenberg, Edward C., 3,778,906.

Chromally American Corporation: *See—*
Clark, Eugene V.; Martin, William J.; Plambeck, Peter J.; and Commanday, Maurice R., 3,779,719.

Chu, Chung Ying: *See—*
Spalt, Howard A.; Chu, Chung Ying; and Niketas, Paul, 3,780,017.

Chuard, Marcel: *See—*
Friedling, Gerard; and Chuard, Marcel, 3,778,979.

Ciavattoni, Anthony: *See—*
Gardella, John M.; Ciavattoni, Anthony; and Ujvary, Joseph I., 3,778,903.

Ciba-Geigy AG: *See—*
Frey, Christoph, 3,780,057.
Hari, Stefan; and Ronco, Karl, 3,780,049.
Hari, Stefan; and Ronco, Karl, 3,780,071.
Hubele, Adolf; and Rohr, Otto, 3,780,068.
Jaeger, Horst, and Schaefer, Paul, 3,780,093.
Kitzing, Rainer, Marthaler, Max; and Oetiker, Alfred, 3,779,937.
Porret, Daniel, Habermeier, Juergen; and Batzer, Hans, 3,779,949

Ciba-Geigy Corporation: *See—*
Dexter, Martin; Spivack, John D.; and Steinberg, David H., 3,779,945
Gachwend, Heinz Werner, 3,780,043.
Greber, Gerd, and Darns, Roland, 3,779,990.
Knell, Martin, 3,780,103.
Rembold, Heinz, Baumann, Dieter; and Habermeier, Jurgen, 3,779,988.

C.I.T. Ralphs Limited: *See—*
Mawby, Roger Frederick, 3,779,426.

Cities Service Company: *See—*
Kerschner, Paul M., 3,779,978.

Cities Service Oil Company: *See—*
Brown, Larry P.; and Rhoades, Vaughan W., 3,779,421.
Kerschner, Paul M., Badin, Elmer J.; and Cresti, Aldo, 3,779,724.

Clad Metals Corporation: *See—*
El Bindari, Ahmed, 3,778,878.

Clark, Eugene V.; Martin, William J.; Plambeck, Peter J.; and Commanday, Maurice R., to Chromally American Corporation Diffusion coating of jet engine components and like structures. 3,779,719, Cl. 29-197.000.

Clark, Gordon J., to Textron, Inc. Apparatus for bonding bearing liners. 3,779,828, Cl. 156-358.000.

Clark, James Webster. Birdhouse sparrow trap. 3,778,922, Cl. 43-61.000.

Clark, John R.; and Bluestein, Claire, to Witco Chemical Corporation. Sulfone-ester compounds as plasticizers for polyvinyl fluoride resins. 3,779,975, Cl. 260-30.8pr.

Clarke, Ellis Whiteside. Means for controlling fluid flow. 3,779,507, Cl. 251-9.000.

Clason, Jan C., to N.V. Fabriek Van Electriche Apparaten Voorheen F. Hazemiejer & Co. Method of applying a field control device to an insulated conductor of a cable and an apparatus for carrying out the method. 3,778,888, Cl. 29-592.000.

Clausen, Erik; and Clausen, Johannes. Rear projection screen and method of making same. 3,779,630, Cl. 350-117.000.

Clausen, Johannes: *See—*
Clausen, Erik; and Clausen, Johannes, 3,779,630.
Clinton, Margaret A.; and Wells, Martin G. H., to Jones & Laughlin Steel Corporation. Corrosion resistant tinplate. 3,779,798, Cl. 117-131.000.
Clorox Company, The: *See—*
Foley, Lary L., 3,778,849.
Close, James Garth. Attachment for perforated boards. 3,778,955, Cl. 52-758.00d.
Clouth Gummuwerke AG: *See—*
Lachmann, Hans-Peter, 3,779,536.
CMI Corporation: *See—*
Smith, Don W., 3,779,662.
Swisher, George W., Jr.; and Hale, Autho, 3,778,912.
Coal Industry Patents Limited: *See—*
Armstrong, Michael Pearson, 3,779,381.
Coates, Alfred E.: *See—*
Vegh, Bertalan J.; and Coates, Alfred E., 3,779,891.
Cockerill-Ougree-Providence et Esperance-Longdoz en abreze "Cockerill": *See—*
Streel, Dominique Thomas Francois, 3,779,802.
Coe, Roger: *See—*
Scott, Walter T., 3,779,227.
Cohen, Guy: *See—*
Lhomore, Pierre; Cohen, Guy; and Jacquinot, Bernard, 3,780,115.
Cohen, Harvey M.: *See—*
Sioui, Richard H.; and Cohen, Harvey M., 3,779,727.
Cohen, Morrel H.: *See—*
Miles, Malcolm G.; Wilson, James D.; and Cohen, Morrel H., 3,779,814.
Cole, Edward L.: *See—*
Wilson, Raymond F.; and Cole, Edward L., 3,779,895.
Collins Radio Company: *See—*
Stover, Harris A., 3,780,279.
Collins, Richard D.: *See—*
Marion, Thomas E.; and Collins, Richard D., 3,779,191.
Collins, Robert J., to Upjohn Company, The. Animal feed for obtaining increased production in animals. 3,780,179, Cl. 424-248.000.
Colorapid Limited: *See—*
Woollacott, Derrick Sunnocks, 3,779,147.
Columbia Broadcasting System, Inc.: *See—*
Glenn, William E., Jr., 3,780,212.
Columbia Machine, Inc.: *See—*
Schmitt, Robert A., 3,779,361.
Combustion Equipment Associates, Inc.: *See—*
Monro, Richard J., 3,779,460.
Comitato Nazionale per l'Engergia Nucleare: *See—*
Soglia, Luciano; Catitti, Aldo; Di Marino, Ciampino; and Sacerdoti, Giancarlo, 3,779,618.
Commanday, Maurice R.: *See—*
Clark, Eugene V.; Martin, William J.; Plambeck, Peter J.; and Commanday, Maurice R., 3,779,719.
Commissariat a l'Energie Atomique: *See—*
Brion, Jacques, 3,779,183.
Communication Equipment & Contracting Co., Inc.: *See—*
Pirnie, Robert M., Jr.; and Pirnie, Robert M., III, 3,780,227.
Communications Satellite Corporation: *See—*
Campanella, Samuel J.; Suyderhuud, Henri G.; and Onufry, Michael, Jr., 3,780,233.
Compagnie, General d'Electricite: *See—*
Aupoix, Marcel; Moisson-Franckhauser, Francois; Leroux, Jean-Marie; and Prost, Roger, 3,780,205.
Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Lejeune, Daniel, 3,779,301.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Rocton, Lucien, 3,780,210.
Computer Power Systems Inc.: *See—*
Mayle, Alfred J., 3,780,339.
Comsec Corporation: *See—*
Simonson, Harris J., 3,780,378.
Conkling, William Collins, to Pennwalt Corporation. Automatic changeover valve for chlorine gas system. 3,779,268, Cl. 137-113.000.
Conn, Alvie P. Gas instrument liquid separator. 3,778,977, Cl. 55-219.000.
Conner, Charles J., to United States of America, Agriculture. Bright pink, lavender and blue mineral dyeing single bath process for cellulosics. 3,779,702, Cl. 8-52.000.
Construction Specialties, Inc.: *See—*
McGeary, Frank L.; and Zampetti, Patrick L., 3,779,660.
Conta, Robert L., to Gleason Works, The. Process for heating and sintering ferrous powder metal compacts. 3,779,747, Cl. 75-200.000.
Conti, Walter; and Corsini, Pasquale, to Snam Progetti S.p.A. Process for the production of composite fibers, apparatus suitable to realize the same and fibers obtained thereby. 3,778,873, Cl. 28-72.300.
Continental Oil Company: *See—*
Gregory, Mercer Duane, 3,779,908.
Contraves AG: *See—*
Schon, Kurt, 3,779,279.
Cooper, John, to Matramatic Company Limited. Method and apparatus for buttoning upholstery. 3,778,853, Cl. 5-356.000.
Cooper, Roy David: *See—*
Gale, Frederick Henry; and Cooper, Roy David, 3,780,332.
Cope, Oswald James; and Chaikin, Saul W., to Xidex Corporation. Silicone surfactants for vesicular films. 3,779,774, Cl. 96-87.00r.
Cope, Wswald James; and Chaikin, Saul W., to Xidex Corporation. Fluorocarbon surfactants for vesicular films. 3,779,768, Cl. 96-75.000.
Corbaty, Martin L.: *See—*
Rosenfeld, Daniel D.; and Corbaty, Martin L., 3,780,042.
Corble, John C.: *See—*
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., 3,779,689.
Corning Glass Works: *See—*
Kapron, Felix P.; and Keck, Donald B., 3,779,628.
Kapron, Felix P.; and Keck, Donald B., 3,780,295.
Cornyn, William S., Jr.; Dier, Stephen A.; and Lynas, Robert M., to TRW Inc. Data normalizing method and system. 3,779,457, Cl. 235-151.300.
Corsini, Pasquale: *See—*
Conti, Walter; and Corsini, Pasquale, 3,778,873.
Cosmo, Nicola: *See—*
Ravera, Giovanni; Cosmo, Nicola; and Siletto, Giorgio, 3,779,638.
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, to Carborundum Company, The. Polyester coated wire. 3,779,808, Cl. 117-232.000.
Cotton, Incorporated: *See—*
Lord, John Garvin, 3,778,913.
Coughlin, Donald W. Strainer shut-off valve with manual back-flush. 3,779,388, Cl. 210-390.000.
Coulter, John G.: *See—*
Seeger, Richard E., Jr.; and Coulter, John G., 3,780,237.
Cowan, Larry Clyde, to Leesona Corporation. Fluid operated logic device. 3,779,267, Cl. 137-111.000.
Cowles, Raymond I.: *See—*
Irish, Charles G., Jr.; Silva, Joseph W.; and Cowles, Raymond I., 3,779,167.
Cox, James R., to Cox, Jim, Company. Form support bracket. 3,779,500, Cl. 248-288.000.
Cox, Jim, Company: *See—*
Cox, James R., 3,779,500.
Cox, William L.: *See—*
Leshin, Richard; and Cox, William L., 3,780,038.
Cozewith, Charles; and Tornqvist, Erik G. M., to Esso Research and Engineering Company. Butadiene polymerization catalyst. 3,779,944, Cl. 252-429.00b.
Cozewith, Charles; and Robison, Samuel B., to Esso Research and Engineering Company. Catalyst for the production of copolymer. 3,780,005, Cl. 260-88.02r.
Craftco Corporation: *See—*
Carswell, Donald R., 3,780,199.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. acid derivatives. 3,780,027, Cl. 260-239.006.
Crapuchettes, Paul Wythe, to Litton Systems, Inc. Microwave oven power supply circuit. 3,780,252, Cl. 219-10.055.
Cresti, Aldo: *See—*
Kerschner, Paul M.; Badin, Elmer J.; and Cresti, Aldo, 3,779,724.
Creusot-Loire: *See—*
Godines, Henri, 3,779,521.
Creusot-Loire a Societe Anonyme: *See—*
Leroy, Pierre; Gombert, Marcel; Queuleu, Metz; and Sprunck, Emile, 3,779,534.
Crewe, Ferdinand: *See—*
Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,780,089.
Crisafulli, Angelo J. Backhoe attached pump. 3,779,670, Cl. 417-231.000.
Cristea, Viorel: *See—*
Simonfi, Paul; and Cristea, Viorel, 3,779,734.
Crone, John M., Jr.: *See—*
Suggitt, Robert M.; Brandenburg, John T.; and Crone, John M., Jr., 3,780,121.
Crooks, Stanley R.: *See—*
Westergren, George A.; Koland, David G.; and Crooks, Stanley R., 3,778,863.
Crosby, Noble Wellington; and Walker, Robert Clinton, to Local Industries Limited. Vibration damper. 3,780,207, Cl. 174-42.000.
Crosweller, Walker, & Company, Limited: *See—*
Arbon, Dennis Charles, 3,779,467.
Crouzet: *See—*
Jullien-Davin, Jean, 3,779,688.
Crowe, Curtis W., to Dow Chemical Company, The. Acidizing composition. 3,779,916, Cl. 252-8.55c.
Crowley, John H. Portable smoke measuring device. 3,779,650, Cl. 356-207.000.
Crown Cork & Seal Company, Inc.: *See—*
Pahl, Leo F.; and Jones, Norman H., 3,780,198.
Crump, Robert O.: *See—*
Rich, Dennis E.; and Crump, Robert O., 3,779,290.
Cryer, Edward, to Lucas, Joseph, (Industries) Limited. Self cancelling direction indicator switches. 3,780,241, Cl. 200-61.027.
Cubic Corporation: *See—*
Lind, Larry W., 3,780,265.
Cumberland Engineering Company, Inc.: *See—*
Chabee, George G., 3,779,123.
Cummings, Alan F.; Binz, Ernest F.; and Freeman, Gene G., to North American Rockwell Corporation. Deployable parabolic antennas. 3,780,375, Cl. 343-915.000.
Cunningham, Robert E.: *See—*

Privott, Wilbur J., Jr.; and Cunningham, Robert E., 3,780,153.
Cuoco, Michael J. Automatic mouse-trap device. 3,778,923, Cl. 43-69.000.
Curry, James R. Dual function wrench. 3,779,104, Cl. 81-119.000.
Curtis, William I.; and McDaniel, Augustus C., Jr., to Hill Acme Company, The. Shearing apparatus. 3,779,116, Cl. 83-378.000.
Curtiss-Wright Corporation: *See—*
Scott, Bruce E., 3,779,879.
Cushman, Charles R.; Hale, James C.; and Anderson, Vernon A., to Autometrics Co. Particle size and percent solids monitor. 3,779,070, Cl. 73-61.00r.
Cuthbert, Victor W.: *See—*
Brenner, Robert A.; and Cuthbert, Victor W., 3,779,258.
Cutler, Lester M.; and Friedman, Paul, to Vabra-Spa Products, Inc. Waterproof battery operated vibrator. 3,779,238, Cl. 128-36.000.
Cuzzupoli, Joseph W.: *See—*
Iceland, William F.; and Cuzzupoli, Joseph W., 3,780,258.
Cycle-Drive Corporation: *See—*
Trammell, Earl M., Jr., 3,779,099.
Cyprane Limited: *See—*
Jones, Wilfred, 3,779,414.
D-Mac Limited: *See—*
Jebb, Alan; and Besant, Colin Bowden, 3,778,905.
Da Costa, Nicholas Mario: *See—*
Seymour, Donald Edwin; and Da Costa, Nicholas Mario, 3,780,003.
Daido Seiko Kabushiki Kaisha: *See—*
Adachi, Toshio; and Hayashi, Kiyohide, 3,779,739.
Adachi, Toshio; and Kayashi, Kiyohide, 3,779,740.
Daigle, Paul A.; and Gronholz, Donald D., to Donaldson Company, Inc. Air cleaner with folding side walls. 3,778,985, Cl. 55-497.000.
Daimler Benz Aktiengesellschaft: *See—*
Wilfert, Karl, 3,779,577.
Daimler-Benz Aktiengesellschaft: *See—*
Kurz, Dietrich; and Oser, Gerhard, 3,779,097.
Worner, Gunter, 3,779,352.
D'Alelio, Gaetano F. Halogenated ethylenically unsaturated phosphates. 3,780,144, Cl. 260-956.000.
Dall'Asta, Gino, to Montecatini Edison S.p.A. Process for polymerizing cycloolefins to polyalkenamers. 3,780,009, Cl. 260-93.100.
D'Amico, John. Swivel tailed kite. 3,779,490, Cl. 244-153.00r.
Dannels, Bobby F.; and Shepard, Alvin F., to Hooker Chemical Corporation. Thermoplastic and thermosetting allyl carbamate resins. 3,779,995, Cl. 260-77.5ma.
Danner, Wilson E.; Hammes, Paul A.; and Everson, Charles W., to Merck & Co., Inc. Curing of meats. 3,780,192, Cl. 426-266.000.
Darns, Roland: *See—*
Greber, Gerd; and Darns, Roland, 3,779,990.
Datastrip Corporation: *See—*
Janssen, Alexander Patton, 3,778,914.
Dattilo, Donald J., to Motorola, Inc. Cartridge locking mechanism for a tape player. 3,779,561, Cl. 274-4.00b.
Datwyler, Walter F.: *See—*
Ahern, Charles J.; Datwyler, Walter F.; and Presley, Rex W., 3,779,673.
Daublebsky, Peter; and Zeitzschel, Gunter, to Licentia Patent-Verwaltungs-G.m.b.H. Nuclear reactor control rod drives. 3,779,134, Cl. 91-44.000.
David, Curry Beach, to Arizona Chemical Company. Molecular sieve 13-X catalyzed isomerization of alpha-pinene-improvement of catalyst activity by iodine. 3,780,124, Cl. 260-675.500.
David, Roger F.: *See—*
Benoun, Samuel M.; and David, Roger F., 3,779,550.
Davis, Billy E., to Signet Controls, Inc. Sphere launcher and receiver. 3,779,270, Cl. 137-268.000.
Davis, George James: *See—*
Schuftan, Paul Maurice; Armond, John Walter; Leader, John Henry; and Davis, George James, 3,779,028.
Davis, Paul, to Sweetheart Plastics Inc. Disposable plastic container and cover. 3,779,418, Cl. 220-60.00r.
Dawson, John M.: *See—*
Kaw, Predhiman K.; and Dawson, John M., 3,779,864.
Dawson, Juan C., to Bendix Corporation, The. Interferometric device for indicating displacement along one dimension during motion along another dimension. 3,779,647, Cl. 356-109.000.
Day, John J.; and Hirschman, Paul S., to Ocean Protein Corporation. Filter. 3,779,387, Cl. 210-232.000.
Day, Leon E., 50% to Rolen, William C. and Sellers, James B. Earth anchor. 3,778,943, Cl. 52-167.000.
Dayco Corporation: *See—*
Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., 3,779,846.
De Beers Industrial Diamond Division, Limited: *See—*
Dewar, Bruce Ian, 3,779,873.
De Bell, Lawrence R.; and Price, David D., Jr., to Economy Co. Recorder having manually actuated means for pivotal vertical movement of the head into operating position. 3,780,231, Cl. 179-100.2ca.
De Jersey, C. L., & Sons Propritary Limited: *See—*
De Jersey, David Charles, 3,780,193.
De Jersey, David Charles, to De Jersey, C. L., & Sons Propritary Limited. Production of waffles and like food products. 3,780,193, Cl. 426-505.000.
de la Pena, Ramon: *See—*
Celada, Joan; MacKay, Patrick W.; and de la Pena, Ramon, 3,779,741.
De Lloret, Herminia Alvarez Gil. Container for the components of mixed drinks. 3,779,372, Cl. 206-47.00a.
De Marco, Joseph V.: *See—*
Jett, Howard V.; and De Marco, Joseph V., 3,779,465.
De Marsico, Henry J.; Strugar, Daniel; and Wu, Dao-Tsing, to Du Pont de Nemours, E. I., and Company. Acrylic polymer modified polyvinyl fluoride coating compositions. 3,779,976, Cl. 260-32.80r.
De Pont de Nemours, E. I., and Company: *See—*
Way, John L., 3,780,278.
De Santis, G. William, to Essex Chemical Corporation. Polyurethane sealant-primer system. 3,779,794, Cl. 117-72.000.
De Vries, Douwe: *See—*
Koomey, Paul C.; and De Vries, Douwe, 3,780,243.
Dean, Donald G.: *See—*
Pansky, Emil J.; and Dean, Donald G., 3,779,610.
Deans, David Robert, to Imperial Chemical Industries Limited. Gas chromatography. 3,778,975, Cl. 55-197.000.
Deering Milliken Research Corporation: *See—*
Sanders, Grady H., 3,778,995.
Deinert, Roedolf Hendrik: *See—*
Kulberg, Gerardus Huibrecht; and Deinert, Roedolf Hendrik, 3,780,289.
Deitch, Ronald S. Magnetic lock. 3,779,052, Cl. 70-38.00c.
Delorean, John Zachary. Building construction. 3,778,953, Cl. 52-745.000.
Dembovsky, Vladimir, to Vysoka Skola Banska. Plasma kiln. 3,780,201, Cl. 13-31.000.
Den Ottolander, Leendert, to Walpro Plastics N.V. Method and device for manufacturing a flat cable as well as a cable acquired by means of the same. 3,778,879, Cl. 29-203.00c.
Dennis, John, Jr.: *See—*
McKenney, Neal D.; and Dennis, John, Jr., 3,779,693.
Denny, John P.; Solbach, Robert C.; and Jagaciak, Pen George J., to Kawecki Berylco Industries, Inc. Ductile consolidated beryllium. 3,779,713, Cl. 29-182.000.
Denver Plastics Inc.: *See—*
Wilcox, Henry O., 3,779,416.
Denzel, Theodore; and Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Derivatives of pyrazolo(3',4'-2,3)pyrido(4,5-E)B-benzo-1,5-diazepines. 3,780,047, Cl. 260-296.00p.
DePenti, Kenneth Louis, to Midland-Ross Corporation. Railway car coupler. 3,779,397, Cl. 213-151.000.
Deumens, Johannes J. M.; and Groen, Siemen H., to Stamicarbon N.V. Process for the preparation of 4-oxocapronitrile. 3,780,082, Cl. 260-465.100.
Deumens, Johannes J. M.; and Stijfs, Petrus A. M. J., to Stamicarbon N.V. Process for preparing α-mono-cyanoethylated butanone. 3,780,083, Cl. 260-465.100.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Kabisch, Gerhard; and Kunkel, Wolfgang, 3,780,168.
Schwarze, Werner; and Weigert, Wolfgang, 3,780,077.
Devco Management, Inc., mesne: *See—*
Buchbinder, Robert I.; and Buchbinder, Albert J., 3,779,379.
Devlin, Barry R. J.: *See—*
Entwistle, Ian D.; Williams, Peter J.; and Devlin, Barry R. J., 3,780,055.
Devries, Donald L., to Atlantic Richfield Company. Lubricating oil composition. 3,779,920, Cl. 252-33.400.
Dewaele, Sylvain Achiel Raoul, to S.A. Texaco Belgium N.V. Method for the preparation of 1,2,4,5-tetrahydroxybenzene. 3,780,114, Cl. 260-621.00h.
Dewar, Bruce Ian, to De Beers Industrial Diamond Division, Limited. Process for metal coating diamonds. 3,779,873, Cl. 204-20.000.
Dewhirst, Fred Arlington, to Bell Telephone Laboratories, Incorporated. Lamp enclosure. 3,780,284, Cl. 240-41.00r.
Dexter, Martin; Spivack, John D.; and Steinberg, David H., to Ciba-Geigy Corporation. Mixtures of 3-(3,5-dialkyl-4-hydroxy phenyl-propionic acid esters of alkanediols. 3,779,945, Cl. 252-404.000.
Deyerl, Herman F.; and Reynolds, Robert J. Roadbed apparatus for model vehicles. 3,780,235, Cl. 191-13.000.
Dezelan, Joseph E., to Caterpillar Tractor Company. Make-up valve for hydraulic control circuit. 3,779,133, Cl. 91-6.000.
Dhein, Rolf; Meissner, Hans-Jurgen; and Kuchenmeister, Rolf, to Bayer Aktiengesellschaft. Lacquer binders. 3,779,961, Cl. 260-19.00u.
Di Edwardo, Andrew; Dix, Robert; and Riggs, John, to Celanese Corporation. Acrylic fibers and films which particularly are suited for thermal stabilization. 3,779,983, Cl. 260-45.70s.
Di Fiore, Lucio: *See—*
Calcagno, Benedetto; Ghirga, Marcello; and Di Fiore, Lucio, 3,779,943.
Di Ianni, Daniel: *See—*
Brackmann, Warren A.; and Di Ianni, Daniel, 3,779,252.
Di Marino, Ciampino: *See—*
Soglia, Luciano; Catitti, Aldo; Di Marino, Ciampino; and Sacerdoti, Giancarlo, 3,779,618.
Diamler-Benz Aktiengesellschaft: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; Krohn, Hellmut; and Stein, Hermann, 3,779,331.
Diamond Shamrock Corporation: *See—*
Hamilton, Donald N.; and Kennedy, Alexander W., 3,779,815.
Loftfield, Richard E., 3,779,889.

Stallings, John P., 3,780,007.
Welsh, Jay Y., 3,780,158.
Welsh, Jay Y., 3,780,159.

Dick, George Wilmer: *See—*
Bowen, Edward George; and Dick, George Wilmer, 3,780,230.

Dickie, Robert J., to Singer Company, The. Gyroscope pickoff means. 3,779,087, Cl. 74-5.000.

Didier-Werke A.G.: *See—*
Fehling, Hans-Reinhard; Hase, Horst; and Kutzer, Hans-Joachim, 3,779,742.

Dier, Stephen A.: *See—*
Cornyn, William S., Jr.; Dier, Stephen A.; and Lynas, Robert M., 3,779,457.

Dieterman, Felix: *See—*
Holz, George Ernest; and Dieterman, Felix, 3,780,341.

Diginetics Incorporated: *See—*
Snook, Richard K., 3,779,079.

Distillers Company (Yeast) Limited, The: *See—*
Trevelyan, William E., 3,780,181.

Ditzingen, Johannes Fuchs, Firma: *See—*
Scheuerpflug, Hans, 3,779,581.

Ditzler, Richard C.: *See—*
Burstein, Norman; and Ditzler, Richard C., 3,779,710.

Dix, Robert: *See—*
Di Edwardo, Andrew; Dix, Robert; and Riggs, John, 3,779,983.

Dodds, Harold E.: *See—*
Kennedy, C. Trowbridge; Stout, David J.; and Dodds, Harold E., 3,779,799.

Doemen, Benno; and Muller, Rolf, to Papst-Motoren KG. Brushless dynamo electric machine, particularly electric motor. 3,780,363, Cl. 318-254.000.

Dolan, Vincent: *See—*
Tarbox, Willis; Dolan, Vincent; and Harman, Ralston L., 3,779,566.

Dollinger, Robert E., to Phillips Petroleum Company. Carbon black mixing apparatus. 3,779,683, Cl. 425-222.000.

Domecki, Edward H. Method of packing shrimp. 3,780,196, Cl. 426-393.000.

Donald, Malcolm: *See—*
Budge, William W.; and Donald, Malcolm, 3,779,209.

Donaldson Company, Inc.: *See—*
Daigle, Paul A.; and Gronholz, Donald D., 3,778,985.

Donaldson, Tommie C. Threshold anchor device. 3,778,931, Cl. 49-380.000.

Donnell, Frank R., to Spin Company. Pipeline squeegee apparatus., 3,778,859, Cl. 15-104.30r.

Dorler, Jack A.; Forneris, John L.; and Swietek, Donald J., to International Business Machines Corporation. Schottky barrier diode read-only memory. 3,780,320, Cl. 307-303.000.

Dorn, Ludwig; Mengel, Manfred; and Heinze, Gerhard, to Bayer Aktiengesellschaft. Production of transition metal-containing supported catalysts. 3,779,946, Cl. 252-448.000.

Dornbush, Albert Carl: *See—*
Van Lear, George E.; and Dornbush, Albert Carl, 3,780,063.

Dorr, Karl-Heinz: *See—*
Drechsel, Herbert; Dorr, Karl-Heinz; Grimm, Hugo; and Rowedder, Gustav, 3,780,166.

Dorris, John P., to Pre-Cast Concrete Products, Ltd. Bell-liner protector, 3,778,941, Cl. 52-124.000.

Dorsch, Robert E., to Uniroyal Inc. Method and apparatus for improving the tensile strength of a multifilament glass strand. 3,779,844, Cl. 156-73.000.

Doss, Richard C.; and Kuper, Donald G., to Phillips Petroleum Company. Purification of alkali metal salts of aromatic carboxylic acids. 3,780,097, Cl. 260-525.000.

Douek, Maurice: *See—*
Liu, Joseph K.; and Douek, Maurice, 3,779,992.

Doughy, Harold A.: *See—*
Snow, Gerald A.; and Doughy, Harold A., 3,779,370.

Dow Chemical Company, The: *See—*
Best, John S., 3,779,030.
Camp, Carolyn J.; and Lindblom, Robert C., 3,779,982.
Crowe, Curtis W., 3,779,916.
Evani, Syamalarao; and Lalk, Robert H., 3,779,970.
Exner, Jurgen H.; Larsen, Eric R.; and Gunsher, Jeffrey A., 3,779,984.
Hart, Porter, 3,779,265.
Heiser, Edward J., 3,779,800.
Howell, Edward R.; Wood, Harold B., Jr.; and Sayad, Richard S., 3,779,927.
Isenberg, Jerry E., 3,779,971.
Kucera, Clare H., 3,779,915.
Morris, Leo R., 3,780,030.
Nimerick, Kenneth H., 3,779,914.
Pearce, Roscoe L.; Stalker, Gerald C.; and Arnold, John L., 3,779,936.
Streu, Robert J., 3,779,951.
Trepanier, Donald L., 3,780,039.
Tsai, James H.; and Anderson, Glenn H., 3,780,010.
Walles, Wilhelm E., 3,779,840.
Zweigle, Maurice L., 3,780,006.

Doyle, William C., Jr., to Gulf Research & Development Company. 1,3,4-Thiadiazine herbicides. 3,779,736, Cl. 71-90.000.

Doyle, William F.; and Artzer, Charles W. Bulkhead. 3,779,174, Cl. 105-376.000.

Draper, Homer L.: *See—*
Gagle, Duane W.; Draper, Homer L.; and Bennett, Richard J., 3,779,964.

Draper, James Ronald: *See—*
Goodhart, Frank W.; and Draper, James Ronald, 3,780,170.

Drechsel, Herbert; Dorr, Karl-Heinz; Grimm, Hugo; and Rowedder, Gustav, to Metallgesellschaft Aktiengesellschaft. Process of catalytically reacting SO_2 to form SO_3 and of producing sulfuric acid. 3,780,166, Cl. 23-167.000.

Dresser Industries, Inc.: *See—*
Head, Norman Weldon, 3,779,314.

Dreyfus, L. A. Company: *See—*
Phillips, Michael; and Jurow, Victor A., 3,779,410.

Dribelbis, Norman C.: *See—*
Barker, John H.; Dribelbis, Norman C.; and Stevens, Keith B., Sr., 3,779,542.

Driscoll, John J.: *See—*
Alston, William W.; Driscoll, John J.; and Wareham, Richard R., 3,779,770.

Dryden, Vernon W., to Xerox Corporation. Apparatus for minimizing image smear due to ion caused undercutting. 3,780,288, Cl. 250-315.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bigelow, John Howard, 3,779,777.
Cameron, Donald D., 3,780,156.
De Marsico, Henry J.; Strugar, Daniel; and Wu, Dao-Tsing, 3,779,976.
Emslie, Robert Steele, 3,779,784.
Gardiner, Robert Archie, 3,779,923.
Hammer, Clarence Frederick, 3,780,140.
Hiss, Roger A.; and Kime, Harry E., Jr., 3,779,858.
Huskey, C. George; Resler, Charles J., Jr.; and Sanders, Sidney C., 3,779,682.
Iwasyk, John M., 3,778,974.
Lesher, Herbert, 3,778,961.
Lohr, James E., 3,780,132.
Olson, Earl Herbert, 3,779,853.
Olson, Earl Herbert, 3,779,859.

Du-Al Manufacturing Company: *See—*
Erlenbusch, Gary L.; Hansen, Calvin N.; and Mott, Richard H., 3,779,402.

Dubell, Edward G.: *See—*
Oliver, Leland W.; Ingham, Francis H.; and Dubell, Edward G., 3,780,204.

Dufault, Emmanuel Joseph; and Heeks, David Andrew, to Syron Corporation. Separation process. 3,780,075, Cl. 260-412.600.

Duke, Edward D.; and Marquardt, Julius F., to International Harvester Company. Rearfacing engine and rearaxle having offset drive line. 3,779,329, Cl. 180-54.00f.

Dukert, Andrew Anthony; and Christofas, Alkis, to Pennwalt Corporation. Polyvinylidene fluoride laminate construction and method. 3,779,854, Cl. 161-156.000.

Dumke, William P.; Rideout, Vincent L.; and Woodall, Jerry M., to International Business Machines Corporation. Bipolar transistor with a heterojunction emitter and a method fabricating the same. 3,780,359, Cl. 317-235.00r.

Dunhill Lighters, Limited: *See—*
Ballantyne, Walter Henderson, 3,779,692.

Dunlop Holdings Limited: *See—*
Folkes, Hugh Lorain, 3,779,684.

Dunlop Limited: *See—*
Barson, Clifford Ward, 3,779,073.

Dunmire, Paul G., to Johns-Manville Corporation, mesne. Pipe saddle assembly. 3,779,272, Cl. 137-315.000.

Dupoy, Harold P.: *See—*
Fore, Sara P.; Hayner, Eric T.; and Dupoy, Harold P., 3,779,066.

Dustin, Daniel S., to Minnesota Mining and Manufacturing Company. Presensitized light-sensitive letterpress printing makeready. 3,779,761, Cl. 96-38.200.

Duval, Pierre: *See—*
Berquin, Yves; Duval, Pierre; and Alleton, Jean-Claude, 3,780,161.

Dvorkina, Klara Moissevna: *See—*
Nikolaev, Petr Ivanovich; Ignatov, Jury Lazarevich; Smirnov, Sergei Ivanovich; Oxengorn, Naum Izrailevich; Gigineishvili, Rimma Fominichna; Dvorkina, Klara Moisseevna; and Iskandyarov, Akhmet Mukhsinyatovich, 3,779,868.

Dykeman, Howard E., to Heyl & Patterson, Inc. Clamshell bucket unloader with rope operated trolley. 3,779,395, Cl. 212-81.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Bunger, Heinrich; and Renckhoff, Gustav, 3,779,783.
Heuser, Gunther; Weisgerber, Gregor; and Behr, Erich, 3,779,985.

Dyson, John J., to Parker Pen Company, The. Writing ink containing nonanoic acid. 3,779,780, Cl. 106-27.000.

Eagen, John F.; and Gudelis, David A., to Esso Research and Engineering Company. Immiscible injection of solvent in dilution chilling of waxy oils. 3,779,894, Cl. 208-33.000.

Earman, Ernest, Jr. Static electricity deshocker. 3,780,345, Cl. 317-2.00r.

Easley, Challice F. Earth anchor. 3,778,944, Cl. 52-159.000.

Eastman Kodak Company: *See—*
Abel, Edward P., 3,779,769.
Altmann, Conrad, 3,779,203.
Altmann, Conrad, 3,779,204.

Chechak, Jonas J., 3,779,924.
Ettischer, Helmut; Steisslinger, Kurt; and Huschle, Peter, 3,779,145.
Farran, Charles F.; and Wolfarth, Eugene F., 3,779,756.
Fessop, Thomas C., 3,779,439.
Harvey, Donald M., 3,779,143.
Hauck, Frederic D., 3,779,641.
Jackson, Winston J.; Kuhbuss, Herbert F.; and Caldwell, John R., 3,780,148.
Kibler, Charles J.; and Lappin, Gerald R., 3,779,993.
Lau, Philip T. S., 3,779,763.
McCrossen, Fred C.; and Osborn, Harland J., 3,779,765.
Merrill, Stewart H.; and Brantly, Thomas B., 3,779,750.
Mosehauer, Michael; and Rodenberg, Orville C., 3,779,748.
Nosco, Louis C.; and Ryan, James E., 3,779,643.
Nosco, Louis C.; and Ryan, James E., 3,779,644.
Tone, Frederick F., 3,779,786.
Vegh, Bertalan J.; and Coates, Alfred E., 3,779,891.
Wadsworth, Donald H.; and Perkins, William C., 3,779,989.
Young, David A.; and Brannock, Kent C. (said Young assor. of 1/2), 3,780,111.

Ehald, Inc., mesne: *See—*
Paul, Dwaine M., 3,779,461.

Eckerle, Otto: *See—*
Eckerle, Otto; and Jung, Robert (said Jung assor. to said), 3,779,674.

Eckerle, Otto; and Jung, Robert, said Jung assor. to said Eckerle, Otto. High-pressure gear pump. 3,779,674, Cl. 418-71.000.

Ecodyne Corporation: *See—*
Ryan, Leo F., 3,779,386.

Ecodyne Corporation, mesne: *See—*
Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, 3,779,523.

Economy Co.: *See—*
De Bell, Lawrence R.; and Price, David D., Jr., 3,780,231.

Economy, James: *See—*
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, 3,779,808.

Ecrevertta, Nicholas Guerrico. Handle for manual percussion tools. 3,779,296, Cl. 145-61.00h.

Edden, Benjamin. Amusement and educational device. 3,778,927, Cl. 46-233.000.

Eddleman, Hardy T.; and Schmitz, Richard L., to Spectrum Medical Industries, Inc. Combined filter paper support and filtrate container. 3,779,415, Cl. 215-48.000.

Edrinn, Roger C., to Hewlett-Packard Company. Automatic paper loading and guiding mechanism. 3,779,473, Cl. 242-54.00r.

Edwards, Albert, to Baker Perkins Limited. Mixing chamber construction. 3,779,520, Cl. 259-151.000.

Edwards, April Wood: *See—*
Edwards, George Wheeler; and Edwards, April Wood, 3,780,183.

Edwards, Arnold Glen; and Jenkins, Charles J., to Halliburton Company. Pressure responsive auxiliary disc valve and the like for well cleaning, testing, and other operations. 3,779,263, Cl. 137-68.000.

Edwards, George Wheeler; and Edwards, April Wood. Plant protein product and process. 3,780,183, Cl. 426-50.000.

Eggington, Wilfred J., to Aerojet-General Corporation. Cells for fluid cushion vehicles. 3,779,334, Cl. 180-121.000.

Eggleton, Reginald C.; and Weidner, Albert W., to Interscience Research Institute. Ultrasonic catheter with rotating transducers. 3,779,234, Cl. 128-2.00r.

Eisen, Howard L., to Glamorene Products Corporation. Alkaline oven cleaning composition. 3,779,933, Cl. 252-118.000.

Ekey, William J., to McNeil Corporation. Stage for a centrifugal pump. 3,779,668, Cl. 415-199.000.

El Bindari, Ahmed, to Clad Metals Corporation. Apparatus for inserting rods into coiled tubes. 3,778,878, Cl. 29-200.00r.

Elec-Tron, Inc.: *See—*
Beddow, Elmer J., 3,780,245.

Electrocardio Dynamics Inc.: *See—*
Goeltz, Richard R.; Schumacher, Howard; and Roth, Alhee, 3,779,237.

Electronic Control & Surveillance Limited: *See—*
Boddy, Michael Gordon; Sewell, Graham; and Sewall, Michael, 3,780,328.

Electroprint, Inc.: *See—*
Pressman, Gerald L.; Frohbach, Hugh; and Blake, David E., 3,779,166.

Electroprint, Inc., mesne: *See—*
Pressman, Gerald L.; and Kittredge, Thomas D., 3,780,376.

Elkem A/S: *See—*
Krogsrod, Harald, 3,779,510.

Elliott, Roger Alan: *See—*
Chang, Herbert Yu-Pang; Elliott, Roger Alan; Senese, Daniel John; and Smith, Thomas Loyd, 3,779,458.

Ellis, Greer, to Vishay Intertechnology, Inc. Calibrator for determining the magnitude of strains in rigid articles. 3,779,065, Cl. 73-1.00r.

Ellis, John L.; Mal, N. Kumar; and Tarkan, Stuart E., to Chromalloy American Corporation. Plasma sprayed titanium carbide tool steel coating. 3,779,720, Cl. 29-195.00a.

Elsner, Edwin C. Combination night light and liquid vaporizer. 3,780,260, Cl. 219-271.000.

Elson, Ronald D.; Krenke, Norman O.; and Ingram, Charles E., to Baker Perkins Inc. Disc type pattern maker and method. 3,779,363, Cl. 198-33.0ab.

Emerson Electric Co.: *See—*
Harelson, Robert G., 3,779,474.

EMI-Varian, Limited: *See—*
Gale, Frederick Henry; and Cooper, Roy David, 3,780,332.

Emory, John E., Jr.: *See—*
Emory, John E., Sr.; and Emory, John E., Jr., 3,778,918.

Emory, John E., Sr.; and Emory, John E., Jr., to Big Jon, Inc. Downrigger release for fishing. 3,778,918, Cl. 43-43.120.

Emoto, Takeo: *See—*
Hasegawa, Fumio; Emoto, Takeo; and Kurihara, Satoshi, 3,779,767.

Emslie, Jean McPhaul: *See—*
Emslie, Robert Steele, 3,779,784.

Emslie, Robert Steele; deceased (by Emslie, Jean McPhaul; administratrix), to Du Pont de Nemours, E. I., and Company. Composite fibers of alkali metal hexatitanate and rutile TIC_2. 3,779,784, Cl. 106-300.000.

Energy Sciences, Inc.: *See—*
Nablo, Sam V., 3,780,308.
Nablo, Samuel V., 3,779,706.

Engelhart, John E.: *See—*
Litt, Arnold D.; and Engelhart, John E., 3,780,051.

Engelhart, John E., to Esso Research and Engineering Company. Malononitrile oxime derivatives. 3,780,085, Cl. 260-465.400.

Entin, Leonard P.: *See—*
Ross, Thorvald S., Jr.; and Entin, Leonard P., 3,779,157.

Entwistle, Ian D.; Williams, Peter J.; and Devlin, Barry R. J., to Shell Oil Company. Herbicidal 1H-indazole-4,7-diones and benzimidazole-4,7-diones. 3,780,055, Cl. 260-309.000.

Enviro-Acoustic R & D Inc.: *See—*
Hoffman, Edward H.; and Kennedy, Clifford F., 3,779,340.

Environmental Metrology Corporation: *See—*
Brown, Verne R., 3,780,311.

Ercoli, Alberto; and Gardi, Rinaldo, to Warner-Lambert Company. 17-Butyrate, 21-ester derivatives of 6α, 9α-difluoro-prednisolone, compositions and use. 3,780,177, Cl. 424-243.000.

Erickson, Donald G.: *See—*
Wright, Bruce C.; and Erickson, Donald G., 3,778,986.

Erickson, Donald V.; and Palusky, Eugene L., to United States Steel Corporation. Bentonite binder composition. 3,779,782, Cl. 106-72.000.

Erickson, Raymond Curry, to Squibb, E. R., & Sons, Inc. Alpha-ureidocyclohexadienylalkylene carboxylic acids. 3,780,088, Cl. 260-468.00j.

Erlenbusch, Gary L.; Hansen, Calvin N.; and Mott, Richard H., to Du-Al Manufacturing Company. Automatic gate for hay bale accumulator. 3,779,402, Cl. 214-6.00b.

Esch, Robert L.; Arnold, William C.; Skelton, Billy K.; Saxon, Michael D.; Murphy, Jerome A.; and Jaques, Roy J., to Bendix Corporation, The. Tooling positioning drive system for automatic gaging and assembly machines. 3,778,880, Cl. 29-208.00c.

ESGE-Marby Gesellschaft mit beschrankter Haftung & Co., Firma: *See—*
Niemann, Heinz, 3,779,435.

Espey Mfg. & Electronics Corporation: *See—*
Saslow, Seymour; and Roberts, Jerome A., 3,779,233.

Esser, Paul: *See—*
Kuntz, Egon; Esser, Paul; and Muschelknautz, Egar, 3,778,907.

Essery, John Michael; and Cheney, Lee Cannon, to Bristol-Myers Company. 7-[D-(α-Amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido]-3-[S-(1-methyl-1,2,3-triazol -4-yl)carbonyl]-thiomethyl-3-cephem-4-carboxylic acids. 3,780,032, Cl. 260-243.00c.

Essex Chemical Corporation: *See—*
De Santis, G. William, 3,779,794.

Essex International, Inc.: *See—*
Preston, Jerome A., 3,779,991.

Esso Production Research Company: *See—*
Guy, Arthur L.; and Ruez, William J., III, 3,779,656.

Esso Research and Company: *See—*
Hubbard, Addison W.; and Powers, Kenneth W., 3,779,974.

Esso Research and Engineering Company: *See—*
Cozewith, Charles; and Tornqvist, Erik G. M., 3,779,944.
Cozewith, Charles; and Robison, Samuel B., 3,780,005.
Eagen, John F.; and Gudelis, David A., 3,779,894.
Engelhart, John E., 3,780,085.
Forster, Eric O.; Goldshine, Alan D.; and Gathman, Albert, 3,779,892.
Kresge, Edward N.; and Baldwin, Francis P., 3,780,002.
Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., 3,779,907.
Litt, Arnold D.; and Engelhart, John E., 3,780,051.
Maravetz, Lester L.; 3,780,046.
McDougall, Lee A.; Richards, Thomas E.; and Looney, James R., 3,779,935.
Miller, Alfred H., 3,779,737.
Molstedt, Byron V., 3,779,900.
Romanelli, Michael G., 3,780,074.
Rosenfeld, Daniel D.; and Corbaty, Martin L., 3,780,042.

Etablissement Public Agence Nationale de Valorisation de la Recherche: *See—*
Loriers, Jean; and Heindl, Rudolf, 3,779,948.

Etat Francais represente par le Ministre d'Etat charge de la Defense Nationale, Delegation: *See—*
Verdier, Claude H., 3,779,011.

Etes, Donald E., to Plas-Med, Inc. Operating boards. 3,779,211, Cl. 119-103.000.

Ethyl Corporation: *See—*
Berolnon, Charles R.; and Kao, James T. F., 3,780,162.
Carley, David R., 3,780,169.
Malec, Robert E., 3,780,145.
Shubkin, Ronald L., 3,780,128.
Vennard, William O.; and Wright, Jack C., 3,779,241.

Etter, Berwyn E. Machine mounted cutting torch. 3,779,533, Cl. 266-23.00t.

Ettischer, Helmut; Steisslinger, Kurt; and Huschle, Peter, to Eastman Kodak Company. Film movement preventing means for cameras. 3,779,145, Cl. 95-31.0fm.

Evani, Syamalarao; and Lalk, Robert H., to Dow Chemical Company, The. Thickened latex coatings with improved flow and leveling properties. 3,779,970, Cl. 260-29.6rw.

Evans, Arthur J.; and Morin, Joseph C., to Whitlock, Inc. Control valve for contaminant-laden gases. 3,779,280, Cl. 137-625.500.

Evans, David; and Simpson, Bowen, to International Nickel Company Inc., The. Distribution of pellets. 3,779,795, Cl. 117-100.00m.

Evans, Delme, to Lilly Industries, Limited. Erythromycin azine derivatives. 3,780,020, Cl. 260-210.00e.

Everson, Charles W.: *See—*
Danner, Wilson E.; Hammes, Paul A.; and Everson, Charles W., 3,780,192.

EVR Enterprises: *See—*
Pickstock, Barry Thomas; and Neale, Denis Manktelow, 3,780,222.

Ewald, Ronald F., to Seaquist Valve Company. Safety closure adaptor. 3,779,427, Cl. 222-153.000.

Ewing, Robert L., to Holophane Co., Inc. Door and hinge assembly. 3,778,932, Cl. 49-388.000.

Exner, Jurgen H.; Larsen, Eric R.; and Gunsher, Jeffrey A., to Dow Chemical Company, The. Halogenated carbonates as fire retardants for polyesters. 3,779,984, Cl. 260-457.00r.

Expando Products Company: *See—*
Triplett, Lee; and Peterson, Wilmer R., 3,779,105.

Faber, George E.; and Kates, Frank F., to Krun Corporation. Closed system internal combustion engine. 3,779,013, Cl. 60-278.000.

Fabrica de Sticlarie Turda: *See—*
Simonfi, Paul; and Cristea, Viorel, 3,779,734.

Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,779,317.
Livingston, William L., 3,779,318.

Fahnler, Friedrich: *See—*
Hechlhammer, Wilhelm; Schneider, Kurt; and Fahnler, Friedrich, 3,780,157.

Fairchild Industries, Inc.: *See—*
Freudenthal, Hugo D.; Townsend, Richard E.; Zawoiski, Peter K.; and Schatz, Edward, 3,779,911.

Falk, David O.: *See—*
Norton, Charles J.; and Falk, David O., 3,779,917.

Fant, William D., to Fibrous Glass Products, Inc. Molten metal filter. 3,779,389, Cl. 210-474.000.

Farr, Glyn Philip Reginald, to Girling Limited. Shoe-drum brakes. 3,779,348, Cl. 188-106.00a.

Farran, Charles F.; and Wolfarth, Eugene F., to Eastman Kodak Company. Color developer scavenger layer for diffusion transfer dye image-receiving elements and systems. 3,779,756, Cl. 96-29.000.

Farwell, Harry Russell: *See—*
Black, James A.; and Farwell, Harry Russell, 3,779,160.

Fastway Fasteners, Inc.: *See—*
Schuplin, Jerome T., 3,780,209.

Faulkner, Hubert D.; and Requa, Stanley D., to Recognition Equipment Incorporation. Bar/half-bar optical code reader. 3,780,270, Cl. 235-61.11e.

Fauri, Jose Ramon. Lamp shade. 3,780,287, Cl. 240-108.00d.

Feasey, Ronald George; and Rose, John Brewster, to Imperial Chemical Industries, Limited. Aromatic polymers with the ether groups. 3,780,000, Cl. 260-79.30m.

Federal Tool & Plastics: *See—*
Porcelli, John C., 3,779,429.

Fehling, Hans-Reinhard; Hase, Horst; and Kutzer, Hans-Joachim, to Didier-Werke A.G. Method of remelting a frozen metal plug in the ceramic nozzle of a metallurgical vessel. 3,779,742, Cl. 75-46.000.

Feiner, Alfred, to Strabag Bau-A.G. Dam having an internal apron and means for indicating leakage of apron. 3,779,022, Cl. 61-31.000.

Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung: *See—*
Ploetz, Theodor; and Solich, Edeltraud, 3,779,791.

Ferguson, Joseph B.: *See—*
Murphy, William J., Jr.; Ferguson, Joseph B.; and Rawson, Edward B., 3,779,235.

Ferrari, Rodolfo: *See—*
Bruzzese, Tiberio; and Ferrari, Rodolfo, 3,780,173.

Fessop, Thomas C., to Eastman Kodak Company. Web guiding apparatus. 3,779,439, Cl. 226-88.000.

Ffarrwaller, Erwin, to Sulzer Brothers Limited. Differential gear. 3,779,102, Cl. 74-713.000.

Fibrous Glass Products, Inc.: *See—*
Fant, William D., 3,779,389.

Fields, Murray E., to Honey Tien Products, Inc. Compositions of matter including dried honey. 3,780,185, Cl. 426-72.000.

Fierro Esponja S.A.: *See—*
Celada, Joan; MacKay, Patrick W.; and de la Pena, Ramon, 3,779,741.

Firestone, Raymond A.: *See—*
Christensen, Burton G.; and Firestone, Raymond A., 3,780,034.

Fischer, Artur; and Muller, Jean-Nicolas. Connector for fractured bones. 3,779,239, Cl. 128-92.0bc.

Fischer, Joseph: *See—*
Stiles, Claude J.; and Fischer, Joseph, 3,779,785.

Fisher, Frank G. Door construction. 3,778,934, Cl. 49-503.000.

Fisher, James Glenn, to NVF Company. Frame and jack assembly. 3,779,517, Cl. 254-134.000.

Fisk, Reginald C.; and Carver, Edgar B., to Norton Company. Method of making a metal impregnated grinding tool. 3,779,726, Cl. 51-295.000.

Fives Lille-Cail: *See—*
Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, 3,779,275.

Fix, Sidney R.: *See—*
Buhrmann, Wayne H.; and Fix, Sidney R., 3,779,308.

Flangeklamp Corporation: *See—*
Sauer, Gale E., 3,778,947.

Flannery, John B., Jr.: *See—*
Haas, Werner E. L.; Flannery, John B., Jr.; Mechlowitz, Bela; and Adams, James E., 3,779,751.

Fleissner, Heinz, to Vepa Aktiengesellschaft. Apparatus for the treatment of permeable textile materials. 3,779,047, Cl. 68-5.00d.

Flexsteel Industries, Inc.: *See—*
Quakenbush, Howard M., 3,779,600.

Flint, Edward F. Dual beam radiometer for clear air turbulence measurement. 3,780,293, Cl. 250-339.000.

Florus, Hans-Jorg: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; Krohn, Hellmut; and Stein, Hermann, 3,779,331.

Flouret, George Rogelio, to Abbott Laboratories. Octapeptide intermediate to gonadotropin releasing hormone. 3,780,014, Cl. 260-112.500.

Fluder, Chester H.: *See—*
Myrent, Harry L.; and Fluder, Chester H., 3,779,086.

Flynn, John E., to GTE Sylvania, Incorporated. Lamp filament support means. 3,780,333, Cl. 313-274.000.

FMC Corporation: *See—*
MacHenry, Richard; and Chang, Pei Tsing, 3,779,704.
Mencacci, Samuel A., 3,779,292.
Roche, Joseph R.; and Bowen, Mat M., 3,779,264.
Rose, Boyd W.; and Bercovitz, John H., Jr., 3,779,159.
Wech, Robert J., 3,779,838.
Wenglar, Frank G., 3,779,511.
White, Daniel A., 3,779,139.

Foley, Lary L., to Clorox Company, The. Automatic dispensing apparatus. 3,778,849, Cl. 4-228.000.

Folger, Michael S.: *See—*
Majkpzak, Charles P.; and Folger, Michael S., 3,779,466.

Folkes, Hugh Lorain, to Dunlop Holdings Limited. Continuous curing apparatus. 3,779,684, Cl. 425-233.000.

Fonken, Gunther S.; Herr, Milton E.; and Murray, Herbert C., to Upjohn Company, The. Oxygenated polymethyleneimines. 3,780,022, Cl. 260-239.00b.

Fontaine, Louis: *See—*
Bayssat, Michel; Fontaine, Louis; and Grand, Marcel, 3,780,102.

Fonzi, Giorgio; Vargio, Silvio; and Giovanni, Sesto S., to Societa Italiana Resine S.I.R. S.p.A. Poromeric materials. 3,779,855, Cl. 161-159.000.

Ford Motor Company: *See—*
Halloway, Henry; and Logothetis, Eleftherios Miltiadis, 3,779,801.
Lawser, John J., 3,778,984.
Spahl, Edwin, 3,779,578.
Wu, Tao-Yuan, 3,779,220.

Fore, Sara P.; Hayner, Eric T.; and Dupoy, Harold P., to United States of America, Agriculture. Determination of residual solvent in oilseed meals and flours by a volatilization procedure. 3,779,066, Cl. 73-23.100.

Forkner, John H. Method of making expanded food products. 3,779,772, Cl. 99-86.000.

Formex Manufacturing, Inc.: *See—*
Alesi, John A., 3,779,687.

Forneris, John L.: *See—*
Dorler, Jack A.; Forneris, John L.; and Swietek, Donald J., 3,780,320.

Forschunginstitut fur Textillechnologie: *See—*
Ploch, Siegfried; Scholtis, Walter; Zschunke, Heinz; and Scharch, Dieter, 3,779,852.

Forst, Wilhelm: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Kartlapp, Gerhard; Forst, Wilhelm; and Schrodter, Hermann, 3,780,164.

Forster, Eric O.; Goldshine, Alan D.; and Gathman, Albert, to Esso Research and Engineering Company. Electronic measurement of end point of asphalt oxidation. 3,779,892, Cl. 208-6.000.

Forsythe, William R. Pipe joint tester. 3,779,068, Cl. 73-49.100.

Foster, Alliene Caraway. Suture package. 3,779,375, Cl. 206-63.300.

Foster Wheeler John Brown Boilers Ltd.: *See—*
Stevens, Kenneth, 3,780,257.

Fowler, Gerald, to British Leyland Truck & Bus Ltd. Panel spacing and holding clip. 3,778,958, Cl. 52-760.000.

Fox, Douglas J., to Singer Company, The. Thread trimming device for sewing machines. 3,779,189, Cl. 112-252.000.

Fox, Robert J.: *See—*
Rogers, Waldo I.; Fox, Robert J.; and Moulton, Eric W., 3,780,268.

Frank, Wolfgang: *See—*
Weiss, Paul; Bardong, Helmut; and Frank, Wolfgang, 3,779,307.

Frankenhauser, Georg, to Kraftwerk Union Aktiengesellschaft. Apparatus for locking stator winding conductors of turbogenerators in position. 3,780,325, Cl. 310-214.000.

Frankfurter Maschinenhau Aktiengesellschaft vormals Pokarny & Whittekind: *See—*
Magdhuber, Kurt; and Kattentidt, Hinrich, 3,779,675.

Franklin Manufacturing Company: *See—*
Ostenberg, Ramon K.; and Case, Richard P., 3,779,090.

Frechet, Daniel: *See—*
Allais, Andre; Nedeleo, Lucine; Guillaume, Jacques; and Frechet, Daniel, 3,780,061.

Frederickson, Arthur R.; and Morris, Arnold D. Charge accumulation gamma radiation detector. 3,780,304, Cl. 250-336.000.

Free, David, to Radiation Development Co., Ltd. Apparatus for treating wood chips with electrons. 3,780,305, Cl. 250-400.000.

Freeman, Gene G.: *See—*
Cummings, Alan F.; Binz, Ernest F.; and Freeman, Gene G., 3,780,375.

Freeman, George; and Freeman, Patricia V. Frame assembly kit. 3,778,915, Cl. 40-125.00r.

Freeman, Patricia V.: *See—*
Freeman, George; and Freeman, Patricia V., 3,778,915.

Freisberg, Karl-Otto: *See—*
Irmscher, Klaus; Klockow, Michael; Mehrhof, Werner; Pfitzner, Klaus; Randau, Deeter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,780,171.

Frenken, Hans: *See—*
Knepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.

Freudenthal, Hugo D.; Townsend, Richard E.; Zawoiski, Peter K.; and Schatz, Edward, to Fairchild Industries, Inc. Waste treatment apparatus. 3,779,911, Cl. 210-60.000.

Frey, Christoph, to Ciba-Geigy AG. Pyrazolone pigments. 3,780,057, Cl. 260-310.00a.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Schafstall, Heinrich Gunter; and Furste, Wolfgang Otto August, 3,779,865.

Friedling, Gerard; and Chuard, Marcel, to Technicair S.A. Method of and apparatus for cleaning gazes. 3,778,979, Cl. 55-227.000.

Friedman, Joseph, to Rockwell International Corporation. Catalytic method of producing high temperature gases. 3,779,009, Cl. 260-217.000.

Friedman, Paul: *See—*
Cutler, Lester M.; and Friedman, Paul, 3,779,238.

Friedrich, Heinz G., to Petro-Tex Chemical Corporation. Dehydrogenation process. 3,780,129, Cl. 260-683.003.

Friedsan, Josef: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.

Fries, Walter; Bloching, Helmut; Rhld, Hilden; and Jung, Dieter, to Henkel & Cie G.m.b.H. Compositions useful in the aqueous cold-bleaching of textiles including optical brighteners. 3,779,931, Cl. 252-99.000.

Friesner, Charles E., to Industrial Plastic Specialties Company. Method for producing trim strip assembly. 3,780,152, Cl. 264-174.000.

Frohbach, Hugh: *See—*
Pressman, Gerald L.; Frohbach, Hugh; and Blake, David E., 3,779,166.

Frohberger, Paul-Ernst: *See—*
Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,780,089.

Froid Industriel Brissonneau: *See—*
Girardin, Pierre, 3,779,036.

Fruth, Hans; and Godel, Wolfgang, to Siemens Aktiengesellschaft. Device for automatically switching a feed flow from one to the other of two parallel branch lines of an emergency cooling system, especially in nuclear reactors. 3,779,266, Cl. 137-110.000.

Fugate, Walter V. Soaker hose reel. 3,779,478, Cl. 242-86.000.

Fugitt, Ronald B.; Uhrich, Richard W.; and Held, Jimmy L., to United States of America, Navy. Remote control underwater observation vehicle. 3,780,220, Cl. 178-6.800.

Fuji Denki Seizo Kabushiki Kaisha: *See—*
Nitta, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, 3,780,349.

Fuji Photo Film Co., Ltd.: *See—*
Chiba, Toshio; Yoneczawa, Teruhiko; Kobayashi, Jiro; and Akashi, Goro, 3,779,775.
Hasegawa, Fumio; Emoto, Takeo; and Kurihara, Satoshi, 3,779,767.
Sato, Masamichi, 3,779,749.
Tamai, Yasuo, 3,779,639.

Fuji Photo Film Company, Ltd.: *See—*
Sato, Masamichi; and Takahashi, Isoji, 3,779,206.

Fujiki, Konoshuke; Inafuku, Katsuaki; Shimizu, Hiroshi; Shigematsu, Toshiharu; and Kumura, Kazumi, to Mitsubishi Chemical Industries, Limited. Prilled ammonium nitrate composition of improved anti-scattering properties. 3,779,821, Cl. 149-7.000.

Fujinami, Akira: *See—*
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,780,090.

Fujisawa, Fumio; Takenoshita, Mitsuaki; Nakamura, Ichiro; and Yumino, Hiroshi, to Hitachi, Ltd. Hydraulic lift. 3,779,017, Cl. 60-413.000.

Fujitsu Limited: *See—*
Kurata, Takao; and Oritani, Atsushi, 3,780,317.

Fukuta, Kenji; Sekiguchi, Junichi; Miyashita, Rihei; Matsuzaki, Yoshihara; and Miura, Yoshihiro, to Industrial Science & Technology, Agency of. Method of and apparatus for automatic bag reversing. 3,779,432, Cl. 223-39.000.

Fuller, Glenn; and Toombs, Alfred John Lawrence, to Shell Oil Company. Thixotropic compositions. 3,779,723, Cl. 44-7.00c.

Fuller, Harlan I.: *See—*
Watson, Edwin B.; and Fuller, Harlan I., 3,779,225.

Fuller, John G., to Tyson, Ian. Collapsible protective structure. 3,779,259, Cl. 135-1.00c.

Fuller, Joseph C. Heat exchanger tube reamer and cleaning apparatus. 3,778,858, Cl. 15-104.10r.

Funai Electric Co., Ltd.: *See—*
Yokata, Tuneo, 3,779,560.

Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, to Ecodyne Corporation, mesne. Concrete cooling tower. 3,779,523, Cl. 261-111.000.

Furste, Wolfgang Otto August: *See—*
Schafstall, Heinrich Gunter; and Furste, Wolfgang Otto August, 3,779,865.

Furutachi, Kunio: *See—*
Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, 3,779,691.

Gabriel, Joseph T.: *See—*
O'Lenick, Anthony J.; Roome, Douglas P.; and Gabriel, Joseph T., 3,778,965.

Gachwend, Heinz Werner, to Ciba-Geigy Corporation. Isoquinobenzazepines. 3,780,043, Cl. 260-286.00r.

Gagle, Duane W.; Draper, Homer L.; and Bennett, Richard J., to Phillips Petroleum Company. Asphalt rubberizing compositions. 3,779,964, Cl. 260-28.5as.

Gagnon, Robert G., to United Aircraft Corporation. Digital anti-spin and anti-slide system for moving vehicles. 3,780,346, Cl. 317-5.000.

Gale, Frederick Henry; and Cooper, Roy David, to EMI-Varian, Limited. Electron discharge devices. 3,780,332, Cl. 313-252.000.

Gale, Richard M.; and Lively, David H., to Lilly, Eli, and Company. Dipeptide antibiotic and method for the production thereof. 3,780,016, Cl. 260-112.005.

Galloway Company: *See—*
Galloway, Edwin J., 3,779,082.

Galloway, Edwin J., to Galloway Company. Aseptic sample fitting. 3,779,082, Cl. 73-421.00b.

Games, John E., to United Aircraft Corporation. Resolution of a triangle from hypotenuse and one side. 3,780,280, Cl. 235-190.000.

Gan, Ramat: *See—*
Yellini, Haim; Konfino, Eliezer; and Gan, Ramat, 3,780,067.

Gannaway, Paul Henry: *See—*
Haslam, Fred; Horsewell, Henry George; and Gannaway, Paul Henry, 3,779,787.

Gannon, Mathew R. Adapters including electro-magnetic attaching means for use with extruders. 3,779,063, Cl. 72-253.000.

Garay, Fernando Creixell, to Hijos de Juan de Garay, S.A. Umbrella frame. 3,779,260, Cl. 135-20.00r.

Garcia, Paulina H.: *See—*
Bloom, Stanely M.; and Garcia, Paulina H., 3,779,752.

Gardella, John M.; Ciavattoni, Anthony; and Ujvary, Joseph I., to Pennwalt Corporation. Dental unit. 3,778,903, Cl. 32-22.000.

Gardi, Rinaldo: *See—*
Ercoli, Alberto; and Gardi, Rinaldo, 3,780,177.

Gardi, Rinaldo; Brianza, Carate; and Castelli, Pier Paolo, to Warner-Lambert Company. 3-Enolethers of Δ^5-3-keto-5α-steroids and process for their preparation. 3,780,072, Cl. 260-397.450.

Gardiner, Robert Archie, to Du Pont de Nemours, E. I., and Company. Alkylated methylenedianiline tars. 3,779,923, Cl. 252-50.000.

Gardner, Gary A.: *See—*
Abler, Roger L.; and Gardner, Gary A., 3,779,929.

Gardner, Richard: *See—*
Kritzberg, Nathan I.; and Gardner, Richard, 3,779,557.

Garrett, William R., to Smith International, Inc. Vibration dampeners. 3,779,040, Cl. 64-27.0nm.

Gartner, Joseph J. Internal combustion engine pollution control device. 3,779,221, Cl. 123-119.00b.

Gaster, Iván: *See—*
Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., 3,779,846.

Gates Rubber Company, The: *See—*
Stuemky, Robert E., 3,779,038.

Gathman, Albert: *See—*
Forster, Eric O.; Goldshine, Alan D.; and Gathman, Albert, 3,779,892.

Gati, George. Knitting machine. 3,779,041, Cl. 66-14.000.
Gatti, Franco: *See—*
Bernard, Jacques; and Gatti, Franco, 3,780,338.
Gatzke, Kenneth G., to Minnesota Mining and Manufacturing Company. Silver halide photographic elements containing removable antihilation layer. 3,779,771, Cl. 96-84.000.
Gay, James L., to Starline, Inc. Apparatus for handling rolled bales of hay. 3,779,208, Cl. 119-1.000.
Gay, Walter A.; and Raymond, Maurice A., to Olin Corporation. Method for preparing 3-fluorosalicylaldehyde., 3,780,110, Cl. 260-600.000.
Geary, Fred, to U.S. Industries, Inc. Conveyor speed monitor. 3,780,297, Cl. 250-231.00r.
Gegick, Charles, to Wean United, Inc. Roll positioning means for a rolling mill. 3,779,062, Cl. 72-244.000.
Gehrke, Gunter: *See—*
Wegner, Peter; Neeff, Rutger; Hederich, Volker; and Gehrke, Gunter, 3,779,700.
Gelenkwellenbau G.m.b.H.: *See—*
Schultenkamper, Josef, 3,779,039.
General Dynamics Corporation: *See—*
Hertz, Julius, 3,779,851.
Nau, Richard A.; and Campbell, Sterling A., 3,779,452.
General Electric Company: *See—*
Beatty, John W., 3,780,244.
Berger, Abe; and Selin, Terry G., 3,780,080.
Chamay, Anthony Joseph; and Johnston, Richard Paul, 3,779,010.
Grimshaw, Norman C.; and West, Thomas G., 3,780,342.
Kohn, Leo S.; and Smearing, Robert W., 3,779,950.
Lavash, John Paul, 3,779,007.
Masop, Lowell M., 3,778,889.
Pauze, Denis R., 3,779,996.
Race, Marlin L., 3,779,156.
Razzano, John S., 3,779,987.
Riesland, David H., 3,780,347.
Sharp, William T., 3,780,354.
Smith, Stanley D.; and Hamilton, Stephen B., 3,779,986.
Swain, Carl E., 3,780,323.
Tatem, Bemis Caldwell, Jr.; and Moehring, John Theodore, 3,779,665
Werderitsch, Thomas W., 3,779,624.
Werts, Everett Wendall; and Wetter, Charles Richard, 3,780,318.
General Electric Corporation: *See—*
Barnes, Thomas Carl; and Knapp, Malcolm Hubert, 3,779,345.
General Foods Corporation: *See—*
Stefanucci, Arthur; and Yadlowsky, Slawko, 3,780,197.
General Motors Corporation: *See—*
Hermann, Christof, 3,779,406.
Koivunen, Lakki A., 3,779,137.
McMurray, Nolan D.; and Tumey, Morris J., 3,779,884.
Witherspoon, Romeo R., 3,779,812.
General Signal Corporation. *See—*
Gross, Wayne B., 3,780,236.
Sanger, David M.; and Langan, Joseph E., 3,780,350.
Gentle Toy Co., Inc.: *See—*
Gladych, B. Michael, 3,778,926.
Gerard, George, to Jiffy Manufacturing Co. Superimposed embossed packing sheets. 3,779,850, Cl. 156-199.000.
Getz, Ralph W.: *See—*
Hansen, James H.; and Getz, Ralph W., 3,779,728.
Gewerkschaft Eisenhutte Westfalia: *See—*
Heyer, Willy; and Rassmann, Christoph, 3,779,604.
Ghirga, Marcello: *See—*
Calcagno, Benedetto; Ghirga, Marcello; and Di Fiore, Lucio, 3,779,943.
Gibble, Walter P.: *See—*
Papahronis, Basil T.; and Gibble, Walter P., 3,780,076.
Gibert, Pierre Antnine Theophile. Device for machining a workpiece by a flow turning operation. 3,779,109, Cl. 82-2.500.
Gidlof, Karl Gunnar. Stand for Christmas trees. 3,779,493, Cl. 248-44.000.
Giebeler, Robert Henry, to Varian Associates. High power beam tube having depressed potential collector containing field-shaping probe. 3,780,336, Cl. 315-5.370.
Gigante, Ernesto Nesofsky. Modular furniture. 3,779,177, Cl. 108-114.000.
Gigineishvili, Rimma Fominichna: *See—*
Nikolaev, Petr Ivanovich; Ignatov, Jury Lazarevich; Smirnov, Sergei Ivanovich; Oxengorn, Naum Izrailevich; Gigineishvili, Rimma Fominichna; Dvorkina, Klara Moisseyna; and Iskandyarov, Akhmet Mukhsinyatovich, 3,779,868.
Gildone, Anthony M., to Sifco Industries Inc. Vibratory applicator for electroplating solutions. 3,779,887, Cl. 204-224.00r.
Gillem, Luke D., 1/2 to McCoy, Roger W. Vehicle lifting and towing apparatus. 3,779,407, Cl. 214-86.00a.
Gillis, William Warren, to Milland Timber Products Ltd. Board edging machine. 3,779,294, Cl. 144-117.00b.
Giovanni, Sesto S.: *See—*
Fonzi, Giorgio; Vargio, Silvio; and Giovanni, Sesto S., 3,779,855.
Gipstein, Edward; Hewett, William Ainslie; and Levine, Harold A., to International Business Machines Corporation. Electron beam sensitive polymer T-butyl methacrylate resist. 3,779,806, Cl. 117-212.000.
Girard-Perregaux S.A.: *See—*
Vuffray, Georges C., 3,778,999.
Girardin, Pierre, to Froid Industriel Brissonneau. Expansion and evaporation apparatus for refrigerating machines. 3,779,036, Cl. 62-512.000.
Girling Limited: *See—*
Farr, Glyn Philip Reginald, 3,779,348.
Hughes, Michael James, 3,779,614.
Sutton, Christopher John, 3,779,613.
Gladych, B. Michael, to Gentle Toy Co., Inc. Slow-flying aircraft. 3,778,926, Cl. 46-79.000.
Glamorene Products Corporation: *See—*
Eisen, Howard L., 3,779,933.
Glazer, Emmett J.: *See—*
Smith, Edwin Studley; and Glazer, Emmett J., 3,780,008.
Gleason Works, The: *See—*
Conta, Robert L., 3,779,747.
Glenn, William E., Jr., to Columbia Broadcasting System, Inc. Color filter and single tube color television camera system utilizing same. 3,780,212, Cl. 178-5.4st.
Gloeckler, Fred A., to Star Sprinkler Corporation of Florida. Fusible link. 3,779,004, Cl. 59-93.000.
Glomm, Horst: *See—*
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., 3,779,689.
Glushko, Mikhail Fedorovich; and Skalatsky, Viktor Klementievich. Method of manufacturing twisted wire products. 3,778,993, Cl. 57-145.000
Go-Craft Systems, Inc.: *See—*
Ow, Gordon Y. W., 3,779,574.
Gobler, Harry W.: *See—*
Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, 3,779,523.
Godberson, Harold W. Machine and method for preparing a surface and for slip forming a concrete structure. 3,779,661, Cl. 404-72.000.
Godel, Wolfgang: *See—*
Fruth, Hans; and Godel, Wolfgang, 3,779,266.
Godines, Henri, to Creusot-Loire. Extrusion assembly. 3,779,521, Cl. 259-191.000.
Godley, Augustus P.; and Kruse, William E., to Raymond International, Inc. Pile installation. 3,779,025, Cl. 61-53.520.
Goeltz, Richard R.; Schumacher, Howard; and Roth, Albee, to Electrocardio Dynamics Inc. Method and system for automatic processing of physiological information in greater than real time. 3,779,237, Cl. 128-2.06a.
Goforth, John A.: *See—*
Poore, Ernest C.; and Goforth, John A., 3,779,696.
Golborn, Peter, to Hooker Chemical Corporation. Process for preparing di-isopropylphosphonomethyl acrylates or methacrylates. 3,780,146, Cl. 260-971.000.
Goldenberg, Marvin M.: *See—*
Alaimo, Robert J.; and Goldenberg, Marvin M., 3,780,048.
Goldshine, Alan D.: *See—*
Forster, Eric O.; Goldshine, Alan D.; and Gathman, Albert, 3,779,892.
Goller, Ernst, to Stoll, H., and Company. Stitch cam adjusting means for a flat knitting machine. 3,779,043, Cl. 66-77.000.
Golze, Richard R.; and Kienle, Richard F., to Rockwell International Corporation. High strength vehicle bumper. 3,779,592, Cl. 273-98.000.
Gombert, Marcel: *See—*
Leroy, Pierre; Gombert, Marcel; Queuleu, Metz; and Sprunck, Emile, 3,779,534.
Gonzalez, Paul S. Modular concrete floatation unit. 3,779,192, Cl. 114-.50f.
Goodhart, Frank W.; and Draper, James Ronald, to Warner-Lambert Company. Tasteless methenamine mandelate. 3,780,170, Cl. 424-35.000.
Goodman, Willard B.: *See—*
Guild, Charles L.; and Goodman, Willard B., 3,779,026.
Goodnow, Ronald F., to Lodding Engineering Corporation. Bladeholders for doctors and scrapers. 3,778,861, Cl. 15-256.510.
Goodrich, B. F., Company, The: *See—*
Son, Pyong-Nae, 3,780,001.
Goodyear Tire & Rubber Company, The: *See—*
Appleby, Paul E.; Riggs, Robert S.; and Christie, Christopher E., 3,779,834.
Blinn, Harold A.; and Overby, William T., 3,779,827.
Buhrmann, Wayne H.; and Fix, Sidney R., 3,779,308.
Knaus, Ernest; and Milhoan, Francis M., 3,779,196.
Knaus, Ernest, 3,779,420.
Leshin, Richard; and Cox, William L., 3,780,038.
Smith, Edwin Studley; and Glazer, Emmett J., 3,780,008.
Goodyear Tire and Rubber Company: *See—*
Greenwood, Alan, 3,779,677.
Gordon, Bernard M.; Becker, Brant W.; and Prescott, Charles, to Gordon Engineering Company. Panel meter construction. 3,780,353, Cl. 317-101.0dh.
Gordon Engineering Company: *See—*
Gordon, Bernard M.; Becker, Brant W.; and Prescott, Charles, 3,780,353.
Goss, Arthur George: *See—*
Lewis, Brynley; Miller, George Langham; Brooks, Kenneth John; and Goss, Arthur George, 3,779,006.
Gottfried, Arthur. Juvenile seating system. 3,779,599, Cl. 297-253.000.
Gotz, Friedrich: *See—*

Bardahl, Nils; and Gotz, Friedrich, 3,779,888.
Gould, Henry D. Flow switching valve. 3,779,269, Cl. 137-119.000.
Gould, Inc.: *See—*
Mao, George W., 3,779,816.
Goyffon, Roland Abel, to Manufacture de Fils Isoles Faurus (Mafit). Apparatus and method for manufacturing insulated conductive wires. 3,779,055, Cl. 72-46.000.
Grace, W. R., & Co.: *See—*
Lefforge, John William; and Keller, George Crawford, 3,779,965.
Ohba, Katsumi, 3,779,958.
Scanlon, Patricia M.; and Thunberg, Jon C., 3,780,099.
Scanlon, Patricia M.; and Thunberg, Jon C., 3,780,100.
Wood, Louis L., 3,779,994.
Graco Metal Products, Inc.: *See—*
Christensen, Walter L., 3,779,124.
Grand, Marcel: *See—*
Bayssat, Michel; Fontaine, Louis; and Grand, Marcel, 3,780,102.
Granger, Alain; and Sausse, Andre, to Rhone-Poulenc S.A. Device for purging gas from a liquid. 3,778,971, Cl. 55-159.000.
Graves, Kenneth E.: *See—*
Porter, Lawrence C.; and Graves, Kenneth E., 3,780,365.
Gray, Arnold Leo. Portholes. 3,779,198, Cl. 114-178.000.
Great Western Sugar Company, The: *See—*
Battin, Marshall V.; and Stein, Brooks M., 3,779,809.
Greber, Gerd; and Darns, Roland, to Ciba-Geigy Corporation. Process for the production of shapeable polymers containing COQ-silyl groups. 3,779,990, Cl. 260-47.0cp.
Green, Evert S. Planter irrigation system with sand drain. 3,778,928, Cl. 47-38.100.
Green, Robert H. Method of making a headwall. 3,779,021, Cl. 61-16.000.
Green, Stanley, to Lucas, Joseph, (Industries) Limited. Combined lens and reflector for a vehicle lamp. 3,779,629, Cl. 350-103.000.
Greenberger, Joseph Irwin, to Wean United, Inc. Coolant control for hot strip mill. 3,779,054, Cl. 72-13.000.
Greene, David, Associates, Limited: *See—*
Hempell, Leo Bruce, 3,780,360.
Greenwell, Jack E., to Lear Motors Corporation. Adjustable speed induction motor system. 3,780,324, Cl. 310-180.000.
Greenwood, Alan, to Goodyear Tire and Rubber Company. Segmented tire mold. 3,779,677, Cl. 425-46.000.
Greer, Mary H.: *See—*
Brockman, William H.; and Greer, Mary H., 3,779,400.
Gref, Hans: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.
Grefco, Inc.: *See—*
Oshida, Otto A.; and Shawgo, Michael, 3,779,860.
Gregory, Mercer Duane, to Continental Oil Company. Coalescence of water and oleophilic liquid dispersions by passage through a permeable, oleophilic liquid equilibrated, foam of polyurethane. 3,779,908, Cl. 210-23.000.
Gregory, William Henry. Vibrationless speaker assembly. 3,779,337, Cl. 181-31.00b.
Grein, Hermann, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Speed control linkage means for winding bobbins. 3,779,471, Cl. 242-18.0es.
Greve, Gottfred, to A/S Hoyer-Ellefsen. Stationary storage and mooring plant resting on the bottom of the sea. 3,779,024, Cl. 61-46.000.
Grier, John D.: *See—*
Taylor, Lynn J.; and Grier, John D., 3,779,807.
Grimm, Hugo: *See—*
Drechsel, Herbert; Dorr, Karl-Heinz, Grimm, Hugo; and Rowedder, Gustav, 3,780,166.
Grimshaw, Norman C.; and West, Thomas G., to General Electric Company. Ballast apparatus for starting and operating arc lamps. 3,780,342, Cl. 315-173.000.
Groen, Siemen H.: *See—*
Deumens, Johannes J. M.; and Groen, Siemen H., 3,780,082.
Gronholz, Donald D.: *See—*
Daigle, Paul A.; and Gronholz, Donald D., 3,778,985.
Gross, Wayne B., to General Signal Corporation. Push button switch assembly with slidable interlocking means preventing simultaneous operation of two or more pushbuttons. 3,780,236, Cl. 200-5.0ea.
Grossner, Horst: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; Krohn, Hellmut; and Stein, Hermann, 3,779,331.
Grotheer, Robert: *See—*
Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, 3,779,523.
Grubel, Harald: *See—*
Korrenn, Heinz; Voll, Horst; and Grubel, Harald, 3,779,626.
Grumet, Alex, to Grumman Aerospace Corporation. Automatic target recognition system. 3,779,492, Cl. 244-3.170.
Grumman Aerospace Corporation: *See—*
Grumet, Alex, 3,779,492.
Grundell, Carl Erik. File for documents and the like. 3,779,393, Cl. 211-126.000.
Grunwald, John J.; Solminski, Leo J.; Landau, Adela; and Shah, Dilip G., to MacDermid Incorporated. Method of and composition for dissolving metallic copper. 3,779,842, Cl. 156-18.000.
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J. Method of making a laminated electrically heated window. 3,778,898, Cl. 29-611.000.
Gryaznov, Vladimir Mikhailovich; Mischenko, Alexandr Petrovich; Smirnov, Viktor Sergeevich; and Aladyshev, Sergei Ivanovich. Catalytic reactor designed for carrying out conjugate chemical reactions. 3,779,711, Cl. 23-288.00r.
Grysckiewic-Trochimowski, Oleg: *See—*
Prognon, Pierre; Scuflaire, Robert; Mathey, Francois; and Grysckiewic-Trochimowski, Oleg, 3,780,036.
GTE Automatic Laboratories Incorporated: *See—*
Stewart, James A., 3,780,228.
GTE Sylvania, Incorporated: *See—*
Flynn, John E., 3,780,333.
Paget, Frederick W., 3,780,344.
Gudelis, David A.: *See—*
Eagen, John F.; and Gudelis, David A., 3,779,894.
Gudmundsen, Sigmund; Ronaess, Egil; Kjolberg, Sven Arne; and Mejdell, Glor Thorvald, to Norsk Hydro A.S. Recovery of anhydrous HCl gas by extractive distillation with a halide salt. 3,779,870, Cl. 203-12.000.
Guichet, Niles F. Dental clutch fabrication. 3,778,902, Cl. 32-20.000.
Guidosh, Edward F., to Westinghouse Electric Corporation. Electrical contact assembly. 3,780,239, Cl. 200.011.00b.
Guild, Charles L.; and Goodman, Willard B. Expansible mandrel employing leaf springs to bias its sections into its pile entering relationship. 3,779,026, Cl. 61-53.720.
Guillaume, Jacques: *See—*
Allais, Andre; Nedeleo, Lucine; Guillaume, Jacques; and Frechet, Daniel, 3,780,061.
Gulf Oil Canada Limited: *See—*
Liu, Joseph K.; and Douek, Maurice, 3,779,992.
Mitchell, David L.; and Speight, James G., 3,779,902.
Gulf Research & Development Company: *See—*
Doyle, William C., Jr., 3,779,736.
Gullberg, Herbert E.; and Williamson, Stearns. Land sailing trailer. 3,779,562, Cl. 280-34.00a.
Gunlock, Theodore. Light gauge for identifying plants that can grow in a particular location. 3,779,651, Cl. 356-213.000.
Gunsher, Jeffrey A.: *See—*
Exner, Jurgen H.; Larsen, Eric R.; and Gunsher, Jeffrey A., 3,779,984.
Gurman, Marvin: *See—*
Martin, Gerald; Baccus, James A.; and Gurman, Marvin, 3,779,202.
Gustison, Robert A., to Kaweski Berylco Industries, Inc. Nickel-tantalum addition agent for incorporating tantalum in molten nickel systems. 3,779,717, Cl. 29-192.00r.
Gutman, Arnold D., to Stauffer Chemical Company. Aryl-N-alkyl-carbamates. 3,780,091, Cl. 260-479.00c.
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Guy, Arthur L.; and Ruez, William J., III, to Esso Production Research Company. Tubular joint. 3,779,656, Cl. 403-4.000.
Gyurk, Warren Joseph: *See—*
Stetson, Harold Wilbur; and Gyurk, Warren Joseph, 3,780,150.
Haas, Friedrich: *See—*
Sutter, Hubert; Nothen, Karl; and Haas, Friedrich, 3,780,139.
Haas, W. Ernst, & Sohn, Firma: *See—*
Birke, Gerhard, 3,778,982.
Haas, Werner E. L.; Flannery, John B., Jr.; Mechlowitz, Bela; and Adams, James E., to Xerox Corporation. Liquid crystalline compositions. 3,779,751, Cl. 96-1.00e.
Habanec, Charles E., to Moser Paper Company. Blank cutting machine. 3,779,118, Cl. 83-437.000.
Habdas, Edward P.: *See—*
Withers, James G., Jr.; Habdas, Edward P.; and Jurmo, Michael W., 3,779,312.
Habermeier, Juergen: *See—*
Porret, Daniel; Habermeier, Juergen; and Batzer, Hans, 3,779,949.
Habermeier, Jurgen: *See—*
Rembold, Heinz; Baumann, Dieter; and Habermeier, Jurgen, 3,779,988.
Habert, Roger. Fastening member. 3,779,659, Cl. 403-372.000.
Habuka, Yoshio. *See—*
Nakazawa, Narihiko; Nakamura, Taiji, Kitahara, Teruyoshi; and Habuka, Yoshio, 3,779,645
Hackbarth, Eugene R.: *See—*
Ward, Harry M., III; and Hackbarth, Eugene R., 3,779,214.
Hadgraft, Robert B.; and Martin, John J., to Standard Brands Chemical Industries Inc. Textile laminating compositions and composite textile structures laminated therewith. 3,779,857, Cl. 161-88.000.
Hadley, Willis. Face fly screen. 3,778,966, Cl. 54-81.000.
Hagelbarger, David William; and Kubik, Peter Steve, to Bell Telephone Laboratories, Incorporated. Optical tape reader using cylindrical lens as tape drive wheel. 3,780,267, Cl. 235-61.11e.
Hague, Louise D.: *See—*
Khelghatian, Habet M.; Jezl, James L.; and Hague, Louise D., 3,780,136.
Haining, Frank W.; and Puterbaugh, Loren J., to International Business Machines Corporation. Method for forming interconnections between circuit layers of a multi-layer package. 3,778,900, Cl. 29-628.000.
Haitz, Roland H., to Hewlett-Packard Company. Electroluminescent semiconductor display apparatus and method of fabricating the same. 3,780,357, Cl. 317-234.00r.

Hale, Autho: *See—*
Swisher, George W., Jr.; and Hale, Autho, 3,778,912.
Hale, James C.: *See—*
Cushman, Charles R.; Hale, James C.; and Anderson, Vernon A., 3,779,070.
Haller, Willi; Lebhere, Richard; and Kratt, Kurt, to Hengstler, J., KG, Firma. Device for controlling a self-service dispenser using identification data carriers. 3,779,357, Cl. 194-5.000.
Halliburton Company: *See—*
Edwards, Arnold Glen; and Jenkins, Charles J., 3,779,263.
Halloway, Henry; and Logothetis, Eleftherios Miltiadis, to Fqrd Motor Company. High mobility epitaxial layers of PbTe and $Pb_{1-x}Sn_xTe$ prepared by post-growth annealing. 3,779,801, Cl. 117-201.000.
Hamill, Robert L.; Haney, Michael E., Jr.; and Stark, William Max, to Lilly, Eli, and Company. Antibiotic A477 and process for preparation thereof. 3,780,174, Cl. 424-118.000.
Hamilton, Donald N.; and Kennedy, Alexander W., to Diamond Shamrock Corporation. Applying chromic acid-amino acid, or lactam, or amide coating compositions to metals. 3,779,815, Cl. 148-6.200.
Hamilton, Stephen B.: *See—*
Smith, Stanley D.; and Hamilton, Stephen B., 3,779,986.
Hamilton, William H.: *See—*
Horten, Carl R.; and Hamilton, William H., 3,779,323.
Hammer, Clarence Frederick, to Du Pont de Nemours, E. I., and Company. Ethylene/carbon monoxide polymer compositions. 3,780,140, Cl. 260-884.000.
Hammes, Paul A.: *See—*
Danner, Wilson E.; Hammes, Paul A.; and Everson, Charles W., 3,780,192.
Hammond Corporation: *See—*
Petrie, Adelore F., 3,780,203.
Hancart, Jules; and Houbart, Ivan, to Centre National de Recherches Metallurgiques Centrum Voor Research in de Metallurgie. Preparation of pig iron samples for spectral analysis. 3,779,646, Cl. 356-74.000.
Handwerk, Richard Herman: *See—*
Calvert, William Lemont; and Handwerk, Richard Herman, 3,779,712.
Handzlik, Anthony T., to Vitter Manufacturing Corporation. Sealing means for an aperture in a panel or the like. 3,779,585, Cl. 285-158.000.
Haney, Michael E., Jr.: *See—*
Hamill, Robert L.; Haney, Michael E., Jr.; and Stark, William Max, 3,780,174.
Hansen, Calvin N.: *See—*
Erlenbusch, Gary L.; Hansen, Calvin N.; and Mott, Richard H., 3,779,402.
Hansen, Hans: *See—*
Christensen, Borge; and Hansen, Hans, 3,778,960.
Hansen, James H.; and Getz, Ralph W. High temperature-high strength alloy glass fiber forming bushing. 3,779,728, Cl. 65-1.000.
Hara, Shoji: *See—*
Mori, Yubi; Tanaka, Tamufsu; Hara, Shoji; Iwashita, Masakatu; and Iguki, Yasuyuki, 3,779,422.
Harada, Toshiaki: *See—*
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, 3,780,119.
Hardemann, Manfred, to Steinmuller, L. & C., G.m.b.H. Combustion chamber. 3,779,180, Cl. 110-7.00r.
Hardinge Brothers, Inc.: *See—*
Tarbox, Willis; Dolan, Vincent; and Harman, Ralston L., 3,779,566.
Hardy Brothers (Alnwick), Limited: *See—*
Humble, Raymond, 3,779,477.
Harelson, Robert G., to Emerson Electric Co. Machine for winding foil ribbon coils. 3,779,474, Cl. 242-56.100.
Hari, Stefan; and Ronco, Karl, to Ciba-Geigy AG. Nickel complexes of dioximes and processes for their manufacture. 3,780,049, Cl. 260-299.000.
Hari, Stefan; and Ronco, Karl, to Ciba-Geigy AG. Process for the manufacture of 2,5-diacyl amino-1, 4 henzoquinones. 3,780,071, Cl. 260-396.00r.
Harman, Julius; and Norman, Michael Eric, to Herbert, Alfred, Limited. Lathes with chuck transfer mechanism. 3,779,110, Cl. 82-200.500.
Harman, Ralston L.: *See—*
Tarbox, Willis; Dolan, Vincent; and Harman, Ralston L., 3,779,566.
Harna, Hyacint E., to Zenith Radio Corporation. Air code burst generator. 3,780,213, Cl. 178-5.100.
Harnden, C. A., Limited: *See—*
Plevin, Harold, 3,779,475.
Harper, George S., to Airpax Electronics Incorporated. Dust seal high performance breaker. 3,780,249, Cl. 200-168.00g.
Harris, Martin: *See—*
Swimmer, James A.; and Harris, Martin, 3,778,970.
Harris-Intertype Corporation: *See—*
Sanders, Thomas J., 3,779,841.
Hart, Porter, to Dow Chemical Company, The. Apparatus for continuous measurement and control of flotation conditions. 3,779,265, Cl. 137-93.000.
Harvey, Donald M., to Eastman Kodak Company. Self-processing film unit incorporating an integral battery. 3,779,143, Cl. 95-13.000.
Hase, Horst: *See—*
Fehling, Hans-Reinhard; Hase, Horst; and Kutzer, Hans-Joachim, 3,779,742.
Hasegawa, Fumio; Emoto, Takeo; and Kurihara, Satoshi, to Fuji Photo Film Co., Ltd. Color photographic developing method and developer therefor. 3,779,767, Cl. 96-66.00r.
Hasegawa, Toro: *See—*
Ogawa, Toshiya; and Hasegawa, Toro, 3,779,162.
Haslam, Fred; Horsewell, Henry George; and Gannaway, Paul Henry, to Brown & Williamson Tobacco Corporation. Method for producing tobacco-smoke filters. 3,779,787, Cl. 117-11.000.
Hassell, Howard L., to Shell Oil Company. Method for separating nickel contaminant from hydrogenated conjugated diene polymers. 3,780,137, Cl. 260-880.00b.
Hassell, Howard L.; Watson, James C.; and Shaw, Benjamin W., to Shell Oil Company. Method for separating metal contaminant from organic polymers. 3,780,138, Cl. 260-880.00b.
Hatcher, Cecil W.; and Warner, Gene. Pavement cutting machine with improved liquid coolant supply. 3,779,606, Cl. 299-39.000.
Hatcher, Cecil W.; and Warner, Gene. Pavement cutting machine with selected drive system. 3,779,608, Cl. 299-39.000.
Hauck, Frederic D., to Eastman Kodak Company. Self-activating cutter for strip material. 3,779,641, Cl. 355-29.000.
Hawkins, Robert D. Deck hinge and locking apparatus for boats equipped with side decks. 3,779,197, Cl. 114-85.000.
Hawthorne, John W.: *See—*
Callinghan, Robert M.; and Hawthorne, John W., 3,780,163.
Hayashi, Hideo: *See—*
Araki, Yoshihiko; and Hayashi, Hideo, 3,779,960.
Hayashi, Kiyohide: *See—*
Adachi, Toshio; and Hayashi, Kiyohide, 3,779,739.
Hayden, Richard Earle; and Chanaud, Robert Charles, to Bolt, Beranek and Newman, Inc. Method of reducing sound generation in fluid flow system embodying foil structures and the like. 3,779,338, Cl. 181-33.00c.
Hayden, Richard R.: *See—*
Sharkitt, Patrick J.; and Hayden, Richard R., 3,780,271.
Hayes, John C.: *See—*
Mitsche, Roy T.; and Hayes, John C., 3,779,947.
Hayes, John C., to Universal Oil Products Company. Hydrotreating of hydrocarbons. 3,779,901, Cl. 208-143.000.
Hayes, Leonard L., to Potlatch Forest Inc. Sheet material conveyor. 3,779,543, Cl. 271-75.000.
Hayner, Eric T.: *See—*
Fore, Sara P.; Hayner, Eric T.; and Dupoy, Harold P., 3,779,066.
Hazemag Hartzerkleinerungs-und Zement-Maschinenbau Gesellschaft m.b.H.: *See—*
Smits, Bernhard Johannes, 3,779,470.
Hazen, George G., to Merck & Co., Inc. Process for preparing cephalosporin compounds. 3,780,033, Cl. 260-243.00c.
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Head, Norman Weldon, to Dresser Industries, Inc. Well tool and releasing device therefor. 3,779,314, Cl. 166-216.000.
Healy, Robert M.; and Hovey, Ralph J., to Bunker-Ramo Corporation, The. Contact element having noble wear area. 3,780,247, Cl. 200-166.00c.
Heberlein & Co., AG: *See—*
Brummer, Josef, 3,778,991.
Hechlhammer, Wilhelm; Schneider, Kurt; and Fahnler, Friedrich, to Bayer Aktiengesellschaft. Process for the production of reinforced polyamide hollow articles. 3,780,157, Cl. 264-310.000.
Hederich, Volker: *See—*
Wegner, Peter; Neeff, Rutger; Hederich, Volker; and Gehrke, Gunter, 3,779,700.
Hedgepeth, Edward B. Sway control unit. 3,779,582, Cl. 280-446.00b.
Hedstrom Co.: *See—*
Boudreau, Alhan M., 3,779,540.
Heeks, David Andrew: *See—*
Dufault, Emmanuel Joseph; and Heeks, David Andrew, 3,780,075.
Hegarty, William P.; and Say, David L., to Air Products and Chemicals Inc. Coal gassification. 3,779,725, Cl. 48-202.000.
Heich Die Casting Corporation: *See—*
Pondelicek, William J.; and Schmidt, Vernon F., 3,779,305.
Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Wetzel, Roland; and Rambausek, Hugo, 3,779,442.
Heier, Wilbur C., to United States of America, National Aeronautics and Space Administration. Evacuated, displacement compression molding. 3,780,151, Cl. 264-102.000.
Heindl, Rudolf: *See—*
Loriers, Jean; and Heindl, Rudolf, 3,779,948.
Heinze, Gerhard: *See—*
Dorn, Ludwig; Mengel, Manfred; and Heinze, Gerhard, 3,779,946.
Heiser, Edward J., to Dow Chemical Company, The. Coatings containing plastic pigments. 3,779,800, Cl. 117-155.0ua.
Heit, Allyn H., to Sybron Corporation. Pentaerthritol purification process. 3,779,883, Cl. 204-180.00p.
Heitz, Charles T. Holder for flexible receptacle liners. 3,779,419, Cl. 220-63.00r.
Held, Jimmy L.: *See—*
Fugitt, Ronald B.; Uhrich, Richard W.; and Held, Jimmy L., 3,780,220.

Hellerich, Walter, to Arbed S.A. Arbed-Felten & Guelleaume Vereinigte Drahtwerke. Reinforced structural element. 3,778,949, Cl. 52-309.000.
Helman, Robert W.: *See—*
Padjen, George; Helman, Robert W.; and Brugger, Joseph A., 3,779,056.
Helmberger, Josef: *See—*
Bestenreiner, Friedrich; Helmberger, Josef; Muller, Rudolf; and Simm, Walter, 3,780,214.
Hempell, Leo Bruce, to Greene, David, Associates, Limited. Shaft positioning means. 3,780,360, Cl. 318-138.000.
Henderson, Charles B.; and Hoglund, Richard F., to Atlantic Research Corporation, mesne. Dectrophillic gas generating compositions and process. 3,779,008, Cl. 60-207.000.
Henderson, Ian, to Printed Motors, Limited. Electric control apparatus. 3,780,366, Cl. 318-345.000.
Henderson, Joseph D., to Telex Computer Products, Inc. Dual-tach capstan speed control. 3,780,364, Cl. 318-271.000.
Hengstler, J., KG, Firma: *See—*
Haller, Willi; Lebhere, Richard; and Kratt, Kurt, 3,779,357.
Henkel & Cie G.m.b.H.: *See—*
Altenschopfer, Theodor; Batka, Heimold; Jakobi, Gunter; Krings, Peter; and Lehmann, Hans-Jurgen, 3,779,934.
Fries, Walter; Bloching, Helmut; Rhld, Hilden; and Jung, Dieter, 3,779,931.
Henry, Nelson R.; and Middour, Donald R., to Woodman Company, Inc., The. Tube seamer with clamp action. 3,779,836, Cl. 156-466.000.
Hentschel, Georg, to SKF Industrial Trading and Development Company N.V. Composite sliding and rolling bearing. 3,779,351, Cl. 192-45.500.
Herbert, Alfred, Limited: *See—*
Harman, Julius; and Norman, Michael Eric, 3,779,110.
Hercules Incorporated: *See—*
Bishop, William T., 3,779,380.
Herman, Virgil L., to Rockwell International Corporation. Composite metal having bonded members of beryllium. 3,779,721, Cl. 29-199.000.
Hermann, Christof, to General Motors Corporation. Vehicle cargo bed loader for elongated articles. 3,779,406, Cl. 214-77.00p.
Hermann, Karl-Heinz, to Bayer Aktiengesellschaft. Process for the polymerization of lactams. 3,779,998, Cl. 260-78.001.
Herpich, William A.; and Chaney, Donal W., to Peabody Galion Corporation. Container dumping mechanism for a rear loader refuse vehicle. 3,779,409, Cl. 214-302.000.
Herr, Milton E.: *See—*
Fonken, Gunther S.; Herr, Milton E.; and Murray, Herbert C., 3,780,022.
Hertz, Julius, to General Dynamics Corporation. Method of fabricating thin graphite reinforced composites of uniform thickness. 3,779,851, Cl. 156-309.000.
Herz, Jack L., to Stauffer Chemical Company. Preparation of esters of aromatic alcohols. 3,780,094, Cl. 260-488.0cd.
Herzhoff, Peter: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.
Hesston Corporation: *See—*
Adee, Raymond A.; Brooks, Dean P.; and Anderson, John Dale, 3,779,158.
Hetzel, Douglas R.: *See—*
Kirby, James D.; Hetzel, Douglas R.; McKay, Richard H.; Snydacker, James U.; and Ziebold, Paul G., 3,779,453.
Hetzel, Max, to Omega Louis Brandt et Frere S.A. Motion transformer. 3,779,093, Cl. 74-142.000.
Heuser, Gunther; Weisgerher, Gregor; and Behr, Erich, to Dynamit Nobel Aktiengesellschaft. Stabilization of fluorine-containing vinyl polymers. 3,779,985, Cl. 260-45.95r.
Hewett, William Ainslie: *See—*
Gipstein, Edward; Hewett, William Ainslie; and Levine, Harold A., 3,779,806.
Hewlett-Packard Company: *See—*
Edrinn, Roger C., 3,779,473.
Haitz, Roland H., 3,780,357.
Osgood, Richard B., 3,780,377.
Heyer, Willy; and Rassmann, Christoph, to Gewerkschaft Eisenhutte Westfalia. Mineral mining installations. 3,779,604, Cl. 299-34.000.
Heyl & Patterson, Inc.: *See—*
Dykeman, Howard E., 3,779,395.
Hicks, Darrell B., to Celanese Coatings Company. Thermosetting nonaqueous dispersion polymers. 3,779,977, Cl. 260-33.6ua.
Hicks, John W., Jr., to Bendix Corporation, The. Method of forming composite fiber bundle. 3,779,729, Cl. 65-4.000.
Hijos de Juan de Garay, S.A.: *See—*
Garay, Fernando Creixell, 3,779,260.
Hill Acme Company, The: *See—*
Curtis, William I.; and McDaniel, Augustus C., Jr., 3,779,116.
Hill, Horace E.: *See—*
Caley, Lloyd E.; Hill, Horace E.; and Phillips, Joseph L., 3,779,664.
Hill, Larry M., to Indiana Brass Company, Inc. Faucet. 3,779,278, Cl. 137-597.000.
Hill, William G. Photographic print processing basket. 3,779,148, Cl. 95-100.000.
Hilti Aktiengesellschaft: *See—*
Maier, Elmar, 3,779,373.
Hinely, Douglas M.; and Lyon, Robert J., to United States of America, Navy. Electrochemical firing device. 3,779,168, Cl. 102-70.20r.
Hino, Naganori: *See—*
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,780,090.
Hirata, Hiroshi. Floating oil storage installation. 3,779,193, Cl. 114-.50t.
Hirschman, Paul S.: *See—*
Day, John J.; and Hirschman, Paul S., 3,779,387.
Hirschmann, Ralph F.; and Veber, Daniel F., to Merck & Co., Inc. Process for preparing lysine containing peptides. 3,780,015, Cl. 260-112.500.
Hisada, Haruhiko: *See—*
Ogawa, Yoshikatsu; Hisada, Haruhiko; and Kasahara, Takeshi, 3,780,142.
Hiss, Roger A.; and Kime, Harry E., Jr., to Du Pont de Nemours, E. I., and Company. Thermally stable non-blistering polymide laminates. 3,779,858, Cl. 161-170.000.
Hitachi, Ltd.: *See—*
Akiyama, Mitsuo; and Suzuki, Sigeyasu, 3,779,031.
Fujisawa, Fumio; Takenoshita, Mitsuaki; Nakamura, Ichiro; and Yumino, Hiroshi, 3,779,017.
Inose, Fumiyuki; Inui, Tomoji; Kohayashi, Sadao; and Shibata, Shotaro, 3,780,314.
Shibata, Akira; and Oguino, Masanori, 3,780,215.
Suzuki, Jinichiro; Takezawa, Kenzi; and Takeda, Takanori, 3,778,887.
Hluchan, Stephen Andrew; and Tainter, Leland B., Jr., to Bourns, Inc. Air-data instrument and method. 3,779,075, Cl. 73-182.000.
Hoehn, Hans: *See—*
Denzel, Theodore; and Hoehn, Hans, 3,780,047.
Hoey, Fred A., to Bruno, C., & Son, Inc. Percussion instrument. 3,779,126, Cl. 84-418.000.
Hofbauer, Thomas J. Magnetic tape unit and hub assembly therefore. 3,779,476, Cl. 242-67.300.
Hoffer, Paul B., to United States of America, Atomic Energy Commission. Radiation camera motion correction system. 3,780,290, Cl. 250-303.000.
Hoffman, Edward H.; and Kennedy, Clifford F., to Enviro-Acoustic R & D Inc. Muffler and spark arrestor for internal combustion engine. 3,779,340, Cl. 181-49.000.
Hoffmann-La Roche Inc.: *See—*
Bretschneider, Hermann, 3,780,101.
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,780,062.
Hoffsommer, Robert D., Jr.: *See—*
Taub, David; and Hoffsommer, Robert D., Jr., 3,780,106.
Hofman, Emiel Alexander; and Pollet, Robert Joseph, to Agfa-Gevaert N.V. Silver complex diffusion transfer process utilizing an aromatic disulfide. 3,779,757, Cl. 96-29.00r.
Hofman, Johannes H. A.: *See—*
Schaafsma, Sijbrandus E.; and Hofman, Johannes H. A., 3,780,084.
Hoglund, Richard F.: *See—*
Henderson, Charles B.; and Hoglund, Richard F., 3,779,008.
Hohlein, Herman, to Volkswagenwerk Aktiengesellschaft. Valve unit for controlling double acting fluid operating cylinders. 3,779,136, Cl. 91-361.000.
Hohulin, Samuel E., to National Union Electrical Corporation. Push button valve assembly for adjusting the negative pressure of a suction cleaner. 3,779,283, Cl. 137-637.000.
Holden, Homer N.: *See—*
Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., 3,779,846.
Holderith, William: *See—*
Ayres, Waldemar; Walker, Evelyn; Holderith, William; Benson, Carl; and Bandrowski, James, 3,779,083.
Holiday Recreation Products, Inc.: *See—*
Martin, Gerald; Baccus, James A.; and Gurman, Marvin, 3,779,202.
Hollister Incorporated: *See—*
Nolan, John L.; Rivin, Arnold A.; and Johnson, Bremen I., 3,779,247.
Holloway, Thomas M.: *See—*
Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, 3,779,275.
Holophane Co., Inc.: *See—*
Ewing, Robert L., 3,778,932.
Holst, Paul F. G.; and Brobeck, William R., to Avco Corporation. Near field spiral antenna. 3,780,373, Cl. 343-788.000.
Holt, William David, to Lucas, Joseph, (Industries) Limited. Windscreen wiping systems for road vehicles. 3,780,367, Cl. 318-444.000.
Holtzman, Norman, to Orion Industries Inc., mesne. Compression tester. 3,779,081, Cl. 73-419.000.
Holz, George Ernest; and Dieterman, Felix, to Burroughs Corporation. Circuit for operating multiple position display devices. 3,780,341, Cl. 315-169.0tv.
Hommo, Masao: *See—*
Otsuka, Hitoshi; Nohmi, Kazumasa; and Hommo, Masao, 3,780,329.
Otsuka, Hitoshi; Nohmi, Kazumasa; and Hommo, Masao, 3,780,330.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hori, Akoto; and Yamamoto, Takenori, 3,778,844.
Uchida, Masaaki, 3,779,597.

Honey Tien Products, Inc.: *See—*
Fields, Murray E., 3,780,185.

Honeywell Inc.: *See—*
Battersby, Robert J.; and Mucciante, Louis L., 3,779,459.
Peterson, Dean McCormack, 3,779,636.
Quinn, Peter T.; and Schroeder, Bruce W., 3,779,423.

Honeywell Information Systems, Inc.: *See—*
Bethsold, Karl R., 3,778,883.
Rich, Dennis E.; and Crump, Robert O., 3,779,290.

Hooker Chemical Corporation: *See—*
Carlson, Ronald H., 3,780,079.
Dannels, Bobby F.; and Shepard, Alvin F., 3,779,995.
Golborn, Peter, 3,780,146.
Miller, George T., 3,779,790.

Hooker, Stanley George: *See—*
Lewis, Gordon Manns; and Hooker, Stanley George, 3,779,486.

Hooper, Eric Ralph: *See—*
Kariagin, Nikolai; Lathson, Jerry; Hooper, Eric Ralph; Keogh, Jim Cowden, Jr.; and Pagan, Augustine Joseph, 3,778,855.

Hoover, John R. E.; and Stedman, Robert John, to Smithkline Corporation. Caged ketone. 3,780,108, Cl. 260-586.00a.

Hoover, William J.: *See—*
Tsen, Cho C.; and Hoover, William J., 3,780,188.

Hope, Richard P.; and Long, Henry B., to Auto-Mat Corporation. Cleaning machine. 3,779,367, Cl. 198-167.000.

Hori, Akoto; and Yamamoto, Takenori, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for preventing whistling at hearing openings in helmets. 3,778,844, Cl. 2-3.00r.

Horiguchi, Sadayuri: *See—*
Takeda, Isao; Mizuno, Masayuki; Sugawara, Toshiaki; Shimojima, Yukiji; and Horiguchi, Sadayuri, 3,780,172.

Horn, Larry L., to Maul Bros. Inc. Glass container handling apparatus. 3,779,362, Cl. 198-24.000.

Horne, Robert V. Artificial joint. 3,779,654, Cl. 403-62.000.

Horsewell, Henry George: *See—*
Haslam, Fred; Horsewell, Henry George; and Gannaway, Paul Henry, 3,779,787.

Horten, Carl R.; and Hamilton, William H., to Ingersoll-Rand Company. Earth cutter mounting means. 3,779,323, Cl. 175-381.000.

Hoshi, Hideaki: *See—*
Naito, Takayuki; Okumura, Jun; and Hoshi, Hideaki, 3,780,028.

Hosiery Equipment Limited: *See—*
Perkins, Charles Willin, 3,779,046.

Houbart, Ivan: *See—*
Hancart, Jules; and Houbart, Ivan, 3,779,646.

Hovemann, Friedrich: *See—*
Schenk, Walter; and Hovemann, Friedrich, 3,779,874.

Hovey, Ralph J.: *See—*
Healy, Robert M.; and Hovey, Ralph J., 3,780,247.

Howell, Edward R.; Wood, Harold B., Jr.; and Sayad, Richard S., to Dow Chemical Company, The. Heat transfer agent composition. 3,779,927, Cl. 252-75.000.

Hower, Sara. Method of working tartan or gingham on canvas. 3,779,190, Cl. 112-262.000.

Howorth Air Conditioning Limited: *See—*
Howorth, Frederick Hugh, 3,778,851.

Howorth, Frederick Hugh, to Howorth Air Conditioning Limited. Mattress. 3,778,851, Cl. 5-347.000.

Howson-Algraphy Limited: *See—*
Lawson, Leslie Edward; and Smith, Peter John, 3,779,759.

Hoyt, John; Koch, Karl; and Williams, Mathew, Jr., to National Distillers and Chemical Corporation. Process for the accelerated alcoholysis of ethylene-vinyl ester interpolymers in the solid phase. 3,780,004, Cl. 260-87.300.

Hubbard, Addison W.; and Powers, Kenneth W., to Esso Research and Company. Sulfonated butyl rubber latices. 3,779,974, Cl. 260-29.70b.

Hubele, Adolf; and Rohr, Otto, to Ciba-Geigy AG. N-(3-trifluoromethyl-4-chlorophenyl)-O-furfuryl and tetrahydrofurfuryl carbamate. 3,780,068, Cl. 260-347.400.

Hubell, Harvey, Incorporated: *See—*
Neuroth, David H., 3,779,593.

Hubner, Klaus: *See—*
Poppincer, Herbert; and Hubner, Klaus, 3,780,361.

Hudler, Heinz. Apparatus for detecting unprepared postage stamps. 3,780,310, Cl. 250-555.000.

Huggins, Homer D., to Modine Manufacturing Company. Noise suppressive fan shroud. 3,779,341, Cl. 181-50.000.

Hughes, James W.; Sample, Thomas E., Jr.; and Tate, Jack F., to Texaco Inc. Scale control. 3,779,793, Cl. 117-72.000.

Hughes, Michael James, to Girling Limited. Vehicle braking systems. 3,779,614, Cl. 303-89.000.

Hughes, Robert D. Feed bunk cleaner. 3,778,857, Cl. 15-4.000.

Hull, Francis R. Marine jet propulsion system 3,779,200, Cl. 115-16.000.

Humble, Raymond, to Hardy Brothers (Alnwick), Limited. Fishing reel. 3,779,477, Cl. 242-84.10r.

Humphreys, Christopher: *See—*
Hunn, Bernard A.; and Humphreys, Christopher, 3,780,269.

Humphries, Darral V., to Bethlehem Steel Corporation. Corrosion resistant wire rope and strand. 3,778,994, Cl. 57-149.000.

Hunn, Bernard A.; and Humphreys, Christopher, to Revenue Systems Limited. Data reading systems. 3,780,269, Cl. 235-61.11h.

Hunt-Wesson Foods, Inc.: *See—*
Papahronis, Basil T.; and Gibble, Walter P., 3,780,076.

Hunter, James R.: *See—*
Wojtowicz, Edward A.; Hunter, James R.; and Lazzarotti, S. James, 3,779,546.

Hunter, James T. Golf putter. 3,779,398, Cl. 273-183.00d.

Hurst, George H.; and Cambria, Emanuel F., to Hurst Performance Inc. Shift control assembly. 3,779,096, Cl. 74-476.000.

Hurst Performance Inc.: *See—*
Hurst, George H.; and Cambria, Emanuel F., 3,779,096.

Huschle, Peter: *See—*
Ettischer, Helmut; Steisslinger, Kurt; and Huschle, Peter, 3,779,145.

Huskey, C. George; Resler, Charles J., Jr.; and Sanders, Sidney C., to Du Pont de Nemours, E. I., and Company. Quenching molten thermoplastic film. 3,779,682, Cl. 425-174.08e.

Hutz, Gerhard; and Bongers, H. J., to Siempelkamp, G., & Co. Method for the manufacture of reinforced flexible belts. 3,779,845, Cl. 156-87.000.

Hydron Limited: *See—*
Seymour, Donald Edwin; and Da Costa, Nicholas Mario, 3,780,003.

Iceland, William F.; and Cuzzupoli, Joseph W., to Air Products and Chemicals, Inc., mesne. Alternating current arc power source having opposite polarity ignition pulse. 3,780,258, Cl. 219-131.00r.

Idelson, Elbert M.: *See—*
Bloom, Stanley M.; Idelson, Elbert M.; Simon, Myron S.; and Waller, David P., 3,779,753.

Idelson, Elbert M., to Polaroid Corporation. Photographic processes and products employing 5-hydroxy-4-azaphenanthrenyl phthaleins as optical filter agents. 3,779,754, Cl. 96-3.000.

Idelson, Elbert M., to Polaroid Corporation. Alkanoylacethnilides. 3,780,105, Cl. 260-562.00k.

Igaki, Yasuyuki: *See—*
Mori, Yubi; Tanaka, Tamufsu; Hara, Shoji; Iwashita, Masakatu; and Igaki, Yasuyuki, 3,779,422.

Ignatov, Jury Lazarevich: *See—*
Nikolaev, Petr Ivanovich; Ignatov, Jury Lazarevich; Smirnov, Sergei Ivanovich; Oxengorn, Naum Izrailevich; Gigineishvili, Rimma Fominichna; Dvorkina, Klara Moissevna; and Iskandyarov, Akhmet Mukhsinyatovich, 3,779,868.

Ignatuev, Vladimir, to Pitney Bowes, Inc. Fluidic connector. 3,779,584, Cl. 280-137.00r.

Imai, Sukeyoshi. Wig stand. 3,779,433, Cl. 223-66.000.

Imperial Chemical Industries Limited. *See—*
Deans, David Robert, 3,778,975.
Feasey, Ronald George; and Rose, John Brewster, 3,780,000.
Le Count, David James; and Squire, Christopher John, 3,780,081.
Morris, Wyndham, 3,780,098.
Stevely, Robert Reid; and Webster, William Snodgrass, 3,779,820.

Imperial Chemical Industries of Australia and New Zealand Limited: *See—*
Alcorn, Percival George Ernest; and Neill, Keith Gordon, 3,779,930.

Imperial Oil, Limited: *See—*
Mitchell, David L., and Speight, James G., 3,779,902.

Inafuku, Katsuaki: *See—*
Fujiki, Konoshuke; Inafuku, Katsuaki; Shimizu, Hiroshi; Shigematsu, Toshiharu; and Kumura, Kazumi, 3,779,821.

Inamine, Shigeo: *See—*
Ueno, Ryuzo; Miyazaki, Tetsuya; Inamine, Shigeo; and Kishi, Saburo, 3,779,796.

Inayama, Takayuki; Ueno, Wataru; and Tsuji, Nobuo. Static charge-prevented photographic light sensitive element. 3,779,773, Cl. 96-87.00a.

Indiana Brass Company, Inc.: *See—*
Hill, Larry M., 3,779,278.

Indler, Russell: *See—*
Sindler, Millard S.; and Indler, Russell, 3,778,867.

Industrial Plastic Specialties Company: *See—*
Friesner, Charles E., 3,780,152.

Industrial Science & Technology, Agency of: *See—*
Fukuta, Kenji; Sekiguchi, Junichi; Miyashita, Rihei; Matsuzaki, Yoshihara; and Miura, Yoshihiro, 3,779,432.
Nomura, Harehiko; and Shimamoto, Susumu, 3,778,895.

Ingeniorfirmaet Borge Christensen Kastanievalle: *See—*
Christensen, Borge; and Hansen, Hans (said Christensen assor. to), 3,778,960.

Ingeniorfirmaet Hans Hansen: *See—*
Christensen, Borge; and Hansen, Hans (said Hansen assor. to), 3,778,960.

Ingeroll-Rand Company: *See—*
Miller, Bernard F., 3,779,088.

Ingersoll-Rand Company: *See—*
Blecken, William E., 3,778,940.
Horten, Carl R.; and Hamilton, William H., 3,779,323.

Ingham, Francis H.: *See—*
Oliver, Leland W.; Ingham, Francis H.; and Dubell, Edward G., 3,780,204.

Ingram, Charles E.: *See—*
Elson, Ronald D.; Krenke, Norman O.; and Ingram, Charles E., 3,779,363.

Inose, Fumiyuki; Inui, Tomoji; Kohayashi, Sadao; and Shibata, Shotaro, to Hitachi, Ltd. and Nissan Motor Co., Ltd. Vehicle collision detecting apparatus. 3,780,314, Cl. 307-121.000.

Inoue, Shiro. Odometer reset mechanism. 3,779,091, Cl. 74-109.000.

Inoue, Syuzi, 1/2 to Tokyo Sanyo Electric Co., Ltd. and 1/2 to Sanyo Electric Co., Ltd. Apparatus for giving notice to the approach of end of tape. 3,779,483, Cl. 242-191.000.

Installation for continuous ingot casting: *See—*
Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, 3,779,275.

Institut de Recherches de la Siderurgie Francaise: *See—*
Barry, Claude; and Ratte, Patrice, 3,779,077.

Intermountain Research and Development Corporation: *See—*
Waggener, Richard W.; and Taylor, James D., 3,780,160.

International Business Machines Corporation: *See—*
Barker, John H.; Dribelbis, Norman C.; and Stevens, Keith B., Sr., 3,779,542.
Carter, William C.; and Wadia, Aspi B., 3,780,276.
Casale, William R.; Saltz, Fred; and Schreck, George R., 3,779,440.
Dorler, Jack A.; Forneris, John L.; and Swietek, Donald J., 3,780,320.
Dumke, William P.; Rideout, Vincent L.; and Woodall, Jerry M., 3,780,359.
Gipstein, Edward; Hewett, William Ainslie; and Levine, Harold A., 3,779,806.
Haining, Frank W.; and Puterbaugh, Loren J., 3,778,900.
Kazan, Benjamin, 3,780,337.
Lee, Robert E.; McDermott, Philip S.; and Pan, Edward S., 3,779,803.
Lin, Yeong S.; and Yao, Ying L., 3,780,312.
Morrison, Donald J.; and Raesz, Reuben, 3,779,359.
Thompson, Leon J.; Kugler, Carl J., Jr.; and Latta, Garland H., 3,780,274.
Thompson, William A., 3,778,893.
Wagner, Peter R.; and Wilson, Donald M., 3,778,901.

International Computers Limited: *See—*
Bailey, Eric, 3,779,111.

International Equipment Company: *See—*
Lehman, Ivan L., 3,779,451.

International Farm Systems, Inc.: *See—*
Blair, Bruce A., 3,779,210.

International Harvester Company: *See—*
Bauman, Jack L., 3,779,428.
Duke, Edward D.; and Marquardt, Julius F., 3,779,329.

International Nickel Company Inc., The: *See—*
Evans, David; and Simpson, Bowen, 3,779,795.

International Standard Electric Corporation: *See—*
Thompson, George H. B., 3,780,358.

International Telephone and Telegraph Corporation: *See—*
Levine, Arnold M., 3,780,224.
Majkpzak, Charles P.; and Folger, Michael S., 3,779,466.
Moen, Art Murphy Dean; and Robison, Jim Ray, 3,779,886.
Oliver, Leland W.; Ingham, Francis H.; and Dubell, Edward G., 3,780,204.

Interscience Research Institute: *See—*
Eggleton, Reginald C.; and Weidner, Albert W., 3,779,234.

Inui, Tomoji: *See—*
Inose, Fumiyuki; Inui, Tomoji; Kohayashi, Sadao; and Shibata, Shotaro, 3,780,314.

Inwood, Bart A. Printing method. 3,779,163, Cl. 101-170.000.

Iowa State University Research Foundation, Inc.: *See—*
Brockman, William H.; and Greer, Mary H., 3,779,400.

Irisawa, Kiyosi. Device for erasing inside force of pickup arm of record player. 3,779,563, Cl. 274-23.00r.

Irish, Charles G., Jr.; Silva, Joseph W.; and Cowles, Raymond I., to Olin Corporation. Electrical initiator. 3,779,167, Cl. 102-46.000.

Irmscher, Klaus; Klockow, Michael; Mehrhof, Werner; Pfitzner, Klaus; Randau, Deeter; Nowak, Herbert; and Freisberg, Karl-Otto, to Merck Patent Gesellschaft mit beschrankter Haftung. Ingestible polymeric compositions. 3,780,171, Cl. 424-79.000.

Isenberg, Jerry E., to Dow Chemical Company, The. Latex-modified mortar compositions. 3,779,971, Cl. 260-29.60s.

Ishii, Masayoshi: *See—*
Shigeno, Shuichi; and Ishii, Masayoshi, 3,779,399.

Iskandyarov, Akhmet Mukhsinyatovich: *See—*
Nikolaev, Petr Ivanovich; Ignatov, Jury Lazarevich; Smirnov, Sergei Ivanovich; Oxengorn, Naum Izrailevich; Gigineishvili, Rimma Fominichna; Dvorkina, Klara Moissevna; and Iskandyarov, Akhmet Mukhsinyatovich, 3,779,868.

Itami, Nobuo: *See—*
Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, 3,779,691.

Ito, Naotake: *See—*
Sakakura, Shiro; and Ito, Naotake, 3,779,185.

ITT Industries, Inc.: *See—*
Oberthur, Heinrich, 3,779,390.

Ivanitsky, Genrikh Romanovich: *See—*
Agadzhanian, Zhora Melkonovich; Ivanitsky, Genrikh Romanovich; and Shamarov, Alvian Matveevich, 3,780,298.

Ivie, Louis E. Front-mounted silage filler for a front-end loader. 3,779,408, Cl. 214-145.000.

Iwashita, Masakatu: *See—*
Mori, Yubi; Tanaka, Tamufsu; Hara, Shoji; Iwashita, Masakatu; and Igaki, Yasuyuki, 3,779,422.

Iwasyk, John M., to Du Pont de Nemours, E. I., and Company. Apparatus. 3,778,974, Cl. 55-199.000.

Jaatinen, Per Arno: *See—*
Kerttula, Into Isak; and Jaatinen, Per Arno, 3,779,686.

Jackson, Winston J.; Kuhbuss, Herbert F.; and Caldwell, John R., to Eastman Kodak Company. Process for enhancing the inherent viscosity of bisphenol polyesters. 3,780,148, Cl. 264-141.000.

Jacobson Manufacturing Company: *See—*
Wright, Bruce C.; and Erickson, Donald G., 3,778,986.

Jacobson, Sava W. Telephone answering apparatus. 3,780,226, Cl. 179-6.00r.

Jacquinot, Bernard: *See—*
Lhomore, Pierre; Cohen, Guy; and Jacquinot, Bernard, 3,780,115.

Jaeger, Horst; and Schaefer, Paul, to Ciba-Geigy AG. Perfluoralkyl compounds. 3,780,093, Cl. 260-486.00a.

Jagaciak, Pen George J.: *See—*
Denny, John P.; Solbach, Robert C.; and Jagaciak, Pen George J., 3,779,713.

Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard. Solid washing compositions. 3,779,932, Cl. 252-108.000.

Jakobi, Gunter: *See—*
Altenschopfer, Theodor; Batka, Heimold; Jakobi, Gunter; Krings, Peter; and Lehmann, Hans-Jurgen, 3,779,934.

James, Maurice L., to Calcato, Inc. Vacuum controlled vessel loading with particulate materials. 3,778,962, Cl. 53-35.000.

James, Robert E. Concrete cutting machine. 3,779,609, Cl. 299-39.000.

Janakirama-Rao, Bhogaraju V., to PPG Industries, Inc. Method of manufacturing heat absorbing glass. 3,779,733, Cl. 65-32.000.

Janssen, Alexander Patton, to Datastrip Corporation. Visible index systems. 3,778,914, Cl. 40-64.00r.

Japan Atomic Energy Research Institute: *See—*
Sakurada, Ichiro; Okada, Toshio; and Shimano, Yasunao, 3,779,881.

Jaques, Roy J.: *See—*
Esch, Robert L.; Arnold, William C.; Skelton, Billy K.; Saxon, Michael D.; Murphy, Jerome A.; and Jaques, Roy J., 3,778,880.

Jaskewycz, Taras. Azine compounds. 3,780,029, Cl. 260-240.00b.

Jauch, Erhard: *See—*
Jauch, Heinz, 3,778,997.

Jauch, Heinz, to Jauch, Erhard. Clockwork mechanism for large clocks. 3,778,997, Cl. 58-13.000.

Jebb, Alan; and Besant, Colin Bowden, to D-Mac Limited. Scribing instruments. 3,778,905, Cl. 33-18.00r.

Jemison, William: *See—*
Nicholson, John H.; and Jemison, William, 3,779,494.

Jenkins, Charles J.: *See—*
Edwards, Arnold Glen; and Jenkins, Charles J., 3,779,263.

Jenks, Charles D.: *See—*
Whittaker, Dewey E.; and Jenks, Charles D., 3,780,208.

Jestin, Paul. Punching unit. 3,779,113, Cl. 83-140.000.

Jett, Howard V.; and De Marco, Joseph V. Splatter pattern control for spray guns. 3,779,465, Cl. 239-416.000.

Jezl, James L.: *See—*
Khelghatian, Habet M.; Jezl, James L.; and Hague, Louise D., 3,780,136.

Jiffy Manufacturing Co.: *See—*
Gerard, George, 3,779,850.

Jin, Jung Il; and Whale, Paul, to Stauffer Chemical Company. Cross-linked vinyl halide polymers as flame retardant additives for thermoplastics. 3,780,141, Cl. 260-897.00c.

Johmann, Frank T. Die gameboard and die throwing roll. 3,779,556, Cl. 273-134.00a.

Johns-Manville Corporation: *See—*
Meserole, Robert H., 3,778,954.
Ramge, Dennis Lee, 3,779,730.
Weeks, Thomas Joseph, Jr.; and Reimschussel, George Paul, 3,779,244.

Johns-Manville Corporation, mesne: *See—*
Dunmire, Paul G., 3,779,272.

Johnson & Johnson: *See—*
Mesek, Frederick K.; and Repke, Virginia L., 3,779,246.

Johnson, Bremen I.: *See—*
Nolan, John L.; Rivin, Arnold A.; and Johnson, Bremen I., 3,779,247.

Johnson, Cecil J.: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,779,893.

Johnson, Charles S., to Baker Hydro, Inc. Semi-seal device. 3,779,667, Cl. 415-170.00a.

Johnson, E. Curtis, to Buckbee Mears Company. Mounting preformed circuits on flexible dielectric substrates. 3,778,899, Cl. 29-625.000.

Johnson, Howard R. Muffler. 3,779,339, Cl. 181-48.000.

Johnson, John D.; and Southworth, Dean L., to Kraftco Corporation. Method for imparting cheese-like flavor to proteinaceous materials. 3,780,182, Cl. 426-33.00r.

Johnson Service Company: *See—*
Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, 3,779,275.

Johnson, Thomas F.; and Schelling, James H., to United States Steel Corporation. Process for recovering cobalt and manganese oxidation catalysts. 3,780,096, Cl. 260-524.00r.

Johnston, Richard Paul: *See—*
Chamay, Anthony Joseph; and Johnston, Richard Paul, 3,779,010.

Johrde, Paul S.: *See—*
Amasino, Richard L.; and Johrde, Paul S., 3,778,891

Jones & Laughlin Steel Corporation: *See—*
Clinton, Margaret A.; and Wells, Martin G. H., 3,779,798.

Jones, James R., to Armstrong Cork Company. Fireproofing cellulose-containing materials. 3,779,861, Cl. 162-145.000.

Jones, Norman H.: *See—*
Pahl, Leo F.; and Jones, Norman H., 3,780,198.

Jones, Wilfred, to Cyprane Limited. Anaesthetic supply. 3,779,414, Cl. 215-44.000.

Jongerius, Hermanus Maria: *See—*
Vervaart, Adrianus Petrus; Verheij, Cornelis Machiel; and Jongerius, Hermanus Maria, 3,780,327.

Jorgenso, Torben, to Kastrup og Holmegaards Glasvaerker A/S. Roller for roller conveyors. 3,779,356, Cl. 193-3.00f.

Jullien-Davin, Jean, to Crouzet. Mold for forming parts of complex shape of injectable or thermosetting plastic material. 3,779,688, Cl. 425-441.000.

Jung, Dieter: *See—*
Fries, Walter; Bloching, Helmut; Rhld, Hilden; and Jung, Dieter, 3,779,931.

Jung, Robert: *See—*
Eckerle, Otto; and Jung, Robert, 3,779,674.

Junger, Hans: *See—*
Pinten, Peter; Weissenfels, Franz; and Junger, Hans, 3,779,959.

Jurmo, Michael W.: *See—*
Withers, James G., Jr.; Habdas, Edward P.; and Jurmo, Michael W., 3,779,312.

Jurow, Victor A.: *See—*
Phillips, Michael; and Jurow, Victor A., 3,779,410.

Jute Industries Limited: *See—*
White, Wilfred A. S.; and West, Edgar R., 3,778,988.

Kabisch, Gerhard; and Kunkel, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the regeneration of aluminum oxide. 3,780,168, Cl. 423-588.000.

Kabushiki Kaisha Daikin Seisaku-Sho Osaka Prefecture: *See—*
Okuno, Yoshihiro, 3,779,355.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Ohno, Eiji, 3,779,155.

Kabushiki Kaisha Rinnai Seisakusho: *See—*
Mizuno, Sueo; and Takase, Tadayoshi, 3,779,228.

Kaesser, Glenda F.; and Zavertnik, Marshall G., to Killark Electric Manufacturing Company. Flame-proof fitting. 3,779,078, Cl. 73-343.00r.

Kahlin, Erik B.: *See—*
Boissevain, Matthew G.; and Kahlin, Erik B., 3,779,003.

Kahn, Louis Lazare. Marine missiles for destruction of submarine targets. 3,779,194, Cl. 114-20.00r.

Kaihu, Masaharu; Soeda, Masumitu; and Nakamura, Hirosi, to Kobe Steel, Ltd. Method of connecting aluminum or aluminum alloy members. 3,779,839, Cl. 156-3.000.

Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, to Hoffmann-La Roche Inc. Indoline derivatives. 3,780,062, Cl. 260-326.11r.

Kaiser Industries Corporation: *See—*
Young, Robert R., 3,779,403.

Kaiser, Klaus, to Seitz-Werke G.m.b.H. Filling element for counter pressure filling machines. 3,779,293, Cl. 141-39.000.

Kalister, Gary B., 1/2 to Napoleon Spring Works, Inc. and Kilcon, Inc. Cone apparatus. 3,779,537, Cl. 267-179.000.

Kalle Aktiengesellschaft: *See—*
Bock, Hartmut, 3,780,299.

Kallio, Kauko: *See—*
Liuhanen, Heikki; and Kallio, Kauko, 3,779,325.

Kameda, Nobuyuki: *See—*
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,780,090.

Kammann, Werner: *See—*
Kammann, Wilfried, 3,779,364.

Kammann, Wilfried, to Kammann, Werner. Transport device more especially for screen printing machines. 3,779,364, Cl. 198-131.000.

Kanebo Ltd.: *See—*
Kitamura, Shigeo; Nakamoto, Takatugo; Kaziura, Toshihiro; and Kurata, Shuichi, 3,779,048.

Kanetsuki, Koji; Yamaga, Minoru; and Ogawa, Hiromichi, to Matsushita Electric Industrial Co., Ltd. Method of making a nickel positive electrode for an alkaline battery. 3,779,810, Cl. 136-29.000.

Kansas State University Research Foundation: *See—*
Tsen, Cho C.; and Hoover, William J., 3,780,188.

Kao, James T. F.: *See—*
Berolnon, Charles R.; and Kao, James T. F., 3,780,162.

Kapron, Felix P.; and Keck, Donald B., to Corning Glass Works. Optical waveguide light source coupler. 3,779,628, Cl. 250-96.0wg.

Kapron, Felix P.; and Keck, Donald B., to Corning Glass Works. Light source coupler for optical waveguide. 3,780,295, Cl. 250-199.000.

Karakawa, Kouichi: *See—*
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,524.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,525.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,526.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,527.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,528.

Kariagin, Nikolai; Lathson, Jerry; Hooper, Eric Ralph; Keogh, Jim Cowden, Jr.; and Pagan, Augustine Joseph, to Whittaker Corporation. Telescoping gravity davit. 3,778,855, Cl. 9-41.000.

Karman, Harvey, to Medical Concepts, Inc. Forceps. 3,779,248, Cl. 128-321.000.

Kartlapp, Gerhard: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Kartlapp, Gerhard; Forst, Wilhelm; and Schrodter, Hermann, 3,780,164.

Kasahara, Takeshi: *See—*
Ogawa, Yoshikatsu; Hisada, Haruhiko; and Kasahara, Takeshi, 3,780,142.

Kaspers, Helmut: *See—*
Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,780,089.

Kastrup og Holmegaards Glasvaerker A/S: *See—*
Jorgenso, Torben, 3,779,356.

Kates, Frank F.: *See—*
Faber, George E.; and Kates, Frank F., 3,779,013.

Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, to Yamasa Shoyu Kabushiki Kaisha. Production of polynucleotides. 3,779,867, Cl. 195-28.000.

Kattentidt, Hinrich: *See—*
Magdhuber, Kurt; and Kattentidt, Hinrich, 3,779,675.

Kauer, George C., Jr.; and Brooks, Louis E., to Air Techniques Incorporated. Apparatus and process for the fractionation by the adsorption of a compressed gas. 3,778,967, Cl. 55-21.000.

Kavanaugh, Daniel E., Jr., to Mail Express, Inc. Vehicle unloading apparatus. 3,779,405, Cl. 214-46.000.

Kaw, Predhiman K.; and Dawson, John M., to United States of America, Atomic Energy Commission. External control of ion waves in a plasma by high frequency fields. 3,779,864, Cl. 176-1.000.

Kawakita, Takao: *See—*
Keda, Hiroshi; and Kawakita, Takao, 3,779,918.

Kawamura, Takeji. Devices for automatically feeding spare cartridge into the firing chamber of shotguns. 3,779,131, Cl. 89-191.00a.

Kawasaki, Kikuo: *See—*
Nitta, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, 3,780,349.

Kawecki Berylco Industries, Inc.: *See—*
Denny, John P.; Solbach, Robert C.; and Jagaciak, Pen George J., 3,779,713.

Kaweski Berylco Industries, Inc.: *See—*
Gustison, Robert A., 3,779,717.

Kayaba Kogyo Kabushiki Kaisha: *See—*
Shigeno, Shuichi; and Ishii, Masayoshi, 3,779,399.

Kayashi, Kiyohide: *See—*
Adachi, Toshio; and Kayashi, Kiyohide, 3,779,740.

Kazan, Benjamin, to International Business Machines Corporation. Field-effect storage tube with bas-discharge output. 3,780,337, Cl. 315-12.000.

Kaziura, Toshihiro: *See—*
Kitamura, Shigeo; Nakamoto, Takatugo; Kaziura, Toshihiro; and Kurata, Shuichi, 3,779,048.

Keafer, Lloyd S., Jr.; Burcher, Ernest E.; and Kopia, Leonard P., to United States of America, National Aeronautics and Space Administration. Transmitting and reflecting diffuser. 3,779,788, Cl. 117-33.300.

Keck, Donald B.: *See—*
Kapron, Felix P.; and Keck, Donald B., 3,779,628.
Kapron, Felix P.; and Keck, Donald B., 3,780,295.

Keda, Hiroshi; and Kawakita, Takao, to Sumitomo Electric Industries, Ltd. Lubricant-containing polymeric synthetic resin composition. 3,779,918, Cl. 252-12.006.

Kee, David Montgomery, to Micromatic Systems Limited. Microwave heating apparatus. 3,780,251, Cl. 219-10.550.

Keller, George Crawford: *See—*
Lefforge, John William; and Keller, George Crawford, 3,779,965.

Kelly, Samuel T., to Robertshaw Controls Company. Pressure regulator. 3,779,274, Cl. 137-505.000.

Kelly, William F. Chuck assembly. 3,778,868, Cl. 24-115.00r.

Kendall Company, The: *See—*
Samour, Carlos M.; and Richards, Mildred C., 3,780,092.

Kenki Insatsu Kabushiki Kaisha: *See—*
Yamamura, Yoshinobu, 3,779,140.

Kennedy, Alexander W.: *See—*
Hamilton, Donald N.; and Kennedy, Alexander W., 3,779,815.

Kennedy, C. Trowbridge; Stout, David J.; and Dodds, Harold E., to Thiokol Chemical Corporation. Coated woven textile product and process therefor. 3,779,799, Cl. 117-161.0uz.

Kennedy, Clifford F.: *See—*
Hoffman, Edward H.; and Kennedy, Clifford F., 3,779,340.

Kennicutt, Robert B.; Sitton, Ellis A.; and Yancey, John W., to Caterpillar Tractor Company. Mounting device for rotatable members. 3,779,615, Cl. 305-10.000.

Kensrue, Milo M. Power propelled welding and cutting apparatus. 3,779,444, Cl. 228-4.000.

Keogh, Jim Cowden, Jr.: *See—*
Kariagin, Nikolai; Lathson, Jerry; Hooper, Eric Ralph; Keogh, Jim Cowden, Jr.; and Pagan, Augustine Joseph, 3,778,855.

Kerr-McGee Chemical Corporation: *See—*

Schlaudroff, Leo M., 3,778,890.

Kerschner, Paul M.; Badin, Elmer J.; and Cresti, Aldo, to Cities Service Oil Company. Nitrogen-containing carbohydrate derivatives and hydrocarbon fuel compositions containing same. 3,779,724, Cl. 44-63.000.

Kerschner, Paul M., to Cities Service Company. Polybromocycloaliphatic ethers as flame retardant plasticizers. 3,779,978, Cl. 260-33.02r.

Kerttula, Into Isak; and Jaatinen, Per Arno. Continuous action sheet press. 3,779,686, Cl. 425-371.000.

Kesler, Sidney B., Jr., to Reynolds Metals Company. Apparatus for removing treating liquids from treated metal strip products. 3,778,862, Cl. 15-306.400.

Keuchel, Herbert W.; and Polestak, Walter J., to Celanese Corporation. Conjugate spinning process. 3,780,149, Cl. 264-186.000.

Khelghatian, Habet M.; Jezl, James L.; and Hague, Louise D., to Standard Oil Company. Process to reduce the amount of low-molecular-weight and amorphous polymers formed during the preparation of olefin copolymers. 3,780,136, Cl. 260-878.00b.

Kibler, Charles J.; and Lappin, Gerald R., to Eastman Kodak Company. Polyesters and polyesteramides containing ether groups and sulfonate groups in the form of a metallic salt. 3,779,993, Cl. 260-75.00s.

Kidd, Wayne L., to Xerox Corporation. Heating apparatus for scan lamp. 3,779,640, Cl. 355-8.000.

Kieley & Mueller, Inc.: *See—*
O'Connor, Joseph, Jr., 3,779,514,

Kienle, Richard F.: *See—*
Golze, Richard R.; and Kienle, Richard F., 3,779,592.

Kilcon, Inc.: *See—*
Kalister, Gary B., 3,779,537.

Killark Electric Manufacturing Company: *See—*
Kaesser, Glenda F.; and Zavertnik, Marshall G., 3,779,078.

Kime, Harry E., Jr.: *See—*
Hiss, Roger A.; and Kime, Harry E., Jr., 3,779,858.

Kimura, Ryuichi, to Mikuni Kogyo K. K. Differential diaphragm carburetor. 3,779,529, Cl. 261-35.000.

King, Jack E. Post puller. 3,779,516, Cl. 254-30.000.

King, Lloyd H., Sr. Drainage valve structure. 3,779,276, Cl. 137-512.400.

King, Roger P., to Libby-Owens-Ford Company. Heat sink for tubular conveyor rolls. 3,779,735, Cl. 65-356.000.

Kinner, James L.: *See—*
Wasielewski, Leonard; and Kinner, James L., 3,779,544.

Kinney, Thomas D.; and Pickett, John E. P. Apparatus for embedding electron microscopy tissue. 3,779,681, Cl. 425-160.000.

Kirby, James D.; Hetzel, Douglas R.; McKay, Richard H.; Snydacker, James U.; and Ziebold, Paul G., to Thornber, Frank, Co. Electronic voting machine. 3,779,453, Cl. 235-54.00f.

Kirchgessner, Robert W., to Applied Communication Inc. Portable viewing theater. 3,779,634, Cl. 353-17.000.

Kirton, Joseph M. Locking finger sealed cap. 3,779,412, Cl. 215-9.000.

Kishi, Saburo: *See—*
Ueno, Ryuzo; Miyazaki, Tetsuya; Inamine, Shigeo; and Kishi, Saburo, 3,779,796.

Kitahara, Teruyoshi: *See—*
Nakazawa, Narihiko; Nakamura, Taiji; Kitahara, Teruyoshi; and Habuka, Yoshio, 3,779,645.

Kitamura, Kazuo; Takahayashi, Fumiki; and Yamada, Setsuo, to Teijin Limited. Process for dyeing fibers or fabrics of aromatic polyamides. 3,779,705, Cl. 8-173.000.

Kitamura, Shigeo; Nakamoto, Takatugo; Kaziura, Toshihiro; and Kurata, Shuichi, to Kaneho Ltd. Apparatus for centrifugal hydroextraction combined with oiling of textile pirns. 3,779,048, Cl. 68-150.000.

Kitaoka, Yoji: *See—*
Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, 3,779,691.

Kittredge, Thomas D.: *See—*
Pressman, Gerald L.; and Kittredge, Thomas D., 3,780,376.

Kitzing, Rainer; Marthaler, Max; and Oetiker, Alfred, to Ciba-Geigy AG. Optical filter layer. 3,779,937, Cl. 252-300.000.

Kiyokuni, Nobuaki: *See—*
Nitta, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, 3,780,349.

Kjolberg, Sven Arne: *See—*
Gudmundsen, Sigmund; Ronaess, Egil; Kjolberg, Sven Arne; and Mejdell, Glor Thorvald, 3,779,870.

Klar, Erhard: *See—*
Nadkarni, Anil V.; and Klar, Erhard, 3,779,714.

Klar, Erich, to Siemens Aktiengesellschaft. Apparatus for measuring the neutron flux in a nuclear reactor. 3,780,292, Cl. 250-390.000.

Klees, Garry W., to Boeing Company, The. Annulus inverting valve. 3,779,282, Cl. 137-625.460.

Kleigman, Jonathan Morris; and Barnes, Robert Keith, to Union Carbide Corporation. Glycolates from acetals. 3,780,087, Cl. 260-468.00k.

Klein, Gerald B. Flex tab for a gated can lid. 3,779,417, Cl. 220-27.000.

Klemm, Kurt, to BYK Gulden Lomberg Chemische Fabrik GmbH. Acylated anilino-carboxylic acids and their salts. 3,780,095, Cl. 260-518.00a.

Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., to Dayco Corporation. Method of continuously manufacturing flexible conduit. 3,779,846, Cl. 156-144.000.

Klockow, Michael: *See—*
Irmscher, Klaus; Klockow, Michael; Mehrhof, Werner; Pfitzner, Klaus; Randau, Deeter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,780,171.

Klutchko, Sylvester; Shavel, John, Jr.; and von Strandtmann, Maximilian, to Warner-Lambert Company. Benzofuro (2,3-C) pyrroles. 3,780,060, Cl. 260-326.05b.

Knapp, Hans John. Continuous process for producing consolidated lignocellulosic material. 3,779,843, Cl. 156-64.000.

Knapp, Lester L.: *See—*
Russell, Allen S.; and Knapp, Lester L., 3,779,699.

Knapp, Malcolm Hubert: *See—*
Barnes, Thomas Carl; and Knapp, Malcolm Hubert, 3,779,345.

Knapp, Peter A. Cylinder end assembly. 3,778,881, Cl. 29-401.000.

Knapsack Aktiengesellschaft: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Kartlapp, Gerhard; Forst, Wilhelm; and Schrodter, Hermann, 3,780,164.

Knaus, Ernest; and Milhoan, Francis M., to Goodyear Tire & Rubber Company, The. Towable floating storage container. 3,779,196, Cl. 114-74.00t.

Knaus, Ernest, to Goodyear Tire & Rubber Company, The. Fluid container. 3,779,420, Cl. 220-63.00r.

Knell, Martin, to Ciba-Geigy Corporation. Alkylhydroxybenzylamides. 3,780,103, Cl. 260-559.00a.

Knochel, William J.; Werner, Leo C.; and Lin, Francis C. M., to Westinghouse Electric Corporation. Apparatus and method for eliminating microcracks in alumina ceramic discharge devices. 3,780,331, Cl. 313-219.000.

Knudsen, Bjarne, to Rivenaes, Ivar. Cleaning internal combustion engines or the like. 3,779,213, Cl. 123-1.00r.

Kobayashi, Jiro: *See—*
Chiba, Toshio; Yonezawa, Teruhiko; Kobayashi, Jiro; and Akashi, Goro, 3,779,775.

Kobe Steel, Ltd.: *See—*
Kaihu, Masaharu; Soeda, Masumitu; and Nakamura, Hirosi, 3,779,839.

Kobylarz, Lawrence P.: *See—*
Kondur, Nicholas, Jr.; and Kobylarz, Lawrence P., 3,780,264.

Koch, Karl: *See—*
Hoyt, John; Koch, Karl; and Williams, Mathew, Jr., 3,780,004.

Koch, Wolfgang: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,780,062.

Kocher, Hans; and Schmid, Peter, to Societe Suisse pour l'Industrie Horlogere Management Services SA. Date-indicating device for a calendar timepiece. 3,779,001, Cl. 58-58.000.

Kodama Brothers Co., Ltd.: *See—*
Okui, Sakujiro, 3,778,924.

Koenen, Gunter; and Szczepanek, Alfred. Stabilizer-luhricant combinations for halogen-containing polymers. 3,779,962, Cl. 260-23.0xa.

Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, to Agfa-Gevaert Aktiengesellschaft. Continuous photographic emulsion processing. 3,779,518, Cl. 259-18.000.

Kohayashi, Sadao: *See—*
Inose, Fumiyuki; Inui, Tomoji; Kohayashi, Sadao; and Shibata, Shotaro, 3,780,314.

Kohn, Leo S.; and Smearing, Robert W., to General Electric Company. Epoxy resin compositions. 3,779,950, Cl. 260-2.0ec.

Kohnstamm, H., Company, Inc.: *See—*
Broderick, James J.; and Marcus, Seymour A., 3,780,184.

Koivunen, Lakki A., to General Motors Corporation. Hydrostatic tilt box bearing. 3,779,137, Cl. 91-489.000.

Kokokawa, Masaru: *See—*
Nohira, Hidetaka; and Kokokawa, Masaru, 3,779,014.

Koland, David G.: *See—*
Westergren, George A.; Koland, David G.; and Crooks, Stanley R., 3,778,863.

Kolyer, John H.; and Kveglis, Albert A., to Allied Chemical Corporation. Diphenol containing polyestcrs derived from tris (2-hydroxyalkyl) isocyanurates. 3,780,133, Cl. 260-857.00r.

Kondo, Fiji; Mitsugi, Takashi; and Tori, Kazuo, to Shionogi I. A., Ltd. Biochemical aldosierune synthesis. 3,780,026, Cl. 260-239.55r.

Kondo, Shigeru. Compression plate for osteosynthesis. 3,779,240, Cl. 128-92.00d.

Kondur, Nicholas, Jr.; and Kobylarz, Lawrence P., to Burroughs Corporation. Electromagnetic read/write apparatus for stationary cards. 3,780,264, Cl. 235-61.11d.

Konfino, Eliezer: *See—*
Yellini, Haim; Konfino, Eliezer; and Gan, Ramat, 3,780,067.

Konishi, Masataka; and Tsukiura, Hiroshi, to Bristol-Myers Company. Derivatives of gentamicin C_1. 3,780,018, Cl. 260-210.0ab.

Kono, Akiro; and Nozawa, Yoshiharu, to Vlvac Corporation and Research Development Corporation of Japan. Process for making a V_3 Ga superconductive composite structure. 3,778,894, Cl. 29-599.000.

Koomey, Paul C.; and De Vries, Douwe. Apparatus for making and breaking an electrical underwater connection between releasable underwater members. 3,780,243, Cl. 200-82.00r.

Koons, Harold F.: *See—*
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., 3,779,689.

Kopia, Leonard P.: *See—*

Keafer, Lloyd S., Jr.; Burcher, Ernest E.; and Kopia, Leonard P., 3,779,788.
Koppers, Manfred, to Rheinstahl AG. Shield roof support. 3,779,023, Cl. 61-45.00d.
Koren, Jan, 10% interest to Lee, Raymond, Organization, Inc., The. Slide rule for electronic analysis. 3,779,454, Cl. 235-70.00a.
Kormer, Vitaly Abramovich: *See—*
Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich, 3,780,078.
Korn, Roland; Seyd, Gunther; and Paulsen, Uwe, to Siemens Aktiengesellschaft. Method for decontamination of surfaces of nuclear reactor components. 3,778,938, Cl. 51-320.000.
Korom, Arpad, to U.S. Philips Corporation. Bistable multivibrator. 3,780,319, Cl. 307-288.000.
Korrenn, Heinz; Voll, Horst; and Grubel, Harald, to Schafer, Kugelfischer Georg, & Co. Astronomical telescope. 3,779,626, Cl. 350-85.000.
Kosar Golf Development Laboratory, Inc., The: *See—*
Taylor, James H., 3,779,559.
Kosseim, Alexander Jean-Marie: *See—*
Kubek, Daniel John; Kosseim, Alexander Jean-Marie; and Somekh, George Solomon, 3,779,904.
Kostick, John M., to Omniversal Design. Structural joint. 3,779,657, Cl. 403-217.000.
Kott, Michael A., to AAI Corporation. Radiation sensitive hit detection arrangement. 3,780,300, Cl. 250-237.00r.
Kozhenets, Tamara Nikolaevna: *See—*
Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich, 3,780,078.
Kracauer, Paul, to American Sweetener Corp. Artificial sweetening composition. 3,780,190, Cl. 426-213.000.
Kraftco Corporation: *See—*
Johnson, John D.; and Southworth, Dean L., 3,780,182.
Kraftwerk Union Aktiengesellschaft: *See—*
Frankenhauser, Georg, 3,780,325.
Kramer, Daniel T. Suction accumulators for refrigeration systems. 3,779,035, Cl. 62-503.000.
Kratt, Kurt: *See—*
Haller, Willi; Lehhere, Richard; and Kratt, Kurt, 3,779,357.
Kratz, Alfred: *See—*
Wisfeld, Werner; Wirth, Hans; Lotz, Walter; and Kratz, Alfred, 3,779,909.
Krause, Erich: *See—*
Schieber, Hans; and Krause, Erich, 3,779,044.
Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber K.G. Device for spreading of the knitting on flat-bed knitting machines. 3,779,045, Cl. 66-147.000.
Krenke, Norman O.: *See—*
Elson, Ronald D.; Krenke, Norman O.; and Ingram, Charles E., 3,779,363.
Kresge, Edward N.; and Baldwin, Francis P., to Esso Research and Engineering Company. Broad molecular weight butyl process. 3,780,002, Cl. 260-85.30r
Kreske, Alvin, Jr. Increased traction racing motor vehicle. 3,779,324, Cl. 180-1.00r.
Krings, Peter: *See—*
Altenschopfer, Theodor; Batka, Heimold; Jakobi, Gunter; Krings, Peter; and Lehmann, Hans-Jurgen, 3,779,934.
Kritzberg, Nathan L., and Gardner, Richard, to Psychotherapeutic Devices, Inc. Psychological testing and therapeutic board game apparatus. 3,779,557, Cl. 273-135.00d.
Krogsrod, Harald, to Elkem A/S Rotatable gastight valve. 3,779,510, Cl. 251-301.000.
Krohn, Hellmut: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg, Grossner, Horst, Krohn, Hellmut; and Stein, Hermann, 3,779,331.
Krun Corporation: *See—*
Faber, George E.; and Kates, Frank F., 3,779,013.
Kruse, William E.: *See—*
Godley, Augustus P., and Kruse, William E., 3,779,025.
Kubek, Daniel John, Kosseim, Alexander Jean-Marie, and Somekh, George Solomon, to Union Carbide Corporation. Process for the separation of aromatic hydrocarbons from a mixed hydrocarbon feedstock. 3,779,904, Cl. 208-333.000.
Kubik, Peter Steve: *See—*
Hagelbarger, David William, and Kubik, Peter Steve, 3,780,267
Kucera, Clare H., to Dow Chemical Company, The. Acid composition and use thereof in treating fluid-bearing geologic formations. 3,779,915, Cl. 252-8.55c
Kuchenmeister, Rolf: *See—*
Dhein, Rolf, Meissner, Hans-Jurgen, and Kuchenmeister, Rolf, 3,779,961.
Kuesters, Eduard. Web-treatment rollers of polyurethane. 3,779,051, Cl. 68-248.000.
Kugler, Carl J., Jr.: *See—*
Thompson, Leon J., Kugler, Carl J., Jr.; and Latta, Garland H., 3,780,274.
Kuhbuss, Herbert F.: *See—*
Jackson, Winston J.; Kuhbuss, Herbert F.; and Caldwell, John R., 3,780,148.
Kuhle, Engelbert: *See—*
Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,780,089.
Kuhlman, Harvey G. Food applicator. 3,779,205, Cl. 118-24.000.
Kuhn, Karl Walter. Device for interlinking the upper spring-caps of two mutually adjacent internal-combustion-engine valves. 3,779,217, Cl. 123-41.410.
Kulberg, Gerardus Huibrecht; and Deinert, Roedolf Hendrik, to Searle, G. D., & Co. Quench correction in liquid scintillation counting. 3,780,289, Cl. 250-362.000.
Kumura, Kazumi: *See—*
Fujiki, Konoshuke; Inafuku, Katsuaki; Shimizu, Hiroshi; Shigematsu, Toshiharu; and Kumura, Kazumi, 3,779,821.
Kuninaka, Akira: *See—*
Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, 3,779,867.
Kunitoku, Sadayoshi, to Nishitetsu Sangyo Co., Ltd. Automatic pencil for drawing a line. 3,779,652, Cl. 401-50.000.
Kunkel, Wolfgang: *See—*
Kabisch, Gerhard; and Kunkel, Wolfgang, 3,780,168.
Kuntz, Egon; Esser, Paul; and Muschelknautz, Egar, to Bayer Aktiengesellschaft. Drying of moist material. 3,778,907, Cl. 34-57.00r.
Kuper, Donald G.: *See—*
Doss, Richard C.; and Kuper, Donald G., 3,780,097.
Kurashiki Boseki Kabushiki Kaisha; a/k/a Kurabo Industries Ltd.: *See-See—*
Tatebe, Masaharu, 3,779,161.
Kurata, Shuichi: *See—*
Kitamura, Shigeo; Nakamoto, Takatugo; Kaziura, Toshihiro; and Kurata, Shuichi, 3,779,048.
Kurata, Takao; and Oritani, Atsushi, to Fujitsu Limited. Transistorized comparator circuit. 3,780,317, Cl. 307-235.00r.
Kurihara, Satoshi: *See—*
Hasegawa, Fumio; Emoto, Takeo; and Kurihara, Satoshi, 3,779,767.
Kurosawa, Takuzo: *See—*
Tagawa, Katsuhiro; and Kurosawa, Takuzo, 3,779,224.
Kurz, Dietrich; and Oser, Gerhard, to Daimler-Benz Aktiengesellschaft. Mechanism for locking shifting members in change-speed transmissions. 3,779,097, Cl. 74-477.000.
Kutzer, Hans-Joachim: *See—*
Fehling, Hans-Reinhard; Hase, Horst; and Kutzer, Hans-Joachim, 3,779,742.
Kuzyk, Roman. Thermal control apparatus. 3,780,263, Cl. 219-501.000.
Kveglis, Albert A.: *See—*
Kolyer, John H.; and Kveglis, Albert A., 3,780,133.
La Barre, Berger A., to Norco Inc. Reversing nut for a diamond thread screw. 3,779,094, Cl. 74-424.08r.
Labbe, Francis Auguste Maurice, to Molins Machine Company, Limited. Cigarettes. 3,779,253, Cl. 131-110.000.
Labedan, Pierre, and Masotti, Robert, to PROGIL. Apparatus and method for cathode sputtering on the two sides of a metallic support having large dimensions. 3,779,885, Cl. 204-192.000.
Laboratorium fur Adsorptionstechnik GmbH: *See—*
Wisfeld, Werner, Wirth, Hans; Lotz, Walter; and Kratz, Alfred, 3,779,909.
Lachmann, Hans Peter, to Clouth Gummuwerke AG. Buffer or fender 3,779,536, Cl. 267-140.000.
Lagain, Georges. Sheet material cutting apparatus. 3,779,121, Cl. 83-614.000
Laing, Nikolaus. Cooling device for semiconductor components. 3,780,356, Cl. 317-234.00r
Lalk, Robert H.: *See—*
Evani, Syamalarao; and Lalk, Robert H., 3,779,970.
Landau, Adela: *See—*
Grunwald, John J.; Solminski, Leo J., Landau, Adela; and Shah, Dilip G., 3,779,842.
Landsman, Robert M., to Perkin-Elmer Corporation, The. Radiation etchable plate. 3,779,779, Cl. 96-363.000.
Landwer, Donald C.; and Lorenz, Allan A., to Teletype Corporation. Data transmitting systems. 3,779,321, Cl. 178-66.00r.
Lang, Jack H. Art paint saver. 3,779,369, Cl. 206-1.800.
Lang, Manfred, to Siemens Aktiengesellschaft. Holographic recording with two groups of differently oriented plane polarized object illumination beams. 3,779,625, Cl. 350-3.500.
Langager, Bruce A., to Minnesota Mining and Manufacturing Company. Poly(hexasubstituted melamines). 3,779,997, Cl. 260-77.50r.
Langan, Joseph E.: *See—*
Sanger, David M.; and Langan, Joseph E., 3,780,350.
Langen, H. J., & Sons Ltd.: *See—*
Langen, Marinus J. M.; and Langen, Jacobus J., 3,778,959.
Langen, Jacobus J.: *See—*
Langen, Marinus J. M.; and Langen, Jacobus J., 3,778,959.
Langen, Marinus J. M.; and Langen, Jacobus J., to Langen, H. J., & Sons Ltd. End loaders. 3,778,959, Cl. 53-26.000.
Langer, Arthur W., Jr.: *See—*
Langer, Herbert R.; and Langer, Arthur W., Jr., 3,780,191.
Langer, Herbert R.; and Langer, Arthur W., Jr. Process for reducing the fat content of meats. 3,780,191, Cl. 426-231.000.
Langwell, John D. Means for detachable support of keys within a pocket of an article of clothing. 3,779,053, Cl. 70-456.00r.
Lansdale, William M.: *See—*
Wheeler, Henry H., 3,780,167.
Lappin, Gerald R.: *See—*

Kibler, Charles J.; and Lappin, Gerald R., 3,779,993.
Larios, Dennis Gary; and Wilhauer, Cecil Eldon. Adjustable backing and framing tool. 3,779,515, Cl. 254-16.000.
Larsen, Eric R.: *See—*
Exner, Jurgen H.; Larsen, Eric R.; and Gunsher, Jeffrey A., 3,779,984.
Lathson, Jerry: *See—*
Kariagin, Nikolai; Lathson, Jerry; Hooper, Eric Ralph; Keogh, Jim Cowden, Jr.; and Pagan, Augustine Joseph, 3,778,855.
Latta, Garland H.: *See—*
Thompson, Leon J.; Kugler, Carl J., Jr.; and Latta, Garland H., 3,780,274.
Lau, Edward: *See—*
Wolf, Edgar; and Lau, Edward, 3,779,485.
Lau, Philip T. S., to Eastman Kodak Company. Phenol color couplers. 3,779,763, Cl. 96-55.000.
Lauro, Michael J. Electrical monitoring and management system for airborne ordnance. 3,779,129, Cl. 89-1.50r.
Laurtech International Company, mesne: *See—*
Brane, Earl P., 3,779,281.
Lavash, John Paul, to General Electric Company. Fuel delivery and control system for a gas turbine engine. 3,779,007, Cl. 60-39.28r.
Law, Clement R.: *See—*
Law, Clement R., 3,780,202.
Law, Clement R., to Law, Clement R. and Law, Joseph F. Mounting bracket for pickup in a stringed, musical instrument. 3,780,202, Cl. 84-1.004.
Law, Joseph F.: *See—*
Law, Clement R., 3,780,202.
Lawrence, Geoffrey Lloyd, to Zenith Carburetter Company Limited, The. Carburetors. 3,779,530, Cl. 261-44.00r.
Lawser, John J., to Ford Motor Company. Gas liquid separator for use in a refrigeration system. 3,778,984, Cl. 55-333.000.
Lawson, Leslie Edward; and Smith, Peter John, to Howson-Algraphy Limited. Lithographic printing plates with lacquer of resole-epoxy resin combination. 3,779,759, Cl. 96-33.000.
Lazzarotti, S. James: *See—*
Wojtowicz, Edward A.; Hunter, James R.; and Lazzarotti, S. James, 3,779,546.
Le Count, David James, and Squire, Christopher John, to Imperial Chemical Industries Limited. 1-(Cyanoalkoxy) phenoxy-3-amino-2-propanols. 3,780,081, Cl. 260-465.00e.
Leader, John Henry: *See—*
Schuftan, Paul Maurice; Armond, John Walter; Leader, John Henry; and Davis, George James, 3,779,028.
Leaffer, Morris A.: *See—*
Acton, Edward M.; Leaffer, Morris A.; and Stone, Herbert, 3,780,194.
Leanza, William J.: *See—*
Christensen, Burton G.; and Leanza, William J., 3,780,031.
Lear Motors Corporation: *See—*
Greenwell, Jack E., 3,780,324.
Leas Brothers Development Corporation: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,779,893.
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., to Leas Brothers' Development Corporation. Production of desulfurized liquids and gases from coal. 3,779,893, Cl. 208-10.000.
Leas, Robert L.: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,779,893.
Lebhere, Richard: *See—*
Haller, Willi; Lebhere, Richard; and Kratt, Kurt, 3,779,357.
Leboutet, Hubert, to Thomson-CSF. Vacuum tube for generating a wide beam of fast electrons. 3,780,334, Cl. 313-299.000.
Lee, Raymond, Organization, Inc., The: *See—*
Koren, Jan, 3,779,454.
Wallen, Raymond Allen, Sr., 3,779,175.
Lee, Robert E.; McDermott, Philip S.; and Pan, Edward S., to International Business Machines Corporation. Infrared sensitive semiconductor device and method of manufacture. 3,779,803, Cl. 117-211.000.
Leeds & Northrop Company: *See—*
Turrell, Douglas Walter, 3,780,273.
Leesona Corporation: *See—*
Cowan, Larry Clyde, 3,779,267.
Lefebvre, Henri: *See—*
Marechal, Freddy; and Lefebvre, Henri, 3,780,086.
Lefforge, John William; and Keller, George Crawford, to Grace, W. R., & Co. Extruded disc gasket for alcoholic beverage bottle cpas. 3,779,965, Cl. 260-28.50b.
Legrandgerard, Jean Marcel, to ADAR (Hauts-de-Seine). Valves with replaceable packing. 3,779,271, Cl. 137-315.000.
Lehman, Ivan L., to International Equipment Company. Flexible shaft stabilizer. 3,779,451, Cl. 233-23.00a.
Lehmann, Hans-Jurgen: *See—*
Altenschopfer, Theodor; Batka, Heimold; Jakobi, Gunter; Krings, Peter; and Lehmann, Hans-Jurgen, 3,779,934.
Leibert, Edward E. Liftoff and landing distance indicator. 3,779,455, Cl. 235-95.000.
Leifeld & Co.: *See—*
Schroder, Paul B., 3,779,060.
Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Mounting of very large tires. 3,779,301, Cl. 157-1.170.
Lemelson, Jerome H. Welding apparatus. 3,779,446, Cl. 228-15.000.
Lentz, Norman Eugene, to Bell Telephone Laboratories, Incorporated. Linear discharge circuit. 3,780,321, Cl. 307-304.000.
Leonard, William J., Jr., to Shell Oil Company. Metal-containing polymers. 3,779,952, Cl. 260-2.50r.
Leroux, Jean-Marie: *See—*
Aupoix, Marcel; Moisson-Franckhauser, Francois; Leroux, Jean-Marie; and Prost, Roger, 3,780,205.
Leroy, Pierre; Gombert, Marcel, Queuleu, Metz; and Sprunck, Emile, to Creusot-Loire a Societe Anonyme. Device for cooling a tuyere of a refining converter. 3,779,534, Cl. 266-41.000.
Lesher, Herbert, to Du Pont de Nemours, E. I., and Company. Tube and package making methods. 3,778,961, Cl. 53-28.000
Leshin, Richard; and Cox, William L., to Goodyear Tire & Rubber Company, The. Process of preparing an amino thiazolyl disulfide using wet 2-mercaptobenzothiazole. 3,780,038, Cl. 260-247.001.
Lesser, Joseph H.: *See—*
Singhal, Gophal H.; and Lesser, Joseph H., 3,780,056.
LeSuer, William M., to Lubrizol Corporation, The. Barium-containing dispersions and process. 3,779,922, Cl. 252-34.00f.
Levin, Gilbert V., to Biospherics Incorporated. Plastic moving-surface treatment of sewage. 3,779,906, Cl. 210-7.000.
Levin, Igor Anatolievich. Electric system of a device for deicing the surface of thinwalled structures. 3,779,488, Cl. 244-134.00a.
Levine, Arnold M., to International Telephone and Telegraph Corporation. Optical system for television camera. 3,780,224, Cl. 178-7.200.
Levine, Harold A.: *See—*
Gipstein, Edward; Hewett, William Ainslie; and Levine, Harold A., 3,779,806.
Levine, Melvin, to American Cystoscope Makers, Inc. Valve. 3,779,513, Cl. 251-309.000.
Levinson, Gerald S., to Shell Oil Company. Hydroconversion process with a catalyst having a hydrogenation component composited with a high density alumina. 3,779,903, Cl. 208-254.00h.
Lewis, Brynley; Miller, George Langham; Brooks, Kenneth John; and Goss, Arthur George, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in her Britannic Majesty's Government of the. Flame shield for a gas turbine engie. 3,779,006, Cl. 60-39.110.
Lewis, Gordon Manns; and Hooker, Stanley George, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Gas turbine engines. 3,779,486, Cl. 244-53.00r.
Lewis Industries, Inc.: *See—*
Lewis, Jerome A., 3,779,376.
Lewis, Jerome A., to Lewis Industries, Inc. Shipping and storage container for casket interiors. 3,779,376, Cl. 206-65.00r.
Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, to Johnson Service Company, Fives Lille-Cail and Installation for continuous ingot casting. Environmental air distribution control system powered by system pressure. 3,779,275, Cl.137-505.180 5'11/22/71 8'20.
Lhomore, Pierre; Cohen, Guy; and Jacquinot, Bernard, to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques. Process for producing nitroparaffins. 3,780,115, Cl. 260-644.000.
Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., to Esso Research and Engineering Company. Liquid membrane process for the separation of aqueous mixtures. 3,779,907, Cl. 210-22.000.
Libby-Owens-Ford Company: *See—*
King, Roger P., 3,779,735.
Swift, Howard R.; Soreghy, Ivan L.; Thacker, George N.; Thomas, Lazarus D.; Mattimoe, Paul T.; and Motter, Theodore J., 3,779,878.
Licentia Patent-Verwaltung G.m.b.H.: *See—*
Mudsam, Udo; Reuter, Ernst; and Maslowski, Stefan, 3,780,266.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Daublebsky, Peter; and Zeitzschel, Gunter, 3,779,134.
Lidington, Frederick Charles, to Weathersheilds Limited. Sliding roofs and vehicles. 3,779,598, Cl. 296-137.000.
Liebman, Harmon L.; and Liebman, Shirley A., to Armstrong Cork Company. Poly (vinyl chloride) monopolymer composites-freeze-dry technique for preparation. 3,779,980, Cl. 260-34.002.
Liebman, Shirley A.: *See—*
Liebman, Harmon L.; and Liebman, Shirley A., 3,779,980.
Lilly, Eli, and Company: *See—*
Cebalo, Tony; and Miesel, John L., 3,780,052.
Gale, Richard M.; and Lively, David H., 3,780,016.
Hamill, Robert L.; Haney, Michael E., Jr.; and Stark, William Max, 3,780,174.
Miesel, John L., 3,780,053.
Miesel, John L., 3,780,054.
Lilly Industries, Limited: *See—*
Evans, Delme, 3,780,020.
Lilly Industries, Ltd.: *See—*
Wildsmith, Eric, 3,780,019.
Lin, Francis C. M.: *See—*
Knochel, William J.; Werner, Leo C.; and Lin, Francis C. M., 3,780,331.
Lin, Yeong S.; and Yao, Ying L., to International Business Machines Corporation. Threshold logic using magnetic bubble domains. 3,780,312, Cl. 307-88.01c.
Lind, Larry W., to Cubic Corporation. Apparatus for sensing embossed indicia. 3,780,265, Cl. 235-61.11c.

Lindblad, Stig Martin. Locking device for a winding up safety belt for vehicles. 3,779,479, Cl. 242-107.400.

Lindblom, Robert C.: *See—*
Camp, Carolyn J.; and Lindblom, Robert C., 3,779,982.

Lindstaedt, Horst Karl; and Webb, Edwin James, to Masson Scott Thrissell Engineering Limited. Curl corrector apparatus for operating on a continuous web. 3,779,138, Cl. 93-1.00r.

Linskey, John R. Smoker's pipe. 3,779,254, Cl. 131-198.00r.

Lipha Lyonnaise Industrielle Pharmaceutique: *See—*
Bayssat, Michel; Fontaine, Louis; and Grand, Marcel, 3,780,102.

Litt, Arnold D.; and Engelhart, John E., to Esso Research and Engineering Company. Certain 2-(thiazol-2-yl)-3,5-dioxo-4-methyl -1,2,4-thiadiazolidines. 3,780,051, Cl. 260-306.80f.

Littlehorn, John J., Jr. Portable ski lift drive mechanism. 3,779,171, Cl. 104-173.000.

Littlejohn, Callion. Units for connecting together successive ladder sections. 3,779,343, Cl. 182-163.000.

Litton Systems, Inc.: *See—*
Crapuchettes, Paul Wythe, 3,780,252.

Liu, Joseph K.; and Douek, Maurice, to Gulf Oil Canada Limited. Interpolymerization of ethylene with other vinyl monomers in aqueous emulsion. 3,779,992, Cl. 260-63.0uy.

Liuhanen, Heikki; and Kallio, Kauko, to Valmet Oy. Motor guard. 3,779,325, Cl. 180-1.00r.

Lively, David H.: *See—*
Gale, Richard M.; and Lively, David H., 3,780,016.

Livingston, William L., to Factory Mutual Research Corporation. Method of fire protection utilizing independently operable discharge heads. 3,779,317, Cl. 169-1.00a.

Livingston, William L., to Factory Mutual Research Corporation. Discharge head for discharging fluid in two discharge patterns and fire protection system incorporating said head. 3,779,318, Cl. 169-1.00b.

Ljungkull, Gunnar R.: *See—*
Appeldorn, Roger H.; and Ljungkull, Gunnar R., 3,780,285.

Lobach, Mark Iosifovich: *See—*
Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich, 3,780,078.

Local Industries Limited: *See—*
Crosby, Noble Wellington; and Walker, Robert Clinton, 3,780,207.

Lodding Engineering Corporation: *See—*
Goodnow, Ronald F., 3,778,861.

Loftfield, Richard E., to Diamond Shamrock Corporation. Electrolytic cell for the manufacture of oxyhalogens. 3,779,889, Cl. 204-268.000.

Logothetis, Eleftherios Miltiadis: *See—*
Halloway, Henry; and Logothetis, Eleftherios Miltiadis, 3,779,801.

Lohr, Herb R.; and Magos, Toby, Jr., to Akron Standard, division of Eagle-Picher, Industries, Inc. Building drum. 3,779,835, Cl. 156-417.000.

Lohr, James E., to Du Pont de Nemours, E. I., and Company. Primer composition containing epoxide resins, phenol formaldehyde resin, tetraalkyl silicates, and silane coupling agents. 3,780,132, Cl. 260-831.000.

Lombardo, Joseph S., Sr. Quick detachable seat for automobile. 3,779,503, Cl. 248-429.000.

Long, Henry B.: *See—*
Hope, Richard P.; and Long, Henry B., 3,779,367.

Longpre, Mose Walter. Belly protective pan for tractor engine. 3,779,330, Cl. 180-69.100.

Lonning, Thor J. G., to Monsanto Company. Vinyl halide resin compositions containing ABS and MBS graft polymers. 3,780,134, Cl. 260-876.00r.

Loomans, Bernard A., to Baker Perkins Inc. Coupling structure for twin mixer shafts. 3,779,522, Cl. 259-192.000.

Looney, James R.: *See—*
McDougall, Lee A.; Richards, Thomas E.; and Looney, James R., 3,779,935.

Lord, John Garvin, to Cotton, Incorporated. Method of making a durable press garment. 3,778,913, Cl. 38-144.000.

Lorenz, Allan A.: *See—*
Landwer, Donald C.; and Lorenz, Allan A., 3,779,321.

Lorenz, Jerome L., to Ranco Incorporated. Malfunction indicator for exhaust gas recirculation valve. 3,779,222, Cl. 123-119.00a.

Loriers, Jean; and Heindl, Rudolf, to Etablissement Public Agence Nationale de Valorisation de la Recherche. Vitreous compounds with bistable electrical characteristics. 3,779,948, Cl. 252-521.000.

Lotz, Walter: *See—*
Wisfeld, Werner; Wirth, Hans; Lotz, Walter; and Kratz, Alfred, 3,779,909.

Loukidis, Panayotis Coroneou. Self-controlled differential sectionaliser for the protection of low voltage electric power consumers. 3,780,348, Cl. 317-18.00d.

Lowrance, Byron R.: *See—*
Carley, David R.; Lowrance, Byron R.; and Mangham, Jesse Roger, 3,780,118.

Lubrizol Corporation, The: *See—*
LeSuer, William M., 3,779,922.

Lucas, Joseph, (Industries) Limited: *See—*
Cryer, Edward, 3,780,241.

Green, Stanley, 3,779,629.
Holt, William David, 3,780,367.

Luk Lamellen und Kupplungsbau GmbH: *See—*
Maucher, Paul, 3,779,353.

Lundin, Eva. Neck band. 3,778,847, Cl. 2-146.000.

Lybecker, Robert W.; and Wahrmund, Kermit A. Hydraulic driven piston pump. 3,779,671, Cl. 417-393.000.

Lynas, Robert M.: *See—*
Cornyn, William S., Jr.; Dier, Stephen A.; and Lynas, Robert M., 3,779,457.

Lyon, Robert J.: *See—*
Hinely, Douglas M.; and Lyon, Robert J., 3,779,168.

Lyytinen, Timothy J. W. Mobile hospital bathing unit. 3,778,848, Cl. 4-173.000.

Maas, Russell H.: *See—*
Bard, John C.; and Maas, Russell H., 3,780,187.

MacDermid Incorporated: *See—*
Grunwald, John J.; Solminski, Leo J.; Landau, Adela; and Shah, Dilip G., 3,779,842.

MacHenry, Richard; and Chang, Pei Tsing, to FMC Corporation. Method and apparatus for space dyeing strand material. 3,779,704, Cl. 8-149.000.

MacKay, Patrick W.: *See—*
Celada, Joan; MacKay, Patrick W.; and de la Pena, Ramon, 3,779,741.

MacNeil, John Harold, to Pisesky, Michael. Head brace for hockey players. 3,779,549, Cl. 273-1.00b.

Magdhuber, Kurt; and Kattentidt, Hinrich, to Frankfurter Maschinenbau Aktiengesellschaft vormals Pokarny & Whittekind. Drive system for a plurality of worm driven compressors. 3,779,675, Cl. 418-199.000.

Magos, Toby, Jr.: *See—*
Lohr, Herb R.; and Magos, Toby, Jr., 3,779,835.

Mahan, John E., to Phillips Petroleum Company. Solid propellants. 3,779,824, Cl. 149-19.900.

Maier, Elmar, to Hilti Aktiengesellschaft. Nail holder for a setting device operated by explosive force. 3,779,373, Cl. 206-560.00f.

Maierson, Theodore, to National Cash Register Company, The. Method of making container opening structure comprising flexible tape and pressure-rupturable capsule. 3,779,848, Cl. 156-178.000.

Mail Express, Inc.: *See—*
Kavanaugh, Daniel E., Jr., 3,779,405.

Main, Peter George, to Sperry Rand Australia. Identification of signalling lines by scanning. 3,780,229, Cl. 179-18.0ff.

Maisner, Leonard S., to Chase, W. M. Company. Corrosion resistant thermostatic laminate. 3,779,718, Cl. 29-195.500.

Majkpzak, Charles P.; and Folger, Michael S., to International Telephone and Telegraph Corporation. Method of producing a nozzle for a turbogenerator. 3,779,466, Cl. 239-489.000.

Makinen, Alpo Eino. Method for the impregnation and surface treatment of porous board type products. 3,779,797, Cl. 117-116.000.

Mal, N. Kumar: *See—*
Ellis, John L.; Mal, N. Kumar; and Tarkan, Stuart E., 3,779,720.

Malcolm, George D. Suspension systems. 3,779,576, Cl. 280-124.00b.

Malec, Robert E., to Ethyl Corporation. Triphenyl phosphates. 3,780,145, Cl. 260-966.000.

Mallory, P. R., & Co. Inc.: *See—*
Stafford, Richard W.; and Schuder, Maurice E., 3,780,240.

Malmin, Oscar. Hanger form. 3,779,434, Cl. 223-88.000.

Malone, Carl L., to AFA Corporation of Florida, The. Manually actuated liquid spraying device. 3,779,464, Cl. 239-350.000.

Maloney, Albert L.; and Maloney, Holly H. Oral hygienic device. 3,779,256, Cl. 132-93.000.

Maloney, Holly H.: *See—*
Maloney, Albert L.; and Maloney, Holly H., 3,779,256.

Manceau, Marcel. Control equipment for an injection moulding machine. 3,779,680, Cl. 425-145.000.

Mangham, Jesse Roger: *See—*
Carley, David R.; Lowrance, Byron R.; and Mangham, Jesse Roger, 3,780,118.

Mann, Roger H.: *See—*
Snyder, John L.; Papavasiliou, Mary J.; and Mann, Roger H., 3,779,999.

Manning, Harold E., to Petro-Tex Chemical Corporation. Oxidative dehydrogenation in the presence of crystalline, Provoskite type manganese compounds. 3,780,126, Cl. 260-680.00d.

Manning, John C.; and Manning, Mark T. Seismically sensitive safety device. 3,779,262, Cl. 137-38.000.

Manning, Mark T.: *See—*
Manning, John C.; and Manning, Mark T., 3,779,262.

Manufacture de Fils Isoles Faurus (Mafit): *See—*
Goyffon, Roland Abel, 3,779,055.

Mao, George W., to Gould, Inc. Method of making mold for forming objects. 3,779,816, Cl. 148-6.300.

Mara, Glenn L.; and McMaster, Robert C., to United States of America, Atomic Energy Commission. Method for producing spike-free electron beam partial penetration welds. 3,780,256, Cl. 219-121.0er.

Marathon Oil Company: *See—*
Argabright, Perry A.; and Presley, C. Travis, 3,779,940.
Argabright, Perry A.; and Presley, C. Travis, 3,779,968.
Chevalier, Arthur A., 3,779,347.
Norton, Charles J.; and Falk, David O., 3,779,917.

Maravetz, Lester L., to Esso Research and Engineering Company. Herbicidal N-(2-picolyl) substituted 2,6-dinitroanilines. 3,780,046, Cl. 260-294.80f.

Marberg, Bruce W. Stake pocket tie down insert. 3,779,502, Cl. 248-361.00r.

Marcona Corporation: *See—*
Murphy, Emmett J., 3,779,027.

Marcus, Seymour A.: *See—*
Broderick, James J.; and Marcus, Seymour A., 3,780,184.

Marechal, Freddy; and Lefebvre, Henri, to Solvay & Cie. Process for producing adiponitrile by dimerization on an amalgam. 3,780,086, Cl. 260-465.80a.

Marforio, Nerino, to S.p.A. Virginio Rimoldi & C. Air-cooled sewing machine. 3,779,188, Cl. 112-218.00r.

Margerum, Edwin O.: *See—*
Rowland-Hill, Edward William; and Margerum, Edwin O., 3,779,251.

Marion, Thomas E.; and Collins, Richard D., to Maryland Cup Corporation. Method and apparatus for securing a closure member within a container. 3,779,191, Cl. 113-120.00k.

Markova, Viktoria Vladimirovna: *See—*
Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich, 3,780,078.

Marois, Jules. Fire-insulated partition and fireproof container made therewith. 3,779,179, Cl. 109-33.000.

Marquardt, Julius F.: *See—*
Duke, Edward D.; and Marquardt, Julius F., 3,779,329.

Marthaler, Max: *See—*
Kitzing, Rainer; Marthaler, Max; and Oetiker, Alfred, 3,779,937.

Martin, Donald J., to Stauffer Chemical Company. Preparation of organic sulphur compounds. 3,780,113, Cl. 260-609.00r.

Martin, Francis J.: *See—*
Stone, Allan V.; and Martin, Francis J., 3,779,273.

Martin, Gerald; Baccus, James A.; and Gurman, Marvin, to Holiday Recreation Products, Inc. Manually propelled water craft. 3,779,202, Cl. 115-22.300.

Martin, John J.: *See—*
Hadgraft, Robert B.; and Martin, John J., 3,779,857.

Martin, Rex. Electrical switches. 3,780,248, Cl. 200-167.00a.

Martin, Richard W. Glass pane fastening. 3,778,956, Cl. 52-758.00d.

Martin, Waylan C. Water treatment. 3,779,913, Cl. 210-63.000.

Martin, William J.: *See—*
Clark, Eugene V.; Martin, William J.; Plambeck, Peter J.; and Commanday, Maurice R., 3,779,719.

Martinez, Felix Jesus, to Baxter Laboratories, Inc. Bubble trap for removal of bubbles from biological fluids under sterile conditions. 3,778,973, Cl. 55-199.000.

Maruhishi Yuka Kogyo Kabushiki Kaisha: *See—*
Ogawa, Yoshikatsu; Hisada, Haruhiko; and Kasahara, Takeshi, 3,780,142.

Maruoka, Hiroyuki, to Nissan Motor Company, Limited. Exhaust gas treating system for internal combustion engine. 3,779,015, Cl. 60-286.000.

Maruoka, Hiroyuki, to Nissan Motor Company, Limited. Vehicular air-pollution preventive apparatus. 3,779,349, Cl. 192-.092.

Maryland Cup Corporation: *See—*
Marion, Thomas E.; and Collins, Richard D., 3,779,191.

Maslowski, Stefan: *See—*
Mudsam, Udo; Reuter, Ernst; and Maslowski, Stefan, 3,780,266.

Mason, Lowell M., to General Electric Company. Apparatus and method for performing manufacturing operations in an article of manufacture. 3,778,889, Cl. 29-596.000.

Masonite Corporation: *See—*
Spalt, Howard A.; Chu, Chung Ying; and Niketas, Paul, 3,780,017.

Masotti, Robert: *See—*
Labedan, Pierre; and Masotti, Robert, 3,779,885.

Masson Scott Thrissell Engineering Limited: *See—*
Lindstaedt, Horst Karl; and Webb, Edwin James, 3,779,138.

Mathey, Francois: *See—*
Prognon, Pierre; Scuflaire, Robert; Mathey, Francois; and Grysckiewic-Trochimowski, Oleg, 3,780,036.

Matramatic Company Limited: *See—*
Cooper, John, 3,778,853.

Matsuo, Jon T., to United States of America, Navy. Controllable gliding parachute. 3,779,489, Cl. 244-152.000.

Matsushita Dendokogu Co., Ltd.: *See—*
Matsushita, Masao, 3,778,978.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kanetsuki, Koji; Yamaga, Minoru; and Ogawa, Hiromichi, 3,779,810.
Ouchi, Hiromo; Nishida, Masamitusu; and Nagano, Katsuo, 3,779,925.

Matsushita Electronics Corporation: *See—*
Otsuka, Hitoshi; Nohmi, Kazumasa; and Hommo, Masao, 3,780,329.
Otsuka, Hitoshi; Nohmi, Kazumasa; and Hommo, Masao, 3,780,330.

Matsushita, Masao, to Matsushita Dendokogu Co., Ltd. Dust collector. 3,778,978, Cl. 55-223.000.

Matsuzaki, Yoshihara: *See—*
Fukuta, Kenji; Sekiguchi, Junichi; Miyashita, Rihei; Matsuzaki, Yoshihara; and Miura, Yoshihiro, 3,779,432.

Matt, Richard J.: *See—*
Van Dorn, Horace B.; Matt, Richard J.; and Rolland, Thomas P., 3,779,619.

Mattel, Inc.: *See—*
Buck, Gordon H., 3,779,552.

Mattern, Ware and Davis: *See—*
Bennett, Robert A., 3,778,870.

Matteson, Lucius G.; and Carlson, Norman R., to Westinghouse Electric Corporation. Modification and improvement to dynamic BOF control. 3,779,744, Cl. 75-60.000.

Mattimoe, Paul T.: *See—*
Swift, Howard R.; Soreghy, Ivan L.; Thacker, George N.; Thomas, Lazarus D.; Mattimoe, Paul T.; and Motter, Theodore J., 3,779,878.

Maucher, Paul, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch, especially for motor vehicles. 3,779,353, Cl. 192-70.000.

Maul Bros. Inc.: *See—*
Horn, Larry L., 3,779,362.

Maurer, Karel; and Benda, Ladislav, to Tesla narodni Podnik. Heating apparatus for plastic extruders. 3,780,200, Cl. 13-23.000.

Mawhy, Roger Frederick, to C.I.T. Ralphs Limited. Adhesive applicator. 3,779,426, Cl. 222-146.000.

Mayer, Oscar, & Company, Inc.: *See—*
Bard, John C.; and Maas, Russell H., 3,780,187.

Mayer, Robert A., Jr. Boundary layer control means. 3,779,199, Cl. 115-14.000.

Mayle, Alfred J., to Computer Power Systems Inc. High speed switching circuit for driving a capacitive load. 3,780,339, Cl. 315-27.0td.

Mazor, Sylvester S., to TRW Inc. Steering system with integral shock damper. 3,779,575, Cl. 280-95.00r.

McArthur, Colin S.: *See—*
Beard, Hoyt S.; Payne, Leslie E.; and McArthur, Colin S., 3,779,849.

McCabe, James L.: *See—*
Wood, Gordon G.; and McCabe, James L., 3,778,946.

McCoy, David L. Kite parachute dolly. 3,779,491, Cl. 244-155.00r.

McCoy, Roger W.: *See—*
Gillem, Luke D., 3,779,407.

McCrossen, Fred C.; and Osborn, Harland J., to Eastman Kodak Company. Silver halide emulsions containing coupler solvents. 3,779,765, Cl. 96-56.500.

McCullough, Gerald W. Perforated composite bandage. 3,779,242, Cl. 128-171.000.

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Curtis, William I.; and McDaniel, Augustus C., Jr., 3,779,116.

McDermott, Philip S.: *See—*
Lee, Robert E.; McDermott, Philip S.; and Pan, Edward S., 3,779,803.

McDonnell Douglas Corporation: *See—*
Appleberry, Walter T., 3,778,957.
Speakman, Eugene R., 3,779,127.
Walker, James V., 3,778,877.

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Kirby, James D.; Hetzel, Douglas R.; McKay, Richard H.; Snydacker, James U.; and Ziebold, Paul G., 3,779,453.

McKenney, Neal D.; and Dennis, John, Jr. Charcoal igniting apparatus. 3,779,693, Cl. 431-327.000.

McKeon, James E.: *See—*
Weinberg, Kurt; and McKeon, James E., 3,780,112.

McKillop, Alexander: *See—*
Taylor, Edward C.; and McKillop, Alexander, 3,780,021.

McMaster, Robert C.: *See—*
Mara, Glenn L.; and McMaster, Robert C., 3,780,256.

McMurray, Nolan D.; and Tumey, Morris J., to General Motors Corporation. Method of producing zirconium diffusion barrier in titanium-silicon carbide composite materials. 3,779,884, Cl. 204-181.000.

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Ekey, William J., 3,779,668.

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Measurex Corporation: *See—*
Boissevain, Matthew G.; and Kahlin, Erik B., 3,779,003.

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Haas, Werner E. L.; Flannery, John B., Jr.; Mechlowitz, Bela; and Adams, James E., 3,779,751.

Medical Concepts, Inc.: *See—*
Karman, Harvey, 3,779,248.

Medow, Robert S. Adjustable prefabricated entryway. 3,778,945, Cl. 52-217.000.

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Irmscher, Klaus; Klockow, Michael; Mehrhof, Werner; Pfitzner, Klaus; Randau, Deeter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,780,171.

Meier, Eugen. Measuring apparatus including improved string mounting means. 3,779,072, Cl. 13-141.00p.

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Dhein, Rolf; Meissner, Hans-Jurgen; and Kuchenmeister, Rolf, 3,779,961.

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Tussey, Jimmy D.; Oakes, George W.; Carr, Herbert F.; and Melnick, Irving, 3,779,243.

Memerino, Hercules. Linear strip of severable bags. 3,779,449, Cl. 229-66.000.

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Mengel, Manfred: *See—*
Dorn, Ludwig; Mengel, Manfred; and Heinze., Gerhard, 3,779,946.

Merck & Co., Inc.: *See—*
Christensen, Burton G.; and Leanza, William J., 3,780,031.
Christensen, Burton G.; and Firestone, Raymond A., 3,780,034.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 3,780,027.
Danner, Wilson E.; Hammes, Paul A.; and Everson, Charles W., 3,780,192.
Hazen, George G., 3,780,033.
Hazen, George G., 3,780,037.
Hirschmann, Ralph F.; and Veber, Daniel F., 3,780,015.
Taub, David; and Hoffsommer, Robert D., Jr., 3,780,106.

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Irmscher, Klaus; Klockow, Michael; Mehrhof, Werner; Pfitzner, Klaus; Randau, Deeter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,780,171.

Merola, Carl R.: *See—*
Salvati, John G.; Ricci, Louis N.; and Merola, Carl R., 3,780,355.

Merrill, Stewart H.; and Brantly, Thomas B., to Eastman Kodak Company. Electrophotographic element with a photoconductive copolymer. 3,779,750, Cl. 96-1.500.

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Mesek, Frederick K.; and Repke, Virginia L., to Johnson & Johnson. Disposable diaper. 3,779,246, Cl. 128-287.000.

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Schnabele, Werner, 3,779,130.

Mesta Machine Company: *See—*
Petros, Andrew J.; and Rybar, Clement S., 3,779,037.

Metacon AG: *See—*
Tinnes, Bernhard; and Bieri, Hans, 3,779,431.

Metallgesellschaft Aktiengesellschaft: *See—*
Drechsel, Herbert; Dorr, Karl-Heinz; Grimm, Hugo; and Rowedder, Gustav, 3,780,166.

Meyer, Robert J., to TRW Inc. Nonconsumable tungsten electrode for arc welding. 3,780,259, Cl. 219-145.000.

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Kee, David Montgomery, 3,780,251.

Middour, Donald R.: *See—*
Henry, Nelson R.; and Middour, Donald R., 3,779,836.

Midland Silicones Limited: *See—*
Thompson, John, 3,780,025.

Midland-Ross Corporation: *See—*
DePenti, Kenneth Louis, 3,779,397.

Midwestern Specialties Ltd.: *See—*
Poore, Ernest C.; and Goforth, John A., 3,779,696.

Miesel, John L.: *See—*
Cebalo, Tony; and Miesel, John L., 3,780,052.

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Kimura, Ryuichi, 3,779,529.

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Zienty, Mitchell Frank, 3,779,869.

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Milhoan, Francis M.: *See—*
Knaus, Ernest; and Milhoan, Francis M., 3,779,196.

Milland Timber Products Ltd.: *See—*
Gillis, William Warren, 3,779,294.

Miller, Alfred H., to Esso Research and Engineering Company. 2-(Thiadizaolyl)-1,2,4-thiadiazolidine-3-5 diones and 1-(thiadiazolyl)-1,3-diazolidine-2,4,5-triones as herbicides (AG-80). 3,779,737, Cl. 71-90.000.

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Lewis, Brynley; Miller, George Langham; Brooks, Kenneth John; and Goss, Arthur George, 3,779,006.

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Miller, Jaydee W., to Sun Oil Company of Pennsylvania. Gas-fog alkylation with strong sulfuric acid and promoter. 3,780,130, Cl. 260-683.630.

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Milwaukee Boiler Manufacturing Company: *See—*
Stevens, Richard W., 3,779,322.

Mine, Akihiko: *See—*
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,780,090.

Mineshima, Hideo: *See—*
Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, 3,779,691.

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Verdier, Claude H., 3,779,011.

Mink, George, to USI Corporation. Head forming tool. 3,779,059, Cl. 72-67.000.

Minnesota Mining and Manufacturing Company: *See—*
Abler, Roger L.; and Gardner, Gary A., 3,779,929.
Appeldorn, Roger H.; and Ljungkull, Gunnar R., 3,780,285.
Bolles, Theodore F., 3,779,942.
Dustin, Daniel S., 3,779,761.
Gatzke, Kenneth G., 3,779,771.
Langager, Bruce A., 3,779,997.
Smith, George H.; and Bonham, James A., 3,779,778.
Thielen, James E., 3,778,860.

Minolta Camera Kabushiki Kaisha: *See—*
Ogawa, Masaya; and Wada, Kenichi, 3,779,642.
Ueda, Hiroshi; and Tsujimoto, Kayoshi, 3,779,141.
Yata, Kotaro; Nanba, Yasuhiro; and Yamada, Seiji, 3,779,142.

Mischenko, Alexandr Petrovich: *See—*
Gryaznov, Vladimir Mikhailovich; Mischenko, Alexandr Petrovich; Smirnov, Viktor Sergeevich; and Aladyshev, Sergei Ivanovich, 3,779,711.

Mista-Matic Corporation: *See—*
Werner, Herbert S., 3,779,425.

Mitchell, David L.; and Speight, James G., 30% to Canada Cities Service, Ltd., 30% to Imperial Oil, Limited, 30% to Atlantic Richfield Company and 10% to Gulf Oil Canada, Limited. Preparation of mineral free asphaltenes. 3,779,902, Cl. 208-251.000.

Mitsche, Roy T.; and Hayes, John C., to Universal Oil Products Company. Method of catalyst manufacture. 3,779,947, Cl. 252-466.0pt.

Mitsubishi Chemical Industries, Limited: *See—*
Fujiki, Konoshuke; Inafuku, Katsuaki; Shimizu, Hiroshi; Shigematsu, Toshiharu; and Kumura, Kazumi, 3,779,821.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Saita, Toshikazu, 3,779,219.

Mitsugi, Takashi: *See—*
Kondo, Fiji; Mitsugi, Takashi; and Tori, Kazuo, 3,780,026.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, 3,779,691.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,524.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,525.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,526.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,527.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,528.

Miura, Yoshihiro: *See—*
Fukuta, Kenji; Sekiguchi, Junichi; Miyashita, Rihei; Matsuzaki, Yoshihara; and Miura, Yoshihiro, 3,779,432.

Miyaoka, Senri, to Sony Corporation. Method of producing a striped cathode ray tube screen. 3,779,760, Cl. 96-36.100.

Miyashita, Rihei: *See—*
Fukuta, Kenji; Sekiguchi, Junichi; Miyashita, Rihei; Matsuzaki, Yoshihara; and Miura, Yoshihiro, 3,779,432.

Miyazaki, Tetsuya: *See—*
Ueno, Ryuzo; Miyazaki, Tetsuya; Inamine, Shigeo; and Kishi, Saburo, 3,779,796.

Miyazako, Takushi: *See—*
Tsuji, Nobuo; Tajima, Tatsuya; Miyazako, Takushi; Tsuchiya, Yoshinori; and Nishio, Fumihiko, 3,779,766.

Mizuno, Masayuki: *See—*
Takeda, Isao; Mizuno, Masayuki; Sugawara, Toshiaki; Shimojima, Yukiji; and Horiguchi, Sadayuri, 3,780,172.

Mizuno, Sueo; and Takase, Tadayoshi, to Kabushiki Kaisha Rinnai Seisakusho. Cooling apparatus for an oven. 3,779,228, Cl. 126-21.00r.

Modine Manufacturing Company: *See—*
Huggins, Homer D., 3,779,341.

Moehring, John Theodore: *See—*
Tatem, Bemis Caldwell, Jr.; and Moehring, John Theodore, 3,779,665.

Moen, Art Murphy Dean; and Robison, Jim Ray, to International Telephone and Telegraph Corporation. Control and indicator circuits for coulometric titrators. 3,779,886, Cl. 204-195.00t.

Moisson-Franckhauser, Francois: *See—*
Aupoix, Marcel; Moisson-Franckhauser, Francois; Leroux, Jean-Marie; and Prost, Roger, 3,780,205.

Molijn, Joannes Cornelius: *See—*
Cameron, James Brisbane; Walton-Knight, Bernard Piet; Bartoo, Otto Floris; and Molijn, Joannes Cornelius, 3,778,882.

Molins Machine Company, Limited: *See—*
Labbe, Francis Auguste Maurice, 3,779,253.

Moll, Franz; Morcher, Bernard; Reckziegel, Erich; and Saleck, Wilhelm, to Agfa-Gevaert AG. Silver halide emulsions for the production of reversal colorphotographic images. 3,779,764, Cl. 96-59.000.

Molstedt, Byron V., to Esso Research and Engineering Company. Process for fluid coking gasification in an integrated system. 3,779,900, Cl. 208-127.000.

Monro, Richard J., to Combustion Equipment Associates, Inc. Acoustic nozzle. 3,779,460, Cl. 239-102.000.

Monroe, Edwin T. Pipe construction. 3,779,594, Cl. 294-91.000.

Monsanto Company: *See—*
Lonning, Thor J. G., 3,780,134.
Miles, Malcolm G.; Wilson, James D.; and Cohen, Morrel H., 3,779,814.
Privott, Wilbur J., Jr.; and Cunningham, Robert E., 3,780,153.
Schleppnik, Alfred A., 3,780,109.

Montecatini Edison S.p.A.: *See—*
Dall'Asta, Gino, 3,780,009.

Moore, Samuel, and Company: *See—*
Whittaker, Dewey E.; and Jenks, Charles D., 3,780,208.

Morabito, Pascal Pierre. Method for producing ornamental articles. 3,778,875, Cl. 29-160.600.

Morcher, Bernard: *See—*
Moll, Franz; Morcher, Bernard; Reckziegel, Erich; and Saleck, Wilhelm, 3,779,764.

Moreau, Claude R. M. Alternative puzzle system. 3,779,558, Cl. 273-157.00r.

Morehouse, Edward L., to Union Carbide Corporation. Process for reducing flammability of polyurethane foams. 3,779,956, Cl. 260-2.5ah.

Moretti, Joseph G., Jr. Low bed trailer for heavy equipment. 3,779,411, Cl. 214-505.000.

Morgan Construction Company: *See—*
Alexander, Frank A., Jr., 3,779,697.

Morgan, Hubert Davies, to British Steel Corporation. Cooling transport mechanism. 3,779,034, Cl. 62-381.000.

Mori, Yubi; Tanaka, Tamufsu; Hara, Shoji; Iwashita, Masakatu; and Igaki, Yasuyuki, to Natsushita Electric Industrial Co. Ltd. Fastener feeding apparatus. 3,779,422, Cl. 221-10.000.

Morin, Joseph C.: *See—*
Evans, Arthur J.; and Morin, Joseph C., 3,779,280.

Morris, Arnold D.: *See—*
Frederickson, Arthur R.; and Morris, Arnold D., 3,780,304.

Morris, Leo R., to Dow Chemical Company, The. 1,2,3-Benzoxathiazin-4(3H)-one 2-oxides and their preparation. 3,780,030, Cl. 260-243.00r.

Morris, Wyndham, to Imperial Chemical Industries Limited. Process for oxidizing cyclohexanone and cyclooctanone. 3,780,098, Cl. 260-531.000.

Morrison, Donald J.; and Raesz, Reuben, to International Business Machines Corporation. System for performing carrier return operation. 3,779,359, Cl. 197-66.000.

Morrow, Woodrow T.: *See—*
Roof, John K., 3,780,234.

Morse, Browne, Company: *See—*
Betts, Paul J., 3,779,392.

Morton-Norwich Products, Inc.: *See—*
Alaimo, Robert J.; and Goldenberg, Marvin M., 3,780,048.

Mosehauer, Michael; and Rodenberg, Orville C., to Eastman Kodak Company. Method of protecting images. 3,779,748, Cl. 96-1.00r.

Moser Paper Company: *See—*
Habanec, Charles E., 3,779,118.

Motohashi, Masatoshi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Sectional rack. 3,779,623, Cl. 312-257.000.

Motorola, Inc.: *See—*
Adams, Victor J., 3,779,506.
Dattilo, Donald J., 3,779,561.
O'Toole, John J., 3,780,219.
Walters, Cecil Kent, 3,780,322.

Mott, Richard H.: *See—*
Erlenbusch, Gary L.; Hansen, Calvin N.; and Mott, Richard H., 3,779,402.

Motter, Theodore J.: *See—*
Swift, Howard R.; Soreghy, Ivan L.; Thacker, George N.; Thomas, Lazarus D.; Mattimoe, Paul T.; and Motter, Theodore J., 3,779,878.

Moulton, Eric W.: *See—*
Rogers, Waldo I.; Fox, Robert J.; and Moulton, Eric W., 3,780,268.

Mucciante, Louis L.: *See—*
Battersby, Robert J.; and Mucciante, Louis L., 3,779,459.

Muckelrath, Ernest R., to Air Heaters, Inc. Indirect or direct fired heater. 3,779,230, Cl. 126-116.00r.

Mudsam, Udo; Reuter, Ernst; and Maslowski, Stefan, to Licentia Patent-Verwaltung G.m.b.H. Apparatus for scanning signals. 3,780,266, Cl. 235-61.11d.

Mueller, Frederick N.: *See—*
Anderson, Reg A.; Chandler, Ronald W.; Mueller, Frederick N.; and Osborn, Norbert I., 3,779,519.

Muller, Erwin: *See—*
Wirth, Wolf-Dieter; Muller, Erwin; and Rohr, Harry, 3,779,954.

Muller, Fritz; Stendenbach, Karl-Heinz; Kartlapp, Gerhard; Forst, Wilhelm; and Schrodter, Hermann, to Knapsack Aktiengesellschaft. Purification of yellow phosphorus. 3,780,164, Cl. 423-322.000.

Muller, Jean-Nicolas: *See—*
Fischer, Artur; and Muller, Jean-Nicolas, 3,779,239.

Muller, Karl Heinz; Richter, Klaus; and Rohr, Harry, to Bayer Aktiengesellschaft. Process and apparatus for the continuous production and/or covering of extruded sections. 3,780,154, Cl. 264-176.00r.

Muller, Rolf: *See—*
Doemen, Benno; and Muller, Rolf, 3,780,363.

Muller, Rudolf: *See—*
Bestenreiner, Friedrich; Helmberger, Josef; Muller, Rudolf; and Simm, Walter, 3,780,214.

Munro, William, to Analog Monitors, Inc. Light source with selectable intensity bandwidth. 3,780,340, Cl. 315-151.000.

Muramatsu, Tateo; and Aramaki, Kuninori, to Bridgestone Tire Company Limited. Immersible oil fence assembly. 3,779,020, Cl. 61-1.00f.

Murphy, Emmett J., to Marcona Corporation. Method and apparatus for a continuous dumbbell tube anchoring system for submarine pipelines. 3,779,027, Cl. 61-72.000.

Murphy, Jerome A.: *See—*
Esch, Robert L.; Arnold, William C.; Skelton, Billy K.; Saxon, Michael D.; Murphy, Jerome A.; and Jaques, Roy J., 3,778,880.

Murphy, William J., Jr.; Ferguson, Joseph B.; and Rawson, Edward B., to Searle Medidata Inc. Cardiovascular test station pressurometer interface system. 3,779,235, Cl. 128-2.05m.

Murray, Herbert C.: *See—*
Fonken, Gunther S.; Herr, Milton E.; and Murray, Herbert C., 3,780,022.

Muschelknautz, Egar: *See—*
Kuntz, Egon; Esser, Paul; and Muschelknautz, Egar, 3,778,907.

Myrent, Harry L.; and Fluder, Chester H., to Vapor Corporation. Combined pulse generator and odometer assembly for a railway locomotive. 3,779,086, Cl. 73-490.000.

Nablo, Sam V., to Energy Sciences, Inc. Process and apparatus for surface sterilization of materials. 3,780,308, Cl. 250-492.000.

Nablo, Samuel V., to Energy Sciences, Inc. Process for bulk sterilization, minimizing chemical and physical damage. 3,779,706, Cl. 21-54.00r.

Nadkarni, Anil V.; and Klär, Erhard, to SCM Corporation. Dispersion strengthening of metals by internal oxidation. 3,779,714, Cl. 29-182.500.

Nagahama, Shizuo: *See—*
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, 3,780,119.

Nagano, Katsuo: *See—*
Ouchi, Hiromo; Nishida, Masamitusu; and Nagano, Katsuo, 3,779,925.

Nagel, Erich: *See—*
Zahn, Wolfgang; Zangenfeind, Helmut; and Nagel, Erich, 3,779,837.

Nagy, Ernest J., to Pullman Incorporated. Hold-open lock for plug sliding door. 3,778,933, Cl. 49-449.000.

Naito, Takayuki; Okumura, Jun; and Hoshi, Hideaki. Diphenylmethyl 7β-(D-2,2-dimethyl-3-nitroso-5-oxo-4 -phenyl-1-imidazolidinyl)-3-methyl-cephem-4-carboxylate. 3,780,028, Cl. 260-243.00c.

Nakamoto, Takatugo: *See—*
Kitamura, Shigeo; Nakamoto, Takatugo; Kaziura, Toshihiro; and Kurata, Shuichi, 3,779,048.

Nakamura, Hirosi: *See—*
Kaihu, Masaharu; Soeda, Masumitu; and Nakamura, Hirosi, 3,779,839.

Nakamura, Ichiro: *See—*
Fujisawa, Fumio; Takenoshita, Mitsuaki; Nakamura, Ichiro; and Yumino, Hiroshi, 3,779,017.

Nakamura, Katsuhiro, to Nippon Electric Company, Limited. Device to generate pseudo-random multi-level pulse. 3,780,275, Cl. 235-152.000.

Nakamura, Taiji: *See—*
Nakazawa, Narihiko; Nakamura, Taiji; Kitahara, Teruyoshi; and Habuka, Yoshio, 3,779,645.

Nakanishi, Michio; Oe, Takanori; and Seki, Toshio, to Yoshitomi Pharmaceutical Ind., Ltd. Phenothiazine and dibenzocycloheptane derivatives. 3,780,035, Cl. 260-243.00a.

Nakanishi, Yoshitaka. Door closer. 3,778,866, Cl. 16-49.000.

Nakazawa, Narihiko; Nakamura, Taiji; Kitahara, Teruyoshi; and Habuka, Yoshio, to Nippon Kogaku K.K. Distance measuring device. 3,779,645, Cl. 356-5.000.

Nalco Chemical Company: *See—*

Bott, Lawrence L., 3,779,316.

Nambu, Shyuya, to Nissan Motor Company, Limited. Ignition timing change-over device for spark advance mechanism having rotatable governor plate. 3,779,218, Cl. 123-117.00a.

Nanba, Yasuhiro: *See—*
Yata, Kotaro; Nanba, Yasuhiro; and Yamada, Seiji, 3,779,142.

Napoleon Spring Works, Inc.: *See—*
Kalister, Gary B., 3,779,537.

Narbaits-Jaureguy, Jean Raymond. Measuring of the coordinates of a subject through a television receiver. 3,780,221, Cl. 178-6.800.

National Cash Register Company, The: *See—*
Maierson, Theodore, 3,779,848.

National Distillers and Chemical Corporation: *See—*
Hoyt, John; Koch, Karl; and Williams, Mathew, Jr., 3,780,004.
Stiles, Claude J.; and Fischer, Joseph, 3,779,785.

National Forge Company: *See—*
Papen, Eduard L. J., 3,779,277.

National Hellenic Research Foundation, The: *See—*
Screttas, Constantinos G., 3,780,045.

National Lead Company: *See—*
Anderson, Clifford J.; and Peterson, Reuben W., 3,780,306.
Urban, Stephen F., 3,779,804.

National Union Electrical Corporation: *See—*
Hohulin, Samuel E., 3,779,283.

Natsushita Electric Industrial Co. Ltd.: *See—*
Mori, Yubi; Tanaka, Tamufsu; Hara, Shoji; Iwashita, Masakatu; and Igaki, Yasuyuki, 3,779,422.

Nau, Richard A.; and Campbell, Sterling A., to General Dynamics Corporation. Rotary separator. 3,779,452, Cl. 233-32.000.

Nauman, Edeard F.: *See—*
Vassiliades, Anthony E.; Nauman, Edeard F.; and Shroff, Shrenik, 3,779,957.

Neale, Denis Manktelow: *See—*
Pickstock, Barry Thomas; and Neale, Denis Manktelow, 3,780,222.

Nebzydoski, John W.: *See—*
Patmore, Edwin L.; Reed, David D.; Oberender, Frederick G.; and Nebzydoski, John W., 3,779,919.

Nedeleo, Lucine: *See—*
Allais, Andre; Nedeleo, Lucine; Guillaume, Jacques; and Frechet, Daniel, 3,780,061.

Neefe, Charles W. Method for making aspheric surfaces. 3,778,937, Cl. 51-284.000.

Neeff, Rutger: *See—*
Wegner, Peter; Neeff, Rutger; Hederich, Volker; and Gehrke, Gunter, 3,779,700.

Neill, Keith Gordon: *See—*
Alcorn, Percival George Ernest; and Neill, Keith Gordon, 3,779,930.

Nelson Irrigation Corporation, mesne: *See—*
Bruninga, Kenneth J., 3,779,462.

Nelson, Victor R. Cure assembly apparatus for plywood lay-up apparatus. 3,779,366, Cl. 198-160.000.

Nelsson, Nels, to United States Gypsum Company. Integral stud and bracket standard and the assembly thereof in a wall construction. 3,778,939, Cl. 52-36.000.

Neuroth, David H., to Hubell, Harvey, Incorporated. Open-mesh support grip construction. 3,779,593, Cl. 294-86.0cg.

Newton, George W.: *See—*
Salmon, Garland R.; and Newton, George W., 3,780,351.

Newton Instrument Company: *See—*
Salmon, Garland R.; and Newton, George W., 3,780,351.

Newton, Richard C., to Phillips Petroleum Company. Method and apparatus for texturing yarn. 3,778,872, Cl. 28-1.600.

Nichols, Duane C., to Whirlpool Corporation. Ice maker water fill control. 3,779,032, Cl. 62-233.000.

Nicholson, John H.; and Jemison, William. Cord anchorage securing device and secure cord anchorage device. 3,779,494, Cl. 248-56.000.

Nieman, John J. Roofing removal apparatus. 3,779,605, Cl. 299-37.000.

Niemann, Heinz, to ESGE-Marby Gesellschaft mit beschrankter Haftung & Co., Firma. Universal luggage rack for placement on cycles with wheels of various diameters, such as various size bicycles. 3,779,435, Cl. 224-37.000.

Nihon Koki Kabushiki Kaisha: *See—*
Shigeno, Shuichi; and Ishii, Masayoshi, 3,779,399.

Niketas, Paul: *See—*
Spalt, Howard A.; Chu, Chung Ying; and Niketas, Paul, 3,780,017.

Niki, Motohiro. Water dispenser for small animals. 3,779,430, Cl. 222-501.000.

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Nilgens, Heinrich: *See—*
Ostertag, Karl; Nilgens, Heinrich; and Scheiber, Herbert, 3,778,909.

Nilsson, Erling Ingvar, to AB Kelva. Apparatus for maintaining a predetermined relative position of a moving web of material and an element. 3,779,438, Cl. 226-19.000.

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Nimerick, Kenneth H., to Dow Chemical Company, The. Composition of improved viscosity control and method of use. 3,779,914, Cl. 252-8.55r.

Nippon Electric Company, Limited: *See—*
Nakamura, Katsuhiro, 3,780,275.

Nippon Kogaku K.K.: *See—*
Nakazawa, Narihiko; Nakamura, Taiji; Kitahara, Teruyoshi; and Habuka, Yoshio, 3,779,645.

Nippon Kokan Kabushiki Kaisha: *See—*
Shigeno, Shuichi; and Ishii, Masayoshi, 3,779,399.

Nippon Light Metal Company Limited: *See—*
Miki, Isao, 3,779,304.

Nippon Oil Company Limited: *See—*
Araki, Yoshihiko; and Hayashi, Hideo, 3,779,960.

Nippon Oil Company, Ltd.: *See—*
Tsuchiya, Shozo, 3,779,979.

Nippon Sheet Glass Co., Ltd.: *See—*
Yamamoto, Yasumichi; and Rokujo, Kazuo, 3,779,437.

Nishida, Masamitusu: *See—*
Ouchi, Hiromo; Nishida, Masamitusu; and Nagano, Katsuo, 3,779,925.

Nishikawa, Takeo: *See—*
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, 3,780,119.

Nishio, Fumihiko: *See—*
Tsuji, Nobuo; Tajima, Tatsuya, Miyazako, Takushi; Tsuchiya, Yoshinori; and Nishio, Fumihiko, 3,779,766.

Nishitetsu Sangyo Co., Ltd.: *See—*
Kunitoku, Sadayoshi, 3,779,652.

Nissan Motor Co., Ltd.: *See—*
Inose, Fumiyuki, Inui, Tomoji; Kohayashi, Sadao; and Shibata, Shotaro, 3,780,314.

Nissan Motor Company, Limited: *See—*
Maruoka, Hiroyuki, 3,779,015.
Maruoka, Hiroyuki, 3,779,349.
Nambu, Shyuya, 3,779,218.
Tagawa, Katsuhiro; and Kurosawa, Takuzo, 3,779,224.

Nitta, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, to Fuji Denki Seizo Kabushiki Kaisha. High-tension circuit breaker. 3,780,349, Cl. 317-58.000.

Nixon, John D.: *See—*
Merck, John W.; and Nixon, John D., 3,779,926.

NJM Inc.: *See—*
Wolff, Edwin K., 3,779,829.

Nohira, Hidetaka; and Kokokawa, Masaru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust emission control device. 3,779,014, Cl. 60-286.000.

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Otsuka, Hitoshi; Nohmi, Kazumasa, and Hommo, Masao, 3,780,329.
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Nolan, John L.; Rivin, Arnold A.; and Johnson, Bremen I., to Hollister Incorporated. Loop colostomy bridge. 3,779,247, Cl. 128-303.00r.

Nomura, Harehiko; and Shimamoto, Susumu, to Industrial Science & Technology, Agency of. Method of fabricating an aluminum clad multiplex superconductor. 3,778,895, Cl. 29-599.000.

Norback, Per Gunnar. Method of fabricating a laminated wheel-like body for the transfer of thermodynamic characteristics between two fluid streams. 3,778,874, Cl. 29-157.30r.

Norco Inc.: *See—*
La Barre, Berger A., 3,779,094.

Norie, Susan Grace. Bathing cap. 3,778,846, Cl. 2-68.000.

Norman, Harry H., 1/2 to Baliski, Staphen. Spring forming apparatus. 3,779,058, Cl. 72-66.000.

Norman, Michael Eric: *See—*
Harman, Julius; and Norman, Michael Eric, 3,779,110.

Norris Industries, Inc.: *See—*
Sanders, Vernard W.; and Powell, Ronald C., 3,779,590.

Norsk Hydro A.S.: *See—*
Gudmundsen, Sigmund; Ronaess, Egil; Kjolberg, Sven Arne; and Mejdell, Glor Thorvald, 3,779,870.

North American Rockwell Corporation: *See—*
Cummings, Alan F.; Binz, Ernest F.; and Freeman, Gene G., 3,780,375.
Schack, Carl J.; and Wilson, Richard D., 3,780,165.

Northeved, Allan; and Vinter, Hans, to Svejsecentralen. Method of marking and subsequently localizing, identifying and recording physical objects. 3,780,368, Cl. 343-6.5ss.

Norton, Charles J.; and Falk, David O., to Marathon Oil Company. Oil recovery with vinyl sulfonic acid-acrylamide copolymers. 3,779,917, Cl. 252-8.55d.

Norton Company: *See—*
Fisk, Reginald C.; and Carver, Edgar B., 3,779,726.
Sioui, Richard H.; and Cohen, Harvey M., 3,779,727.
Steadman, Wilfred A., 3,778,936.

Nosco, Louis C.; and Ryan, James E., to Eastman Kodak Company. Easel locking device. 3,779,643, Cl. 355-75.000.

Nosco, Louis C.; and Ryan, James E., to Eastman Kodak Company. Document holder exchange apparatus. 3,779,644, Cl. 355-75.000.

Nosek, Roy F.: *See—*
Bisinella, Angelo J.; and Nosek, Roy F., 3,779,679.

Notbohm, Willard C., to Black Clawson Company, The. Paper machine drying apparatus. 3,778,908, Cl. 34-116.000.

Nothen, Karl: *See—*

Sutter, Hubert; Nothen, Karl; and Haas, Friedrich, 3,780,139.

Nowak, Bernard E.: *See—*
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, 3,779,808.

Nowak, Herbert: *See—*
Irmscher, Klaus; Klockow, Michael; Mehrhof, Werner; Pfitzner, Klaus; Randau, Deeter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,780,171.

Nozawa, Yoshiharu: *See—*
Kono, Akiro; and Nozawa, Yoshiharu, 3,778,894.

Nuber, Frederick H. Line cutting insolator. 3,779,583, Cl. 285-48.000.

N.V. Fabriek Van Electriche Apparaten Voorheen F. Hazemiejer & Co.: *See—*
Clason, Jan C., 3,778,888.

NVF Company: *See—*
Fisher, James Glenn, 3,779,517.

Oakes, George W.: *See—*
Tussey, Jimmy D.; Oakes, George W.; Carr, Herbert F.; and Melnick, Irving, 3,779,243.

OB/Masco Drapery Hardware Company: *See—*
Ziers, David F., 3,779,539.

Oberender, Frederick G.: *See—*
Patmore, Edwin L.; Reed, David D.; Oberender, Frederick G.; and Nebzydoski, John W., 3,779,919.
Patmore, Edwin L.; Oberender, Frederick G.; and Reed, David D., 3,779,921.

Oberthur, Heinrich, to ITT Industries, Inc. Filter assembly. 3,779,390, Cl. 210-495.000.

Occidental Energy Development Company: *See—*
Rabut, Eugene W., 3,779,813.

Ocean Protein Corporation. *See—*
Day, John J.; and Hirschman, Paul S., 3,779,387.

O'Connor, Joseph, Jr., to Kieley & Mueller, Inc. Control valve and process control system. 3,779,514, Cl. 251-369.000.

O'Connor, Joseph M.; and Pasternak, Stephen F., to Peerless of America, Incorporated. Heat exchanger. 3,779,311, Cl. 165-171.000.

Oe, Takanori: *See—*
Nakanishi, Michio; Oe, Takanori; and Seki, Toshio, 3,780,035.

Oeland, Ernest N., Jr., to United States of America, Navy. Lift cable transfer apparatus. 3,779,195, Cl. 114-51.000.

Oetiker, Alfred: *See—*
Kitzing, Rainer; Marthaler, Max; and Oetiker, Alfred, 3,779,937.

Office Nationale d'Etudes et de Recherches Aerospatiales: *See—*
Verdier, Claude H., 3,779,011.

Ogawa, Hiromichi: *See—*
Kanetsuki, Koji; Yamaga, Minoru; and Ogawa, Hiromichi, 3,779,810.

Ogawa, Masaya; and Wada, Kenichi, to Minolta Camera Kabushiki Kaisha. Variable magnefication copier machine. 3,779,642, Cl. 355-55.000.

Ogawa, Toshiya; and Hasegawa, Toro, to Ricoh Co., Ltd. Copy sheet distinguishing device for rotary offset printing machines. 3,779,162, Cl. 101-142.000.

Ogawa, Yoshikatsu; Hisada, Haruhiko; and Kasahara, Takeshi, to Marubishi Yuka Kogyo Kabushiki Kaisha. Flame-retardant polyolefin compositions. 3,780,142, Cl. 260-897.00a.

Oguino, Masanori: *See—*
Shibata, Akira; and Oguino, Masanori, 3,780,215.

Ohba, Katsumi, to Grace, W. R., & Co. Method of preparing a phenol formaldehyde amine microporous sheet. 3,779,958, Cl. 260-2.50f.

Ohlhauser, Ernest F.; and Boggild, Robert, to Celotex Corporation, The, mesne. Demountable light fixture for bathroom cabinet. 3,780,281, Cl. 240-4.001.

Ohnishi, Yutaka: *See—*
Ohno, Atsuyoshi; Ohnishi, Yutaka; and Tsuchihashi, Genichi, 3,779,880.

Ohno, Atsuyoshi; Ohnishi, Yutaka; and Tsuchihashi, Genichi, to Sagami Chemical Research Center. Process for preparing thietane derivatives. 3,779,880, Cl. 204-158.00r.

Ohno, Eiji, to Kabushiki Kaisha Komatsu Seisakusho. Plural-slide transfer pressing apparatus. 3,779,155, Cl. 100-207.000.

Okada, Toshio: *See—*
Sakurada, Ichiro; Okada, Toshio; and Shimano, Yasunao, 3,779,881.

Okui, Sakujiro, to Kodama Brothers Co., Ltd. Insecticidal fumigator. 3,778,924, Cl. 43-129.000.

Okumura, Jun: *See—*
Naito, Takayuki; Okumura, Jun; and Hoshi, Hideaki, 3,780,028.

Okuno, Yoshihiro, to Kabushiki Kaisha Daikin Seisaku-Sho Osaka Prefecture. Centrifugal clutch. 3,779,355, Cl. 192-105.0ba.

O'Lenick, Anthony J.; Roome, Douglas P.; and Gabriel, Joseph T., to Standard Packaging Corporation. Loading system for packing machine. 3,778,965, Cl. 53-248.000.

Olin Corporation: *See—*
Bruson, Herman A.; and Plant, Howard L., 3,780,117.
Gay, Walter A.; and Raymond, Maurice A., 3,780,110.
Irish, Charles G., Jr.; Silva, Joseph W.; and Cowles, Raymond I., 3,779,167.

Oliver, Leland W.; Ingham, Francis H.; and Dubell, Edward G., to International Telephone and Telegraph Corporation. Electrical penetration assembly. 3,780,204, Cl. 174-11.00r.

Oliver Tire & Rubber Company: *See—*
Reppel, Willi E., 3,779,830.
Reppel, Willi E., 3,779,831.
Reppel, Willi E., 3,779,832.
Reppel, Willi E., 3,779,833.

Olivetti, Ing. C. & S. S.p.A.: *See—*
Ravera, Giovanni; Cosmo, Nicola; and Siletto, Giorgio, 3,779,638.

Olliges, James R., Sr., to A-T-O Inc. Extracting. 3,779,050, Cl. 68-242.000.

Ollinger, James C.: *See—*
Alexipfe, Stephen T.; and Ollinger, James C., 3,780,286.

Olson, Earl Herbert, to Du Pont de Nemours, E. I., and Company. Crimpable bicomponent filament. 3,779,853, Cl. 161-70.000.

Olson, Earl Herbert, to Du Pont de Nemours, E. I., and Company. Crimpable copolyamide filaments. 3,779,859, Cl. 161-173.000.

Olson, Raymond L.; and Yone, Harold R., to Barber-Colman Company. Method for doffing a bobbin and forming a transfer tail. 3,778,996, Cl. 57-156.000.

Olsson, Robert G.; and Turkdogan, Ethem T., to United States Steel Corporation. Continuous casting with in-line stream degassing. 3,779,743, Cl. 75-49.000.

Omega Louis Brandt et Frere S.A.: *See—*
Hetzel, Max, 3,779,093.

Omniversal Design: *See—*
Kostick, John M., 3,779,657.

Onufry, Michael, Jr.: *See—*
Campanella, Samuel J.; Suyderhuud, Henri G.; and Onufry, Michael, Jr., 3,780,233.

Originetics Incorporated: *See—*
Pappas, Michael, 3,779,547.

Orion Industries Inc., mesne: *See—*
Holtzman, Norman, 3,779,081.

Oritani, Atsushi: *See—*
Kurata, Takao; and Oritani, Atsushi, 3,780,317.

Oroschakoff, Georgi., 3,778,951, Cl. 52-646.000.

Ortho Pharmaceutical Corporation: *See—*
Shroff, Arvin P., 3,780,073.

Osborn, Harland J.: *See—*
McCrossen, Fred C.; and Osborn, Harland J., 3,779,765.

Osborn, Norbert I.: *See—*
Anderson, Reg A.; Chandler, Ronald W.; Mueller, Frederick N.; and Osborn, Norbert I., 3,779,519.

Oser, Gerhard: *See—*
Kurz, Dietrich; and Oser, Gerhard, 3,779,097.

Osgood, Richard B., to Hewlett-Packard Company. Magnetic card reader-recorder apparatus with provision for avoiding undesired erasures. 3,780,377, Cl. 346-74.00m.

Oshida, Otto A.; and Shawgo, Michael, to Grefco, Inc. Thermal and acoustical structural insulating composition. 3,779,860, Cl. 162-129.000.

Ostenberg, Ramon K.; and Case, Richard P., to Franklin Manufacturing Company. Washing machine. 3,779,090, Cl. 74-81.000.

Ostertag, Karl; Nilgens, Heinrich; and Scheiber, Herbert, to Akzona Incorporated. Apparatus for the continuous heat treatment of running yarns. 3,778,909, Cl. 34-155.000.

Ostroski, Richard J., to Black and Decker Manufacturing Company, The. Method of producing double-insulated armature sub-assemblies. 3,778,892, Cl. 29-598.000.

Ostwald, Richard, to Smith, Gordon, & Co., Inc. Wheel mounting assembly. 3,779,579, Cl. 280-150.500.

O'Toole, John J., to Motorola, Inc. Signal processing circuit. 3,780,219, Cl. 178-5.4he.

Otsuboj, Minoro. Slide attachment with a sounding mechanism. 3,779,637, Cl. 353-120.000.

Otsuka, Hitoshi; Nohmi, Kazumasa; and Hommo, Masao, to Matsushita Electronics Corporation. 40 Watt fluorescent lamp. 3,780,329, Cl. 313-185.000.

Otsuka, Hitoshi; Nohmi, Kazumasa; and Hommo, Masao, to Matsushita Electronics Corporation. 20 Watt fluorescent lamp. 3,780,330, Cl. 313-185.000.

Otto, Dr. C., & Comp., G.m.b.H.: *See—*
Rossow, Rolf, 3,779,690.

Otto, Thomas W. Combination air and hydraulic motor. 3,779,132, Cl. 91-4.00a.

Ouchi, Hiromo; Nishida, Masamitusu; and Nagano, Katsuo, to Matsushita Electric Industrial Co., Ltd. Piezoelectric ceramic compositions. 3,779,925, Cl. 252-62.009.

Ouitmeyer, John W. Sympathetic piano sound augmenter. 3,779,125, Cl. 84-189.000.

Outboard Marine Corporation: *See—*
Ward, Harry M., III; and Hackharth, Eugene R., 3,779,214.

Overby, William T.: *See—*
Blinn, Harold A.; and Overby, William T., 3,779,827.

Ow, Gordon Y. W., to Go-Craft Systems, Inc. Retractable wheel assembly. 3,779,574, Cl. 280-43.180.

Owen, Andrew Alden, to Ambassador International, Inc. Puppet toy. 3,778,925, Cl. 46-13.000.

Owens-Corning Fiberglas Corporation: *See—*
Benson, Gustav E.; and Yakuboff, Paul D., 3,779,207.
Ward, John E., 3,779,981.

Owens-Illinois, Inc.: *See—*
Baak, Nils Tryggve E. A.; and Rapp, Charles F., 3,779,781.
Pirooz, Perry P., 3,779,856.
Schere, Gerald F., 3,779,378.
Spanoudis, Louis, 3,779,732.
Taylor, Lynn J.; and Grier, John D., 3,779,807.
Yakubek, Louis P., 3,779,365.

Oxengorn, Naum Izrailevich: *See—*

Nikolaev, Petr Ivanovich; Ignatov, Jury Lazarevich; Smirnov, Sergei Ivanovich; Oxengorn, Naum Izrailevich; Gigineishvili, Rimma Fominichna; Dvorkina, Klara Moissevna; and Iskandyarov, Akhmet Mukhsinyatovich, 3,779,868.

Pacific Mariculture, Inc.: *See—*
Budge, William W.; and Donald, Malcolm, 3,779,209.

Pacific Scientific Company: *See—*
Mescher, Harold E., 3,779,532.

Padjen, George; Helman, Robert W.; and Brugger, Joseph A., to Bethlehem Steel Corporation. Method of coating steel wire with aluminum. 3,779,056, Cl. 72-47.000.

Pagan, Augustine Joseph: *See—*
Kariagin, Nikolai; Lathson, Jerry; Hooper, Eric Ralph; Keogh, Jim Cowden, Jr.; and Pagan, Augustine Joseph, 3,778,855.

Paget, Frederick W., to GTE Sylvania Incorporated. Charge regulating circuit for flash lamp storage capacitor. 3,780,344, Cl. 315-241.00p.

Paglia, Richard, to Polaroid Corporation. Photographic film processing apparatus and camera system employing same. 3,779,144, Cl. 95-14.000.

Pahl, Leo F.; and Jones, Norman H., to Crown Cork & Seal Company, Inc. System for carbonating beverages. 3,780,198, Cl. 426-477.000.

Palau, Joseph, to Staubli Ltd. Connection between frame and power transmitting rod of a shedforming machine. 3,779,287, Cl. 139-88.000.

Palmaer, Karl V. General purpose tracks. 3,779,617, Cl. 305-38.000.

Palmenberg, Edward C., to Chromalloy American Corporation. Buttress twist gage. 3,778,906, Cl. 33-174.00p.

Palmer, Oskar. Apparatus for production of concrete reinforcement lattice. 3,779,445, Cl. 228-5.000.

Palusky, Eugene L.: *See—*
Erickson, Donald V.; and Palusky, Eugene L., 3,779,782.

Palzon, William Joseph. Right hand steering mechanism for vehicles. 3,779,098, Cl. 74-492.000.

Pan, Edward S.: *See—*
Lee, Robert E.; McDermott, Philip S.; and Pan, Edward S., 3,779,803.

Pansky, Emil J.; and Dean, Donald G., to Whittaker Corporation. Wheel and alignment assembly. 3,779,610, Cl. 301-9.00n.

Papa, Anthony Joseph; and Proops, William Robert, to Union Carbide Corporation. Flame-retardant polyurethanes containing 1,2,5,6-tetrabromo-5,4'-dihydroxyhexane. 3,779,953, Cl. 260-2.5aj.

Papahronis, Basil T.; and Gibble, Walter P., to Hunt-Wesson Foods, Inc. Oil treatment process. 3,780,076, Cl. 260-420.000.

Papavasiliou, Mary J.: *See—*
Snyder, John L.; Papavasiliou, Mary J.; and Mann, Roger H., 3,779,999.

Papen, Eduard L. J., to National Forge Company. Anti-dirt sleeve for isostatic press. 3,779,277, Cl. 137-592.000.

Pappas, Michael, to Originetics Incorporated. Ball game court with heat receiving panel structure. 3,779,547, Cl. 272-3.000.

Papst-Motoren KG: *See—*
Doemen, Benno; and Muller, Rolf, 3,780,363.

Park, Im Keon, to Celanese Corporation. Production of pervious low density carbon fiber reinforced composite articles. 3,779,789, Cl. 117-46.0cb.

Parker, George, Sr., 1/5 to Trimble, J. B. and Smith, Divian. Method and apparatus for controlling air pollution caused by volatile emissions from storage tanks and the like. 3,778,968, Cl. 55-32.000.

Parker Pen Company, The: *See—*
Dyson, John J., 3,779,780.

Pastari, Guenter: *See—*
Schmidt, Alfred, Jr.; and Pastari, Guenter, 3,778,865.

Pasternak, Stephen F.: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 3,779,311.

Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen m.b.H.: *See—*
Stadler, Karl, 3,780,335.

Patmore, Edwin L.; Reed, David D.; Oberender, Frederick G.; and Nebzydoski, John W., to Texaco Inc. Synthetic aircraft turbine oil. 3,779,919, Cl. 252-33.006.

Patmore, Edwin L.; Oberender, Frederick G.; and Reed, David D., to Texaco Inc. Synthetic aircraft turbine oil. 3,779,921, Cl. 252-33.600.

Patterson, Richard A., to United Seal Company, The. Flexible strap-type seal having enclosed locking means. 3,779,589, Cl. 292-317.000.

Pattyn, Herman Alberik: *See—*
Vanassche, Willy Joseph; Pollet, Robert Joseph; Borginon, Hendrik Alfons; and Pattyn, Herman Alberik, 3,779,776.

Paul, Dwaine M., to Ebald, Inc., mesne. Explosive blast actuated liquid distributors and processes of operation thereof. 3,779,461, Cl. 239-172.000.

Paul, Herman L., Jr. Venturi-ball valve. 3,779,508, Cl. 251-124.000.

Paulsen, Uwe: *See—*
Korn, Roland; Seyd, Gunther; and Paulsen, Uwe, 3,778,938.

Pauze, Denis R., to General Electric Company. Polyamideimides from unsaturated anhydrides. 3,779,996, Cl. 260-77.5am.

Payne, Leslie E.: *See—*
Beard, Hoyt S.; Payne, Leslie E.; and McArthur, Colin S., 3,779,849.

Peabody Engineering Corporation: *See—*
Vancini, Carlo A., 3,778,980.

Peabody Galion Corporation: *See—*
Herpich, William A.; and Chaney, Donal W., 3,779,409.

Pearce, Roscoe L.; Stalker, Gerald C.; and Arnold, John L., to Dow Chemical Company, The. Calcium chloride and polyethylene glycol desiccant briquette. 3,779,936, Cl. 252-194.000.

Pearson, Theodore A. Plant grow guide. 3,778,929, Cl. 47-58.000.

Pease, Theodore J. Mobile snow working apparatus with adjustable height flailer. 3,779,319, Cl. 172-45.000.

Peerless of America, Incorporated: *See—*
O'Connor, Joseph M.; and Pasternak, Stephen F., 3,779,311.

Peippo, Emil. Decoy, especially trolling hook. 3,778,917, Cl. 43-35.000.

Pelaez, Pedro B. Mortar with electro-magnetic retaining coil. 3,779,128, Cl. 89-1.00f.

Penn International Industries, Inc.: *See—*
Penn, Russell C.; Penn, Wayne P.; and Roughly, Thomas H., 3,778,852.

Penn, Russell C.; Penn, Wayne P.; and Roughly, Thomas H., to Penn International Industries, Inc. Water bed. 3,778,852, Cl. 5-348.0wb.

Penn, Wayne P.: *See—*
Penn, Russell C.; Penn, Wayne P.; and Roughly, Thomas H., 3,778,852.

Pennington, Leroy R.: *See—*
Young, Frank G.; and Pennington, Leroy R., 3,780,127.

Pennwalt Corporation: *See—*
Callahan, John William; and Capdeville, Martin J., 3,778,935.
Conkling, William Collins, 3,779,268.
Dukert, Andrew Anthony; and Christofas, Alkis, 3,779,854.
Gardella, John M.; Ciavattoni, Anthony; and Ujvary, Joseph I., 3,778,903.
Shapiro, Leonard, 3,779,450.

Perkin-Elmer Corporation, The: *See—*
Landsman, Robert M., 3,779,779.

Perkins, Charles Willin, to Hosiery Equipment Limited. Apparatus for separating hosiery articles. 3,779,046, Cl. 66-147.000.

Perkins, William C.: *See—*
Wadsworth, Donald H.; and Perkins, William C., 3,779,989.

Permanence Corporation: *See—*
Baum, Charles S., 3,779,299.
Wendler, Charles F.; and Baum, Charles S., 3,779,715.

Perreault, Jules, to Bombardier Limited. Muffler assembly for snowmobiles. 3,779,327, Cl. 180-5.00r.

PERRO, Societe pour de Developpment et la Vente de Specialities Chimiques: *See—*
Pillon, Daniel, Poignant, Pierre; and Caffiero, Rudolphe, 3,779,738.

Perry, Robert J., to Phillips Petroleum Company. Introducing catalyst into a reactor. 3,780,135, Cl. 260-878.00b.

Perry, Russell C., to Artek Systems Corporation. Antibiotic sensitivity measurement system. 3,780,223, Cl. 178-6.008.

Personal Communication Inc.: *See—*
Yevick, George J.; and Waly, Adnan, 3,779,635.

Peterson, Dean McCormack, to Honeywell Inc. Slide projector. 3,779,636, Cl. 353-83.000.

Peterson, Lonn M. Live-bait fish-hook. 3,778,921, Cl. 43-44.800.

Peterson, Reuben W.: *See—*
Anderson, Clifford J.; and Peterson, Reuben W., 3,780,306.

Peterson, Wilmer R.: *See—*
Triplett, Lee; and Peterson, Wilmer R., 3,779,105.

Petrie, Adelore F., to Hammond Corporation. Organ system for automatically producing runs of various character. 3,780,203, Cl. 84-1.170.

Petro-Tex Chemical Corporation: *See—*
Friedrich, Heinz G., 3,780,129.
Manning, Harold E., 3,780,126.

Petrochemical Industries, Limited: *See—*
Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, 3,779,691.

Petrolite Corporation: *See—*
Redmore, Derek; and Welge, Frederick T., 3,779,912.

Petros, Andrew J.; and Rybar, Clement S., to Mesta Machine Company. Coupling for mill rolls. 3,779,037, Cl. 64-5.000.

Pettibone Corporation: *See—*
Bisinella, Angelo J.; and Nosek, Roy F., 3,779,679.

Petzsch, Lothar: *See—*
Backstein, Gunter; and Petzsch, Lothar, 3,779,169.

Pfarrwaller, Erwin, to Sulzer Brother Limited. Method and apparatus for weaving terry cloth. 3,779,286, Cl. 139-25.000.

Pfeiler, Leslie H.: *See—*
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., 3,778,898.

Pfenning, Helmut: *See—*
Reis, Walter; Pfenning, Helmut; and Boll, Dietmar, 3,779,067.

Pfitzner, Klaus: *See—*
Irmscher, Klaus; Klockow, Michael; Mehrhof, Werner; Pfitzner, Klaus; Randau, Deeter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,780,171.

Phelps, William D., to Phelps-Davis, Inc. Peacan cleaner. 3,779,377, Cl. 209-36.000.

Phelps-Davis, Inc.: *See—*
Phelps, William D., 3,779,377.

Philander, Herber C., to Chicago Fire Brick Company. Removable refractory furnace cover. 3,778,950, Cl. 52-483.000.

Phillippe, Maurice, to Vel's Ford Sales Co., Inc. Light weight racing wheel. 3,779,611, Cl. 301-65.000.

Phillips, Joseph L.: *See—*

Caley, Lloyd E.; Hill, Horace E.; and Phillips, Joseph L., 3,779,664.

Phillips, Michael; and Jurow, Victor A., to Dreyfus, L. A. Company. Mechanized gum base pan unloader. 3,779,410, Cl. 214-311.000.

Phillips Petroleum Company: *See—*
Blackwell, Jennings P., 3,779,825.
Boneau, David F., 3,779,315.
Dollinger, Robert E., 3,779,683.
Doss, Richard C.; and Kuper, Donald G., 3,780,097.
Gagle, Duane W.; Draper, Homer L.; and Bennett, Richard J., 3,779,964.
Mahan, John E., 3,779,824.
Newton, Richard C., 3,778,872.
Perry, Robert J., 3,780,135.

Photocircuits Corporation: *See—*
Polichette, Joseph, 3,779,758.

Piccirilli, Francis J.; and Sabo, Joseph M. Light weight decorative insulated bottle container. 3,779,298, Cl. 150-52.00r.

Pickerell, Fred T.; and Brignola, Dominic J., to West Company, The. Primary nurser assembly. 3,779,413, Cl. 215-11.00c.

Pickett, John E. P.: *See—*
Kinney, Thomas D.; and Pickett, John E. P., 3,779,681.

Pickstock, Barry Thomas; and Neale, Denis Manktelow, to EVR Enterprises. Electronic weave compensation. 3,780,222, Cl. 178-7.200.

Piech, Ferdinand; and Schmitt, Sepp, to Porsche, Dr.-Ing. H.c.F., KG. Method and apparatus for mixture preparation of internal combustion engines. 3,779,223, Cl. 122-122.00d.

Pierce, Harold C. Boxed produce carloading. 3,779,173, Cl. 105-369.00s.

Pietryka, Joseph: *See—*
Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, 3,779,275.

Pillon, Daniel; Poignant, Pierre; and Caffiero, Rudolphe, to PERRO, Societe pour de Developpment et la Vente de Specialities Chimiques. Herbicidal para-tert-butylphenyl urea. 3,779,738, Cl. 71-120.000.

Pinnow, Douglas Arthur; and Van Uitert, Le Grand Gerard, to Bell Telephone Laboratories, Incorporated. Optical elements utilizing fluorinated polymers. 3,779,627, Cl. 350-96.0wg.

Pinten, Peter; Weissenfels, Franz; and Junger, Hans. Method of making phenolic resin foams. 3,779,959, Cl. 260-2.50f.

Piretti, Giancarlo, to Anonima Castelli s.a.s. di Casare Castelli & C. Folding table. 3,779,176, Cl. 108-112.000.

Pirnie, Robert M., III: *See—*
Pirnie, Robert M., Jr.; and Pirnie, Robert M., III, 3,780,227.

Pirnie, Robert M., Jr.; and Pirnie, Robert M., III, to Communication Equipment & Contracting Co., Inc. Telephone call answering and allotting transfer system. 3,780,227, Cl. 179-6.00c.

Pirooz, Perry P., to Owens-Illinois, Inc. Glass-ceramic and for making same. 3,779,856, Cl. 161-164.000.

Pisesky, Michael: *See—*
MacNeil, John Harold, 3,779,549.

Pisoni, Ottorino. Automatic rotary machine for continuously molding and pressing soap cakes. 3,779,685, Cl. 425-236.000.

Pitney Bowes, Inc.: *See—*
Ignatuev, Vladimir, 3,779,584.

Plambeck, Peter J.: *See—*
Clark, Eugene V.; Martin, William J.; Plambeck, Peter J.; and Commanday, Maurice R., 3,779,719.

Plant, Howard L.: *See—*
Bruson, Herman A.; and Plant, Howard L., 3,780,117.

Plas-Med, Inc.: *See—*
Etes, Donald E., 3,779,211.

Plasser, Franz; and Theurer, Josef. Control for the lateral adjustment of a track working tool assembly. 3,779,170, Cl. 104-12.000.

Plevin, Harold, to Harnden, C. A., Limited. Slitting and rewinding machine. 3,779,475, Cl. 242-56.200.

Ploch, Siegfried; Scholtis, Walter; Zschunke, Heinz; and Scharch, Dieter, to Forschunginstitut fur Textillechnologie. Textile fabric and method of producing same. 3,779,852, Cl. 161-62.000.

Ploetz, Theodor; and Solich, Edeltraud, to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung. Method of heating paper. 3,779,791, Cl. 21-58.000.

Pogonowski, Ivo C.; and Carmichael, Paul D., to Texaco Inc. Protection against sheet ice at an offshore structure. 3,779,019, Cl. 61-1.000.

Poignant, Pierre: *See—*
Pillon, Daniel; Poignant, Pierre; and Caffiero, Rudolphe, 3,779,738.

Polanka, George J.: *See—*
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., 3,778,898.

Polanskyj, Bohdan S.; Solomon, Jack M.; Chisholm, Daniel R.; and Bluestein, Bernard R., to Witco Chemical Corporation. Continuous process for producing long chain amines. 3,780,107, Cl. 260-503.00r.

Polaroid Corporation: *See—*
Alston, William W.; Driscoll, John J.; and Wareham, Richard R., 3,779,770.
Bloom, Stanely M.; and Garcia, Paulina H., 3,779,752.
Bloom, Stanley M.; Idelson, Elbert M.; Simon, Myron S.; and Waller, David P., 3,779,753.
Idelson, Elbert M., 3,779,754.
Idelson, Elbert M., 3,780,105.
Paglia, Richard, 3,779,144.

Polestak, Walter J.: *See—*
Keuchel, Herbert W.; and Polestak, Walter J., 3,780,149.

Policella, Henry. Fabric tensioning apparatus. 3,779,441, Cl. 226-111.000.

Polichette, Joseph, to Photocircuits Corporation. Photosensitive process for producing printed circuits employing electroless deposition. 3,779,758, Cl. 96-36.200.

Pollart, Dale F.: *See—*
Ancker, Fred H.; and Pollart, Dale F., 3,779,963.

Pollet, Robert Joseph: *See—*
Hofman, Emiel Alexander; and Pollet, Robert Joseph, 3,779,757.
Vanassche, Willy Joseph; Pollet, Robert Joseph; Borginon, Hendrik Alfons; and Pattyn, Herman Alberik, 3,779,776.

Pollitt, Duncan: *See—*
Scott, Walter T., 3,779,227.

Pollitzer, Ernest L., to Universal Oil Products Company. Alkylaromatic transalkylation utilizing alumina deficient mordenite. 3,780,122, Cl. 260-672.00t.

Pollock, E. Kears; and Umbel, Forrest K., to PPG Industries, Inc. Controlled glass manufacturing process. 3,779,731, Cl. 65-29.000.

Pond, Robert B., to Atom Manufacturing Co., Inc. Degassing apparatus for a fish aquarium or the like. 3,778,976, Cl. 55-206.000.

Pondelicek, William J.; and Schmidt, Vernon F., to Heich Die Casting Corporation. Apparatus for lubricating a die structure employed in die casting. 3,779,305, Cl. 164-312.000.

Poore, Ernest C.; and Goforth, John A., to Midwestern Specialties Ltd. Pipe handling method and apparatus. 3,779,696, Cl. 432-6.000.

Poppincer, Herbert; and Hubner, Klaus, to Siemens Aktiengesellschaft. Control circuit for an inverter including a controlled thyristor in an intermediate direct current circuit. 3,780,361, Cl. 318-171.000.

Porazinski, Robert F., to Bell & Howell. Film magazine with drive capstan. 3,779,484, Cl. 242-199.000.

Porcelli, John C., to Federal Tool & Plastics. Plastic dispensing nozzle with a ball valve. 3,779,429, Cl. 222-500.000.

Porret, Daniel; Habermeier, Juergen; and Batzer, Hans, to Ciba-Geigy AG. Adducts, containing opoxide groups, from polyepoxide compounds and binuclear N-heterrocyclic compounds. 3,779,949, Cl. 260-2.00n.

Porsche, Dr.-Ing. H.c.F., KG: *See—*
Piech, Ferdinand; and Schmitt, Sepp, 3,779,223.

Porter, Lawrence C.; and Graves, Kenneth E., to Upjohn Company, The. Digital method and system for material handling. 3,780,365, Cl. 318-318.000.

Poster, Maurice G. Hydrophilic lens holder. 3,779,648, Cl. 356-124.000.

Potlatch Forest Inc.: *See—*
Hayes, Leonard L., 3,779,543.

Potter, Ernest William: *See—*
Allen, Ronald Noel; and Potter, Ernest William, 3,778,876.

Powell, Mabrin P., to Champion International Corporation. Water-resistant microcapsular opacifier system and products. 3,779,941, Cl. 252-316.000.

Powell, Ronald C.: *See—*
Sanders, Vernard W.; and Powell, Ronald C., 3,779,590.

Powers, Kenneth W.: *See—*
Hubbard, Addison W.; and Powers, Kenneth W., 3,779,974.

Poweska, Joseph V.; and Stoneham, Jeffrey R., to Sylvania Electric Products, Inc. Percussion-ignitable flash unit having contact-actuable pre-energized strikers and photographic apparatus using such units. 3,780,283, Cl. 240-1.300.

PPG Industries, Inc.: *See—*
Janakirama-Rao, Bhogaraju V., 3,779,733.
Pollock, E. Kears; and Umbel, Forrest K., 3,779,731.

Pre-Cast Concrete Products, Ltd.: *See—*
Dorris, John P., 3,778,941.

Prescott, Charles: *See—*
Gordon, Bernard M.; Becker, Brant W.; and Prescott, Charles, 3,780,353.

Present, Charles William Stratford: *See—*
Witney, Clifford Edward; and Present, Charles William Stratford, 3,779,890.

Presley, C. Travis: *See—*
Argabright, Perry A.; and Presley, C. Travis, 3,779,940.
Argabright, Perry A.; and Presley, C. Travis, 3,779,968.

Presley, Rex W.: *See—*
Ahern, Charles J.; Datwyler, Walter F.; and Presley, Rex W., 3,779,673.

Pressman, Gerald L.; Frohbach, Hugh; and Blake, David E., to Electroprint, Inc. Electrostatic printing system and method using ions and toner particles. 3,779,166, Cl. 101-426.000.

Pressman, Gerald L.; and Kittredge, Thomas D., to Electroprint, Inc., mesne. Method and apparatus for single and multicopy CRT computer print-out. 3,780,376, Cl. 346-74.0cr.

Preston, Jerome A., to Essex International, Inc. Silicon-hydantoin-ester resins. 3,779,991, Cl. 260-46.50e.

Price, David D., Jr.: *See—*
De Bell, Lawrence R.; and Price, David D., Jr., 3,780,231.

Price, Raymond M.; and Reed, Russell. Abrasion resistant gas generating compositions for use in inflating safety crash bags. 3,779,823, Cl. 149-19.000.

Printed Motors, Limited: *See—*
Henderson, Ian, 3,780,366.

Privott, Wilbur J., Jr.; and Cunningham, Robert E., to Monsanto Company. Low viscosity melt spinning process. 3,780,153, Cl. 264-176.00f.

PROGIL: *See—*
Labedan, Pierre; and Masotti, Robert, 3,779,885.
Prognon, Pierre; Scuflaire, Robert; Mathey, Francois; and Grysckiewic-Trochimowski, Oleg, to Azote et Produits Chimiques S.A. Alkylthiocarbonates of S-dialkylamino halotriazines. 3,780,036, Cl. 260-249.500.
Proops, William Robert: *See—*
Papa, Anthony Joseph; and Proops, William Robert, 3,779,953.
Prost, Roger: *See—*
Aupoix, Marcel; Moisson-Franckhauser, Francois; Leroux, Jean-Marie; and Prost, Roger, 3,780,205.
Psychotherapeutic Devices, Inc.: *See—*
Kritzberg, Nathan I.; and Gardner, Richard, 3,779,557.
Pullakat, Thomas J.; and Shida, Mitsuzo, to Chemplex Company. Catalyst and catalytic process. 3,780,011, Cl. 260-94.90d.
Pullman Incorporated: *See—*
Nagy, Ernest J., 3,778,933.
Purdy, Frederick A. Garage door energy stored and employed. 3,778,930, Cl. 49-25.000.
Purex Corporation, Ltd.: *See—*
Smith, Charles Harry, 3,779,080.
Puterbaugh, Loren J.: *See—*
Haining, Frank W.; and Puterbaugh, Loren J., 3,778,900.
Putman, Richard E. J., to Westinghouse Electric Corporation. Control system and method for a reversed ball mill grinding circuit. 3,779,469, Cl. 241-30.000.
QST Industries, Inc.: *See—*
Miller, Samuel E., 3,778,845.
Quakenbush, Howard M., to Flexsteel Industries, Inc. Foldable arm rest assembly. 3,779,600, Cl. 297-417.000.
Queuleu, Metz: *See—*
Leroy, Pierre; Gombert, Marcel; Queuleu, Metz; and Sprunck, Emile, 3,779,534.
Quinn, Peter T.; and Schroeder, Bruce W., to Honeywell Inc. Photographic slide dispenser. 3,779,423, Cl. 221-186.000.
Raago, Rein, to Wagner Electric Corporation. Symbol display tube with auxiliary electrode. 3,780,326, Cl. 313-108.00r.
Rabin, Albert M., to Bell & Howell Company. Knife programmer. 3,779,114, Cl. 83-205.000.
Rabut, Eugene W., to Occidental Energy Development Company. Manifold system for electrical energy storage systems. 3,779,813, Cl. 136-161.000.
Race, Marlin L., to General Electric Company. Trash compactor having means facilitating trash removal therefrom. 3,779,156, Cl. 100-218.000.
Racine, William H. Tube end fitting. 3,779,587, Cl. 285-312.000.
Radiation Development Co., Ltd.: *See—*
Free, David, 3,780,305.
Radomski, Alfreda, to Warnaco, Inc. Brassiere. 3,779,250, Cl. 128-489.000.
Raesz, Reuben: *See—*
Morrison, Donald J.; and Raesz, Reuben, 3,779,359.
Rambausek, Hugo: *See—*
Wetzel, Roland; and Rambausek, Hugo, 3,779,442.
Ramge, Dennis Lee, to Johns-Manville Corporation. Control for glass marble, feeding, melting and fiber forming unit. 3,779,730, Cl. 65-9.000.
Ramillon, Rene. Safety front jaw for ski bindings. 3,779,569, Cl. 280-11.35t.
Ramond, Jean: *See—*
Thomas, Jean-Pierre; and Ramond, Jean, 3,779,819.
Ranco Incorporated: *See—*
Lorenz, Jerome L., 3,779,222.
Randau, Deeter: *See—*
Irmscher, Klaus; Klockow, Michael; Mehrhof, Werner; Pfitzner, Klaus; Randau, Deeter; Nowak, Herbert; and Freisberg, Karl-Otto, 3,780,171.
Rands, William Partington. Energy absorbing device. 3,779,591, Cl. 293-89.000.
Rankins, Everett V. Windrow rake opening device and one wheel tractor. 3,778,987, Cl. 56-377.000.
Ranz, Erwin; Schutz, Heinz-Dieter; Schellenberger, Hans; and Von Rintelen, Harald, to Agfa-Gevaert Aktiengesellschaft. Photographic process. 3,779,755, Cl. 96-27.00e.
Rapp, Charles F.: *See—*
Baak, Nils Tryggve E. A.; and Rapp, Charles F., 3,779,781.
Rassmann, Christoph: *See—*
Heyer, Willy; and Rassmann, Christoph, 3,779,604.
Ratie, Wilbert L., Jr., to Water Gremlin Company. Connectors. 3,778,871, Cl. 24-236.000.
Ratte, Patrice: *See—*
Barry, Claude; and Ratte, Patrice, 3,779,077.
Ravera, Giovanni; Cosmo, Nicola; and Siletto, Giorgio, to Olivetti, Ing. C. & S. S.p.A. Desk-top electrostatic copying machine. 3,779,638, Cl. 355-3.000.
Rawson, Edward B.: *See—*
Murphy, William J., Jr.; Ferguson, Joseph B.; and Rawson, Edward B., 3,779,235.
Raymon, Raymond T. Sliding panel lock. 3,779,588, Cl. 292-57.000.
Raymond International, Inc.: *See—*
Godley, Augustus P.; and Kruse, William E., 3,779,025.
Raymond, Maurice A.: *See—*
Gay, Walter A.; and Raymond, Maurice A., 3,780,110.
Razzano, John S., to General Electric Company. Process for producing diorganopolysiloxane polymers. 3,779,987, Cl. 260-46.50r.
RCA Limited: *See—*
Waksberg, Armand; and Wood, John Irving, 3,780,296.
Reagan, Donald W., to Singer Company, The. Circular knitting machines for producing a patterned fabric. 3,779,042, Cl. 66-5.0da.
Reckziegel, Erich: *See—*
Moll, Franz; Morcher, Bernard; Reckziegel, Erich; and Saleck, Wilhelm, 3,779,764.
Recognition Equipment Incorporation: *See—*
Faulkner, Hubert D.; and Requa, Stanley D., 3,780,270.
Redactron Corporation: *See—*
Wolf, Edgar; and Lau, Edward, 3,779,485.
Redmore, Derek; and Welge, Frederick T., to Petrolite Corporation. Water clarification process using silicon-containing aminomethyl phosphonates. 3,779,912, Cl. 210-54.000.
Redwanz, James O. Semiconductor interconnecting system using conductive patterns bonded to thin flexible insulating films. 3,780,352, Cl. 317-101.0cm.
Reed, David D.: *See—*
Patmore, Edwin L.; Reed, David D.; Oberender, Frederick G.; and Nebzydoski, John W., 3,779,919.
Patmore, Edwin L.; Oberender, Frederick G.; and Reed, David D., 3,779,921.
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., to Zink, John, Company. Method and apparatus for non-polluting combustion of waste gases. 3,779,689, Cl. 431-89.000.
Reed, Russell: *See—*
Price, Raymond M.; and Reed, Russell, 3,779,823.
Reeves, Hewett Maxwell, to Brown & Root, Inc. Electronic range measuring method and apparatus. 3,780,370, Cl. 343-17.700.
Regan, Albert Michael, to Regan Forge & Engineering Company. Releasable connecting apparatus for subsea wellhead. 3,779,313, Cl. 166-.600.
Regan Forge & Engineering Company: *See—*
Regan, Albert Michael, 3,779,313.
Regipa, Robert, to Centre National d'Etudes Spatiales. Positioning device for the edge of flexible films. 3,779,443, Cl. 226-199.000.
Reimschussel, George Paul: *See—*
Weeks, Thomas Joseph, Jr.; and Reimschussel, George Paul, 3,779,244.
Reis, Walter: *See—*
Reis, Walter; Pfenning, Helmut; and Boll, Dietmar (said Pfenning, said Boll, assor to said), 3,779,067.
Reis, Walter; Pfenning, Helmut; and Boll, Dietmar, said Pfenning, said Boll, assor to said Reis, Walter. Device for finishing complementary parts and testing the same. 3,779,067, Cl. 73-37.000.
Reiser, Kurt: *See—*
Abendroth, Paul; and Reiser, Kurt, 3,779,165.
Reisser, Vernon H. Vehicle wheel. 3,779,616, Cl. 305-19.000.
Reiter, John J. Clamp. 3,779,108, Cl. 81-424.000.
Rembold, Heinz; Baumann, Dieter; and Habermeier, Jurgen, to Ciba-Geigy Corporation. Polyepoxide-polysiloxane compounds, processes for their manufacture and their use. 3,779,988, Cl. 260-46.50g.
Renckhoff, Gustav: *See—*
Bunger, Heinrich; and Renckhoff, Gustav, 3,779,783.
Rennick, John L., to Zenith Radio Corporation. Circuit for establishing correct hue setting in color television using VIRS signal. 3,780,218, Cl. 178-5.4he.
Repco Products Corporation: *See—*
Bunten, Theodore M., 3,779,309.
Repke, Virginia L.: *See—*
Mesek, Frederick K.; and Repke, Virginia L., 3,779,246.
Reppel, Willi E., to Oliver Tire & Rubber Company. Apparatus for retreading tires. 3,779,830, Cl. 156-394.000.
Reppel, Willi E., to Oliver Tire & Rubber Company. Apparatus for retreading tires. 3,779,831, Cl. 156-394.000.
Reppel, Willi E., to Oliver Tire & Rubber Company. Method for retreading tires. 3,779,832, Cl. 156-96.000.
Reppel, Willi E., to Oliver Tire & Rubber Company. Apparatus for retreading tires. 3,779,833, Cl. 156-394.000.
Requa, Stanley D.: *See—*
Faulkner, Hubert D.; and Requa, Stanley D., 3,780,270.
Research Development Corporation of Japan: *See—*
Kono, Akiro; and Nozawa, Yoshiharu, 3,778,894.
Research-Cottrell, Inc.: *See—*
Scheller, Herman, 3,779,678.
Resitron Corporation, mesne: *See—*
Wade, Robert C., 3,779,955.
Resler, Charles J., Jr.: *See—*
Huskey, C. George; Resler, Charles J., Jr.; and Sanders, Sidney C., 3,779,682.
Reuter, Ernst: *See—*
Mudsam, Udo; Reuter, Ernst; and Maslowski, Stefan, 3,780,266.
Revenue Systems Limited: *See—*
Hunn, Bernard A.; and Humphreys, Christopher, 3,780,269.
Reynolds, Edward Henry, to British Insulated Callenders Cables Limited. Electric cables. 3,780,206, Cl. 174-36.000.
Reynolds Metals Company: *See—*
Kesler, Sidney B., Jr., 3,778,862.
Reynolds, R. J., Tobacco Company: *See—*
Beard, Hoyt S.; Payne, Leslie E.; and McArthur, Colin S., 3,779,849.
Reynolds, Robert J.: *See—*
Deyerl, Herman F.; and Reynolds, Robert J., 3,780,235.
Rheinmetall G.m.bH.: *See—*

Backstein, Gunter; and Petzsch, Lothar, 3,779,169.
Zielinski, Erich, 3,779,396.
Rheinstahl AG: *See—*
Koppers, Manfred, 3,779,023.
Rhld, Hilden: *See—*
Fries, Walter; Bloching, Helmut; Rhld, Hilden; and Jung, Dieter, 3,779,931.
Rhoades, Vaughan W.: *See—*
Brown, Larry P.; and Rhoades, Vaughan W., 3,779,421.
Rhone-Poulenc S.A.: *See—*
Camp, Michel, 3,779,967.
Granger, Alain; and Sausse, Andre, 3,778,971.
Michelet, Daniel, 3,779,875.
Michelet, Daniel, 3,779,876.
Rhyne, Johnathan L., 20% to Rhyne, Paul C., Jr. and Rhyne, Joseph M. Novelty yarn. 3,778,992, Cl. 57-139.000.
Rhyne, Joseph M.: *See—*
Rhyne, Johnathan L., 3,778,992.
Rhyne, Paul C., Jr.: *See—*
Rhyne, Johnathan L., 3,778,992.
Ricci, Louis N.: *See—*
Salvati, John G.; Ricci, Louis N.; and Merola, Carl R., 3,780,355.
Rice, Edward K. Means and method of treating expansive concrete. 3,779,085, Cl. 73-432.00r.
Rich, Dennis E.; and Crump, Robert O., to Honeywell Information Systems, Inc. Apparatus for untwisting and stripping twisted wire pair leads. 3,779,290, Cl. 140-1.000.
Richards, Albert A. Wall anchor for electrical conduits. 3,779,495, Cl. 248-71.000.
Richards, Mildred C.: *See—*
Samour, Carlos M.; and Richards, Mildred C., 3,780,092.
Richards, Thomas E.: *See—*
McDougall, Lee A.; Richards, Thomas E.; and Looney, James R., 3,779,935.
Richter, Klaus: *See—*
Muller, Karl Heinz; Richter, Klaus, and Rohr, Harry, 3,780,154.
Ricoh Co., Ltd.: *See—*
Ogawa, Toshiya; and Hasegawa, Toro, 3,779,162.
Rideout, Vincent L.: *See—*
Dumke, William P.; Rideout, Vincent L.; and Woodall, Jerry M., 3,780,359.
Ried, Harold T.: *See—*
Schipper, Dennis J.; Ried, Harold T.; and Rollins, Dallas W., 3,779,172.
Riegel Textile Corporation: *See—*
Teed, Richard K., 3,779,186.
Riesland, David H., to General Electric Company. Power factor correction in a lead/lag ballast circuit. 3,780,347, Cl. 317-9.0pf.
Riggs, John: *See—*
Di Edwardo, Andrew; Dix, Robert; and Riggs, John, 3,779,983.
Riggs, Robert S.: *See—*
Appleby, Paul E.; Riggs, Robert S.; and Christie, Christopher E., 3,779,834.
Riley, D. Richard; and Andren, Earl A. Waterproof tail and clearance light. 3,780,282, Cl. 240-8.003.
Riley, Robert E.; and Taub, James M., to United States of America, Atomic Energy Commission. Tantalum carbide-tantalum fiber composite material. 3,779,716, Cl. 29-182.800.
Riseley, Gerald Frederick, Jr. Restrained access protection apparatus. 3,779,178, Cl. 109-6.000.
Rist, Michel Theophill, to Societe Anonyme Francaise du Ferodo. Free-wheel mechanisms and free wheels incorporating such mechanisms. 3,779,350, Cl. 192-45.000.
Rister, Franklin D. Multi purpose ladder. 3,779,344, Cl. 182-214.000.
Ritter, Henry, to Avco Corporation. Mobile passenger loading lounge for aircraft. 3,779,596, Cl. 296-28.0al.
Rivenaes, Ivar: *See—*
Knudsen, Bjarne, 3,779,213.
Rivin, Arnold A.: *See—*
Nolan, John L.; Rivin, Arnold A.; and Johnson, Bremen I., 3,779,247.
Rivin, Ervin Mikhailovich: *See—*
Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich, 3,780,078.
RMI Company: *See—*
Bomberger, Howard B., Jr., 3,779,872.
Robalex, Inc.: *See—*
Bemiss, Robert P., 3,779,447.
Robatel S.L.P.I.: *See—*
Bochard, Camille, 3,780,309.
Robbins and Bendror Associates, Inc.: *See—*
Bendror, Jack, 3,780,242.
Roberson, Richard E.; and Roberson, Richard E., Jr. Slab and cant mill. 3,779,117, Cl. 83-404.004.
Roberson, Richard E., Jr.: *See—*
Roberson, Richard E.; and Roberson, Richard E., Jr., 3,779,117.
Roberts, Jerome A.: *See—*
Saslow, Seymour; and Roberts, Jerome A., 3,779,233.
Robertshaw Controls Company: *See—*
Kelly, Samuel T., 3,779,274.
Robison, Jim Ray: *See—*
Moen, Art Murphy Dean; and Robison, Jim Ray, 3,779,886.
Robison, Samuel B.: *See—*
Cozewith, Charles; and Robison, Samuel B., 3,780,005.
Roche, Joseph R.; and Bowen, Mat M., to FMC Corporation. Automatic pressure-relief rupture disc changer. 3,779,264, Cl. 137-68.000.
Rockwell International Corporation: *See—*
Budzyna, Edward S., 3,779,288.
Friedman, Joseph, 3,779,009.
Golze, Richard R.; and Kienle, Richard F., 3,779,592.
Herman, Virgil L., 3,779,721.
Wagner, William R., 3,779,212.
Rocton, Lucien, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Connection device for submarine repeater. 3,780,210, Cl. 174-70.00s.
Rodenberg, Orville C.: *See—*
Mosehauer, Michael; and Rodenberg, Orville C., 3,779,748.
Rogers, Waldo I.; Fox, Robert J.; and Moulton, Eric W., to Rusco Industries, Inc. Static card reader and control system for access apparatus. 3,780,268, Cl. 235-61.11d.
Rohm, Gunter Horst. Machinist vise. 3,779,538, Cl. 269-23.000.
Rohner, Thomas E. Electronic odometer and comparative rate indicator. 3,780,272, Cl. 235-150.002.
Rohr, Harry: *See—*
Muller, Karl Heinz; Richter, Klaus; and Rohr, Harry, 3,780,154.
Wirth, Wolf-Dieter; Muller, Erwin; and Rohr, Harry, 3,779,954.
Rohr, Otto: *See—*
Hubele, Adolf; and Rohr, Otto, 3,780,068.
Rokujo, Kazuo: *See—*
Yamamoto, Yasumichi; and Rokujo, Kazuo, 3,779,437.
Rola Celestion Limited: *See—*
Ward, Leslie Russell, 3,780,232.
Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
Abendroth, Paul; and Reiser, Kurt, 3,779,165.
Roland Offsetmaschinenfabrik Faber & Schliches AG: *See—*
Schuhmann, Siegfried; Simeth, Claus; and Wegel, Erich, 3,779,545.
Rolen, William C.: *See—*
Day, Leon E., 3,778,943.
Roll-O-Sheets, Incorporated: *See—*
Rowland, Frederick F., 3,778,964.
Rolland, Thomas P.: *See—*
Van Dorn, Horace B.; Matt, Richard J.; and Rolland, Thomas P., 3,779,619.
Rollei-Werke Franke & Heidecke: *See—*
Bode, Kurt, 3,779,092.
Rollins, Dallas W.: *See—*
Schipper, Dennis J.; Ried, Harold T.; and Rollins, Dallas W., 3,779,172.
Romanelli, Michael G., to Esso Research and Engineering Company. Preparation of alkadienoic acid esters. 3,780,074, Cl. 260-410.90r.
Ronaess, Egil: *See—*
Gudmundsen, Sigmund; Ronaess, Egil; Kjolberg, Sven Arne; and Mejdell, Glor Thorvald, 3,779,870.
Ronco, Karl: *See—*
Hari, Stefan; and Ronco, Karl, 3,780,049.
Hari, Stefan; and Ronco, Karl, 3,780,071.
Roof, John K., to Morrow, Woodrow T. Lock for press button telephone. 3,780,234, Cl. 179-189.00r.
Roome, Douglas P.: *See—*
O'Lenick, Anthony J.; Roome, Douglas P.; and Gabriel, Joseph T., 3,778,965.
Rose, Boyd W.; and Bercovitz, John H., Jr., to FMC Corporation. Egg marking apparatus. 3,779,159, Cl. 101-35.000.
Rose, John Brewster: *See—*
Feasey, Ronald George; and Rose, John Brewster, 3,780,000.
Rosenfeld, Daniel D.; and Corbaty, Martin L., to Esso Research and Engineering Company. Methyl-3-hydroxymethyl-24-dioxo-1,3-dihydroquinazolines. 3,780,042, Cl. 260-260.000.
Rosenthal, Louis Aaron, to Union Carbide Corporation. Electrode method for the surface treatment of thermoplastic materials. 3,779,882, Cl. 204-165.000.
Ross, Donald Mackenzie: *See—*
Bertoya, Hastings Charles Maxim; Ross, Donald Mackenzie; Brook, Richard Anthony; Allnutt, Anthony John; and Semos, Robert Ernest, 3,779,649.
Ross, Henry M., to Ross Industries, Inc. Force-limited injection system for meat processing. 3,779,151, Cl. 99-533.000.
Ross Industries, Inc.: *See—*
Ross, Henry M., 3,779,151.
Ross, Samuel Scott. Exhaust cleaner. 3,778,981, Cl. 55-263.000.
Ross, Thorvald S., Jr.: *See—*
Ross, Thorvald S., Jr.; and Entin, Leonard P. (said Entin assor. to said), 3,779,157.
Ross, Thorvald S., Jr.; and Entin, Leonard P., said Entin assor. to said Ross, Thorvald S., Jr. Receptacle for waste material. 3,779,157, Cl. 100-240.000.
Rossiter, Donald W. Hose coupling connect and disconnect mechanism. 3,779,586, Cl. 285-308.000.
Rossow, Rolf, to Otto, Dr. C., & Comp., G.m.b.H. Gaseous mixing device for regenerator heaters. 3,779,690, Cl. 431-173.000.
Roth, Albee: *See—*
Goeltz, Richard R.; Schumacher, Howard; and Roth, Albee, 3,779,237.
Rothmans of Pall Mall Canada, Limited: *See—*
Brackmann, Warren A.; and Di Ianni, Daniel, 3,779,252.
Roughly, Thomas H.: *See—*

Penn, Russell C.; Penn, Wayne P.; and Roughly, Thomas H., 3,778,852.

Rovinski, Walter M. Package of separated materials to be mixed. 3,779,371, Cl. 206-47.00a.

Rowedder, Gustav: *See—*
Drechsel, Herbert; Dorr, Karl-Heinz; Grimm, Hugo; and Rowedder, Gustav, 3,780,166.

Rowland, Frederick F., to Roll-O-Sheets, Incorporated. Apparatus for shrink packaging. 3,778,964, Cl. 53-184.000.

Rowland-Hill, Edward William; and Margerum, Edwin O., to Sperry Rand Corporation. Crop elevator for a combine. 3,779,251, Cl. 130-27.0jt.

Rudd, Robert L. Thermal bank. 3,780,262, Cl. 219-341.000.

Rudy, Erwin, to Aerojet-General Corporation. Carbide alloys suitable for cutting tools and wear parts. 3,779,745, Cl. 75-176.000.

Rudy, Erwin, to Aerojet-General Corporation. Carbide alloys suitable for cutting tools and wear parts. 3,779,746, Cl. 75-176.000.

Ruez, William J., III: *See—*
Guy, Arthur L.; and Ruez, William J., III, 3,779,656.

Ruggles, Clyde M. Drill bit gauge. 3,779,663, Cl. 408-113.000.

Runck, Alan H.; and Valeri, Cesare Robert, to United States of America, Navy. Method and means for determining oxyhemoglobin association and dissociation curves of whole or other liquids. 3,779,708, Cl. 23-230.00b.

Rusco Industries, Inc.: *See—*
Rogers, Waldo I.; Fox, Robert J.; and Moulton, Eric W., 3,780,268.

Russell, Allen S.; and Knapp, Lester L., to Aluminum Company of America. Furnace structure. 3,779,699, Cl. 432-248.000.

Russell, George F. High efficiency heat transit system. 3,779,310, Cl. 165-105.000.

Ryan, James E.: *See—*
Nosco, Louis C.; and Ryan, James E., 3,779,643.
Nosco, Louis C.; and Ryan, James E., 3,779,644.

Ryan, Leo F., to Ecodyne Corporation. Filter cartridge. 3,779,386, Cl. 210-193.000.

Rybar, Clement S.: *See—*
Petros, Andrew J.; and Rybar, Clement S., 3,779,037.

Ryc, Oldrich, to TATRA, narodni podnik. Apparatus for control of hydraulic circuits. 3,779,016, Cl. 60-329.000.

Rygg, Gregers G., to Avco Corporation. Integral multichannel separator. 3,778,983, Cl. 55-306.000.

Rygiol, Henry V. Multi-arc pipe welding. 3,780,254, Cl. 219-61.000.

Rymes, William H., to United States of America, Navy. Electronic counter-countermeasures system. 3,780,371, Cl. 343-18.00e.

S.A. Texaco Belgium N.V.: *See—*
Dewaele, Sylvain Achiel Raoul, 3,780,114.

Sabet, Huschang. Intake and exhaust arrangement for a rotary-piston internal combustion engine. 3,779,215, Cl. 123-8.470.

Sabo, Joseph M.: *See—*
Piccirilli, Francis J.; and Sabo, Joseph M., 3,779,298.

Sacerdoti, Giancarlo: *See—*
Soglia, Luciano; Catitti, Aldo; Di Marino, Ciampino; and Sacerdoti, Giancarlo, 3,779,618.

Saeva, Franklin D.; and Wysocki, Joseph J., to Xerox Corporation. Liquid crystalline compositions having induced optical activity. 3,780,307, Cl. 250-484.000.

Sagami Chemical Research Center: *See—*
Ohno, Atsuyoshi; Ohnishi, Yutaka; and Tsuchihashi, Genichi, 3,779,880.

Sahgal, Prakash Nath, to Zaverchand & Company. Method for nitration of aromatic hydrocarbon compounds. 3,780,116, Cl. 260-645.000.

Saita, Toshikazu, to Mitsubishi Denki Kabushiki Kaisha. Device for controlling ignition timing of engine. 3,779,219, Cl. 123-117.00r.

Saito, Takashi: *See—*
Suzuki, Ichiro; and Saito, Takashi, 3,779,595.

Sakakura, Shiro; and Ito, Naotake, to Brother Kogyo Kabushiki Kaisha. Apparatus for joining together two pieces of work fabric or similar materials. 3,779,185, Cl. 112-121.120.

Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, to Mitsui Shipbuilding and Engineering Co., Ltd. and Petrochemical Industries, Limited. Apparatus for burning high viscosity liuid fuels. 3,779,691, Cl. 431-190.000.

Sakurada, Ichiro; Okada, Toshio; and Shimano, Yasunao, to Japan Atomic Energy Research Institute. Radiation grafting of poly(ethylene glycol) dimethacrylate and other monomers onto polyester fibers. 3,779,881, Cl. 204-159.150.

Saleck, Wilhelm: *See—*
Moll, Franz; Morcher, Bernard; Reckziegel, Erich; and Saleck, Wilhelm, 3,779,764.

Salient Engineering Limited: *See—*
Christie, Gerald Anthony; and Bressington, Edwin Thomas, 3,778,856.

Salmon, Garland R.; and Newton, George W., to Newton Instrument Company. Universal mounting frame and system for telephone distribution equipment. 3,780,351, Cl. 317-99.000.

Saltz, Fred: *See—*
Casale, William R.; Saltz, Fred; and Schreck, George R., 3,779,440.

Salvati, John G.; Ricci, Louis N.; and Merola, Carl R., to Westinghouse Electric Corporation. Metal enclosed switchgear with J-shaped vertically disposed conductors. 3,780,355, Cl. 317-120.000.

Samour, Carlos M.; and Richards, Mildred C., to Kendall Company, The. Monomeric emulsion stabilizers. 3,780,092, Cl. 260-482.00r.

Sample, Thomas E., Jr.: *See—*
Hughes, James W.; Sample, Thomas E., Jr.; and Tate, Jack F., 3,779,793.

Sanatari, Takeo, to Bendix Corporation, The. Heterodyne imaging device for providing high resolution images. 3,780,217, Cl. 178-6.000.

Sanders, Grady H., to Deering Milliken Research Corporation. Drafting method. 3,778,995, Cl. 57-156.000.

Sanders, Sidney C.: *See—*
Huskey, C. George; Resler, Charles J., Jr.; and Sanders, Sidney C., 3,779,682.

Sanders, Thomas J., to Harris-Intertype Corporation. Fabrication of thin film resistor crossovers for integrated circuits. 3,779,841, Cl. 156-8.000.

Sanders, Vernard W.; and Powell, Ronald C., to Norris Industries, Inc. Non removable knob trim. 3,779,590, Cl. 292-336.300.

Sandoz-Wander, Inc.: *See—*
Anderson, Paul L., 3,780,180.
Barcza, Sandor, 3,780,175.

Sanford Research Institute: *See—*
Acton, Edward M.; Leaffer, Morris A.; and Stone, Herbert, 3,780,194.

Sanger, David M.; and Langan, Joseph E., to General Signal Corporation. Surge arrester. 3,780,350, Cl. 317-61.005.

Sanshin Kinzoku Industries Co., Ltd.: *See—*
Toyota, Yoshitane, 3,779,655.

Santa Fe International Corporation: *See—*
Chow, Philip Y., 3,778,854.

Sanyo Electric Co., Ltd.: *See—*
Inoue, Syuzi, 3,779,483.

Saslow, Seymour; and Roberts, Jerome A., to Espey Mfg. & Electronics Corporation. Speculum instrument with disposable forward section. 3,779,233, Cl. 128-6.000.

Sasse, Klaus: *See—*
Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,780,089.

Sato, Aisuhiko. Finger-training apparatus. 3,779,548, Cl. 272-67.000.

Sato, Makoto: *See—*
Sato, Yoshikazu; and Sato, Makoto, 3,779,391.

Sato, Masamichi; and Takahashi, Isoji, to Fuji Photo Film Company, Ltd. Apparatus for scraping liquid off of sheet material. 3,779,206, Cl. 118-63.000.

Sato, Masamichi, to Fuji Photo Film Co., Ltd. Method of charging in electrophotography. 3,779,749, Cl. 96-1.00c.

Sato, Yoshikazu; and Sato, Makoto. Tool changer for machine tool. 3,779,391, Cl. 211-1.500.

Satomi, Takeo: *See—*
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,780,090.

Sauer, Gale E., to Flangeklamp Corporation. Fire-rated grid member with controlled expansion means. 3,778,947, Cl. 52-232.000.

Sausse, Andre: *See—*
Granger, Alain; and Sausse, Andre, 3,778,971.

Sawvell, Roger V., to Whitney, W. A., Corporation. Punch press with assembly locking mechanism. 3,779,122, Cl. 83-698.000.

Saxon, Michael D.: *See—*
Esch, Robert L.; Arnold, William C.; Skelton, Billy K.; Saxon, Michael D.; Murphy, Jerome A.; and Jaques, Roy J., 3,778,880.

Say, David L.: *See—*
Hegarty, William P.; and Say, David L., 3,779,725.

Sayad, Richard S.: *See—*
Howell, Edward R.; Wood, Harold B., Jr.; and Sayad, Richard S., 3,779,927.

Scanlon, Patricia M.; and Thunberg, Jon C., to Grace, W. R., & Co. Process for preparing chelating agents. 3,780,099, Cl. 260-534.00e.

Scanlon, Patricia M.; and Thunberg, Jon C., to Grace, W. R., & Co. Process for preparing chelating agents. 3,780,100, Cl. 260-534.00e.

Scaramucci, Domer. Stamped-disc butterfly valve. 3,779,512, Cl. 251-308.000.

Schaafsma, Sijbrandus E.; and Hofman, Johannes H. A., to Stamicarbon N.V. Preparation of cyanoalkane carboxylic acids. 3,780,084, Cl. 260-465.400.

Schack, Carl J.; and Wilson, Richard D., to North American Rockwell Corporation. Synthesis of chlorine fluorosulfate and bromine fluorosulfate. 3,780,165, Cl. 423-466.000.

Schaefer, Paul: *See—*
Jaeger, Horst; and Schaefer, Paul, 3,780,093.

Schafer, Kugelfischer Georg, & Co.: *See—*
Korrenn, Heinz; Voll, Horst; and Grubel, Harald, 3,779,626.

Schafstall, Heinrich Gunter; and Furste, Wolfgang Otto August, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Feed-through connection for a pressure vessel, especially a nuclear-reactor shell. 3,779,865, Cl. 176-38.000.

Scharch, Dieter: *See—*
Ploch, Siegfried; Scholtis, Walter; Zschunke, Heinz; and Scharch, Dieter, 3,779,852.

Schatz, Edward: *See—*
Freudenthal, Hugo D.; Townsend, Richard E.; Zawoiski, Peter K.; and Schatz, Edward, 3,779,911.

Scheer, Marcel: *See—*

Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,780,062.

Scheiber, Herbert: *See—*
Ostertag, Karl; Nilgens, Heinrich; and Scheiber, Herbert, 3,778,909.

Scheinpflug, Hans: *See—*
Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,780,089.

Schellenberger, Hans: *See—*
Ranz, Erwin; Schutz, Heinz-Dieter; Schellenberger, Hans; and Von Rintelen, Harald, 3,779,755.

Scheller, Herman, to Research-Cottrell, Inc. Apparatus for constructing concrete walls. 3,779,678, Cl. 425-65.000.

Schelling, James H.: *See—*
Johnson, Thomas F.; and Schelling, James H., 3,780,096.

Schenk, Walter; and Hovemann, Friedrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Nickel electroplating baths. 3,779,874, Cl. 204-49.000.

Schere, Gerald F., to Owens-Illinois, Inc. Apparatus and method for linearizing the output of a normally nonlinear radio frequency thickness gauge. 3,779,378, Cl. 209-73.000.

Scherer, William S. Turbine powered surface vacuum cleaning device. 3,778,864, Cl. 15-339.000.

Schering Corporation: *See—*
Shapiro, Elliot L., 3,780,070.

Scheuerpflug, Hans, to Ditzingen, Johannes Fuchs, Firma. Vehicular suspension system. 3,779,581, Cl. 280-95.00r.

Schieber, Hans; and Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber G.m.b.H. Method and apparatus for adjusting stitch cams. 3,779,044, Cl. 66-78.000.

Schild, A., S.A.: *See—*
Zaugg, Roland, 3,779,002.

Schimitschek, Erhard J.; and Trias, John A., to United States of America, Navy. Liquid laser solution formed with a neodymium salt in phosphorus oxychloride. 3,779,939, Cl. 252-301.40p.

Schipper, Dennis J.; Ried, Harold T.; and Rollins, Dallas W., to ACF Industries, Incorporated. Railway hopper car outlet. 3,779,172, Cl. 105-282.00p.

Schlaudroff, Leo M., to Kerr-McGee Chemical Corporation. Apparatus and method for precisely forming and placing insulation in the slots of magnetic cores. 3,778,890, Cl. 29-596.000.

Schleppnik, Alfred A., to Monsanto Company. 2-Alkyl-3-(2-norbornyl)-propanals. 3,780,109, Cl. 260-598.000.

Schlicht, Raymond C., to Texaco Inc. Automatic transmission fluid. 3,779,928, Cl. 252-75.000.

Schlidt, Rudolf H. Mixing-device. 3,779,463, Cl. 239-308.000.

Schlitz, Jos. Brewing Company: *See—*
Smith, Wayne A., 3,779,368.

Schmerling, Louis, to Universal Oil Products Company. Preparation of alkenyl substituted halogenated unsaturated polybasic acid anhydrides. 3,780,066, Cl. 260-345.900.

Schmid, Peter: *See—*
Kocher, Hans; and Schmid, Peter, 3,779,001.

Schmid, Peter, to Societe Suisse pour l'Industrie Horlogere Management Services SA. Correction device for day-and-date calendar watches. 3,779,000, Cl. 58-58.000.

Schmidt, Alfred, Jr.; and Pastari, Guenter. Attachment for a utility vehicle or for a trailer of such vehicle. 3,778,865, Cl. 15-340.000.

Schmidt, Richard. Variable speed transmission. 3,779,100, Cl. 74-665.00r.

Schmidt, Vernon F.: *See—*
Pondelicek, William J.; and Schmidt, Vernon F., 3,779,305.

Schmidt, Willfred G.: *See—*
Stammler, Manfred; Schmidt, Willfred G.; and Bruenner, Rolf S., 3,779,822.

Schmitt, Robert A., to Columbia Machine, Inc. Article handling apparatus. 3,779,361, Cl. 198-24.000.

Schmitt, Sepp: *See—*
Piech, Ferdinand; and Schmitt, Sepp, 3,779,223.

Schmitz, Richard L.: *See—*
Eddleman, Hardy T.; and Schmitz, Richard L., 3,779,415.

Schnabele, Werner, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Launching tube for projectiles and missiles, respectively. 3,779,130, Cl. 89-1.701.

Schneider, Kurt: *See—*
Hechlhammer, Wilhelm; Schneider, Kurt; and Fahnler, Friedrich, 3,780,157.

Schnettler, Richard A.: *See—*
Suh, John T.; and Schnettler, Richard A., 3,780,023.
Suh, John T.; and Schnettler, Richard A., 3,780,024.

Schnettler, Richard A.; and Suh, John T. 2-Substituted -3,4-dihydroquinazolines. 3,780,040, Cl. 260-256.000.

Scholtis, Walter: *See—*
Ploch, Siegfried; Scholtis, Walter; Zschunke, Heinz; and Scharch, Dieter, 3,779,852.

Schon, Kurt, to Contraves AG. Conductivity measuring cell. 3,779,279, Cl. 137-599.000.

Schon, Rudolf: *See—*
Bartling, Gerhard; and Schon, Rudolf, 3,778,990.

Schon, Rudolf, to SKF Kugellagerfabriken GmbH. Apparatus for withdrawing thread. 3,778,989, Cl. 57-58.890.

Schreck, George R.: *See—*
Casale, William R.; Saltz, Fred; and Schreck, George R., 3,779,440.

Schreiber, Olaf: *See—*
Auer, Werner; and Schreiber, Olaf, 3,780,369.

Schroder, Johann, to U.S. Philips Corporation. Heat accumulator. 3,779,232, Cl. 126-400.000.

Schroder, Paul B., to Leifeld & Co. Method and apparatus for making stepped rims. 3,779,060, Cl. 72-87.000.

Schrodter, Hermann: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Kartlapp, Gerhard; Forst, Wilhelm; and Schrodter, Hermann, 3,780,164.

Schroeder, Bruce W.: *See—*
Quinn, Peter T.; and Schroeder, Bruce W., 3,779,423.

Schroeder, Walter. Air compressor. 3,779,672, Cl. 417-493.000.

Schuder, Maurice E.: *See—*
Stafford, Richard W.; and Schuder, Maurice E., 3,780,240.

Schuftan, Paul Maurice; Armond, John Walter; Leader, John Henry; and Davis, George James, to British Oxygen Company Limited, The. Krypton xenon recovery method. 3,779,028, Cl. 62-22.000.

Schuhmann, Siegfried; Simeth, Claus; and Wegel, Erich, to Roland Offsetmaschinenfabrik Faber & Schliches AG. Delivery arrangement. 3,779,545, Cl. 271-183.000.

Schultenkamper, Josef, to Gelenkwellenbau G.m.b.H. Sealing device for the needle bearings of a universal joint journal pin. 3,779,039, Cl. 64-17.00a.

Schultz, Ward E.: *See—*
Arnold, Dan M.; Schultz, Ward E.; and Smith, Harry D., Jr., 3,780,302.
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., 3,780,301.
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., 3,780,303.

Schumacher, Howard: *See—*
Goeltz, Richard R.; Schumacher, Howard; and Roth, Albee, 3,779,237.

Schuplin, Jerome T., to Fastway Fasteners, Inc. Clip for securing boxes to metal dry wall studs. 3,780,209, Cl. 174-51.000.

Schutz, Heinz-Dieter: *See—*
Ranz, Erwin; Schutz, Heinz-Dieter; Schellenberger, Hans; and Von Rintelen, Harald, 3,779,755.

Schwartz, Robert E.: *See—*
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., 3,779,689.

Schwartz, Sidney M.; and Andalman, Avrum N. Stand for menus and the like. 3,779,504, Cl. 248-441.000.

Schwarze, Werner; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for preparing lead (IV) acetate. 3,780,077, Cl. 260-436.000.

Schweicher, Wolfgang: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.

SCM Corporation: *See—*
Nadkarni, Anil V.; and Klar, Erhard, 3,779,714.

SCM Corporation, mesne: *See—*
Merck, John W.; and Nixon, John D., 3,779,926.

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Scuflaire, Robert: *See—*
Prognon, Pierre; Scuflaire, Robert; Mathey, Francois; and Grysckiewic-Trochimowski, Oleg, 3,780,036.

Seaquist Valve Company: *See—*
Ewald, Ronald F., 3,779,427.

Searle, G. D., & Co.: *See—*
Kulberg, Gerardus Huibrecht; and Deinert, Roedolf Hendrik, 3,780,289.
Scott, Don, 3,780,189.

Searle Medidata Inc.: *See—*
Murphy, William J., Jr.; Ferguson, Joseph B.; and Rawson, Edward B., 3,779,235.

Secoura, Ralph J.: *See—*
Beckering, Jacobus J.; Weber, Edwin J.; and Secoura, Ralph J., 3,780,246.

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Seitz-Werke G.m.b.H.: *See—*
Kaiser, Klaus, 3,779,293.

Seki, Toshio: *See—*
Nakanishi, Michio; Oe, Takanori; and Seki, Toshio, 3,780,035.

Sekiguchi, Junichi: *See—*
Fukuta, Kenji; Sekiguchi, Junichi; Miyashita, Rihei; Matsuzaki, Yoshihara; and Miura, Yoshihiro, 3,779,432.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Motohashi, Masatoshi, 3,779,623.

Selas Corporation of America: *See—*
Siemssen, Ernst A., 3,779,698.

Selin, Terry G.: *See—*

Berger, Abe; and Selin, Terry G., 3,780,080.
Sellers, James B.: *See—*
Day, Leon E., 3,778,943.
Semler, Herbert J. Artery clamp. 3,779,249, Cl. 128-325.000.
Semos, Robert Ernest: *See—*
Bertoya, Hastings Charles Maxim; Ross, Donald Mackenzie; Brook, Richard Anthony; Allnutt, Anthony John; and Semos, Robert Ernest, 3,779,649.
Senese, Daniel John: *See—*
Chang, Herbert Yu-Pang; Elliott, Roger Alan; Senese, Daniel John; and Smith, Thomas Loyd, 3,779,458.
Senn, Charles. Structure for and method of mesh welding. 3,780,253, Cl. 219-58.000.
Sewall, Michael: *See—*
Boddy, Michael Gordon; Sewell, Graham; and Sewall, Michael, 3,780,328.
Sewell, Graham: *See—*
Boddy, Michael Gordon; Sewell, Graham; and Sewall, Michael, 3,780,328.
Seyd, Gunther: *See—*
Korn, Roland; Seyd, Gunther; and Paulsen, Uwe, 3,778,938.
Seymour, Donald Edwin; and Da Costa, Nicholas Mario, to Hydron Limited. Polymers of alkoxy and hydroxyalkyl acrylates or methacrylates. 3,780,003, Cl. 260-86.10e.
Shah, Dilip G.: *See—*
Grunwald, John J.; Solminski, Leo J.; Landau, Adela; and Shah, Dilip G., 3,779,842.
Shamarov, Alvian Matveevich: *See—*
Agadzhanian, Zhora Melkonovich; Ivanitsky, Genrikh Romanovich; and Shamarov, Alvian Matveevich, 3,780,298.
Shannon, Thomas D. Tactile communication attachment. 3,780,225, Cl. 179-2.00a.
Shapiro, Elliot L., to Schering Corporation. 4-Azido-17alpha-alkinyl-4-gonen-17beta-ol-3-ones and method for their preparation. 3,780,070, Cl. 260-349.000.
Shapiro, Leonard, to Pennwalt Corporation. Basket Centrifuge. 3,779,450, Cl. 233-21.000.
Shapland, Earle P., Jr., to United States Steel Corporation. Operating mechanisms and method for slidable-gate closures. 3,779,424, Cl. 222-1.000.
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Sharp, William T., to General Electric Company. Vacuum type circuit breaker comprising series-connected vacuum interrupters, individual ones of which are readily removable and replaceable. 3,780,354, Cl. 317-103.000.
Shavel, John, Jr.: *See—*
Klutchko, Sylvester; Shavel, John, Jr.; and von Strandtmann, Maximilian, 3,780,060.
Shaver, Robert G., to Atlantic Research Corporation. Nitrocellulose propellent compositions containing inorganic oxidizing agents with aluminum. 3,779,826, Cl. 149-20.000.
Shaw, Benjamin W.: *See—*
Hassell, Howard L.; Watson, James C.; and Shaw, Benjamin W., 3,780,138.
Shawgo, Michael: *See—*
Oshida, Otto A., and Shawgo, Michael, 3,779,860.
Shell, Irving W. Support assembly. 3,779,499, Cl. 248-245.000.
Shell Oil Company: *See—*
Beard, Thomas N., 3,779,601.
Beard, Thomas N.; and Van Meurs, Peter, 3,779,602.
Entwistle, Ian D.; Williams, Peter J.; and Devlin, Barry R. J., 3,780,055.
Fuller, Glenn; and Toombs, Alfred John Lawrence, 3,779,723.
Hassell, Howard L., 3,780,137.
Hassell, Howard L.; Watson, James C.; and Shaw, Benjamin W., 3,780,138.
Leonard, William J., Jr., 3,779,952.
Levinson, Gerald S., 3,779,903.
Snyder, John L.; Papavasiliou, Mary J.; and Mann, Roger H., 3,779,999.
Shepard, Alvin F.: *See—*
Dannels, Bobby F.; and Shepard, Alvin F., 3,779,995.
Shepard, Stephen K.: *See—*
Brant, Roy G.; and Shepard, Stephen K., 3,780,238.
Shibano, Yoshizo; and Yamashita, Shohachiro, to Sumitomo Electric Industries, Ltd. Radome with matching layers. 3,780,374, Cl. 343-872.000.
Shibata, Akira; and Oguino, Masanori, to Hitachi, Ltd. Circuit for compensating sharpness of picture in color television receiver. 3,780,215, Cl. 178-5.40r.
Shibata, Shotaro: *See—*
Inose, Fumiyuki; Inui, Tomoji; Kohayashi, Sadao; and Shibata, Shotaro, 3,780,314.
Shibayama, Kazuhiko: *See—*
Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, 3,779,691.
Shida, Mitsuzo: *See—*
Pullakat, Thomas J.; and Shida, Mitsuzo, 3,780,011.
Shields, Michael A.; and Andrews, Robert W., to Signetics Corporation. Semiconductor structure with fusible link and method. 3,778,886, Cl. 29-577.000.
Shigematsu, Toshiharu: *See—*
Fujiki, Konoshuke; Inafuku, Katsuaki; Shimizu, Hiroshi; Shigematsu, Toshiharu; and Kumura, Kazumi, 3,779,821.
Shigeno, Shuichi; and Ishii, Masayoshi, to Kayaba Kogyo Kabushiki Kaisha, Nihon Koki Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha. Adjusting mechanism of removing heavy article. 3,779,399, Cl. 214-1.00r.
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, to Teijin Limited. Process for catalytic intra-molecular rearrangement of dimethyl naphthalene. 3,780,119, Cl. 260-668.00a.
Shimamoto, Susumu: *See—*
Nomura, Harehiko; and Shimamoto, Susumu, 3,778,895.
Shimano, Yasunao: *See—*
Sakurada, Ichiro; Okada, Toshio; and Shimano, Yasunao, 3,779,881.
Shimizu, Hiroshi: *See—*
Fujiki, Konoshuke; Inafuku, Katsuaki; Shimizu, Hiroshi; Shigematsu, Toshiharu; and Kumura, Kazumi, 3,779,821.
Shimojima, Yukiji: *See—*
Takeda, Isao; Mizuno, Masayuki, Sugawara, Toshiaki; Shimojima, Yukiji; and Horiguchi, Sadayuri, 3,780,172.
Shionogi I. A., Ltd.: *See—*
Kondo, Fiji; Mitsugi, Takashi; and Tori, Kazuo, 3,780,026.
Shoemaker, Carlyle E., to Bethlehem Steel Corporation. Method for preventing the formation of rust on the surface of coiled steel strip and an inhibitor for accomplishing same. 3,779,818, Cl. 148-6.14r.
Shrier, Adam L.: *See—*
Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., 3,779,907.
Shroff, Arvin P., to Ortho Pharmaceutical Corporation. 3-Oximes of 19-nortestosterone esters. 3,780,073, Cl. 260-397.500.
Shroff, Shrenik: *See—*
Vassiliades, Anthony E.; Nauman, Edeard F.; and Shroff, Shrenik, 3,779,957.
Shuhkin, Ronald L., to Ethyl Corporation. Synthetic lubricants by oligomerization and hydrogenation. 3,780,128, Cl. 260-683.900.
Shumaker, Charles Storer, to Wean United, Inc. Roll changing device. 3,779,061, Cl. 72-239.000.
Shupe, David M., to Bendix Corporation, The. Optical correlator having a dye amplifier for amplifying correlating portions of signal. 3,779,631, Cl. 350-162.0sf.
Siagel, Robert Clayton; and Bloomquist, Arnold Eugene, to Calgon Corporation. Friction reducing in flowing hydrocarbon fluids. 3,779,969, Cl. 260-29.60e.
Siedman, Russell F., to Universal Oil Products Company. Adding corrosion inhibitor to top of crude oil still. 3,779,905, Cl. 208-348.000.
Siemens Aktiengesellschaft: *See—*
Bardahl, Nils; and Gotz, Friedrich, 3,779,888.
Bock, Erwin; and Theml, Oskar, 3,778,897.
Breyer, Eberhard, 3,779,074.
Fruth, Hans; and Godel, Wolfgang, 3,779,266.
Klar, Erich, 3,780,292.
Korn, Roland; Seyd, Gunther; and Paulsen, Uwe, 3,778,938.
Lang, Manfred, 3,779,625.
Poppincer, Herbert; and Hubner, Klaus, 3,780,361.
Wilhelm, Wilhelm, 3,780,316.
Siempelkamp, G., & Co.: *See—*
Hutz, Gerhard; and Bongers, H. J., 3,779,845.
Siemssen, Ernst A., to Selas Corporation of America. Making of devitrified pellets. 3,779,698, Cl. 432-13.000.
Sifco Industries Inc.: *See—*
Gildone, Anthony M., 3,779,887.
Sigma Systems, Inc.: *See—*
Sharkitt, Patrick J.; and Hayden, Richard R., 3,780,271.
Signet Controls, Inc.: *See—*
Davis, Billy E., 3,779,270.
Signetics Corporation: *See—*
Shields, Michael A.; and Andrews, Robert W., 3,778,886.
Siletto, Giorgio: *See—*
Ravera, Giovanni; Cosmo, Nicola; and Siletto, Giorgio, 3,779,638.
Silva, Joseph W.: *See—*
Irish, Charles G., Jr.; Silva, Joseph W.; and Cowles, Raymond I., 3,779,167.
Silvey, Elmer R. Chipper chain grinder. 3,779,103, Cl. 76-25.00a.
Simeth, Claus: *See—*
Schuhmann, Siegfried; Simeth, Claus; and Wegel, Erich, 3,779,545.
Simm, Walter: *See—*
Bestenreiner, Friedrich; Helmberger, Josef; Muller, Rudolf; and Simm, Walter, 3,780,214.
Simon, James O. Hook extractor pliers. 3,778,919, Cl. 43-53.500.
Simon, Myron S.: *See—*
Bloom, Stanley M.; Idelson, Elbert M.; Simon, Myron S.; and Waller, David P., 3,779,753.
Simoneau, Alex: *See—*
Chaput, Victor B., 3,779,101.
Simonfi, Paul; and Cristea, Viorel, to Fabrica de Sticlarie Turda. Method of making copper-colored ruby glass. 3,779,734, Cl. 65-136.000.
Simonson, Harris J., to Comsec Corporation. Timeclock surveillance system. 3,780,378, Cl. 346-107.00r.
Simpson, Bowen: *See—*
Evans, David; and Simpson, Bowen, 3,779,795.
Sindler, Millard S.; and Indler, Russell. Method and apparatus for eviscerating animals and fowl. 3,778,867, Cl. 17-11.00r.
Singer Company, The: *See—*
Adams, Kenneth D., 3,779,187.

Dickie, Robert J., 3,779,087.
Fox, Douglas J., 3,779,189.
Reagan, Donald W., 3,779,042.
Singhal, Gophal H.; and Lesser, Joseph H. Acyl hydantoin phorothioates. 3,780,056, Cl. 260-309.500.
Sinibaldo, Armando J., to Union Carbide Corporation. Method for obtaining perforated tubular food castings. 3,779,285, Cl. 138-118.100.
Sioui, Richard H.; and Cohen, Harvey M., to Norton Company. Resin-bonded abrasive tools with metal fillers. 3,779,727, Cl. 51-298.000.
Sira Institute: *See—*
Bertoya, Hastings Charles Maxim; Ross, Donald Mackenzie; Brook, Richard Anthony; Allnutt, Anthony John; and Semos, Robert Ernest, 3,779,649.
Sitton, Ellis A.: *See—*
Kennicutt, Robert B.; Sitton, Ellis A.; and Yancey, John W., 3,779,615.
Skalatsky, Viktor Klementievich: *See—*
Glushko, Mikhail Fedorovich; and Skalatsky, Viktor Klementievich, 3,778,993.
Skelton, Billy K.: *See—*
Esch, Robert L.; Arnold, William C.; Skelton, Billy K.; Saxon, Michael D.; Murphy, Jerome A.; and Jaquet, Roy J., 3,778,880.
SKF Industrial Trading and Development Company N.V.: *See—*
Hentschel, Georg, 3,779,351.
SKF Kugellagerfabriken GmbH: *See—*
Bartling, Gerhard; and Schon, Rudolf, 3,778,990.
Schon, Rudolf, 3,778,989.
Smalligan, Lenore R. Writing aid. 3,778,910, Cl. 35-37.000.
Smearing, Robert W.: *See—*
Kohn, Leo S.; and Smearing, Robert W., 3,779,950.
Smirnov, Sergei Ivanovich: *See—*
Nikolaev, Petr Ivanovich; Ignatov, Jury Lazarevich; Smirnov, Sergei Ivanovich; Oxengorn, Naum Izrailevich; Gigineishvili, Rimma Fominichna; Dvorkina, Klara Moissevna; and Iskandyarov, Akhmet Mukhsinyatovich, 3,779,868.
Smirnov, Viktor Sergeevich: *See—*
Gryaznov, Vladimir Mikhailovich; Mischenko, Alexandr Petrovich; Smirnov, Viktor Sergeevich; and Aladyshev, Sergei Ivanovich, 3,779,711.
Smith, Benjamin F., Jr.: *See—*
Wrench, Richard E.; and Smith, Benjamin F., Jr., 3,779,897.
Smith, Charles Harry, to Purex Corporation, Ltd. Gauge recording maximum pressure. 3,779,080, Cl. 73-396.000.
Smith, Divian: *See—*
Parker, George, Sr., 3,778,968.
Smith, Don W., to CMI Corporation. Curb slip form apparatus. 3,779,662, Cl. 404-98.000.
Smith, Duaine E. Storage receptacle-bondler assembly. 3,779,152, Cl. 100-34.000.
Smith, Edwin Studley; and Glazer, Emmett J., to Goodyear Tire & Rubber Company, The. In situ initiator polymerization of vinyl chloride. 3,780,008, Cl. 260-92.80w.
Smith, George H.; and Bonham, James A., to Minnesota Mining and Manufacturing Company. Photosolubilizable compositions and elements. 3,779,778, Cl. 96-115.00r.
Smith, Gordon, & Co., Inc.: *See—*
Ostwald, Richard, 3,779,579.
Smith, Harry D., Jr.: *See—*
Arnold, Dan M.; Schultz, Ward E.; and Smith, Harry D., Jr., 3,780,302.
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., to Texaco Inc. Pulsed neutron logging systems for detecting gas zones. 3,780,301, Cl. 250-301.000.
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., to Texaco Inc. Pulsed neutron logging with background compensation. 3,780,303, Cl. 250-31.000.
Smith International, Inc.: *See—*
Garrett, William R., 3,779,040.
Smith, Peter John: *See—*
Lawson, Leslie Edward; and Smith, Peter John, 3,779,759.
Smith, Stanley D.; and Hamilton, Stephen B., to General Electric Company. Curable compositions. 3,779,986, Cl. 260-46.50g.
Smith, Thomas Loyd: *See—*
Chang, Herbert Yu-Pang; Elliott, Roger Alan; Senese, Daniel John; and Smith, Thomas Loyd, 3,779,458.
Smith, Wayne A., to Schlitz, Jos. Brewing Company. Wear strip construction for conveyor. 3,779,368, Cl. 198-204.000.
Smith, William Richard, to Arizona Chemical Company. Production of tail oil rosin-pentaerythritol esters having improved color. 3,780,012, Cl. 260-97.500.
Smith, William Richard, to Arizona Chemical Company. Preparation of color improved tall oil rosin-pentaerythritol esters. 3,780,013, Cl. 260-97.500.
Smithkline Corporation: *See—*
Hoover, John R. E.; and Stedman, Robert John, 3,780,108.
Sutton, Blaine M., 3,780,065.
Weinstock, Joseph, 3,780,064.
Smits, Bernhard Johannes, to Hazemag Hartzerkleinerungs-und Zement-Maschinenbau Gesellschaft m.b.H. Rotor for use in impact crushers. 3,779,470, Cl. 241-191.000.
Smokontrol Corporation of America: *See—*
Burstein, Norman; and Ditzler, Richard C., 3,779,710.
Snam Progetti S.p.A.: *See—*
Conti, Walter; and Corsini, Pasquale, 3,778,873.
Snell, Leonard Stanley, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Fluid flow compressors. 3,779,666, Cl. 415-159.000.
Snitgen, Joseph D. Safety ignition lock. 3,779,332, Cl. 180-112.000.
Snook, Richard K., to Diginetics Incorporated. Temperature measuring systems for automotive vehicles and the like. 3,779,079, Cl. 73-346.000.
Snow, Gerald A.; and Doughy, Harold A., to United Industrial Syndicate, Inc. Egg carton. 3,779,370, Cl. 206-45.310.
Snydacker, James U.: *See—*
Kirby, James D.; Hetzel, Douglas R.; McKay, Richard H.; Snydacker, James U.; and Ziebold, Paul G., 3,779,453.
Snyder, John L.; Papavasiliou, Mary J.; and Mann, Roger H., to Shell Oil Company. Process for the preparation of branched conjugated diene copolymers. 3,779,999, Cl. 260-78.0ad.
Sobel, Jay E., to Universal Oil Products Company. Isoparaffin alkylation with a lighter olefin and subsequently with a heavier olefin. 3,780,131, Cl. 260-683.450.
Societa Italiana Resine S.I.R. S.p.A.: *See—*
Fonzi, Giorgio; Vargio, Silvio; and Giovanni, Sesto S., 3,779,855.
Societa Italiana Resine S.p.A.: *See—*
Calcagno, Benedetto; Ghirga, Marcello; and Di Fiore, Lucio, 3,779,943.
Societa Italiano Resine S.I.R. S.p.A.: *See—*
Calcagno, Benedetto; Canavesi, Roberto; and Bertolini, Bollate Natale, 3,780,120.
Societe Anonyme de Telecommunications: *See—*
Cambou, Andre Paul, 3,779,480.
Societe Anonyme Francaise du Ferodo: *See—*
Rist, Michel Theophill, 3,779,350.
Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See—*
Lhomore, Pierre; Cohen, Guy; and Jacquinot, Bernard, 3,780,115.
Societe Nationale des Poudres et Explosifs, mesne: *See—*
Thomas, Jean-Pierre; and Ramond, Jean, 3,779,819.
Societe Suisse pour l'Industrie Horlogere Management Services SA: *See—*
Kocher, Hans; and Schmid, Peter, 3,779,001.
Schmid, Peter, 3,779,000.
Sodeco Societe des Compteurs de Geneve S.A.: *See—*
Wenger, Claude, 3,779,257.
Soeda, Masumitu: *See—*
Kaihu, Masaharu; Soeda, Masumitu; and Nakamura, Hirosi, 3,779,839.
Soglia, Luciano; Catitti, Aldo; Di Marino, Ciampino; and Sacerdoti, Giancarlo, to Comitato Nazionale per l'Engergia Nucleare. Self-centering magnetic suspension. 3,779,618, Cl. 308-10.000.
Solbach, Robert C.: *See—*
Denny, John P.; Solbach, Robert C.; and Jagaciak, Pen George J., 3,779,713.
Solich, Edeltraud: *See—*
Ploetz, Theodor; and Solich, Edeltraud, 3,779,791.
Solminski, Leo J.: *See—*
Grunwald, John J.; Solminski, Leo J.; Landau, Adela; and Shah, Dilip G., 3,779,842.
Solomon, Jack M.: *See—*
Polanskyj, Bohdan S.; Solomon, Jack M.; Chisholm, Daniel R.; and Bluestein, Bernard R., 3,780,107.
Solvay & Cie: *See—*
Marechal, Freddy; and Lefebvre, Henri, 3,780,086.
Somekh, George Solomon: *See—*
Kubek, Daniel John; Kosseim, Alexander Jean-Marie; and Somekh, George Solomon, 3,779,904.
Sommer, Herbert J., to Wooster Brush Company, The. Pump spray unit. 3,779,669, Cl. 417-214.000.
Son, Pyong-Nae, to Goodrich, B. F., Company, The. (Hydrocarbonthio) oxamide vulcanization retarders. 3,780,001, Cl. 260-79.50a.
Sonnenberg, Kent L. Appliance for treating especially thin-walled metal work pieces. 3,779,057, Cl. 72-56.000.
Sony Corporation: *See—*
Chimura, Toshihiko, 3,779,482.
Miyaoka, Senri, 3,779,760.
Takashino, Shizuo, 3,779,498.
Soreghy, Ivan L.: *See—*
Swift, Howard R.; Soreghy, Ivan L.; Thacker, George N.; Thomas, Lazarus D.; Mattimoe, Paul T.; and Motter, Theodore J., 3,779,878.
Sorensen, George C. Turbocharged piston engine having improved economizer and self ignition. 3,779,005, Cl. 60-11.000.
Soucy, Eugene H. Stud bracing for metal studs. 3,778,952, Cl. 52-667.000.
South, Richard Glenn: *See—*
Armstrong, Douglas Byron; and South, Richard Glenn, 3,780,277.
Southworth, Dean L.: *See—*
Johnson, John D.; and Southworth, Dean L., 3,780,182.
Sowerby, Brian David, to Australian Atomic Energy Commission. Applications of nuclear resonance fluorescence of gamma rays to elemental analysis. 3,780,294, Cl. 250-364.000.
S.p.A. Virginio Rimoldi & C.: *See—*
Marforio, Nerino, 3,779,188.
Spahl, Edwin, to Ford Motor Company. Motor vehicle with mechanically-operable safety belt system. 3,779,578, Cl. 280-150.0sb.

Spahn, Leland R. Inflatable amusement device for treading on water. 3,779,201, Cl. 115-20.000.
Spalt, Howard A.; Chu, Chung Ying; and Niketas, Paul, to Masonite Corporation. Production of crystalline xylose. 3,780,017, Cl. 260-209.00r.
Spanoudis, Louis, to Owens-Illinois, Inc. Method of making glass lasers of increased heat dissipation capability. 3,779,732, Cl. 65-31.000.
Speakman, Eugene R., to McDonnell Douglas Corporation. Stress coining bolt. 3,779,127, Cl. 85-7.000.
Speco, Inc.: *See—*
Witte, Walter R., 3,779,565.
Spectrum Medical Industries, Inc.: *See—*
Eddleman, Hardy T.; and Schmitz, Richard L., 3,779,415.
Speight, James G.: *See—*
Mitchell, David L.; and Speight, James G., 3,779,902.
Spencer, Lloyd. Trickle irrigation system. 3,779,468, Cl. 239-542.000.
Sperry Rand Australia: *See—*
Main, Peter George, 3,780,229.
Sperry Rand Corporation: *See—*
Rowland-Hill, Edward William; and Margerum, Edwin O., 3,779,251.
Spin Company: *See—*
Donnell, Frank R., 3,778,859.
Spivack, John D.: *See—*
Dexter, Martin; Spivack, John D.; and Steinberg, David H., 3,779,945.
Sprague Electric Company: *See—*
Alwitt, Robert S., 3,779,877.
Sproul, Fred C., Sr. Combination valance and conditioned air admission duct. 3,779,150, Cl. 98-40.00d.
Sprunck, Emile: *See—*
Leroy, Pierre; Gombert, Marcel; Queuleu, Metz; and Sprunck, Emile, 3,779,534.
Squibb, E. R., & Sons, Inc.: *See—*
Denzel, Theodore; and Hoehn, Hans, 3,780,047.
Erickson, Raymond Curry, 3,780,088.
Yale, Harry L., 3,780,044.
Yale, Harry L.; and Bernstein, Jack, 3,780,059.
Squire, Christopher John: *See—*
Le Count, David James; and Squire, Christopher John, 3,780,081.
Staab, Donald C., to Cardinal Industries, Incorporated. Supporting cutter assemblies for multiple grooving of pavement. 3,779,607, Cl. 299-39.000.
Stabovitz, Peter C., 1/2 to Stabovitz, Peter C., Jr. Multiple tire rim. 3,779,300, Cl. 152-376.000.
Stabovitz, Peter C., Jr.: *See—*
Stabovitz, Peter C., 3,779,300.
Stadler, Karl, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen m.b.H. Quartz glass pinch seal of increased compressive strength. 3,780,335, Cl. 313-318.000.
Staffin, Herbert K.; and Staffin, Robert, to AWT Systems, Inc. Fluid bed dryer and heat exchange system. 3,779,181, Cl. 110-7.00r.
Staffin, Robert: *See—*
Staffin, Herbert K.; and Staffin, Robert, 3,779,181.
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Stalker, Gerald C.: *See—*
Pearce, Roscoe L.; Stalker, Gerald C.; and Arnold, John L., 3,779,936.
Stallings, John P., to Diamond Shamrock Corporation. Polymerization of vinylidene fluoride in aqueous suspension. 3,780,007, Cl. 260-92.10r.
Stamicarbon N.V.: *See—*
Deumens, Johannes J. M.; and Groen, Siemen H., 3,780,082.
Deumens, Johannes J. M.; and Stijfs, Petrus A. M. J., 3,780,083.
Schaafsma, Sijbrandus E.; and Hofman, Johannes H. A., 3,780,084.
Stammer, John S. Hinged golf club bag. 3,779,297, Cl. 150-1.50r.
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Stana, Regis R., to Westinghouse Electric Corporation. Method for making high flow porous reverse osmosis membranes containing lipids. 3,780,147, Cl. 264-49.000.
Standard Brands Chemical Industries Inc.: *See—*
Hadgraft, Robert B.; and Martin, John J., 3,779,857.
Standard Oil Company: *See—*
Khelghatian, Habet M.; Jezl, James L.; and Hague, Louise D., 3,780,136.
Standard Packaging Corporation: *See—*
O'Lenick, Anthony J.; Roome, Douglas P.; and Gabriel, Joseph T., 3,778,965.
Star Sprinkler Corporation of Florida: *See—*
Gloeckler, Fred A., 3,779,004.
Stark, William Max: *See—*
Hamill, Robert L.; Haney, Michael E., Jr.; and Stark, William Max, 3,780,174.
Starline, Inc.: *See—*
Gay, James L., 3,779,208.
Staubli Ltd.: *See—*
Palau, Joseph, 3,779,287.
Stauffer Chemical Company: *See—*
Brokke, Mervin E., 3,780,050.
Gutman, Arnold D., 3,780,091.
Gutman, Arnold D., 3,780,143.
Herz, Jack L., 3,780,094.
Jin, Jung Il; and Whale, Paul, 3,780,141.
Martin, Donald J., 3,780,113.
Teach, Eugene G., 3,780,104.
Steadman, Wilfred A., to Norton Company. Mounted abrasive point. 3,778,936, Cl. 51-168.000.
Stedman, James K.: *See—*
Bushnell, Calvin L.; and Stedman, James K., 3,779,811.
Stedman, Robert John: *See—*
Hoover, John R. E.; and Stedman, Robert John, 3,780,108.
Stefanucci, Arthur; and Yadlowsky, Slawko, to General Foods Corporation. Balanced coffee flavors. 3,780,197, Cl. 426-473.000.
Stein, Brooks M.: *See—*
Battin, Marshall V.; and Stein, Brooks M., 3,779,809.
Stein, Hermann: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; Krohn, Hellmut; and Stein, Hermann, 3,779,331.
Stein, Jay A.; and Swift, Roderick, to American Science & Engineering Inc. Radiant energy imaging with scanning pencil beam. 3,780,291, Cl. 250-363.000.
Steinberg, David H.: *See—*
Dexter, Martin; Spivack, John D.; and Steinberg, David H., 3,779,945.
Steinmuller, L. & C., G.m.b.H.: *See—*
Hardemann, Manfred, 3,779,180.
Steisslinger, Kurt: *See—*
Ettischer, Helmut; Steisslinger, Kurt; and Huschle, Peter, 3,779,145.
Steltner, Hermanna R. Dynamically effective oil-guide-boom and method for purifying water employing the same. 3,779,382, Cl. 210-83.000.
Stendenbach, Karl-Heinz: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Kartlapp, Gerhard; Forst, Wilhelm; and Schrodter, Hermann, 3,780,164.
Sterling Drug Inc.: *See—*
Ackerman, James H., 3,780,041.
Stetson, Harold Wilbur; and Gyurk, Warren Joseph, to Western Electric Company, Incorporated. Use of menhaden oil to defiocculate dry ground alumina in manufacture of substrates. 3,780,150, Cl. 264-63.000.
Stevely, Robert Reid; and Webster, William Snodgrass, to Imperial Chemical Industries, Limited. Propellent charge comprising nitrocellulose. 3,779,820, Cl. 149-2.000.
Stevens, J. P., & Co., Inc.: *See—*
Tesoro, Giuliana C., 3,779,703.
Stevens, Keith B., Sr.: *See—*
Barker, John H.; Dribelbis, Norman C.; and Stevens, Keith B., Sr., 3,779,542.
Stevens, Kenneth, to Foster Wheeler John Brown Boilers Ltd. Arc welding torches for tube plate welding. 3,780,257, Cl. 219-125.00r.
Stevens, Richard W., to Milwaukee Boiler Manufacturing Company. Machine for sinking vertical shafts. 3,779,322, Cl. 175-162.000.
Stewart, James A., to GTE Automatic Laboratories Incorporated. Automatic disconnect circuit for reducing dial pulse distortion caused by subscriber carrier equipment. 3,780,228, Cl. 179-16.00a.
Stewart, James M., to Stewart Research, Inc. Pressure relief valve for a sphygmomanometer. 3,779,236, Cl. 128-2.05g.
Stewart Research, Inc.: *See—*
Stewart, James M., 3,779,236.
Stijfs, Petrus A. M. J.: *See—*
Deumens, Johannes J. M.; and Stijfs, Petrus A. M. J., 3,780,083.
Stiles, Claude J.; and Fischer, Joseph, to National Distillers and Chemical Corporation. Free flowing wax coated particulate ethylene vinyl acetate copolymers. 3,779,785, Cl. 117-4.000.
Stoll, H., and Company: *See—*
Goller, Ernst, 3,779,043.
Stoll, Wolfgang, to ALKEM GmbH. Method for the manufacture of plutonium-containing nuclear fuel. 3,778,885, Cl. 29-527.200.
Stone, Allan V.; and Martin, Francis J. Shut off device. 3,779,273, Cl. 137-460.000.
Stone, Herbert: *See—*
Acton, Edward M.; Leaffer, Morris A.; and Stone, Herbert, 3,780,194.
Stoneham, Jeffrey R.: *See—*
Poweska, Joseph V.; and Stoneham, Jeffrey R., 3,780,283.
Stonham, Frederick Ryan. Ignition support system. 3,780,343, Cl. 315-211.000.
Stout, David J.: *See—*
Kennedy, C. Trowbridge; Stout, David J.; and Dodds, Harold E., 3,779,799.
Stover, Harris A., to Collins Radio Company. Means for extending the identification range of radio equipments using repetitive coded identification signals. 3,780,279, Cl. 235-164.000.
Stoy, Artur; and Urbanova, Renata, to Ceskoslovenska akademic ved. Method of protecting glass against fogging. 3,779,792, Cl. 117-72.000.
Strabag Bau-A.G.: *See—*
Feiner, Alfred, 3,779,022.

Strand, Walter L. Safety stabilizer and shock absorber system. 3,779,535, Cl. 267-64.000.
Straujups, John E.; and Bellwood, Frederick J., to Birch Brothers Inc. Apparatus for wrapping rolls of materials. 3,778,963, Cl. 53-66.000.
Strawson, Kenneth Horace, to Burnand, W. E., & Son Limited. Metal shearing machines. 3,779,120, Cl. 83-601.000.
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Streu, Robert J., to Dow Chemical Company, The. Method for expanding microspheres and expandable composition. 3,779,951, Cl. 260-2.50b.
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Stromin, Boris Alexandrovich; and Baranov, Boris Konstantinovich. Method for control of a brushless motor. 3,780,362, Cl. 318-254.000.
Strugar, Daniel: *See—*
De Marsico, Henry J.; Strugar, Daniel; and Wu, Dao-Tsing, 3,779,976.
Study, Jon A., to Caro, Inc. Stamping device. 3,779,164, Cl. 101-334.000.
Stuemky, Robert E., to Gates Rubber Company, The. Centering device for flexible shaft couplings. 3,779,038, Cl. 64-11.00b.
Stumpe, Gunter. Cloth-spreading machine. 3,779,541, Cl. 270-31.000.
Sturm, Edward R., to Thomas Concrete Products Company. Apparatus for simultaneously precasting a plurality of structural members. 3,779,505, Cl. 249-84.000.
Su Ddeutsche Kuhlerfabrik Juluis Fr. Behr., Firma: *See—*
Weiss, Paul; Bardong, Helmut; and Frank, Wolfgang, 3,779,307.
Sudduth, Jackie Wayne, to Chicago Bridge & Iron Company. Ejector vapor recovery system for stored volatile liquids. 3,778,969, Cl. 55-55.000.
Sugawara, Toshiaki: *See—*
Takeda, Isao; Mizuno, Masayuki; Sugawara, Toshiaki; Shimojima, Yukiji; and Horiguchi, Sadayuri, 3,780,172.
Suggitt, Robert M.; Brandenburg, John T.; and Crone, John M., Jr., to Texaco Inc. Disproportionation of alkylaromatics. 3,780,121, Cl. 260-672.00t.
Suggitt, Robert M., to Texaco Inc. Disproportionation of alkylbenezenes. 3,780,123, Cl. 260-672.00t.
Sugimura, Nobuyuki. Air pressure actuator. 3,779,135, Cl. 91-45.000.
Suh, John T.: *See—*
Schnettler, Richard A.; and Suh, John T., 3,780,040.
Suh, John T.; and Schnettler, Richard A. 2-Aralkylamino-4,5-dihydro-3H-1,3-benzodiazepines. 3,780,023, Cl. 260-239.0bd.
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Pfarrwaller, Erwin, 3,779,286.
Sulzer Brothers Limited: *See—*
Ffarrwaller, Erwin, 3,779,102.
Sumitomo Chemical Co., Ltd.: *See—*
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,780,090.
Sumitomo Electric Industries, Ltd.: *See—*
Keda, Hiroshi; and Kawakita, Takao, 3,779,918.
Shibano, Yoshizo; and Yamashita, Shohachiro, 3,780,374.
Sun Oil Company of Pennsylvania: *See—*
Miller, Jaydee W., 3,780,130.
Suter, Xaver, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Rocket engine. 3,779,012, Cl. 60-271.000.
Sutter, Hubert; Nothen, Karl; and Haas, Friedrich, to Bayer Aktiengesellschaft. Segment copolymers of 1,3-dienes and aromatic vinyl compounds. 3,780,139, Cl. 260-880.00b.
Sutton, Blaine M., to Smithkline Corporation. Phenylvulpinic acid derivatives. 3,780,065, Cl. 260-343.600.
Sutton, Christopher John, to Girling Limited. Anti-skid braking systems. 3,779,613, Cl. 303-21.0eb.
Suyderhuud, Henri G.: *See—*
Campanella, Samuel J.; Suyderhuud, Henri G.; and Onufry, Michael, Jr., 3,780,233.
Suzuki, Ichiro; and Saito, Takashi, to Toyota Jidosha Kogyo Kabushiki. Pillar for a body of a motor vehicle. 3,779,595, Cl. 296-28.00r.
Suzuki, Jinichiro; Takezawa, Kenzi; and Takeda, Takanori, to Hitachi, Ltd. Electronic devices and method for manufacturing the same. 3,778,887, Cl. 29-588.000.
Suzuki, Sigeyasu: *See—*
Akiyama, Mitsuo; and Suzuki, Sigeyasu, 3,779,031.
Svejsecentralen: *See—*
Northeved, Allan; and Vinter, Hans, 3,780,368.
Swain, Carl E., to General Electric Company. Insulatingly covered dynamoelectric machine. 3,780,323, Cl. 310-43.000.
Swanson, Donald F., to Whirlpool Corporation. Harvest auger for ice maker. 3,779,033, Cl. 62-354.000.
Sweetheart Plastics Inc.: *See—*
Davis, Paul, 3,779,418.
Swietek, Donald J.: *See—*
Dorler, Jack A.; Forneris, John L.; and Swietek, Donald J., 3,780,320.
Swift & Company: *See—*
Troy, William A., 3,780,186.
Swift, Howard R.; Soreghy, Ivan L.; Thacker, George N.; Thomas, Lazarus D.; Mattimoe, Paul T.; and Motter, Theodore J., to Libby-Owens-Ford Company. Method of producing antenna type windshields. 3,779,878, Cl. 204-140.000.
Swift, Roderick: *See—*
Stein, Jay A.; and Swift, Roderick, 3,780,291.
Swimmer, James A.; and Harris, Martin, to Air King Corporation. Electrostatic air cleaner. 3,778,970, Cl. 55-137.000.
Swisher, George W., Jr.; and Hale, Autho, to CMI Corporation. Side bank excavator. 3,778,912, Cl. 37-110.000.
Sybron Corporation: *See—*
Heit, Allyn H., 3,779,883.
Sykes, Henry, Limited: *See—*
Allen, Ronald Noel; and Potter, Ernest William, 3,778,876.
Sylvania Electric Products, Inc.: *See—*
Poweska, Joseph V.; and Stoneham, Jeffrey R., 3,780,283.
Syron Corporation: *See—*
Dufault, Emmanuel Joseph; and Heeks, David Andrew, 3,780,075.
Szczepanek, Alfred: *See—*
Koenen, Gunter; and Szczepanek, Alfred, 3,779,962.
Tabone, Donald J. Surgical sterilization method. 3,779,707, Cl. 21-58.000.
Tagawa, Katsuhiro; and Kurosawa, Takuzo, to Nissan Motor Company, Limited. Air-pollution preventive system. 3,779,224, Cl. 123-136.000.
Taher, Mohammed Amin El; Balogh, Erno; and Boltrek, Henry, to Westinghouse Electric Corporation. Transportation device having movable handrails. 3,779,360, Cl. 198-16.00r.
Tainter, Leland B., Jr.: *See—*
Hluchan, Stephen Andrew; and Tainter, Leland B., Jr., 3,779,075.
Tajima, Tatsuya: *See—*
Tsuji, Nobuo; Tajima, Tatsuya; Miyazako, Takushi; Tsuchiya, Yoshinori; and Nishio, Fumihiko, 3,779,766.
Takabayashi, Fumiki: *See—*
Kitamura, Kazuo; Takabayashi, Fumiki; and Yamada, Setsuo, 3,779,705.
Takacs, Edward Andrew. Isomerization of alpha-pinene-containing feed by zeonite. 3,780,125, Cl. 260-675.500.
Takahashi, Isoji: *See—*
Sato, Masamichi; and Takahashi, Isoji, 3,779,206.
Takase, Tadayoshi: *See—*
Mizuno, Sueo; and Takase, Tadayoshi, 3,779,228.
Takashino, Shizuo, to Sony Corporation. Magnetic recording and reproducing apparatus. 3,779,498, Cl. 242-204.000.
Takeda, Isao; Mizuno, Masayuki; Sugawara, Toshiaki; Shimojima, Yukiji; and Horiguchi, Sadayuri, to Asahi Kasei Kogyo Kabushiki Kaisha. Antibiotic no. 1308 and process for producing the same. 3,780,172, Cl. 424-122.000.
Takeda, Takanori: *See—*
Suzuki, Jinichiro; Takezawa, Kenzi; and Takeda, Takanori, 3,778,887.
Takenoshita, Mitsuaki: *See—*
Fujisawa, Fumio; Takenoshita, Mitsuaki; Nakamura, Ichiro; and Yumino, Hiroshi, 3,779,017.
Takeuchi, Tomio: *See—*
Umezawa, Hamao; and Takeuchi, Tomio, 3,780,069.
Takezawa, Kenzi: *See—*
Suzuki, Jinichiro; Takezawa, Kenzi; and Takeda, Takanori, 3,778,887.
Talbert, William Lewis, to Canton Company of Baltimore. Notching machine. 3,779,115, Cl. 83-210.000.
Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Color electrophotographic apparatus. 3,779,639, Cl. 355-4.000.
Tanaka, Tamufsu: *See—*
Mori, Yubi; Tanaka, Tamufsu; Hara, Shoji; Iwashita, Masakatu; and Igaki, Yasuyuki, 3,779,422.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, to Mitsui Shipbuilding and Engineering Co., Ltd. Gas-liquid contacting apparatus. 3,779,524, Cl. 261-114.00r.
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Tarkan, Stuart E.: *See—*
Ellis, John L.; Mal, N. Kumar; and Tarkan, Stuart E., 3,779,720.
Tate, Jack F.: *See—*
Hughes, James W.; Sample, Thomas E., Jr.; and Tate, Jack F., 3,779,793.
Tatebe, Masaharu, to Kurashiki Boseki Kabushiki Kaisha; a/k/a Kurabo Industries Ltd. Screen printer with ink level sensing and control. 3,779,161, Cl. 101-123.000.
Tateishi, Kohshi: *See—*

Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,780,090.

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TATRA, narodni podnik: *See*—
Ryc, Oldrich, 3,779,016.

Tatum, David. Process for desulfurizing fuel. 3,779,722, Cl. 44-1.00r.

Taub, David; and Hoffsommer, Robert D., Jr., to Merck & Co., Inc. Process for preparing 5-(γ-tertiorgaminopropylidene-dibenzo [a,d] cycloheptenes. 3,780,106, Cl. 260-570.8tc.

Taub, James M.: *See*—
Riley, Robert E.; and Taub, James M., 3,779,716.

Taylor, Edward C.; and McKillop, Alexander. Chemical processes using organothallium compounds. 3,780,021, Cl. 260-211.50r.

Taylor, James D.: *See*—
Waggener, Richard W.; and Taylor, James D., 3,780,160.

Taylor, James H., 1/2 to Kosar Golf Development Laboratory, Inc., The. Golf club grip and marker. 3,779,559, Cl. 273-162.00d.

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Technicair S.A.: *See*—
Friedling, Gerard; and Chuard, Marcel, 3,778,979.

Teed, Richard K., to Riegel Textile Corporation. Self-aligning edge stitching apparatus for traveling webs. 3,779,186, Cl. 112-121.140.

Teijin Limited: *See*—
Kitamura, Kazuo; Takabayashi, Fumiki; and Yamada, Setsuo, 3,779,705.
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, 3,780,119.

Telefunken Patentverwertungsgesellschaft m.b.H.: *See*—
Auer, Werner; and Schreiber, Olaf, 3,780,369.

Teletype Corporation: *See*—
Landwer, Donald C.; and Lorenz, Allan A., 3,779,321.

Telex Computer Products, Inc.: *See*—
Henderson, Joseph D., 3,780,364.
Wilson, John H., 3,779,481.

Tenneco Chemicals, Inc.: *See*—
Minieri, Pasquale P., 3,779,972.
Minieri, Pasquale P., 3,779,973.

Tesla narodni Podnik: *See*—
Maurer, Karel; and Benda, Ladislav, 3,780,200.

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Tetradyne Corporation, mesne: *See*—
Anderson, Reg A.; Chandler, Ronald W.; Mueller, Frederick N.; and Osborn, Norbert I., 3,779,519.

Texaco Inc.: *See*—
Canup, Robert E., 3,779,226.
Hughes, James W.; Sample, Thomas E., Jr.; and Tate, Jack F., 3,779,793.
Patmore, Edwin L.; Reed, David D.; Oberender, Frederick G.; and Nehzydoski, John W., 3,779,919.
Patmore, Edwin L.; Oberender, Frederick G.; and Reed, David D., 3,779,921.
Pogonowski, Ivo C.; and Carmichael, Paul D., 3,779,019.
Schlicht, Raymond C., 3,779,928.
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., 3,780,301.
Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., 3,780,303.
Suggitt, Robert M.; Brandenburg, John T.; and Crone, John M., Jr., 3,780,121.
Suggitt, Robert M., 3,780,123.
Wilson, Raymond F.; and Cole, Edward L., 3,779,895.
Woodle, Robert A., 3,779,896.
Wrench, Richard E.; and Smith, Benjamin F., Jr., 3,779,897.
Youngblood, Douglas J., 3,779,898.

Textron, Inc.: *See*—
Clark, Gordon J., 3,779,828.
Van Dorn, Horace B.; Matt, Richard J.; and Rolland, Thomas P., 3,779,619.

Thacker, George N.: *See*—
Swift, Howard R.; Soreghy, Ivan L.; Thacker, George N.; Thomas, Lazarus D.; Mattimoe, Paul T.; and Motter, Theodore J., 3,779,878.

Thelen, Jerome P. Combination camperstep, tire carrier and trailer hitch. 3,779,580, Cl. 280-164.000.

Theml, Oskar: *See*—
Bock, Erwin; and Theml, Oskar, 3,778,897.

Theodorides, Irene. Hair curling implement. 3,779,255, Cl. 132-41.00a.

Thetford Corporation: *See*—
Vanden Broek, Christiaan J. H., 3,779,509.

Theurer, Josef: *See*—
Plasser, Franz; and Theurer, Josef, 3,779,170.

Thielen, James E., to Minnesota Mining and Manufacturing Company. Mop frame assembly. 3,778,860, Cl. 15-174.00a.

Thiokol Chemical Corporation: *See*—
Kennedy, C. Trowbridge; Stout, David J.; and Dodds, Harold E., 3,779,799.

Thomas, Alvin D., Jr.; and Thornton, Joseph Scott, to Tracor, Inc. Fatigue strain gauges. 3,779,071, Cl. 73-88.50r.

Thomas Concrete Products Company: *See*—
Sturm, Edward R., 3,779,505.

Thomas, Jean-Pierre; and Ramond, Jean, to Societe Nationale des Poudres et Explosifs, mesne. Propellant powder charge having finned internal configuration. 3,779,819, Cl. 149-2.000.

Thomas, Lazarus D.: *See*—
Swift, Howard R.; Soreghy, Ivan L.; Thacker, George N.; Thomas, Lazarus D.; Mattimoe, Paul T.; and Motter, Theodore J., 3,779,878.

Thompson, George H. B., to International Standard Electric Corporation. Gallium arsenide lasers. 3,780,358, Cl. 317-235.00r.

Thompson, John, to Midland Silicones Limited. Silicon compounds containing lactam structures. 3,780,025, Cl. 260-239.30r.

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Thompson, Margaret: *See*—
Thompson, Leon J.; Kugler, Carl J., Jr.; and Latta, Garland H., 3,780,274.

Thompson, William A., to International Business Machines Corporation. Method of fabricating a coherent superconducting oscillator. 3,778,893, Cl. 29-599.000.

Thomson-CSF: *See*—
Leboutet, Hubert, 3,780,334.

Thornber, Frank, Co.: *See*—
Kirby, James D.; Hetzel, Douglas R.; McKay, Richard H.; Snydacker, James U.; and Ziebold, Paul G., 3,779,453.

Thornton, Joseph Scott: *See*—
Thomas, Alvin D., Jr.; and Thornton, Joseph Scott, 3,779,071.

Thunberg, Jon C.: *See*—
Scanlon, Patricia M.; and Thunberg, Jon C., 3,780,099.
Scanlon, Patricia M.; and Thunberg, Jon C., 3,780,100.

Tinnes, Bernhard; and Bieri, Hans, to Metacon AG. Slide closure mechanism for casting vessels for liquid metallic melts. 3,779,431, Cl. 222-561.000.

Tokyo Sanyo Electric Co., Ltd.: *See*—
Inoue, Syuzi, 3,779,483.

Tomoyasu, Yoshitada: *See*—
Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, 3,779,691.

Tone, Frederick F., to Eastman Kodak Company. Method for manufacturing aperture cards. 3,779,786, Cl. 117-4.000.

Toombs, Alfred John Lawrence: *See*—
Fuller, Glenn; and Toombs, Alfred John Lawrence, 3,779,723.

Tori, Kazuo: *See*—
Kondo, Fiji; Mitsugi, Takashi; and Tori, Kazuo, 3,780,026.

Tornqvist, Erik G. M.: *See*—
Cozewith, Charles; and Tornqvist, Erik G. M., 3,779,944.

Townsend, Richard E.: *See*—
Freudenthal, Hugo D.; Townsend, Richard E.; Zawoiski, Peter K.; and Schatz, Edward, 3,779,911.

Toyota Jidosha Kogyo Kabushiki: *See*—
Suzuki, Ichiro; and Saito, Takashi, 3,779,595.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Nohira, Hidetaka; and Kokokawa, Masaru, 3,779,014.

Toyota, Yoshitane, to Sanshin Kinzoku Industries Co., Ltd. Angle variable joint for foldable chair. 3,779,655, Cl. 403-93.000.

Tracor, Inc.: *See*—
Thomas, Alvin D., Jr.; and Thornton, Joseph Scott, 3,779,071.

Trammell, Earl M., Jr., to Cycle-Drive Corporation. Bicycle drive assembly. 3,779,099, Cl. 74-594.003.

Trankner, Werner, to VEB Pentacon Dresden Kamera- und Kinowerke. Reflex photographic cameras. 3,779,146, Cl. 95-42.000.

Trautwein, Wolfgang. Snow vehicles. 3,779,326, Cl. 180-5.00r.

Trepanier, Donald L., to Dow Chemical Company, The. 4-β-Hydroxyethyl-as-triazines. 3,780,039, Cl. 260-248.0as.

Trevelyan, William E., to Distillers Company (Yeast) Limited, The. Preparation of active dry yeast. 3,780,181, Cl. 426-18.000.

Trias, John A.: *See*—
Schimitschek, Erhard J.; and Trias, John A., 3,779,939.

Trimble, J. B.: *See*—
Parker, George, Sr., 3,778,968.

Triplett, Lee; and Peterson, Wilmer R., to Expando Products Company. Fastener tool. 3,779,105, Cl. 81-121.00r.

Troy, William A., to Swift & Company. All-corn alimentary pastes foodstuff. 3,780,186, Cl. 426-93.000.

Truman Smog Control, Inc.: *See*—
Winningham, Troman, 3,779,153.

TRW Inc.: *See*—
Cornyn, William S., Jr.; Dier, Stephen A.; and Lynas, Robert M., 3,779,457.
Mazor, Sylvester S., 3,779,575.
Meyer, Robert J., 3,780,259.

Tsai, James H.; and Anderson, Glenn H., to Dow Chemical Company, The. Metaltcobalt carbonyl complexes. 3,780,010, Cl. 260-94.300.

Tschannen, Hans, to Beka St-Aubin S.A. Trailer brake control system. 3,779,612, Cl. 303-21.0cg.

Tsen, Cho C.; and Hoover, William J., to Kansas State University Research Foundation. Method of increasing protein content of wheat flour based baked and fried products and compositions for preparing same. 3,780,188, Cl. 426-152.000.

Tsuchihashi, Genichi: *See*—
Ohno, Atsuyoshi; Ohnishi, Yutaka; and Tsuchihashi, Genichi, 3,779,880.

Tsuchiya, Shozo, to Nippon Oil Company, Ltd. Process for the preparation of novel high chlorinated butyl rubber and vulcanizable compositions containing the same. 3,779,979, Cl. 260-33.60a.

Tsuchiya, Yoshinori: *See*—
Tsuji, Nohuo; Tajima, Tatsuya; Miyazako, Takushi; Tsuchiya, Yoshinori; and Nishio, Fumihiko, 3,779,766.

Tsuji, Nobuo: *See*—
Inayama, Takayuki; Ueno, Wataru; and Tsuji, Nobuo, 3,779,773.

Tsuji, Nobuo; Tajima, Tatsuya; Miyazako, Takushi; Tsuchiya, Yoshinori; and Nishio, Fumihiko. Method for developing photographic elements. 3,779,766, Cl. 96-63.00r.

Tsujimoto, Kayoshi: *See*—
Ueda, Hiroshi; and Tsujimoto, Kayoshi, 3,779,141.

Tsukiura, Hiroshi: *See*—
Konishi, Masataka; and Tsukiura, Hiroshi, 3,780,018.

Tuchenhagen, Otto A. P.: *See*—
Stahlkopf, Friedrich R. R., 3,779,384.

Tumey, Morris J.: *See*—
McMurray, Nolan D.; and Tumey, Morris J., 3,779,884.

Tums, Valdis M., to Union Carbide Corporation. Shirred casing stick with reverse helical fold pattern. 3,779,284, Cl. 138-118.100.

Turkdogan, Ethem T.: *See*—
Olsson, Robert G.; and Turkdogan, Ethem T., 3,779,743.

Turner, Arthur A. Process of assembling fabric and plastic to form a building structure which may be inflated and chemically rigidized. 3,779,847, Cl. 156-156.000.

Turrell, Douglas Walter, to Leeds & Northrop Company. Analog-to-digital wattmeter multiplier. 3,780,273, Cl. 235-150.052.

Tussey, Jimmy D.; Oakes, George W.; Carr, Herbert F.; and Melnick, Irving, said Carr assor. to said Melnick, Irving and said Oakes and said Tussey assors. to said Oakes, George W. Contamination free surgical evacuator. 3,779,243, Cl. 128-278.000.

Tyson, Ian: *See*—
Fuller, John G., 3,779,259.

Uchida, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for securing an article in a two-wheel vehicle. 3,779,597, Cl. 296-37.000.

Ueda, Hiroshi; and Tsujimoto, Kayoshi, to Minolta Camera Kabushiki Kaisha. Apparatus for controlling an electronic flash. 3,779,141, Cl. 95-10.0ce.

Ueno Fine Chemical Industries, Ltd.: *See*—
Ueno, Ryuzo; Miyazaki, Tetsuya; Inamine, Shigeo; and Kishi, Saburo, 3,779,796.

Ueno, Ryuzo; Miyazaki, Tetsuya; Inamine, Shigeo; and Kishi, Saburo, to Ueno Fine Chemical Industries, Ltd. Sodium propionate coated with sorbitan higher fatty acid ester and process for its preparation. 3,779,796, Cl. 117-100.00a.

Ueno, Wataru: *See*—
Inayama, Takayuki; Ueno, Wataru; and Tsuji, Nobuo, 3,779,773.

Ufton, Keith Frederick: *See*—
Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, 3,779,932.

Uhrich, Richard W.: *See*—
Fugitt, Ronald B.; Uhrich, Richard W.; and Held, Jimmy L., 3,780,220.

Ujvary, Joseph I.: *See*—
Gardella, John M., Ciavattoni, Anthony; and Ujvary, Joseph I., 3,778,903.

Umbel, Forrest K.: *See*—
Pollock, E. Kears; and Umbel, Forrest K., 3,779,731.

Umezawa, Hamao; and Takeuchi, Tomio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Diketocoriolin B and process for the production thereof. 3,780,069, Cl. 260-348.00c.

Union Carbide Corporation: *See*—
Ancker, Fred H.; and Pollart, Dale F., 3,779,963.
Calvert, William Lemont; and Handwerk, Richard Herman, 3,779,712.
Kleigman, Jonathan Morris; and Barnes, Robert Keith, 3,780,087.
Kubek, Daniel John; Kosseim, Alexander Jean-Marie; and Somekh, George Solomon, 3,779,904.
Morehouse, Edward L., 3,779,956.
Papa, Anthony Joseph; and Proops, William Robert, 3,779,953.
Rosenthal, Louis Aaron, 3,779,882.
Sinibaldo, Armando J., 3,779,285.
Tums, Valdis M., 3,779,284.
Weinberg, Kurt; and McKeon, James E., 3,780,112.
Young, Frank G.; and Pennington, Leroy R., 3,780,127.

Uniroyal Inc.: *See*—
Dorsch, Robert E., 3,779,844.

United Aircraft Corporation: *See*—
Bushnell, Calvin L.; and Stedman, James K., 3,779,811.
Chamberlain, John, 3,779,695.
Gagnon, Robert G., 3,780,346.
Games, John E., 3,780,280.

United Industrial Syndicate, Inc.: *See*—
Snow, Gerald A.; and Doughy, Harold A., 3,779,370.

United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in her Britannic Majesty's Government of the: *See-See*—
Lewis, Brynley; Miller, George Langham; Brooks, Kenneth John; and Goss, Arthur George, 3,779,006.
Lewis, Gordon Manns; and Hooker, Stanley George, 3,779,486.
Snell, Leonard Stanley, 3,779,666.

United Seal Company, The: *See*—
Patterson, Richard A., 3,779,589.

United States Gypsum Company: *See*—
Nelsson, Nels, 3,778,939.

United States of America
Agriculture: *See*—
Conner, Charles J., 3,779,702.
Fore, Sara P.; Hayner, Eric T.; and Dupoy, Harold P., 3,779,066.
Atomic Energy Commission: *See*—
Hoffer, Paul B., 3,780,290.
Kaw, Predhiman K.; and Dawson, John M., 3,779,864.
Mara, Glenn L.; and McMaster, Robert C., 3,780,256.
Riley, Robert E.; and Taub, James M., 3,779,716.
Strohecker, John W., 3,779,385.
Weakley, Everett A., 3,779,938.
National Aeronautics and Space Administration: *See*—
Heier, Wilbur C., 3,780,151.
Keafer, Lloyd S., Jr.; Burcher, Ernest E.; and Kopia, Leonard P., 3,779,788.
Navy: *See*—
Fugitt, Ronald B.; Uhrich, Richard W.; and Held, Jimmy L., 3,780,220.
Hinely, Douglas M.; and Lyon, Robert J., 3,779,168.
Matsuo, Jon T., 3,779,489.
Oeland, Ernest N., Jr., 3,779,195.
Runck, Alan H.; and Valeri, Cesare Robert, 3,779,708.
Rymes, William H., 3,780,371.
Schimitschek, Erhard J.; and Trias, John A., 3,779,939.

United States Steel Corporation: *See*—
Brunko, Wade D., 3,779,817.
Callinghan, Robert M.; and Hawthorne, John W., 3,780,163.
Erickson, Donald V.; and Palusky, Eugene L., 3,779,782.
Johnson, Thomas F.; and Schelling, James H., 3,780,096.
Olsson, Robert G.; and Turkdogan, Ethem T., 3,779,743.
Shapland, Earle P., Jr., 3,779,424.

Universal Maschinenfabrik Dr. Rudolf Schieber G.m.b.H.: *See*—
Schieber, Hans; and Krause, Erich, 3,779,044.

Universal Maschinenfabrik Dr. Rudolf Schieber K.G.: *See*—
Krause, Erich, 3,779,045.

Universal Oil Products Company: *See*—
Hayes, John C., 3,779,901.
Mitsche, Roy T.; and Hayes, John C., 3,779,947.
Pollitzer, Ernest L., 3,780,122.
Schmerling, Louis, 3,780,066.
Siedman, Russell F., 3,779,905.
Sobel, Jay E., 3,780,131.
Withers, James G., Jr.; Habdas, Edward P.; and Jurmo, Michael W., 3,779,312.

Unz, Hillel. Nonuniformly optimally spaced antenna array. 3,780,372, Cl. 343-844.000.

Upjohn Company, The: *See*—
Collins, Robert J., 3,780,179.
Fonken, Gunther S.; Herr, Milton E.; and Murray, Herbert C., 3,780,022.
Porter, Lawrence C.; and Graves, Kenneth E., 3,780,365.

Urban, Stephen F., to National Lead Company. Electrodes for ceramic bodies. 3,779,804, Cl. 117-212.000.

Urbanova, Renata: *See*—
Stoy, Artur; and Urbanova, Renata, 3,779,792.

U.S. Industries, Inc.: *See*—
Geary, Fred, 3,780,297.

U.S. Philips Corporation: *See*—
Korom, Arpad, 3,780,319.
Schroder, Johann, 3,779,232.
Vervaart, Adrianus Petrus; Verheij, Cornelis Machiel; and Jongerius, Hermanus Maria, 3,780,327.

USI Corporation: *See*—
Mink, George, 3,779,059.

Vabra-Spa Products, Inc.: *See*—
Cutler, Lester M.; and Friedman, Paul, 3,779,238.

Valeri, Cesare Robert: *See*—
Runck, Alan H.; and Valeri, Cesare Robert, 3,779,708.

Vallier, Raymond G., to Western States Envelope Company. Pop-up delivery table for paper cutting press. 3,779,112, Cl. 83-103.000.

Valmet Oy: *See*—
Liuhanen, Heikki; and Kallio, Kauko, 3,779,325.

Van Dorn, Horace B.; Matt, Richard J.; and Rolland, Thomas P., to Textron, Inc. Composite plastic bearing. 3,779,619, Cl. 308-72.000.

Van Lear, George E.; and Dornbush, Albert Carl, to American Cyanamid Company. Substituted aminoethyl indoles and method of preparation. 3,780,063, Cl. 260-326.150.

Van Meurs, Peter: *See*—
Beard, Thomas N.; and Van Meurs, Peter, 3,779,602.

Van Uitert, Le Grand Gerard: *See*—

Pinnow, Douglas Arthur; and Van Uitert, Le Grand Gerard, 3,779,627.

Vanassche, Willy Joseph; Pollet, Robert Joseph; Borginon, Hendrik Alfons; and Pattyn, Herman Alberik, to Agfa-Gevaert N.V. Fogged, direct-positive silver halide emulsion containing a color coupler and a heterocyclic mercaptan desensitizer. 3,779,776, Cl. 9-55.000.

Vancini, Carlo A., to Peabody Engineering Corporation. Gas drying apparatus. 3,778,980, Cl. 55-238.000.

Vanden Broek, Christiaan J. H., to Thetford Corporation. Ball valve. 3,779,509, Cl. 251-148.000.

Vandervell Products Limited: *See—*
Witney, Clifford Edward; and Present, Charles William Stratford, 3,779,890.

Vanguard Industries, Inc.: *See—*
Bockenstette, Kenneth R., 3,779,374.

Vapor Corporation: *See—*
Myrent, Harry L.; and Fluder, Chester H., 3,779,086.

Vargio, Silvio: *See—*
Fonzi, Giorgio; Vargio, Silvio; and Giovanni, Sesto S., 3,779,855.

Varian Associates: *See—*
Giebeler, Robert Henry, 3,780,336.

Vassiliades, Anthony E.; Nauman, Edeard F.; and Shroff, Shrenik, to Champion International Corporation. Microcapsular opacifier system. 3,779,957, Cl. 260-2.50b.

VEB Pentacon Dresden Kamera- und Kinowerke: *See—*
Trankner, Werner, 3,779,146.

Veb Petrolchemisches Kombinat Schwedt: *See—*
Berthold, Gunter, 3,779,069.

Veber, Daniel F.: *See—*
Hirschmann, Ralph F.; and Veber, Daniel F., 3,780,015.

Vegh, Bertalan J.; and Coates, Alfred E., to Eastman Kodak Company. Triode sputtering apparatus. 3,779,891, Cl. 204-298.000.

Velinsky, Milton: *See—*
Wiegand, John Richard, 3,780,313.

Vel's Ford Sales Co., Inc.: *See—*
Phillippe, Maurice, 3,779,611.

Vennard, William O.; and Wright, Jack C., to Ethyl Corporation. Intrauterine contraceptive and method for its use. 3,779,241, Cl. 128-129.000.

Vepa Aktiengesellschaft: *See—*
Fleissner, Heinz, 3,779,047.

Verblovsky, Alexei Matveevich: *See—*
Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich, 3,780,078.

Verdier, Claude H., to Office Nationale d'Etudes et de Recherches Aerospatiales, Etat Francais represente par le Ministre d'Etat charge de la Defense Nationale, Delegation and Ministerielle pour l'Armament, Direction des Poudres. Fuel unit for a hybrid hotgas gencrator. 3,779,011, Cl. 60-251.000.

Verheij, Cornelis Machiel: *See—*
Vervaart, Adrianus Petrus; Verheij, Cornelis Machiel; and Jongerius, Hermanus Maria, 3,780,327.

Vernet, Francis. Insulating printed-circuit board having pin-shaped connecting members. 3,780,211, Cl. 174-68.500.

Vervaart, Adrianus Petrus; Verheij, Cornelis Machiel; and Jongerius, Hermanus Maria, to U.S. Philips Corporation. Glow discharge starter. 3,780,327, Cl. 313-151.000.

Vinter, Hans: *See—*
Northeved, Allan; and Vinter, Hans, 3,780,368.

Viscardi, Frank. Apparatus for detecting ionization radiation emanating from a television receiver. 3,780,216, Cl. 178-5.40r.

Vishay Intertechnology, Inc.: *See—*
Ellis, Greer, 3,779,065.

Vitter Manufacturing Corporation: *See—*
Handzlik, Anthony T., 3,779,585.

Vlvac Corporation: *See—*
Kono, Akiro; and Nozawa, Yoshiharu, 3,778,894.

Volbehr, Hartwig, to Webasto-Werk W. Baier KG. Heater for vehicles. 3,779,229, Cl. 126-110.00b.

Volkswagenwerk Aktiengesellschaft: *See—*
Hohlein, Herman, 3,779,136.

Voll, Horst: *See—*
Korrenn, Heinz; Voll, Horst; and Grubel, Harald, 3,779,626.

Von Rintelen, Harald: *See—*
Ranz, Erwin; Schutz, Heinz-Dieter; Schellenberger, Hans; and Von Rintelen, Harald, 3,779,755.

von Strandtmann, Maximilian: *See—*
Klutchko, Sylvester; Shavel, John, Jr.; and von Strandtmann, Maximilian, 3,780,060.

Voss, Karl: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.

Vuffray, Georges C., to Girard-Perregaux S.A. Electronic wristwatch. 3,778,999, Cl. 58-23.00r.

Vysoka Skola Banska: *See—*
Dembovsky, Vladimir, 3,780,201.

Wada, Kenichi: *See—*
Ogawa, Masaya; and Wada, Kenichi, 3,779,642.

Wade, Robert C., to Resitron Corporation, mesne. Non-burning resinous compounds and structures prepared from furan resins. 3,779,955, Cl. 260-2.50f.

Wadia, Aspi B.: *See—*
Carter, William C.; and Wadia, Aspi B., 3,780,276.

Wadsworth, Donald H.; and Perkins, William C., to Eastman Kodak Company. Light-sensitive polymers containing a phenyl diarylcyclopropene moiety, their preparation and use. 3,779,989, Cl. 260-47.0up.

Waggener, Richard W.; and Taylor, James D., to Intermountain Research and Development Corporation. Carbonation process for the manufacture of sodium bicarbonate. 3,780,160, Cl. 423-186.000.

Wagner Electric Corporation: *See—*
Raago, Rein, 3,780,326.

Wagner, Horst Richard: *See—*
Jaggers, Brian George; Ufton, Keith Frederick; and Wagner, Horst Richard, 3,779,932.

Wagner, Peter R.; and Wilson, Donald M., to International Business Machines Corporation. Method of protecting electrical conductor terminations during gas panel fabrication. 3,778,901, Cl. 29-625.000.

Wagner, William R., to Rockwell International Corporation. Non-polluting steam generator system. 3,779,212, Cl. 122-23.000.

Wahren, Douglas, to Allmanna Svenska Elecktriska Aktiebolaget. Stock flow control system for feeding a paper machine headbox. 3,779,863, Cl. 162-253.000.

Wahrmund, Kermit A.: *See—*
Lybecker, Robert W.; and Wahrmund, Kermit A., 3,779,671.

Wakabayashi, Nobuyuki. Ski carrier. 3,779,568, Cl. 280-9.000.

Waksberg, Armand; and Wood, John Irving, to RCA Limited. Automatic optical bias control for light modulators. 3,780,296, Cl. 250-201.000.

Walker, Evelyn: *See—*
Ayres, Waldemar; Walker, Evelyn; Holderith, William; Benson, Carl; and Bandrowski, James, 3,779,083.

Walker, James V., to McDonnell Douglas Corporation. Method of making piston ring expander. 3,778,877, Cl. 29-173.000.

Walker, Robert Clinton: *See—*
Crosby, Noble Wellington; and Walker, Robert Clinton, 3,780,207.

Wallace, Maynard. Fishing rod. 3,778,916, Cl. 43-18.00r.

Wallen, Raymond Allen, Sr., to Lee, Raymond, Organization, Inc., The. Portable locomotive cab storm window. 3,779,175, Cl. 105-456.000.

Waller, David P.: *See—*
Bloom, Stanley M.; Idelson, Elbert M.; Simon, Myron S.; and Waller, David P., 3,779,753.

Walles, Wilhelm E., to Dow Chemical Company, The. Lamination of olefin polymer to various substrates. 3,779,840, Cl. 156-3.000.

Walpro Plastics N.V.: *See—*
Den Ottolander, Leendert, 3,778,879.

Walters, Cecil Kent, to Motorola, Inc. Minimized temperature coefficient voltage standard means. 3,780,322, Cl. 307-318.000.

Walton-Knight, Bernard Piet: *See—*
Cameron, James Brisbane; Walton-Knight, Bernard Piet; Bartoo, Otto Floris; and Molijn, Joannes Cornelius, 3,778,882.

Waly, Adnan: *See—*
Yevick, George J.; and Waly, Adnan, 3,779,635.

Ward, Harry M., III; and Hackbarth, Eugene R., to Outboard Marine Corporation. Rotary combustion engine having a charge-cooled rotor and side and peripheral wall intake ports. 3,779,214, Cl. 123-8.010.

Ward, John E., to Owens-Corning Fiberglas Corporation. Sizing composition and glass fibers treated therewith. 3,779,981, Cl. 260-40.00r.

Ward, Leslie Russell, to Rola Celestion Limited. Loudspeaker diaphragm. 3,780,232, Cl. 179-181.00r.

Wareham, Richard R.: *See—*
Alston, William W.; Driscoll, John J.; and Wareham, Richard R., 3,779,770.

Warnaco, Inc.: *See—*
Radomski, Alfreda, 3,779,250.

Warner, Gene: *See—*
Hatcher, Cecil W.; and Warner, Gene, 3,779,606.
Hatcher, Cecil W.; and Warner, Gene, 3,779,608.

Warner-Lambert Company: *See—*
Ercoli, Alberto; and Gardi, Rinaldo, 3,780,177.
Gardi, Rinaldo; Brianza, Carate; and Castelli, Pier Paolo, 3,780,072.
Goodhart, Frank W.; and Draper, James Ronald, 3,780,170.
Klutchko, Sylvester; Shavel, John, Jr.; and von Strandtmann, Maximilian, 3,780,060.

Wasielewski, Leonard; and Kinner, James L., to Burroughs Corporation. Solenoid control system. 3,779,544, Cl. 271-115.000.

Wasser, Willi: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.

Water Gremlin Company: *See—*
Ratie, Wilbert L., Jr., 3,778,871.

Watson, Edwin B.; and Fuller, Harlan I., to Bendix Corporation, The. Reciprocating plunger type fuel injection pump having electromagnetically operated control port. 3,779,225, Cl. 123-139.00e.

Watson, James C.: *See—*
Hassell, Howard L.; Watson, James C.; and Shaw, Benjamin W., 3,780,138.

Watts, Golden Fred: *See—*
Weeks, Charles Earl; and Watts, Golden Fred, 3,779,966.

Way, John L., to De Pont de Nemours, E. I., and Company. Binary squaring circuit. 3,780,278, Cl. 235-164.000.

Weakley, Everett A., to United States of America, Atomic Energy Commission. Method for processing scrap fissile material into a form suitable for shipping. 3,779,938, Cl. 252-301.10r.

Wean United, Inc.: *See—*
Gegick, Charles, 3,779,062.
Greenberger, Joseph Irwin, 3,779,054.
Shumaker, Charles Storer, 3,779,061.

Weathersheilds Limited: *See—*
Lidington, Frederick Charles, 3,779,598.

Webasto-Werk W. Baier KG: *See—*
Volbehr, Hartwig, 3,779,229.

Webb, Edwin James: *See—*
Lindstaedt, Horst Karl; and Webb, Edwin James, 3,779,138.

Webber, Peter B. Tripod and support therefor. 3,779,497, Cl. 248-165.000.

Weber, Edwin J.: *See—*
Beckering, Jacobus J.; Weber, Edwin J.; and Secoura, Ralph J., 3,780,246.

Webster, William Snodgrass: *See—*
Stevely, Robert Reid; and Webster, William Snodgrass, 3,779,820.

Wech, Robert J., to FMC Corporation. Heat sealing head. 3,779,838, Cl. 156-583.000.

Weeks, Charles Earl; and Watts, Golden Fred, to Ashland Oil, Inc. Polymerizable water-in-oil emulsions. 3,779,966, Cl. 260-29.6nr.

Weeks, Thomas Joseph, Jr.; and Reimschussel, George Paul, to Johns-Manville Corporation. Disposable face respirator. 3,779,244, Cl. 128-146.200.

Wegel, Erich: *See—*
Schuhmann, Siegfried; Simeth, Claus; and Wegel, Erich, 3,779,545.

Wegner, Peter; Neeff, Rutger; Hederich, Volker; and Gehrke, Gunter, to Bayer Aktiengesellschaft. Exhaust dyeing of synthetic fiber materials with anthraquino2c dhestuufh 8nd 9ated-km lihcible hclolenated alkphctic hyddocerhlns E6 008/039n000. 3,779,700, Cl. .

Weidner, Albert W.: *See—*
Eggleton, Reginald C.; and Weidner, Albert W., 3,779,234.

Weigert, Wolfgang: *See—*
Schwarze, Werner; and Weigert, Wolfgang, 3,780,077.

Weinberg, Kurt; and McKeon, James E., to Union Carbide Corporation. Substituted ethylene bis (phosphine oxides). 3,780,112, Cl. 260-606.580.

Weinstock, Joseph, to Smithkline Corporation. Thiolpulvinic acid derivatives. 3,780,064, Cl. 260-343.600.

Weisgerber, Gregor: *See—*
Heuser, Gunther; Weisgerber, Gregor; and Behr, Erich, 3,779,985.

Weiss, Paul, Bardong, Helmut; and Frank, Wolfgang, to Su Ddeutsche Kuhlerfabrik Juluis Fr. Behr., Firma. Heating and cooling system for motor vehicles. 3,779,307, Cl. 165-42.000.

Weissenfels, Franz: *See—*
Pinten, Peter; Weissenfels, Franz; and Junger, Hans, 3,779,959.

Welge, Frederick T.: *See—*
Redmore, Derek; and Welge, Frederick T., 3,779,912.

Welles, Theodore W. Container former. 3,779,496, Cl. 248-99.000.

Wells, Martin G. H.: *See—*
Clinton, Margaret A.; and Wells, Martin G. H., 3,779,798.

Welsh, Jay Y., to Diamond Shamrock Corporation. Process for recovering high purity free flowing crystalline manganese dioxide from impure manganese nitrate solutions. 3,780,158, Cl. 423-49.000.

Welsh, Jay Y., to Diamond Shamrock Corporation. Process for recovering manganese values from low grade oxidized manganese containing ores. 3,780,159, Cl. 423-49.000.

Wendler, Charles F.; and Baum, Charles S., to Permanence Corporation. Heat resistant high strength composite structure of hard metal particles in a matrix, and methods of making the same. 3,779,715, Cl. 29-182.100.

Wenger, Claude, to Sodeco Societe des Compteurs de Geneve S.A. Coin magazine. 3,779,257, Cl. 133-5.00r.

Wenglar, Frank G., to FMC Corporation. Sanitary butterfly valve. 3,779,511, Cl. 251-306.000.

Werderitsch, Thomas W., to General Electric Company. Cabinet having a kick plate assembly. 3,779,624, Cl. 312-278.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Suter, Xaver, 3,779,012.

Werner, Herbert S., to Mista-Matic Corporation. Periodical dispenser for aerosol containers. 3,779,425, Cl. 222-70.000.

Werner, Leo C.: *See—*
Knochel, William J.; Werner, Leo C.; and Lin, Francis C. M., 3,780,331.

Werts, Everett Wendall; and Wetter, Charles Richard, to General Electric Company. Zero crossing SCR firing circuit network. 3,780,318, Cl. 307-252.0ua.

West Company, The: *See—*
Pickerell, Fred T.; and Brignola, Dominic J., 3,779,413.

West, Edgar R.: *See—*
White, Wilfred A. S.; and West, Edgar R., 3,778,988.

West, Thomas G.: *See—*
Grimshaw, Norman C.; and West, Thomas G., 3,780,342.

Westergren, George A.; Koland, David G.; and Crooks, Stanley R., to Whirlpool Corporation. Vacuum cleaner implement tray. 3,778,863, Cl. 15-323.000.

Western Auto Supply Company: *See—*
Bard, Melvern O., 3,779,394.

Western Electric Company, Incorporated: *See—*
Stetson, Harold Wilbur; and Gyurk, Warren Joseph, 3,780,150.

Western States Envelope Company: *See—*
Vallier, Raymond G., 3,779,112.

Westfall, Harold L.: *See—*
Akers, Robert M.; and Westfall, Harold L., 3,779,302.

Westinghouse Electric Corporation: *See—*
Amasino, Richard L.; and Johrde, Paul S., 3,778,891.
Guidosh, Edward F., 3,780,239.
Knochel, William J.; Werner, Leo C.; and Lin, Francis C. M., 3,780,331.
Matteson, Lucius G.; and Carlson, Norman R., 3,779,744.
Putman, Richard E. J., 3,779,469.
Salvati, John G.; Ricci, Louis N.; and Merola, Carl R., 3,780,355.
Stana, Regis R., 3,780,147.
Taher, Mohammed Amin El; Balogh, Erno; and Boltrek, Henry, 3,779,360.
Winkler, Charles L., 3,779,346.

Wetter, Charles Richard: *See—*
Werts, Everett Wendall; and Wetter, Charles Richard, 3,780,318.

Wetzel, Roland; and Rambausek, Hugo, to Heidelberger Druckmaschinen Aktiengesellschaft. Foil transport arrangement in hot process embossing printing machines. 3,779,442, Cl. 226-123.000.

Whale, Paul: *See—*
Jin, Jung Il; and Whale, Paul, 3,780,141.

Wheeler, Henry H., 50% to Lansdale, William M. and 50% to Wingate, Francis E. Process for solvent extraction of ores. 3,780,167, Cl. 423-578.000.

Whirlpool Corporation: *See—*
Brenner, Robert A.; and Cuthbert, Victor W., 3,779,258.
Nichols, Duane C., 3,779,032.
Swanson, Donald F., 3,779,033.
Westergren, George A.; Koland, David G.; and Crooks, Stanley R., 3,778,863.

White, Daniel A., to FMC Corporation. Method of forming plastic bag with integral tie. 3,779,139, Cl. 93-35.0vl.

White, Robert W. Top driven material shearing mixer and aerator. 3,779,531, Cl. 261-87.000.

White, Wilfred A. S.; and West, Edgar R., to Jute Industries Limited. Method of laying protruding fibres, and increasing abrasion resistance of textile yarns. 3,778,988, Cl. 57-12.000.

Whitlock, Inc.: *See—*
Evans, Arthur J.; and Morin, Joseph C., 3,779,280.

Whitney, W. A., Corporation: *See—*
Sawvell, Roger V., 3,779,122.

Whittaker Corporation: *See—*
Kariagin, Nikolai; Lathson, Jerry; Hooper, Eric Ralph; Keogh, Jim Cowden, Jr.; and Pagan, Augustine Joseph, 3,778,855.
Pansky, Emil J.; and Dean, Donald G., 3,779,610.

Whittaker, Dewey E.; and Jenks, Charles D., to Moore, Samuel, and Company. Composite hose having a grounding wire enclosed in a sleeve and wrapped about the core tube of the hose. 3,780,208, Cl. 174-47.000.

Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Substituted ureidophenyl thioureas. 3,780,089, Cl. 260-470.000.

Wiegand, John R.: *See—*
Wiegand, John Richard, 3,780,313.

Wiegand, John Richard, 1/2 to Velinsky, Milton and 1/2 to Wiegand, John R. Pulse generator. 3,780,313, Cl. 307-106.000.

Wilcox, Henry O., to Denver Plastics Inc. Flexible sealing closure with frangible section. 3,779,416, Cl. 220-27.000.

Wildsmith, Eric, to Lilly Industries, Ltd. Production of erythromycylamine compounds. 3,780,019, Cl. 260-210.00e.

Wilfert, Karl, to Daimler Benz Aktiengesellschaft. Safety installation for the passengers of vehicles, especially passenger motor vehicles. 3,779,577, Cl. 280-150.0ab.

Wilhauer, Cecil Eldon: *See—*
Larios, Dennis Gary; and Wilhauer, Cecil Eldon, 3,779,515.

Wilhelm G.m.b.H.: *See—*
Stahlecker, Fritz, 3,779,620.

Wilhelm, Wilhelm, to Siemens Aktiengesellschaft. Data distribution linc arrangement. 3,780,316, Cl. 307-209.000.

Williams, Mathew, Jr.: *See—*
Hoyt, John; Koch, Karl; and Williams, Mathew, Jr., 3,780,004.

Williams, Peter J.: *See—*
Entwistle, Ian D.; Williams, Peter J.; and Devlin, Barry R. J., 3,780,055.

Williamson, Stearns: *See—*
Gullberg, Herbert E.; and Williamson, Stearns, 3,779,562.

Wilson, Donald M.: *See—*
Wagner, Peter R.; and Wilson, Donald M., 3,778,901.

Wilson, James D.: *See—*
Miles, Malcolm G.; Wilson, James D.; and Cohen, Morrel H., 3,779,814.

Wilson, John H., to Telex Computer Products, Inc. Vacuum buffer. 3,779,481, Cl. 242-182.000.

Wilson, Raymond F.; and Cole, Edward L., to Texaco Inc. Treatment of heavy petroleum oils. 3,779,895, Cl. 208-86.000.

Wilson, Richard C., to Aluminum Company of America. Indicator element for ball bat. 3,779,551, Cl. 273-72.00a.

Wilson, Richard D.: *See—*
Schack, Carl J.; and Wilson, Richard D., 3,780,165.
Wilson, Warren M. Heat exchanger. 3,779,306, Cl. 161-3.900.
Wimberly, Louis. Board game apparatus. 3,779,555, Cl. 273-134.00d.
Windsor, Robert K. Device for applying materials to the area of the eye. 3,779,245, Cl. 128-233.000.
Wingate, Francis E.: *See—*
Wheeler, Henry H., 3,780,167.
Winkler, Charles L., to Westinghouse Electric Corporation. Terminal slowdown control for elevator system. 3,779,346, Cl. 187-29.00r.
Winningham, Troman, to Truman Smog Control, Inc. Sludge separator. 3,779,153, Cl. 100-116.000.
Wirth, Hans: *See—*
Wisfeld, Werner; Wirth, Hans; Lotz, Walter; and Kratz, Alfred, 3,779,909.
Wirth, Wolf-Dieter; Muller, Erwin; and Rohr, Harry, to Bayer Aktiengesellschaft. Benzazamide compounds as blowing agents. 3,779,954, Cl. 260-2.50r.
Wisfeld, Werner; Wirth, Hans; Lotz, Walter; and Kratz, Alfred, to Laboratorium fur Adsorptionstechnik GmbH. Method of and apparatus for the purification of water containing organic contaminants. 3,779,909, Cl. 210-29.000.
Witco Chemical Corporation: *See—*
Clark, John R.; and Bluestein, Claire, 3,779,975.
Polanskyj, Bohdan S.; Solomon, Jack M.; Chisholm, Daniel R.; and Bluestein, Bernard R., 3,780,107.
Withers, James G., Jr.; Habdas, Edward P.; and Jurmo, Michael W., to Universal Oil Products Company. Internally ridged heat transfer tube. 3,779,312, Cl. 165-184.000.
Witherspoon, Romeo R., to General Motors Corporation. Hydrophilic treatment for hydrophobic gas electrodes. 3,779,812, Cl. 136-120.0fc.
Witney, Clifford Edward; and Present, Charles William Stratford, to Vandervell Products Limited. Plating boxes for holding a stack of semi-cylindrical bearing liners during plating. 3,779,890, Cl. 204-297.00r.
Witte, Walter R., to Speco, Inc. Composite expansible biasing and sealing gasket. 3,779,565, Cl. 277-123.000.
Wojcikowski, Czeslaw: *See—*
Brzozowski, Zdzislaw; Angielski, Stefan; and Wojcikowski, Czeslaw, 3,780,058.
Wojtowicz, Edward A.; Hunter, James R.; and Lazzarotti, S. James, to Burroughs Corporation. Vacuum wheel document direction changing device. 3,779,546, Cl. 271-196.000.
Wolcke, Uwe: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,780,062.
Wolf, Edgar; and Lau, Edward, to Redactron Corporation. Magnetic tape transport system and associated controls. 3,779,485, Cl. 242-204.000.
Wolfarth, Eugene F.: *See—*
Farran, Charles F.; and Wolfarth, Eugene F., 3,779,756.
Wolff, Edwin K., to NJM Inc. Labeling machine. 3,779,829, Cl. 156-361.000.
Wollenburg, John G. Trailer maneuvering mechanism. 3,779,328, Cl 180-14.00a.
Woltersdorf, Otto W., Jr.: *See—*
Cragne, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 3,780,027.
Wood, Gordon G.; and McCabe, James L., to Woodco Ltd. Truss and method of making same. 3,778,946, Cl. 52-223.00r.
Wood, Harold B., Jr.: *See—*
Howell, Edward R.; Wood, Harold B., Jr.; and Sayad, Richard S., 3,779,927.
Wood, John Irving: *See—*
Waksberg, Armand; and Wood, John Irving, 3,780,296.
Wood, Louis L., to Grace, W. R., & Co. Method for preparing polyurethane from polyisocyanate and polyalkanolamine using a blocking acid salt. 3,779,994, Cl. 260-77.5aq.
Woodall, Jerry M.: *See—*
Dumke, William P.; Rideout, Vincent L.; and Woodall, Jerry M., 3,780,359.
Woodco Ltd.: *See—*
Wood, Gordon G.; and McCabe, James L., 3,778,946.
Woodle, Robert A., to Texaco Inc. Lube oil manufacture. 3,779,896, Cl. 208-86.000.
Woodman Company, Inc., The: *See—*
Henry, Nelson R.; and Middour, Donald R., 3,779,836.
Woollacott, Derrick Sunnocks, to Colorapid Limited. Apparatus processing photographic material. 3,779,147, Cl. 95-96.000.
Woolman, Myron. Classroom for paired learning. 3,778,911, Cl. 35-60.000.
Wooster Brush Company, The: *See—*
Sommer, Herbert J., 3,779,669.
Wootten, William A. Interlocking seam structure. 3,779,448, Cl. 229-48.00r.
Worner, Gunter, to Daimler-Benz Aktiengesellschaft. Blocking synchronizing arrangement for motor vehicle change-speed gears. 3,779,352, Cl. 192-53.00f.
Wrench, Richard E.; and Smith, Benjamin F., Jr., to Texaco Inc. Hydrotreating-hydrocracking process for manufacturing gasoline range hydrocarbons. 3,779,897, Cl. 208-89.000.
Wright, Bruce C.; and Erickson, Donald G., to Jacobson Manufacturing Company. Grass catcher bag and mower assembly. 3,778,986, Cl. 56-202.000.
Wright, Jack C.: *See—*
Vennard, William O.; and Wright, Jack C., 3,779,241.
Wu, Dao-Tsing: *See—*
De Marsico, Henry J.; Strugar, Daniel; and Wu, Dao-Tsing, 3,779,976.
Wu, Tao-Yuan, to Ford Motor Company. Distributor vacuum spark advance control valve with regulator. 3,779,220, Cl. 123-117.00a.
Wysocki, Joseph J.: *See—*
Saeva, Franklin D.; and Wysocki, Joseph J., 3,780,307.
Xerox Corporation: *See—*
Dryden, Vernon W., 3,780,288.
Haas, Werner E. L.; Flannery, John B., Jr.; Mechlowitz, Bela; and Adams, James E., 3,779,751.
Kidd, Wayne L., 3,779,640.
Saeva, Franklin D.; and Wysocki, Joseph J., 3,780,307.
Xidex Corporation: *See—*
Cope, Oswald James; and Chaikin, Saul W., 3,779,774.
Cope, Wswald James; and Chaikin, Saul W., 3,779,768.
Yadlowsky, Slawko: *See—*
Stefanucci, Arthur; and Yadlowsky, Slawko, 3,780,197.
Yakubek, Louis P., to Owens-Illinois, Inc. Articulated conveyor structure. 3,779,365, Cl. 198-131.000.
Yakuboff, Paul D.: *See—*
Benson, Gustav E.; and Yakuboff, Paul D., 3,779,207.
Yale, Harry L., to Squibb, E. R., & Sons, Inc. 1-[3-[5,11-dihydrodibenz[b,e][1,4]oxazepin-5-yl] propyl]-phenyliperidinols. 3,780,044, Cl. 260-293.580.
Yale, Harry L.; and Bernstein, Jack, to Squibb, E. R., & Sons, Inc. Dibenzooxazepines and dibenzothiazepines. 3,780,059, Cl. 260-326.00d.
Yamada, Kiichi. Device for removing noxious substances discharged from chimneys. 3,779,709, Cl. 23-260.000.
Yamada, Seiji: *See—*
Yata, Kotaro; Nanba, Yasuhiro; and Yamada, Seiji, 3,779,142.
Yamada, Setsuo: *See—*
Kitamura, Kazuo; Takabayashi, Fumiki; and Yamada, Setsuo, 3,779,705.
Yamaga, Minoru: *See—*
Kanetsuki, Koji; Yamaga, Minoru; and Ogawa, Hiromichi, 3,779,810.
Yamamoto, Takenori: *See—*
Hori, Akoto; and Yamamoto, Takenori, 3,778,844.
Yamamoto, Yasumichi; and Rokujo, Kazuo, to Nippon Sheet Glass Co., Ltd. Apparatus for cutting the edges of sheet glass. 3,779,437, Cl. 225-96.500.
Yamamura, Yoshinobu, to Kenki Insatsu Kabushiki Kaisha. Method and apparatus for automatically setting up of paper cases with the bendable-headed inner case. 3,779,140, Cl. 93-36.100.
Yamasa Shoyu Kabushiki Kaisha: *See—*
Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, 3,779,867.
Yamashita, Shohachiro: *See—*
Shibano, Yoshizo; and Yamashita, Shohachiro, 3,780,374.
Yancey, John W.: *See—*
Kennicutt, Robert B.; Sitton, Ellis A.; and Yancey, John W., 3,779,615.
Yao, Ying L.: *See—*
Lin, Yeong S.; and Yao, Ying L., 3,780,312.
Yata, Kotaro; Nanba, Yasuhiro; and Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Automatic electronic flash device. 3,779,142, Cl. 95-10.0ce.
Yellini, Haim; Konfino, Eliezer; and Gan, Ramat, to Assia Chemical Laboratories Ltd. Process for the preparation of 4-chloro-N-furfuryl-5-sulfamoyl anthranilic acid. 3,780,067, Cl. 260-347.002.
Yeo, Herbert G., to Augat, Inc. Pin straightening machine. 3,779,291, Cl. 140-147.000.
Yevick, George J.; and Waly, Adnan, to Personal Communication Inc. Microfiche reading attachment for a typewriter. 3,779,635, Cl. 353-27.000.
Yokata, Tuneo, to Funai Electric Co., Ltd. Selective tape recorder for endless tape cartridges. 3,779,560, Cl. 274-4.00f.
Yokoyama, Takesi: *See—*
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,524.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,525.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,526.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,527.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,528.
Yone, Harold R.: *See—*
Olson, Raymond L.; and Yone, Harold R., 3,778,996.
Yonezawa, Teruhiko: *See—*
Chiba, Toshio; Yonezawa, Teruhiko; Kobayashi, Jiro; and Akashi, Goro, 3,779,775.
Yoshino, Hiroshi: *See—*
Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, 3,779,867.
Yoshitomi Pharmaceutical Ind., Ltd.: *See—*
Nakanishi, Michio; Oe, Takanori; and Seki, Toshio, 3,780,035
Young, David A.; and Brannock, Kent C., said Young assor. of 1/2 Eastman Kodak Company. Reduction of triphenylphosphine oxide with iron to triphenylphosphine. 3,780,111, Cl. 260-606.50p.

Young, Frank G.; and Pennington, Leroy R., to Union Carbide Corporation. Catalytic process for dehydration of alcohols. 3,780,127, Cl. 260-682.000.
Young, Fu-Dah, to American Cyanamid Company. Predominantly aqueous substituted triamcinolone compositions. 3,780,176, Cl. 424-239.000.
Young, Robert R., to Kaiser Industries Corporation. Container storage and handling apparatus. 3,779,403, Cl. 214-16.40a.
Youngblood, Douglas J., to Texaco Inc. Catalytic cracking of hydrocarbons with zeolite catalysts. 3,779,898, Cl. 208-120.000.
Yumino, Hiroshi: *See—*
Fujisawa, Fumio; Takenoshita, Mitsuaki; Nakamura, Ichiro; and Yumino, Hiroshi, 3,779,017.
Zagoroff, Dimiter S. Heat gun. 3,779,694, Cl. 431-347.000.
Zahn, Wolfgang; Zangenfeind, Helmut; and Nagel, Erich, to Agfa-Gevaert Aktiengesellschaft. Apparatus for splicing exposed photographic films and for encoding information on spliced-together films and associated envelopes. 3,779,837, Cl. 156-505.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; and Takeuchi, Tomio, 3,780,069.
Zampetti, Patrick L.: *See—*
McGeary, Frank L.; and Zampetti, Patrick L., 3,779,660.
Zangenfeind, Helmut: *See—*
Zahn, Wolfgang; Zangenfeind, Helmut; and Nagel, Erich, 3,779,837.
Zaugg, Roland, to Schild, A., S.A. Watch movement with off-center wheel and pinion. 3,779,002, Cl. 58-59.000.
Zaverchand & Company: *See—*
Sahgal, Prakash Nath, 3,780,116.
Zavertnik, Marshall G.: *See—*
Kaesser, Glenda F.; and Zavertnik, Marshall G., 3,779,078.
Zawoiski, Peter K.: *See—*
Freudenthal, Hugo D.; Townsend, Richard E.; Zawoiski, Peter K.; and Schatz, Edward, 3,779,911.
Zeitzschel, Gunter: *See—*
Daublebsky, Peter; and Zeitzschel, Gunter, 3,779,134.
Zenith Carburetter Company Limited, The: *See—*
Lawrence, Geoffrey Lloyd, 3,779,530.
Zenith Radio Corporation: *See—*
Harna, Hyacint E., 3,780,213.
Rennick, John L., 3,780,218.
Zibell, Jules Scott. Automobile storage bracket. 3,779,501, Cl. 248-302.000.
Ziebold, Paul G.: *See—*
Kirby, James D.; Hetzel, Douglas R.; McKay, Richard H.; Snydacker, James U.; and Ziebold, Paul G., 3,779,453.
Zielinski, Erich, to Rheinmetall GmbH. Hydraulic buffers. 3,779,396, Cl. 213-43.000.
Zienty, Mitchell Frank, to Miles Laboratories, Inc. Enzyme stabilization. 3,779,869, Cl. 195-68.000.
Ziers, David F., to OB/Masco Drapery Hardware Company. Molding apparatus for sheet material. 3,779,539, Cl. 269-91.000.
Zink, John, Company: *See—*
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., 3,779,689.
Zink, John Smith: *See—*
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., 3,779,689.
Zschunke, Heinz: *See—*
Ploch, Siegfried; Scholtis, Walter; Zschunke, Heinz; and Scharch, Dieter, 3,779,852.
Zweigle, Maurice L., to Dow Chemical Company, The. Removal of monomer from acrylamide polymers with sulfur dioxide. 3,780,006, Cl. 260-89.70r.
Zygiel, Alfred E. Method and apparatus for mixing fluids. 3,779,261, Cl. 137-3.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF DECEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allumanna Svenska Elektriska Aktiebolaget: *See*—
Virsberg, Lars-Goran. Re. 27,846.

Ballini, Giuliano, and C. Bujtar, to Montecatini Edison S.p.A. Process for preparing peroxyacetals and peroxyketals. Re. 27,843, 12–18–73, Cl. 260—610.

Bujtar, Carlo.: *See*—
Ballini, Giuliano, and Bujtar. Re. 27,843.

Campbell, Jack M.: *See*—
Niven, William W. Jr. Re. 27,841.

Esso Research and Engineering Co.: *See*—
Gilbert, John B., and Kartzmark. Re. 27,845.

Fast Load Control, Inc.: *See*—
Park, Robert H. Re. 27,842.

Folger Coffee Co., The: *See*—
Niven, William W., Jr. Re. 27,841.

Gilbert, John B., and R. Kartzmark, to Esso Research and Engineering Co. Preparation of white oils with organo-aluminum activated iron group metal catalysts. Re. 27,845, 12–18–73, Cl. 208—89.

Jankelson, Bernard. Method of producing a muscularly balanced closure of the human mandible. Re. 27,847, 12–18–73, Cl. 32—21.

Kartzmark, Robert: *See*—
Gilbert, John B., and Kartzmark. Re. 27,845.

Mitchell, John E., Co.: *See*—
Olson, John W., Jr. Re. 27,844.

Montecatini Edison S.p.A.: *See*—
Ballini, Giuliano, and Bujtar. Re. 27,843.

Niven, William W., Jr., deceased, by Jack M. Campbell, administrator, to The Folger Coffee Co. Method of processing coffee. Re. 27,841, 12–18–73, Cl. 99—71.

Olson, John W., Jr., to John E. Mitchell, Co. Compressor unit with self-contained drive means. Re. 27,844, 12–18–73, Cl. 417—269.

Park, Robert H., to Fast Load Control, Inc. Methods of improving the stability of interconnected power systems. Re. 27,842, 12–18–73, Cl. 307—52.

Virsberg, Lars-Goran, by Alumanna Svenska Elektriska Aktiebolaget, assignee. Means in electric insulators for keeping the upper side of the insulator plate free from deposits reducing the flash-over strength. Re. 27,846, 12–18–73, Cl. 174—139.

LIST OF DESIGN PATENTEES

Ahrens, Paul W., to Miracle Equipment Co. Child's swing seat. 229,590, 12–18–73, Cl. D6—11.

Aladdin Industries, Inc.: *See*—
Bridges, John A. 229,601.

Alter, Hobart L., to Coast Catamaran Corp. Sailboat hull. 229,611, 12–18–73, Cl. D12—70.

Amerock Corp.: *See*—
Tegner, Raymond U. H. 229,605.

American Optical Corp.: *See*—
Shindler, Anthony. 229,633.

Bartron, Robert S., to Robert R. Shaefer. Golf club head. 229,622, 12–18–73, Cl. D34—5.

Bermender, Harold W., Jr. Electronic data printer. 229,634, 12–18–73, Cl. D64—11.

Bixler, Kenneth D.: *See*—
Reifers, Richard F., and Bixler. 229,608.

Bridges, John A., to Aladdin Industries, Inc. Disposable meal serving unit. 229,601, 12–18–73, Cl. D7—38.

Buchtel, Dean H., 22½% to Robert C. Dye, Frank L. Buchtel, Harold H. Kehoe, and 10% to Edwin W. Oldham. Bottle. 229,606, 12–18–73, Cl. D9—60.

Buchtel, Frank L.: *See*—
Buchtel, Dean H. 229,606.

Casey, James P., and J. W. Fine, Jr., to Ethyle Development Corp. Bottle or similar article. 229,607, 12–18–73, Cl. D9—167.

Chadima, George E., Jr. Combined data entry and distribution terminal. 229,615, 12–18–73, Cl. D26—5.

Coast Catamaran Corp.: *See*—
Alter, Hobart L. 229,611.

Comprehensive Health Testing Laboratories, Inc.: *See*—
Pun, John Y. 229,637.

Conaqua, Inc.: *See*—
King, Radford G., and Holler. 229,614.

Davis, Delles T., and B. D. Motlong, to Research Fuels, Inc. Vehicle. 229,613, 12–18–73, Cl. D14—3.

Defores, Eugene, to Societe Le Foyer. Casing for a pen or the like. 229,636, 12–18–73, Cl. D74—17.

Devore, R. A.: *See*—
Thomas, Robert W., and Devore. 229,625.

Devore, William and R. A.: *See*—
Thomas, Robert W., Devore, and R. A. 229,625.

Diamond International Corp.: *See*—
Reifers, Richard F., and Bixler. 229,608.

DuBois, Ralph L. Garment hanger. 229,600, 12–18–73, Cl. D6—248.

Dye, Robert C.: *See*—
Buchtel, Dean H. 229,606.

Eckel, Alan F., to Sears, Roebuck and Co. Combined can opener and knife sharpener. 229,602, 12–18–73, Cl. D8—35.

Eckel, Alan F., to Sears, Roebuck and Co. Can opener. 229,603, 12–18–73, Cl. D8—36.

Ethyle Development Corp.: *See*—
Casey, James P., and Fine. 229,607.

Fine, John W., Jr.: *See*—
Casey, James P., and Fine. 229,607.

Fisher, Morris F., to Jackson Chair Co., Inc. Sofa. 229,592, 12–18–73, Cl. D6—62.

Fisher, Morris F., to Jackson Chair Co., Inc. Sofa. 229,593, 12–18–73, Cl. D6—63.

Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 229,594, 12–18–73, Cl. D6—68.

Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 229,595, 12–18–73, Cl. D6—71.

Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 229,596, 12–18–73, Cl. D6—73.

Fontana, Frank: *See*—
Tacke, William H., and Fontana. 229,609.

German, Ronald L. Motorcycle auxiliary tank. 229,612, 12–18–73, Cl. D12—155.

Gleason Corp.: *See*—
Westrich, James L. 229,598.
Westrich, James L. 229,599.

Grams, Johanna, to Porzellan-Handels-GmbH. Plate or similar article. 229,626, 12–18–73, Cl. D44—15.

Gregor, Eduard, to Union Carbide Corp. Holographic laser housing. 229,617, 12–8–73, Cl. D26—14.

Gregorutti, Walter. Combined table and tray. 229,589, 12–18–73, Cl. D6—4.

Haggerty, Patrick E., Jr. Face shield for a helmet. 229,587, 12–18–73, Cl. D2—233.

Holler, Frank A.: *See*—
King, Radford G., and Holler. 229,614.

Jackson Chair Co., Inc.: *See*—
Fisher, Morris F. 229,592.
Fisher, Morris F. 229,593.
Fisher, Morris F. 229,594.
Fisher, Morris F. 229,595.
Fisher, Morris F. 229,596.

Jackson, Ira J., and L. D. Williams, to Trans-World Compacters, Inc. Trash and waste compactor. 229,632, 12–18–73, Cl. D55—1.

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Kehoe, Harold H.: *See*—
Buchtel, Dean H. 229,606.

King, Radford G., and F. A. Holler, to Conaqua, Inc. Water softener housing. 229,614, 12–18–73, Cl. D23—3.

Kohmer Bros., Inc.: *See*—
Stubbmann, Albert. 229,623.

LaPointe, Gabriel M., to Parker Mfg. Co. Rivet gun. 229,604, 12–18–73, Cl. D8—68.

Lussier, Carol A. Necktie. 229,588, 12–18–73, Cl. D2—351.

Matsushita Electric Industrial Co., Ltd.: *See*—
Teruachi, Makoto, Nakamura, Sugihara, Sumino, Ueda, and Suzuki. 229,618.

Miracle Equipment Co.: *See*—
Ahrens, Paul W. 229,590.

Morris, Stephen W. Desk lamp. 229,627, 12–18–73, Cl. D48—20.

Morse Electro Products Corp.: *See*—
Robson, Arthur. 229,616.

Motlong, Bruce D.: *See*—
Davis, Delles T., and Motlong. 229,613.

Nakamura, Yasunobu: *See*—
Teruachi, Makoto, Nakamura, Sugihara, Sumino, Ueda, and Suzuki. 229,618.

Oldham, Edwin W.: *See*—
Buchtel, Dean H. 229,606.

Parker Mfg. Co.: *See*—
LaPointe, Gabriel M. 229,604.

Physio-Control Corp.: *See*—
Kawaguchi, Harold H. 229,638.

Porzellan-Handels-GmbH: *See*—
Grams, Johanna. 229,626.

Pun, John Y., to Comprehensive Health Testing Laboratories, Inc. Spirometer. 229,637, 12–18–73, Cl. D83—1.

Reifers, Richard F., and K. D. Bixler, to Diamond International Corp. Molded packaging tray for meat or the like. 229,608, 12–18–73, Cl. D9—219.

Research Fuels, Inc.: *See*—
Davis, Delles T., and Motlong. 229,613.

Robertson, Jesse C. Signboard panel. 229,641, 12–18–73, Cl. D96—12.

Robson, Arthur, to Morse Electro Products Corp. Stereo system housing. 229,616, 12–18–73, Cl. D26—14.

Sears, Roebuck and Co.: *See*—
Eckel, Alan F. 229,602.
Eckel, Alan F. 229,603.

Shaefer, Robert R.: *See*—
Bartron, Robert S. 229,622.

Shindler, Anthony, to American Optical Corp. Pair of spectacles. 229,633, 12–18–73, Cl. D57—1.

Shinjo, Katsumi. Clinch nut. 229,610, 12–18–73, Cl. D8—273.

Sleith, Robert W., to Suburban Plastics, Inc. Handle for a grooming aid for pets. 229,619, 12–18–73, Cl. D30—40.

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Societe Le Foyer: *See*—
Defores, Eugene. 229,636.

Steelcase Inc.: *See*—
Tacke, William H., and Fontana. 229,609.

Stubbmann, Albert, to Kohner Bros., Inc. Mobile toy for infants. 229,623, 12–18–73, Cl. D34—15.

Suburban Plastics, Inc.: *See*—
Sleith, Robert W. 229,619.
Sleith, Robert W. 229,620.
Sleith, Robert W. 229,621.

Sugihara, Osamu: *See*—
Teruachi, Makoto, Nakamura, Sugihara, Sumino, Ueda, and Suzuki. 229,618.

Sumino, Tadashi: *See*—
Teruachi, Makoto, Nakamura, Sugihara, Sumino, Ueda, and Suzuki. 229,618.

Suzuki, Kiyoshi: *See*—
Teruachi, Makoto, Nakamura, Sugihara, Sumino, Ueda, and Suzuki. 229,618.

Swilley Calvin A. Boat. 229,635, 12–18–73, Cl. D71—1.

Tacke, William H., and F. Fontana, to Steelcase, Inc. Caster. 229,609, 12–18–73, Cl. D8—226.

Tegner, Raymond U. H., to Amerock Corp. Plate hardware. 229,605, 12–18–73, Cl. D8—179.

Teruachi, Makoto, Y. Nakamura, O. Sugihara, T. Sumino, K. Ueda, and K. Suzuki, to Matsushita Electric Industrial Co., Ltd. Speaker housing. 229,618, 12–18–73, Cl. D26—14.

Thomas, Robert W., to William, and R. A. Devore. Cooker. 229,625, 12–18–73, Cl. D44—1.

Trail, Robert J., and S. T. Wolfe. Furniture seat. 229,591, 12–18–73, Cl. D6—60.

Trans-World Compacters, Inc.: *See*—
Jackson, Ira J., and Williams. 229,632.

Ueda, Kazuhiro: *See*—
Teruachi, Makoto, Nakamura, Sugihara, Sumino, Ueda, and Suzuki. 229,618.

Union Carbide Corp.: *See*—
Gregor, Eduard. 229,617.

Vanderhorst, John, to Wilkerson Corp. Pressure gauge. 229,629, 12–18–73, Cl. D52—6.

Vander Mere, Jacob. Fluid dispensing comb. 229,640, 12–18–73, Cl. D86—8.

Wastal, Patrick H. Tree holder. 229,597, 12–18–73, Cl. D6—105.

Watford, Sherwin L. Finger-operated indicating device. 229,630, 12–18–73, Cl. D52—6.

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Wolfe, Spencer T.: *See*—
Trail, Robert J., and Wolfe. 229,591.

Wolfson, Nell I. Lamp. 229,628, 12–18–73, Cl. D48—20.

Woog, James N. Patient positioning cushion. 229,639, 12–18–73, Cl. D83—1.

Wilkerson Corp.: *See*—
Vanderhorst, John. 229,629.

Williams, Leroy D.: *See*—
Jackson, Ira J., and Williams. 229,632.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 18, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
3R 3,778,844
68 3,778,846
146 3,778,847
236 3,778,845

CLASS 4
173 3,778,848
227 3,778,850
228 3,778,849

CLASS 5
347 3,778,851
348WB 3,778,852
356 3,778,853

CLASS 8
39 3,779,700
3,779,701
52 3,779,702
115.5 3,779,703
149 3,779,704
173 3,779,705

CLASS 9
8P 3,778,854
41 3,778,855

CLASS 12
7.9 3,778,856

CLASS 13
23 3,780,200
31 3,780,201

CLASS 15
4 3,778,857
104.1R 3,778,858
104.3R 3,778,859
147A 3,778,860
256.51 3,778,861
306A 3,778,862
323 3,778,863
339 3,778,864
340 3,778,865

CLASS 16
49 3,778,866

CLASS 17
11 3,778,867

CLASS 21
54R 3,779,706
58 3,779,707
3,779,791

CLASS 23
230B 3,779,708
260 3,779,709
288E 3,779,712
288F 3,779,710
288R 3,779,711

CLASS 24
115R 3,778,868
3,778,869
204R 3,778,870
236 3,778,871

CLASS 28
1.6 3,778,872
72.3 3,778,873

CLASS 29
157.3R 3,778,874
160.6 3,778,875
163.5F 3,778,876
173 3,778,877
182.1 3,779,715
182.5 3,779,713
3,779,714
182.8 3,779,716
192R 3,779,717
195A 3,779,720
195.5 3,779,718
197 3,779,719
199 3,779,721
200R 3,778,878
203C 3,778,879
208C 3,778,880
401 3,778,881
450 3,778,882
495 3,778,883
512 3,778,884
527.2 3,778,885
577 3,778,886
588 3,778,887
592 3,778,888
593 3,778,889
596 3,778,890
3,778,891
598 3,778,892
599 3,778,893
3,778,894
3,778,895
603 3,778,896
609 3,778,897
611 3,778,898
625 3,778,899
3,778,901
628 3,778,900

CLASS 32
20 3,778,902
21 Re.27,847
22 3,778,903
27 3,778,904

CLASS 33
18R 3,778,905
174P 3,778,906

CLASS 34
57R 3,778,907
116 3,778,908
155 3,778,909

CLASS 35
4 3,779,729
37 3,778,910
60 3,778,911

CLASS 37
110 3,778,912

CLASS 38
144 3,778,913

CLASS 40
64R 3,778,914
125R 3,778,915

CLASS 43
18R 3,778,916
35 3,778,917
43.12 3,778,918
44.4 3,778,920
44.8 3,778,921
53.5 3,778,919
61 3,778,922
69 3,778,923
129 3,778,924

CLASS 44
1R 3,779,722
7C 3,779,723
63 3,779,724

CLASS 46
13 3,778,925
79 3,778,926
233 3,778,927

CLASS 47
38.1 3,778,928
58 3,778,929

CLASS 48
202 3,779,725

CLASS 49
25 3,778,930
380 3,778,931
388 3,778,932
449 3,778,933
503 3,778,934

CLASS 51
8 3,778,935
168 3,778,936
284 3,778,937
295 3,779,726
298 3,779,727
320 3,778,938

CLASS 52
36 3,778,939
116 3,778,940
124 3,778,941
134 3,778,942
157 3,778,943
159 3,778,944
217 3,778,945
223R 3,778,946
232 3,778,947
302 3,778,948
309 3,778,949
483 3,778,950
646 3,778,951
667 3,778,952
745 3,778,953
747 3,778,954
758D 3,778,955
3,778,956
3,778,957
760 3,778,958

CLASS 53
26 3,778,959
28 3,778,961
29 3,778,960
35 3,778,962
66 3,778,963
159 3,778,972
184 3,778,964
248 3,778,965

CLASS 54
81 3,778,966

CLASS 55
21 3,778,967
32 3,778,968
55 3,778,969
137 3,778,970
159 3,778,971
197 3,778,975
199 3,778,973
3,778,974
206 3,778,976
219 3,778,977
223 3,778,978
227 3,778,979
238 3,778,980
263 3,778,981
290 3,778,982
306 3,778,983
333 3,778,984
497 3,778,985

CLASS 56
202 3,778,986
377 3,778,987

CLASS 57
12 3,778,988
58.89 3,778,989
58.95 3,778,990
77.3 3,778,991
139 3,778,992
145 3,778,993
149 3,778,994
156 3,778,995
3,778,996

CLASS 58
13 3,778,997
23AC 3,778,998
23R 3,778,999
58 3,779,000
3,779,001
59 3,779,002

CLASS 59
78.1 3,779,003
93 3,779,004

CLASS 60
11 3,779,005
39.11 3,779,006
39.28R 3,779,007
207 3,779,008
217 3,779,009
226A 3,779,010
251 3,779,011
271 3,779,012
278 3,779,013
286 3,779,014
3,779,015
329 3,779,016
413 3,779,017
575 3,779,018

CLASS 61
1F 3,779,020
1 3,779,019
6 3,779,133
16 3,779,021
31 3,779,022
45D 3,779,023
46 3,779,024
53.52 3,779,025
53.72 3,779,026
72.001 3,779,027

CLASS 62
22 3,779,028
58 3,779,030
138 3,779,029
160 3,779,031
233 3,779,032
354 3,779,033
381 3,779,034
503 3,779,035
512 3,779,036

CLASS 64
5 3,779,037
11B 3,779,038
17A 3,779,039
27NM 3,779,040

CLASS 65
1 3,779,728
9 3,779,730
29 3,779,731
31 3,779,732
32 3,779,733
136 3,779,734
356 3,779,735

CLASS 66
14 3,779,041
50A 3,779,042
77 3,779,043
78 3,779,044
147 3,779,045
3,779,046

CLASS 68
5D 3,779,047
150 3,779,048
158 3,779,049
242 3,779,050
248 3,779,051

CLASS 70
38C 3,779,052
456R 3,779,053

CLASS 71
90 3,779,736
3,779,737
120 3,779,738

CLASS 72
13 3,779,054
46 3,779,055
47 3,779,056
56 3,779,057
66 3,779,058
67 3,779,059
87 3,779,060
239 3,779,061
244 3,779,062
253 3,779,063
283 3,779,064

CLASS 73
1R 3,779,065
23.1 3,779,069
37 3,779,067
49.1 3,779,068
88.5R 3,779,071
141R 3,779,072
144 3,779,074
146 3,779,073
182 3,779,075
211 3,779,076
341 3,779,077
343R 3,779,078
346 3,779,079
396 3,779,080
419 3,779,081
421B 3,779,082
425.4P 3,779,083
432HA 3,779,084
432PS 3,779,070
432R 3,779,085
490 3,779,086

CLASS 74
5.6 3,779,087
44 3,779,088
53 3,779,089
81 3,779,090
109 3,779,091
122 3,779,092
142 3,779,093
424.8R 3,779,094
471XY 3,779,095
476 3,779,096
477 3,779,097
492 3,779,098
594.3 3,779,099
665N 3,779,100
711 3,779,101
713 3,779,102

CLASS 75
12 3,779,739
3,779,740
23.1 3,779,066
35 3,779,741
46 3,779,742
49 3,779,743
60 3,779,744
176 3,779,745
3,779,746
200 3,779,747

CLASS 76
25A 3,779,103

CLASS 81
119 3,779,104
121R 3,779,105
177B 3,779,106
177.8 3,779,107
424 3,779,108

CLASS 82
2.5 3,779,109
3,779,110

CLASS 83
23 3,779,111
103 3,779,112
140 3,779,113
205 3,779,114
210 3,779,115
378 3,779,116
404.4 3,779,117
437 3,779,118
581 3,779,119
601 3,779,120
614 3,779,121
698 3,779,122
3,779,123

CLASS 84
1.04 3,780,202
1.17 3,780,203
94C 3,779,124
189 3,779,125
418 3,779,126

CLASS 85
7 3,779,127

CLASS 89
1F 3,779,128
1.5R 3,779,129
1.71 3,779,130
191A 3,779,131

CLASS 91
4A 3,779,132
44 3,779,134
45 3,779,135
361 3,779,136
489 3,779,137

CLASS 93
1R 3,779,138
35VL 3,779,139
36.01 3,779,140

CLASS 95
10CE 3,779,141
3,779,142
13 3,779,143
14 3,779,144
31FM 3,779,145
42 3,779,146
96 3,779,147
100 3,779,148

CLASS 96
1C 3,779,749
1E 3,779,751
1R 3,779,748
1.5 3,779,750
3 3,779,752
3,779,753
3,779,754
27E 3,779,755
29D 3,779,756
29R 3,779,757
33 3,779,759
36.1 3,779,760
36.2 3,779,758
36.3 3,779,779
38.2 3,779,761
48R 3,779,762
55 3,779,763
3,779,776
56.5 3,779,765
59 3,779,764
63 3,779,766
66R 3,779,767
75 3,779,768
76C 3,779,770
76R 3,779,769
84 3,779,771
87A 3,779,773
87R 3,779,774
88 3,779,775
107 3,779,777
115R 3,779,778

CLASS 98
2.16 3,779,149
40D 3,779,150

CLASS 99
71 Re.27,841
86 3,779,772
141A 3,780,189
533 3,779,151

CLASS 100
34 3,779,152
116 3,779,153
155R 3,779,154
207 3,779,155
218 3,779,156
240 3,779,157
250 3,779,158

CLASS 101
35 3,779,159
115 3,779,160
123 3,779,161
142 3,779,162
170 3,779,163
334 3,779,164
365 3,779,165
426 3,779,166

CLASS 102
46 3,779,167
70.2R 3,779,168
78 3,779,169

CLASS 104
12 3,779,170
173 3,779,171

CLASS 105
282P 3,779,172
369S 3,779,173
376 3,779,174
456 3,779,175

CLASS 106
27 3,779,780
52 3,779,781
72 3,779,782
171 3,779,783
300 3,779,784

CLASS 108
112 3,779,176
114 3,779,177

CLASS 109
6 3,779,178
33 3,779,179

CLASS 110
7R 3,779,180
3,779,181
8R 3,779,182
18R 3,779,183

CLASS 112
2 3,779,184
121.12 3,779,185
121.14 3,779,186
158R 3,779,187
218R 3,779,188
252 3,779,189
262 3,779,190

CLASS 113
120K 3,779,191

CLASS 114
.5F 3,779,192
.5T 3,779,193
20R 3,779,194
51 3,779,195
74T 3,779,196
85 3,779,197
178 3,779,198

CLASS 115
14 3,779,199
16 3,779,200
20 3,779,201
22.3 3,779,202

CLASS 117
4 3,779,785
3,779,786
11 3,779,787
33.3 3,779,788
46CB 3,779,789
47A 3,779,790
72 3,779,792
3,779,793
3,779,794
100A 3,779,796
100M 3,779,795
116 3,779,797
131 3,779,798
155UA 3,779,800
161UZ 3,779,799
201 3,779,801
207 3,779,802
211 3,779,803
212 3,779,804
3,779,805
3,779,806
215 3,779,807
232 3,779,808

CLASS 118
8 3,779,203
3,779,204
24 3,779,205
63 3,779,206
109 3,779,207

CLASS 119
1 3,779,208
4 3,779,209
18 3,779,210
103 3,779,211

CLASS 122
23 3,779,212

CLASS 123
1R 3,779,213
8.01 3,779,214
8.47 3,779,215
8.49 3,779,216
41.41 3,779,217
117A 3,779,218
3,779,220
117R 3,779,219
119A 3,779,222
119B 3,779,221
122D 3,779,223
136 3,779,224
139E 3,779,225
148E 3,779,226

CLASS 124
16 3,779,227

CLASS 126
21R 3,779,228
110B 3,779,229
116R 3,779,230
373 3,779,231
400 3,779,232

CLASS 127
63 3,779,809

CLASS 128
2V 3,779,234
2.05G 3,779,236
2.05M 3,779,235
2.06A 3,779,237
6 3,779,233
36 3,779,238
92BC 3,779,239
92D 3,779,240
129 3,779,241
146.2 3,779,244
171 3,779,242
233 3,779,245
278 3,779,243
287 3,779,246
303R 3,779,247
321 3,779,248
325 3,779,249
489 3,779,250

CLASS 130
27JT 3,779,251

CLASS 131
84B 3,779,252
110 3,779,253
198R 3,779,254

CLASS 132
41A 3,779,255
93 3,779,256

CLASS 133
5R 3,779,257

CLASS 134
138 3,779,258

CLASS 135
1C 3,779,259
20R 3,779,260

CLASS 136
29 3,779,810
86R 3,779,811
120FC 3,779,812
161 3,779,813
236 3,779,814

CLASS 137
3 3,779,261
38 3,779,262
3,779,263
68 3,779,264
93 3,779,265
110 3,779,266
111 3,779,267
113 3,779,268
119 3,779,269
268 3,779,270
315 3,779,271
3,779,272
460 3,779,273
505 3,779,274
505.18 3,779,275
512.4 3,779,276
592 3,779,277
597 3,779,278
599 3,779,279
625.29 3,779,281
625.46 3,779,282
625.5 3,779,280
637 3,779,283

CLASS 138
111 3,779,284
118.1 3,779,285

CLASS 139
25 3,779,286
88 3,779,287
122R 3,779,288
266 3,779,289

CLASS 140
1 3,779,290
147 3,779,291

CLASS 141
11 3,779,292
39 3,779,293

CLASS 144
117B 3,779,294
193A 3,779,295

CLASS 145
61H 3,779,296

CLASS 148
6.14R 3,779,818
6.2 3,779,815
6.3 3,779,816
12.4 3,779,817

CLASS 149
2 3,779,819
3,779,820
7 3,779,821
18 3,779,825
19.4 3,779,822
3,779,823
19.9 3,779,824
20 3,779,826

CLASS 150
1.5R 3,779,297
52R 3,779,298

CLASS 152
210 3,779,299
376 3,779,300

CLASS 156
3 3,779,839
3,779,840
8 3,779,841
18 3,779,842
64 3,779,843
73 3,779,844
87 3,779,845
96 3,779,832
144 3,779,846
156 3,779,847
178 3,779,848
199 3,779,850
212 3,779,849
309 3,779,851
330 3,779,827
358 3,779,828
361 3,779,829
394 3,779,830
3,779,831
405 3,779,833
417 3,779,834
466 3,779,835
505 3,779,836
583 3,779,837
3,779,838

CLASS 157
1.17 3,779,301

CLASS 160
68 3,779,302

CLASS 161
62 3,779,852
70 3,779,853
88 3,779,857
156 3,779,854
159 3,779,855
164 3,779,856
170 3,779,858
173 3,779,859

CLASS 162
129 3,779,860
145 3,779,861
152 3,779,862
253 3,779,863

CLASS 164
282 3,779,303
312 3,779,304
3,779,305

CLASS 165
39 3,779,306
42 3,779,307
51 3,779,308
55 3,779,309
105 3,779,310
171 3,779,311
184 3,779,312

CLASS 166
.6 3,779,313
216 3,779,314
268 3,779,315
276 3,779,316

CLASS 169
1A 3,779,317
1B 3,779,318

CLASS 172
45 3,779,319
60 3,779,320

CLASS 174
11R 3,780,204
15C 3,780,205
36 3,780,206
42 3,780,207
47 3,780,208
51 3,780,209
68.5 3,780,211
70S 3,780,210
139 Re.27,846

CLASS 175
162 3,779,322
381 3,779,323

CLASS 176
1 3,779,864
38 3,779,865

CLASS 178
5.1 3,780,213
5.2R 3,780,214
5.4HE 3,780,218
3,780,219
5.4ST 3,780,212
5.4R 3,780,215
3,780,216
6 3,780,217
6.8 3,780,220
3,780,221
3,780,223
7.2 3,780,222
3,780,224
66R 3,779,321

CLASS 179
2A 3,780,225
6C 3,780,227
6R 3,780,226
16A 3,780,228
18FF 3,780,229
84VF 3,780,230
100.2CA 3,780,231
170.2 3,780,233
181R 3,780,232
189R 3,780,234

CLASS 180
1R 3,779,324
3,779,325
5R 3,779,326
3,779,327
14A 3,779,328
54F 3,779,329
69.1 3,779,330
82R 3,779,331
112 3,779,332
121 3,779,333
3,779,334

CLASS 181
.5NC 3,779,335
31B 3,779,336
3,779,337
33C 3,779,338
48 3,779,339
49 3,779,340
50 3,779,341
56 3,779,342

CLASS 182
163 3,779,343
214 3,779,344

CLASS 184
6.4 3,779,345

CLASS 187
29R 3,779,346

CLASS 188
65.2 3,779,347
106A 3,779,348

CLASS 191
13 3,780,235

CLASS 192
.092 3,779,349
45 3,779,350
45.2 3,779,351
53F 3,779,352
70 3,779,353
104R 3,779,354
105BA 3,779,355

CLASS 193
37 3,779,356

CLASS 194
5 3,779,357
75 3,779,358

CLASS 195
2 3,779,866
28 3,779,867
49 3,779,868
68 3,779,869

CLASS 197
66 3,779,359

CLASS 198
16R 3,779,360
24 3,779,361
3,779,362
33AB 3,779,363
131 3,779,364
3,779,365
160 3,779,366
167 3,779,367
204 3,779,368

CLASS 200
5EA 3,780,236
5A 3,780,237
11DA 3,780,238
11B 3,780,239
38R 3,780,240
61.27 3,780,241
61.41 3,780,242
82R 3,780,243
148B 3,780,244
155R 3,780,245
157 3,780,246
166C 3,780,247
167A 3,780,248
168G 3,780,249

CLASS 203
12 3,779,870
88 3,779,871

CLASS 204
12 3,779,872
20 3,779,873
49 3,779,874
76 3,779,875
3,779,876
129.75 3,779,877
140 3,779,878
146 3,779,879
158R 3,779,880
159.15 3,779,881
165 3,779,882
180P 3,779,883
181 3,779,884
192 3,779,885
195T 3,779,886
224R 3,779,887
228 3,779,888
268 3,779,889
297R 3,779,890
298 3,779,891

CLASS 206
1.8 3,779,369
45.31 3,779,370
47A 3,779,371
3,779,372
56DF 3,779,374
63.3 3,779,375
65R 3,779,376
560F 3,779,373

CLASS 208
6 3,779,892
10 3,779,893
33 3,779,894
86 3,779,895
3,779,896
89 Re.27,845
3,779,897
120 3,779,898
127 3,779,900
143 3,779,899
3,779,901
251 3,779,902
254H 3,779,903
333 3,779,904
348 3,779,905

CLASS 209
36 3,779,377
73 3,779,378
102 3,779,379
166 3,779,380
271 3,779,381

CLASS 210
7 3,779,906
22 3,779,907
23 3,779,908
29 3,779,909
49 3,779,910
54 3,779,912
60 3,779,911
63 3,779,913
83 3,779,382
84 3,779,383
136 3,779,384
154 3,779,385
193 3,779,386
232 3,779,387
390 3,779,388
474 3,779,389
495 3,779,390

CLASS 211
1.5 3,779,391
75 3,779,392
126 3,779,393
134 3,779,394

CLASS 212
81 3,779,395

CLASS 213
43 3,779,396
151 3,779,397

CLASS 214
1BB 3,779,400
3,779,401
1R 3,779,399
6B 3,779,402
16.4A 3,779,403
41 3,779,404
46 3,779,405
77P 3,779,406
86A 3,779,407
145 3,779,408
302 3,779,409
311 3,779,410
505 3,779,411

CLASS 215
9 3,779,412
11C 3,779,413
44 3,779,414
48 3,779,415

CLASS 219
10.49 3,780,250
10.55 3,780,251
3,780,252
58 3,780,253
61 3,780,254
121EM 3,780,256
121P 3,780,255
125R 3,780,257
131R 3,780,258
145 3,780,259
271 3,780,260
324 3,780,261
341 3,780,262
501 3,780,263

CLASS 220
27 3,779,416
3,779,417
60R 3,779,418
63R 3,779,419
3,779,420
63 3,779,421

CLASS 221
10 3,779,422
186 3,779,423

CLASS 222
1 3,779,424
70 3,779,425
146 3,779,426
153 3,779,427
498 3,779,428
500 3,779,429
501 3,779,430
561 3,779,431

CLASS 223
39 3,779,432
66 3,779,433
88 3,779,434

CLASS 224
37 3,779,435
42.1G 3,779,436

CLASS 225
96.5 3,779,437

CLASS 226
19 3,779,438
74 3,779,440
88 3,779,439
111 3,779,441
123 3,779,442
199 3,779,443

CLASS 228
4 3,779,444
5 3,779,445
15 3,779,446

CLASS 229
14B 3,779,447
48R 3,779,448
66 3,779,449

CLASS 233
21 3,779,450
23A 3,779,451
32 3,779,452

CLASS 235
54F 3,779,453
61.11C 3,780,265
61.11D 3,780,264
3,780,266
3,780,268
61.11E 3,780,267
3,780,270
3,780,271
61.11H 3,780,269
70A 3,779,454
95 3,779,455
3,779,456
150.2 3,780,272
150.52 3,780,273
151.3 3,779,457
151.31 3,780,274
152 3,780,275
153AC 3,780,277
153AE 3,780,276
153BG 3,779,458
164 3,780,278
3,780,279
190 3,780,280

CLASS 236
15A 3,779,459

CLASS 239
102 3,779,460
172 3,779,461
230 3,779,462
308 3,779,463
350 3,779,464
416 3,779,465
489 3,779,466
538 3,779,467
542 3,779,468

CLASS 240
1.3 3,780,283
4.1 3,780,281
8.3 3,780,282
41R 3,780,284
41.3 3,780,285
78LD 3,780,286
108D 3,780,287

CLASS 241
30 3,779,469
191 3,779,470

CLASS 242
18CS 3,779,471
18DD 3,779,472
54R 3,779,473
56.1 3,779,474
56.2 3,779,475
67.3 3,779,476
84.1R 3,779,477
86 3,779,478
107.4 3,779,479
158R 3,779,480
182 3,779,481
190 3,779,482
191 3,779,483
199 3,779,484
204 3,779,485
3,779,498

CLASS 244
3.17 3,779,492
53R 3,779,486
123 3,779,487
134A 3,779,488
152 3,779,489
153R 3,779,490
155R 3,779,491

CLASS 248
44 3,779,493
56 3,779,494
71 3,779,495
99 3,779,496

165 3,779,497
245 3,779,499
288 3,779,500
302 3,779,501
361R 3,779,502
429 3,779,503
441 3,779,504

CLASS 249
84 3,779,505
110 3,779,506

CLASS 250
199 3,780,295
201 3,780,296
202 3,780,298
209 3,780,299
231R 3,780,297
237R 3,780,300
301 3,780,301
3,780,302
3,780,303
303 3,780,290
315 3,780,288
336 3,780,304
339 3,780,293
362 3,780,289
363 3,780,291
364 3,780,294
390 3,780,292
400 3,780,305
428 3,780,306
484 3,780,307
492 3,780,308
507 3,780,309
555 3,780,310

CLASS 251
9 3,779,507
124 3,779,508
148 3,779,509
301 3,779,510
306 3,779,511
308 3,779,512
309 3,779,513
369 3,779,514

CLASS 252
8.55C 3,779,915
3,779,916
8.55D 3,779,917
8.55R 3,779,914
12.6 3,779,918
33.4 3,779,920
33.6 3,779,919
3,779,921
34F 3,779,922
50 3,779,923
62.1 3,779,924
3,779,926
62.9 3,779,925
75 3,779,927
3,779,928
77 3,779,930
90 3,779,929
199 3,779,931
108 3,779,932
118 3,779,933
142 3,779,934
149 3,779,935
194 3,779,936
300 3,779,937
301.1R 3,779,938
301.4P 3,779,939
312 3,779,940
316 3,779,941
3,779,942
404 3,779,945
411R 3,779,943
429B 3,779,944
448 3,779,946
466PT 3,779,947
521 3,779,948

CLASS 254
16 3,779,515
30 3,779,516
134 3,779,517

CLASS 259
18 3,779,518
147 3,779,519
151 3,779,520
191 3,779,521
192 3,779,522

CLASS 260
2EC 3,779,950
2N 3,779,949
2.5AH 3,779,956
2.5AJ 3,779,953
2.5B 3,779,951
3,779,957
2.5F 3,779,955
3,779,958
3,779,959
2.5R 3,779,952
3,779,954
8 3,779,960
23XA 3,779,962
23H 3,779,963
25.5B 3,779,965
28.5AS 3,779,964
29.2M 3,779,967
29.6BM 3,779,968
29.6MN 3,779,973
29.6NR 3,779,966
29.6RW 3,779,970
29.6E 3,779,969
29.6S 3,779,971
29.6 3,779,972
29.7B 3,779,974
30.8R 3,779,975
32.8R 3,779,976
33.2R 3,779,978
33.6UA 3,779,977
33.6A 3,779,979
34.2 3,779,980
40R 3,779,981
41R 3,779,982
45.7R 3,779,984
45.7S 3,779,983
45.95R 3,779,985
46.5E 3,779,991
46.5G 3,779,986
3,779,988
46.5R 3,779,987
47CP 3,779,990
47UP 3,779,989
63UY 3,779,992
75S 3,779,993
77.5AM 3,779,996
77.5AQ 3,779,994
77.5MA 3,779,995
77.5R 3,779,997
78L 3,779,998
78.4D 3,779,999
79.3M 3,780,000
79.5A 3,780,001
85.3R 3,780,002
86.1E 3,780,003
87.3 3,780,004
88.2R 3,780,005
89.7R 3,780,006
92.1R 3,780,007
92.8W 3,780,008
93.1 3,780,009
94.3 3,780,010
94.9D 3,780,011
97.5 3,780,012
3,780,013
112.5 3,780,014
3,780,015
3,780,016
190 3,779,961
209R 3,780,017
210AB 3,780,018
210E 3,780,019
3,780,020
211.5R 3,780,021
239BD 3,780,023
3,780,024
239B 3,780,022
239.3R 3,780,025
239.55R 3,780,026
239.6 3,780,027
240B 3,780,029
243A 3,780,035
243C 3,780,028
3,780,031
3,780,032
3,780,033
3,780,034
884 3,780,037
243R 3,780,030
247.1 3,780,038
248AS 3,780,039
249.5 3,780,036
256.5R 3,780,040
260 3,780,042
281 3,780,041
286R 3,780,043
293.51 3,780,045
293.58 3,780,044
294.8F 3,780,046
296B 3,780,048
296P 3,780,047
299 3,780,049
306 3,780,050
306.8F 3,780,051
308C 3,780,052
3,780,053
309 3,780,054
309.5 3,780,056
310A 3,780,057
310D 3,780,058
326D 3,780,059
326.11R 3,780,062
326.15 3,780,063
326.5B 3,780,060
332.2A 3,780,061
343.6 3,780,064
3,780,065
345.9 3,780,066
347.2 3,780,067
347.4 3,780,068
348C 3,780,069
349 3,780,070
396R 3,780,071
397.45 3,780,072
397.5 3,780,073
410.9R 3,780,074
412.6 3,780,075
420 3,780,076
436 3,780,077
439R 3,780,078
3,780,079
448.2B 3,780,080
465E 3,780,081
465.1 3,780,082
3,780,083
465.4 3,780,084
3,780,085
465.8A 3,780,086
468J 3,780,088
468K 3,780,087
470 3,780,089
471A 3,780,090
479C 3,780,091
482R 3,780,092
486H 3,780,093
488CD 3,780,094
518A 3,780,095
524R 3,780,096
525 3,780,097
531R 3,780,098
534E 3,780,099
3,780,100
553D 3,780,101
558R 3,780,102
559A 3,780,103
562K 3,780,105
562R 3,780,104
570.8TC 3,780,106
583P 3,780,107
586A 3,780,108
598 3,780,109
600 3,780,110
606.5P 3,780,111
3,780,112
609B 3,780,113
610R Re.27,843
621H 3,780,114
644 3,780,115
645 3,780,116
650R 3,780,117
665R 3,780,118
668A 3,780,119
671B 3,780,120
672T 3,780,121
3,780,122
3,780,123
675.5 3,780,124
3,780,125
680D 3,780,126
682 3,780,127
683.3 3,780,129
683.45 3,780,131
683.63 3,780,130
683.9 3,780,128
831 3,780,132
857R 3,780,133
876R 3,780,134
878B 3,780,135
3,780,136
880B 3,780,137
3,780,138
3,780,139
3,780,140
897A 3,780,142
897C 3,780,141
956 3,780,143
3,780,144
966 3,780,145
971 3,780,146

CLASS 261
35 3,779,529
44R 3,779,530
87 3,779,531
111 3,779,523
114R 3,779,524
3,779,525
3,779,527
3,779,528
114T 3,779,526

CLASS 264
49 3,780,147
63 3,780,150
102 3,780,151
141 3,780,148
168 3,780,149
174 3,780,152
176F 3,780,153
176R 3,780,154
230 3,780,155
300 3,780,156
310 3,780,157

CLASS 266
5R 3,779,532
23T 3,779,533
41 3,779,534

CLASS 267
64 3,779,535
140 3,779,536
179 3,779,537

CLASS 269
23 3,779,538
91 3,779,539
328 3,779,540

CLASS 270
31 3,779,541

CLASS 271
60 3,779,542
75 3,779,543
115 3,779,544
183 3,779,545
196 3,779,546

CLASS 272
3 3,779,547
67 3,779,548

CLASS 273
1B 3,779,549
54B 3,779,550
72A 3,779,551
88 3,779,552
130AB 3,779,553
131B 3,779,554
134A 3,779,556
134D 3,779,555
135D 3,779,557
157R 3,779,558
162D 3,779,559
183D 3,779,398

CLASS 274
4B 3,779,561
4F 3,779,560
10R 3,779,562
23R 3,779,563

CLASS 277
80 3,779,564
123 3,779,565

CLASS 279
1S 3,779,566
19.1 3,779,567

CLASS 280
9 3,779,568
11.35R 3,779,570
11.35T 3,779,569
19 3,779,571
21R 3,779,572
34A 3,779,573
43.18 3,779,574
95R 3,779,575
3,779,581
124B 3,779,576
150AB 3,779,577
150SB 3,779,578
150.5 3,779,579
164 3,779,580
446B 3,779,582

CLASS 285
48 3,779,583
137R 3,779,584
158 3,779,585
308 3,779,586
312 3,779,587

CLASS 292
57 3,779,588
317 3,779,589
336.3 3,779,590

CLASS 293
89 3,779,591
98 3,779,592

CLASS 294
86CG 3,779,593
91 3,779,594

CLASS 296
28AL 3,779,596
28R 3,779,595
37 3,779,597
137G 3,779,598

CLASS 297
253 3,779,599
417 3,779,600

CLASS 299
4 3,779,601
5 3,779,602
34 3,779,603
3,779,604
37 3,779,605
39 3,779,606
3,779,607
3,779,608
3,779,609

CLASS 301
9DN 3,779,610
65 3,779,611

CLASS 303
21CG 3,779,612
21EB 3,779,613
89 3,779,614

CLASS 305
19 3,779,616
31 3,779,615
38 3,779,617

CLASS 307
10R 3,780,311
52 Re.27,842
88LC 3,780,312
106 3,780,313
121 3,780,314
141 3,780,315
209 3,780,316
235R 3,780,317
252UA 3,780,318
288 3,780,319
303 3,780,320
304 3,780,321
318 3,780,322

CLASS 308
10 3,779,618
72 3,779,619
203 3,779,620

CLASS 310
43 3,780,323
180 3,780,324
214 3,780,325

CLASS 312
15 3,779,621
194 3,779,622
257 3,779,623
278 3,779,624

CLASS 313
108R 3,780,326
151 3,780,327
184 3,780,328
185 3,780,329
3,780,330
219 3,780,331
252 3,780,332
274 3,780,333
299 3,780,334
318 3,780,335

CLASS 315
5.38 3,780,336
12 3,780,337
27TD 3,780,339
27R 3,780,338
151 3,780,340
169TV 3,780,341
173 3,780,342
211 3,780,343
241P 3,780,344

CLASS 317
2R 3,780,345
5 3,780,346
9PF 3,780,347
18D 3,780,348
58 3,780,349
61.5 3,780,350
101CM 3,780,352
101DH 3,780,353
103 3,780,354
119 3,780,351
120 3,780,355
234R 3,780,356
3,780,357
235R 3,780,358
3,780,359

CLASS 318
138 3,780,360
171 3,780,361
254 3,780,362
3,780,363
271 3,780,364
318 3,780,365
345 3,780,366
444 3,780,367

CLASS 343
6.5SS 3,780,368
9 3,780,369
17.7 3,780,370
18E 3,780,371
788 3,780,373
844 3,780,372
872 3,780,374
915 3,780,375

CLASS 346
74CR 3,780,376
74M 3,780,377
107R 3,780,378

CLASS 350
3.5 3,779,625
85 3,779,626
96WG 3,779,627
3,779,628
103 3,779,629
117 3,779,630
162SF 3,779,631

CLASS 352
17 3,779,632
204 3,779,633

CLASS 353
17 3,779,634
27 3,779,635
83 3,779,636
120 3,779,637

CLASS 355
3 3,779,638
4 3,779,639
8 3,779,640
29 3,779,641
55 3,779,642
75 3,779,643
3,779,644

CLASS 356
5 3,779,645
74 3,779,646
109 3,779,647
124 3,779,648
200 3,779,649
207 3,779,650
213 3,779,651

CLASS 401
50 3,779,652

CLASS 403
3 3,779,653
62 3,779,654
93 3,779,655
174 3,779,656
217 3,779,657
372 3,779,659
393 3,779,658

CLASS 404
69 3,779,660
72 3,779,661
98 3,779,662

CLASS 408
113 3,779,663
225 3,779,664

CLASS 415
123 3,779,665
159 3,779,666
170A 3,779,667
199 3,779,668

CLASS 417
214 3,779,669
231 3,779,670
269 Re.27,844
393 3,779,671
493 3,779,672

CLASS 418
61 3,779,673
71 3,779,674
199 3,779,675

CLASS 423
49 3,780,158
3,780,159
186 3,780,160
210 3,780,163
300 3,780,162
310 3,780,161
322 3,780,164
466 3,780,165
522 3,780,166
578 3,780,167
588 3,780,168
645 3,780,169

CLASS 424
35 3,780,170
79 3,780,171
118 3,780,174
122 3,780,172
3,780,173
184 3,780,175
239 3,780,176
243 3,780,177
244 3,780,178
248 3,780,179
3,780,180

CLASS 425
46 3,779,677
65 3,779,678
110 3,779,679
131 3,779,676
145 3,779,680
160 3,779,681
174.8E 3,779,682
222 3,779,683
233 3,779,684
236 3,779,685
371 3,779,686
383 3,779,687
441 3,779,688

CLASS 426
18 3,780,181
33 3,780,182
50 3,780,183
65 3,780,184
72 3,780,185
93 3,780,186
113 3,780,187
152 3,780,188

213	3,780,190	350	3,780,195	495	3,780,199	173	3,779,690	347	3,779,694	8	3,779,697
231	3,780,191	393	3,780,196	505	3,780,193	190	3,779,691	351	3,779,695	13	3,779,698
266	3,780,192	473	3,780,197		CLASS 431	266	3,779,692		CLASS 432		
342	3,780,194	477	3,780,198	89	3,779,689	327	3,779,693	6	3,779,696	248	3,779,699

CLASSIFICATION OF DESIGNS

D02—	233	229,587		105	229,597		226	229,609	D26—	5C	229,615	D42—	7R	229,624	D57—	F	229,633
	351	229,588		198	229,598		273	229,610		14B	229,616	D44—	1F	229,625	D64—	11R	229,634
D06—	4	229,589			229,599	D09—	60	229,606		G	229,618		15	229,626	D71—	1Q	229,635
	11	229,590		248	229,600		167	229,607		L	229,617	D48—	20	229,627	D74—	17B	229,636
	60	229,591	D07—	38	229,601		219	229,608	D30—	40	229,619		K	229,628	D83—	1F	229,637
	62	229,592	D08—	35	229,602	D12—	70	229,611			229,620	D52—	6A	229,630			229,638
	63	229,593		36	229,603		155	229,612			229,621			229,629		H	229,639
	68	229,594			229,603	D14—	3G	229,613	D34—	5GH	229,622	D54—	1A	229,631	D86—	8	229,640
	71	229,595		68	229,604	D23—		229,614		15AP	229,623	D55—	B	229,632	D96—	12G	229,641
	73	229,596			229,604												

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,779,326		3,779,159		3,779,663		3,780,375		3,778,974		3,779,118
	3,779,376		3,779,166		3,779,667		3,780,376		3,779,380		3,779,122
	3,779,696		3,779,173		3,779,687		3,780,377		3,779,853		3,779,132
	3,780,227		3,779,195		3,779,719	8 :	3,778,869		3,779,859		3,779,133
4 :	3,778,858		3,779,209		3,779,721		3,779,038		3,779,923		3,779,148
	3,778,864		3,779,212		3,779,723		3,779,052		3,780,140		3,779,210
	3,778,883		3,779,248		3,779,768		3,779,070		3,780,156		3,779,211
	3,778,904		3,779,256		3,779,772		3,779,152	12 :	3,778,945		3,779,214
	3,778,925		3,779,262		3,779,774		3,779,171		3,779,042		3,779,234
	3,779,029		3,779,272		3,779,806		3,779,416		3,779,198		3,779,246
	3,779,269		3,779,274		3,779,822		3,779,417		3,779,202		3,779,247
	3,779,290		3,779,292		3,779,851		3,779,423		3,779,236		3,779,283
	3,779,398		3,779,295		3,779,860		3,779,473		3,779,281		3,779,284
	3,779,506		3,779,313		3,779,883		3,779,601		3,779,367		3,779,285
	3,780,185		3,779,334		3,779,886		3,779,636		3,779,387		3,779,300
	3,780,204		3,779,340		3,779,893		3,779,647		3,779,411		3,779,305
	3,780,219		3,779,354		3,779,899		3,779,678		3,779,464		3,779,311
	3,780,234		3,779,369		3,779,903		3,779,809		3,779,490		3,779,316
	3,780,322		3,779,379		3,779,952		3,779,917		3,779,500		3,779,321
5 :	3,779,377		3,779,388		3,779,982		3,779,940		3,779,504		3,779,328
6 :	3,778,849		3,779,403		3,779,999		3,779,968		3,779,533		3,779,329
	3,778,852		3,779,407		3,780,050	9 :	3,778,850		3,779,671		3,779,342
	3,778,854		3,779,415		3,780,076		3,778,870		3,779,695		3,779,343
	3,778,855		3,779,444		3,780,091		3,778,952		3,779,841		3,779,404
	3,778,877		3,779,447		3,780,104		3,778,980		3,779,847		3,779,424
	3,778,886		3,779,448		3,780,137		3,778,983		3,780,012		3,779,427
	3,778,896		3,779,452		3,780,138		3,779,094		3,780,013		3,779,428
	3,778,902		3,779,456		3,780,143		3,779,129		3,780,124		3,779,429
	3,778,915		3,779,457		3,780,165		3,779,167		3,780,196		3,779,436
	3,778,941		3,779,459		3,780,167		3,779,250	13 :	3,779,021		3,779,453
	3,778,957		3,779,465		3,780,194		3,779,335		3,779,501		3,779,458
	3,778,962		3,779,468		3,780,220		3,779,454		3,779,517		3,779,462
	3,778,966		3,779,487		3,780,224		3,779,497		3,779,609		3,779,484
	3,778,987		3,779,489		3,780,226		3,779,584		3,779,693		3,779,491
	3,779,003		3,779,502		3,780,228		3,779,593		3,779,836		3,779,499
	3,779,009		3,779,523		3,780,235		3,779,619	14 :	3,780,203		3,779,555
	3,779,013		3,779,532		3,780,238		3,779,762	16 :	3,778,981		3,779,561
	3,779,027		3,779,535		3,780,252		3,779,779		3,779,184		3,779,565
	3,779,058		3,779,539		3,780,254		3,779,811		3,779,231		3,779,615
	3,779,068		3,779,550		3,780,256		3,779,828		3,779,543		3,779,622
	3,779,075		3,779,551		3,780,258		3,779,842	17 :	3,778,845		3,779,679
	3,779,076		3,779,552		3,780,265		3,780,110		3,778,939		3,779,785
	3,779,080		3,779,554		3,780,268		3,780,117		3,778,946		3,779,901
	3,779,081		3,779,590		3,780,278		3,780,125		3,778,950		3,779,905
	3,779,085		3,779,591		3,780,282		3,780,134		3,778,969		3,779,920
	3,779,096		3,779,606		3,780,288		3,780,212		3,778,970		3,779,941
	3,779,104		3,779,608		3,780,293		3,780,236		3,778,973		3,779,947
	3,779,107		3,779,610		3,780,336		3,780,276		3,778,996		3,779,957
	3,779,119		3,779,617		3,780,339		3,780,280		3,779,050		3,780,011
	3,779,127		3,779,632		3,780,357		3,780,346		3,779,086		3,780,014
	3,779,153		3,779,651		3,780,365	10 :	3,778,961		3,779,114		3,780,017

3,780,066
3,780,122
3,780,131
3,780,182
3,780,186
3,780,189
3,780,199
3,780,202
3,780,213
3,780,218
3,780,247
3,780,264
3,780,290
3,780,315
3,780,318
3,780,347
18 : 3,778,889
3,778,890
3,778,919
3,778,933
3,778,934
3,779,032
3,779,278
3,779,324
3,779,362
3,779,844
3,779,869
3,779,884
3,779,991
3,780,016
3,780,052
3,780,053
3,780,054
3,780,144
3,780,174
3,780,240
3,780,284
3,780,323
3,780,342
3,780,373
19 : 3,779,090
3,779,201
3,779,208
3,779,400
3,779,571
3,779,586
3,779,661
3,780,272
3,780,279
20 : 3,778,857
3,779,158
3,779,174
3,779,394
3,779,495
3,779,736
3,780,188
3,780,245
3,780,372
21 : 3,779,579
3,779,977
22 : 3,778,868
3,779,066
3,779,117
3,779,192
3,779,241
3,779,702
3,779,900
3,780,118
3,780,162
3,780,169
23 : 3,779,258
3,779,370
3,779,830
3,779,831
3,779,832
3,779,833
24 : 3,778,867
3,778,892
3,779,168
3,779,191
3,779,199
3,779,714
3,779,906
3,779,994
3,780,158
3,780,159
3,780,198
3,780,233
3,780,246
3,780,249
3,780,271
3,780,306
25 : Re.27,842
Re.27,847
3,778,861
3,778,878
3,778,881
3,778,929
3,778,936
3,778,956
3,778,963
3,778,976
3,779,010
3,779,063
3,779,106
3,779,144

3,779,157
3,779,235
3,779,288
3,779,317
3,779,318
3,779,319
3,779,338
3,779,345
3,779,418
3,779,451
3,779,540
3,779,657
3,779,694
3,779,697
3,779,706
3,779,708
3,779,726
3,779,727
3,779,729
3,779,752
3,779,753
3,779,754
3,779,770
3,779,877
3,779,955
3,779,965
3,780,092
3,780,099
3,780,100
3,780,105
3,780,237
3,780,291
3,780,300
3,780,304
3,780,308
3,780,321
3,780,333
3,780,340
3,780,344
3,780,353
26 : 3,778,880
3,778,910
3,778,916
3,778,918
3,778,953
3,778,984
3,779,030
3,779,059
3,779,098
3,779,125
3,779,137
3,779,160
3,779,164
3,779,220
3,779,280
3,779,299
3,779,312
3,779,332
3,779,339
3,779,363
3,779,392
3,779,406
3,779,509
3,779,522
3,779,544
3,779,575
3,779,587
3,779,588
3,779,592
3,779,621
3,779,631
3,779,673
3,779,715
3,779,718
3,779,800
3,779,801
3,779,807
3,779,812
3,779,813
3,779,840
3,779,858
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3,779,951
3,779,970
3,779,971
3,779,981
3,779,984
3,780,006
3,780,022
3,780,030
3,780,039
3,780,128
3,780,145
3,780,179
3,780,217
3,780,253
3,780,297
3,780,311
27 : 3,778,848
3,778,860
3,778,863
3,778,871
3,778,899
3,778,921
3,778,985
3,779,033

3,779,108
3,779,276
3,779,589
3,779,605
3,779,761
3,779,771
3,779,778
3,779,782
3,779,816
3,779,929
3,779,942
3,779,966
3,779,997
3,780,262
3,780,285
29 : Re.27,841
3,778,922
3,778,964
3,779,078
3,779,079
3,779,099
3,779,172
3,779,330
3,779,474
3,779,670
3,779,814
3,779,912
3,780,109
31 : 3,779,308
3,779,616
32 : 3,780,324
33 : 3,779,101
3,779,572
34 : 3,778,859
3,778,903
3,778,935
3,778,954
3,778,965
3,779,025
3,779,083
3,779,087
3,779,089
3,779,095
3,779,163
3,779,181
3,779,187
3,779,221
3,779,268
3,779,323
3,779,371
3,779,383
3,779,386
3,779,405
3,779,410
3,779,446
3,779,466
3,779,476
3,779,494
3,779,503
3,779,547
3,779,556
3,779,557
3,779,564
3,779,583
3,779,599
3,779,627
3,779,635
3,779,658
3,779,660
3,779,710
3,779,712
3,779,724
3,779,737
3,779,781
3,779,789
3,779,794
3,779,805
3,779,829
3,779,850
3,779,879
3,779,882
3,779,892
3,779,907
3,779,933
3,779,944
3,779,963
3,779,974
3,779,975
3,779,978
3,779,983
3,780,002
3,780,005
3,780,015
3,780,021
3,780,031
3,780,033
3,780,034
3,780,037
3,780,042
3,780,043
3,780,044
3,780,046
3,780,051
3,780,056
3,780,059
3,780,060

3,780,070
3,780,073
3,780,085
3,780,088
3,780,106
3,780,112
3,780,133
3,780,149
3,780,170
3,780,175
3,780,176
3,780,178
3,780,180
3,780,184
3,780,191
3,780,192
3,780,197
3,780,216
3,780,230
3,780,255
3,780,263
3,780,267
3,780,277
3,780,326
3,780,341
3,780,350
35 : Re.27,845
3,779,716
3,779,824
36 : 3,778,893
3,778,900
3,778,901
3,778,906
3,778,908
3,778,911
3,778,923
3,778,928
3,778,930
3,778,947
3,778,967
3,779,041
3,779,053
3,779,057
3,779,065
3,779,088
3,779,143
3,779,197
3,779,200
3,779,203
3,779,204
3,779,233
3,779,237
3,779,238
3,779,244
3,779,273
3,779,425
3,779,439
3,779,440
3,779,441
3,779,460
3,779,485
3,779,492
3,779,513
3,779,514
3,779,553
3,779,558
3,779,566
3,779,628
3,779,640
3,779,641
3,779,643
3,779,644
3,779,648
3,779,703
3,779,720
3,779,747
3,779,748
3,779,750
3,779,751
3,779,756
3,779,758
3,779,763
3,779,765
3,779,769
3,779,777
3,779,786
3,779,790
3,779,803
3,779,804
3,779,808
3,779,891
3,779,895
3,779,904
3,779,911
3,779,919
3,779,921
3,779,924
3,779,928
3,779,945
3,779,950
3,779,956
3,779,972
3,779,973
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3,779,987
3,779,989

3,779,995
3,779,996
3,780,032
3,780,041
3,780,048
3,780,063
3,780,074
3,780,075
3,780,079
3,780,080
3,780,094
3,780,103
3,780,107
3,780,113
3,780,121
3,780,123
3,780,141
3,780,146
3,780,190
3,780,195
3,780,223
3,780,225
3,780,242
3,780,274
3,780,283
3,780,295
3,780,307
3,780,312
3,780,313
3,780,320
3,780,331
3,780,337
3,780,359
3,780,378
37 : 3,778,992
3,779,182
3,779,542
3,779,681
3,779,849
3,780,153
3,780,351
38 : 3,779,230
39 : 3,778,898
3,778,932
3,779,007
3,779,100
3,779,116
3,779,196
3,779,222
3,779,306
3,779,365
3,779,374
3,779,378
3,779,397
3,779,409
3,779,420
3,779,434
3,779,496
3,779,531
3,779,537
3,779,559
3,779,634
3,779,665
3,779,668
3,779,669
3,779,677
3,779,682
3,779,683
3,779,728
3,779,730
3,779,732
3,779,735
3,779,815
3,779,827
3,779,834
3,779,835
3,779,846
3,779,848
3,779,856
3,779,872
3,779,878
3,779,887
3,779,889
3,779,922
3,779,976
3,780,001
3,780,004
3,780,007
3,780,008
3,780,038
3,780,152
3,780,208
3,780,209
3,780,239
3,780,259
3,780,281
40 : Re.27,844
3,778,912
3,779,178
3,779,242
3,779,263
3,779,270
3,779,302
3,779,315
3,779,421
3,779,481

41 : 3,778,920
3,778,942
3,779,005
3,779,103
3,779,249
3,779,254
3,779,366
3,779,419
3,779,515
3,779,745
3,779,746
3,779,843
42 : 3,778,891
3,778,913
3,778,994
3,779,004
3,779,035
3,779,037
3,779,054
3,779,056
3,779,061
3,779,062
3,779,115
3,779,124
3,779,190
3,779,225
3,779,227
3,779,245
3,779,251
3,779,298
3,779,309
3,779,346
3,779,360
3,779,395
3,779,413
3,779,449
3,779,450
3,779,469
3,779,508
3,779,546
3,779,567
3,779,573
3,779,607
3,779,698
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3,779,704
3,779,707
3,779,717
3,779,722
3,779,725
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3,779,744
3,779,784
3,779,798
3,779,817
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3,779,871
3,779,926
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3,780,108
3,780,130
3,780,132
3,780,136
3,780,147
3,780,150
3,780,155
3,780,163
3,780,244
3,780,273
3,780,286
3,780,354
3,780,355
44 : 3,779,026
3,779,123
3,779,207
3,779,267
3,779,291
3,779,713
45 : 3,778,872
3,778,995
3,779,186

3,779,216
3,779,344
46 : 3,779,402
3,779,580
47 : 3,778,943
3,778,944
3,779,385
3,779,408
3,779,596
3,779,857
3,779,993
3,780,111
3,780,148
3,780,183
48 : 3,778,931
3,778,937
3,778,955
3,778,968
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3,779,126
3,779,128
3,779,261
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3,779,359
3,779,375
3,779,461
3,779,478
3,779,511
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3,779,602
3,779,656
3,779,793
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3,779,897
3,779,898
3,779,913
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3,780,126
3,780,129
3,780,243
3,780,270
3,780,301
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3,780,352
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49 : 3,779,105
3,779,412
3,779,582
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3,780,260

50 : 3,779,520
51 : 3,778,862
3,778,914
3,779,008
3,779,149
3,779,151
3,779,226
3,779,243
3,779,472
3,779,574
3,779,788
3,779,799
3,779,826
3,779,866
3,780,151
3,780,345
3,780,371
53 : 3,778,926
3,778,940

3,779,175
3,779,282
3,779,310
3,779,361
3,779,389
3,779,455
3,779,653
3,779,654
3,779,664
3,779,938
54 : 3,779,594
3,779,953
3,780,087
3,780,127
3,779,838
3,780,023
3,780,024
3,780,040

56 : 3,780,187
3,779,347
3,780,160
55 : 3,778,986
3,779,082
3,779,112
3,779,139
3,779,156
3,779,205
3,779,275
3,779,322
3,779,341
3,779,368
3,779,585
3,779,600
3,779,624
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DESIGN PATENTS

6 : 229,597
229,611
229,612
229,614
229,617
229,624
229,627
229,637
8 : 229,629

9 : 229,608
229,634
17 : 229,602
229,603
229,603
18 : 229,592
229,593
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19 : 229,590
20 : 229,625
229,632
22 : 229,635
25 : 229,604
229,604

229,596
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229,628
229,631
229,633

26 : 229,609
229,640

229,619
229,620
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27 : 229,639
29 : 229,607
34 : 229,623
36 : 229,616
39 : 229,606
229,630
40 : 229,600
41 : 229,641

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229,613
53 : 229,591
229,638
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229,599

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 25, 1973 Volume 917 Number 4

CONTENTS

	Page
Patent Notices	
Certificates of Correction for the Week of December 25, 1973	1194
Dedications	1194
Adverse Decisions in Interferences	1195
Disclaimers	1195
Condition of Patent Applications	1196
Reissue Patents Granted (27,848)	1197
Patents Granted	
General and Mechanical (3,780,379)	1200
Chemical (3,781,168)	1409
Electrical (3,781,448)	1458
Design Patents Granted (229,642)	1584
Index of Patentees	PI 1
Indices of Reissues and Designs	PI 48
Classification of	
Patents (Including Reissues)	PI 51
Designs	PI 54
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 55
Designs	PI 57

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PATENT NOTICES

Certificates of Correction for the Week of Dec. 25, 1973

Re. 27,710	3,723,470	3,744,284	3,754,972
D. 228,247	3,723,546	3,744,402	3,755,161
D. 228,255	3,723,970	3,744,403	3,755,310
D. 228,331	3,724,413	3,744,541	3,755,590
D. 228,390	3,724,580	3,744,649	3,755,711
D. 228,410	3,725,024	3,744,773	3,756,060
D. 228,470	3,725,270	3,744,816	3,756,134
3,532,519	3,725,296	3,745,008	3,756,228
3,559,825	3,726,688	3,745,041	3,756,407
3,562,334	3,726,714	3,745,129	3,756,418
3,574,543	3,726,933	3,745,594	3,756,457
3,578,819	3,726,938	3,745,828	3,756,976
3,601,556	3,727,865	3,745,951	3,756,993
3,615,989	3,728,174	3,745,962	3,757,084
3,621,027	3,728,288	3,746,071	3,757,184
3,626,012	3,728,336	3,746,437	3,757,324
3,638,484	3,729,497	3,746,650	3,757,353
3,647,845	3,729,715	3,746,698	3,757,428
3,652,979	3,729,903	3,746,797	3,757,429
3,655,345	3,730,178	3,746,867	3,757,472
3,655,397	3,730,560	3,747,108	3,757,502
3,657,263	3,730,979	3,747,180	3,757,640
3,660,303	3,731,113	3,747,311	3,757,653
3,663,526	3,731,432	3,747,354	3,757,867
3,669676	3,731,719	3,747,542	3,757,886
3,670,119	3,732,055	3,747,659	3,758,186
3,671,540	3,732,173	3,747,664	3,758,298
3,671,917	3,732,247	3,747,765	3,758,334
3,672,819	3,732,604	3,747,770	3,758,351
3,673,278	3,732,633	3,748,184	3,758,566
3,675,040	3,732,992	3,748,329	3,758,593
3,676,234	3,733,326	3,748,447	3,758,615
3,676,384	3,733,934	3,748,749	3,758,739
3,677,963	3,734,166	3,748,972	3,758,825
3,679,548	3,734,188	3,749,138	3,758,838
3,681,482	3,734,252	3,749,477	3,758,840
3,681,688	3,734,516	3,749,606	3,758,879
3,683,084	3,734,866	3,749,767	3,758,992
3,686,158	3,734,934	3,749,810	3,759,143
3,688,555	3,734,977	3,749,939	3,759,145
3,688,724	3,735,054	3,749,975	3,759,148
3,690,992	3,735,196	3,750,090	3,759,414
3,691,258	3,735,473	3,750,110	3,759,492
3,692,557	3,735,799	3,750,309	3,759,511
3,694,442	3,735,941	3,750,448	3,759,594
3,694,510	3,736,149	3,750,464	3,759,885
3,699,500	3,736,981	3,750,562	3,759,893
3,700,198	3,737,301	3,750,623	3,759,911
3,701,603	3,737,338	3,750,698	3,759,996
3,701,675	3,737,376	3,750,717	3,760,055
3,703,288	3,737,566	3,750,988	3,760,071
3,703,758	3,738,150	3,751,093	3,760,148
3,704,270	3,738,354	3,751,269	3,760,276
3,706,875	3,738,735	3,751,424	3,760,297
3,707,555	3,739,054	3,751,432	3,760,328
3,709,667	3,739,160	3,751,444	3,760,412
3,709,928	3,739,195	3,751,603	3,760,457
3,710,113	3,739,310	3,751,626	3,760,627
3,712,360	3,739,700	3,751,892	3,760,645
3,712,680	3,740,237	3,752,289	3,760,890
3,712,911	3,740,281	3,752,368	3,760,974
3,715,393	3,740,463	3,752,370	3,761,305
3,716,582	3,740,478	3,752,499	3,761,340
3,717,655	3,740,485	3,752,660	3,761,423
3,717,750	3,740,577	3,752,854	3,761,441
3,719,608	3,740,762	3,752,969	3,761,443
3,719,663	3,740,996	3,753,188	3,761,635
3,719,855	3,741,697	3,753,464	3,761,836
3,720,708	3,741,932	3,754,024	3,761,840
3,720,772	3,742,011	3,754,112	3,761,867
3,720,925	3,742,253	3,754,224	3,761,941
3,721,113	3,742,475	3,754,279	3,761,981
3,721,400	3,742,577	3,754,366	3,762,065
3,721,682	3,742,660	3,754,400	3,762,614
3,722,036	3,743,098	3,754,404	3,762,697
3,722,714	3,743,555	3,754,452	3,762,962
3,723,166	3,743,576	3,754,813	

Dedications

2,746,729.—*Merle M. Eakins,* Ford City, Pa. METHOD FOR HOMOGENIZING GLASS. Patent dated May 22, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,748,441.—*William G. Smith,* Tarentum, Pa. QUICK ACTION CLAMP DEVICE. Patent dated June 5, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,750,161.—*Ralph W. Simmons,* Ford City, Pa. METHOD FOR STIRRING GLASS. Patent dated June 12, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,750,312.—*James H. Bloom, Jr.,* and *Wyman N. Connor,* New Kensington, Pa. METHOD OF FABRICATING LAMINATED STRUCTURES. Patent dated June 12, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,764,848.—*Florian V. Atkeson,* Tarentum, Pa. IMPROVED GLASS CUTTING METHOD. Patent dated Oct. 2, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

3,466,812.—*Alec Leibowitz,* London, England. HOLDERS FOR GEM STONES. Patent dated Sept. 16, 1969. Dedication filed Sept. 7, 1973, by the assignee, *Spectrum Diamonds (Proprietary) Limited.*

Hereby dedicates the entire remaining term of said patent to the Public.

3,466,813.—*Alec Leibowitz,* Marylebone, London, England. HOLDERS FOR GEM STONES. Patent dated Sept. 16, 1969. Dedication filed Sept. 7, 1973, by the assignee, *Spectrum Diamonds (Proprietary) Limited.*

Hereby dedicates the entire remaining term of said patent to the Public.

3,540,190.—*Joseph A. Brink, Jr.,* St. Louis, Mo. LIQUID MIST COLLECTION. Patent dated Nov. 17, 1970. Dedication filed Aug. 9, 1973, by the assignee, *Monsanto Enviro-Chem Systems, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent

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3,543,450.—*Alec Leibowitz,* London, England. APPARATUS FOR CONTROLLING RECIPROCATORY MOVEMENT OF A GEM STONE ACROSS A POLISHING SURFACE. Patent dated Dec. 1, 1970. Dedication filed Sept. 7, 1973, by the assignee, *Spectrum Diamonds (Proprietary) Limited.*

Hereby dedicates the entire remaining term of said patent to the Public.

3,548,190.—*Charles B. Sclar,* Columbus, and *Paul J. Freud,* Worthington, Ohio. HIGH PRESSURE APPARATUS FOR USE IN X-RAY DIFFRACTION ANALYSIS. Patent dated Dec. 15, 1970. Dedication filed May 7, 1973, by assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,551,992.—*Daniel J. Maykuth* and *Horace R. Ogden,* Columbus, Ohio. METHOD OF PRODUCING DUCTILE-TUNGSTEN BASE SHEET ALLOY. Patent dated Jan. 5, 1971. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 2,763,716, K. E. Farr, COLOR TELEVISION RECEIVER APPARATUS, decided Jan. 13, 1961, claims 2 and 11, decided Sept. 13, 1973, claim 7, Interference No. 88,971.

Patent No. 3,457,349, A. G. Jelinek, ESTERS OF 1-AZIRIDINEPROPIONIC ACID AS TRANQUILIZERS, decided Sept. 12, 1973, Interference No. 98,349, claim 7.

Patent No. 3,484,677, M. J. Piteo, BREAKERLESS MAGNETO IGNITION SYSTEM, decided Sept. 13, 1973, Interference No. 98,080, claims 1, 4, 6 and 10.

Patent No. 3,503,261, H. A. Riester and T. Kobayashi, RESISTANCE TO CURRENT CONVERTER, decided June 26, 1973, Interference No. 97,615, claims 1, 2, 3, 4, 5 and 6.

Patent No. 3,517,370, R. Poingt, INSULATING PROTECTOR FOR CLIPS USED IN ELECTRICAL CONNECTIONS, decided Sept. 5, 1973, Interference No. 97,935, claims 1 and 2.

Patent No. 3,578,618, H. P. Beardsley, VINYL ACETATE-ETHYLENE COPOLYMER AQUEOUS PAINT COMPOSITIONS, decided Sept. 12, 1973, Interference No. 98,176, claim 1.

Patent No. 3,602,972, H. Droll, APPARATUS FOR FORMING AND TRANSFERRING COILS FOR STATORS, decided Sept. 19, 1973, Interference No. 98,264, claims 1, 2, 5, 7 and 8.

Patent No. 3,676,031, F. M. Stinton and W. M. Slater, POST-TENSIONING SYSTEM, decided Sept. 7, 1973, Interference No. 98,181, claims 1, 2, 4, 5, 6, 7, 8 and 9.

Disclaimers

Design Patent No. 217,954.—*Heinz Nathanson,* New York, N.Y. SHOWER CURTAIN HOOK. Patent dated July 7, 1970. Disclaimer filed Aug. 3, 1973, by the inventor.

Hereby disclaims the claim of said patent.

Design Patent No. 224,093.—*Elmer W. Griese, Jr.,* Chicago, Ill. CARRYING HANDLE FOR A CONTAINER OR THE LIKE. Patent dated July 4, 1972. Disclaimer filed Oct. 9, 1973, by the assignee, *National Can Corporation.*

Hereby disclaims the remaining term of said patent.

3,388,690.—*Eldon Hostetler,* Middlebury, Ind. POULTRY FEEDER SYSTEM AND PAN ASSEMBLY THEREFOR. Patent dated June 18, 1968. Disclaimer filed Oct. 9, 1973, by the assignee, *Chore-Time Equipment Inc.*

Hereby enters this disclaimer to claims 4, 6 and 7 of said patent.

3,452,269.—*Wilbur C. Welz,* Houston, Tex. METHODS AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS INCLUDING ADJUSTING THE POTENTIAL DISTRIBUTION IN AN AXIAL DIRECTION THROUGH A BOREHOLE. Patent dated June 24, 1969. Disclaimer filed Oct. 11, 1973, by the assignee, *Schlumberger Technology Corporation.*

Hereby enters this disclaimer to claim 28 of said patent.

3,494,969.—*George J. Kallos,* Saginaw, Mich. PREPARATON OF STYRENES. Patent dated Feb. 10, 1970. Disclaimer filed June 4, 1973, by the assignee, *The Dow Chemical Company.*

Hereby enters this disclaimer to claims 1, 3, 5 and 8 of said patent.

3,496,122.—*Ulrich Niklaus,* Munchenstein, and *Daniel Porret,* Binningen, Switzerland. MODIFIED TRIGLYCIDYLISOCYANURATE RESINS. Patent dated Feb. 17, 1970. Disclaimer filed Apr. 11, 1973, by the assignee, *Ciba-Geigy AG.*

Hereby enters this disclaimer to claims 1, 7, 8 and 10 of said patent.

3,551,286.—*Richard G. Barker,* Princeton Junction, N.J. POLYSULFIDE PAPER PULPING COMPOSITION. Patent dated Dec. 29, 1970. Disclaimer filed Aug. 1, 1973, by the assignee, *Union Camp Corporation.*

Hereby enters this disclaimer to claims 1 through 6, inclusive of said patent.

3,553,270.—*John C. Wollensak* and *Bernard R. Meltsner,* Royal Oak, Mich. PREPARATION OF PHENOLIC THIOETHERS. Patent dated Jan. 5, 1971. Disclaimer filed Sept. 14, 1973, by the assignee, *Ethyl Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3 and 7 of said patent.

3,563,313.—*Lloyd B. Spangle,* Tulsa, Okla. WELL CEMENTING METHOD USING QUICK GELLING CEMENT. Patent dated Feb. 16, 1971. Disclaimer filed Aug. 17, 1973, by the assignee, *The Dow Chemical Company.*

Hereby enters this disclaimer to claims 1–3 of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 8, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-24-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo, Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-25-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-30-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-02-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-17-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-02-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-11-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-29-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-10-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-26-72
DESIGNS, GROUP 290—R L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-14-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-22-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-10-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-19-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors: Pumps; Rotary Engines and Pumps: Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-12-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes, Sewing Machines.	9-25-72

Expiration of patents: The patents within the range of numbers indicated below expire during December 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,772,415 to 2,775,761, inclusive
Plant Patents ..... Numbers 1,532 to 1,542, inclusive

REISSUES

DECEMBER 25, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

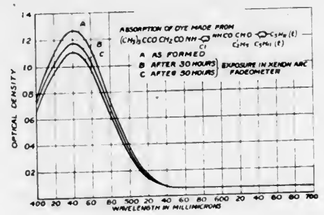
27,848
YELLOW FORMING COUPLERS

Arnold Weissberger, Rochester, N.Y., and Charles J. Kibler, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Original No. 3,265,506, dated Aug. 9, 1966, Ser. No. 364,450, May 4, 1964, which is a continuation-in-part of abandoned Ser. No. 25,295, Apr. 28, 1960. Application for reissue July 21, 1971, Ser. No. 164,684

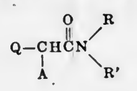
Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **15 Claims**



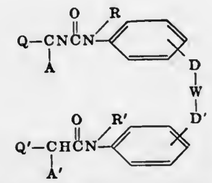
1. A photographic element comprising a support having coated thereon at least one photographic silver halide emulsion layer and in contiguity therewith a yellow dye-forming coupler selected from those having the formulas:

I

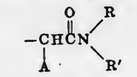


and

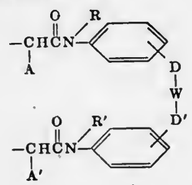
II



wherein Q and Q' each represent a member having from 5 to 32 carbon atoms selected from the class consisting of acyl groups wherein the carbon atom attached to the carbonyl radical of said acyl group is a tertiary carbon atom and the said carbonyl radical is attached directly to the carbon atom of the active methylene in the



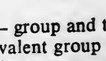
moiety of Formula I and the



moiety of Formula II; A and A' each represents a member selected from the class consisting of the hydrogen atom, a halogen atom and an —SB radical; B represents a member selected from the class consisting of an alkyl radical, an aryl radical and a heterocyclic radical; R and R' each represent a member selected from the class consisting of the hydrogen atom, an alkyl radical, an aryl radical, and a heterocyclic radical; D and D' each represent a member selected from the class consisting of the



group, the



group, the —$NHSO_2$— group and the —SO_2NH— group; and W represents a bivalent group selected from the class consisting of a phenylene group and an alkylene group.

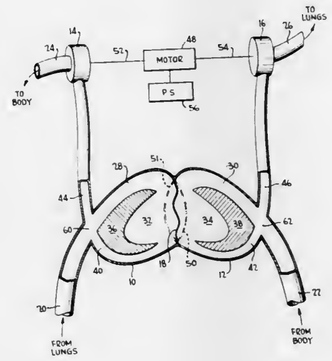
27,849
DYNAMIC ACTION VALVELESS ARTIFICIAL HEART UTILIZING DUAL FLUID OSCILLATOR

Donald E. Wortman, 609 Muriel St., Rockville, Md. 20852

Original No. 3,599,244, dated Aug. 17, 1971, Ser. No. 878,484, Nov. 20, 1969. Application for reissue Nov. 30, 1971, Ser. No. 203,489

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **12 Claims**



An artificial heart intended for supplementing or [temporarily] replacing the natural heart for circulating blood through the body. The heart relies on the dynamic flow properties of the blood for its operation, utilizing a unique dual fluid oscillator with a common diaphragm for providing the pulsing action to a pair of pumps that have pressure-volume flow relationships that simulate the natural heart.

27,850
TWO-WAY PLOW WITH SYNCHRONIZED GUIDED TAIL WHEEL

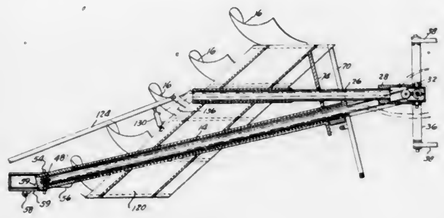
Glen Armon Watts, Rte. 1, Box 258, McMinnville, Oreg. 97127

Original No. 3,507,334, dated Apr. 21, 1970, Ser. No. 616,842, Feb. 17, 1967. Application for reissue Mar. 27, 1972, Ser. No. 238,700

The portion of the term of the patent subsequent to Dec. 2, 1986, has been disclaimed

Int. Cl. A01b *3/28*

U.S. Cl. 172—212 **5 Claims**



Steerable tail wheel arrangement for two-way plow involving pulleys or the like connected to tractor and mating with reversing pulleys or the like direct-connected to tail wheel to steer tail wheel in direction opposite to change in direction of tractor.

27,851
HARD FACING ALLOY COMPOSITION AND METHOD OF MANUFACTURE

Samuel P. Alessi, Homewood, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Original No. 3,600,201, dated Aug. 17, 1971, Ser. No. 780,204, Nov. 29, 1968. Application for reissue Oct. 12, 1971, Ser. No. 188,509

Int. Cl. C09d *1/00*; **C23c** *3/00*

U.S. Cl. 106—1 **6 Claims**

A hard facing composition is disclosed herein which contains carbon, chromium, nickel, silica, manganese boron and iron. The composition is applied to metal surfaces to provide a fused metallic hard facing on the surface when the material is heated to melting temperature.

27,852
SPEAR PACKING APPARATUS

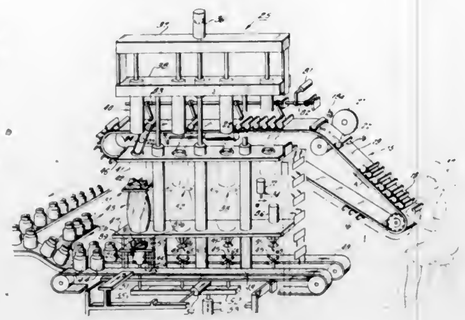
Bernard C. Eisenberg, Rockaway, N.J., assignor to Solbern Corp., Fairfield, N.J.

Original No. 3,662,518, dated May 6, 1972, Ser. No. 83,868, Oct. 26, 1970. Application for reissue Nov. 29, 1972, Ser. No. 310,390

Int. Cl. B65b *63/00*

U.S. Cl. 53—123 **14 Claims**

Apparatus for longitudinally segmentizing cucumbers and packing the segments in a jar with the seeded surfaces of the segments facing outward is constructed with means for receiving a whole cucumber and cutting same to predetermined length. The predetermined length of cucumber is slit longitudinally into spears of segmental cross section that are fed through individual twisted chutes and exit therefrom into a jar with the seeded surfaces of the segments facing outward. Guide means at the exit ends of the twisted chutes directs the segments outward toward the jar wall. Thereafter the guide means and the jar are angularly stepped so that additional spear segments entering the jar are directed between those segments previously placed in the jar.



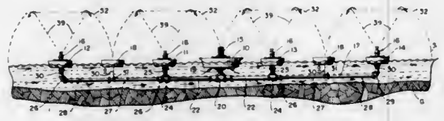
27,853
MODULAR FLOATING WATER-COOLING SYSTEM

Paul A. Frohwerk, Fort Worth, Tex., assignor to Ceramic Cooling Tower Company, Fort Worth, Tex.

Original No. 3,622,074, dated Nov. 23, 1971, Ser. No. 39,351, May 21, 1970, which is a continuation-in-part of Ser. No. 7,901, Feb. 2, 1970. Application for reissue Feb. 23, 1972, Ser. No. 228,664

Int. Cl. B05b *17/08*

U.S. Cl. 239—11 **37 Claims**



An evaporative water-cooling system and method for reducing the temperature of heated water in an open flow channel utilizes a plurality of water pump and spray units or modules floating in the channel and anchored at sequential locations therealong. In a preferred embodiment, the modules are identical in design, and each include at least three separate floats, a power-operated water pump supported by one of the floats, at least two sprays supported by others of the floats, and pipes connecting the pump to the sprays. Within each module, the floats are preferably aligned in the direction of flow, the pump float being centered with spray floats upstream and downstream, and the pump intake being located beneath and protected by the overhang of its disk-shaped float. The sprays project water upwardly into the atmosphere for evaporative cooling and return to the channel. The standardized modules can be patterned in flow-direction sequences and cross-channel clusters, providing a predeterminable temperature reduction profile under specified design conditions. The system is adapted for both once-through and closed-loop channels. As water flow rate, channel volume and/or temperature reduction requirements change, the pattern can be altered accordingly, by either down or cross-channel module modifications.

27,854
INSULATED TELEPHONE CABLE

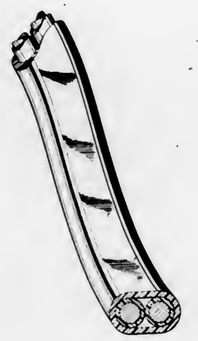
Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Original No. 3,515,796, dated June 2, 1970, Ser. No. 814,200, Apr. 7, 1969, which is a continuation-in-part of Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of Ser. No. 730,933, May 21, 1968, both now abandoned. Application for reissue Oct. 12, 1972, Ser. No. 296,940

The portion of the term of the patent subsequent to May 19, 1987, has been disclaimed

Int. Cl. H01b *11/00*

U.S. Cl. 174—113 R **12 Claims**



An insulated telephone cable is prepared from individually insulated conductors which are gathered together and insulated as a unit. The individually insulated conductors are prepared from aluminum alloy wires having an acceptable electrical conductivity of at least sixty-one percent based on the International Annealed Copper Standard and an increased tensile strength when compared to conventional aluminum alloy wire of the same percent ultimate elongation. In addition, the present wire has an increased percent ultimate elongation when compared to conventional wire of the same tensile strength. The aluminum alloy wires contain substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron and no more than 0.15 weight percent silicon to an alloy mass containing less than about 99.70 weight percent aluminum and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals, annealed after the final draw and insulated. After annealing and insulating, the individual wires are brought together and insulated with an outer sheath. The telephone cable generally consists of two or more individually insulated wires brought together in a conventional stranding operation.

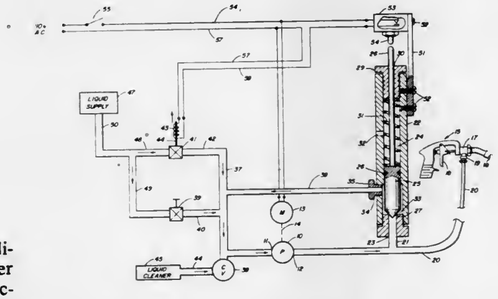
27,855
CLEANING APPARATUS WITH RELIEF CONTROL VALVE

Iven R. Norstrud and John H. Threlkeld, Britt, Iowa, assignors to Britt Tech Corporation, Britt, Iowa

Original No. 3,140,049, dated July 7, 1964, Ser. No. 240,629, Nov. 28, 1962. Application for reissue July 1, 1966, Ser. No. 572,164

Int. Cl. B05b *7/04, 9/00*

U.S. Cl. 239—126 **18 Claims**



The present disclosure is directed to pressure washing apparatus used primarily in washing vehicles. The pressure washer uses a high-pressure pump to deliver a cleaning solution to the surface to be cleaned at approximately 500 p.s.i. through a flow-directing device or gun. The choice of at least two cleaning fluids is controlled through the use of a solenoid operated valve and a check valve. The solenoid-operated valve is controlled by the changes in fluid-line pressure between the pump and the gun due to opening and closing the valve in the gun. A pressure relief valve including a pressure-actuated switching mechanism is connected to the fluid line between the pump and the gun and responds to the pressure changes in the line. An electrical circuit including the switching mechanism and solenoid-operated valve alternately opens and closes the solenoid-operated valve to change the source of cleaning solution. The switching mechanism is controlled by the pressure changes in the line created by opening and closing the valve in the flow-directing device or gun.

PATENTS

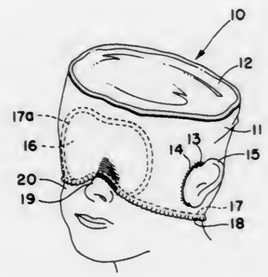
GRANTED DECEMBER 25, 1973

GENERAL AND MECHANICAL

3,780,379
PROTECTIVE CAP FOR INFANTS

Joy M. Kampman, North Olmsted, Ohio, assignor to Joyco, Inc., Cleveland, Ohio

Filed Dec. 14, 1972, Ser. No. 315,151
Int. Cl. A61f 9/00
U.S. Cl. 2—15 15 Claims

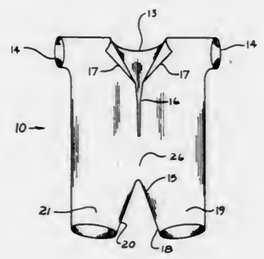


A protective cap for enclosing substantially the entire upper portion of an infant's head has radiation blocking material in the front thereof to prevent radiation from injuring the eyes. The top of the cap and ear openings in the sides of the cap cooperate to facilitate application while effectively retaining the cap in proper position on the head; and resilient material in a hem portion of the cap provides for snug fitting against the face without restricting circulation.

3,780,380
DISPOSABLE PROTECTIVE LINER

Amy W. Lafollette, Rt. 3, Red Oak, Iowa

Filed July 20, 1972, Ser. No. 273,491
Int. Cl. A41b 9/00
U.S. Cl. 2—78 R 5 Claims

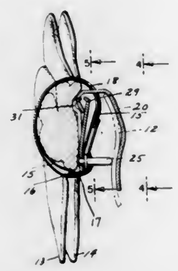


A thin flexible protective liner for use as a disposable undergarment to protect outer garments from the transmission of soilage and disease, comprising a trunk section and leg sections formed to enclose the human body from above the knees to the neck wherein donning and removal of the liner is accomplished through a front slit in the trunk. The protective liner may further include a reinforcing panel in the groin area thereof.

3,780,381
BOW TIES

John Najarian, Cresskill, N.J., assignor to France Neckwear Co. Inc., New York, N.Y.

Filed Jan. 4, 1973, Ser. No. 320,976
Int. Cl. A41d 25/08
U.S. Cl. 2—154 6 Claims

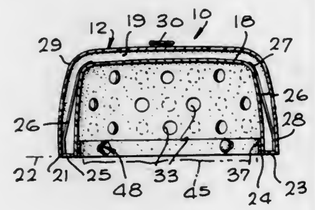


A pre-formed bow tie comprises the usual bow shaped elements which are interconnected at their constricted, reduced width, centers, by a locking band wrapped therearound. The band is covered by fabric. The band also includes a spring controlled vertically swingable lever arm by means of which the pre-formed bow tie may be releasably secured to the neckband of a shirt without being connected to the collar of the shirt. The neckband may be that of a turtle neck shirt as well as the conventional collared shirt.

3,780,382
HAT OR CAP CONSTRUCTED FOR AIR CIRCULATION THERETHROUGH

Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif.

Filed Aug. 2, 1971, Ser. No. 168,018
Int. Cl. A42b 1/00
U.S. Cl. 2—182.6 9 Claims

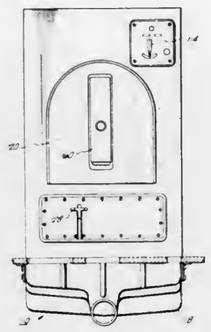


A hat or cap having an outer crown structure containing a number of spaced apertures, and an inner element or elements located opposite the apertures in a relation shielding the user's head from the sun's rays while at the same time allowing free circulation of air into the interior of the hat or cap and to the user's head. Additional freedom for circulation is provided by supporting the hat or cap on the head at only a few circularly spaced locations, to allow movement of air upwardly into the hat or cap between those locations.

3,780,383
RETRACTABLE RECIRCULATING TOILET SYSTEM MODULE

William F. Katona, Northridge, Calif., assignor to Monogram Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 43,450, June 4, 1970, Pat. No. 3,593,346.
This application Apr. 22, 1971, Ser. No. 136,473
Int. Cl. E03d 11/12, 11/10
U.S. Cl. 4—10 4 Claims



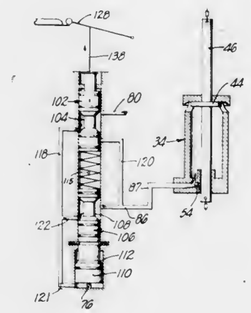
A novel toilet system is disclosed which is alternatively operable on a recirculating fluid supply or an external water supply.

In a specific embodiment, the toilet retracts into a wall fixture and combines a movable bowl member with a fixed receiver member. Separate flush lines clean the bowl and the receiver when in the retracted configuration.

3,780,384
AUTOMATIC TOILET FLUSHING SYSTEM

George R. Rivelle, 1123 Venton St., San Dimas, Calif.

Filed Jan. 17, 1972, Ser. No. 218,216
Int. Cl. E03d 1/36, 5/04
U.S. Cl. 4—41 19 Claims

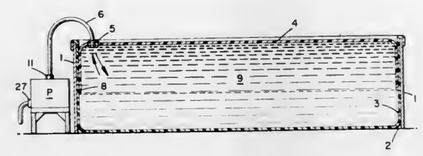


An automatic flushing system for a toilet having a bowl mounting a hinged seat and a flush tank containing a flush valve which is raised from closed position to open position to flush the toilet and returns to closed position at the end of the flush cycle. The flushing system has a water pressure actuated flush valve operator to be mounted in the toilet flush tank and operatively connected to the flush valve, and seat actuated valve means for providing a regulated flow of water to the operator for opening the flush valve and then releasing the valve for closure in response to application of a downward to and removal of the force from the toilet seat. The toilet may also be flushed by hand, if desired.

3,780,385
SWIMMING POOL COVER

Robert R. Dunn, 105 Seneca Dr., Brightwaters, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,934
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.12 7 Claims

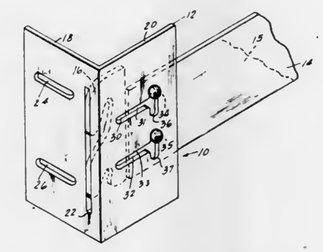


A swimming pool unitary liner and cover comprising a first swimming pool liner and a second swimming pool liner attached circumferentially to the first liner's interior vertical surface, the second liner defining the pool bottom in a lowered position and forming with said first liner a watertight compartment which compartment, when filled with water, displaces the second liner upward whereby the second liner acts as a swimming pool cover. Water is introduced into the compartment through a hose fitting in one of the liners, and preferably the second liner. The water which is introduced into the compartment may optionally be the swimming pool water which is located upward of the second liner.

3,780,386
MECHANICAL FASTENER FOR FRAME OF BED

Philip F. Fouks, and Donald H. Wriggins, both of 114 South Blvd., Evanston, Ill.

Filed May 4, 1971, Ser. No. 140,149
Int. Cl. A47c 19/00; A47f 5/00
U.S. Cl. 5—296 12 Claims



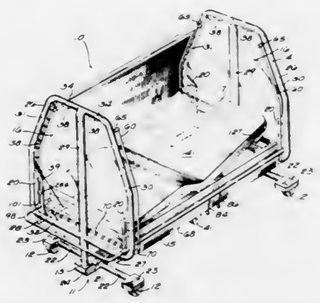
A great flexibility of use and reduction of inventory are made possible by the convertible bed rail connector means of the invention which allows connection of a bed rail means to a bed post means alternately by hook means or bolted means while at th same time allowing the bed rail means to either support the bed post means as would be the case in a "Hollywood" bed arrangement or will allow the bed rail means to be supported by the bed post means as is the case in a conventional bed stead arrangement. An angular bracket member is movably coupled to a bed rail means so that hook means on the bed rail means may pass through a slot in the bracket to effect hook coupling means and to be retracted to a position

where the bracket may be connected to the bed post means for either supporting the bed rail means or being supported by the bed rail means.

3,780,387
PEDIATRIC BED

Robert L. Propst, Ann Arbor, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Division of Ser. No. 175,505, Aug. 27, 1971. This application Sept. 27, 1972, Ser. No. 292,808
Int. Cl. A47c *27/08*
U.S. Cl. 5—345 **8 Claims**

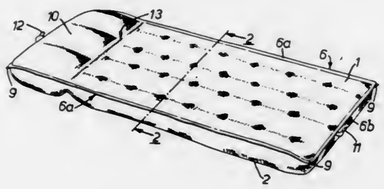


A bed platform is suspended within a support frame having transparent and removable plastic end walls and plastic mesh sides slidable on a Tambour track between raised and lowered positions. As the sides are raised, they slope inwardly over and above the platform to discourage climbing. The support frame is mounted on a caster supported base having upstanding end posts attached to the frame and adjustable height-wise by a motor driven lift. The platform is supported on the ends of the frame and is adjustable for Trendelenburg and reversed Trendelenburg positioning. Affixed to the platform is a mattress frame which includes adjustable and pivotal portions for Gatch positioning. The mattress is molded with a shell-like configuration to fit over the mattress and support frame and includes living hinges to permit folding into various Gatch positions. It also includes grippers along its underside for positive grip sheet placement.

3,780,388
INFLATABLE AIR MATTRESSES AND LIKE ARTICLES

Andre G. Thomas, Briant-Amilly, and Basile Fetissoff, Pannes, both of France, assignors to Etabbissements Hutchinson Compagnie Nationale Du Caoutchouc, Paris, France

Filed Jan. 20, 1972, Ser. No. 219,329
Claims priority, application France, Jan. 22, 1971, 7102222
Int. Cl. A47c *27/08, 27/18*
U.S. Cl. 5—349 **8 Claims**

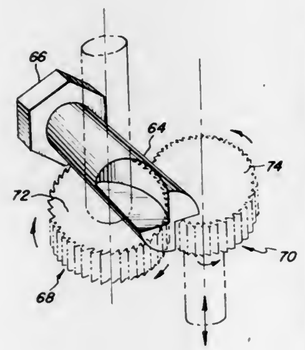


An air mattress has an upper and a lower member joined together at edge portions to form a lip. The width of the lower member is greater than that of the lower member so that the lip lies, when the mattress is inflated at the level of the upper member.

3,780,389
METHOD OF MANUFACTURING A SELF-DRILLING AND SELF-TAPPING FASTENER

Bert A. Lindstrom, Rockford, Ill., assignor to Elco Industries, Inc., Rockford, Ill.

Division of Ser. No. 186,928, Oct. 6, 1971. This application Nov. 24, 1972, Ser. No. 309,176
Int. Cl. B23g *9/00*
U.S. Cl. 10—10 R **6 Claims**



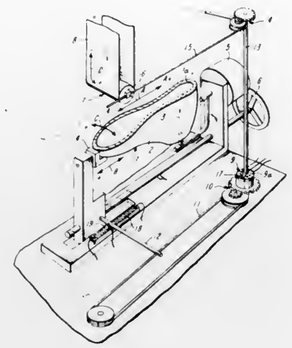
This improved non-walking, non-skittering self-drilling and self-tapping screw fastener is manufactured by a simplified, versatile method comprising pointing and fluting steps involving axial movement of end mill cutters. The resulting threaded fastener features a pair of oppositely-disposed, substantially-longitudinally-extending milled flutes at the entering end, each of the flutes having a uniformly-concavely-curved flute side including the cutting edge, a plane tangent to the concavely-curved surface at the cutting edge extremity being inclined at an angle to and traversing the axis of the screw at an intermediate point of the shank. In a preferred embodiment having enhanced chip-breaking characteristics, the curvature and disposition of the flutes are such that they redirect the normal chip flow and thereby fragment the chips by flexure.

3,780,390
SHOE TREATMENT

Dieter Braun, Stuttgart, Germany, assignor to Fortuna-Werke Maschinenfabrik Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 29, 1972, Ser. No. 284,579
Int. Cl. A43d
U.S. Cl. 12—1 R **41 Claims**

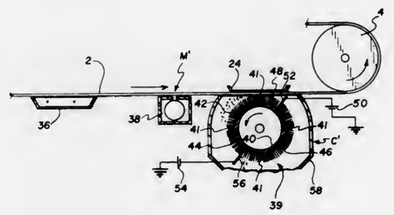
A shoe treatment machine in which a tool is provided which operates on the edge of the sole portion which is turned over the top of a last. The tool moves longitudinally of the last and which last pivots about a longitudinal axis so that the tool operates on the upper material near the periphery of the sole portion of the last. A control arrangement is provided operated by potentiometers which are adjustable in conformity with the size of the shoe last and with the longitudinal position of the tool to control the pivotal movement of the last during a work cycle.



3,780,391
APPARATUS FOR CLEANING A RESIDUAL IMAGE FROM A PHOTOSENSITIVE MEMBER

Donald D. Leenhouts, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 88,628, Nov. 12, 1970, abandoned. This application June 9, 1972, Ser. No. 261,478
Int. Cl. G03g *15/00*
U.S. Cl. 15—1.5 **9 Claims**



A residual toner image remaining after transfer of a developed image from a photoconductive surface is cleaned therefrom in one embodiment by a conductive cleaning brush mounted in a vacuum chamber and having a flicker bar which is used to apply a potential to the brush opposite that of the residual toner particles to be removed from the photoconductive surface. In another embodiment, the brush is divided into a number of electrically insulated segments so that the polarity of the potential applied to a portion of the brush coming in contact with the photosensitive surface is opposite to the charge on the residual toner particles and a potential applied to a segment spaced from the photoconductive surface is the same as the charge on the toner particles on the brush segment so that they are repelled therefrom to clean the toner particles from the brush.

3,780,392
MICRO-ORGANISM CONTROL COMPOSITION AND DUST CLOTH THEREWITH

David Lester, Cambridge, Mass., assignor to Quatek, Inc., Waltham, Mass.

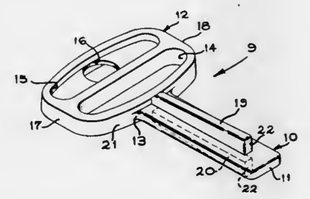
Filed July 9, 1971, Ser. No. 161,291
Int. Cl. A47l *13/17*; **C11d** *17/04*
U.S. Cl. 15—104.93 **2 Claims**

A dust cloth comprises a tacky vinyl adhesive that causes dust retrieval and retention, a low molecular weight polyalcohol lubricant for masking the adhesive in order to enable slip, and a bio-active material for micro-organisms retrieved and retained.

3,780,393
DEVICE FOR DIRECTING FOOD WASTE INTO GARBAGE DISPOSAL INLET

Hubert J. Gaetke, 6630 Dartmoor Way, San Jose, Calif.

Filed June 16, 1972, Ser. No. 263,475
Int. Cl. A47l *17/06*
U.S. Cl. 15—105 **7 Claims**

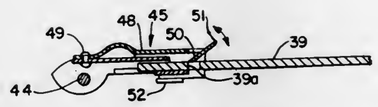


A device for safely directing food waste through a flexible cover guard and into the inlet of a garbage disposal unit. The device comprises a pusher-scraper blade. Integrally formed at the end of the pusher-scraper blade is a hand grip. Auxiliary pusher blades are formed along the sides of the pusher-scraper blade and extend partially therealong at right angles thereto. The auxiliary pusher blades extend lengthwise along the pusher-scraper blade from the vicinity of the hand grip to a point removed from the free end of the pushing-scraping blade. The auxiliary blades serve to facilitate the opening of the flexible cover guard so that food waste passes from a sink into the inlet of a garbage disposal unit. The hand grip is sufficiently large so that it cannot advance beyond the cover guard and pass into the garbage disposal unit. The pusher-scraper blade is sufficiently short so that even when inserted fully through the cover guard, it will not contact the moving parts of the garbage disposal unit.

3,780,394
WINDSHIELD WIPER ASSEMBLY

William J. Quinlan, and Lawrence L. Huver, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.

Division of Ser. No. 90,987, Nov. 19, 1970, Pat. No. 3,717,900. This application June 29, 1972, Ser. No. 267,620
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **1 Claim**



An elongated and longitudinally curved blade body of resiliently flexible material has a hollow crown portion in-

tegral with a lower wiping portion. A set of superposed metallic leaf springs are contained within the hollow crown portion for proper application and control of forces on the wiping portion of the blade body. Various types of wiper arm connectors may be secured to the blade body by fasteners which engage the leaf springs in the crown portion.

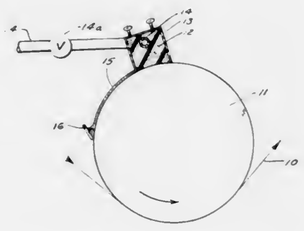
3,780,395
WINDSHIELD WIPER ASSEMBLY
William J. Quinlan, and Lawrence L. Huver, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.
Division of Ser. No. 267,620, June 20, 1972 which is a division of Ser. No. 90,987, Nov. 19, 1970, Pat. No. 3,717,900. This application Nov. 29, 1972, Ser. No. 310,447
Int. Cl. B60s *1/38*
U.S. Cl. 15—250.36 3 Claims



An elongated and longitudinally curved blade body of resiliently flexible material has a hollow crown portion integral with a lower wiping portion. A set of superposed metallic leaf springs are contained within the hollow crown portion for proper application and control of forces on the wiping portion of the blade body. Various types of wiper arm connectors may be secured to the blade body by fasteners which engage the leaf springs in the crown portion

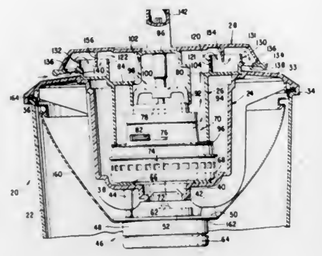
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3,780,396
ROLL CLEANING APPARATUS FOR PAPERMAKING MACHINES AND THE LIKE
Charles E. Werner, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Apr. 29, 1970, Ser. No. 32,855
Int. Cl. D21g *3/02*, *3/04*
U.S. Cl. 15—256.51 4 Claims



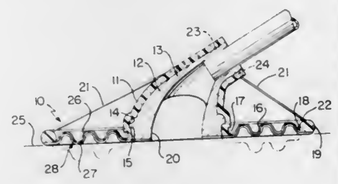
A solvent is metered onto the upper portion of a cylindrical surface while said surface moves at a rapid rate of speed due to its rotation about an axis. The solvent is uniformly distributed along the extent of said surface in all directions to form a continuous film of desired thickness for loosening foreign material carried by said surface. The solvent film is maintained on the moving surface through a segmental arc and is then separated from said surface together with the then loosened foreign material.

3,780,397
WET/DRY SUCTION CLEANER
Martin E. Harbeck, and Robert C. Lagerstrom, both of Anderson, S.C., assignors to The Singer Company, New York, N.Y.
Filed Jan. 3, 1973, Ser. No. 320,803
Int. Cl. A47l *5/00*, *7/00*
U.S. Cl. 15—413 3 Claims



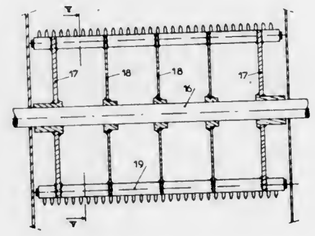
A wet/dry suction cleaner having a dirt storage receptacle and a power suction module mounted thereon. The module includes a lower housing, a separator housing and a top cover. A by-pass motor-blower unit is mounted between the two housings and an air shut-off valve assembly depends downwardly from the lower housing into the receptacle. The separator housing includes downwardly depending annular walls which separate the blower working airflow from the motor cooling airflow and has an exhaust port which communicates with the blower airstream. Motor cooling air enters inlet slots in the separator housing and is baffled by a labyrinth of vertical walls formed by the top cover and separator housing. The air then flows between the top and the separator floor and enters the motor through an opening in the separator. The cooling air exits the motor to a cooling air exhaust chamber formed by the annular walls of the separator housing, exhausts therefrom between the cover and separator housings, and is baffled before exiting by a labyrinth similar to that at its entry.

3,780,398
FLEXIBLE SKIRT CONSTRUCTION FOR A VACUUM CLEANING NOZZLE AND THE LIKE
James T. Candor, 5440 Cynthia Ln., Dayton, Ohio
Filed Feb. 8, 1972, Ser. No. 224,484
Int. Cl. A47l *9/02*
U.S. Cl. 15—415 16 Claims



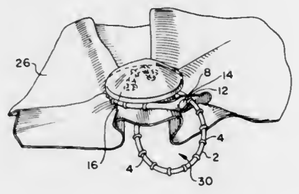
In combination with a nozzle construction for a vacuum cleaning operation, a separate member having a body portion detachably secured to the nozzle construction and having a flexible wall surrounding the inlet of the nozzle construction and outboard of the same to have one side thereof engage against a surface means around the inlet to substantially seal the inlet of the nozzle construction to the surface means. The flexible wall is so constructed and arranged that a pressure differential acting across the same and resulting from a vacuum pump drawing fluid from the surface means into the inlet of the nozzle construction is adapted to cause the flexible wall to be urged toward the surface means to substantially seal against the same around the inlet and substantially conform to the contour of the surface means outboard of the nozzle construction.

3,780,399
FIBER OPENING MACHINE
Andre Morel, Cours, France, assignor to Constructions Mecaniques F. Laroche & Fils, Cours (Rhone), France
Filed Feb. 10, 1972, Ser. No. 225,167
Int. Cl. D01b *1/00*; D01g *19/00*
U.S. Cl. 19—97 4 Claims



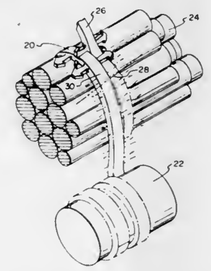
The textile fiber-opening machine is provided with a feed roller having a plurality of pivoted pressure members individually spring biased toward the periphery thereof to assist in the feeding of the material of varying thickness therebetween. A breaking cylinder is also provided having a plurality of axially directed peripheral grooves. An assembly of toothed members are fastened together end-to-end. Such an assembly is inserted and retained in each of the grooves with the teeth projecting outwardly from the grooves to engage the material being fed by the feed roller.

3,780,400
FASTENER FOR FLEXIBLE SHEET MATERIAL
Cornelius Andre Hinsperger, 360 Rexdale Blvd., Rexdale, Ontario, Canada
Filed Nov. 9, 1972, Ser. No. 305,009
Claims priority, application Canada, Sept. 11, 1972, 151400
Int. Cl. A44b *21/00*; B65d *63/00*
U.S. Cl. 24—16 PB 9 Claims



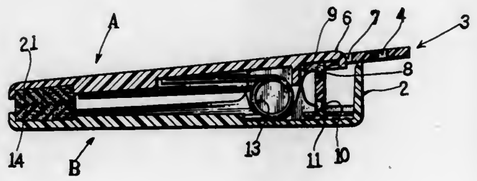
A fastener for flexible sheet material, such as cloth, plastic sheeting, tarpaulins, and the like is disclosed. The fastener consists of an elongate cord member having enlarged or bulbous portions provided at spaced distances therealong, with one end of the cord having a flattened tab portion and an aperture thereon to receive the other end of the cord member which passes therethrough to form a loop portion. The said other end of the cord is then attached to a button member. In use, the button is positioned on one side of a sheet of material and the loop portion passed over the button from the other side of the sheet carrying a portion of the sheet material therewith. The tab is then moved along the cord to close the loop to a diameter smaller than the button and securely hold the fastener to the sheet material. The aperture in the tab portion is provided with a contiguous slot opening in which the cord is fitted after the loop is tightened. The slot is of a width to receive the cord but the width is less than the diameter of the enlarged portions to prevent longitudinal movement of the cord with respect to the slot. The fastener may be used with any flexible sheet material and is re-usable any number of times without damage to the sheet material.

3,780,401
FASTENING DEVICE
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.
Filed Nov. 13, 1972, Ser. No. 305,766
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB 5 Claims



A locking strap fastening device comprising an elongate strap body of a selected dimension and having a plurality of locking fingers extending outwardly from opposed sides thereof, adjacent locking fingers being tapered and spaced apart from one another by a distance no greater than the dimension of the strap body such that in a flexible embodiment the fingers at one portion of the strap may be locked about the strap body at another portion of the strap such as to encircle and retain articles to be bound together. Alternatively the invention may be used in a rigid form as a fastener.

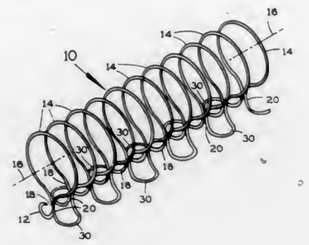
3,780,402
PLASTIC CLIP
Teruo Takabayashi, Kyoto, Japan, assignor to Korin Limited, Kyoto City, Japan
Filed July 31, 1972, Ser. No. 276,593
Int. Cl. A44b *21/00*
U.S. Cl. 24—250 HE 8 Claims



The present invention relates to a plastic clip comprising at least first and second clip members adapted to open and close

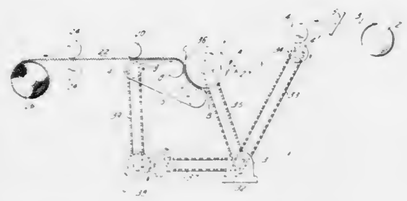
freely by means of a spring member, one of said clip members having a pair of journals and the other clip member having a pair of bearings each of which includes a bearing portion each of the journals being fitted into each of the bearing portions.

3,780,403
SPRING CLIP
Frank A. Mauritz, 2760 S.W. 1st St., Ft. Lauderdale, Fla.
Filed Aug. 13, 1971, Ser. No. 171,516
Int. Cl. A44b *21/00*
U.S. Cl. 24—261 D **3 Claims**



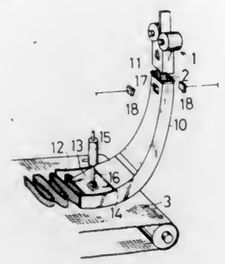
A spring clip comprising a spring wire wound generally circularly back and forth about an axis to form a series of parallel loops having the same axis. The loops are joined together at mouths thereof by interconnection portions of the wire which alternate between left and right sides of the loops. The loops have shank portions at the mouths thereof which, when spread, squeeze together due to the spring action of the loops. Thus, the loops can be slipped onto the rim of a container such as a trash can to hold the mouth of a bag on the rim.

3,780,404
PROCESS AND APPARATUS FOR TEXTURIZING YARN
Charles P. Mazzone, 16 Pine St., Dover, N.J.
Continuation-in-part of Ser. No. 266,184, June 26, 1972, abandoned. This application Oct. 13, 1972, Ser. No. 297,566
Int. Cl. D02g *1/20*
U.S. Cl. 28—1.3 **10 Claims**



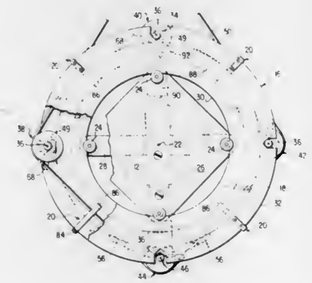
Multiple ends of continuous multifilament yarns are texturized within a pressure applying zone formed by confronting surfaces of a moving belt and a rotating heated roll with said confronting surfaces moving in the same direction. The yarns are arranged in spaced side-by-side relationship and fed at a speed greater than that of the moving belt into contact with the heated roll at a point upstream from the pressure applying zone, the peripheral speed of the heated roll being at least 1.4 times that of the moving belt. The filaments of the yarns are differentially shrunk and then carried into the pressure applying zone, i.e., between the rotating roll and the moving belt. The surface of the moving belt has a greater gripping power on the multifilament yarns than the heated roll surface, whereby the speed of the multifilament yarns is reduced upon contact with the belt and the filaments of the yarns are forced into a folded configuration in which they are then heat set.

3,780,405
APPARATUS FOR SUPPLYING CRIMPED SYNTHETIC FILAMENT TOW TO CONVEYOR FOR HEAT TREATMENT
Nobuharu Izawa; Hiroshi Toyoshima, and Koh Ikazaki, all of Matsuyama, Japan, assignors to Teijin Limited, Tokyo, Japan
Filed May 17, 1972, Ser. No. 254,220
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **10 Claims**



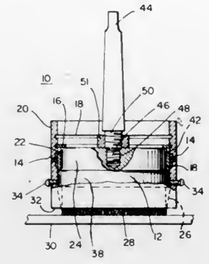
An apparatus for supplying crimped synthetic filament tow to a conveyer for heat treatment is installed between a crimping device and the conveyor. The apparatus comprises a supply chute having a vertical portion in which crimped tow intermittently forced out from the crimping device is piled up, a curved portion, the lower end of which is formed to set up said crimped tow at right angles with respect to conveyer surface, and an outlet portion through which said crimped tow is forced out by pressure of succeeding tow. Flapper means is pivotably attached to said outlet portion of said supply chute to control filling conditions of said tow within said supply chute. A supplemental chute member may be provided between the crimping device and the supply chute, said supplemental chute member having a flapper pivotably attached thereto to control the discharge of the crimped tow from the supplemental chute.

3,780,406
MACHINING CENTER EMPLOYING CAM OPERATED TOOL CHANGER
John A. Cupler, II, 10 Cupler Dr., Cumberland, and Wayne B. Stone, Jr., Bethesda, both of Md., assignors to said Cupler, by said Stone
Filed Jan. 26, 1971, Ser. No. 109,852
Int. Cl. B23q *3/157*
U.S. Cl. 29—26 A **17 Claims**



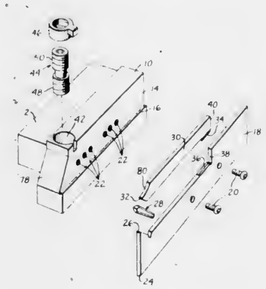
A machining center wherein rotating tools are cammingly interchanged between a tool carrier and tool bearing as a direct function of tool carrier movement.

3,780,407
METAL WORKING BRUSH ASSEMBLY
James L. Hoffecker, 4112 Vernon Rd., Drexel Hill, Pa.
Filed Dec. 2, 1971, Ser. No. 204,201
Int. Cl. B21c *43/00*
U.S. Cl. 29—90 **8 Claims**



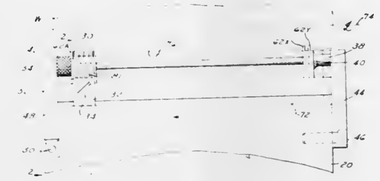
A brush having a circular array of wire strands located within a central opening of a control collar with the tips of the wire strands protruding from one extremity of the collar. The central opening of the collar adjacent this extremity is formed by an inwardly tapering surface of revolution having a minimum inside diameter at the collar extremity. The brush is locked within the collar by a spring retaining ring which is captured by one of a plurality of axially displaced annular grooves located within the central opening of the collar. Set screws extending through the collar and into contact with the ferrule of the brush are also utilized to lock the brush in place. A concentric ring which encircles the ferrule maintains the collar and the brush in coaxial relationship.

3,780,408
CUTTING TOOL
James F. McCreery, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Mar. 2, 1972, Ser. No. 231,199
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **9 Claims**



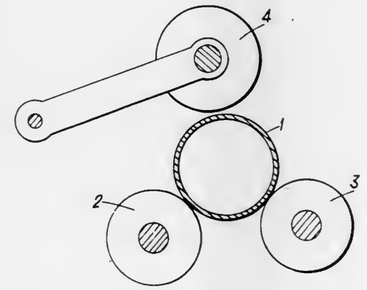
A cutting tool in which a small rod-like piece of cemented carbide material is mounted at an angle so that one end projects from the holder and on which one end is a cutting edge for being presented to work to be turned. The holder consists of a block adapted for mounting in a holder in a machine tool and on one side of the block is a support plate having an inclined insert supporting surface at one end on which the rod-like cutting insert rests. A clamp plate overlies the support plate and a clamp presses the clamp plate down so that a surface thereon engaging the insert from above will clamp the insert against the support plate. The insert in the lateral direction has a greater dimension than the corresponding dimension of the support and clamp plates and thereby takes a kerf from the work which has clearance on both sides from the support and clamp plates whereby the tool is useful, amongst other things, for cut off operations.

3,780,409
THREADING TOOL
Joseph G. Bartoszevicz; George H. Murphy, Jr., and Frederick W. Schmidt, all of Plantsville, Conn., assignors to Fansteel Inc., North Chicago, Ill.
Filed Feb. 19, 1971, Ser. No. 116,912
Int. Cl. B26d *1/00*
U.S. Cl. 29—97 **6 Claims**



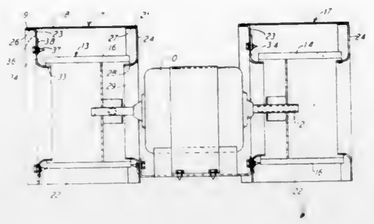
A threading tool for providing a simultaneous cut in a plurality of adjacent grooves of a thread to enable a progressive cut to be taken with the light cut in each groove permitting a full thread depth to be cut with one pass along a turning cylindrical workpiece. The invention includes a means for presenting an array of cutting inserts at the proper angle to provide for the proper cut, at the same time setting up a proper plunge clearance for the cutting teeth with an independent pressure locator on each tooth in the form of an interdigital clamp designed to exclude the collection of chips and dust.

3,780,410
SHAPING OF HOLLOW METAL ARTICLES
Noel Francis Drake, Flat 3, 4 The Point Rd., Woolwich, New South Wales, Australia
Filed June 1, 1972, Ser. No. 258,703
Int. Cl. B21d *13/04*
U.S. Cl. 29—155 R **6 Claims**



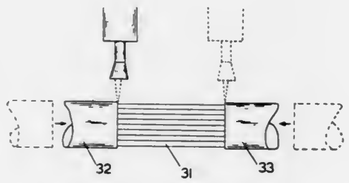
Metal tubes are shaped, particularly for use as guard rail stanchions, by heating the tube in a series of bands, in order to render the tube malleable in such heated regions, and passing the heated tube between a set of rollers, one of which is shaped with a series of alternating troughs and crests whereby the crested portions act on the metal bands of the heated tube.

3,780,411
METHOD OF MAKING BLOWER HOUSING ASSEMBLY
Shelly A. Bulin, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed Oct. 19, 1972, Ser. No. 299,054
Int. Cl. B23p *15/00, 17/00*
U.S. Cl. 29—156.4 R 5 Claims



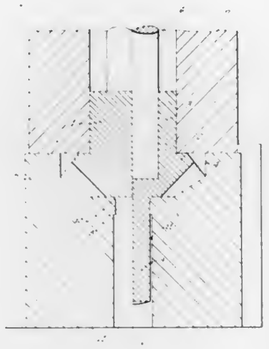
A method of making a blower housing assembly through the steps of forming the blower housing wrapper to extend in a curved shape and to enclose the blower blades which are powered by an electric motor or the like. Left-hand and right-hand end plates or heads are formed and attached to the wrapper to enclose the housing for directing the air therethrough. The heads are made from die sets which form an inner flange and an outer flange on each head and these flanges are facing in the same direction. The inner flange is cut away on one of the heads, is reversed thereon, and is reattached to that head so that the two end heads now have the inner flange facing toward each other. Therefore, only two dies are required to make the left-hand and the right-hand heads, as mentioned, rather than several or even five or more die sets.

3,780,412
METHOD OF PRODUCING CYLINDRICAL COMPONENTS
Barry John Millard, Earley, near Reading, England, assignor to Adwest Engineering Limited, Berkshire, England
Filed Nov. 16, 1970, Ser. No. 89,666
Claims priority, application Great Britain, Nov. 28, 1969, 58,423/69
Int. Cl. B21d *53/10*; B23p *15/14*
U.S. Cl. 29—157.1 R 9 Claims



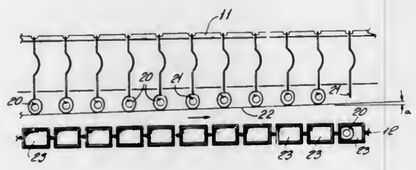
A method of producing cylindrical components, particularly cylindrical components for rotary valves or pinion members, the method comprising initially producing the component in two or more separate parts, preferably heat-treating the separately formed parts, assembling said parts and electron beam welding or friction welding the parts together to form the complete component.

3,780,413
METHOD FOR MAKING HOLLOW BEVEL GEARS WITH INTEGRAL HOLLOW SHAFT
Marten Burgdorf, Ruckersdorf, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Aug. 24, 1972, Ser. No. 283,520
Claims priority, application Germany, Sept. 2, 1971, P 21 44 006.2
Int. Cl. B21d *53/28*; B21h *5/00*; B21k *1/30*
U.S. Cl. 29—159.2 3 Claims



A solid bevel gear with integral solid shaft is provided as a blank and a core is extruded from this blank by means of an extrusion punch acting through the shaft end of the blank, using a die that supports the bevel gear in contour fitting relation as to the teeth and having a bore of diameter smaller than the punch through which the core is extruded. The core is subsequently removed.

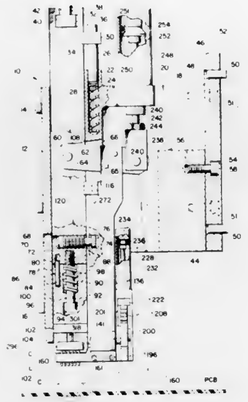
3,780,414
AUTOMATED CONVEYOR SYSTEM
Richard Skaggs, Columbus, Miss., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Apr. 5, 1972, Ser. No. 241,370
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 A 5 Claims



An automated conveyor system, in which the product is carried by one continuous conveyor, and the machinery for processing the product is carried by additional continuous conveyors. A segment of each machinery conveyor parallels and is directly above a segment of the product conveyor, with the direction of rotation of each continuous product conveyor being opposite to the direction of rotation of the continuous machinery conveyor. The speeds of all conveyors are so adjusted that at those locations where a machinery conveyor is parallel to, and above the product conveyor, both conveyors

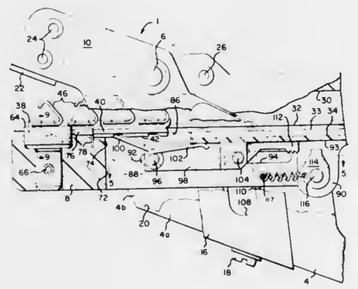
are aligned together, move at the same speed and in the same direction, so that machinery can perform machining functions on the product being carried by the product conveyor.

3,780,415
DUAL IN-LINE SOCKET INSERTION APPARATUS
Phillip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.
Filed Mar. 20, 1972, Ser. No. 236,261
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B 10 Claims



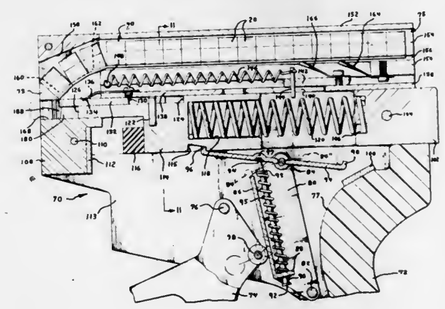
An apparatus for aligning the leads of dual in-line sockets and inserting them into a printed circuit board featuring a rotatable grooved lead aligner which acts on leads depending from a pair of biased latches and then swings away to allow a driver having a biased insertion head to move vertically downward, engage the latches to swing them apart and force the component into the printed circuit board.

3,780,416
SURGICAL TUBING CLIP CLENCHING TOOL
George William Rider, 172 Eddington Ave., Harrisburg, Pa.
Continuation of Ser. No. 67,172, Aug. 26, 1970, abandoned. This application July 10, 1972, Ser. No. 270,401
Int. Cl. B23q *7/10*; B23p *11/00*
U.S. Cl. 29—212 D 1 Claim



A hand operated tool having means for storing a carrier strip provided with a plurality of serially mounted clips, an anvil for receiving a clip thereon with a length of tubing received within the confines of the clip. A jaw is closed to flatten the tubing and simultaneously compress and clench the clip in encircling engagement over the flattened tubing portion. Upon opening of the jaw, the clenched clip may be removed from the carrier strip and anvil of the tool, and an indexing mechanism will serially advance another clip in position on the anvil.

3,780,417
INSTALLATION TOOLING FOR PLASTIC LOCKING NUT IN STRIP FORM
Charles Edward Reynolds, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Division of Ser. No. 761,063, Sept. 20, 1968, Pat. No. 3,624,867. This application Mar. 15, 1971, Ser. No. 124,455
Int. Cl. B23p *19/00*
U.S. Cl. 29—235 1 Claim

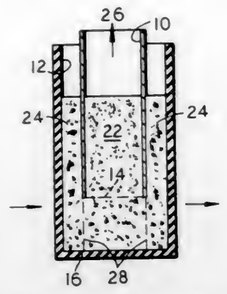


A tool is provided for installing each fastener of a row of interconnected fasteners within an aperture of a mounting panel. Each fastener includes a leg member which is arranged for insertion into the aperture and a head to limit that insertion. Each fastener is interconnected with adjacent fasteners in the row at the head by a web of bendable and severable material extending between the heads of the fasteners. The tool includes a chamber to hold the row of fasteners. The end fastener extends from the tool while bent at the web generally perpendicular to the remainder of the row so that it may be positioned for insertion of at least a portion of its leg member into the aperture. When the portion of the fastener is inserted into the aperture, a trigger operated hammer within the tool strikes the fastener to thereby sever it from the row and drive it fully into the aperture.

3,780,418
METHOD OF FABRICATING COMPOSITE MULTI-METALLIC BILLETS USEFUL FOR METAL WORKING OPERATIONS
Alvin L. Hurst, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Oct. 10, 1972, Ser. No. 296,006
Int. Cl. B22f *3/04*
U.S. Cl. 29—420 6 Claims

Method of fabricating compacted composite multi-metallic billets for metal working operations having at least two discrete metal constituents disposed in predetermined desired positional disposition therein. Included therein is the formation of at least a pair of discrete powdered metal receiving

cavities of predetermined configuration within a deformable shell, introduction of powdered metal therein and isostatic



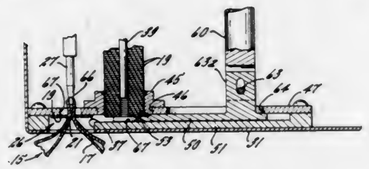
compaction to predetermined desired density without appreciable change in the relative physical disposition of the metals, one to the other.

3,780,419

METHOD FOR SEALING BALLOONS AND THE LIKE

Rudolph L. Allison, and Gary L. Lindstrand, both of Rockford, Ill., assignors to MTL, Incorporated, Rockford, Ill.

Division of Ser. No. 133,143, April 12, 1971, Pat. No. 3,720,991. This application Aug. 28, 1972, Ser. No. 284,247
Int: Cl. B23p *11/02*
U.S. Cl. 29—451 **4 Claims**



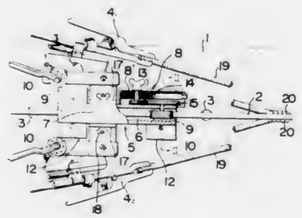
An inflatable balloon is sealed gas-tight by forcing an intermediate section of the neck of the balloon through a hole in a disc sufficiently far to double the intermediate section over upon itself and to pinch the doubled-over portions together between the edges of the hole.

3,780,420

METHOD OF FILLET WELDING

Masachika Ohta, and Toshio Wakameda, both of Otahara, Japan, assignors to Kawada Kogyo Kabushiki Kaisha, Toyama-ken, Japan

Filed Apr. 21, 1971, Ser. No. 136,066
Claims priority, application Japan, June 19, 1970, 45/53848
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.1 **10 Claims**



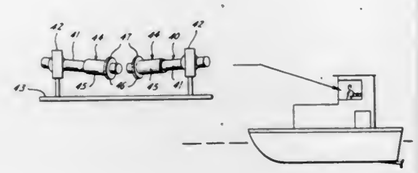
A method and apparatus for fillet welding in which a pair of welding rod holders are provided on a feeding device so as to press welding rods on both parts to be welded and on both sides of one of them.

3,780,421

METHOD OF JOINING PIPES IN A HOSTILE ENVIRONMENT

William E. White, Jr., and Lloyd E. Billingsly, both of Houston, Tex., assignors to Hydrotech Services, Inc., Houston, Tex.

Division of Ser. No. 65,648, Aug. 20, 1970, Pat. No. 3,707,025. This application Aug. 17, 1972, Ser. No. 281,467
Int. Cl. B23q *3/00*
U.S. Cl. 29—466 **11 Claims**



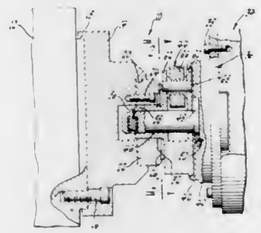
A method and apparatus for joining the ends of two work pipes in a generally hostile environment and wherein the pipes are generally not parallel. The method includes loosely mounting work couplings on each of the work pipe ends and with each of the work couplings having biased flanges arranged to accommodate the bend which will occur in the pipe when the coupling is completed and wherein the couplings will have to be rotated relative to each other to arrive at the proper angular relationship therebetween. The work pipes are moved to the position such that the axes thereof intersect. The method includes constructing a model, preferably in a favorable environment, which is positionally representative of the work pipe ends and work couplings. Thereafter, the model couplings are manipulated to the mating position by trial and error. Preferably, the model couplings will be dimensionally representative of the work couplings and both the work couplings and the model couplings will have identical indicia, such as numerals, marked thereon. Once the mated position of the model couplings is known, the relative position of the indicia thereon is utilized to similarly manipulate the work couplings to the mating position, to thereby eliminate trial and error in aligning the work couplings in the hostile environment.

3,780,422

FRICTION WELDER AND FRICTION WELDING METHODS

Stanley W. Herman, Nashville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1971, Ser. No. 203,263
Int. Cl. B23k *27/00*; B29c *27/08*
U.S. Cl. 29—470.3 **3 Claims**



This friction welder has a rotatable head that drives an annular friction welding tool of a temperature stable material

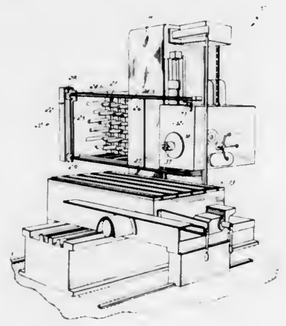
across adjacent faces of workpieces held in a fixture. The tool is axially loaded against the workpieces and the resulting heat of friction in an annular weld zone generally corresponding to the dimensions of the tool causes material in the zone to plasticize and form a bond wiped across the adjacent faces which solidifies to connect the workpieces as the rotating friction engagement of the tool with the workpieces is terminated.

3,780,423

TOOL CHANGER

Alfred J. Lilienthal, Bourbonnais, Ill.; Theodore F. Johnson; William E. Petri, Jr.; and Charles E. Gilbert, Jr., all of Cincinnati, Ohio, assignors to Cincinnati Gilbert Machine Tool Co., Cincinnati, Ohio

Filed July 15, 1970, Ser. No. 54,896
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **72 Claims**



An automatic tool changer for use on a machine tool which moves tools in combinations of rectilinear movements between a spindle at a machine head and a rectangular array of compartments, parallel to the spindle axis, at a storage magazine. The storage magazine is mounted on the support of the machine tool to move in unison with the machine head, and includes a plurality of drawers which move at right angles to a pair of tool forks for transferring tools to and from the forks. The forks are independently linearly movable on a carriage which moves between the storage magazine and the machine head. One tool fork carries tools exclusively from the magazine to the spindle, and the other tool fork carries tools exclusively from the spindle to the magazine. The entire tool changer is movable relative to the machine head to insert tools into and withdraw tools from the spindle.

3,780,424

METHOD OF MAKING SILICON SOLAR CELL ARRAY

Americo F. Forestieri, Berea; Jacob D. Broder, Cleveland Heights, and Daniel T. Bernatowicz, Parma, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 26, 1970, Ser. No. 83,816
Int. Cl. H01l *15/02*
U.S. Cl. 29—572 **2 Claims**

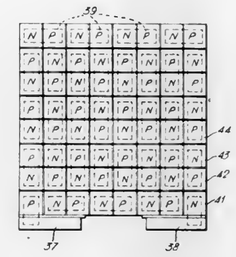
A heat sealable transparent plastic film, such as a fluorinated ethylene propylene copolymer, is used both as a cover material and as an adhesive for mounting a solar cell array to a flexible substrate.

3,780,425

THERMOELECTRIC UNITS

Alan William Penn, Reading, and Frank Neighbour, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 25, 1971, Ser. No. 109,485
Claims priority, application Great Britain, Jan. 30, 1970, 4,732/70
Int. Cl. H01l *15/00*
U.S. Cl. 29—573 **5 Claims**



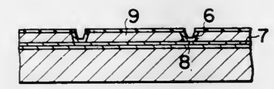
In a thermoelectric unit comprising a plurality of thermoelectric elements, accurate spacing between adjacent elements is achieved by use of a cellular insulating material between adjacent thermoelectric elements and applying pressure during setting of the bonding medium so that the bonding medium occupies the pores of the cellular material.

3,780,426

METHOD OF FORMING A SEMICONDUCTOR CIRCUIT ELEMENT IN AN ISOLATED EPITAXIAL LAYER

Yuichi Ono, Kokubunji; Hiroji Saida, Hachioji; Masayoshi Nomura, and Kyyotake Naraoka, both of Kokubunji, all of Japan

Filed Oct. 12, 1970, Ser. No. 80,104
Claims priority, application Japan, Oct. 15, 1969, 44/81877; Oct. 23, 1969, 44/84188
Int. Cl. B01j *17/00*
U.S. Cl. 29—580 **13 Claims**



Method for isolation comprising the steps of forming layers with a high impurity concentration along one surface of a semiconductor substrate growing a semiconductor epitaxial layer on one surface of the semiconductor substrate, said epitaxial layer having a conductivity type opposite to that of said high impurity concentration layer, forming at least one groove in said epitaxial layer in such a manner that the groove divides the said epitaxial layer into a plurality of regions, diffusing an impurity with opposite conductivity type to the epitaxial layer from all surfaces of the groove into the epitaxial layer and depositing a metal or an insulating layer in the groove.

3,780,427
OHMIC CONTACT TO ZINC SULFIDE DEVICES

Robert Jenkins, Cupertino; Carver A. Mead, Pasadena, and James McCaldin, So. Pasadena, all of Calif., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 824,898, April 25, 1969, Pat. No. 3,614,551. This application Oct. 28, 1970, Ser. No. 84,910

Int. Cl. B01j *17/00*

U.S. Cl. 29—590 **12 Claims**

A zinc sulfide body is treated to form an ohmic contact by applying a Group II metal or alloy thereof to a surface region of the body in the presence of a source of donor precursor such as a Group IIIa metal or a halogen and heating the region to a temperature above the melting temperature of the metal or alloy.

3,780,428
METHOD OF MAKING GENERATOR ROTOR OF TURBOGENERATOR UNIT

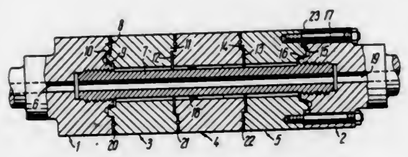
Nikolai Nikolaevich Zorev, ulitsa Novinki, 6, korpus 2, kv. 23; Viktor Vasilievich Chernykh, Belomorskaya ulitsa, 18, korpus 4, kv. 51, both of Moscow; Lazar Yankelevich Stanislavsky, ulitsa Mayakovskogo 11, kv. 24, Kharkov; Mikhail Mikhailovich Timofeev, ulitsa Velozavodskaya 11/1, kv. 323, Moscow; Ivan Vasilievich Kudryavtsev, Sharikopodshipnikovskaya ulitsa, 2, kv. 36, Moscow; Alexei Ilich Isaev, Sharikopodshipnikovskaya ulitsa, 36/8, kv. 300, Moscow; Nikolai Grigorievich Grinchenko, pereulok Vatutina, 16/25; Boris Volkovich Spivak, ulitsa Kossiora 56, kv. 55, both of Kharkov; Vladimir Alexandrovich Belov, Leningradskoi oblasti ulitsa Very Slutskoi, 9, kv. 32, Kolpino; Adolf Efimovich Kozik, Leningradskoi oblasti ulitsa Very Slutskoi 11, kv. 20, Kolpino; Adolf Ivanovich Shavrin, Leningradskoi oblasti prospekt Lenina, 45, kv. 17, Kolpino, and Jury Vasilievich Sobolev, Leningradskoi oblasti ulitsa Novgorodskaya 16, korpus 2. kv. 13, Kolpino, all of U.S.S.R.

Filed Nov. 3, 1970, Ser. No. 86,564

Claims priority, application U.S.S.R., Oct. 31, 1969, 1368152; Oct. 31, 1969, 1368153

Int. Cl. H02k *15/02*

U.S. Cl. 29—598 **4 Claims**



The invention relates to a method of making the generator rotor of a large-sized turbogenerator unit, said rotor comprising two end members and a few annular intermediate members welded together and to the guide member.

According to the invention some favourable compressive stresses are developed in the welded joints by means of the embracing stem fixed in position to the end members, said stresses adding much to the fatigue strength of said welded joints.

The welded and mechanical joints of the rotor, as well as the embracing stem are so designed that in the case of failure of one of the said joints the breakdown of the rotor is precluded.

3,780,429
METHOD FOR MANUFACTURING A BASE FOR THE ENVELOPE OF AN ELECTRIC COMPONENT

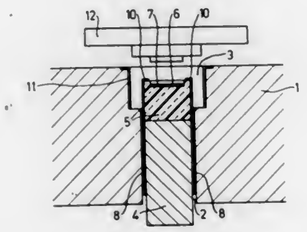
Hendrikus Johannes Christianus Friebel, Nijmegen; Simon Jonker, Emmasingel, Eindhoven, and Gerardus Cornelis Marie Benschop, Nijmegen, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,277

Claims priority, application Netherlands, Jan. 13, 1971, 7100410

Int. Cl. H01b *13/14*

U.S. Cl. 29—626 **6 Claims**



A method of manufacturing a base for the envelope of an electric component, for example a semiconductor device, in which a pressure member is provided on one side in the cavity of a jig, which cavity has an approximately rectangular cross-section, after which a member of insulating material which softens upon heating is placed on the pressure member from the other side where a chamber of a larger cross-section is present which communicates with the cavity, after which of a conductor grid the conductors of which are supported at one end by a strip and are bent at their other end transverse to the plane of the grid the ends connected to the strip are inserted into a narrow slot between the pressure member and the wall of the cavity until the bent ends of the conductors bear on the insulating member after which the chamber is closed by a closure plate, the jig is heated and a force is exerted via the pressure member, in which the bent ends of the conductors are forced against the closure plate by the insulating member and a part of the softened insulating material is forced between the conductors in the direction of the side walls of the chambers so that a base is formed the bent ends of which of the conductors are situated on the upper side of the insulating member and the parts of the conductors connected thereto with are embedded in the insulating material and the further part of the conductor project from the lower side of the insulating member.

3,780,430
PROCESS FOR MOUNTING ELECTRO-LUMINESCENT DISPLAYS

James Henry Feeney, Acton, Mass., assignor to Bowmar/Ali, Inc., Acton, Mass.

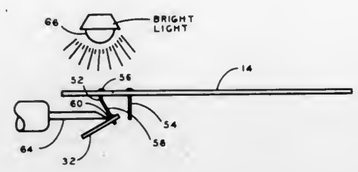
Filed Sept. 25, 1972, Ser. No. 292,129

Int. Cl. H05k *3/30*

U.S. Cl. 29—626 **5 Claims**

In a small hand-held calculator the electroluminescent display is in the form of a series of light emitting diodes ("chips") which are received on a printed circuit board. The electric signal output of the calculator circuit is communicated to the display through a series of pins which are stake mounted on a printed circuit board and the projected ends of these pins

serve the dual purpose of communicating electric signals which determine the display and also serve to mount the printed circuit board of the display and its associated components. The pins are inclined so that the display can be disposed at whatever viewing angle is desired. Thus, although the small calculator may lie flat on a desk or other support surface, the plane of the display is disposed at an angle making



viewing much more convenient, that is, at an angle approaching perpendicularity to the line of vision of the viewer.

By utilizing the pins both as electrical signal communicating means as well as mounting means it is possible to locate the display at whatever angle is desired and in a much more convenient and economical manner.

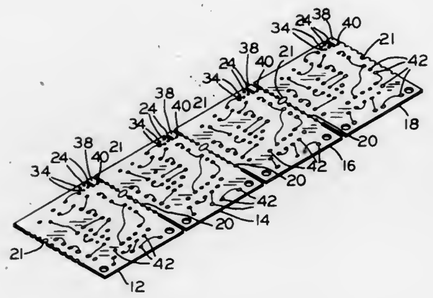
3,780,431
PROCESS FOR PRODUCING COMPUTER CIRCUITS UTILIZING PRINTED CIRCUIT BOARDS

James Henry Feeney, Acton, Mass., assignor to Bowmar/Ali, Inc., Acton, Mass.

Filed Sept. 25, 1972, Ser. No. 292,131

Int. Cl. H05k *3/30*

U.S. Cl. 29—626 **3 Claims**



In a process for producing calculator printed circuit boards, a pallet consisting of a plurality of printed circuit boards are interconnected by snapaway perforated edges at the adjacent side of the boards, so that the pallet consisting of plural boards is processible as a whole. Electrical elements or components have their terminals received through openings in the printed circuit board, which insertion is by machine utilizing a pantographic locating principle. Components are also assembled on the board by hand insertion. After inserting selected electrical components at the desired locations, and masking other locations, the electrical connections are then treated by fountain soldering to form electrical connections between the leads and the printed circuit. The soldering occurs to the pallet as a whole. The individual boards are then snapped apart and the board has enough dimensional stability so that it is rigidly clamped on a fixture and passed over a routing blade at a predetermined slight clearance therefrom so that all of the excess lead sections are trimmed from the subsurface of the printed circuit substrate. Further electrical devices can then be added and soldered in place and the printing circuit board together with its electrical components can then be positioned within a container for a computer application. The described process incorporates minimal handling and incorporates high speed machine assembly techniques wherein multiple operations occur simultaneously or repetitively at high speed.

3,780,432
METHOD OF ESTABLISHING RELATIVELY INSULATED CONNECTIONS BETWEEN CONDUCTOR ENDS AND AN INSULATING SUBSTRATE

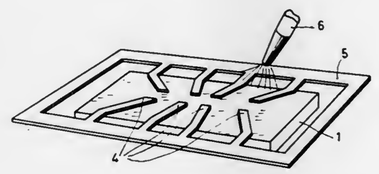
Gerardus Baas, and Frans Victor Willem Ten Bloemendal, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 10, 1971, Ser. No. 170,482

Claims priority, application Netherlands, Aug. 12, 1970, 7011885

Int. Cl. H05k *3/02*

U.S. Cl. 29—625 **5 Claims**



A method of establishing relatively insulated connections between the ends of metal conductors arranged in a mounting frame and an insulating substrate, the substrate surface being provided with a metal coating and the conductor ends being secured to said metallized surface, after which the metallized surface is subjected to a process attaching the metal coating so that the metal regions located between the conductor ends are removed from the substrate.

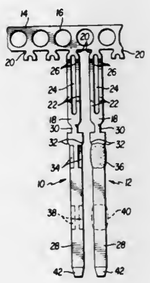
3,780,433
A METHOD OF MAKING AN ELECTRICAL CONNECTION USING A COINED POST WITH SOLDER STRIPE

James Edward Lynch, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 1, 1972, Ser. No. 248,964

Int. Cl. H01r *43/00*

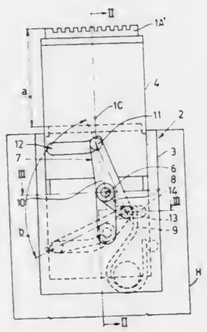
U.S. Cl. 29—628 **2 Claims**



A connector post or pin is disclosed which is particularly suitable for use with printed circuit board assemblies. The post

includes a coined portion which is designed to permit the pin to be easily inserted into holes of a predetermined size in printed circuit boards, and to increase the quality of a solder joint between the post and the printed circuit board. A solder stripe is placed on each post in the coined region to facilitate soldering of the posts to conductive portions of the printed circuit board. The posts are attached in groups to break-away carrier strips to aid in the rapid assembly of large numbers of posts to printed circuit boards. The posts may also include provisions for coupling them to multilayered printed circuit assemblies. A method of fabricating the coined post is also disclosed which converts a post with normally an interference fit in a printed circuit board aperture to a post which is freely received in the aperture together with masses of solder adhered to said post.

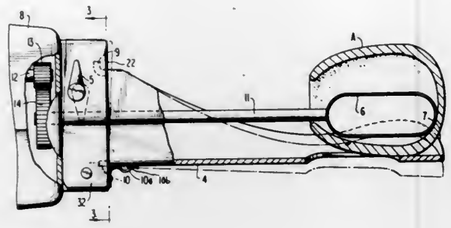
3,780,434
HAIR-CLIPPING CUTTER SYSTEM
Jan de Boer, and Petrus Jozephus Johannes Vaes, both of Oliemolenstraat, Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 3, 1971, Ser. No. 139,569
Claims priority, application Netherlands, May 28, 1970, 7007686
Int. Cl. B26b *19/20*; **F16h** *21/44*
U.S. Cl. 30—34.1 **6 Claims**



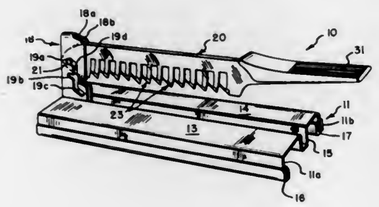
Displacement device for a hair-clipping cutter system for a dry-shaving apparatus, the hair-clipping cutter system being displaceable by means of a sliding knob between an extended position and a retracted position in the direction of shifting of the sliding knob. The stroke of the sliding knob is smaller than the shifting distance of the cutter system.

3,780,435
CUTTING DEVICE
Bahia Rashid Farha, and Lloyd Lee, both of Charlton Heights, W. Va., assignors to said Farha, by said Lee
Filed Dec. 28, 1971, Ser. No. 212,943
Int. Cl. B26b *29/00*
U.S. Cl. 30—113.1 **11 Claims**

Apparatus for hollowing out an article of food such as a fruit or vegetable so that a substantially uniform predetermined thickness is formed. The apparatus comprises longitudinally extending blade means having a longitudinally extending curved guide means extending in substantially the same direction as the blade means and guiding the article of food while it is being hollowed. The article of food is rotated with its outside surface on the guide means while being simultaneously advanced onto the blade means. The guide means ensures that the blade means contacts the article of food at a position displaced from the longitudinal axis of the article of food and a predetermined distance from the surface of the article of food. The blade means is power driven to rotate around its own axis and when the article of food is rotated in the guide means a shell having a hollow area of transverse dimension greater than the transverse dimension of the blade means is formed. The distance between the guide means and blade means is adjustable to control the thickness of the shell.



3,780,436
DEVICE TO CUT OR SEPARATE MASSES OF FROZEN FOOD
Ronald C. Pellman, Trumbull, Conn., assignor to Utica Cutlery Company, Utica, N.Y.
Filed May 24, 1971, Ser. No. 146,276
Int. Cl. B26b *1/04*
U.S. Cl. 30—123 R **9 Claims**

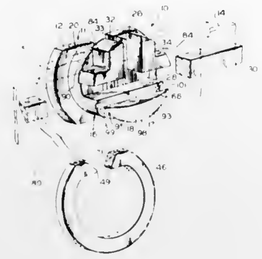


There is disclosed a frozen food cutter having a blade of toothed configuration, each tooth being of unique wedge-shaped and arcuate design.

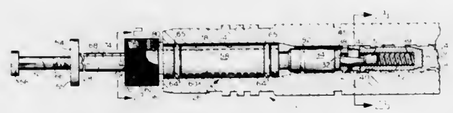
3,780,437
ORTHODONTIC BRACKET
Alexander J. Wildman, Eugene, Oreg., assignor to Consyne Corporation, Glendora, Calif.
Filed Mar. 2, 1972, Ser. No. 231,139
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **13 Claims**

An arch wire is held in a slot in a bracket body by a finger of a hook-like follower having a camming portion adapted to push the arch wire into the slot. The finger has a rounded labial surface blending with a labial portion of a head of the body

and has wedging surfaces adapted to move the follower to its open position. A snap ring engages somewhat abrupt shoulders on the follower to strongly hold the follower in its closed position, and engages less abrupt shoulders on the follower to weakly hold the follower in its open position. The body has a saddle horn portion to connect elastics to the body, and has notches for receiving auxiliary equipment.



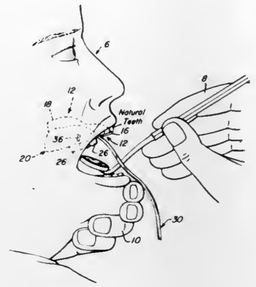
3,780,438
RIFLING LANDS INSPECTION GAGE
Robert J. Styczynski, Wynantskill, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 20, 1971, Ser. No. 173,521
Int. Cl. G01b *7/12*
U.S. Cl. 33—174 R **6 Claims**



A gage for inspecting the lands of a rifled barrel bore for erosion comprises a slider and a push rod axially disposed therein for displacing a feeler radially against one of the lands during movement of the slider along the bore. Radial deviations in the land are measured by calibrations on the push rod and the location of a deviation is indicated by graduations on the slider. Numbered radial lines on a supporting plug, respectively referenced to the lands, indicate the one thereof contacted by the feeler.

3,780,439
SIMULATED DENTITION
Richard C. Manor, Rt. 2, Box 182, Big Rapids, Mich., and Henry W. Osowski, P.O. Box 222, Chippawa Lake, Mich.
Filed July 15, 1971, Ser. No. 162,827
Int. Cl. A61c *19/00*
U.S. Cl. 32—71 **1 Claim**

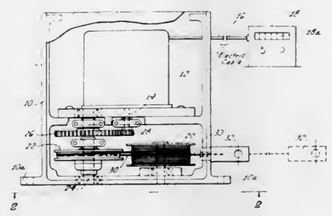
A simulated dentition for use by a dental student when studying and experimentally learning painstaking skills, dental practice, and chairside procedures comprising: an innovation expressly fabricated for placement and temporary retention within the confines of the oral cavity of a live in-the-chair student impersonating an actual patient. Made of non-deleterious material and structured to provide precisely contoured and compatible components upon which dental operative procedures can be capably evaluated and safely executed by the dental student. The first named student becomes a "dentist" and a second in-the-chair student provides the "patient." The essence of the concept pertains to the unique intra-oral dentition.



ERRATUM

For Class 33—174 R see:
Patent No. 3,780,438

3,780,440
MEASURING INSTRUMENT
James L. Taylor, Laverne, Calif., assignor to Ideal Aerosmith, Inc., Cheyenne, Wyo.
Continuation of Ser. No. 841,654, May 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 669,346, Sept. 5, 1967, abandoned, which is a continuation-in-part of Ser. No. 574,622, Aug. 24, 1966, abandoned. This application July 21, 1971, Ser. No. 164,925
Int. Cl. G01b *3/12, 5/02*
U.S. Cl. 33—139 **7 Claims**



An electronic measuring instrument is provided which includes an encoder having a control shaft and which generates electrical signals representative of angular increments of the control shaft and of the direction of rotation thereof, an extensible member with respect to the encoder housing is mechanically coupled to the control shaft and turns the control shaft in one direction or the other as the extensible member is moved in and out of the housing to measure linear distances, and a bidirectional electronic counter and display unit is electrically coupled to the encoder and responds to the electrical signals

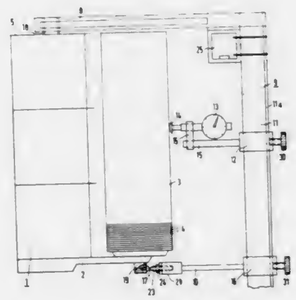
from the encoder to provide an exact reading of the corresponding linear distances measured by the extensible member as it is moved in and out of the housing.

The extensible member, for example, may be a steel flexible tape which is stored within the housing of the encoder unit on a supply drum, and which is drawn around a wheel coupled to the aforesaid control shaft to turn the wheel and control shaft in one direction or the other as the tape is moved in and out of the encoder housing. Appropriate tensioning means, such as a "Negator" spring, may be provided within the encoder housing to draw the tape in and around the aforesaid drum. However, other linear distance measuring means may be used to turn the aforesaid control shaft, such as a flexible cord, a rigid rod, a rack and pinion arrangement. Moreover, other means may be used to bias the tape, cord, or other distance measuring means into the encoder housing, such as an external weight, a torque motor, or the like.

3,780,441
METHOD AND DEVICE FOR MEASURING THE CONCENTRICITY OF THE LAMINATED STATOR STACK OF AN ELECTRIC MACHINE

Paul Kunert, Erlangen, Germany, assignor to Siemens Aktiengesellshaft, Munich, Germany

Filed July 20, 1972, Ser. No. 273,540
Claims priority, application Germany, July 24, 1971, P 21 37 132.4
Int. Cl. B23f *23/08*; B23q *17/04*
U.S. Cl. 33—174 Q **8 Claims**

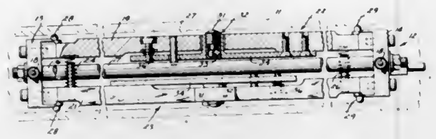


A method of testing the concentricity of the stator bore of an electrical machine as the stator lamination layers conjointly defining the bore are stacked is disclosed. Each layer is made up of several lamination sections having respective inside edges at the bore surface. The housing of the machine is centered with respect to the longitudinal axis thereof and is equipped with an end plate and a thrust ring at the excitation side and drive side of the machine respectively. The method includes the steps of arranging markers at equal spacing on a circle described on the end plate so as to be concentric with the longitudinal axis. Markers are also arranged at equal spacing on the thrust ring. The inside edges of the lamination sections are sensed with a sensing and measuring gauge to measure the distance between the inside edge of each lamination section and markers corresponding to the section being sensed. An apparatus for performing the method is also disclosed and includes a sensing and measuring gauge engageable with the markers corresponding to the section sensed to measure the distance between the edge of the section and the markers.

3,780,442
METHODS AND COMPOUND GAUGE DEVICES FOR MEASURING THE AXIAL CURVATURE OF A TUBE

William Milan Gresho, Hopewell Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 21, 1972, Ser. No. 246,210
Int. Cl. G01b *7/28*; E21b *47/08*; G01b *19/26*
U.S. Cl. 33—178 E **35 Claims**

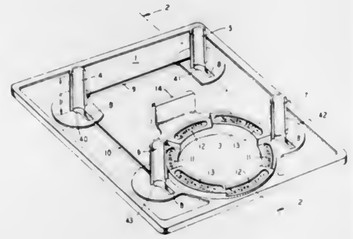


A number of wall curvature gauges, e.g., two, are mounted independently on a rigid carrier, arrayed equiangularly about the axis of the rigid carrier, to form a compound gauge device. The compound gauge is advanced along the length of a tube, typically through the interior of the tube, with each component gauge generating an electrical signal having a voltage representative of tube wall curvature along the path traced by the respective gauge. The signals are processed concurrently to provide a single continous output voltage signal which is proportional to a weighted algebraic sum of the voltages generated by the individual wall curvature gauges. Where two diametrically opposed wall curvature gauges are employed, the weighted algebraic sum constitutes the difference in signal voltages generated by the two gauges. The single continuous output signal is representative of the pattern of an axial curvature component in a plane along the length of the tube, e.g., the plane defined by two diametrically opposed wall curvature gauges.

3,780,443
INSTALLATION GAUGE OR THE LIKE

Jay R. Smith, 1 Kenilworth Dr., Millburn Township, Essex County, N.J.

Filed Aug. 4, 1971, Ser. No. 168,998
Int. Cl. G01b *3/38*
U.S. Cl. 33—180 R **5 Claims**

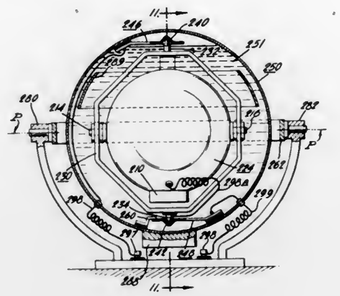


A gauge specifically designed for mounting on "roughed-out" closet bolts and waste fittings is disclosed to indicate the bolts lengths and fitting depths which insure a maximum seal efficiency in the waste system. The gauge is a substantially rectangular member having facilities for "plumbing" and leveling the gauge with a conventional level, upstanding curved members framing guide holes to indicate bolt lengths, and a waste connection guide having accurate surfaces to indicate the proper depth of the waste couplings.

3,780,444
GYROCOMPASS

Marvin Taylor, Plainview, N.Y., assignor to AMBAC Industries, Incorporated, Garden City, N.Y.

Filed May 12, 1971, Ser. No. 142,584
Int. Cl. G01c *19/38*
U.S. Cl. 33—327 **3 Claims**

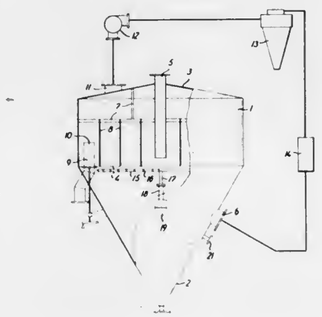


A pendulous gyrocompass of the type in which the rotor case if floated and the motor for driving the rotor in the rotor case is supplied with electrical power through a pair of specially-constructed electrically-conductive azimuth gimbal pivots of the needle-bearing type. The other gimbals in the gimbal support system may be relatively lower-grade bearings, with conventional arrangements for passing the motor current through or around them. The resultant gyrocompass may be of small size and low cost, and does not require servo's, pickoffs, torquers, sliprings, internal power supplies or other specialized compensating or correcting devices, yet provides an accuracy suitable for many applications.

3,780,445
CLEANSING DEVICE FOR POWDER PROCESSING APPARATUSES

Ove Emil Hansen, Vaerlose, Denmark, assignor to Aktieselskabet Niro Atomizer, Gladsaxevej, Sorborg, Germany

Filed Apr. 4, 1972, Ser. No. 241,031
Claims priority, application Denmark, Apr. 15, 1971, 1798/71
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 D **7 Claims**

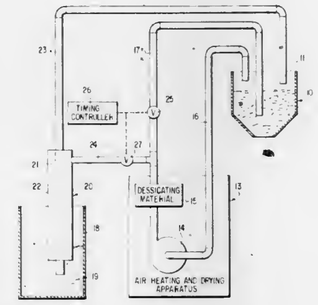


A cleansing device for cleaning perforated supporting plates in powder processing apparatuses, in which a flow of gas passes a perforated supporting plate more than one time or passes a number of perforated supporting plates for fluidizing a layer of powder on the plate or plates, comprising an arm parallel to the underside of the plate to be cleaned, said arm being provided with a number of gas nozzles connected with means for producing jets of gas shooting upwards against the underside, said arm being displaceable in a plane parallel to the underside of the plate in question.

3,780,446
AUTOMATIC HOPPER LOADER

Herbert H. Frimberger, Middlefield, Conn., assignor to Polymer Machinery Corp., Berlin, Conn.

Filed July 25, 1972, Ser. No. 274,985
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 R **10 Claims**



An apparatus for automatically supplying plastic material to the closed hopper of an injection molding machine or the like, the hopper being provided with an air drying arrangement, including a suction blower, for drying the air and thus the plastic material in the hopper. The plastic material to be supplied to the hopper is maintained in a supply bin which is open at its upper end. A suction wand, including a pair of space concentric tubes which are open at one end, extends into the bin to a point below the level of the plastic material. The other end of the inner one of the pair of concentric tubes is connected to the interior of the hopper adjacent the upper end thereof for conveying the plastic material thereto, while the other end of the outer one of the pair of concentric tubes is connected to the outlet air tube of the drying arrangement, and hence the outlet of the suction blower. Finally, a valve arrangement is connected in the outlet tube from the suction blower. The valve arrangement is such that when it is in a normal first position, the outlet stream of air from the drying device passes into the hopper via the outlet tube of the suction blower, and when it is in a second position the flow path to the hopper via the outlet tube is closed off and the output stream of air from the drying device is conducted via the outer tube of the suction wand into the supply bin where it is drawn together with the plastic material, via the inner tube of the suction wand into the hopper.

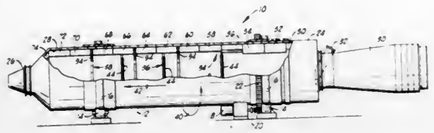
3,780,447
ROTARY DRYER

Howard S. Fales, West Redding, Conn., assignor to Continental Oil Company, Ponca City, Okla.

Filed Apr. 3, 1972, Ser. No. 240,630
Int. Cl. F26b *17/18*
U.S. Cl. 34—136 **8 Claims**

An improved rotary dryer having radially extended flights generally near the material feed end of the dryer, and a dam

assembly having a movable ring segment rotatable between a dam position, wherein the movable ring segment extends in a direction transverse to the general direction of material flow through the dryer, and a flight position, wherein the movable ring segment extends in a direction aligned with the general direction of material flow through the dryer.



3,780,448

APPARATUS FOR DRYING WASHED VEHICLES

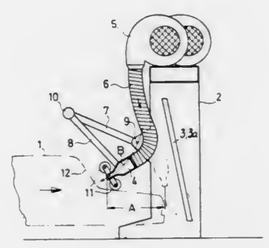
Ulrich Von Kulmer, Friedberg, Germany, assignor to Kleindienst & Co., Augsburg, Germany

Filed June 28, 1971, Ser. No. 157,088

Claims priority, application Germany, June 26, 1970, P 20 31 556.4

Int. Cl. F26b *19/00*

U.S. Cl. 34—229 **7 Claims**



The invention relates to apparatus for the drying of vehicles, comprising at least one blast nozzle mounted on a rocking lever and including an element capable of following the contour of a vehicle surface during relative movement between the vehicle and the apparatus, the rocking lever being mounted on a swivel pivot connected to drive means, so that the swivel pivot is moved in a direction to decrease effectively the rate of relative movement between the vehicle and nozzle during a drying operation on at least one inclined surface of the vehicle.

3,780,449

RESEARCH TEACHING TOOL

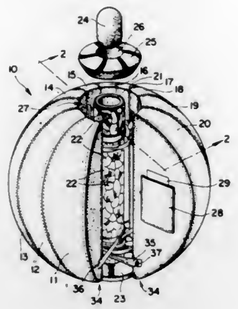
John Edward Stephenson, 893 Kennedy Rd., Toronto, Ontario, Canada

Filed May 1, 1972, Ser. No. 248,924

Int. Cl. G09b *1/02*

U.S. Cl. 35—1 **2 Claims**

The following specification discloses a novel teaching device and research tool made in the shape of a ball and composed of a plurality of segments interfitted like the segments of a citrus fruit and spaced apart from a hollow cylindrical core. The segments are made from polyurathane foam, covered with fabric and detachably fitted to one another and to the cylinder. Base and cover members are provided to complete the ball-like appearance of the device.



3,780,450

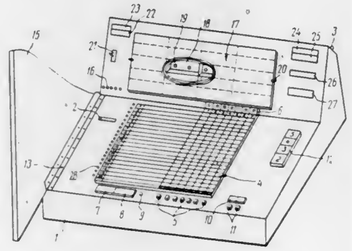
TEACHING MACHINE PREFERABLY FOR STUDYING FOREIGN LANGUAGES

Boris Ivanovich Podkopaev, Belomorskaya ulitsa, 22, korpus 3, kv. 19; Alexandr Vasilievich Bobkov, Tsvetochny kombinat, 14, kv. 2, and Ljudmila Dmitrievna Chervyakova, 4 Grazhdanskaya ulitsa, 34, korpus 1, kv. 71, all of Moscow, U.S.S.R.

Filed June 5, 1972, Ser. No. 259,918

Int. Cl. G09b *7/04*

U.S. Cl. 35—9 A **2 Claims**



A teaching machine preferably for teaching foreign languages using a program containing a set of algorithmic exercises is provided with a detachable decoder having indication means intended to indicate the locations of correct answers on the program-carrier containing the program of algorithmic exercises.

3,780,451

STUDY DEVICE

William T. White, 5110 W. School St., Chicago, Ill.

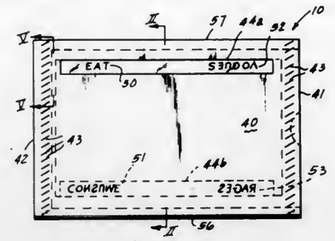
Filed Aug. 24, 1972, Ser. No. 283,328

Int. Cl. G09b *3/00*

U.S. Cl. 35—9 E **8 Claims**

A query and response study device having a frame member covered by a flexible sheet extending around the frame member with open ends, the sheet being slidable on the frame member, and the sheet having two spaced-apart transverse slots therethrough open to the interior of the frame, the frame accommodating cards having printed indicia thereon in lines.

The flexible sheet can slide on the frame to align the slots with a given line on one of the cards held internally of the frame whereby the indicia on that line represents a query. The frame can then be turned over where the other slot will be found to be aligned with a line of printed indicia on the opposite side of the same card or on a different card, that line representing a response to the query.



3,780,452

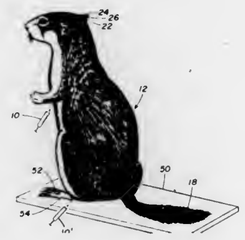
METHOD FOR MOUNTING AND PRESERVING ANIMALS WITHOUT EVISCERATION

William D. Jackson, Brownwood, Tex., assignor to R. Ray Rankin, Brownwood, Tex., by said Jackson and Bell, a part interest

Filed May 28, 1971, Ser. No. 147,879

Int. Cl. G09b *23/36*

U.S. Cl. 35—20 **10 Claims**



A method for preserving and hardening animals for display includes the steps of injecting the animal with a preservative solution and a setting agent. No evisceration or other preparation except washing and sealing of wound openings is needed. The preservative solution includes an aqueous formaldehyde solution, a formalin neutralizer, a mold inhibitor, and odorant, and a drying agent. The setting agent includes calcium sulfate, sodium chloride, and water. The preservative solution and setting agent are injected into the animal body beginning near the midsection thereof and advancing outwardly toward the extremities of the animal. The procedure is periodically repeated.

3,780,453

QUESTION AND ANSWER EDUCATIONAL GAME WITH AN ANSWER CONTROL DEVICE

Walter Hesener, 66, Rue de la Prulay, Geneve, Switzerland

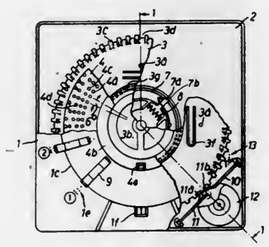
Filed Mar. 30, 1971, Ser. No. 129,469

Claims priority, application Switzerland, Mar. 31, 1970, 4696/70; May 29, 1970, 8136/70; Sept. 5, 1970, 13300/70; Nov. 20, 1970, 17285/70; Nov. 30, 1970, 17659/70

Int. Cl. G09b *3/00*

U.S. Cl. 35—48 R **44 Claims**

An educational question-and-answer game has an answer verifying apparatus which has a code member having at least one code alignment, and a co-operating setting device. The latter device is supported by a supporting member. The code and supporting members are each provided with part of an indicating device, and can be brought into various relative positions which are differently designated by the indicating device, in such a way that the setting device is associated with a different longitudinal unit of code alignment in each of the said positions. The setting device can be moved into at least two positions in order to answer any one of the questions asked, and can be brought into registry with the appropriate longitudinal unit of code alignment. The answer verifying apparatus has means for multiplying its verifying capacity, which results from the number of different positions of the code member relative to the supporting member or the longitudinal units of code alignment, and for improving the enciphering of the possible verifications. Such means take the form of a plurality of differently designated setting devices (**9**) in FIG. 1 of the drawings for answering a corresponding plurality of questions per setting position of the code member (**3, 4** in the drawings) relative to the supporting member (**1**). Alternatively the verifying capacity is enhanced by the construction of at least one of the code and supporting members (**3, 4, 1**) as parts (**3, 4**) which are each provided with part (**3g, 4e**) of a further indicating device. These parts can be brought into various relative positions, these positions being differently designated by the indicating device.



3,780,454

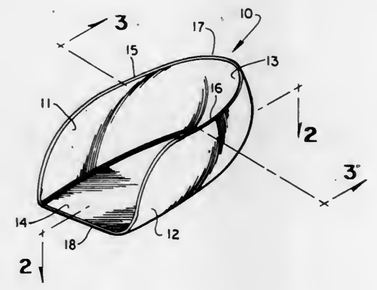
HEEL ENLARGER

Ernest Godwin, 157 Peachtree St., Atlanta, Ga.

Continuation-in-part of Ser. No. 121,477, March 5, 1971, abandoned. This application June 9, 1972, Ser. No. 261,450

Int. Cl. A43b *23/28*

U.S. Cl. 36—58.6 **2 Claims**



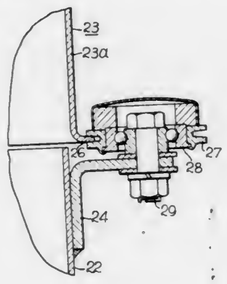
A heel enlarger formed to receive the heel of a human foot for effectively enlarging the size of the foot, and for insertion

with the foot into the heel cavity of a shoe to enable the wearer of the shoe to fill or occupy the space in an oversized heel cavity of the shoe. The outer surfaces of the heel enlarger generally conform to the inner surfaces of the heel cavity of a typical shoe, while the inner surfaces of the heel enlarger generally conform to the shape of the heel of the human foot. The top edge of the heel enlarger is shaped to the shoe by marking the portion of the heel enlarger protruding above the upper edge of the side wall of the shoe with a line coinciding with the upper edge of the shoe and cutting along the line.

3,780,455
SNOWBLOWER DISCHARGE SPOUT WITH AIR INLET MEANS

William L. Stevenson, Mequon, and George J. Vertanen, Port Washington, both of Wis., assignors to Simplicity Manufacturing Company, Inc., Port Washington, Wis.

Filed Feb. 1, 1972, Ser. No. 222,533
Int. Cl. E01h *5/04*
U.S. Cl. 37—43 R **4 Claims**

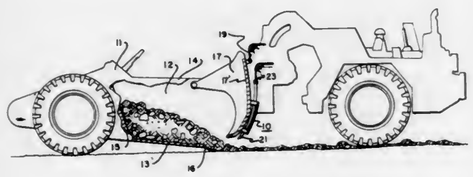


A snow blower, the frame structure includes a support for the discharge pipe, an adjustable chute positioned on antifriction devices carried by the upper end of such pipe and providing clearance between such pipe and chute for inspirating air into the chute to prevent clogging, and electric power means for swinging such chute which means are controlled by an operator from his station.

3,780,456
SECONDARY LIP FOR SCRAPERS

Orville P. Bronson, 5209 Targee, Space No. 14, Boise, Idaho, and Bruce L. Crabtree, Sr., P.O. Box 423, Snohomish, Wash.

Continuation-in-part of Ser. No. 234,361, March 13, 1972. This application Mar. 12, 1973, Ser. No. 340,624
Int. Cl. E02a *5/00*
U.S. Cl. 37—125 **3 Claims**

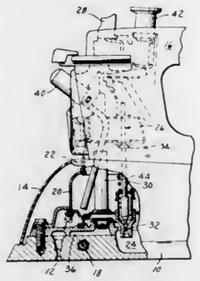


In a scraper excavating apparatus, the secondary lip comprises an apron skirt which is coextensive in width with, and is of sustantially similar curvature as, the apron of the scraper; guideways which are fastened at each side of the apron and which are operable to guide vertical travel of the skirt over the lower portion of the forward, exterior side of the apron; and a suitable actuator, such as cables, to selectively raise and lower the apron skirt with respect to the apron and to selectively dispose the lowermost terminal edge of the apron skirt contiguously adjacent the uppermost side of the scraper cutting bit.

3,780,457
STEAM IRON

Harold W. Gowdy, and William E. Davidson, both of Ontario, Canada, assignors to General Electric Company, Bridgeport, Conn.

Filed Feb. 5, 1973, Ser. No. 329,365
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.81 **7 Claims**

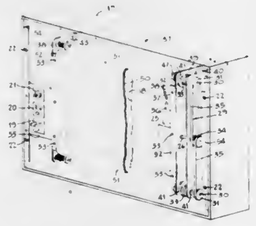


The invention is directed to a balanced pressure steam iron having a closed water tank and steam generating soleplate with control means to start and stop a metered flow of water. It has pressure balancing means connecting the steam generating soleplate and tank and a power spray means connected to the tank. In this conventional iron the invention provides an improvement in means to control pressure in the tank by supplying a coverplate overlying the soleplate to define steam passages therebetween and pressure control is provided by a continuously open pressure controlling conduit through the coverplate, the conduit containing an orifice and being formed to repel foreign particles whereby the single continuously open conduit controls both pressure within the iron and vents the iron for filling or emptying when upended.

3,780,458
PORTABLE VISUAL-AID OR DISPLAY DEVICE

Joseph M. Jacoby, 302 Carriage House Ln., Riverton, N.J., and Richard Gelak, Runnemede, N.J., assignors to said Jacoby, by said Gelak

Filed May 20, 1971, Ser. No. 145,173
Int. Cl. G09f *1/29*
U.S. Cl. 40—31 **2 Claims**

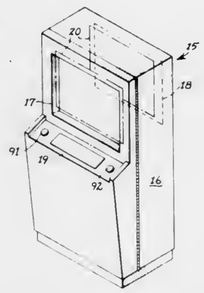


A rectangular portable carrying and display case of the attache type, adapted to stand vertically, is provided with a fully detachable front cover which is attached at the rear during use. At the front of the case, with the cover removed, a picture frame cover plate provides a viewing opening for observing visual-aid or display material in the form of a strip of paper or the like made up of individual elements or frame units connected end-to-end in a reel which is passed across the framed opening between two spaced rollers to display the information carried by each unit. Motor drive means with a hand-held control switch, and including overrunning clutches and belt drive for each roller, is connected therewith in a manner to wind the reel from one roller to the other in a forward direction past the viewing opening or to rewind it in the opposite direction.

3,780,459
APPARATUS FOR EXHIBITING DISPLAY PANELS

Donald D. Modglin, 924 Rodney Dr., Nashville, Tenn.

Filed Mar. 14, 1972, Ser. No. 234,498
Int. Cl. G09f *11/32*
U.S. Cl. 40—36 **6 Claims**



An apparatus for exhibiting display panels of the type in which each panel is provided with a top transverse rod having its end portions projecting beyond the lateral margins of the panel. The apparatus includes front endless carrier members for lowering the panels one at a time past a front viewing area, and rear endless carrier members for raising the panels one at a time past a rear viewing area for viewing the display on the rear surface of the panel. The apparatus further includes top transfer rails permitting the rod portions of the panels to feed down to the front carrier members from the rear carrier members, and declining transfer rails permitting the panels to gravitate down from the bottom of the front endless members to the bottom of the rear endless members. Escapement mechanisms are located at the lower end portions of the upper and lower rails for substantially simultaneously feeding one panel at a time to the upper end of the front endless members and to the lower end of the rear endless members. A single escapement lever is pivotally supported in the upward path of a panel on the rear endless members for engagement and simultaneous actuation of the escapement mechanisms.

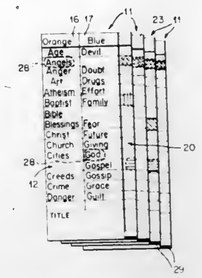
The apparatus further includes separate front and rear motors for driving the corresponding endless members independently of each other, and control means for driving the motors at different times and at different speeds, if desired.

3,780,460
INDEX CARD FILING SYSTEM

John M. Hurt, Jr., 1030 Belvidere Dr., Nashville, Tenn.

Filed Apr. 20, 1972, Ser. No. 245,775
Int. Cl. G09f *9/00*
U.S. Cl. 40—78 **2 Claims**

An index filing system including a plurality of identical index cards, each card having parallel longitudinal columns of information symbols, and each information column having a color-coded heading. Each card further has a longitudinal

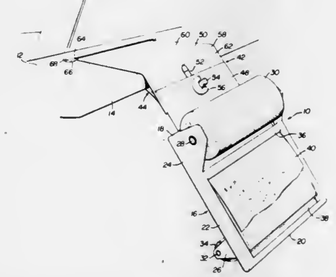


edge member including a plurality of color-code receiving spaces, each space transversely aligned with an information symbol in one or more information columns.

3,780,461
MOBILE LOG-NOTER

Theodore B. Russell, 2190 N.E. 124th St., North Miami, Fla.

Filed Oct. 4, 1972, Ser. No. 294,950
Int. Cl. G09f *19/02*
U.S. Cl. 40—86 **4 Claims**



A mobile log-noter having a backboard and supply and take-up rolls mounted on the backboard so that paper can be drawn over a central portion of the backboard by winding it from the supply roll onto the take-up roll, and clamps affixed to the backboard for receiving and gripping a projecting portion of a dashboard of a vehicle so that the log-noter can be mounted directly on the dashboard. Notes in the form of a log or memorandum can be recorded on the paper at the central portion of the backboard. The clamps include two plates which are extensible and retractable relative to the backboard and a fastener for holding the plates in a given position of adjustment. One plate may have a hook at its distal end for hooking onto a ventilation opening in the dashboard.

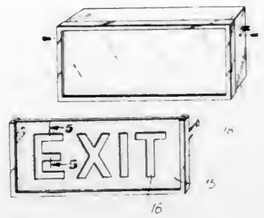
3,780,462
LUMINOUS INDICATORS INVOLVING PHOSPHORS

Alexander Pregel, and William A. Goldman, both of New York, N.Y., assignors to Canrad Precision Industries, Newark, N.J.

Continuation of Ser. No. 863,785, Oct., 1969, abandoned. This application Oct. 20, 1972, Ser. No. 299,502
Int. Cl. G09t *13/20*
U.S. Cl. 40—130 R **6 Claims**

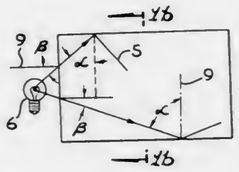
Luminescent, specifically phosphorescent, indicia or insignia are disposed on a visible translucent substrate mounted on

a carrier wherein an artificial light source is disposed within the carrier rearwardly and spacedly of the substrate so that the heat of the source of light will not affect the luminescent properties of the phosphorescent indicia or insignia which latter are formed of homogeneously dispersed phosphor particles in glass or porcelain frit, and as such are bonded to the substrate.



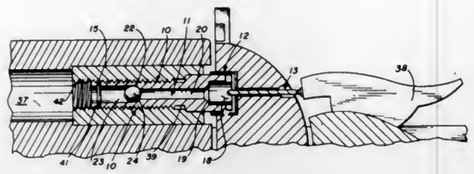
3,780,463
ILLUMINATED DISPLAYS AND ILLUMINARIES
Leonard S. Aronoff, 16751 Tupper St., Sepulveda, Calif.
Continuation-in-part of Ser. No. 855,197, Sept. 4, 1969, abandoned. This application May 15, 1972, Ser. No. 253,323
Int. Cl. G02b 5/14
U.S. Cl. 40—130 K **9 Claims**

A display particularly adaptable for displaying a message comprising a light-carrying body and a source of light disposed along at least one edge of the body is disclosed. The message is placed in intimate contact with one surface of the light-carrying body. A contrasting backing material is disposed about and/or behind the message and is held in remote contact with the body. The edges of the body adjacent to the sources of light are shaped such that the edges are relatively normal to the incident light rays, thus allowing most of the light to refract through, thus easily entering the body.



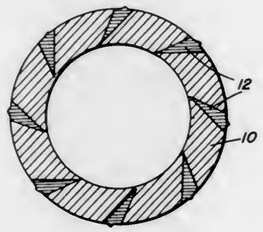
3,780,464
FIRING MECHANISM FOR PERCUSSION LOCK FIREARMS
Harvey B. Anderson, 1203 Broadway, Yakima, Wash.
Filed Sept. 5, 1972, Ser. No. 286,608
Int. Cl. F41c 7/00
U.S. Cl. 42—69 R **6 Claims**

A mechanism to replace the flash hole structure of either breech or muzzle loading percussion firearms to allow firing with metallic cartridge primers of present day commerce. The primer is enclosed by a removable cap during firing to prevent fragmentation. A relatively large flash hole is provided with a check valve to alleviate misfires and hangfires to prevent blow backs.



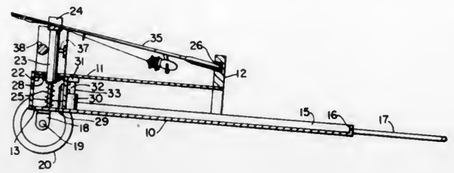
3,780,465
WEAR RESISTANT GUN BARREL AND METHOD OF MAKING THE SAME
Raymond J. Polcha, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 1, 1972, Ser. No. 258,622
Int. Cl. F41c 21/02; B23p 13/00; C21d 1/06
U.S. Cl. 42—76 A **8 Claims**

A wear resistant gun barrel and method of producing it is disclosed. The barrel has hardened zones or lands which penetrate into the barrel material between rifling grooves and which are highly resistant to wear from repeated projectile firings. The hardened zones or lands are produced by heating a narrow zone on the outside of the gun barrel with a high intensity heat source, allowing any desired pattern to be melted into the steel. The molten zones, when cool, produce areas having increased hardness. The final step is to machine the gun barrel to the proper inner diameter and engrave rifling grooves between the hardened zones. In the case of large caliber gun barrels the hardened zones are provided in an inner liner which is then shrunk fit into the outer cylinder before the machining step is performed.



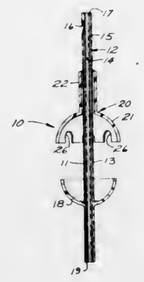
3,780,466
DEVICE FOR HOLDING FISHING RODS
Leroy Hadnot, 2715 May St., Cincinnati, Ohio
Filed Jan. 14, 1972, Ser. No. 217,804
Int. Cl. A01k 97/12
U.S. Cl. 43—17 **1 Claim**

A device for carrying and holding a plurality of fishing rods so that the movement of the fishing rods cause a signaling device to be actuated. The device comprises a frame having a pair of wheels at one end thereof and a cross member with sockets therein to receive the rod handles. Each rod shaft is positioned over a spring mounted pistion which actuates the signal device.



3,780,467
FISHING DEVICE
Lawrence R. Lueck, P.O. Box 1061, Victorville, Calif.
Filed Oct. 17, 1972, Ser. No. 298,335
Int. Cl. A01k 93/00, 97/02
U.S. Cl. 43—44.87 **10 Claims**

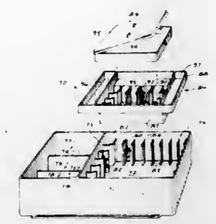
A chum holding bobber which can be attached to a fishing line above a baited hook to distribute chum in the surrounding water for the attraction of fish. The bobber has a round tubular stem with an annular hollow for buoyancy; a chum holding cup, made of lightweight plastic, coaxially affixed to the stem to extend concentrically outwardly and upwardly so that its open side faces up; and a lightweight plastic cup with a larger mouth than the chum holding cup, slidably mounted on the stem above the chum holding cup with its open side down and having a downturned rim with scalloped indentations. The bobber is readied for use by loading the lower, chum holding cup with particulate chum, then sliding the upper cup into contact with the loaded lower cup. The rim or mouth of the chum holding cup nests within the larger mouth of the upper cup, but leaves portions of the scalloped indentations unobstructed to provide openings through which chum particles can escape into the water. A slight tug on the fishing line loosens more of the chum for distribution in the water when this is desired.



3,780,468
FISHING TACKLE BOX
William C. Maffett, c/o William C. Maffett and Associates, Smithville, Tenn.
Filed Oct. 20, 1972, Ser. No. 299,314
Int. Cl. A01k 97/00
U.S. Cl. 43—54.5 R **3 Claims**

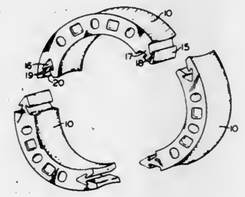
A fishing tackle box including a compartment having a wall structure in which top ledges are formed to receive the inverted ends of the fish hooks of freely suspended fishing lures. The top ledges may be formed of a soft material penetrable by the sharp ends of the fish hooks, such as a foamed plastic material; or an opening may be pre-formed in the ledge for receiving the end of each hook; or the wall structure may be thin enough for each hook to hang over the top edge of a wall.

In the preferred form of the invention, the wall structure includes a plurality of spaced partition walls to form separate compartments for receiving the lures, and one form of the invention includes such wall structure in a cascade arrangement.



3,780,469
SECTIONAL CREATIVE TOY
John P. Hancovsky, Shaler Township, Allegheny County, Pa., assignor to Hi-Ho Products, Inc., Sharpsburg, Pa.
Filed May 18, 1971, Ser. No. 144,583
Int. Cl. A63g 11/00, 21/00
U.S. Cl. 46—25 **6 Claims**

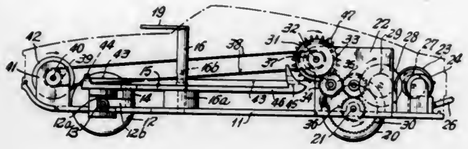
The specification discloses a creative toy of lightweight, durable material, such as a low-density polyethylene and plastic composition, which is made up of a plurality of interlocking arcuate sections capable of assembly in a variety of different ways to provide different life-size toys for juveniles, such as a hoop, slide or chair. Each section of the toy comprises a body portion of hollow, thin-walled and substantially rectangular cross-section having a protruding V-shaped tongue at one end and at the opposite end a recess of complementary and interlocking configuration to the tongue. The outer and inner walls of the body portion are curved inwardly and the side walls have shallow cups recessively molded therein for decoration and reinforcement purposes.



3,780,470
PROGRAMMABLE TOY VEHICLE
Robert E. Roberts, 523 Danbury Rd., and William D. Zdinak, 74 Raymond Ln., both of Wilton, Conn.
Filed Apr. 5, 1972, Ser. No. 241,145
Int. Cl. A63h 17/36
U.S. Cl. 46—213 **9 Claims**

The toy vehicle disclosed comprises a chassis, a driving motor, directable front wheels and operating mechanism to steer

the vehicle, as it travels forward, to the left or the right under the control of a flexible member, such as a cord or cable which is wound on a program drum having a multiplicity of pegs projecting from its surface and arranged equispaced laterally in parallel circumferential rows, said cord being led from a storage spool around the program drum and between the pegs



by an eye on a lever connected to operate the steering mechanism of the vehicle when traveling in reverse direction, said spool and lever when the vehicle is operated in a forward direction unwinding said cord from the drum and causing the steering lever to operate the steering mechanism in a sequence of movements opposite to those made in operating the vehicle in reverse direction.

3,780,471

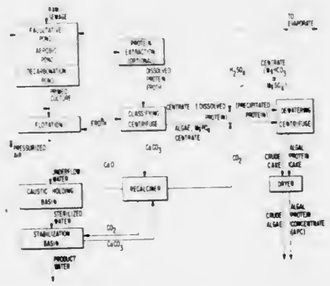
WATER RECLAMATION-ALGAE PRODUCTION

Jay E. Ort, Lubbock, Tex., assignor to Era Incorporated, Clovis, N. Mex.

Continuation-in-part of Ser. No. 55,570, July 16, 1970, Pat. No. 3,645,040. This application Feb. 28, 1972, Ser. No. 229,742

Int. Cl. A01g *7/00*

U.S. Cl. 47—1.4 **14 Claims**



Wastewater is treated in a manner which geratly reduces the level of organic waste matter, phosphates, fixed nitrogen, bacteria, virus and suspended solids. Water is reclaimed and an algae by-product is recovered by employing a series os three ponds with different depths and detention periods, each of which performs specific functions. A dissolved-air-lime flotation step is then used to separate suspended materials (primarily algae). After the flotation step the water is held at a high pH to achieve total disinfection prior to recarbonation to stabilize the water. The by-product algae material is refined by centrifugal classification of calcium carbonate from the slurry or, optionally, by alkaline hydrolysis of protein from the algae followed by acid precipitation to yield a high quality protein concentrate.

3,780,472

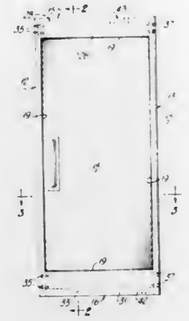
DOOR STRUCTURE

Lawrence F. Biebuyck, Niles, Mich., assignor to American Metal Climax, Inc., New York, N.Y.

Continuation of Ser. No. 59,981, July 31, 1970, abandoned. This application Dec. 1, 1971, Ser. No. 203,814

Int. Cl. E06b *3/00*

U.S. Cl. 49—501 **3 Claims**



There is provided an improved door structure of the type having a frame supporting a panel of glass or other suitable material and characterized by very narrow stiles. The stiles each have relatively heavy face portions connected by a transverse web and defining confronting shallow and deep glazing pockets. Spaced upper and lower rail assemblies interconnect the stiles, and are each provided with longitudinally extending screw splines. The ends of the upper and lower rail assemblies are coped so that the screw splines fit within the confronting glazing pockets and seat against the respective webs.

3,780,473

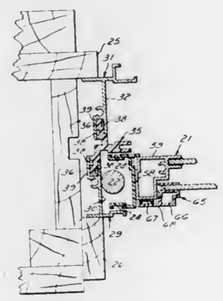
THERMAL BARRIER WINDOW

Walter A. Kort, New Philadelphia, and Eugene L. Brand, Clinton, both of Ohio, assignors to Alsco Anaconda, Inc., Akron, Ohio

Filed Aug. 13, 1969, Ser. No. 849,856

Int. Cl. E06b *3/28*

U.S. Cl. 49—62 **4 Claims**



A window unit having a stationary window frame and an upper and lower sash slidably mounted within the frame is disclosed. The window frame includes interior and exterior metal portions and a thermal barrier element interspaced therebetween to minimize heat transfer from and moisture condensation on the interior metal portions. The metal portions are joined to the thermal barrier element by providing each metal portion with an elongated U-shaped female portion which receives an elongated male portion of the thermal barrier element. Longitudinally spaced portions of at least one leg of each U-shaped female portion are plastically deformed into longitudinally extending channels formed in the male portions to complete the connection. The upper and lower sashes are each provided with a nonmetallic thermal barrier sash guide providing the sole contact between the sashes and their tracks formed in the stationary frame to minimize heat transfer through the sash guide from the interior metal portions of the window frame. The upper and lower sashes are each provided with a storm window unit having a nonmetallic thermal barrier frame which covers substantially all interior exposed lateral surfaces of the window sash to prevent moisture condensation thereon.

3,780,474

TABLE POSITIONING DEVICE FOR GRINDING MACHINE

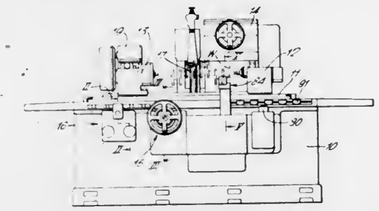
Hiroshi Ota, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed June 17, 1971, Ser. No. 153,992

Claims priority, application Japan, June 23, 1970, 45/54636

Int. Cl. B24b *5/42*

U.S. Cl. 51—105 SP **9 Claims**



A table positioning device for a grinding machine to grind work pieces with multiple grinding portions is provided which comprises measuring means for measuring a first grinding position of the work pieces, a fine transferring device regulated by the measuring means to position the table of the grinding machine in a first grinding position, and a table indexing device including an index plate mounted on the table with notches at corresponding intervals of the multiple grinding portions and an index pin adjustably provided on a bed of the grinding machine, the index pin being engageable with the notches to set the table at the corresponding grinding positions.

3,780,475

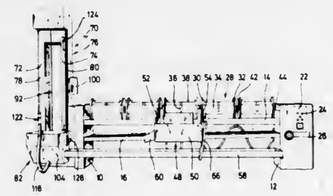
TUMBLER WITH DRUM TRANSFER APPARATUS

Manfrid Dreher, Salmbach, Germany, assignor to Dr.-Ing. Manfrid Dreher KG, Engelsbrand, Germany

Filed Apr. 23, 1971, Ser. No. 136,844

Int. Cl. B24b *31/02*

U.S. Cl. 51—164 **9 Claims**



At least one hollow rotatable drum is movable between a first and a second position in the latter of which it can receive and discharge its contents. First displacing means is provided for displacing the drum between its positions. Container means is movable between an upper and a lower position in which it is respectively located above and below the level of the drum when the latter is in the second position thereof. A hoist or similar means displaces the container means between the upper and lower positions thereof. Connecting means connects the interiors of the drum and the container means and enables gravity discharge of the contents of the drum to the container means when the drum is in the second position and the container means is in the lower position, and of the contents of the container means to the drum when the former is in the upper is in its upper position and the drum is in its second position.

3,780,476

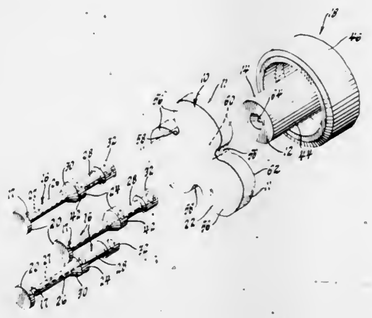
GRINDING WHEEL AND MOUNTING ASSEMBLY

Therell L. Sipe, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 8, 1972, Ser. No. 278,768

Int. Cl. B24b *45/00, 55/02*

U.S. Cl. 51—168 **3 Claims**

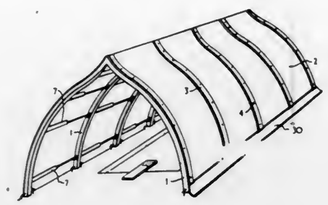


A solid grinding wheel substantially in the form of a cloverleaf having equiangular spaced petals and the like spaced roots defined therebetween, the spaced roots receiving flanged retaining pins securing the grinding wheel to a rotatable drive shaft. The shanks of the flanged retaining pins include a portion of increased diameter including a tapered cam surface engaged by a like tapered cam surface on an adjustable nut of a chuck mounting assembly. The adjustable nut is internally threaded and received upon a sleeve in the chuck assembly and presents a tool receiving end through which the shanks of the retaining pins are received with the flanges engaging the outside surface of the grinding wheel. Tightening movement of the nut engages the mating tapered cam surfaces axially moving the retaining pins drawing the grinding wheel into engagement with an end of the driving shaft. A conical protuberance is provided on one surface of the grinding wheel and is received in a like recess in the end of the driving shaft thereby aligning the wheel on the shaft prior to firmly securing it by rotation of the adjustable nut. Coolant fluid passages are provided in the flanged retaining pins so that coolant fluid is directed onto work engaging surfaces of the grinding wheel beneath a wind barrier created when the wheel is rotated at high speeds. The adjustable nut can be formed to accommodate a fluid collector sleeve which is secured to the nut and extends away from the grinding wheel terminating in an arcuate portion receiving coolant discharged from a source under pressure, the fluid being received by the collector sleeve and directed through the passages in the flanged pins for discharge onto the grinding wheel work engaging surfaces.

3,780,477
DEMOUNTABLE BUILDING

Philip D. Sprung, Jr., 1201 Sifton Blvd., Calgary, Alberta, Canada

Filed July 28, 1971, Ser. No. 166,861
Int. Cl. E04b *1/32*
U.S. Cl. 52—86 **1 Claim**



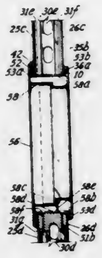
A demountable building embodying a fabric covered framework of spaced arch-like members. The fabric is applied in elongated strips laid between adjacent arches and by mounting the bases of the arches for movement longitudinally of the building and interposing extendable devices like screw jacks between the arch members, the several fabric strips can be suitably stretched on adjustment of the jacks.

The fabric strips are provided with thickened or beaded edges by which they are releasably clamped along opposite sides to the respective arch members.

3,780,478
INTERLOCKED PANEL STRUCTURE

John Pavlecka, 8797 Capital St., Oak Park, Mich.

Filed Dec. 20, 1971, Ser. No. 209,790
Int. Cl. E06b *3/54*; **E04b** *5/52*; **E06b** *1/104*
U.S. Cl. 52—206 **28 Claims**



A structure for hollow walls, floors and flat roofs of houses, buildings, trailers, mobile homes, vans, containers, etc., in which two parallel rows of panels and door and window frames are locked into unity crosswise and lengthwise by keying members inserted slidably into interlocking means on the panels and on the jambs of the frames; moreover, top and bottom mounting boundary channels and door and window frame lintels are provided with laterally interfitable formations, and the panels with matching formations, the latter being entered at assembly inbetween the former; as the keying members—which may be the studs, joists, or rafters themselves or lightweight linear keys—are inserted into their interlocking engagement with the panels and the jambs, the panels are displaced laterally into a crosswise interfit with the channel and lintel formations, the keying members thus effecting a simultaneous three-dimensional interlock of all the components of the structure; clearance holes in the top channel and in the window lower lintel admit the keying members for insertion.

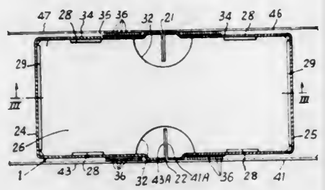
In floor and flat roof structures boundary channels as "-headers" enclose all four outer sides, and both those at right angles to the keying members—be they the joists or raftes themselves or linear keys—and those parallel with them are interfitted laterally with the upper and lower deck panels as in the walls, i.e., by the keying members inserted inbetween the decks through openings in one of the channels.

The complete structure embodies weather seals at all vertical and horizontal seams; corner voids in the bottom channel and in the door and window lintels for receiving fallen-in particles; means on the channels for supporting or retaining peripheral basement and roof shroud members; and a window lower lintel divided into a panel engaging channel with keying member insertion openings therein, and a window sill as a cover therefor. Continuous and discontinuous species and subspecies thereof of the means for carrying the laterally interfitted formations on the panels are disclosed, as are inwardly offset such formations for a flush wall, floor or roof exterior surface.

3,780,479
PARTITIONS COVERED WITH A FACING FABRIC

Patrick Billarant, Nantes; Robert Goubeau, Bois Le Roi, and Jacques Langlois, Paris, all of France, assignors to Velcro France, Paris, France

Filed July 28, 1971, Ser. No. 166,678
Claims priority, application Luxembourg, Aug. 10, 1970, 61491
Int. Cl. E04b *2/72*
U.S. Cl. 52—222 **4 Claims**



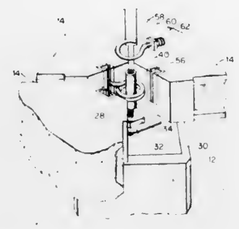
The post has at least one slot extending over the entire height of said post and into which a portion of a facing fabric applied against the post and at least one partition adjacent said post can be inserted, while fastening elements carried by said post at locations thereon which are to be covered by the facing fabric are adapted to retain a corresponding looped, fluffy, down, velvety, felted cellular or the like portion of the back of the facing fabric.

3,780,480
BUILDING CONSTRUCTION AND METHOD OF SAME

Alex Cvijanovic, Cambridge, and Sepp Firnkas, Boston, both of Mass., assignors to TAC House, Inc., Cambridge, Mass.

Filed Oct. 7, 1971, Ser. No. 187,445
Int. Cl. E04c *3/34*; **E04b** *1/343*
U.S. Cl. 52—227 **8 Claims**

A building construction and method which utilizes columns and precast concrete, generally rectangular, horizontal floor slabs. A first set of columns is erected at the building site and post-tensioned. Then the horizontal slabs are lifted up and positioned with the corners thereof resting on the upper ends of the columns. In the preferred embodiment, each slab has a vertically extending pin secured to the slab at each corner. After the slabs are positioned on the columns, a locking ring is dropped over the pins with the upper edge of the ring extending above the upper horizontal surface of the slabs. A second series of columns is erected in vertical alignment with the previously erected and post-tensioned columns. Each column

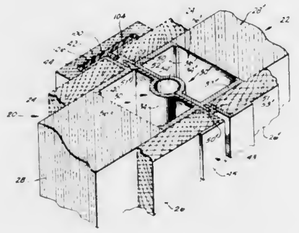


in the second series rests on the upper edge of the corresponding locking ring. This arrangement provides essentially a point support for the column which permits very easy vertical alignment of the column. Once the column has been aligned, the space between the bottom of the column and the upper surface of the horizontal slabs is dry packed. After the dry pack has set, the second series of columns is post-tensioned before receiving the next series of horizontal floor slabs. The resulting connection between the column and slabs provides a "-semi-rigid" connection which is suitable for use in buildings that are constructed in earthquake zones.

3,780,481
COMPOSITE PANEL FASTENING DEVICE HAVING INTERLOCK FEATURE

Harold E. Tomkins, Glendale, Calif., assignor to Myers Double Tee Structures, Inc., Los Angeles, Calif.

Filed Apr. 15, 1971, Ser. No. 134,124
Int. Cl. E04b *2/60*
U.S. Cl. 52—265 **26 Claims**

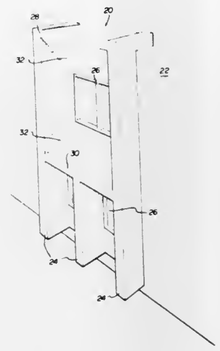


A fastening device for fastening together a pair of elongate planar boards in parallel spaced relation to form a composite panel has interlock means defined thereon. The interlock means enables the fastening device to be directly interlocked with an identical fastening device of another composite panel so that the two panels may be locked together in adjoining relation.

3,780,482
PREFABRICATED STRUCTURAL UNIT AND METHOD

Cornelis J. De Lange, Farmington, Mich., assignor to Cement Enamel Development, Inc., Detroit, Mich.

Filed Jan. 26, 1972, Ser. No. 220,854
Int. Cl. B44f *9/04*, *7/00*
U.S. Cl. 52—309 **5 Claims**



The prefabricated structural unit disclosed herein includes a metal frame or skeleton formed of a plurality of steel studs or channels welded into a shaped unitary frame having the general exterior configuration of the structural unit. Asbestos-cement panels or sheets are permanently secured to the exterior of the frame which are joined and sealed by an adhesive to form a continuous monolithic exterior surface. The exterior surface is then finished by coating the surface with a cementitious matrix into which is distributed a stone or other aggregate providing a precast monolithic appearance.

The disclosed method of forming a prefabricated structural unit includes welding the steel channels or studs into a relatively lightweight unitary frame structure, permanently securing the asbestos-cement panels over the exterior of the frame, as by nailing the panels directly to the frame, and joining and sealing the panels with an adhesive. A cement matrix is then applied over the panels and a stone aggregate is distributed in the matrix while the matrix is in the fluid state. The exterior surface is then dried, wherein the cementitious matrix forms a substantially continuous layer with the cement-asbestos panels.

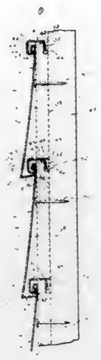
3,780,483
BUILDING SIDING UNIT WITH INTERLOCKING BACKING BOARD AND OUTER PANEL

Lee Herbert Mattes, South Bend, Ind., assignor to Mastic Corporation, South Bend, Ind.

Filed Nov. 9, 1971, Ser. No. 197,031 The portion of the term of this patent subsequent to Nov. 28, 1989, has been disclaimed.
Int. Cl. E04b *2/08*; **E04c** *2/46*
U.S. Cl. 52—550 **3 Claims**

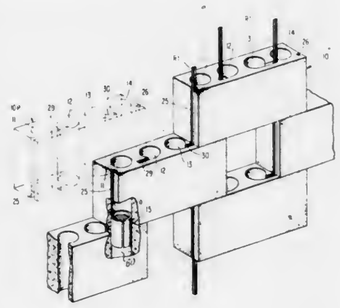
A siding unit for a building or like structure which includes an outer panel and a backing board. The outer panel of the siding unit includes a hook-shaped butt portion which is adapted to interlock with the siding unit in the lower adjacent

siding course. The outer panel also includes a rearwardly extending downturned hook part at its upper marginal portion



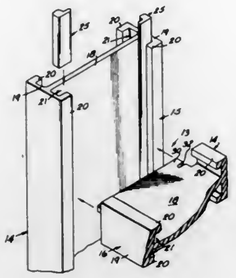
which is fitted over and interlocks with a lip formed in the upper marginal portion of the backing board located at the back of the outer panel.

3,780,484
UNIVERSAL BLOCKS
George B. Muse, Hillcrest Dr., Calhoun, Ga.
Continuation-in-part of Ser. No. 83,939, Oct. 26, 1970, Pat. No. 3,693,307, which is a continuation-in-part of Ser. No. 252, Jan. 2, 1970. This application June 23, 1971, Ser. No. 155,946
Int. Cl. E04b *2/46*; **E04c** *1/08, 1/10*
U.S. Cl. 52—585 **8 Claims**



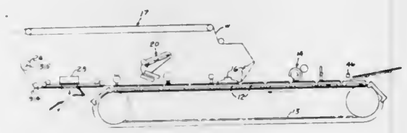
A wall structure and a block for forming same in which the block is generally rectangular and divided along its length into four substantially equal parts with a vertical hole centrally positioned through each of the four parts. Each of the four parts also has an alignment groove such that when two overlying blocks in adjacent courses of blocks overlie by any number of one-fourths of the length of a block, at least some of the alignment grooves and vertical holes will be vertically aligned. Expandable aligning rods are provided to be received within the aligned aligning grooves and to extend through several courses of blocks to assure vertical alignment of a plurality of blocks vertically disposed, and long or short expandable sleeves are inserted into the aligned vertical holes and filled with mortar to lock the blocks together and rigidify the wall structure.

3,780,485
STRUCTURAL PANEL
Robert P. Matson, P.O. Box 9986, Atlanta, Ga.
Filed Feb. 22, 1972, Ser. No. 227,883
Int. Cl. E04c *2/42, 5/04*
U.S. Cl. 52—665 **5 Claims**



A structural panel including an open core frame covered by skin elements to form the panel. The frame is made up of I-beams which are connected together with an interlock to form joints. One of the I-beams in each joint has a tongue which fits between the flanges of the other I-beam and is notched to receive a retaining rib of the interlock. A lip on the flange retains the interlock in place.

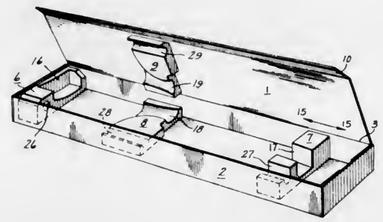
3,780,486
METHOD OF PACKAGING
Hans A. Jensen, Madison, and Melvin M. Layman, Waunakee, both of Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.
Division of Ser. No. 16,787, March 5, 1970, Pat. No. 3,645,065. This application July 29, 1971, Ser. No. 167,221
Int. Cl. B65b *57/00*; **B65c** *9/08*
U.S. Cl. 53—14 **3 Claims**



A method and apparatus for packaging products, such as assemblies of bacon slices and the like, which are advanced from a supply source in random order on backing boards having identifying indicia for controlling certain of the subsequent packaging operations and the application of the proper one of two differnt labels according to the indicia on the respective boards. The assemblies are advanced to the horizontal top run of a lower conveyor carrying successive package platters, past an electric eye which scans the identifying indicia and which actuates mechanism to position or set a series of cams carried on the back face of each of the packaging platters for controlling subsequent operations. An upper conveyor carrying package forming platters for mating with the platters on the lower conveyor lays down a covering web and forms vacuumized and sealed packages between pairs of mating platters. The cams control operation of mechanism for applying adhesive to the backing board prior to advance of the boards to the upper conveyor and also a label applying device beyond the upper conveyor which has a dual label supply magazine and an

associated adhesive activator and applicator for applying to the packages either of two labels according to the cam setting on the bottom of the platter on the lower conveyor which carries the package. The apparatus includes a platen identification printer and a code dater preceding and following the labeling device. Upon the application of the label, the packages are transferred to the bottom run of an outfeed conveyor having package suspending pins which carry the connected packages between a vertically reciprocating trimming die and a co-operating bottom anvil for severing the packages from the web so as to permit discharge of the separated packages from the apparatus with the waste resulting from the trimming operation being forced loose from the pins and wound on a reel at the end of the outfeed conveyor.

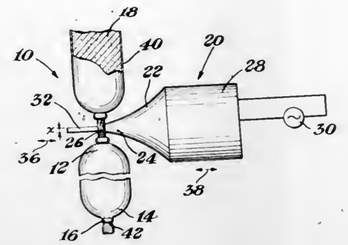
3,780,487
UNIVERSAL-TYPE PACKAGE FOR FIREARMS
Harold C. Munson, Little Falls, N.Y., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Apr. 3, 1972, Ser. No. 240,657
Int. Cl. B65b *5/04*
U.S. Cl. 53—35 **3 Claims**



This invention relates to a unique firearm package for the handling, storage, and transportation of firearms. The package contains supporting blocks of polystyrene foam which receive and support the gun assembly by sandwiching the stock and barrel therebetween. The universality of the package is achieved by contouring one or more of the supporting blocks to conform to a select portion of the gun which has a common shape and dimensional feature with like guns of a class. Thus, any one of a series of guns of a varying shape and size can be accommodated by the same package.

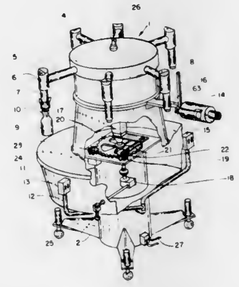
3,780,488
CLOSURE FOR FILM PACKAGES AND METHOD OF MAKING SAME
Arthur D. Herrell, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 878,462, Nov. 20, 1969, Pat. No. 3,667,594. This application Feb. 3, 1972, Ser. No. 223,324
Int. Cl. B65b *7/00, 51/22*
U.S. Cl. 53—38 **3 Claims**

A method of forming improved film packages of a type wherein one or more of the package ends or regions is gathered and tied closed by encircling metal bands, closure clips or other closure devices. The resultant closure of compressed film is made leak-proof by application of ultrasonic vibratory energy to the package in the vicinity of the gathered region of film. The invention in its modified embodiments further invisions elimination of present bands, closure clips or other closure devices by using instead a temporary film



gathering and holding means, and then applying ultrasonic energy to the gathered region of film to form a permanent closure not requiring a band or clip.

3,780,489
VACUUM PACKAGING APPARATUS
Thomas E. Waldrop, Greer, and Philip L. Reid, Duncan, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.
Filed June 1, 1972, Ser. No. 258,665
Int. Cl. B65b *31/06*
U.S. Cl. 53—112 B **6 Claims**

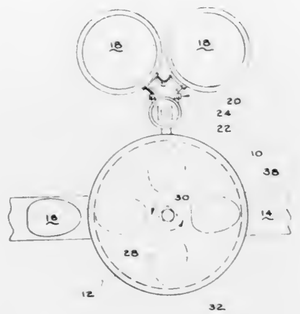


This invention is a method and apparatus for vaccum packaging articles in flexible pouches or bags wherein the apparatus has a plurality of vacuumizing nozzles and includes pouch sealing means. Each nozzle is vertically mounted at the end of a rotatable arm, the arms resembling spokes in a horizontal wheel. The neck of a filled bag is placed around the barrel of the nozzle, and the nozzle clamps the bag neck between the barrel and a plunger coaxially located in and below the opening to the barrel. The bag remains in this clamped position as it rotates around to a pouch sealing means which is synchronized to meet the bag and close, seal, and sever the bag from the nozzle. When severed, the bag may drop onto a conveyor belt.

3,780,490
SHAPED AND FORMED MEAT PRODUCTS MANUFACTURE

Warren R. Schack, Western Springs, and Francis Glenn Connick, Downers Grove, both of Ill., assignors to Swift & Company, Chicago, Ill.

Division of Ser. No. 141,492, May 10, 1971, Pat. No. 3,730,740. This application Feb. 5, 1973, Ser. No. 329,326
Int. Cl. B65b *63/02*
U.S. Cl. 53—122 **9 Claims**

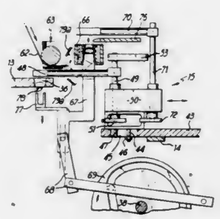


Method and apparatus for rapid and accurate filling of meat containers with solid meat pieces having the muscle fibers thereof arranged in substantial parallel alignment with the longest dimension of the meat container to produce an improved appearance and melding of the meat surfaces into a superior unitary product. The solid meat pieces are passed under a constant positive pressure through a side wall of a volumetric forming chamber along a horizontal plane and in the direction of the longitudinal axis thereof and thereafter the formed product is transferred intact to an identically shaped container.

3,780,491
APPARATUS FOR WRAPPING SMALL ARTICLES

William S. Robinson, Carvers Close, 112A Blagreaves Ln., Littleover, England

Filed Feb. 11, 1972, Ser. No. 225,466
Claims priority, application Great Britain, Feb. 19, 1971, 4,973/71
Int. Cl. B65b *49/06*
U.S. Cl. 53—226 **25 Claims**

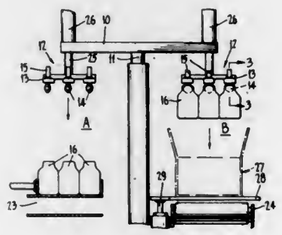


Apparatus for wrapping small articles, especially sweets, having wrapping units mounted one at each end of a reciprocating carrier which moves between two delivery stations in the form of apertured discs, each wrapping unit having means for picking up a sweet from its associated disc and means for drawing wrapping paper from a supply and locating the paper and the sweet in pre-wrapping positions preparatory to wrapping the paper around the sweet, the arrangement being such that in each limit position one wrapping unit is picking up a sweet from its associated disc while the other wrapping unit is wrapping a sweet previously picked up from its disc. There can be two or more wrapping units at each end of the carrier.

3,780,492
APPARATUS FOR PACKING BOTTLES, JARS OR LIKE INTO CASES

Henry Morgan Corderoy, Gladesville, New South Wales, Australia, assignor to ACI Operations Pty. Limited, Melbourne, Victoria, Australia

Filed Feb. 2, 1972, Ser. No. 222,794
Claims priority, application Australia, Feb. 5, 1971, 3950
Int. Cl. B65b *39/02*
U.S. Cl. 53—247 **3 Claims**



This invention relates to apparatus for packing bottles, jars or like open-ended containers into a case by transferring said bottles or the like from a conveyor delivering the articles to a pick-up station to a packing case situated on a discharge conveyor at a loading station.

The invention broadly comprises an arm pivotal through a full circle in two separate movements each of 180° whereby a bottle carrier head on each end of the arm may be stopped successively at said pick-up and loading stations to collect, transfer and deposit the bottles or the like carried on each head.

Each bottle carrier head comprises a frame which is additionally movable in a vertical plane whereby bottles etc. carried thereon may be raised or lowered and whereby inflatible inserts mounted on the underside of each head may be inserted into and/or withdrawn from the open neck portion of bottles, jars or like articles. The inserts are inflated by air pressure after insertion in the neck portions of the bottles or the like whereby the walls of the inserts grip firmly the inside neck portions thus providing a carrying member for the bottles or the like. When the bottles or the like are lowered into a packing case at the loading station the inserts on the carrier head at that station are evacuated to release the bottles whilst the inserts on the carrier head on the other end of the pivotal arm, i.e. at the pick-up station, are inflated to grip the bottles.

3,780,493
PACKAGE CAPPING APPARATUS

Leroy D. Baker, Morris, Ill., assignor to Diamond International Corporation, New York, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,866
Int. Cl. B65b *7/28*
U.S. Cl. 53—287 **18 Claims**

Apparatus for continuously forming produce packages for marketing comprising support means upon which containers filled with produce are individually fed and moved, conveyor means for moving each container to successive areas of operation to form a completed package, said areas including cap supply source, cap dispensing means, means for gripping and moving each cap in timed relationship along with the produce container, means for applying glue to lateral tab portions of each cap, means for folding the lateral portions of the cap against adjacent sides of the container associated therewith,

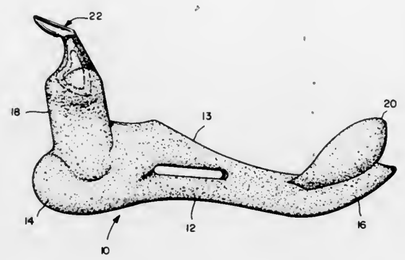


means for compressing the lateral portions of the cap firmly against the sides of the container, means for applying glue to leading and trailing tab portions of the cap, means for folding the leading and trailing tab portions of the cap against adjacent sides of the container and means for compressing the leading and trailing tab portions of the cap firmly against the sides of the containers.

3,780,494
MOLDED SADDLE TREE AND METALLIC SADDLE HORN

Erby Roy Nankivell, Jr., Athens, Tenn., assignor to Ralide, Inc., Athens, Tenn.

Continuation-in-part of Ser. No. 172,208, Aug. 16, 1971, Pat. No. 3,712,024, which is a continuation-in-part of Ser. No. 730,874, May 21, 1968, abandoned, and a continuation of Ser. No. 822,907, May 8, 1967, abandoned. This application Jan. 12, 1973, Ser. No. 323,333
Int. Cl. B68c *01/02*
U.S. Cl. 54—44 **3 Claims**

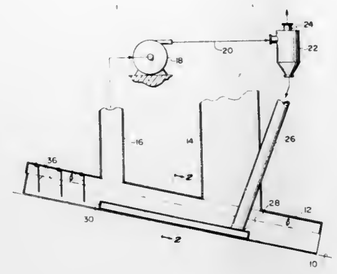


A molded saddle tree assemblage is provided by forming a seat, front and rear jockeys, a cantle, pommel and a ground seat by injection molding the tree assemblage in a mold cavity within which a metallic saddle horn is positioned for attachment to the molded tree as it is molded with the base or stem portion of the horn shaped for maximum embedded strength.

3,780,495
METHOD AND APPARATUS FOR CONTROLLING DUST

Charles E. Johanningmeier, Carlsbad, N. Mex., assignor to International Minerals & Chemical Corporation, Libertyville, Ill.

Filed May 1, 1972, Ser. No. 249,356
Int. Cl. B01d *45/12*
U.S. Cl. 55—1 **6 Claims**



A method and apparatus is disclosed for controlling dust in the handling of dusty particulate material by belt conveyor. Dust-laden air generated by the deposit of dusty material on a belt conveyor is gathered by a fan and hood system enveloping the locus where the material is dropped on the conveyor. The dust-laden air is separated into a dust fraction and an air fraction and the dust fraction is returned to the conveyor through a downwardly extending pipe which communicates with a tunnel-shaped shoe just above the conveyor belt. The shoe is located such that it is completely enclosed by the particulate material deposited on the conveyor.

3,780,496
SULFONATED POLYXYLENE OXIDE AS A PERMSELECTIVE MEMBRANE FOR GAS SEPARATIONS

William J. Ward, III, and Robert M. Salemme, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 31, 1972, Ser. No. 276,753
Int. Cl. B01d *53/22*
U.S. Cl. 55—16 **7 Claims**

Sulfonated polyxylylene oxide membranes are very effective for the separation of helium, hydrogen and oxygen from gas mixtures. The discovery that the permeability of the aforementioned gases varies with the counter ion form of the sulfonated polyxylylene oxide membrane used is also disclosed.

3,780,497
ADSORPTION OF FLUORINE AND FLUORINE COMPOUNDS ON ALUMINA

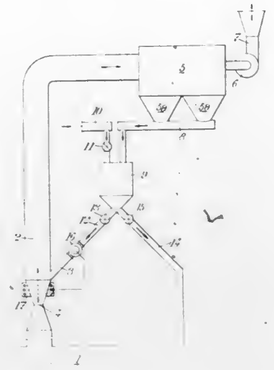
Wolf Muhlrad, Chatou, France, assignor to Air Industrie, Courbevoie, France

Filed Aug. 20, 1971, Ser. No. 173,475
Claims priority, application France, May 28, 1971, 71.19494
Int. Cl. B01d *53/06*
U.S. Cl. 55—71 **10 Claims**

The invention relates to a method for adsorbing gaseous fluorine on alumina particles.

The alumina particles are introduced at the base of an adsorption column through which the stream of gas to be

scrubbed flows, the column terminating in a separator where the particles charged with fluorine are recovered. The method



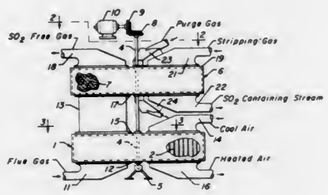
is particularly suitable for scrubbing of gas from electrolytic baths in an aluminium-producing plant.

3,780,498

SULFUR OXIDES REMOVAL SYSTEM

John G. Wenner, Lincolnshire, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 31, 1972, Ser. No. 239,893
Int. Cl. B01d *53/06*; **F23i** *15/02*
U.S. Cl. 55—73 **8 Claims**



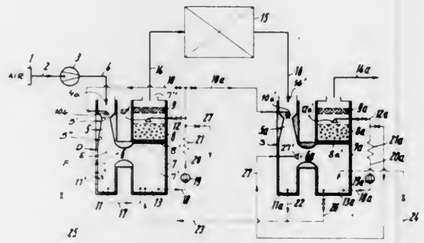
A continuous system is provided for effecting the removal of sulfur oxides from a waste gas stream through the utilization of continuously rotating an acceptor unit, that has a plurality of segmented zones containing an SO_2 adsorbent acceptor material, such that at least one segmental zone is always being rotated into the pathway of an SO_2 containing waste gas stream while at least one other contacted zone is simultaneously being passed through and into contact with a regeneration stream so as to undergo the removal of sulfur oxides. A special embodiment of the system utilizes two stages of rotating beds or units, whereby a first contacted rotating unit serves as a heat exchanger to recover useful heat from the waste gas stream and the second stage rotating unit serves to effect sulfur oxides removal.

3,780,499

SYSTEM FOR THE LIQUID-PHASE REMOVAL OF A COMPONENT FROM THE GAS STREAM ESPECIALLY THE ABSORPTION OF SULFUR TRIOXIDE IN SULFURIC ACID

Karl-Heinz Dorr, Mainz; Hugo Grimm, Frankfurt am Main, and Rolf Kola, Homberg, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 12, 1971, Ser. No. 188,127
Claims priority, application Germany, Oct. 15, 1970, P 20 50 580.0
Int. Cl. B01d *53/14*
U.S. Cl. 55—32 **11 Claims**



A process for the removal of gaseous components from a gas stream by liquid-phase absorption of the component in the treatment of the gas with a liquid, especially the absorption of sulfur trioxide from a gas stream obtained by the contact-catalysis oxidation of sulfur dioxide in the production of sulfuric acid, makes use of a uniflow vertical venturi absorber followed by a turbulencing device or horizontal venturi absorber and a counterflow column absorber or tower. The absorbing liquid is sulfuric acid.

3,780,500

REMOVAL OF SULFUR TRIOXIDE AND ACID MIST FROM GASEOUS STREAMS

David H. Clemens, Willow Grove, and Robert Kunin, Yardley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 164,932, July 21, 1971. This application Feb. 15, 1973, Ser. No. 332,836
Int. Cl. B01d *53/00*
U.S. Cl. 55—73 **16 Claims**

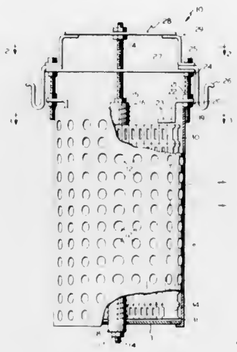
Sulfur trioxide $(SO)_3$ and/or sulfuric acid mist are removed from the gaseous effluents, particularly those from sulfuric acid plants, by contacting the gas containing such components with a crosslinked, macroreticular, polymeric ion exchange resin containing a vinylpyridine moiety. The resin is a macroreticular weak base resin which can be regenerated with an alkaline material.

3,780,501

GETTER PUMPS

Paolo Della Porta; Mario Zucchinelli, both of Milan, and Cesare Pisani, Turin, all of Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Continuation of Ser. No. 761,161, Sept. 20, 1968, abandoned. This application Nov. 11, 1971, Ser. No. 197,819
Claims priority, application Italy, Aug. 10, 1968, 20046 A/68
Int. Cl. B01d *53/04*
U.S. Cl. 55—208 **14 Claims**



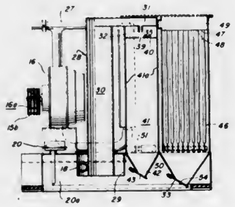
A getter pump comprising a circular pleated strip of metal having a non-vaporative getter material attached to its surface and a heater coaxially disposed within said circular strip.

3,780,502

COLLECTOR APPARATUS

George T. Dupre, Palatine, and Thomas M. DeMarco, Chicago, both of Ill., assignors to National Foundry Equipment Company, Inc., Palatine, Ill.

Continuation of Ser. No. 109,246, Jan. 25, 1971, abandoned. This application Jan. 12, 1973, Ser. No. 323,085
Int. Cl. B01d *50/00*
U.S. Cl. 55—337 **11 Claims**



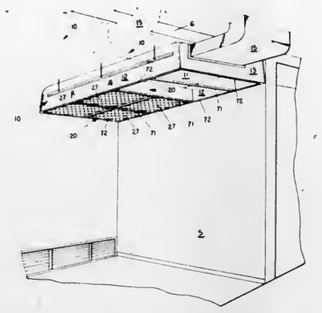
An industrial heavy-duty vacuum collector suitable for use with waste material hoppers, particularly dump hoppers. The collector includes a positive displacement vacuum blower apparatus, a material separator apparatus on a base mountable in airtight relation with the hoppers and an automatic control apparatus for the collector.

3,780,503

LOW PROFILE FILTER SYSTEM

Irwin M. Smith, Grand Rapids, Mich., assignor to Walter Kidde & Company, Inc., Grand Rapids, Mich.

Filed Dec. 27, 1971, Ser. No. 212,264
Int. Cl. B01d *31/00*
U.S. Cl. 55—418 **22 Claims**



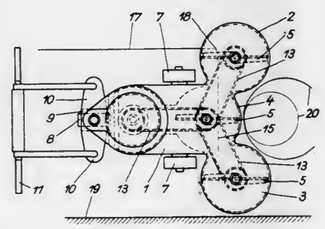
A plurality of large plenum chambers are provided for hanging from the ceiling of a room. Each supports four low profile filter units. Each filter unit includes a frame, circumscribing a filter which is mounted in the frame, and a sliding plate air flow control valve mounted above the frame. The air flow control valve has a flow control area which is generally coextensive with the area of the filter. A seal is effectuated between the frame and the plenum chamber by means of a sealing flange projecting upwardly from the strips supporting the filter units into a channel at the bottom edge of the frame. The channel is covered by a flexible membrane which is stretched over the top of the sealing flange. The plenums are suspended and joined together by a supension wire passing through matingly engaging joining brackets on adjacent plenum chambers.

3,780,504

LAWN MOWER

Fritz Haseloff, Behingstrasse 3, Kassel, Germany

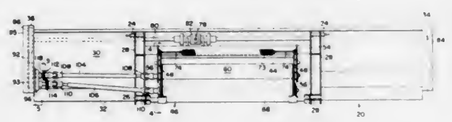
Filed Mar. 20, 1972, Ser. No. 236,147
Claims priority, application Germany, Mar. 29, 1971, P 21 15 101.9
Int. Cl. A01d *55/26*
U.S. Cl. 56—13.6 **5 Claims**



A rotary-type lawn mower having a housing and three cutter heads, each of which includes a blade mounted to rotate about a vertical axis, are mounted in triangular relation within the housing. One of the cutter heads is located along the longitudinal center line of the housing while the other cutter heads are located forwardly and laterally outward of the central cutter head. Wheels are mounted on opposite sides of the

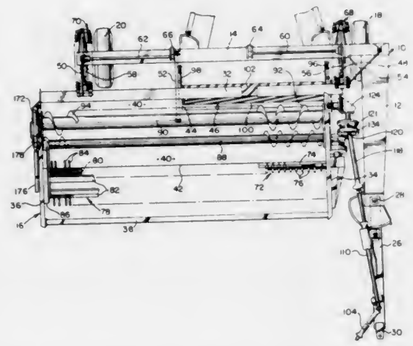
housing and the wheels are positioned so that the cutting zone of each forward cutter head is located a substantial distance ahead and laterally outward of the respective wheel. A third pivotable wheel is attached to the rear end of the housing to said in steering.

3,780,505
CROP CONDITIONER DRIVE
Donald Herbert Pettengill, and Merlyn Duane Bass, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.
Filed June 26, 1972, Ser. No. 266,298
Int. Cl. A01d *43/10*
U.S. Cl. 56—14.4 **7 Claims**



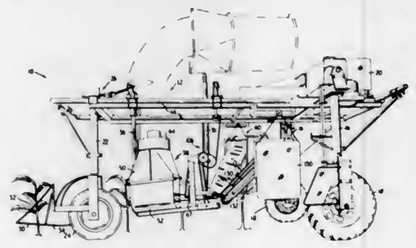
A self-propelled windrower has a forward transversely elongated auger-type platform with a central crop discharge opening, and a crop conditioning unit is mounted on the rear wall of the platform and conditions the crop as it moves through the discharge opening. The crop conditioner unit includes a pair of transverse conditioner rolls, which condition the crop as it passes between the rolls, the upper roll being journaled on a pair of vertically swingable arms to vary the clearance between the rolls. A header drive shaft extends forwardly from the propulsion unit and drives a transverse drive shaft, which is mounted on and spans the width of the rear wall of the platform. One end of the transverse drive shaft is connected by a belt drive to the input shaft of a gearbox mounted on the side of the platform, and the gearbox has two output shafts rotating in opposite directions and respectively connected to the upper and lower conditioner rolls by means of transverse drive shafts, which are provided with universal joints and are disposed adjacent to the rear wall of the platform.

3,780,506
HARVESTER DRIVE SYSTEM
Donald K. Tashiro, Hamilton, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.
Filed Aug. 1, 1972, Ser. No. 276,984
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.5 **9 Claims**



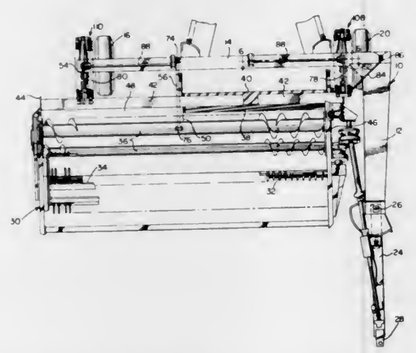
A pull-type windrower having a crop harvesting platform floatably mounted on a wheeled frame adapted to be coupled behind a tractor. The platform includes a cutter, a reel, a pair of crop-conveying augers, and a pair of crop conditioning rolls for cutting a standing crop, consolidating and conditioning the same, and depositing the crop onto the ground in a windrow. The windrower includes a power drive system for driving the above-mentioned components from the power takeoff (PTO) drive of the tractor.

3,780,507
TOBACCO HARVESTER
Leonard A. Chapman, London, Ontario, Canada, assignor to Eagle Machine Company Limited, London, Ontario, Canada
Filed July 6, 1970, Ser. No. 52,345
Claims priority, application Canada, Feb. 25, 1970, 075838
Int. Cl. A01d
U.S. Cl. 56—27.5 **25 Claims**



Improved apparatus for harvesting growing tobacco leaves from a standing tobacco crop is described. The harvester includes means for orienting the tobacco leaves and maintaining such orientation during and after defoliation until deposition of the leaves in container means provided on the harvester. Improved leaf defoliator elements are provided and devices for separating leaves in the picking swath from those above the picking swath are provided. The harvester is designed such as to reduce leaf damage to a minimum. The harvester also includes improved means for effecting directional control thereof relative to the tobacco plants to still further reduce damage to the tobacco leaves.

3,780,508
HARVESTER PLATFORM SUSPENSION
Donald K. Tashiro, Hamilton, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.
Filed Aug. 1, 1972, Ser. No. 277,030
Int. Cl. A01d *67/00*
U.S. Cl. 56—208 **10 Claims**



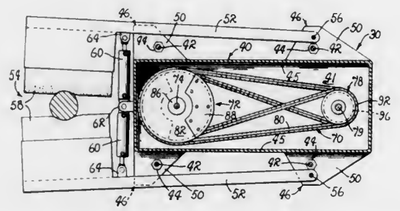
A windrower including a wheeled frame adapted to be towed behind a tractor and having a harvester platform on the frame for cutting a crop and depositing the crop unto the ground in a windrow. The platform is mounted on the frame by arm means and is moveable vertically by hydraulic lift cylinders. The platform is suspended by a pair of spring units and a pair of torsion bar assemblies which cooperate to floatably support the platform for movement relative to the frame as dictated by varying contour of the ground over which the windrower is moved.

3,780,509
ROTARY LAWN MOWER CUTTER BAR WITH BI-LEVEL CUTTER
Neill C. Woelffer, Racine, Wis., assignor to Jacobson Manufacturing Company, Racine, Wis.
Filed Mar. 2, 1973, Ser. No. 337,661
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **6 Claims**



A rotary lawn mower having an engine and a cutter bar rotated by the engine and having a grass catcher bag for collecting the grass. The cutter bar has a pair of cutters on each opposite end of the bar, and each cutter has a cutting edge on the rotationally leading side of the cutter. The cutters are both vertically and horizontally offset within their pairs, and the upper one of the cutters in each pair is rotationally in advance of the other one of the cutters so that the leading and upper cutter will cut the grass prior to being cut by the trailing and lower cutter, and thus each blade of grass is cut into two short lengths by the bilevel cutter. An air-fanning blade is also included in the cutter bar and creates a flow of air to convey the clippings from the cutter bar and through the outlet of the mower and into the collector bag.

3,780,510
SHAKER HEAD
Neil R. Tompkins, Yuba City, Calif., assignor to Halsey Harvester & Supply Co., Inc., Colusa, Calif.
Filed Jan. 31, 1972, Ser. No. 221,893
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 TS **4 Claims**



A mechanical shaker head particularly suited for use in dislodging tree-borne objects such as fruits and nuts. The shaker head is characterized by a frame pivotally coupled to the distal end of a transportable boom and having supported therein a carriage from which is extended an operable clamp for grasping a selected portion of a given tree, and force generating means characterized by a pair of counter-rotating masses driven at a common tangential velocity, about a common axis of rotation, and at different angular velocities for periodically applying radially directed shock to the carriage through 360° of stepped progression, so that a vibratory motion is transmitted to components of the given tree, whereby the tree-borne objects are dislodged in response to the vibratory motion imparted to the shaker head by the force generating means.

3,780,511
TRASH SEPARATOR FOR CROP PICK-UP HARVESTER
John M. Avis, Spring Lake, Mich., assignor to Koehring Company, Milwaukee, Wis.
Division of Ser. No. 172,623, Aug. 18, 1971, Pat. No. 3,712,039. This application Sept. 15, 1972, Ser. No. 289,671
Int. Cl. A01d *89/00*
U.S. Cl. 56—364 **4 Claims**



A trash separator for a mobile harvester for picking up fruit such as apples, oranges, nuts or vegetables for example, lying on the ground, which separator acts to separate trash from the crop and which additionally acts to clean the crop before discharging it into storage bins or the like. The separator includes pairs of oppositely rotating rollers which pull the foreign material downwardly through the nip formed between the pairs of rollers. The rollers are driven by a fluid motor through a flexible chain and the separating unit in general is inclined downwardly to cause the crop material to move thereover by gravity. Flexible means are provided in the form of curtains to impede the passage of the crop and trash over the rollers thereby insuring good separation. The rearward porton of the rollers are formed as brushes so as to insure cleaniness of the crop before discharge from the separator.

3,780,512
PROCESS AND DEVICE FOR PRODUCING FANCY PLY YARNS WITH HIGH EFFICIENCY UPTWISTERS
Michele Ratti, via Fascara 5, Luino, Italy
Filed Jan. 26, 1972, Ser. No. 220,820
Claims priority, application Italy, Feb. 10, 1971, 20404/71
Int. Cl. D02g *3/34*
U.S. Cl. 57—16 **5 Claims**



Fancy yarns are produced by twisting a core yarn in one direction, and then winding an effect yarn in the opposite

direction about the core yarn while simultaneously varying the velocity of the core yarn so as to group the turns of effect yarn on the core yarn. A plurality of oppositely wound effect yarns can be applied. The direction of twist of each yarn remains unchanged throughout.

3,780,513

METHOD AND APPARATUS FOR DRIVING OPEN-END SPINNING FRAME

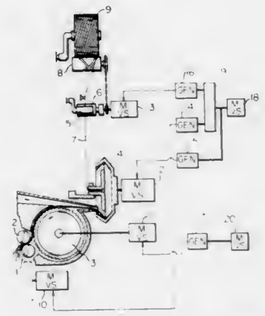
Kazuo Watanabe, Bisai; Yastami Kito, Nagoya; Choji Nozaki, Nagoya; Kiichi Kono, Nagoya; Kanemitsu Tsuzuki, Kariya, and Kozo Motobayashi, Aichi-ken, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken and Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Apr. 5, 1971, Ser. No. 131,086

Claims priority, application Japan, Apr. 8, 1970, 45/29431; Apr. 8, 1970, 45/29432

Int. Cl. D01h *1/12, 1/34, 15/00*

U.S. Cl. 57—93 **15 Claims**



Method and apparatus for driving open-end spinning frame by a first electric source which actuates the spinning frame at a predetermined higher speed for carrying out the normal spinning operation and by a second electric source which actuates a spinning unit of yarn break at a predetermined lower speed during the yarn piecing operation. These electric sources are variable frequency electric sources for driving at least each individual variable speed motor which is directly connected to a spinning rotor of each spinning unit at predetermined variable speed.

3,780,514

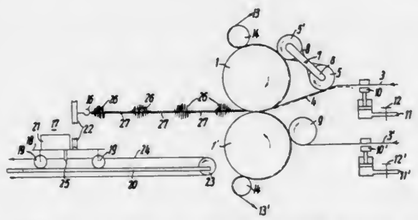
METHOD FOR THE MANUFACTURE OF WREATHS, POMPONS, ROSETTES, AND THE LIKE

Gerd Rodermund, Inder Breite 24, and Helmut Kappus, both of Lahr, Germany, assignors to said Rodermund, by said Kappus

Filed Feb. 9, 1968, Ser. No. 704,462

Int. Cl. D04d *1/00, 7/00*

U.S. Cl. 57—156 **7 Claims**



A method and apparatus for manufacturing wreaths, pompons, rosettes and the like by utilizing a pair of rotating cutting and counter rolls each of which is provided with a peripheral groove at the passage of twistable wires for at least one strip which runs between the rolls and a take-off and twisting device. The strip is fed at a velocity which is substantially greater than the take-off speed of the twisted wires.

3,780,515

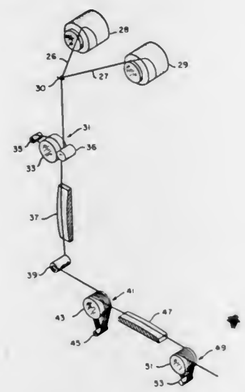
TEXTURED CORE YARNS

Graham Thomas Waters, Caerleon, Wales, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 125,683, March 18, 1972, Pat. No. 3,691,750, which is a continuation-in-part of Ser. No. 805,598, March 10, 1969, Pat. No. 3,577,873. This application June 8, 1972, Ser. No. 260,934

Int. Cl. D02g *3/38, 3/04, 3/28*

U.S. Cl. 57—157 R **5 Claims**



False twist textured yarns are described which are composed of a plurality of continuous filaments forming a false twist textured core portion and a plurality of wrapper false twist textured continuous filaments, said wrapper filaments being of a higher bulk than the core filaments, said filaments periodically wrapping around the core filaments and forming reversing helices at intervals along the yarn.

3,780,516

PROCESS FOR FORMING YARN OF IMPROVED PROPERTIES

William C. Kimbrell, Blacksburg, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 23, 1972, Ser. No. 282,934

Int. Cl. D02j *1/22*

U.S. Cl. 57—157 TS **3 Claims**



In a process for forming yarn wherein a plurality of yarn ends pass from their respective yarn packages, are each wrapped about a common feed roll, pass from the feed roll through a heating zone, pass from the heating zone to a common heated draw roll, are wrapped about the heated draw roll, and pass from the heated draw roll through apparatus for bringing the yarn ends into contact with one another in a preselected arrangement to form a resultant yarn, said resultant yarn is caused to have improved properties by wrapping a selected one of the yarn ends about the heated draw roll a number of turns, said number of turns being greater than the common number of turns the other yarn ends are wrapped about said draw roll.

3,780,517

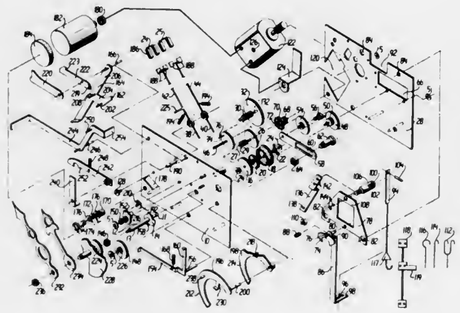
CHIME BATTERY CLOCK WITH ADJUSTING WHEEL FOR ADJUSTING THE MOVEMENT THEREOF

Mamut Ajrulahi, 7308 Parkwood Ct., Falls Church, Va.

Filed Nov. 7, 1972, Ser. No. 304,478

Int. Cl. G04b *13/00*

U.S. Cl. 58—7 **9 Claims**



A chime battery clock having an adjustable movement which can alter a basic movement to another desired movement, including an adjusting gear secured to an adjusting base which is slidably and rotatably securd to a front plate housing the movement. A conventional third gear engages a pinion of the adjusting gear while the adjusting gear engages a pinion of an escape wheel. Replacement of either the escape wheel pinion, the adjusting gear pinion, or the adjusting gear with another pinion or gear, respectively, of a different size in diameter but having the same sized gear teeth so as to insure proper intermeshing of the gear, and adjustment of the adjusting base, will alter the movement and facilitate achievement of the movement desired. The movement may serve as the basis of a clock from which other movements may be obtained, or by substitution of the adjusting gear and adjusting base for the fourth gear of an existing clock movement, such movement may be converted to other desired movements. Similarly, in lieu of utilizing a conventional third gear, as well as utilizing the adjusting gear in place of the conventional fourth gear, the adjusting gear may be employed in place of the conventional third gear, while a conventional fourth gear is used.

In addition, the clock movement has only a single chime gear, and when converting non-chime clocks to chime clocks, only the single chime gear need be incorporated within the movement.

Furthermore, although the clock movement of the present invention is disclosed as being battery-powered, other sources of power may be utilized, such as, for example, an electric motor, a hand crank key mechanism, a hand-wound chain mechanism, or the like.

3,780,518

MOTION CONVERTER

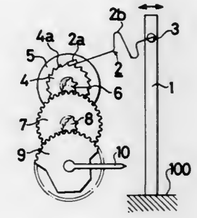
Yoshiaki Kato, 20-46, 4-chome, Higiyama-cho, Higashimuraya-shi, Tokyo, and Hiroshi Mabuchi, 873, Shimotomi Takeno, Tokorozawa-shi, both of Japan

Filed July 14, 1971, Ser. No. 162,360

Claims priority, application Japan, May 26, 1971, 46-36081

Int. Cl. G04c *3/00*

U.S. Cl. 58—23 D **5 Claims**



This invention relates to a motion converter for converting the oscillating movement of a mechanical vibrator.

The motion converter according to this invention is characterized by that the feed pawl is designed to have a substantial resiliency in its oscillating direction and the ratchet wheel has a substantial moment of inertia, said pawl resiliency and said ratchet inertia serving in combination for converting otherwise stepwise intermittent movement of said ratchet wheel into a substantially continuous and constant rotation thereof.

3,780,519

TIMEPIECE DIAL WITH ELECTRICALLY CONDUCTING FOOT

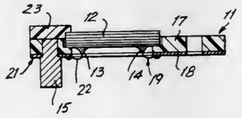
Ikuo Tokunaga, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikasha, Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,501

Claims priority, application Japan, Dec. 29, 1970, 45/141705

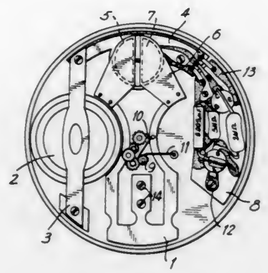
Int. Cl. G04c *3/00*; **G04b** *19/06*

U.S. Cl. 58—23 C **6 Claims**



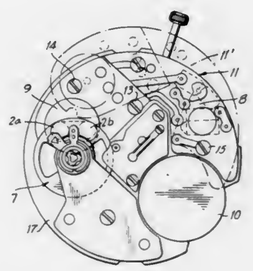
In a timepiece driven by a cell which is charged by a solar battery,connection is made between the solar battery which is mounted in the dial and the cell which is interior to the timepiece by means of at least one electrically conducting foot which is part of the dial. The electrically conducting foot may be so constructed that it serves to connect one terminal of the solar battery to the cell or both terminals of the solar battery to the cell. A similar foot may be used for connecting the cell to other electrical components of said timepiece.

3,780,520
WATCH HAVING TUNING FORK TIME STANDARD
Yuki Tsuruishi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikasha, Tokyo, Japan
Filed Feb. 2, 1972, Ser. No. 222,956
Claims priority, application Japan, Feb. 12, 1971, 46/5577
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 TF **3 Claims**



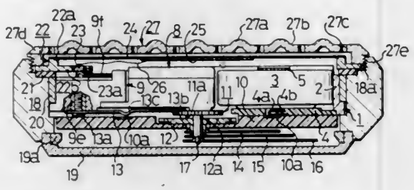
A watch having a tuning fork vibrating at an audio frequency as a time standard is provided with means for converting the vibratory movement of the tuning fork into the rotary movement of a gear train and a driving circuit for sustaining the vibratory movement of the tuning fork. The driving circuit includes a battery, a two-terminal coil cooperating with a magnetic circuit on said tuning fork, a PNP transistor and an NPN transistor, the two-terminal coil being connected between the collector electrodes of said transistors.

3,780,521
ELECTRONIC TIMEPIECE
Masahiro Kurita, Suwa, and Tomio Ota, Okaya, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Dec. 6, 1971, Ser. No. 206,227
Claims priority, application Japan, Dec. 4, 1970, 45/120242; Dec. 28, 1970, 45/132714
Int. Cl. G04c *3/04*; **G04b** *17/00*
U.S. Cl. 58—28 A **1 Claim**



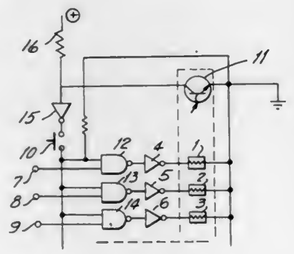
An electronic timepiece having a magnetic circuit including permanent magnets mounted on an oscillator, said magnetic circuit including an air gap. A driving and controlling device including at least one coil is pivotably mounted in said timepiece for displacement in a plane extending substantially parallel to the oscillating direction of said oscillator between an operative position at which said coil is positioned in said air gap and an inoperative position at which said driving and controlling device is positioned out of overlapping relation with said oscillator. The oscillator may take the form of a balance wheel assembly formed of a pair of spaced balance wheels mounted in spaced relation on a common arbor, one of said balance wheels being formed of a magnetic material, the other of said balance wheels being formed of a non-magnetic material.

3,780,522
ALARM TIMEPIECE
Makoto Yoshida, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan
Filed May 22, 1972, Ser. No. 255,819
Claims priority, application Japan, June 5, 1971, 46/47337
Int. Cl. G04c *21/34*; **G04b** *23/12*
U.S. Cl. 58—38 **4 Claims**



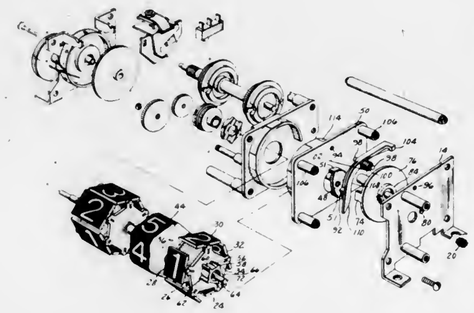
A small alarm timepiece having a timepiece movement, an electrically operating buzzer as an acoustic alarm signal delivery means, a battery detachably mounted on the timepiece movement for energizing said buzzer for its operation, and an alarm switch for on-off control of the operation of the buzzer. This alarm switch is operatively connected with the movement so as to be closed at a preset time point and to remain closed for a certain predetermined operation period. The drive circuit for the buzzer is designed as a free-running oscillator having an oscillator transistor. In addition to the alarm switch, there is provided a switching transistor operatively connected with the first mentioned transistor. There is provided a CR-time limiting circuit operatively connected with the switching transistor for control thereof. In this way, the operating period of the buzzer is limited to only a small fraction of the closure period of the alarm switch which is adapted for being mechanically closed at the preset time by the action of an alarm control mechanism fitted to the timepiece movement. In this way, the power consumption of the electronic alarm can be minimized.

3,780,523
WATCHES HAVING LIQUID CRYSTAL DISPLAYS
Okito Naito, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Feb. 2, 1972, Ser. No. 222,742
Claims priority, application Japan, Feb. 10, 1971, 46/5217
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R **3 Claims**



A watch having a liquid crystal display for the digital display of time in response to timing signals produced by divider and driving circuits, which in turn produce said timing signals in response to the high frequency time standard signal of a quartz crystal oscillator. A switch means is coupled to said driving circuits for rendering said liquid crystal display inoperative without disturbing said oscillator and divider circuit.

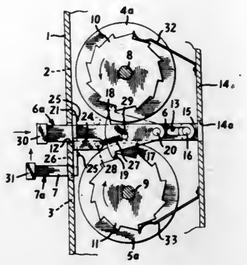
3,780,524
DIGITAL DISPLAY INDICATOR
Robert L. Boyles, Wayland, Mass., assignor to General Electric Company, Bridgeport, Conn.
Filed Mar. 8, 1973, Ser. No. 339,419
Int. Cl. G04b *19/02*
U.S. Cl. 58—125 C **9 Claims**



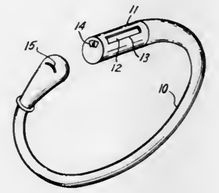
A digital display indicator wherein a plurality of numerals are carried on a rotatable drum 38 so that the numerals may be successively brought into position behind a viewing window 52. An eccentrically mounted drive finger 74 accurately indexes a ratchet wheel of the rotatable drum from one position to a next succeeding position while the finger holds a spring loaded detent lever away from the ratchet wheel.

3,780,525
SETTING MEANS FOR INDICATING APPARATUS
Kiyoshi Kitai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 28, 1973, Ser. No. 345,736
Claims priority, application Japan, Mar. 28, 1972, 47/31076
Int. Cl. G04b
U.S. Cl. 58—125 C **12 Claims**

Setting means for digital indicating apparatus, for example a digital clock having a plurality of coaxial indicating display wheels and a like plurality of coaxial reference display wheels, comprises a rachet wheel fixed on each of said display wheels and a single reciprocable setting member located between each of the indicating display wheels and the corresponding reference display wheel. A pawl pivotally mounted on the setting member is movable between a first position in which it is engageable with the rachet wheel of the respective indicating display wheel and a second position in which it is engageable with the rachet wheel of the corresponding reference display wheel. The pawl is shifted from one position to the other by manually operable changeover means so that the same setting member is operable to rotate either the indicating display wheel or the corresponding reference display wheel to the desired setting.



3,780,526
TIMEPIECE INCLUDING A COLOR CYLINDER AND ANOTHER TIME INDICATOR DISPLAYED ON A DIFFERENT PLANE
Marilyn J. Maue, 20 Melwex St., Belleville, N.J.
Continuation-in-part of Ser. No. 696,940, Jan. 10, 1968, Pat. No. 3,616,643. This application July 30, 1971, Ser. No. 167,778
Int. Cl. G04b *19/00*
U.S. Cl. 58—126 R **9 Claims**

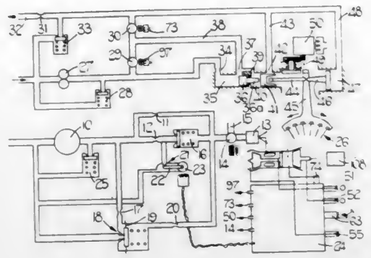


A timepiece is provided, particularly at the free end of a bracelet body, by having the bracelet body terminate in a cylindrical color carrying member which, in turn, is adjacent a numerical or other display indicator at its free end for viewing in a direction which is generally axial of, or angled to the axis of the cylindrical color carrying member.

3,780,527
CONTROL APPARATUS FOR A GAS TURBINE ENGINE
Geoffrey Arthur Lewis, Olton, Solihull, Warwickshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Apr. 21, 1971, Ser. No. 136,150
Int. Cl. F02c *3/10, 9/04*
U.S. Cl. 60—39.16 R **21 Claims**

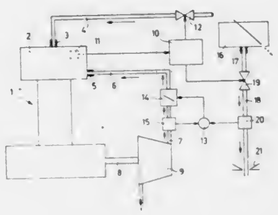
A control apparatus for a gas turbine having a separate gas generator and power turbine and nozzles for controlling the passage of gas to the power turbine, includes valves responsive

to electrical signals to derive servo pressures to actuate the nozzles, the said electrical signals being generated in response



to engine operating conditions and also providing an input to an electric actuator which can modify the nozzle position.

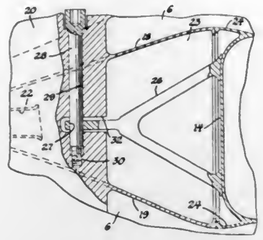
3,780,528
THERMODYNAMIC RECIPROCATING MACHINE WITH CONTROLLED FUEL/AIR SUPPLY
Klaus Brandenburg, Kirchen-Wehbach, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 16, 1972, Ser. No. 226,913
Claims priority, application Netherlands, Mar. 4, 1971, 7102862
Int. Cl. F02g *3/02*
U.S. Cl. 60—39.27 **5 Claims**



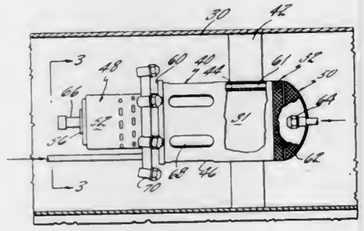
A thermodynamic reciprocating engine in combination with a carburetor having inlets and control apparatus responsive to air and fuel flow for providing optimum operation.

3,780,529
COMBUSTION APPARATUS
Douglas Johnson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 169,307, Aug. 5, 1971, Pat. No. 3,724,207.
This application Nov. 21, 1972, Ser. No. 308,524
Int. Cl. F02c *7/20*
U.S. Cl. 60—39.36 **3 Claims**

A combustion apparatus having outer and inner casing walls and an annular combustion liner mounted between them. The combustion liner is supported at its upstream end by brackets extending from the front wall of the liner having a radial slip fit connection with struts connecting the outer and inner casings. An annular diffuser fitting against the front end of the combustion liner and extending from and between the struts supplies air to the front wall of the combustion liner. Fuel is introduced through combined fuel and air inlet structures spaced around the front wall of the liner effective to direct the entering air and fuel generally radially from these entrances.



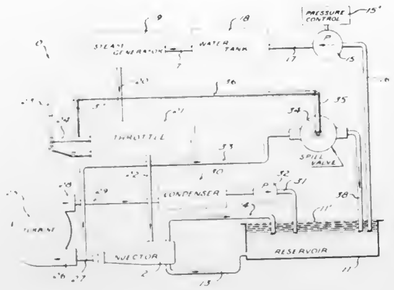
3,780,530
COMBUSTION CHAMBER
Philip G. Dooley, Bolton, Conn., and Sotiris Lambiris, Lawrenceville, N.J., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 23, 1969, Ser. No. 868,677
Int. Cl. F02k *3/04*; **F23r** *1/04*
U.S. Cl. 60—39.69 **14 Claims**



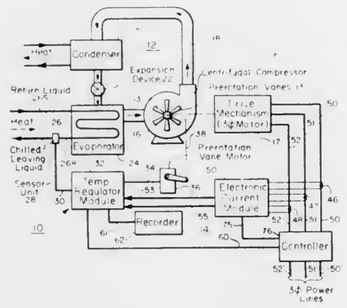
A combustion chamber or duct heater which provides an enclosed volume where partial combustion occurs and a transverse momentum is imparted to the burning gases to obtain mixing and burning with a secondary fuel supply.

3,780,531
HYDROTURBINE
William G. Blair, Bolusia, Fla., assignor to Blair Engineering, Inc., Ormond Beach, Fla.
Filed Apr. 23, 1971, Ser. No. 136,721
Int. Cl. F01k *25/04*, *13/00*
U.S. Cl. 60—40 **2 Claims**

There is disclosed herein a hydroturbine apparatus in which a rotary engine or turbine having radially disposed blades is driven by an injector of the type which entrains water in pressurized steam traveling at high velocity and projects the same against the blades.

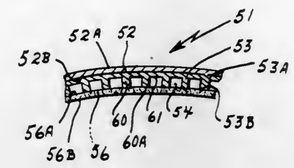


3,780,532
TEMPERATURE CONTROL SYSTEM FOR CENTRIFUGAL LIQUID CHILLING MACHINES
Dean K. Norbeck, and Francis A. Kimpel, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 17, 1971, Ser. No. 181,507
Int. Cl. F25b *1/00*
U.S. Cl. 62—201 **9 Claims**



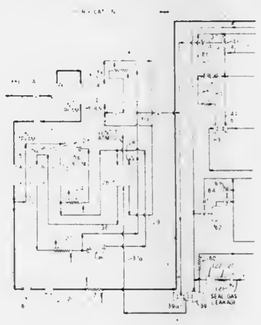
An improved temperature control system for centrifugal compressors in refrigeration equipment for elimination of "droop" associated with proportional position control is disclosed using a two thermistor temperature sensing unit for sensing both the temperature and the rate and direction of change of the temperature of the chilled liquid from the evaporator and for producing a change in the pre-rotation vane setting. The rate and direction of change of temperature is obtained by comparing a fast and a slow temperature signal in a summing amplifier to control a pulse width modulator that modulates a sawtooth generator to control a vane motor through appropriate logic. The fast temperature signal is also compared with a unit cycling thermostat reference signal in a Schmitt Trigger to de-energize the compressor when that temperature signal reaches the reference level. The fast temperature signal is also used to drive a recorder.

3,780,533
COMPOSITE WALL FOR A REGENERATIVELY COOLED THRUST CHAMBER OF A LIQUID PROPELLANT ROCKET ENGINE
David H. Huang, Woodland Hills, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed May 17, 1972, Ser. No. 254,139
Int. Cl. F02k *1/02*
U.S. Cl. 60—260 **4 Claims**



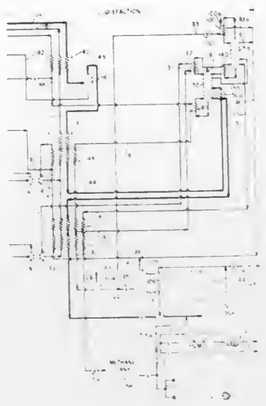
A composite wall, and a method of manufacturing it, for a regeneratively cooled thrust chamber of a liquid propellant rocket engine. The composite wall of the thrust chamber comprises: an outer wall component of high strength lightweight alloy; a middle wall component of nickel abutting with and joined to the outer wall component, with the middle wall having a plurality of lands thereon and a plurality of grooves therein; and, an inner wall component of material of high thermal conductivity and high temperature strength and ductility, with the inner wall component abutting with and joined to the lands on the middle wall component, thereby forming liquid propellant coolant passages of the channel type. The outer wall component, the middle wall component, and the inner wall component are integrated to form a unitary structure. The external surface of the outer wall component functions as the external structural shell surface of the thrust chamber, and the internal surface of the inner wall component functions as the internal combustion gas side surface of the thrust chamber. The inner wall component may be conveniently, easily, and economically replaced after its normal operational life.

3,780,534
LIQUEFACTION OF NATURAL GAS WITH PRODUCT USED AS ABSORBER PURGE
Antony Lofredo, Springfield, and Domenick R. Biava, Somerset, both of N.J., assignors to Airco, Inc., New York, N.Y.
Filed July 22, 1969, Ser. No. 843,427
Int. Cl. F25j *1/02*, *3/02*
U.S. Cl. 62—28 **13 Claims**



This invention relates to a process for purifying and liquefying a natural gas stream comprising the steps of passing said

stream through absorption units to remove impurities, compressing said stream, liquefying said stream by heat exchange with a low temperature nitrogen refrigeration cycle, stripping



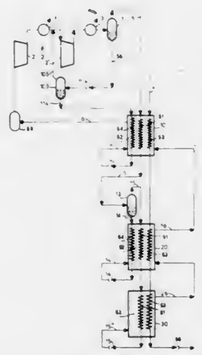
the nitrogen from said liquefied stream, utilizing said nitrogen in said refrigeration cycle, storing a portion of said liquefied stream, and condensing the boil-off from said storage with low temperature nitrogen from said cycle.

3,780,535

METHOD OF COOLING A GASEOUS MIXTURE AND INSTALLATION THEREFOR

Bernard Darredeau, Paris, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Dec. 20, 1971, Ser. No. 209,810
Claims priority, application France, Dec. 21, 1970, 7046084
Int. Cl. F25j *1/00, 3/06, 5/00*
U.S. Cl. 62—40 **4 Claims**



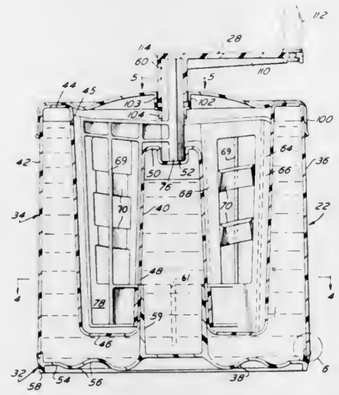
A method of and apparatus for cooling and condensing a gaseous mixture by means of at least one frigorific cycle utilizing a cycle mixture which may include at least one constituent of said gaseous mixture, the cycle mixture being cooled and subjected to fractional condensation under high pressure; at least the first condensed fraction obtained during this fractional condensation is expanded to a low pressure lower than said high pressure; at least said expanded portion is vaporized and re-heated at said low pressure, in heat exchange relation with at least the cycle mixture in course of fractional condensation; at least the first heated portion is recompressed from said low pressure to said high pressure in at least one compression stage so as to re-constitute the cycle mixture, at least in part, under the high pressure, the first condensed fraction being obtained immediately after the last stage of compression; the said method further comprises the steps of expanding the portion of the first condensed fraction to the low pressure in at least one intermediate stage, consisting of expanding said portion from a pressure at most equal to the high pressure to a pressure intermediate between the said high and low pressures, a gaseous fraction from the said portion expanded to the intermediate pressure being separated out and re-compressed from the intermediate pressure to the high pressure in order to re-constitute a further portion of the cycle mixture under high pressure. The invention is especially applicable to the liquefaction of natural gas.

3,780,536

ICE CREAM MAKER

Aaron Harry Fishman, Hewlitt Harbor, and George Parmett, Seaford, both of N.Y., assignors to APL Corporation, Great Neck, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,714
Int. Cl. F25c *7/06*
U.S. Cl. 62—342 **4 Claims**



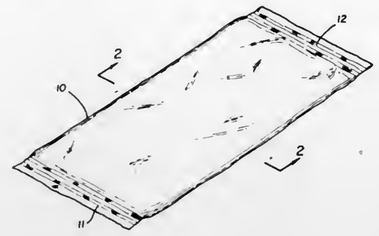
Apparatus is disclosed for making a frozen dessert of the ice cream type. The apparatus includes a cylindrical vessel having an outer generally cylindrical wall, a horizontally extending bottom wall which is integral with said cylindrical wall and a vertically extending post which extends coaxially with the cylindrical wall and extends upwardly from the bottom wall. The vessel is open ended at its upper end for receiving a liquid mass from which a frozen dessert can be made. The wall and the post are hollow and have therein a chamber. The chamber has a refrigerant therein for freezing the liquid mass. A scraping member is provided for removing the mass from the walls of the vessel as the mass is frozen by the loss of temperature through the shell of the walls and the post.

3,780,537

DEVICE FOR USE AS A HOT AND COLD COMPRESS

Jacob H. Spencer, Woodbury, N.Y., assignor to Nortech Laboratories, Inc., North Bellmore, L. I., N.Y.

Filed July 20, 1971, Ser. No. 164,368
Int. Cl. F25d *3/08*
U.S. Cl. 62—530 **6 Claims**



A device for use as a hot and cold compress comprises a tough flexible envelope of plastic material within which is a gel which maintains a gel-like consistency over a wide temperature range.

ERRATUM

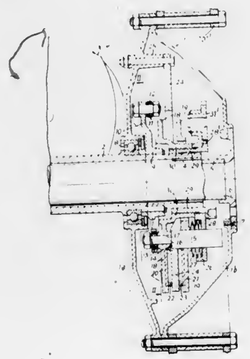
For Class 62—201 see:
Patent No. 3,780,532

3,780,538

CABLE REELING DRUMS

John Brien Mann, Calverton, England, assignor to Metropolitan Tool and Products Limited, Nottingham, England

Filed Sept. 14, 1972, Ser. No. 288,981
Claims priority, application Great Britain, Sept. 17, 1971, 43567/71
Int. Cl. F16l *7/02*
U.S. Cl. 64—30 C **9 Claims**



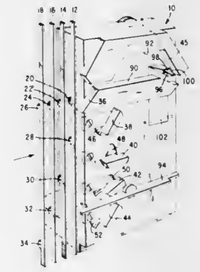
A cable reeling drum for reeling in the cable of a movable machine, such as an electrically driven crane, is driven by a motor through a slipping clutch which is designed to operate continuously over long periods without large scale variation of the transmitted torque. To this end the slipping clutch includes a pair of floating clutch plates, which are axially pressed against a clutch disc member. The clutch plates are driven by means of a spider secured to the clutch input shaft. The spider is connected to one or both clutch plates by means of two or more links which are connected to the spider and the clutch plate so as to permit free axial movement of the clutch plate. Ball joint connections between the links and the spider and clutch plate are provided for that purpose. The clutch disc is preferably channel-shaped to provide improved cooling and the clutch plates and disc are enclosed within a casing forming the output member of the clutch, the casing protecting these parts from dirt and water.

3,780,539

NEEDLE ACTUATING CAMMING FOR CIRCULAR KNITTING MACHINES

Lester Mishcon, Miami Beach, Fla., assignor to The Singer Company, New York, N.Y.

Continuation-in-part of Ser. No. 248,518, April 28, 1972. This application May 16, 1972, Ser. No. 253,720
Int. Cl. D04b *15/32*
U.S. Cl. 66—42 **7 Claims**



In a circular knitting machine wherein multi-butt needles are controlled by camming defining a plurality of raceways, the height of cam sections and the length of the needles is shortened by the provision of preliminary raise cams which are extended to also serve as guard cams and prevent the accidental descent of needles between vertical arrays of rotatably adjustable cams. Each of the adjustable cams may be positively locked in a position to permit needles to welt or in positions to raise needles to a knit or a tuck level from which they may be lowered by a main stitch cam engageable with the same needle butts as the preliminary raise and guard cams. Tilting of the needles in a vertical plane perpendicular to the camming is prevented by a needle engageable member at each feed.

3,780,540

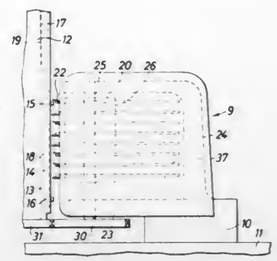
PATTERNING DEVICES FOR KNITTING MACHINES

John Eric Maidens, Ansley Village, near Nuneaton; Kenneth Alison Hartley, Coventry, and Frederick Henry Carrotte, Kirby Muxloe, all of England, assignors to Courtaulds Limited, London, England

Filed July 7, 1971, Ser. No. 160,442
Claims priority, application Great Britain, July 17, 1970, 34731/70
Int. Cl. D04b *15/74, 15/78*
U.S. Cl. 66—50 B **7 Claims**

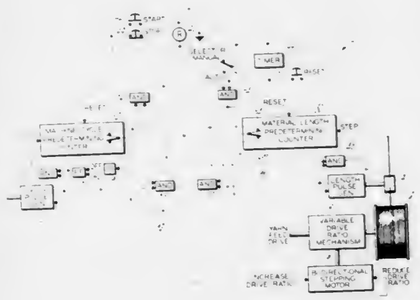
A patterning device for a circular knitting machine, comprising a rotatable support carrying selector members which co-operate with butts of knitting elements to select needles for knitting or other operations, each selector member being

movable on the support between two positions providing for different modes of interaction with said butts. Prior to interaction with the butts, the selector members are positioned by



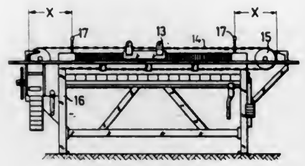
selective interaction with one or more electromagnetically controlled cam surfaces which deflect the selector members from one position to the other or not, as desired.

3,780,541
MATERIAL FEED RATE CONTROL SYSTEM
Jerry L. Haynes, Elizabethtown, N.C., assignor to Veeder Industries Inc., Hartford, Conn.
Filed Sept. 5, 1972, Ser. No. 286,117
Int. Cl. D04b *3/06*
U.S. Cl. 66—125 R **12 Claims**



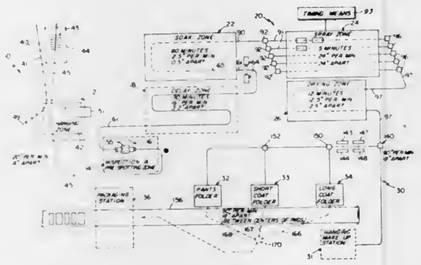
A knitting machine yarn pay off control system having a first presettable counter indexed in a subtraction direction by a first pulse generator to count the amount of yarn paid off from a driven yarn spool, a second presettable counter indexed in a subtraction direction by a second pulse generator to count the number of cycles of operation of the knitting machine and a bi-directional stepping motor automatically connected to be indexed by a pulse generator—after one of the counters reaches zero and before the other counter reaches zero—for correcting for any difference between the actual pay off rate and a desired pay off rate pre-established by the original settings of the counters.

3,780,542
NEEDLE BREAKAGE SAFETY DEVICE
Hans Schieber, and Erich Krause, both of Bopfingen, Germany, assignors to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Westhausen, Germany
Filed Nov. 10, 1972, Ser. No. 305,398
Claims priority, application Germany, Feb. 10, 1972, P 22 06 363.4
Int. Cl. D04b *35/10*
U.S. Cl. 66—165 **8 Claims**



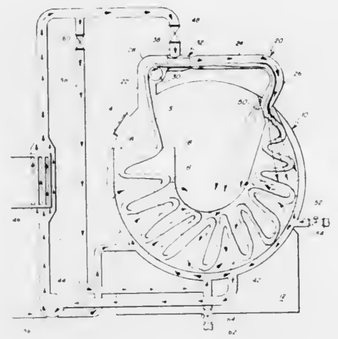
A device for disengaging the sliding carriage of a knitting machine is response to a needle break. The high amplitude sound caused by a break is sensed by a microphone attached to the machine frame, and the amplified output of the microphone toggles a threshold trigger whose amplified output energizes an electromagnet. The latter releases a spring biased lever which in turn moves a shift rod to disengage the carriage drive. Means are also provided for deactivating the safety device when the carriage leaves the needle region, thereby preventing triggering from the noise caused by racking or carriage reversal.

3,780,543
LAUNDERING SYSTEM WITH SOAK OF GARMENTS ON HANGERS
Howard Rosenfeld, New York, N.Y., and Justin J. Wetzler, Evanston, Ill., assignors to A-T-O Inc., Willoughby, Ohio and American Linen Supply Co., Minneapolis, Minn., part interest to each
Division of Ser. No. 55,468, July 16, 1970, Pat. No. 3,686,899.
This application Mar. 13, 1972, Ser. No. 234,096
Int. Cl. D06f *31/00, 39/10*
U.S. Cl. 68—18 F **8 Claims**



A laundering and finishing system for garments (such as no-iron garments) collected from a number of user sources of soiled garments includes a hanging zone, a washing zone including spray assemblies, a drying zone, and a conveyor network extending from the hanging station through the washing and drying zones, the conveyor network being adapted to support individual garments on hangers to hang loosely for washing and wrinkle-free drying in the zones, the hanging zone being arranged to enable a worker to hang soiled garments from one user source at a time in serial order upon an initial conveyor of the conveyor network, and the conveyor network being further adapted to discharge the garments in the same serial order so that garments originating from different sources of soiled garments are not mixed. Preceding the washing zone a soak zone is provided including means to guide garments on hangers therethrough.

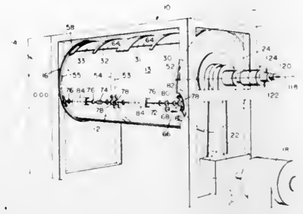
3,780,544
JET DYEING APPARATUS
James Keith Turner, Lincolnton, and James Robert Riley, Stanley, both of N.C., assignors to Gaston County Dyeing Machine Company, Mt. Holly, N.C.
Filed July 18, 1972, Ser. No. 272,774
Int. Cl. B05c *11/124*
U.S. Cl. 68—177 **7 Claims**



Means is provided for circulating textile material in endless strand form through a wet processing bath under the influence of a venturi-induced jet of a cycled portion of the treating bath. The jet arrangement includes a driven roll member provided for lifting the strand material from the bath, a venturi structure disposed horizontally beyond the roll member for subjecting the strand material to the jet influence, and a perforate baffle member designed to direct the strand material for orderly circulation beyond the jet influence.

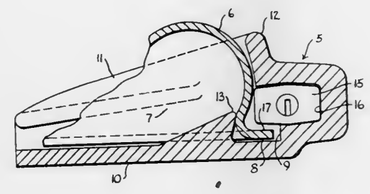
3,780,545
WASHING MACHINE AND DOOR STRUCTURE THEREFOR
Raymond G. Henderson, Mount Prospect, and Ervin A. Hess, Chicago, both of Ill., assignors to A-T-O Inc., Willoughby, Ohio
Filed July 10, 1972, Ser. No. 270,059
Int. Cl. D06f *37/28*
U.S. Cl. 68—210 **26 Claims**

A cylindrical drum rotatable in at least one direction about its horizontal axis, the drum having an opening in the peripheral wall thereof and carrying an arcuate door slidably mounted for movement thereon between a closed position overlying the opening and an open position, that improvement comprising a driver connected to the drum and door for moving the door in either circumferential direction relative to the



drum, and control means operably connected to the driver and operable for causing the driver selectively to move the door between its open and closed positions.

3,780,546
TRAILER HITCH LOCK
Ernst A. Longenecker, 17820 Robinwood, Brookfield, Wis.
Filed Nov. 10, 1972, Ser. No. 306,027
Int. Cl. E05b *73/00*
U.S. Cl. 70—58 **16 Claims**

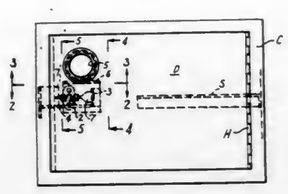


An anti-theft device securable by a key controlled lock to the coupler on the front end of a trailer to obstruct access to the socket of the coupler and thereby prevent insertion of the ball of a ball and socket connection by which the trailer can be coupled to a towing vehicle. A cover member slips onto the coupler to close the mouth of the socket and is secured in place by simply inserting the body of a padlock into a cavity in the cover member. No tool is needed to lock the cover member to the coupler.

3,780,547
CHILD PROOF LATCHES
Kirk Drumheller, 1029 Cedar, Richland, Wash.
Filed Sept. 30, 1971, Ser. No. 185,198
Int. Cl. E05b *65/06;* **E05c** *3/14*
U.S. Cl. 70—78 **4 Claims**

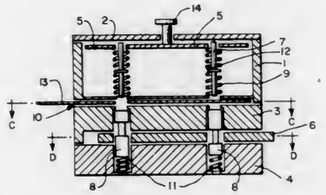
A child-proof latching apparatus for a movable door. Finger access from the exterior of the door is permitted through an entry hole adjacent to a latch engageable with a keeper on a stationary door frame member. An inwardly projected dog on the inside surface of the door is located intermediate the entry

hole and latch to provide manual obstacle to latch access and to prevent latch operation by the relatively short fingers of young children. The latch is protected against jamming by ar-



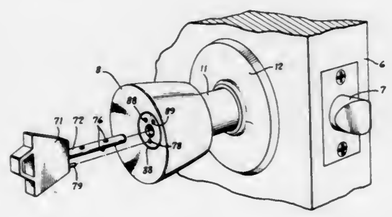
ticles located inward of the door by a shield extended alongside the latch at the side of the latch opposite to the finger entry hole when the door is in a closed condition.

3,780,548
MECHANICAL CODED TRICK LOCK
Ivan Krestev Anastasov, Sofia, Bulgaria, assignor to Glavna Directzia KBUMKP pri SGNS, Sofia, Bulgaria
Filed Oct. 30, 1972, Ser. No. 302,209
Claims priority, application Bulgaria, Oct. 30, 1971, 18901
Int. Cl. E05b *21/00*
U.S. Cl. 70—352 **4 Claims**



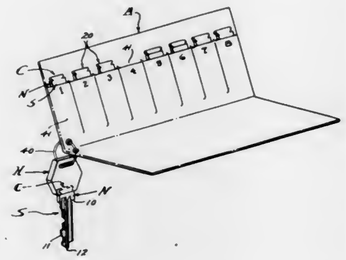
The present invention relates to a lock with a plurality of working cylinders, either a relatively small or large number, controlled by a punched tape through a thin slit, or by a key that is dissembled into its elemental parts, which lock is safe against any of the contemporary methods of forced unlocking.

3,780,549
BINARY MULTI-PLANE CYLINDER
Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.
Filed Sept. 8, 1971, Ser. No. 178,561
Int. Cl. E05b *27/06*
U.S. Cl. 70—358 **11 Claims**



For use in a lockset having a rotary spindle there is provided a lock unit including a binary, multi-plane cylinder with a body defining a circular-cylindrical passage about a central axis and within which a tubular plug is rotatable about the axis. The plug is formed with a circular-cylindrical coaxial keyway within which a circular-cylindrical rod is disposed, leaving an annular space. There is at least one pair of radially aligned openings and holes in the body and in the plug with a tumbler radially movable within the opening and the hole toward the rod under spring pressure. The tumbler is displaceable away from the rod by a tubular, apertured key axially movable into the keyway and fitting over the rod, there being means for preventing relative rotation of the key and the plug. Preferably the body is disposed within a tubular shell having a rib fitting into a slot in the spindle. The shell carries means for preventing relative rotation and axial movement of the body with respect to the shell, such means being accessible from the exterior in at least one rotated position of the plug in the body and being inaccessible from the exterior in at least another rotated position of the plug with respect to the body.

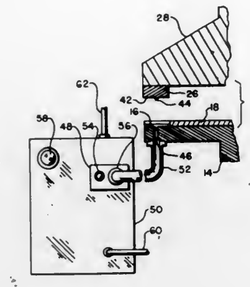
3,780,550
SEPARABLE KEY-HEAD AND FILING SYSTEM
Parvis Simorghi, 10645 Wilshire Blvd., Los Angeles, Calif.
Filed Feb. 15, 1972, Ser. No. 226,496
Int. Cl. E05b *19/04*
U.S. Cl. 70—395 **4 Claims**



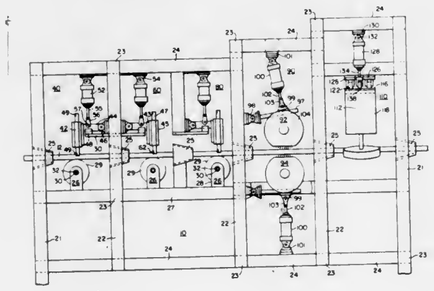
A key system especially suited for handling a multiplicity of different keys with facility, reducing their weight and bulk and assuring their accurate selection as circumstances require; and comprised of a releasible coupling configuration incorporated in the separate multiplicity of keys and in the single operating head therefor respecitively; and all of which reduces the keys to their minimum shank configurations containing the lock combinations adapted to be stored in individual file pockets.

3,780,551
APPARATUS AND METHOD OF FORMING AN ARTICLE DISPLAYING A SELF-MAINTAINING AND SELF-MONITORING QUALITY FEATURE
Archie L. Lind, Lakewood, and Mack R. Cobb, Wheatridge, both of Colo., assignors to Ball Corporation, Muncie, Ind.
Filed Dec. 13, 1971, Ser. No. 207,066
Int. Cl. B21c *43/00*; **B21d** *45/00*, *55/00*
U.S. Cl. 72—4 **10 Claims**

An article forming apparatus having a self-maintaining and self-monitoring quality feature and a method of forming an article is disclosed herein. The apparatus includes two reciprocally moving die faces which cooperate with each other in shaping a portion of an article in a predetermined manner. In this regard, one open end portion of an open ended passage or opening provided through one of the two die faces may be utilized in the aforesaid shaping operation. This passage or opening is provided with a flow of gas under pressure, preferably concurrently with the shaping operation of the apparatus, so as to prevent various foreign particles such as, for example, chips or scraps, from lodging or accumulating within or adjacent the passage, which particles might otherwise create an obstruction to the shaping operation, thereby adversely effecting the predetermined shape desired. In addition, the gas pressure within the passage is monitored, preferably continuously, so that, in the event of an obstruction, a signal is produced for terminating operation of the forming apparatus and/or providing an indication to the operator.



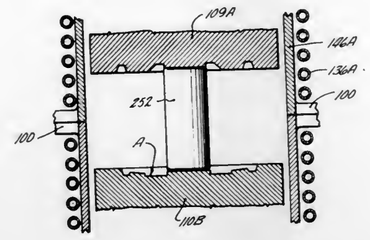
3,780,552
APPARATUS FOR CONDITIONING CONTINUOUSLY CAST BARS
Fred C. Staskiewicz, 11 Deborah Ln., Buffalo, N.Y., and Robert E. Fromson, 27 Dogwood Rd., Williamsville, N.Y.
Continuation of Ser. No. 733,605, May 31, 1968, abandoned.
This application Apr. 16, 1971, Ser. No. 134,888
Int. Cl. B21b *45/02*, *45/04*; **B22d** *11/12*
U.S. Cl. 72—40 **12 Claims**



Apparatus is disclosed for conditioning a continuously cast bar particularly of the type formed employing a continuous casting wheel and a belt, and includes a plurality of working stations which form in the bar chamfered corners which are thereafter formed into a radius and the surface of the bar is conditioned prior to hot working.

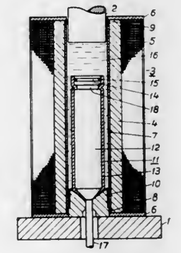
3,780,553
FORGING DIE LUBRICATION
Roy L. Athey, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.
Division of Ser. No. 141,530, May 10, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,569
Int. Cl. B21j *3/00*, *1/06*, *13/02*
U.S. Cl. 72—41 **5 Claims**

A die for a forging operation, especially isothermal forging, is formed having grooves thereon to act as reservoirs for holding a lubricant for lubricating the die during operation. While the lubricant can be put in the grooves originaly by various means, one means for maintaining lubricant in the grooves during a forging operation where a plurality of billets are



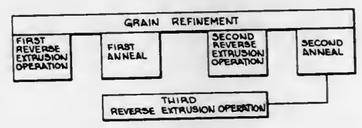
forged in succession is to have the billet covered by the lubricant, then each billet would leave some lubricant in the grooves for the next forging while pushing some out to use for its own forging operation.

3,780,554
METHOD OF MANUFACTURING EXTRUDED RODS OF WIRE FROM COMPOUND MATERIAL
Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektreska Aktiebolaget, Vasteras, Sweden
Filed Feb. 7, 1972, Ser. No. 224,089
Claims priority, application Sweden, Feb. 12, 1971, 1845/71
Int. Cl. B21c *23/22*
U.S. Cl. 72—60. **2 Claims**



A rod or wire having an aluminum or aluminum alloy core and a copper or copper alloy casing is produced by hydrostatic extrusion of a compound billet through a die having a conical inlet with a cone angle of between 93° and 115°.

3,780,555
METHOD OF MAKING A PIPE WITH REFINED GRAIN STRUCTURE
Real J. Balthazar, Marina Del Rey, and Richard A. Halberg, Manhattan Beach, both of Calif., assignors to Sargent Industries, Inc., Los Angeles, Calif.
Filed Apr. 10, 1972, Ser. No. 242,708
Int. Cl. B21b *27/06*, *17/02*
U.S. Cl. 72—69 **6 Claims**



A method of making a pipe comprising providing a pipe preform having a wall with relatively large columnar grains,

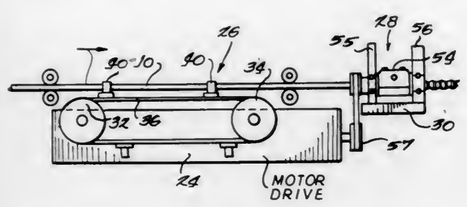
refining the grain of the pipe preform by cold working and annealing, and cold working the wall subsequent to refining the grain to substantially axially elongate the pipe preform.

3,780,556

TUBE CORRUGATING APPARATUS AND METHOD

Ernest H. Johnson, Chicago, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed Sept. 27, 1971, Ser. No. 183,857
Int. Cl. B21d *15/06*
U.S. Cl. 72—78 **7 Claims**



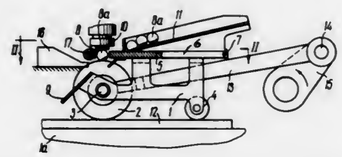
To form an annularly corrugated tube, an uncorrugated tube is driven in the direction of its longitudinal axis while a toothed corrugating tool mounted for free rotation on a transverse axis is circularly orbited about the tube with successive teeth of the corrugating tool pressing into the surface of the tube to form spaced annular grooves. As the tube moves forwardly each successive groove engages and advances the tooth of the corrugating tool which is employed in its formation, thus commencing the formation of a succeeding groove by a succeeding tooth.

3,780,557

MACHINE FOR MARKING CYLINDRICAL ARTICLES

Efim Lvovich Petrikovsky, Prospekt imeni Lenina, 45, kv. 34, Chelyabinsk, U.S.S.R.

Filed Dec. 22, 1971, Ser. No. 210,665
Int. Cl. B21b *1/00*
U.S. Cl. 72—92 **3 Claims**



Machine for marking cylindrical articles, comprising a drum mounted for rotation and longitudinal reciprocation on a guide; a holder plate being mounted between a marking tool and the drum, also for longitudinal movement synchronous with that of the drum, and featuring a seat to accomodate the articles therein.

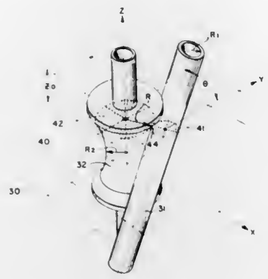
3,780,558

APPARATUS FOR STRAIGHTENING ELONGATED MEMBERS

Peter Frederick Lilienthal, II, Princeton; Karapurath Remachandran, and Edward Stephen Tice, both of Hightstown, all of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,849
Int. Cl. B21d *3/02*
U.S. Cl. 72—98 **2 Claims**

Tubular members, such as sections of tubing for use in millimeter waveguide systems, are straightened through the use of roller or rotary straightener apparatus. The previously common creation of helical indentations along the inner walls of the tubular members, which has been found to result from a discontinuous surface contact at discrete points between the tubular members and conventional straightening rollers, is avoided by the use of special-purpose rollers. The special-purpose rollers are shaped such that the tubular members undergoing straightening maintain intimate surface contact with the rollers throughout a continuous contact path extending along a substantial length of the surface of each roller.



Each special-purpose roller may be formed by positioning a cylindrical cutting tool, of a diameter equal to that of a tubular member to be roller straightened, at a selected acute angle to the axis of a roller blank and in contact with the roller blank, and then rotating both the cutting tool and the roller blank. Subsequent roller straightening will take place with each tubular member oriented at the selected acute angle to the finished roller.

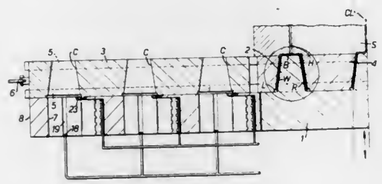
Alternatively, a mathematical analysis may be employed to characterize the required roller shape. Numerically controlled machining techniques may then be utilized to form the special-purpose rollers in accordance with the determined shape.

3,780,559

SHEET FEEDING

Leslie Ashton Steele Turner, Sutton, England, assignor to Airfix Industries Limited, London, England

Filed Oct. 4, 1971, Ser. No. 186,229
Claims priority, application Great Britain, Oct. 5, 1970, 47,318/70; Jan. 21, 1971, 2,846/71
Int. Cl. B21d *43/16*
U.S. Cl. 72—361 **25 Claims**



A foil loading mechanism for use with an injection moulding machine producing containers having foil side wall, the mechanism comprises a body forming the peripheral wall of a cavity for receiving and retaining a foil in deformed condition, an aperture in the wall extending longitudinally of the cavity,

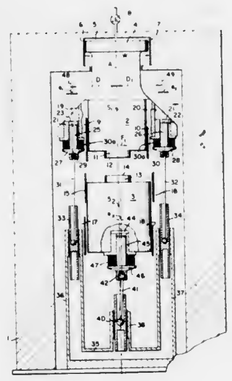
guide means for guiding a foil into a position overlying the aperture and means for driving a foil overlying the aperture through the aperture and into the cavity. The foil in the cavity is then driven from the cavity in a longitudinal direction into a female mould cavity in register with the loaded cavity. Thereafter the male core is inserted into the female cavity and material injected into the mould cavity defined therebetween.

3,780,560

DOUBLE-ACTING PRESS WITH HYDRAULICALLY COUPLED HAMMER AND ANVIL

Kurt Zimmer, Hueckeswagen, and Wilhelm Schneider, Dhuenn, both of Germany, assignors to Beche & Grohs GmbH, Huckeswagen/Rhld, Germany

Filed Mar. 2, 1971, Ser. No. 120,083
Claims priority, application Germany, July 28, 1970, P 20 37 339.1
Int. Cl. B21j *9/12*
U.S. Cl. 72—407 **8 Claims**



A double-acting press with hydraulic coupling of upper and lower rams has an upper ram connected with a pair of pistons that extend into a closed oil-filled vessel. At least one other piston extends from this vessel up against a lower ram so that descent of the upper ram causes lifting of the lower ram. The piston rods of these pistons can all be inclined to the displacement axis of the rams to twist these rams into engagement with opposite guides and ensure their engagement in a fixed orientation of the forming surfaces. Two pistons can act upon the lower ram in which case the torque can be produced by using pistons of greater effective surface area to one side of the rams. Alternatively a pair of vessels can be provided, one to each side with a respective pair of pistons, and a pump can be provided to maintain the pressure in one vessel above that in the other. The guides can be two pairs of guides for each ram, one pair being above and laterally offset from the other.

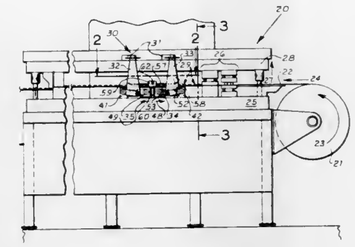
3,780,561

FEED DEVICE FOR FORMING APPARATUS

Ward A. Ames, Danville, Ill., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Filed Dec. 23, 1971, Ser. No. 211,551
Int. Cl. B21d *43/02*
U.S. Cl. 72—417 **10 Claims**

A feeding device for moving a sheet of material through a progressive die apparatus which forms holes into the sheet. In one embodiment of the feed device, a feed bar is slidably mounted in the direction of feed and has a plurality of upwardly biased feed fingers which project through the formed holes in the sheet. The bar is pivotally connected to a link which in turn is connected to means for converting the vertical motion of the forming apparatus press into reciprocating horizontal motion of the feed bar. One embodiment of the means includes a rack connected to the press which is engaged with a pinion mounted on a rotatable shaft. A crank is connected to an end of the shaft and is pivotally connected to the link. Another embodiment of the means includes a member projecting downwardly from the press being pivotally connected to an end of the link. A second guide link is connected



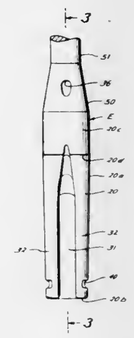
to the base of the feeding device and is also connected to the downwardly extending member. The feeding device has either a single feed bar for moving the sheet of material during the downward or upward stroke of the press or a pair of feed bars are provided which reciprocate in opposite directions so as to move the sheet during both the downward and upward stroke of the press. A power cylinder is provided in one embodiment to control the stroke of one of the feed bars.

3,780,562

DEVICE FOR EXPANDING A TUBING LINER

John C. Kinley, 5815 Royalton St., Houston, Tex.

Division of Ser. No. 03,369, Jan. 16, 1970, Pat. No. 3,691,624.
This application July 10, 1972, Ser. No. 269,966
Int. Cl. B21j *13/02*
U.S. Cl. 72—479 **5 Claims**

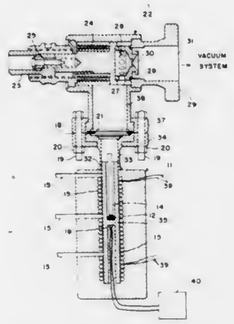


A device and method for expanding a tubing liner having a preformed reverse bend by pulling the metal of the liner outwardly to expand the reverse bend and bring the liner into a substantially cylindrical shape inside of a well tubing or other pipe.

ERRATUM

For Class 72—465 see:
Patent No. 3,780,591

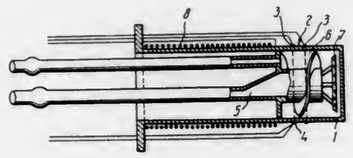
3,780,563
INSITU TRANSFER STANDARD FOR ULTRA-HIGH VACUUM GAGE CALIBRATION
Ronald A. Outlaw, Newport News; Richard E. Stell, Hampton, and Ronald F. Hoyt, Tabb, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed July 14, 1972, Ser. No. 271,951
Int. Cl. G01l *27/00*
U.S. Cl. 73—4 V **12 Claims**



A compact insitu calibration assembly for ultra high vacuum gauges which depends on the repeatable generation of a specific gas pressure by the dissociation of a solid solution chemical compound when subjected to a given temperature.

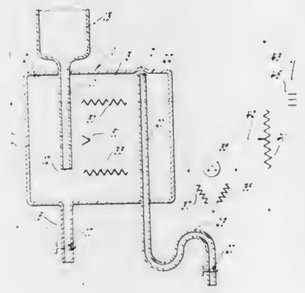
A precise temperature measurement is related to the pressure generated within the vacuum by the properties of the solid solution compound. This accurately establishes the gas pressure which in turn is used to calibrate a vacuum gauge. Also included is a metering orifice used in the calibration system and which is made movable to facilitate the degassing bakeout required in ultra high vacuum devices.

3,780,564
FLUE GAS DEW POINT TEMPERATURE TRANSDUCER
Tatyana Abramovna Levina, ulitsa Snaiperskaya, 10, korpus 1, kv. 69; Mikhail Borisovich Serkh, ulitsa Moskvina, 5, kv. 46, both of Moscow, and Ivan Georgievich Guzynin, Oktyabrsky propekt, 403, korpus 8, kv. 63, Ljubertsy Moskovskoi Oblasti, all of U.S.S.R.
Filed May 16, 1972, Ser. No. 253,729
Int. Cl. G01n *25/02*
U.S. Cl. 73—17 A **3 Claims**



A flue gas dew point temperature transducer having a heated shell with primary cell electrodes and a thermoelement disposed on the portion of the shell surface which serves as a flue gas vapor condensation area. Cooling said condensation area is effected by a coolant supplied to and led off said condensation area by a coolant inlet and a coolant outlet duct mounted inside the transducer shell. One of the ducts forms a helix wound around the other duct, whereby the measurement accracy is enhanced and the transducer application range is extended.

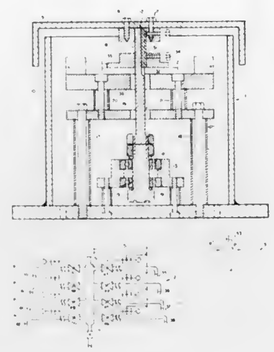
3,780,565
FLUID VAPORIZATION TESTER
Jerry F. Hawkins, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 19, 1972, Ser. No. 299,144
Int. Cl. G01n *25/02*
U.S. Cl. 73—17 A **1 Claim**



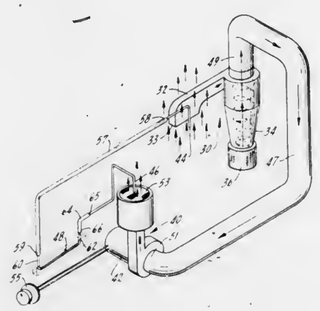
A fluid vaporization indicator for brake fluid in which a chamber of specified volume is filled with test fluid and heated by two resistors arranged one above the other in the chamber and connected in a bridge circuit. When sufficient vapor has been formed so that the upper resistor is exposed to vapor, that resistor's resistance increases and the bridge circuit shows an imbalance. The temperature at this instant, as measured by a thermocouple in the fluid, approximates the vapor-lock temperature of the fluid. The chamber includes an inlet, outlet and overflow tube arrangement to insure consistent sample sizes and to facilitate emptying and flushing the chamber between tests.

3,780,566
APPARATUS FOR CONTINUOUSLY MONITORING AIR-POLLUTION
Kenneth Burton Smith, and Shaul Gladstone, both of Wilmington, Del., assignors to Argus Chemical Corp., Brooklyn, N.Y.
Filed Mar. 7, 1972, Ser. No. 232,467
Int. Cl. G01n *31/00*
U.S. Cl. 73—23 **10 Claims**

Apparatus and process for continuously monitoring the air pollution around a manufacturing plant comprising a weather vane to sense the direction of the wind, multiple air sampling means positioned to sample air from different compass directions, a valve in line with each air sampling means, an air sample analyzer and recorder, means for transmitting a signal from the weather vane indicating the direction of the wind to the valve which is in line of the air sampling means positioned to sample air in that particular wind direction, means for drawing in an air sample from the atmosphere in the direction of the wind by sucking the air in through the air sampling means, through the valve and into the air analyzer with means in the air analyzer to determine and record the degree of a given air pollutant.

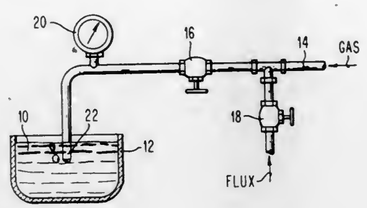


3,780,567
DRIFT MEASUREMENT SYSTEM
John C. Ovard, Santa Rosa, Calif., assignor to Ecodyne Corporation, Chicago, Ill.
Filed Mar. 17, 1972, Ser. No. 235,484
Int. Cl. G01n *1/22*
U.S. Cl. 73—28 **11 Claims**



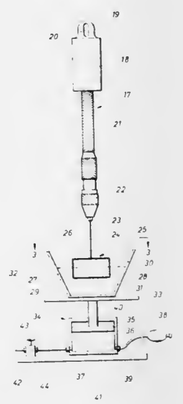
A drift measurement system to quantitatively measure the drift emitted from a cooling tower. The drift measurement system includes: sample collecting means for collecting test samples from various points in the fan stack exhaust air; isokinetic sampling control means to insure that the drift particles collected are truly representative of those entrained in the exhaust air; cyclone separator means for separating the liquid or solid particles from the test sample; and container means for receiving the separated liquid or solid particles.

3,780,568
QUANTITATIVE TEST METHOD FOR MEASURING SOLDER-FLUX SURFACE TENSION INTERACTION
Lewis S. Goldmann, Ossining; Dexter A. Jeannotte, Clinton Corners, and Bodgan Krall, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 27, 1971, Ser. No. 166,535
Int. Cl. G01n *13/02*
U.S. Cl. 73—64.4 **11 Claims**



A process for quantitatively measuring one of the surface tension components for a solder-flux combination by introducing a gaseous ambient bubble internally coated with a liquid flux into a molten solder, and measuring a pressure differential.

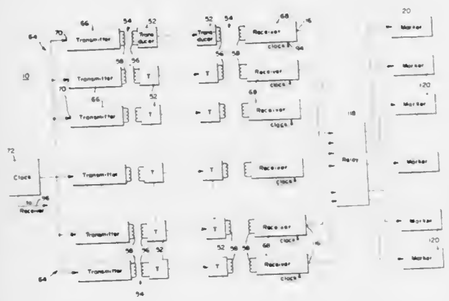
3,780,569
TENSIOMETER ASSEMBLY FOR SUBSTITUTION TYPE ANALYTICAL BALANCES
John W. Graham, Rt. 3, Box 41, Alvin, Tex.
Filed Sept. 2, 1971, Ser. No. 177,223
Int. Cl. G01n *13/02*
U.S. Cl. 73—64.4 **11 Claims**



A tensiometer assembly for use with substitution type analytical balances that is particularly designed to take the place of the conventional weighing pan with which such balances are commonly provided. The tensiometer assembly comprises an elongated support mechanism having a support eye at the upper extremity thereof that is adapted to be received by the hook portion of the weighing arm of a substitution type analytical balance, thereby suspending the tensiometer assembly in vertical relation within the weighing chamber of the balance. The support mechanism includes a

needle chuck device, disposed at the lower extremity thereof, that is adapted to support a conventional duNouy ring in substantially rigid relation with the support mechanism. A container for a liquid defining the interface to be tested may be raised or lowered in accurately controllable manner by a movable support device. The support device may be capable of moving the container downwardly at a controlled rate of speed thereby moving the interface downwardly past the ring portion of a duNuoy ring or other suitable tensiometer device suspended in the liquid by the support mechanism. The force necessary to move the duNuoy ring through the liquid interface is accurately measured by the analytical balance.

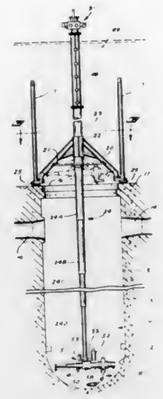
3,780,570
ULTRASONIC INSPECTION DEVICE
Jack T. Collins, Boulder, Colo., assignor to Automation Industries, Inc., El Segundo, Calif.
Continuation of Ser. No. 587,573, Oct. 18, 1966, abandoned.
This application Mar. 2, 1970, Ser. No. 14,806
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 R **4 Claims**



An ultrasonic device for nondestructively testing flat, bonded panels such as plywood or particle board panels. A transmitting set of roller type ultrasonic transducers are positioned on one side of a workpiece-transporting line, while the receiving transducers are placed on the other side of the line. Transmitters supply an ultrasonic pulse signal to each transmitting transducer. If the panel is well bonded, the associated receiving transducer receives the ultrasonic signal. A clock controls the actuation of the transmitters, turns off the transmitters, and after a time delay, turns on the receivers, responding to reverberations in a good panel. A panel marking device is actuated if a received signal is not present due to a defect in the panel.

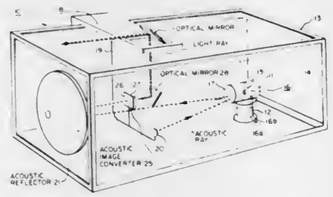
3,780,571
REACTOR VESSEL INSPECTION DEVICE
Robert W. Wiesener, Roseville, Minn., assignor to Programmed & Remote Systems Corporation, St. Paul, Minn.
Filed Apr. 22, 1971, Ser. No. 136,411
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **15 Claims**

A device for in place inspecting nuclear reactor pressure vessels and which can be removed from the vessel when the vessel is in service. The device can be utilized to inspect the vessel during routine maintenance. Further, the device is mounted so that its position and movements can be repeated on subsequent inspections, and by proper recording of data



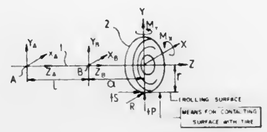
from initial inspections, defects, cracks, or other hazardous situations can be discovered.

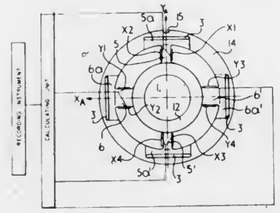
3,780,572
ULTRASONIC INSPECTION APPARATUS
Henry A. F. Rocha, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 156,226, Jan. 24, 1971, abandoned.
This application Sept. 18, 1972, Ser. No. 290,253
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 R **15 Claims**



Acoustic echo pulses from an object under observation are converted into a visual image by means of an acoustic image converter member. A piezoelectric plate for converting acoustic energy into electrical energy is located on one side of the member and an array of light emitting elements is located on the opposite side of the member. An array of amplifier and signal conditioning channels is located between the piezoelectric plate and the array of light emitting elements. Each channel has an input connected to a respective point on the piezoelectric plate and an output connected to each of the amplifier and signal conditioning channels for periodically rendering each of the channels conductive to pass electrical signals after a first predetermined interval of time from a periodically occurring zero reference time and for maintaining conduction in the channels for a second predetermined interval of time.

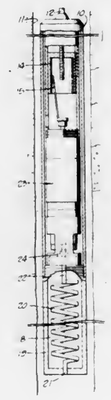
3,780,573
UNIFORMITY TEST MACHINES
Walter Reus, Freigericht, Germany, assignor to Dunlop Limited, London, England
Filed Mar. 13, 1972, Ser. No. 234,419
Claims priority, application Germany, Mar. 22, 1971, P 21 13 820.5; Mar. 22, 1971, P 71 10 863.9
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 **17 Claims**





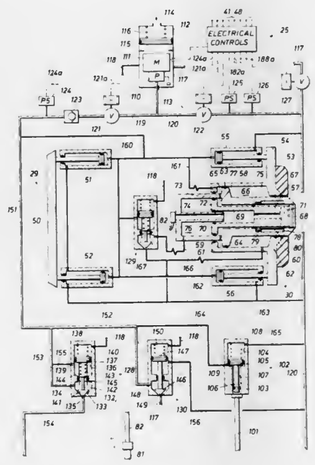
Apparatus and a method for determining wheel/tire uniformity in which the wheel is rotatably mounted on one end of a support shaft and rotated under load against a moving surface. The support shaft is clamped in two spaced apart force-measuring devices each being sensitive in at least two directions which are perpendicular to one another and to the support shaft.

3,780,574
WELL PRESSURE MEASURING AND RECORDING DEVICE
Leonidas C. Miller, 1321 Sombrero Dr., Monterey Park, Calif.
Filed June 14, 1972, Ser. No. 262,779
Int. Cl. E21b *49/00*; **G01l** *19/08*
U.S. Cl. 73—151 **12 Claims**



A device adapted to be lowered into a well on a wire line for measuring and recording well pressure employs a multiple-turn cylindrical Bourdon tube carried by a housing and having its interior exposed to well pressure. An axially-extending pin driven by said Bourdon tube is mounted to turn in the housing. A shaft having a wedge-shaped groove in its outer surface is connected to the pin at one end and is connected at the other end to drive the slow speed shaft of a motion multiplier gear device. A recording mechanism in the housing of the movable member is connected to be driven by the high speed shaft of the motion multiplier device. Two radial pins each carried by a separate rotary collar project into the shaft groove to limit turning movement of the shaft in both directions when their respective collars are fixed relative to the housing. The Bourdon tube may be pressurized when at the ground surface and the position of the radial pins adjusted in the shaft groove so that the shaft does not turn until well pressure applied to the Bourdon tube reaches a predetermined minimum.

3,780,575
FORMATION-TESTING TOOL FOR OBTAINING MULTIPLE MEASUREMENTS AND FLUID SAMPLES
Harold J. Urbanosky, Pearland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Dec. 8, 1972, Ser. No. 313,235
Int. Cl. E21b *49/00*
U.S. Cl. 73—152 **40 Claims**



In the representative embodiment of the new and improved wireline formation-testing apparatus disclosed herein; pressure-responsive fluid-admitting means and tool-anchoring means are cooperatively arranged on a tool body for selectively anchoring the tool in position in a well bore for obtaining at least one measurement or fluid sample from a sub-surface earth formation. The new and improved tool further includes a selectively-operable hydraulic pump which is coupled by a plurality of selectively-operable hydraulic valves to the pressure-responsive means as well as to one or more pressure-responsive flow-control valves. By arranging each of the hydraulic control valves to operate only at selected hydraulic pressures, the new and improved formation-testing tool is sequentially operated as required to obtain selected measurements and, if desired, one or more samples of the formation fluids from one or more formation intervals before removing the tool from the well bore.

3,780,576
HIGH ENERGY SLURRY EXPLOSIVES

H. Dean Mallory, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

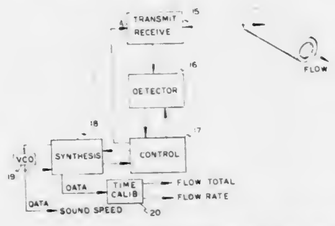
Filed Aug. 30, 1971, Ser. No. 176,265
Int. Cl. G01l 5/14
U.S. Cl. 73—167 2 Claims

A method of testing the uniformity of liner effectiveness. Randomly selected shaped bomblet cases are uniformly filled with a slurry explosive. The cases are fired into armor plate targets and the relative uniformity of penetration between bomblet cases is measured.

3,780,577
ULTRASONIC FLUID SPEED OF SOUND AND FLOW METER APPARATUS AND METHOD

Alvin E. Brown, Redwood, Calif., assignor to Saratoga Systems, Inc., Cupertino, Calif.

Filed July 3, 1972, Ser. No. 268,712
Int. Cl. G01f 1/00; G01p 5/00
U.S. Cl. 73—194 A 21 Claims

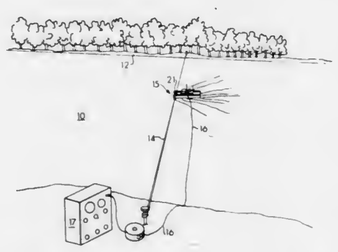


An ultrasonic speed of sound and flow metering system which may utilize only one pair of ultrasonic transducers by incorporating a unique time share feature. In one embodiment a direct synthesis of a frequency proportional to the speed of sound in a flowing medium is obtained using one voltage controlled oscillator. An additional direct synthesis of a data frequency proportional to the flow of the medium is derived from signals inversely proportional to sound energy transit times upstream and downstream.

3,780,578
MEASUREMENT OF THE TOTAL VOLUME FLOW OF A WATERCOURSE

Paul V. Sellman, Norwich, Vt.; S. Larence Dingman, Hanover, and Ronald T. Atkins, West Labanon, both of N.H., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1972, Ser. No. 249,600
Int. Cl. G01f 1/00
U.S. Cl. 73—227 12 Claims

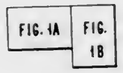


Measurement of the volume flow of a watercourse is accomplished by bridging the watercourse with a taut line and thereafter causing a floating instrumented package to traverse the watercourse, guided by said line. The instrumented package which contains means to ascertain the depth of the watercourse and separate means to measure the velocity of the watercourse, is remotely controlled from one bank of the watercourse. Data collected at spaced intervals along the path of the taut line is used to calculate total volume flow.

3,780,579
DIGITAL INTEGRATING FLOWMETER

Ronald K. Barnard, Tuscola, Ill., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 2, 1972, Ser. No. 222,968
Int. Cl. G01f 1/00
U.S. Cl. 73—229 R 15 Claims

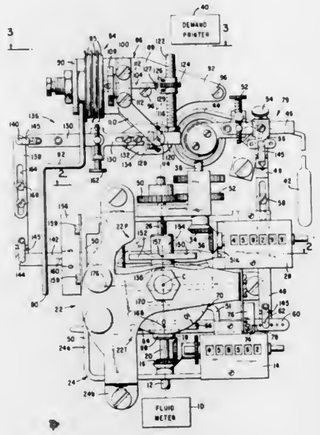


Apparatus adapted to measure fluid flow in a pulsating flow system, such system being characterized by wide variations in flow rate over a predetermined cycle of operation. Reliability in measurement is achieved by counting the pulses, the frequency of which is determined by instantaneous flow rate, over a time interval which is at least approximately as long as the operating cycle for the system. The apparatus also possesses the capability of adjusting for variation in specific gravity of the fluid and, generally, of providing direct readouts in various units of measurement.

3,780,580
LOW PRESSURE INDEX CONTINUOUS INTEGRATOR

Carl J. Kugler, Philadelphia, Pa., assignor to The Singer Company, New York, N.Y.

Filed Sept. 12, 1972, Ser. No. 288,448
Int. Cl. G01f 1/12
U.S. Cl. 73—233 3 Claims

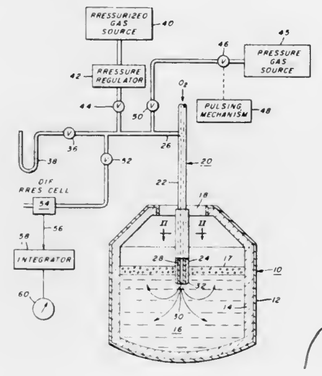


A low pressure index continuous integrator having a diaphragm stack transmitting pressure changes in the throughput flow of a meter through a balanced linkage means to a continuous integrator. The motion of both the diaphragm stack and the continuous integrator is linear, so as to eliminate any possible geometric error in the corrected volumetric measurement of the throughput flow of the meter. The diaphragm stack is mounted on a frame fixedly connected to the housing of the meter. The frame provides an integral block to prevent overexpansion of the diaphragm stack, and a fixed pivot for the linkage means.

3,780,581
METHOD AND APPARATUS FOR DETERMINING THE DEPTH OF SUBMERGED LANCES AND THE LIKE

Thomas R. Acre, New Kensington, Pa.; Frederick M. Gimbel, Kokomo, Ind., and Sundaresan Ramacheandran, Natrona Heights, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Aug. 18, 1971, Ser. No. 172,697
Int. Cl. G01f 23/14
U.S. Cl. 73—302 3 Claims



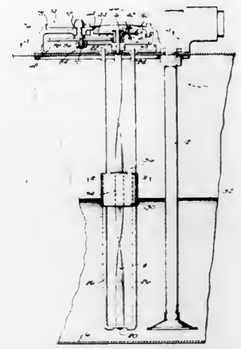
Method and apparatus for determining the depth of a submerged article with the use of a pressure probe, and in particular the depth of a submerged lance used to deliver a gaseous reaction agent to a metallic bath. The probe is adjacent or within a conduit delivering the gaseous reaction agent to the bath. The pressure at the probe is compared with that above the bath, the difference between the two pressures being proportional to depth. The system can be used in installations where the pressure at the surface of the bath is atmospheric pressure or in cases where the space above the surface is evacuated as in vacuum decarburization of stainless steels and the like. In the former case, the probe is usually pressurized to prevent clogging of the tip. In the latter case, the ambient pressure at the tip of the probe is compared with that above the surface of the bath and the probe pulse-pressurized periodically to prevent clogging.

3,780,582
LIQUID PROPORTIONAL MEASURING DEVICE

Fortunato S. Ajero, 521 S. Rawson Ct., South Milwaukee, Wis.

Continuation-in-part of Ser. No. 189,710, Oct. 15, 1971, abandoned. This application Dec. 29, 1971, Ser. No. 213,584
Int. Cl. G01f 23/08
U.S. Cl. 73—320 7 Claims

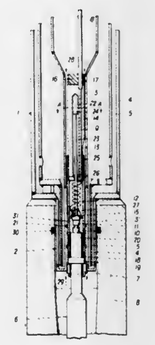
The gauge is for a tank which is to contain mixed liquids desirably kept in fixed proportionate ratio regardless of the amount of liquid in the tank when filling is started. The drive to the gauge indicator has a gear shift device set to engage at a high ratio when the filling with the low volume liquid is started. Then the indicator will move to "Full" from any position in response to the introduction of only the lower volume of liquid which is proper for the space to be filled. When the drive is then shifted to disengaged position, the indicator will return to the position appropriate to show the proper volume of the high ratio liquid and that needed to fill the tank. For example, in a tank of a fuel and oil mixture for a two-cycle engine, when the gauge drive is set to receive oil, it will register the proper amount of required oil in moving to full position regardless of where the mixture level stood when oil introduction started. Likewise, when the drive is set to receive fuel, it will register the proper amount of fuel in moving to full position, regardless of where the mixture level stood when introduction started.



3,780,583
WATER-COOLED MEASURING PROBE FOR MEASURING THE TEMPERATURE OF HOT LIQUID METAL BATHS, IN PARTICULAR IN MELTING OR REFINING FURNACES

Gunter Poferl; Gerald Schmidt, and Hellmuth Smejkal, all of Linz, Austria, assignors to Verinigte Osterrlichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

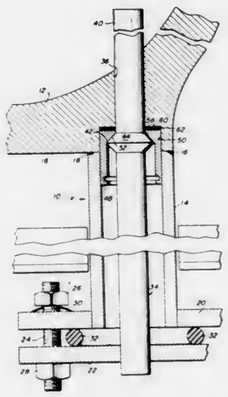
Filed Aug. 9, 1971, Ser. No. 170,215
Claims priority, application Austria, Aug. 17, 1970, 7435/70
Int. Cl. G01k 1/14
U.S. Cl. 73—343 R 8 Claims



The invention relates to a water-cooled measuring probe for continuously measuring the temperature of hot liquid metal baths, comprising an inner tube and an outer tube connected with each other under formation of a probe head to which a sensing portion containing a thermocouple is joined, and a plug connection for connecting a compensating line with said sensing portion; a sleeve closed at its upper end and open at its lower end surrounding the plug connection and means for

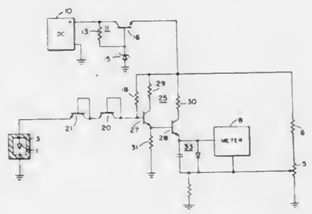
sealingly pressing said sensing portion against said lower end of said sleeve. By means of this arrangement the access of water and humidity to the plug connection is absolutely avoided.

3,780,584
EROSION RESISTENT SENSING DEVICE
William P. Long, Chester; Walter M. Sawyer, West Caldwell, and Lionel J. De Paula Arias, Parsippany, all of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed July 30, 1971, Ser. No. 167,729
Int. Cl. G01k *13/02*
U.S. Cl. 73—349 **5 Claims**



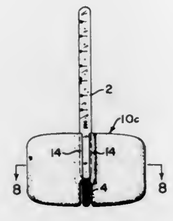
A sensing device for sensing a characteristic of an erosive fluid stream. The device has a sensing element with a bearing surface which bears against a seat member with an end of the sensing element projecting into a conduit through which the erosive fluid flows. The sensing element may be rotated when one side is excessively eroded or withdrawn and replaced completely with another sensing element so that the characteristic can be sensed in spite of the erosiveness of the flowing fluid.

3,780,585
CRYOGEN TEMPERATURE INDICATOR
William C. Milo, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 12, 1972, Ser. No. 217,356
Int. Cl. G01k *7/24*, *1/20*; **H03f** *1/30*
U.S. Cl. 73—362 SC **1 Claim**



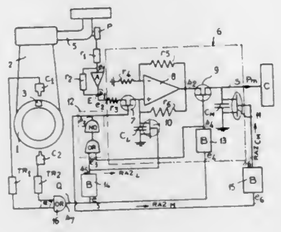
A diode, which will vary its voltage in response to a variance in temperature, is housed in a heat sink. The heat sink is placed into a cryogenic material whose temperature is to be measured. The voltage across the diode is indirectly measured so as to give an indication of the temperature of the cryogen.

3,780,586
ORAL THERMOMETER
David J. Donofrio, 1407 Herberich Ave., Akron, Ohio
Filed July 6, 1971, Ser. No. 159,962
Int. Cl. G01k *1/14*
U.S. Cl. 73—374 **9 Claims**



This application relates to an oral thermometer in the form of a glass tube having an expanded bulb at one end thereof. Mercury is in the bulb and the tube. A resilient flanged portion made of plastic or other suitable material is either as an integral part of or able to be attached to the tube, which serves to properly position the thermometer under the tongue in a person's mouth, and to hold the thermometer in a fixed position while the person's temperature is taken.

3,780,587
METHODS OF MEASURING INSTANTANEOUS MEAN PRESSURES IN FLUID MEDIA
Jean-Pierre Rivere, Billancourt, France, assignor to Rugie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of France
Filed Mar. 10, 1972, Ser. No. 233,629
Claims priority, application France, Mar. 19, 1971, 7109831
Int. Cl. G01l *9/00*
U.S. Cl. 73—398 R **12 Claims**

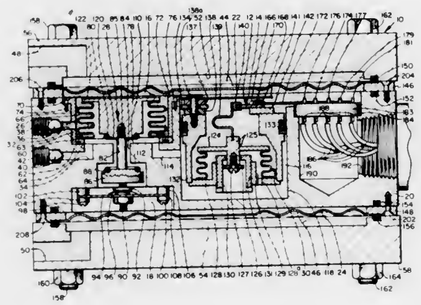


Apparatus for measuring a pressure, applicable notably to the specific case of a fluid volume output in a conduit, in which a pressure pick up having a very short response time translates the instantaneous pressure into the form of an electric signal amplified and transformed into a voltage fed to an electric integrator determining the means pressure. At least one pick up emits an electric signal during at least one fraction

of the period for controlling the release of the integrator, its integration period and the resetting thereof.

The apparatus is applicable *inter alia* to systems for injecting fuel into internal combustion engines.

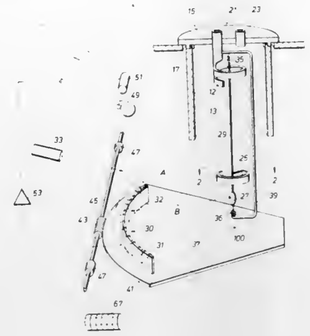
3,780,588
DIFFERENTIAL PRESSURE RESPONSIVE APPARATUS
Robert C. Whitehead, Jr., and Lester R. Leidy, Jr., both of Oreland, Pa., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 31, 1972, Ser. No. 240,100
Int. Cl. G01l *9/06*
U.S. Cl. 73—398 AR **10 Claims**



A flowmeter for converting differential high and low fluid pressure signals into an electrical signal includes a flexible compliance bellows and an overload valve actuating bellows. The high and low differential fluid pressure signals are applied respectively against the inner and outer surfaces of each of said bellows. A spring extends between the compliance bellows and a wafer made of a single crystal silicon material. The wafer includes a diffused fully active resistive bridge pattern thereon and is so arranged that distortion thereof caused by displacement of said compliance bellows results in unbalancing of said bridge and the production of the electrical signal. Adjustable stops are employed whereby the displacement of the compliance bellows is restricted to predetermined differential fluid pressure operating ranges thereby limiting the forces transmitted by the compliance bellows and spring to the wafer to a level below those tending to rupture said wafer.

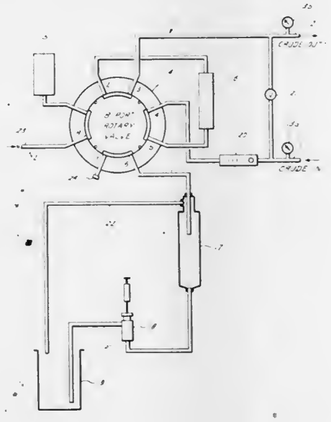
3,780,589
PRECISION PRESSURE MANOMETER
Jerry L. Fruit, Houston, Tex., assignor to Mensor Corporation, Houston, Tex.
Division of Ser. No. 134,607, April 16, 1971, Pat. No. 3,707,868. This application Sept. 12, 1972, Ser. No. 288,259
Int. Cl. G01l *7/04*
U.S. Cl. 73—418 **6 Claims**

A design Bourdon tube manometer, wherein tube deflection is detected by sensing the arc subtended by a light beam reflected from a mirror on the Bourdon tube, has a fixed light source and a null reading reflected beam detector. The Bourdon tube itself is mounted on a mounting member which is selectively movable with respect to a frame member on which is mounted the null reading detector. This permits linearizing the response of the instrument. Initially, the range of the instrument is adjusted by moving the mirror parallel to the source light beam to produce a readout corresponding to the upper limit of the pressure range desired to be measured.



Then the mirror is moved perpendicular to the source light beam to produce a linear response at a point at approximately the mid-point of such range.

3,780,590
ON-STREAM SAMPLE COLLECTING MECHANISM FOR HIGH PRESSURE LIQUIDS
Ralph E. Stamm, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Oct. 30, 1972, Ser. No. 302,153
Int. Cl. G01n *1/10*
U.S. Cl. 73—422 TC **15 Claims**

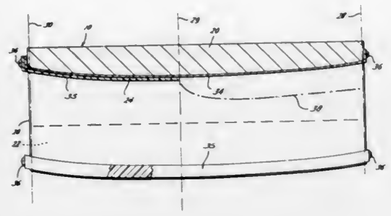


A safe and efficient mechanism for taking liquid samples, as crude oil, at pressures up to 250 psig and transferring them to an atmospheric pressure container for future analysis comprises a double ended through-flow sample holding reservoir connected to an eight port rotary valve for periodically having its contents blown into a depressurizing vessel from which the liquid at atmospheric pressure flows by gravity to a two ended flow-through sample vial to purge it with a fresh sample. The latter vial permits transfer of an aliquot by a conventional automatic sampler for gas chromatographs or the like to an analytical instrument for subsequent analysis.

3,780,591
PIPE BENDING DIE

Edward A. Clavin, and Lionel H. Wheeler, both of Houston, Tex., assignors to CRC-Crose International, Inc., Houston, Tex.

Filed Mar. 22, 1972, Ser. No. 236,879
Int. Cl. B21d 11/04
U.S. Cl. 72—465 8 Claims

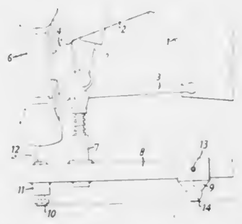


An improved pipe bending die presenting a transversely concave and longitudinally convex bearing surface to the pipe. The bearing surface is comprised of a first longitudinal bearing surface which is hard and which provides substantially all of the external support for the pipe in the direction of the bend, and a second longitudinal bearing surface which is on either side transversely of the first bearing surface, which is compressible to a preselected degree and which provides support for the pipe to prevent bulging without damaging the external coating of the pipe. This abstract is neither intended to define this invention, which of course, is measured by the claims, nor is it intended to be limiting as to the scope of this invention in any way.

3,780,592
WHEEL BALANCING APPARATUS

James Drummond Merrilees, Bristol, England, assignor to Bendix Westinghouse Limited, Bristol, England

Filed July 3, 1972, Ser. No. 268,458
Claims priority, application Great Britain, July 22, 1971, 34,458/71
Int. Cl. G01m 1/28
U.S. Cl. 73—457 3 Claims

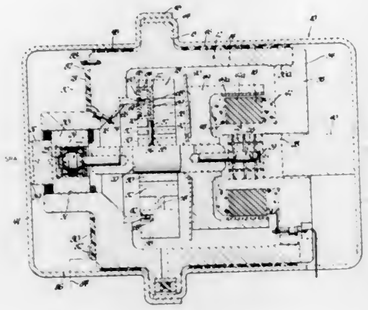


A vehicle suspension supporting transducer arrangement is proposed for on-car wheel balancing in which the transducer is incorporated in one end of a rigid lever on an intermediate position of which a suspension jack is mounted and the other end of the lever is effectively adjustable to positioning of the transducer immediately beneath the wheel centre and of the said other end beneath the point about which cyclic wheel static unbalance forces can be considered to act so that the supporting arrangement reacts substantially complementary forces through the transducer.

3,780,593
MAGNETIC FLUID HYDRODYNAMIC BEARING

Richard J. Coleman, Hales Corners; David J. Foster, Elm Grove; Edward J. Loper, Jr., New Berlin, and Arthur R. Sundeen, Greenfield, all of Wis., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1971, Ser. No. 186,823
Int. Cl. G01c 19/20
U.S. Cl. 74—5 R 4 Claims

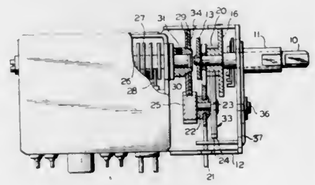


A pair of stationary soft iron bearings that support the ends of a soft iron shaft each have an annular cavity contiguous with an annular rim. Each shaft end and cavity define a uniform gap that communicates with a divergent pocket defined between the rim and the shaft. To hydrodynamically support the shaft when rotated, a magnetically susceptible bearing fluid is disposed in each gap-and-pocket set and is retained therein by a magnetic field provided by a permanent magnet applied across the gaps and divergent pockets. A field return path around the shaft communicates with the opposite pole regions of the magnet. A gyroscope is illustrated as a suitable environment in which these hydrodynamic bearings might be used.

3,780,594
UHF TUNING MECHANISM

Hirohiko Tonari, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 15, 1972, Ser. No. 263,278
Claims priority, application Japan, June 18, 1971, 46/44390; June 18, 1971, 46/44391; June 18, 1971, 46/44392; June 18, 1971, 46/44393
Int. Cl. F16h 35/18
U.S. Cl. 74—10.52 6 Claims

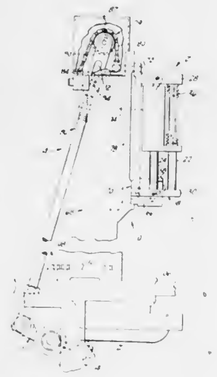


A tuning mechanism for a UHF tuner of the type which has a tuner control shaft adjustable to tune the UHF tuner. The mechanism has a tuning shaft which is rotatable in step-by-step rotation under control of a detent means, and driving gear means are mounted on the tuning shaft coupled to driven gear means on the tuner control shaft through a pair of planetary gear means. The planetary gear means are rotatably mounted on a swinging lever which rotates around the tuning shaft under the control of a fine tuning shaft coaxially mounted on the tuning shaft while the tuning shaft is locked in any one of its stop positions by the detent means for fine tuning of the UHF tuner.

3,780,595
LINEAR MOTION MECHANISM AND MOTION AMPLIFYING DEVICE THEREFOR

John J. Tuss, Englewood, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 7, 1972, Ser. No. 278,339
Int. Cl. F16h 21/16
U.S. Cl. 74—25 9 Claims

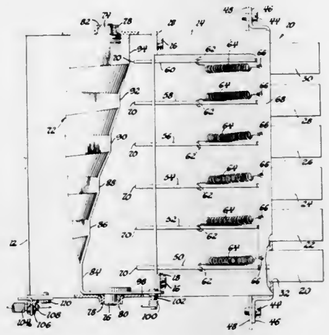


A linear motion mechanism is disclosed consisting of an output member comprising a slide block mounted for sliding linear movement on a slide frame, which slide frame is in turn detachably secured to a vertical drive assembly including a mounting frame having a vertically extending mounting surface formed thereon. The slide block is drivingly connected to a motion amplifying mechanism carried on the mounting frame including an input push link on which is rotatably mounted a rotary drive element engaged with a drive chain fixed at one end and connected at the other end to the slide block so that the motion of the slide block is an amplification of the motion of the push link in direction away from the chain ends. The push link is translated by a rotary cam and pivoted lever pinned to one end of the push link. The slide block and slide frame are adapted for use separately from the mounting frame and motion amplifieation mechanism by mounting it on a horizontal surface and directly engaging the slide block with a rotary cam.

3,780,596
FLOATING SUPPORT FOR THE SHIFT LEVER IN A SHIFT ASSEMBLY FOR A TRANSMISSION

Seihachi Takahashi; Nobuaki Katayama, and Hideki Morino, all of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Jan. 24, 1973, Ser. No. 326,458
Claims priority, application Japan, Jan. 28, 1972, 47/010365
Int. Cl. G05g 9/12
U.S. Cl. 74—473 P 14 Claims

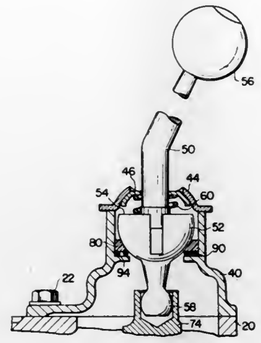


In a direct-shift type transmission, the shift lever is floatingly supported within an axially-extending retainer in the transmission case by means of a spring axially biasing the shift lever and also by the combination of a seat ring and a resilient member. The seat ring is axially movable within the retainer and has a spherically-shaped surface in contact with a spherically-shaped surface on the shift lever. The resilient member is positioned between a support surface on the retainer and the seat ring so that it resiliently supports the seat ring against the biasing action of the spring.

3,780,597
PUSHBUTTON SHIFT MECHANISM

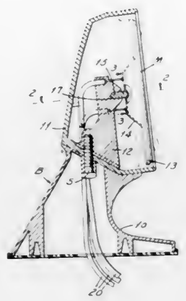
Robert L. White, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1972, Ser. No. 297,302
Int. Cl. G05g 13/02
U.S. Cl. 74—483 PM 7 Claims



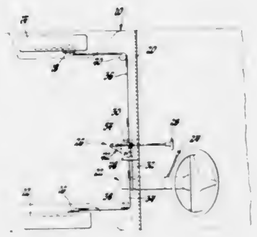
The drawings illustrate a pushbutton transmission shift mechanism including pushbutton members each having an inner abutment face formed thereon, a contoured member having a plurality of flat surfaces formed thereon at equal angles with respect to each adjacent flat surface and directly aligned with the respective inner abutment faces for being selectively pivotted thereby to a face-to-face relationship therewith upon selective depression of respective pushbuttons, a lever formed on an end portion of the contoured member, and a transmission selector cable connected to the lever for actuating selective transmission drive ratios.

3,780,598
REMOTE CONTROL MIRROR
Keith J. Menger, Greenville, Ohio, assignor to Sheller-Globe Corporation, Toledo, Ohio
Filed Apr. 12, 1972, Ser. No. 243,234
Int. Cl. F16c *1/10*
U.S. Cl. 74—501 M **16 Claims**



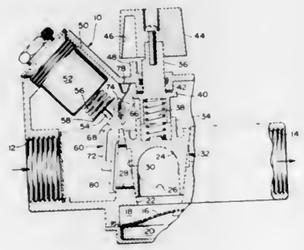
A remote control mirror comprising a mirror support, a base, a trunnion, interengaging means between the trunnion and the base limiting the pivotal movement of the trunnion with respect to the base in a single plane about a first axis, and interengaging means between the trunnion and mirror support limiting the pivotal movement of the mirror support about a second axis at a right angle to the first axis. The mirror construction further includes cable means acting on the mirror support for selectively moving said mirror support into any desired position by the combined pivotal movement about each of the axes.

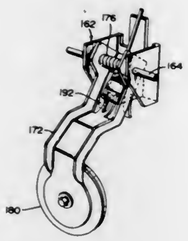
3,780,599
PARKING BRAKE CONTROL MECHANISM
Ernest D. Schaefer, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 16, 1973, Ser. No. 324,206
Int. Cl. G05g *1/04*
U.S. Cl. 74—516 **2 Claims**



A vehicle parking brake apply mechanism which increases the apply force from the hand or pedal apply lever by means of a mechanical advantage which varies with the travel of the apply lever so that the mechanism initially has a low mechanical advantage which phases into a high mechanical advantage. The mechanism also changes the direction of the apply force to a plane substantially perpendicular to the original force so that it is particularly adapted for front wheel parking brake systems. The parking brake apply lever has an interlock with the transmission gear selector so that the gear selector cannot be moved into the park position until the parking brake has been applied. The interlock will not allow release of the parking brake until the transmission gear selector is moved from the park position.

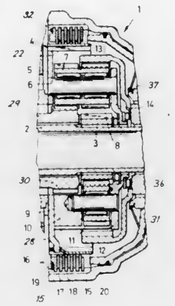
3,780,600
DUAL LEVER MECHANISM
Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 162,556, July 14, 1971, Pat. No. 3,747,617. This application Feb. 20, 1973, Ser. No. 333,591
Int. Cl. G05g *1/04*
U.S. Cl. 74—519 **4 Claims**





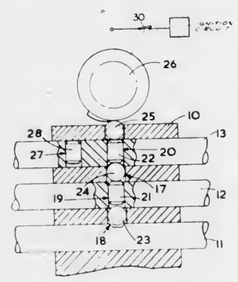
Dual lever mechanisms especially well suited for use in a combination control device for gas burner apparatus having a reset operator, an electromagnetic holding device and a safety valve member, the dual lever mechanisms including a first lever having one arm actuated by the reset operator, a second arm engaging the magnet armature and a third arm spaced from the second arm and movable into engagement with a second lever for the safety valve member and pivoted in common with the first lever; lost motion is provided between the first and second levers such that the second lever is not engaged by the third arm of the first lever until the final movement of the reset operator whereupon the valve member is lifted from its seat a slight amount thereby permitting the pressure differential experienced across the valve to be balanced. A torsion spring for the second lever thereafter moves the second lever so as to fully open the safety valve.

3,780,601
PLANET CARRIER FOR PLANETARY-GEAR TRANSMISSION
Hansjorg Dach; Karl Heinz Bordowsky, and Manfred Bucksch, all of Friedrichshafen, Germany, assignors to ZF-Borg Warner GmbH Industriegebiet Sud, Friedrichshafen, Germany
Filed May 15, 1972, Ser. No. 253,439
Claims priority, application Germany, May 14, 1971, P 21 24 009.5
Int. Cl. F16h *57/10, 3/44, 1/28*
U.S. Cl. 74—762 **10 Claims**



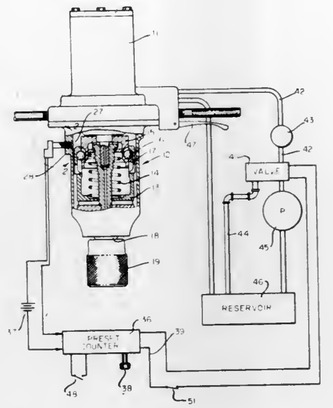
A planet carrier mounted on a central shaft, in a transmission housing, comprises a disk with a toothed periphery matingly engaged by the complementarily crenellated periphery of a drum coaxial therewith, the drum serving as a support for a set of annular clutch or brake foils which are interleaved with similar foils on the surrounding housing. Several segments of the disk periphery are partly severed from the disk body to form tongues which are bent out of the disk plane toward the interior of the drum and are locked in place by radially inbent portions of the drum periphery.

3,780,602
LOCKING ARRANGEMENT FOR VEHICLE GEARBOX
Derek Thornley, Nelson, England, assignor to Joseph Lucas (Industries) Limited, London, England
Filed Feb. 16, 1972, Ser. No. 226,789
Claims priority, application Great Britain, Feb. 17, 1971, 4,884/71
Int. Cl. B60k *21/00*
U.S. Cl. 74—850 **7 Claims**



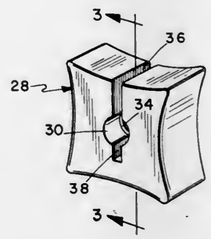
A locking arrangement for a vehicle gear box comprises a transverse passage in the gear box housing and intersecting the axes of the gear selector rods. An outside one of the rods has a recess and the remainder of the rods have transverse through bores, the recess, the bores and the passage being in alignment when a predetermined gear ratio is selected. Plungers slidable in the rod bores and members slidable in the passage between the rods are movable by an actuator to lock the rods in the position corresponding to the predetermined ratio.

3,780,603
IMPACT CONTROL FOR IMPACT WRENCHES
George C. Whitaker, Los Altos, Calif., assignor to Wolff Sales Engineering Company, Redwood City, Calif.
Filed May 11, 1972, Ser. No. 252,492
Int. Cl. B25b *19/00*
U.S. Cl. 81—52.3 **5 Claims**



A control for impact wrenches and method in which a predetermined number of impacts are delivered after the wrench has applied a predetermined torque.

3,780,604
SPLIT SOCKET WRENCH AND METHOD OF USING SAME
Gary J. Wood, 4215 47th St., and Bonnie G. Wood, 1940 California St., both of San Diego, Calif.
Filed July 1, 1971, Ser. No. 155,169
Int. Cl. B25h *13/52*
U.S. Cl. 81—64 **1 Claim**



A wrench-type handtool for manipulating annular bands, such as the clamping rings used on a rubber tube in spear gun slings, the wrench being essentially a block with a bore of a diameter substantially equal to the outside diameter of the ring to be manipulated, with a step or shoulder in the bore having a diameter approximateing the internal diameter of the ring, the block being split so as to be slightly compressible for gripping the ring. The invention includes the method of using the wrench in assembling a spear gun sling, including the steps of placing the rings on a ball-ended wishbone, forcing the ball ends into the ends of the rubber tubing, lubricating the ends of the rubber tubing with a water soluble substance, capturing the rings in the stepped bore of the wrench and manipulating the wrench with the rings therein onto the lubricated ends of the tubing and then, of course, removing the wrench and washing the assembled sling to remove the lubricant. A special clamp is disclosed for clamping the rubber tubing close to the ends thereof while manipulating the ball ends of the wishbone

into the bore of the tubing and while manipulating the rings onto the ends of the tubing.

3,780,605

GUIDING DEVICE, ESPECIALLY FOR SPLITTING AND BEVELING MACHINES

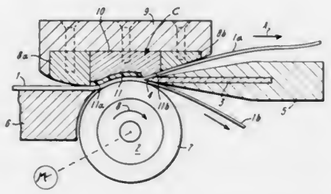
Karl Fingerle, Korb; Jurgen Haag, Stuttgart-Hedelfingen, both of Germany, assignors to Fortuna-Werke Maschinenfabrik Aktiengesellschaft, Stuttgart, Germany

Filed Sept. 11, 1972, Ser. No. 288,099

Claims priority, application Germany, Sept. 10, 1971, P 21 45 303.2

Int. Cl. B26d *3/12*

U.S. Cl. 83—4 **9 Claims**



A guiding device for splitting and beveling machines in which the material to be split or beveled is fed between a cutting member and a guiding element, said guiding device having a guiding part comprising at least a first guiding section forming the front guiding section when looking in the direction in which the material to be split or beveled is fed toward the cutting member and a second guiding section located behind the first guiding section when looking in the direction in which the material to be split or beveled is fed toward the cutting member. The arangement is such that the first guiding section is made of a synthetic material with a low coefficient of friction with regard to the material to be split or beveled, whereas the second guiding section is made of a hard metal.

3,780,606

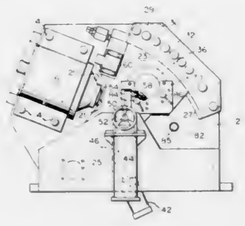
HOT LOG SHEAR

Alfred C. Jentsch, Jr., Fairport; Edward I. Taylor, Jr., Pittsford, and Walter Shukoff, Rochester, all of N.Y., assignors to USM Corporation, Boston, Mass.

Filed May 15, 1972, Ser. No. 253,623

Int. Cl. B23d *17/06*; **B26d** *3/16*

U.S. Cl. 83—23 **7 Claims**



A selected length of a hot aluminum billet or log is fed into the die openings of a relatively fixed and a relatively movable die, which are at the time aligned. Then an arm, which supports one die is pivoted to achieve a scissors-like action between the dies to sever the desired length of billet from the log. The pivotal movement of the arm is continued bringing a fluid-actuated plunger on the arm into alignment with the fixed die, and the movable die with the severed billet therein into alignment with a fluid-actuated fixed plunger. Both plungers are then actuated, respectively, to push the remainder of the log back out of the fixed die into the heating furnace and to push the severed billet out of the movable die whence it is conveyed to the extrusion press. The log is clamped during severing of the billet to prevent any movement of the log inside the dies or the log heater during the shearing operation.

3,780,607

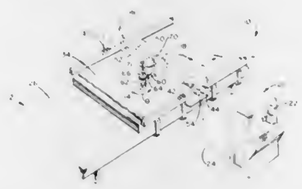
METHOD AND APPARATUS FOR CUTTING SHEET MATERIAL

Heinz Joseph Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Jan. 3, 1972, Ser. No. 214,579

Int. Cl. B26d *1/10*; **A41h** *43/00*

U.S. Cl. 83—49 **12 Claims**



A method and apparatus for cutting sheet material utilize a reciprocating cutting blade that is guided through a layup of sheet material along a cutting path defining the periphery of a pattern piece. The cutting blade is positioned generally perpendicular to the sheet material being cut and bears a cutting edge which is advanced through the sheet material as the blade is reciprocated. The stroking speed of the reciprocating cutting blade is regulated as the cutting blade advances to prevent excessive heat from being generated due to the frictional contact of the reciprocating cutting blade and the sheet material. Along sections of the cutting path which permit rapid advancement of the cutting blade, the stroking speed is increased to optimize the cutting operation without generating excessive heat and thereby fusing the sheet material. At other sections of the cutting path where the rate of advancement is decreased, the stroking speed is also decreased to reduce local heating and fusion.

3,780,608

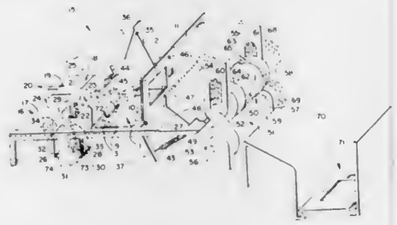
STRIP CUTTING AND MOUNTING APPARATUS

Gordon P. Brown, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 19, 1972, Ser. No. 218,949

Int. Cl. B26d *5/42*

U.S. Cl. 83—375 **7 Claims**



Apparatus for severing a portion of an information bearing strip from a remaining strip length and for sealing such a severed strip portion in a mount, wherein the apparatus is of the kind provided with (*a*) a strip cutting member, (*b*) a strip retaining member and (*c*) a mount sealing mechanism. Upon initial movement of the cutting member toward a strip portion disposed in a mount, a spring is actuated to urge the retaining member from a rest position to a position in which the retaining member firmly holds the strip portion against the mount. In this way, the retaining member serves to prevent the strip portion from being displaced from the mount when the cutting member severs the strip portion from the remaining strip length. Thereafter, the mount and the severed strip portion are transported with the retaining member (which still holds the severed strip portion against the mount) toward the mount sealing mechanism. After movement of the mount and the severed strip portion to the mount sealing mechanism, the spring is actuated to return the retaining member to the rest position.

3,780,609

RIBBON-TYPE COMPOSITE SAWING DEVICE

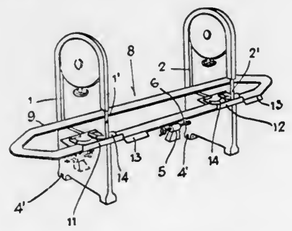
Giancarlo Storti, Via Bassa di Casalmaggiore 3, Motta Baluffi, Italy

Filed Sept. 11, 1972, Ser. No. 287,643

Claims priority, application Italy, Mar. 17, 1972, 5141 A/72

Int. Cl. B27b *15/08*

U.S. Cl. 83—420 **5 Claims**



A ribbon-type composite saw for obtaining uniform and continuous wooden strips which comprises a pair of frame-supported ribbon-type saws, the frames resting on a base platform and being provided for means for controlling the position of the blades of the saws. This control consists of movable feet on the points of contact of the frames with the platform, which feet are controlled for angular lateral displacement. The wooden workpieces are fed by an endless flight unit to the saws.

3,780,610

GUILLOTINES OR THE LIKE MACHINES

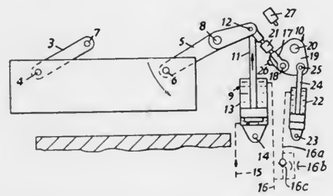
Herbert Zadow, Stockport, England, assignor to Victory Kidder Limited, London, England

Filed Aug. 30, 1972, Ser. No. 284,921

Claims priority, application Great Britain, Sept. 2, 1971, 40945/71

Int. Cl. B26d *5/12*

U.S. Cl. 83—643 **7 Claims**



The knife holder of a guillotine or the like machine has an operating arm which is connected to one end of a link, the other end of the link being pivotally connected eccentrically to a crank disc. The arrangement is such that when the knife is at its lowermost position, the pivot axes of the crank disc and of each end of the link are in line thus preventing further downward movement of the knife

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3,780,611

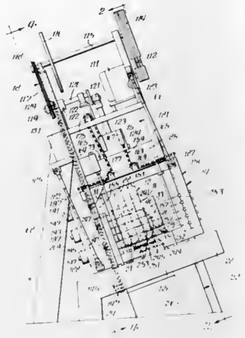
SAWMILL

Jesse Wasson Wilson Beckman, c/o Calumet Harbor Lumber Co., 13651 S. Buffalo Ave., Chicago, Ill.

Filed Aug. 12, 1971, Ser. No. 171,116

Int. Cl. B27b *3/04*, *3/22*

U.S. Cl. 83—751 **10 Claims**



A sawmill, including a log bed for feeding a log, saw means for cutting the log, and a cut-timber bed which receives the timbers into which the log is cut, is inclined to one side so that the log and cut timbers are held in place by their own weight. The sawmill has two gangs of blades which are arranged perpendicularly to each other so that a log can be cut in a single operation directly into timbers. The two gangs of blades are metal cutting blades so that the sawmill can be used to cut logs containing foreign objects, such as nails.

3,780,612

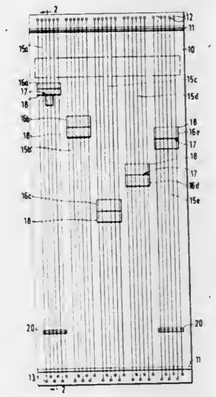
STRINGED MUSICAL INSTRUMENTS

Alan Thomas Robinson, 114 Mount St., London, W. 1, England

Filed June 16, 1972, Ser. No. 263,455

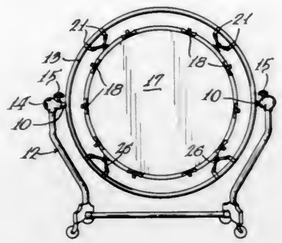
Int. Cl. G10d *1/00*

U.S. Cl. 84—173 **3 Claims**



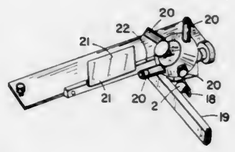
A musical instrument, particularly suited to be played by plucking using one hand, has sets of strings extending over a sound board or table, each set having its own bridge, and each set of strings being tunable to sound a chord the pitch of which can be altered simply by sliding the associated bridge lengthwise of the strings.

3,780,613
BASS DRUM SUSPENSION
William F. Ludwig, Jr., Oak Brook, Ill., assignor to Ludwig Industries, Chicago, Ill.
Filed Apr. 16, 1973, Ser. No. 351,295
Int. Cl. G10d *13/02*
U.S. Cl. 84—421 **5 Claims**



A suspension for a bass drum which is resilient and which prevents unwanted transmissions of vibrations from the beating of the drum to the supporting stand thus eliminating rattles and the like. Each suspension includes a flexible cord having a coiled spring at each end thereof which springs are removable secured to a ring supporting member with the cord slidably passing through an eye provided on the drum shell.

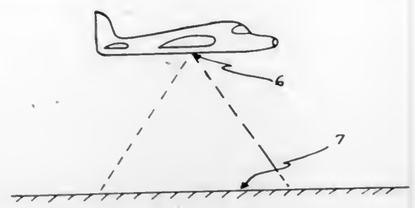
3,780,614
MULTIPLE BULLET AND CARTRIDGE MOUNT FOR FORENSIC MICROSCOPE
Howard A. Maier, Williamsville, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 5, 1973, Ser. No. 329,794
Int. Cl. C06b *21/02*
U.S. Cl. 86—1 R **3 Claims**



A multiple bullet and cartridge holder for use with a forensic microscope has a carriage with a plurality of conventional mounts for bullets and provides rapid interchangability of specimens for examination, improved indexing and improved manipulation.

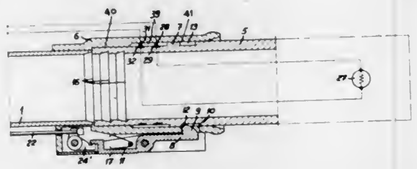
3,780,615
PRESSURE ACTIVATED HEAT ABSORBING OR EMITTING DETECTION SYSTEM
Keith S. Peyton, c/o Hq. SAMSO (SMTAX), AFUPO, Los Angeles, Calif., and Michael D. Jolly, Lexington Ave., Highland Mills, N.Y.
Filed Jan. 6, 1969, Ser. No. 790,513
Int. Cl. G01j *3/00, 5/00*
U.S. Cl. 89—1 A **4 Claims**

A detector for use in warfare, to provide intelligence information concerning the use of roads or trails by the enemy. The detector comprises an agglomeration of crushable capsules containing reactants for producing a temperature change when the capsules are crushed. The agglomerations are distributed over roads and trails to be monitored and may contain either a chemical which will react with a component of the atmosphere or two chemicals which will react with each other when the agglomerations are crushed. In either case, the reaction produces a change in temperature and a corresponding change in infrared radiation which is detectable by an



overflying aircraft carrying suitable infrared detection equipment.

3,780,616
SET COMPRISING AN INFANTRY WEAPON AND ITS AMMUNITION
Maurice Rusbach, Vernier-Beneva, Switzerland, assignor to Sarmac S. A., Carouge-Geneve, Switzerland
Filed May 10, 1971, Ser. No. 141,700
Claims priority, application Switzerland, May 21, 1070, 7508/70
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 **7 Claims**

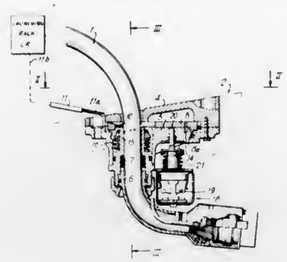


The invention relates to a set comprising an infantry weapon capable of being fired from the shoulder, and ammunition for the same, the said weapon comprising at least one tubular body for guiding a self-propelled projectile which is housed in a case and a control device for firing the projectile. This weapon has at the rear of the said tubular body a device for the ratchet-wise locking of the front end of the case, in the vicinity of which is the nose of the projectile, so that the case is located in the extension of the tubular body of the weapon. Means are provided for releasing the said case during the period of time elapsing between firing of the projectile and its emergence from the front end of the tubular guide body of the weapon and for ejecting the case once the projectile has left this.

3,780,617
DEVICE FOR BREAKING A LAUNCHING RACK-TO-MISSILE UMBILICAL CORD
Frederic Louis Joseph Tabarie, Saint-Tropez; Albert Bernard, Cannes, and Georges Gilbert Saint-Aubin, Gassin, all of France, assignors to Etat Francais represente par le Ministre Charge de la Defense Nationale Delegation, Ministerielle pour l'Armement, Paris, France
Filed Mar. 30, 1972, Ser. No. 239,654
Claims priority, application France, Apr. 2, 1971, 71.11641
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.811 **4 Claims**

In a missile launching apparatus in which a missile is coupled to a launching rack by an umbilical cord which passes through an opening in the skin or fairing of the missile, there is provided a device for severing the umbilical cord. This device includes a rotatable disk provided wth a hole which is offset relative to the axis of rotation of the disk and through which hole the cord passes. A cable is provided connecting the disk

with the launching rack so that upon launching, the disk is rotated through a fraction of a turn. The disk is provided with a knife edge bordering part of the aforementioned hole for purposes of severing the umbilical cord. The hole in the disk is provided in a half of the disk and the other half of the disk is at least substantially imperforate. This latter half of the disk operates to obturate the opening in the skin of the missile after

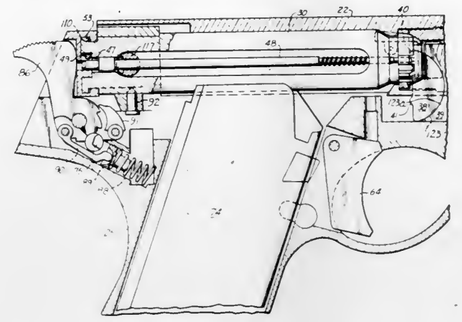


the umbilical cord has been severed. A safety pin is provided to lock the disk against rotation prior to launching of the missile and this pin is of a strength to be sheared when the disk is rotated by the aforesaid cable. In addition, there may be provided a switch which includes an actuator bearing against the disk and adapted to enter the aforesaid hole upon rotation of the disk in order to actuate the switch.

3,780,618
AUTOMATIC HAND GUN
Harry W. Sanford, Arcadia, Calif., assignor to James C. Thomas, III, Encino, Calif.
Filed May 20, 1971, Ser. No. 145,259
Int. Cl. F41d *3/06, 11/02*
U.S. Cl. 89—150 **2 Claims**

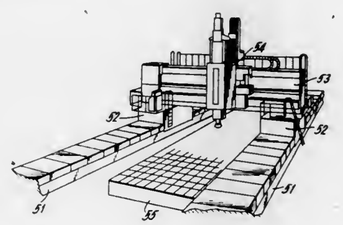


This invention relates to a recoil-actuated automatic hand gun, which provides for utilizing a maximum sized cartridge in a hand gun system. The reactive thrust as the bullet leaves the muzzle of this gun causes a barrel, barrel extension, receiver, and bolt to slide back locked together a set distance during initial motion until the bullet leaves the bore of the gun, and the gas pressure decreases to a level low enough to permit the safe unlocking of a locked breech action. The sliding receiver reaches its limit of travel and hits a portion of the frame of the pistol. A through-slot in the bolt bears cam surfaces which rotate the bolt out of breech-locking splines in the breech action thereby to release the bolt from engagement with the receiver and permit the inertia of the bolt to carry it backwards to perform ejection, cocking, and the loading of a new cartridge. In order to replace some of the dissipated energy and to increase the speed of travel of the bolt to load spring-return mechanisms, and to perform the functions of the bolt with the speed required, a rotary, mechanical accelerator forms a part of the action and imparts a blow to the bolt at the time that the receiver reaches its stop position. The bolt is rotated out of the breechlocked position by balanced cam follower means fixed to the frame that follow the cam surfaces, and upon return to the breechlocked lock position, the entire assembly travels as a unit to the battery position with a loaded



cartridge in the chamber. A safety tappet pin engages a spiral groove in the bolt to prevent premature firing before the action has reached an appropriate position. The bolt is adapted with unique ejection means, which ejects the spent cartridge case forward and away from the shooter's head and face.

3,780,619
GANTRY MILL FREE FROM THE EFFECTS OF THERMAL DEFORMATION OF A BRIDGE MEMBER
Tetsuo Kitamura, and Akira Tamai, both of Hiroshima-ken, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 10, 1972, Ser. No. 233,689
Int. Cl. B23c *1/06*
U.S. Cl. 90—15 **6 Claims**

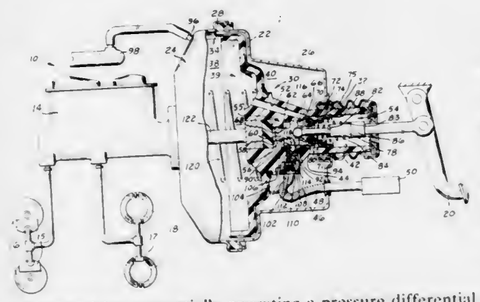


A gantry mill free, from the effects of thermal deformation of a bridge member, comprises a pair of combinations each consisting of a base member, a bed member on which the base member can travel and which is fixed provided with a driving strip member directed in the direction of travel of the base member, and a driving device engaged with the driving strip member. A bridge member is connected between the head portions of the base members.

In one combination, the base member and the driving device are fixed to each other and the bed and base members are constrained against relative lateral displacement and relative vertical displacement while being capable of relative longitudinal displacement while being capable of relative longitudinal displacement in the direction of travel. In the other combination, the base member and the driving device are constrained against relative longitudinal displacement and relative vertical displacement, but are capable of relative lateral displacement through a distance in excess of the maximum thermal deformation of the bridge member. Also, the bed member and the base member in the other combination are constrained against relative displacement in the vertical direction but are capable of relative displacement in the

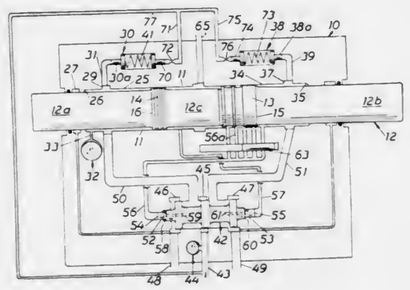
lateral direction through a distance in excess of the magnitude of thermal deformation of the bridge member, and are also capable of relative displacement in the travel direction, with the bed member and the driving device being constrained against relative displacement in the lateral direction. The bed members are fixedly mounted in spaced parallel relation, and the base members are conjointly movable, in fixed parallel relation, longitudinally of the bed members.

3,780,620
PRESSURE DIFFERENTIAL ASSIST FOR A SERVOMOTOR
Delbert J. Gardner, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed Nov. 13, 1972, Ser. No. 306,265
Int. Cl. F01b *25/02*; **F15b** *9/00*
U.S. Cl. 91—6 **7 Claims**



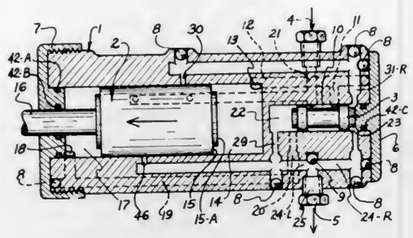
A control for sequentially operating a pressure differential servomotor with air at atmospheric pressure and air above atmospheric pressure in response to an input force for developing an output force to energize an intensifying device to supply a braking system with pressurized fluid.

3,780,621
HYDRAULIC FLUID ACTUATED PERCUSSION TOOL
Gunnar Vigg Riss Romell, Djursholm, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed June 7, 1971, Ser. No. 150,566
Int. Cl. F01l *25/04*
U.S. Cl. 91—290 **7 Claims**



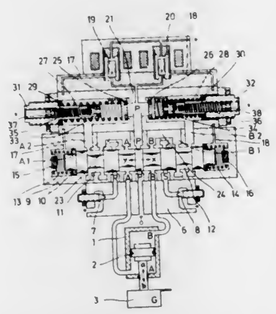
A percussion tool has a hammer piston forming with the cylinder a rear and a forward variable volume work chamber which are alternately pressurized. A fluid accumulator is connected to the rear work chamber and it is loaded by a spring device which is adapted to be automatically pre-loaded in proportion to the pressure in the pressurized hydraulic fluid supplied to the percussion tool. Another identical fluid accumulator is shown connected to the forward pressure chamber.

3,780,622
HYDRAULIC OSCILLATOR AND SYSTEMS ACTUATED THEREBY
Arthur E. Vogel, 1860 E. Cherry St., Columbus, Ohio
Filed June 9, 1971, Ser. No. 151,302
Int. Cl. F01l *25/04*
U.S. Cl. 91—296 **9 Claims**



A hydraulic actuator in the form of a fluid actuated reciprocating motor of extreme simplicity consisting of two movable elements and hydraulic circuitry. A housing encloses the two movable elements and the hydraulic circuitry is achieved within the wall of the housing. The two movable elements consist of a reciprocable piston in a cylinder and a reciprocable reversing valve in a chamber. Fluid flow through the system is continuous and uninterrupted. The reversing valve is moved alternately to its two different positions and held in such positions, by pressure differential created by different flow conditions set up at its opposite ends. These differential flow conditions are set up under the control of cylinder inlet and outlet ports which are connected to the valve chamber and are covered and uncovered by the piston during its reciprocation.

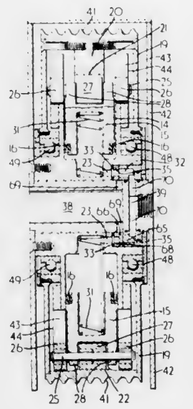
3,780,623
VALVE UNIT FOR CONTROLLING DOUBLE ACTING FLUID OPERATING CYLINDERS
Herman Hohlein, Planckstrasse 10, Wolfsburg, Germany
Filed July 15, 1970, Ser. No. 54,915
Int. Cl. F15b *11/08*, *13/043*
U.S. Cl. 91—459 **3 Claims**



A system comprising a fluid motor and a valve unit, said valve unit having a movable slide valve connecting in its end positions one side of a fluid motor to a fluid source under pressure and the other side of said fluid motor to a sump or to the atmosphere and connecting in its central position both sides of said fluid motor to said fluid source under pressure, said valve unit having a shifting slide and solenoid valves actuating said slide. After de-energizing said solenoid valves, said slide valve is caused to move into its central position so that the fluid motor is immediately supplied with fluid under pressure via passages containing excess pressure valves and the slide on

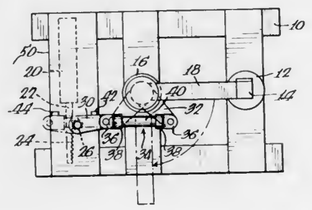
both sides and retained in every intermediate and end position.

3,780,624
ROTARY AIR MOTOR
Frank Alan Webb, Twickenham, England, assignor to Martonair Limited, Middlesex, England
Filed Aug. 12, 1971, Ser. No. 171,236
Claims priority, application Great Britain, Sept. 21, 1970, 40,326/70
Int. Cl. F01b *13/00*
U.S. Cl. 91—491 **9 Claims**



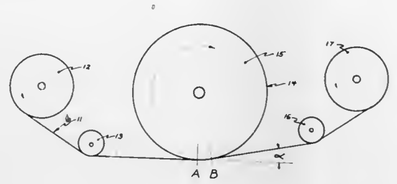
In a rotary motor a plurality of radially-directed cylinders are located on a stator and include reciprocating pistons whose outer ends react with a cam track defined on the inner surface of a rotatable output member mounted coaxially with the stator, the pistons being driven pneumatically in a predetermined sequence by means of an air distribution arrangement in which two co-operating valve plates, one stationary and the other movable with the output member, operate between sources of air relatively high and low pressure and cylinder ports in the stator communicating with said cylinders.

3,780,625
OPERATING MECHANISM FOR HIGH TENSION ELECTRIC SWITCH GEAR
Donald E. Weston, East Sebago, Maine, and Julius W. Timmerman, Brookfield, Wis., assignors to H. K. Porter Company, Inc., Chicago, Ill.
Filed Mar. 1, 1971, Ser. No. 119,549
Int. Cl. F15b *11/08*
U.S. Cl. 91—418 **5 Claims**



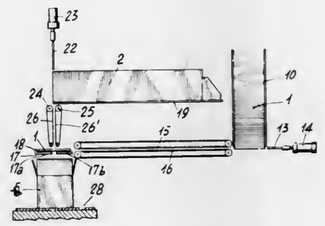
Operating mechanism for high tension electric switch gear comprising hydraulic cylinder means for reciprocating a rack, a pinion engaged with the rack for rotation thereby, and a three bar toggle linkage connected between said pinion and the rotary stack of the switch for operating the switch; said mechanism being characterized by its economy, compactness, foolproof operation, safety features and power.

3,780,626
DEVICE FOR THINNING CELLULOSIC STRIPS
Joseph H. Hollier, Jr., Pearcy, Ark., assignor to Sutco, Inc., Hot Springs, Ark.
Filed July 25, 1972, Ser. No. 274,979
Int. Cl. B24b *19/22*; **B26d** *3/02*
U.S. Cl. 93—1 G **1 Claim**



An advancing cellulosic strip is caused to impinge tangentially upon the exterior, abrasive surface of a drum, which is rotatably mounted and driven on its longitudinal axis. The advancing cellulosic strip is urged into congruity with the exterior, abrasive surface of the drum over an area on the drum defined by an arc thereon of at least about 10°

3,780,627
MACHINE FOR THE AUTOMATIC FORMATION AND INSERTION OF CONTAINER PARTITIONS
Emilio Roda, Noranco, Switzerland, assignor to Fratelli Roda S.A., Lugano, Switzerland
Filed Dec. 9, 1971, Ser. No. 206,319
Claims priority, application Switzerland, July 9, 1971, 10179/71
Int. Cl. B31b *11/26*, *11/02*
U.S. Cl. 93—37 R **6 Claims**

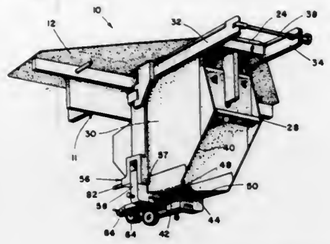


A machine for automatically manufacturing partition baffles forming "beehive" bodies adapted to separate various articles contained within a container, and for inserting said bodies into the respective containers having a first magazine containing the horizontal element piled therein, means to push an element into conveying members, a bending platform to receive said element conveyed by said members, a second magazine above said bending platform containing the vertical elements side by side, means to push said element into conveying and accelerating members which position said vertical elements into the elongated slots of said horizontal element, located on said bending table means to convey an embodied container below said bending platform and to hold said container while the "beehive" body is inserted, after which said container is advanced.

3,780,628
FILM SHAPING APPARATUS

Robert W. McGill, Stow, and P. Eric Painter, Northfield, both of Ohio, assignors to A-T-O Inc., Willoughby, Ohio

Filed Mar. 13, 1972, Ser. No. 234,089
Int. Cl. B31b 1/38; B65b 9/06
U.S. Cl. 93—82 10 Claims

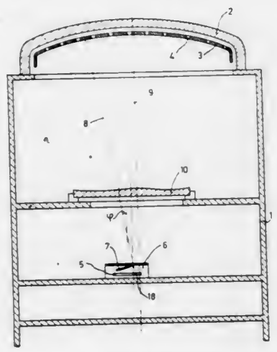


A film forming apparatus or collar is provided for having a continuous sheet of flexible film led thereover for shaping into an enclosure tube for receiving articles fed thereinto for packaging purposes and it includes a top plate having a trapezoidal form with a short front end and a wide rear end and forwardly converging side edges. Parallel side plates depend from the top plate and guide bar means are operatively positioned underneath the guide plate to fold the film around the side edges thereof as well as the front end of the guide plate, the film moving downwardly to be formed into the enclosure. A front roller is positioned at the front end of the guide plate and is adjustable in position to protrude forwardly or upwardly slightly from the front end of the guide plate and provide maximum tension on a center portion of the film as fed to and folded around the guide plate and downwardly over the front roller. The apparatus also includes a removable nose assembly on which the front roller is positioned and a second guide roller is positioned on such nose assembly with the center portion of the film passing down to and rearwardly around the second guide roller.

3,780,629
EXPOSURE DEVICE FOR MANUFACTURING A DISPLAY SCREEN OF A COLOUR TELEVISION DISPLAY TUBE

Piet Gerard Joseph Barten, and Eric Tapley Ferguson, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,781
Claims priority, application Netherlands, Oct. 14, 1971, 7114113
Int. Cl. G03b
U.S. Cl. 95—1 R 6 Claims

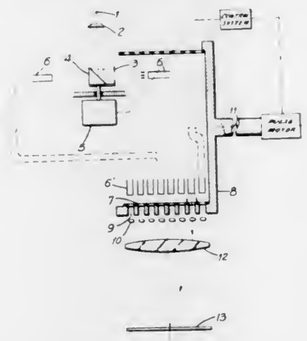


An exposure device for manufacturing a display screen of a colour television display tube. The device comprises a quasi-line-shaped light source and a diaphragm having a narrow slot. As a result of this combination a quasi-punctiform part of the light source is visible from the display screen. The shape of the slot is such that the quasi-puntiform part varies its position as a function of the deflection. This position variation is accomplished partly by varying the position of the virtual light source, which is necessary because of the actual shift of the deflection point in the operating tube. The rest of the position variation of the virtual light source is obtained by means of a correction lens system. A special shape of the slot is indicated.

3,780,630
LIGHT-DISTRIBUTION SYSTEM FOR PHOTOCOMPOSERS

Tohru Nakajima, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 28, 1970, Ser. No. 101,948
Claims priority, application Japan, Dec. 26, 1969, 44/2135
Int. Cl. B41b 21/08, 21/26
U.S. Cl. 95—4.5 3 Claims



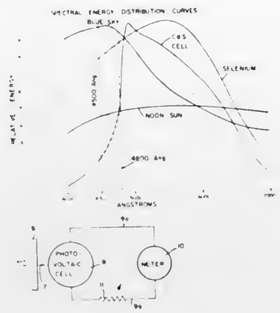
A system for directing light in a photocomposer to a selected character to participate in the formation of an image thereof. The photocomposer has a maxtrix provided with characters uniformly arranged in rows which are adapted selectively to be positioned at a projecting position where a selected character in the row at the latter position can have its image projected onto a light-sensitive member. A plurality of elongated light-guide members are respectively provided with light-discharge ends respectively aligned with the characters in a row at the projecting location, and these light-guide members have light-receiving ends distant from their light-discharge ends. A single light source is provided for illuminating a selected character, and a light-directing structure coacts with this single light source to direct light therefrom to the receiving end of a selected light-guide member, so that light will travel therethrough to the discharge end thereof for illuminating a selected character in a row which is at the projecting location.

3,780,631
MONOCHROMATIC PHOTOGRAPHIC EXPOSURE PROCESS AND APPARATUS

Norman S. Schulman, 55 Grist Mill Ln., Great Neck, N.Y.

Filed June 23, 1972, Ser. No. 265,574
Int. Cl. G01j 1/00
U.S. Cl. 95—10 C 7 Claims

A process of filtering out from natural light that light of wave lengths greater than about 4800 angstroms and less than about 4500 angstroms, directing the filtered light of about 4500 to about 4800 angstroms onto a photosensitive cell and metering the response of the photosensitive cell and directly proportional to the metered response, controlling light exposure to an image-receiving mechanism such as a television-image-receiving tube or a camera film, typically by controlling shutter speed and/or by controlling iris-aperture diameter of the camera, and the controlling of the light exposure may be

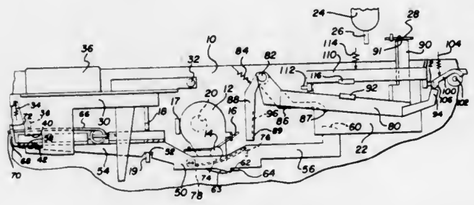


either calculated on the basis of a meter reading or may be automatic through electrical circuits, whereby compensation is made for variations in spectral quantity of light source as well as compensation being thereby made for various reflectiveness of subject matter being metered.

3,780,632
DAYLIGHT MODE COMPENSATING MECHANISM

Leonard F. Kamp, and Jeffrey R. Stoneham, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,538
Int. Cl. G03b 15/04
U.S. Cl. 95—11 L 10 Claims

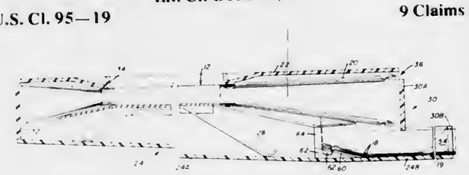


Photographic apparatus having a shutter mechanism and adapted for use with a flash device is provided with a compensating spring for equalizing the force required to actuate the mechanism in the daylight and flash mode.

3,780,633
FILM CARTRIDGE

Chester W. Michatek, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,939
Int. Cl. G03b 19/10
U.S. Cl. 95—19 9 Claims

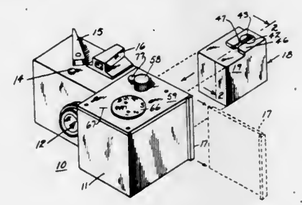


An improved cartridge for a plurality of photographic film units of the self-processing type wherein the film units each include an image-recording unit releasably coupled at the leading end to a leading member which comprises elements that can be separated from the finished photographic print and constitute waste that must be disposed of. The cartridge comprises a substantially rectangular container having an exposure aperture in one surface. The cartridge is provided with a trailing and a leading end, the leading end being provided with a film unit dispensing slot for the removal of an exposed image-recording unit from the cartridge. The lower portion of the leading end of the cartridge extends beyond the portion containing the dispensing slot and is arranged to accept and retain the leading member as it is separated from the image-recording unit. The improvement comprises wall elements in the cartridge extension which provides improved storage and retention of the separated members in the extension.

3,780,634
SYSTEM FOR TAKING AND PROCESSING STILL PICTURES

John H. Van Osch, 3415 Honey Creek Ct., Milwaukee, Wis.

Division of Ser. No. 501,321, Oct. 22, 1965, Pat. No. 3,653,310. This application Mar. 27, 1972, Ser. No. 238,696
Int. Cl. G03b 17/26
U.S. Cl. 95—31 CA 18 Claims

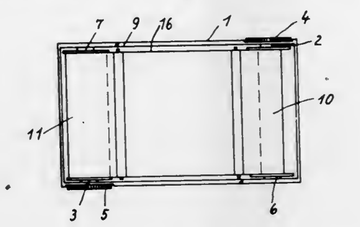


This invention relates to photography and in particular to an improved photographic system for taking and processing still pictures.

3,780,635
SPOOL HOLDER FOR ROLL FILM CAMERAS

Claus Prochnow, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Apr. 14, 1972, Ser. No. 244,099
Int. Cl. G03b 19/04
U.S. Cl. 95—31 CA 9 Claims



A spool holder for holding a roll film supply spool and take-up spool, the holder with the spools mounted therein being insertable in or removable from an appropriate camera body constructed to receive it, or a detachable back section or cassette section of a camera body. The holder contains driving keys and mounting pins or stub shafts for both spools, the driving keys being at diagonally opposite corners of the holder. Thus the holder may be inserted in the camera body in either one of two positions, rotated 180° with respect to each other about the optical axis. When the film on the supply spool has been used up, the former supply spool now becomes the take-up spool when the holder is inserted in the camera in a posi-

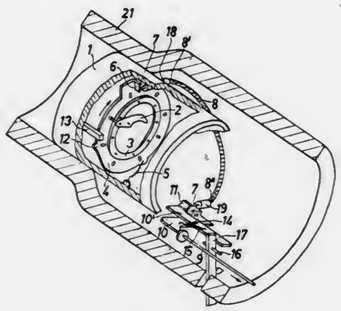
tion turned 180° from its former position, thus avoiding the customary step of removing the empty supply spool and re-inserting it in the camera in the take-up position.

3,780,636

DEVICES FOR OPERATING A SPRING AND PRESSURE CONTROLLED PRESELECTION DIAPHRAGM IN PHOTOGRAPHIC LENS MOUNTS

Paul Klupsch, 23, Am Johannisberg; Rudolf Paul, 14, Thomas-Mann-Strasse, and Ulrich Dressler, 6, Geleitsstrasse, all of Jena, Germany

Filed Mar. 11, 1969, Ser. No. 806,325
Int. Cl. G03b 9/02
U.S. Cl. 95—64 R 2 Claims



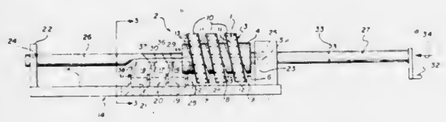
A photographic lens mount includes a spring and pressure controlled preselection diaphragm which participates in the focusing motion along the optical axis, a Bowden cable, and means for actuating the diaphragm. Part of the actuating means projects from the lens mount into the camera. The Bowden cable connects the actuating means with the diaphragm and controls the diaphragm setting by push and pull.

3,780,637

PHOTOGRAPHIC MATERIAL PROCESSING APPARATUS

Robert F. Horn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1972, Ser. No. 232,387
Int. Cl. G03d 3/06
U.S. Cl. 95—93 7 Claims



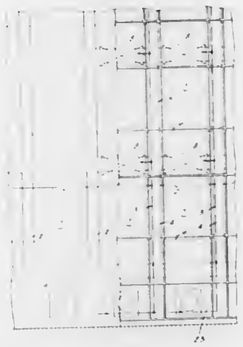
Apparatus for processing photographic material by immersing such material in processing solution, includes a screw member which is provided with a shank having a longitudinally extending axis and with a rib projecting from the shank and helically disposed about the shank axis so as to form a series of uniformly spaced rib convolutions. The rib convolutions are adapted to hold a flexible strip of photographic material in a helical winding. A frame member of the apparatus is provided with a base which supports several processing solution tanks in fixed, aligned relation. The frame member is further provided with other structure which supports the screw member for rotation about the shank axis and for translation in a manner such that the rib convolutions depend into, and move successively through, the tanks. A screw-mating member of the apparatus is located on the frame and adapted to be received between the rib convolutions for effecting translation of the screw upon screw rotation about the shank axis.

3,780,638

CONSTRUCTION FOR THE VENTILATION AND AIR CONDITIONING OF ROOMS OF EXISTING BUILDINGS

Ernst Albrecht Burghartz, Isabellastrasse 29, and Hans Guenter Fuss, Krayer-Strasse 218, both of 4300 Essen, Germany

Filed Nov. 28, 1972, Ser. No. 310,137
Claims priority, application Germany, Dec. 3, 1971, P 21 60 012.4
Int. Cl. F24f 7/00
U.S. Cl. 98—31 10 Claims



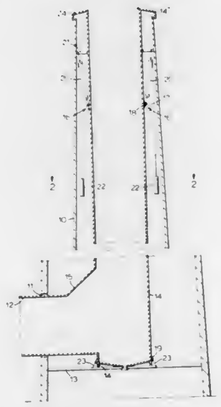
Ventilation and air conditioning system for heating, cooling and ventilating existing buildings, which avoids the necessity of breaking through the walls, floor or ceiling of the building for the provision of air supply and exhaust ducts. This systems consists of an air-tight false building wall, which may be a false front wall of the building in the form of a subframe having air supply and return ducts therein having communication with the interior of the building..

3,780,639

CHIMNEY LINERS

Geoffrey Brian Wood, R. R. No. 1, 18th Ave., Richmond Hill, Ontario, Canada

Filed July 11, 1972, Ser. No. 270,863
Int. Cl. E04h 12/28
U.S. Cl. 98—58 10 Claims



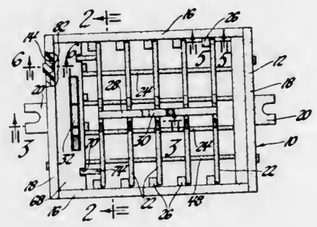
A tubular chimney liner is supported within the outer tubular shell of a chimney structure by tensioning means connected between the liner and the shell for applying an upward force to the liner in excess of its weight, and tethering means connected to the liner adjacent to its bottom end for maintaining the bottom end of the liner in a substantially constant position. The liner is thus supported under longitudinal tension, and changes in length due to thermal changes are taken up at its upper end.

3,780,640

COMPOUND AIR REGISTER OF ONE PIECE CONSTRUCTION

Jonathan N. Fruth, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 18, 1972, Ser. No. 272,993
Int. Cl. F24f 13/08
U.S. Cl. 98—110 3 Claims



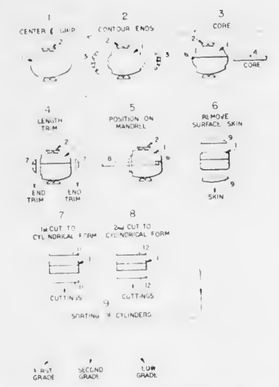
A compound air register of one-piece molded plastic construction, in preferred form of molded polypropolene, including integraly connected frame members one being pivotally folded within the other, the respective frame members each including a plurality of vanes forming a vane set integrally molded therewith and capable of pivotal movement relative thereto. The vanes in the one frame vane set rotate about an axis normal to the axis of rotation of the vanes in the other frame vane set. When folded together the vanes in the one frame vane set are positioned normal to the vanes in the other frame vane set controlling the flow of air in both vertical and horizontal planes. Actuating means are also molded integral with the respective pluralities of vanes so that they may be rotated in unison as desired.

3,780,641

METHOD FOR PREPARING PINEAPPLE

William L. Hole, 23 Brookdale Ct., Lafayette, Calif.

Filed Dec. 6, 1971, Ser. No. 204,912
Int. Cl. A23n 7/00; B23q 3/08; A47i 17/10
U.S. Cl. 426—482 15 Claims



Method and apparatus for preparing fresh pineapple and like fruit prior to slicing and canning or freezing such fruit. Whole pineapple are gripped in sequence intermediate their ends while skin is removed from such ends, after which their core is removed. Following trimming to predetermined length the external grip is released and the pineapple are supported internally while the remaining skin is removed and the pineapple are cut to cylindrical form of predetermined diameter. The removed skin, core and meat cuttings are utilized to the maximum extent to insure minimum waste in an economical procedure.

3,780,642

CASSEROLE

Eduard Bay, Hohlstrasse 26, 5412 Ransbach-Baumbach, Germany

Filed Feb. 11, 1972, Ser. No. 225,463
Claims priority, application Great britain, Oct. 29, 1971, 20,402/71
Int. Cl. A47j 37/10
U.S. Cl. 99—347 7 Claims



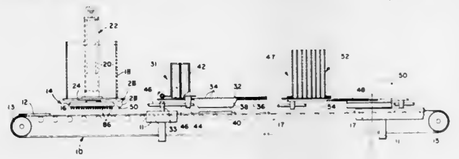
A casserole in which the container for the food is formed of porous ceramic material and the lid for the container is formed of impervious material. The underside of the lid is provided with a plurality of spaced, depending ribs. During cooking, condensate collecting on the underside of the lid drips from the ribs onto the food in the casserole.

3,780,643

PASTRY SHELL FILLING APPARATUS

Imre F. Papai, 2818 E. 119 St., Cleveland, Ohio

Filed May 8, 1972, Ser. No. 250,933
Int. Cl. A21c 11/16; A23g 3/02
U.S. Cl. 99—450.7 7 Claims



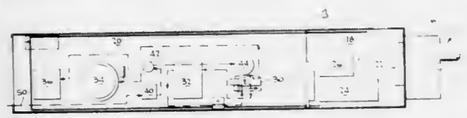
There is provided a new pastry filling machine characterized by an indexing conveyor belt adapted to receive unfilled pastry shells, e.g., partially baked pizza pie shells, for delivery sequentially to filling stations, e.g., a tomato paste applying station, a grated cheese applying station, and a pepperoni applying station. Each of the material dispensers included at the indexed stations is also novel and may be used alone or in combination with one or more of the others.

The apparatus for applying a paste-like foodstuff is characterized by a distribution head of unique construction and having a manifold chamber and a plurality of individual distributing orifices of predetermined increasing opening as the distance from the center of the head increases. The length of the spouts and the magnitude of the hydrostatic head within the distribution head is interrelated in such a way that dripping of residual material is avoided.

The apparatus for applying a grated foodstuff, e.g., cheese from brick cheese bodies, is characterized by a movable holder for gravity or forced feeding of the foodstuff and a stationary grate.

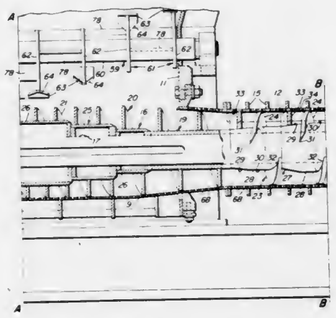
The apparatus for applying a sliced meat product includes relatively movable rotatable cutting means and meat supporting means, and means for guiding meat slices to a predetermined location on a pastry shell.

3,780,644
MILK PROCESSING SYSTEM
Richard Canfield, R. D. No. 1, Manheim, Pa., and Nelson Nafziger, R. D. No. 3, Coatesville, Pa.
Filed Jan. 24, 1972, Ser. No. 220,324
Int. Cl. A01j *11/00*
U.S. Cl. 99—455 **9 Claims**



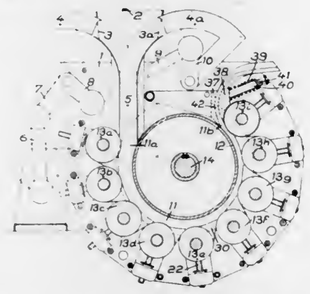
A novel milk processing system is disclosed which generally comprises a mobile milk processing unit mounted on a motor vehicle and by which raw milk can be processed and discharged directly at the farm, for example. In the preferred disclosed structural embodiment, the mobile unit for processing raw milk directly at the location of a source of supply thereof comprises a movable vehicle which has disposed thereon a milk processing assembly including at least a pasteurizer, means for delivering raw milk to the pasteurizer and for discharging processed milk therefrom, means for circulating water as a heat transfer medium through the pasteurizer, and electrically operable temperature conditioning means for selectively heating and cooling the circulating water. The mobile unit further carries an electrical generator which, in the preferred inventive embodiment, is itself driven by the motor of the movable vehicle, or by an auxiliary motor the vehicle being contemplated to comprise a tractor/trailer combination. The electrical generator provides electric power for operating at least the milk processing assembly and the temperature conditioning means disposed on the vehicle. By so utilizing an electrical generator as the power source, marked savings in economy, size, and weight can be achieved over conventional steam-operated apparatus and related machinery, thus enabling production of a commercially feasible mobile milk processing system.

3,780,645
SCREW PRESS ASSEMBLY
John Farmer, Honolulu, Hawaii, assignor to Ward Foods, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 65,447, Aug. 20, 1970, abandoned. This application Aug. 2, 1972, Ser. No. 277,248
Int. Cl. B30b *9/12*
U.S. Cl. 100—117 **31 Claims**



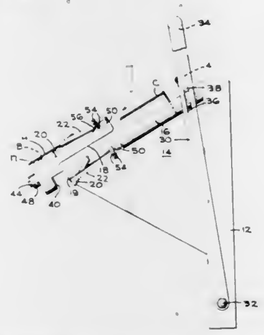
A screw press assembly for expressing juice from bagasse and other disintegrated juice-containing material, having an upwardly opening hopper feeding a plurality of barrels, through each of which bagasse is driven by a screw extending into the hopper, and means in the inlet of the hopper for preventing accumulation of the material in advance of and distributing it uniformly over the screws. Within the barrels, the screws are so constructed as to produce a relatively low radial force and concentrate the pressure at the barrels' outlets and that pressure is controlled by axially shiftable, fluid-actuated plugs in the outlets. The barrels have bell-mounted inlets for minimum interference with entry of the material and are perforated throughout their lengths for passing expressed juice and the screws are intergeared for driving all through a drive connected to one.

3,780,646
FIBROUS SUBSTANCE COMPRESSION APPARATUS
Marcel Ancellin, Paris, France, assignor to Societa FFSA, Paris, France
Filed Feb. 11, 1972, Ser. No. 225,533
Claims priority, application France, Feb. 19, 1971, 7105790
Int. Cl. B30b *3/04*
U.S. Cl. 100—155 **5 Claims**



In apparatus for compressing fibrous substances, e.g. hay or other catle cattle into caked form, the substance is squeezed or compressed through a conduit of circular shape and whose cross-section decreases from its inlet to its outlet. The conduit is defined by a central wheel and a plurality of satellite rollers peripherally distributed therearound and the spacing of the satellite rollers from the central wheel decreases progressively from the inlet end to the outlet end.

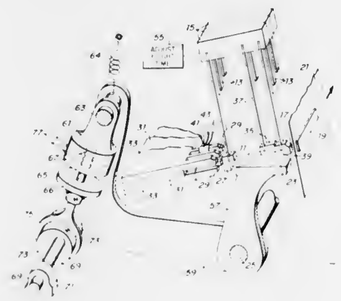
3,780,647
CONTAINER FLATTENING APPARATUS
James L. Reimers, Saratoga, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Sept. 25, 1972, Ser. No. 292,052
Int. Cl. B30b *7/04*
U.S. Cl. 100—232 **8 Claims**



A can flattening apparatus has four diagonal creasing blades that are pressed into the cylindrical wall of the can through a

housing, whereupon the can is flattened by axial compression between an anvil and rotatable base in the housing.

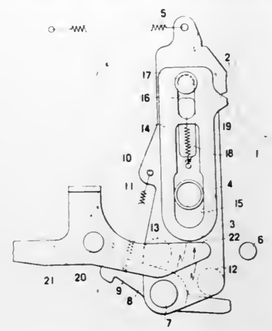
3,780,648
HIGH SPEED PRINT HAMMER WITH DYNAMIC DAMPER MEANS
Robert H. Curtiss, Wayland; Richard Holzman, and Seldan A. Lazarow, both of Framingham, all of Mass., assignors to Nortec Computer Devices Inc., Ashland, Mass.
Filed Sept. 2, 1969, Ser. No. 854,531
Int. Cl. B41j *5/23*
U.S. Cl. 101—93 C **11 Claims**



A hammer for impact printers having a hammer arm with a striking face mounted for movement toward and away from type to cause a document located between the hammer face and type to be printed when the hammer arm is propelled toward the type. The hammer arm is supported by two spring reeds and is cocked away from the printing position against a permanent magnet. Printing is effected by opposing the permanent magnetic field with an electromagnetic field to release the cocked hammer arm. The spring reeds cause the hammer to be propelled toward the type. A dynamic damper supported by another spring reed is cocked with the hammer arm. The natural frequency of the damper is lower than that of the hammer arm, causing the damper to strike the rebounding hammer arm after printing. The energy in the rebounding hammer arm is absorbed by the impact of the damper to reduce oscillations in the hammer arm.

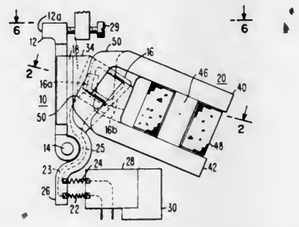
3,780,649
DECIMAL-POINT PRINTING MECHANISM FOR ELECTRONIC CALCULATOR
Masaaki Oishi, Tokyo; Yoshinaga Takahashi, Yachiyo, and Keiichi Yoshizawa, Matsudo, all of Japan, assignors to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan
Filed July 8, 1971, Ser. No. 160,685
Int. Cl. B41j *1/16*
U.S. Cl. 101—93 C **3 Claims**

A decimal-point printing mechanism for an electronic calculator having a plurality of rockably mounted print hammers actuated selectively to engage a print drum or roll having type thereon for printing numerals. The type includes decimal points printed in their proper place in a multi-numeral number. Some of the print hammers have slidably disposed on a side thereof decimal point print levers that are actuated selectively from a rest position in which they are ineffective during the printing action of the respective print hammers. Selector mechanism is provided for selectively actuating individual decimal-point print levers to a raised position on the associated hammers for disposing the print heads thereof in



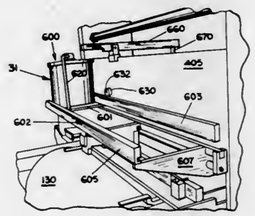
position for printing a respective decimal point simultaneously with the printing effected by the associated print hammers.

3,780,650
PRINT HAMMER WITH MOVING COIL
Johann Hans Meier, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 20, 1971, Ser. No. 209,512
Int. Cl. B41j *7/08*
U.S. Cl. 101—93 C **5 Claims**



A printer is provided with a plurality of pivoted print hammers having flat operating windings which are positioned in a plurality of parallel air gaps between projecting pole pieces of an electromagnet.

3,780,651
SCREEN PRINTER INK SUPPLY WITH QUICK COUPLING AND LEVEL SENSING
James A. Black, 13700 Sparta, N.W., Kent City, Mich., and Harry Russell Farwell, 129 Ann St., Cedar Springs, Mich.
Division of Ser. No. 51,852, July 2, 1970. This application Mar. 20, 1972, Ser. No. 236,135
Int. Cl. B41f *31/00*
U.S. Cl. 101—115 **7 Claims**



A stencil screen printing press assembly including a pressurized ink supply means having a sensor and a control valve operably connected thereto. The sensor and control valve

serve to cooperatively maintain a predetermined optimum ink level in the stencil screen.

3,780,652

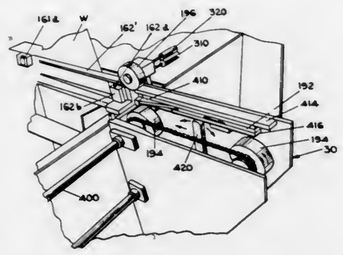
SCREEN PRINTER WITH SCREEN INFEED MEANS

James A. Black, 13700 Sparta, N.W., Kent City, Mich., and Harry Russell Farwell, 129 Ann St., Cedar Springs, Mich.

Division of Ser. No. 51,852, July 2, 1970. This application Mar. 20, 1972, Ser. No. 236,482

Int. Cl. B41f *15/10*

U.S. Cl. 101—124 **12 Claims**



Stencil screen printing apparatus having at least one printing station and means for advancing continuous web stock through the printing station. Releasable stencil frame retention means are provided at the printing station each shiftable between clamping and releasing conditions such that a combination stencil screen frame, squeegee, and flow coater can be loaded into and unloaded from the printing apparatus with ease.

ERRATA

For Classes 102—269 and 101—363 see:
Patents Nos. 3,780,669 and 3,780,670

3,780,653

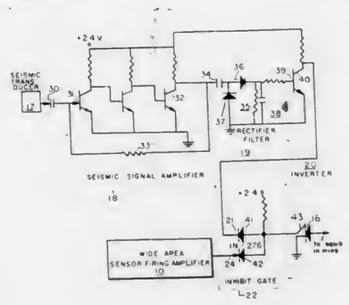
SEISMIC INHIBIT CIRCUIT FOR RF MINE SENSOR

Raymond G. Stinchcomb, Glen Burnie, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 7, 1971, Ser. No. 178,445

Int. Cl. F42b *23/26, 21/38*

U.S. Cl. 102—19.2 **10 Claims**



An inhibiting circuit used in conjunction with a means for detecting the presence of personnel and other moving objects and detonating a mine proximate thereto. The circuit includes a seismic transducer positioned to detect vibrations of relatively heavy moving objects and provide an output signal responsive to such movement, which is then amplified, rectified, filtered, and inverted. The inverted output, which is at ground level only when a seismic signal is present and at some positive level at all other times, is applied to one input of an inhibit gate. The other inhibit gate input is derived from the output of said detecting means which consists of a positive signal when it detects a moving object. The output of the gate is connected to the control element of a silicon controlled rectifier that in turn is connected to detonate a selected land mine. Thus, the mine will only be detonated upon receipt of the positive output of the gate which is dependent on having applied thereto a pair of positive inputs. Such inputs are only present in the absence of a seismic signal and in the presence of a moving object. Therefore the mine cannot be detonated by a large, heavy, moving object such as a tank.

3,780,654

REMOTE DETONATION SYSTEM

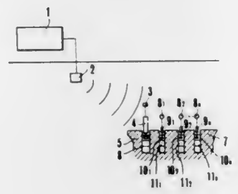
Ryozi Shimizu, Chigasaki; Kenji Nakao, Yokohama; Masaaki Oguri, Tokyo, and Masakatu Ohgaki, Hiratsuka, all of Japan, assignors to OKI Electric Industry Co., Ltd. and Taisei Corporation, Tokyo, Japan

Filed Oct. 16, 1972, Ser. No. 297,985

Claims priority, application Japan, Oct. 15, 1971, 46/80970

Int. Cl. F42d *3/00*

U.S. Cl. 102—22 **11 Claims**



In a remote detonation system wherein a plurality of underwater explosives are detonated simultaneously by command signals sent from a remote control station, there are provided a control station including an oscillator for generating a plurality of frequency modulated waves and a sound wave transmitter for transmitting the frequency modulated waves through the water as frequency modulated command signals; a plurality of detonation control elements, each including a sound wave receiver for receiving the frequency modulated command signals from the control station, means for demodulating the output from the sound wave receiver for reproducing the frequency modulated command signals and ignition means including a plurality of switches which are operated sequentially by the output of the demodulating means; a plurality of electric detonators each connected to the ignition means of the detonation control elements, and a plurality of underwater explosives detonated by the detonations of respective electric detonators.

3,780,655

SIGNALING DEVICE

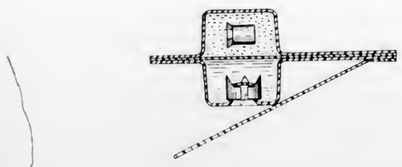
Robert A. Allen, Tonawanda, and Elmore L. Bement, Buffalo, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 24, 1969, Ser. No. 802,308

Int. Cl. F42b *23/00*

U.S. Cl. 102—31 **7 Claims**

This invention relates to a sealed multicompartment signaling device, each compartment containing at least one material which is mixed with the material of the other compartment upon puncturing of the seal by a member contained in one of



the compartments, as the result of an external force on the device.

3,780,656

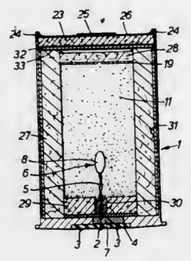
PYROTECHNIC DEVICES

Dudley Charles Murray, Homington, near Salishury, England, assignor to Pains-Wessex Limited, Wiltshire, England

Filed June 4, 1970, Ser. No. 43,483

Int. Cl. C06d *1/04, 1/10*

U.S. Cl. 102—37.6 **6 Claims**



A pyrotechnic signal device which comprises a discharge tube, a rupturable casing which is housed within the discharge tube and which contains flash-producing composition, and electrically-operated means for igniting the pyrotechnic composition that includes contacts on the outer surface of the discharge tube.

3,780,657

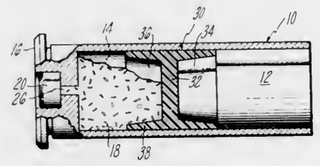
FRANGIBLE PROJECTILE

Melvin Zaid, Old Westbury, N.Y., assignor to Colt's Inc., Hartford, Conn.

Filed Sept. 27, 1971, Ser. No. 183,967

Int. Cl. F42b *5/22, 11/38*

U.S. Cl. 102—41 **10 Claims**



A bullet assembly with a projectile body formed of a low mass frangilbe material lethal over a limited effective range and which may be provided with an obturator between the projectile body and a propellant charge.

3,780,658

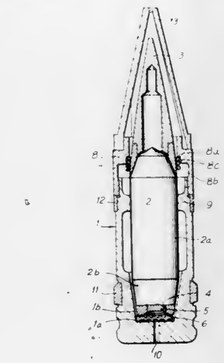
UNDERSIZED-CALIBER PROJECTILE WITH DETACHABLE SABOT

Jacques Charles de Longueville, Bourges; Jacques Felix Charles Perfetti, Vichy, both of France, and Ernst Jakob Kessler, Muellheim, Germany, assignors to Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale, Paris, France

Filed Sept. 3, 1971, Ser. No. 177,573

Int. Cl. F42b *11/14*

U.S. Cl. 102—52 **7 Claims**



An armor-piercing projectile comprising an undersized-caliber core arranged inside a detachable sabot or shoe, wherein a cavity is provided at the back of the core in which a gas generating composition, is seated. The base of the shoe is provided opposite this cavity with a calibrated orifice having a sectional area such as to allow hot gases from a powder charge to pass from the associated casing to ignite the discharge composition, while allowing the developed gas pressure from the composition to be used for effecting discharge.

3,780,659

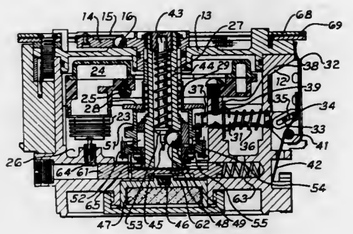
ENVIRONMENTAL FUZE FOR PYROTECHNIC DEVICE

Stanley Kulesza, Brooklyn, and Max Sapsowitz, Bronx, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 18, 1972, Ser. No. 298,731

Int. Cl. F42c *5/02*

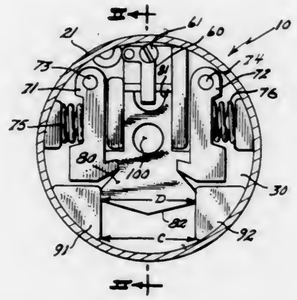
U.S. Cl. 102—70 B **4 Claims**



An environmental fuze for use with an air-dropped store having a timed firing mechanism which can be set for different time intervals. Fuze action is initiated by one or more dynamic pressure sensing fins which, upon actuation, initiates a timing mechanism and seals a bellows assembly. The bellows assembly monitors the increase of atmospheric pressure as the store falls and if a predetermined pressure change occurs within a given time period, the firing pin is released to

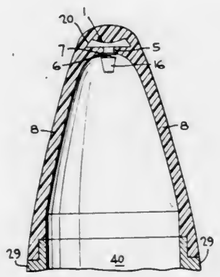
detonate a primer. In the event that the desired pressure change does not occur during a given time interval, the timing mechanism will jam and the fuze will remain in a safe condition.

3,780,660
MULTIPLE FUNCTION SAFE AND ARM MECHANISM
George Webb, and Bernard L. Malott, both of Richmond, Ind., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 23, 1971, Ser. No. 118,012
Int. Cl. F42c *13/00, 11/00, 15/22*
U.S. Cl. 102—70.2 R **5 Claims**



A safe and arm mechanism for use with a proximity fuze which uses an active battery and which is armed by spin. The mechanism includes an electric detonator which is short-circuited and misaligned with respect to a lead when the mechanism is in an unarmed position, and a battery switch which is off when the mechanism is in an unarmed position. Spinning causes the arming weights in the mechanism to rotate and to release a slider which removes the short-circuit, brings the lead into alignment with the electric detonator, and causes the battery switch to turn on the battery to fully arm the fuze.

3,780,661
PROTECTIVE METAL CAP FOR PLASTIC FUZE RADOMES
Samuel A. Clark, Jr., Wheaton, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed June 30, 1972, Ser. No. 267,886
Int. Cl. F42c *13/04, 13/00, 19/00*
U.S. Cl. 102—70.2 P **10 Claims**



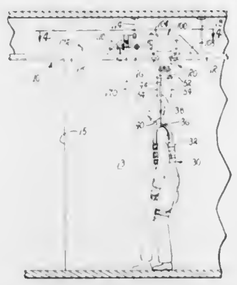
In combination with a plastic fuze radome, a structure for protecting the internal electronic components housed within said fuze during flight said structure being a metal cap immersed in the forward tip of the radome and having a concave frontal indentation for reducing the droplet flow of impinging rain and other fluid around the cap, whereby the immersion of the metal cap in the plastic material of the radome prevents relative movement of the cap with respect to the components and thus avoids malfunctioning of the fuze via this disturbance and whereby the metal cap having a plastic coating avoids triboelectric charging of the radome, and, because of the thermal conductivity of the metal cap provides protection against surface heat buildup. Several openings are provided in the metal cap such that radial movement of the cap with respect to the components is prevented when said fuzes are subjected to spin forces. Extending from the base of the metal cap is a finger member having indentation in the side thereof for the purpose of securing the cap within the plastic of the radome.

3,780,662
RADAR REFLECTOR DEPLOYMENT METHOD
Glenn P. Sorenson, 148 Los Cerras, Walnut Creek, Calif.
Continuation-in-part of Ser. No. 256,549, Feb. 6, 1963, abandoned. This application Sept. 1, 1965, Ser. No. 485,672
Int. Cl. F42b *13/56*; **H01q** *17/00*
U.S. Cl. 102—89 **10 Claims**



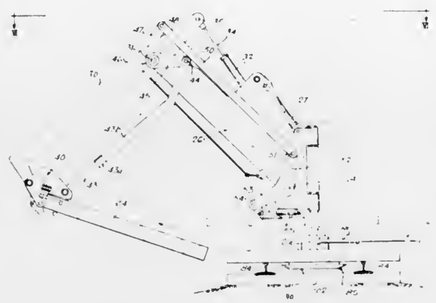
1. A device for deploying radar reflector material comprising a spinner rocket, a radar reflector wound about substantially the entire periphery of said rocket, said radar reflector including a monofilament fiberglass thread.

3,780,663
AMBULATORY SYSTEM
Marshall G. Pettit, 255 E. Sandra, Tulare, Calif.
Filed Jan. 31, 1972, Ser. No. 221,950
Int. Cl. B61b *13/00*
U.S. Cl. 104—1 R **14 Claims**



An ambulatory system for use by debilitated ambulatory patients and the like. The system consists of a track network including a primary track, which extends the length of communicating corridors, and a plurality of secondary tracks, each extending from a point in close proximity with the primary track, and terminating at a point remote therefrom, and a travelling truck, supported by the track network, having a harness depending therefrom for substantially supporting the weight of a human body in suspension for assisting the patients in walking along the corridors as well as to enter and depart from various areas through which the secondary tracks are extended.

3,780,664
MACHINE FOR INSERTING TIES BENEATH A RAILROAD TRACK
John D. Holley, Montgomery, Ala., and Richard A. Peppin, Minneapolis, Minn., assignors to Mannix Construction, Inc., Minneapolis, Minn.
Filed May 30, 1972, Ser. No. 257,888
Int. Cl. E01b *29/10*
U.S. Cl. 104—9 **3 Claims**



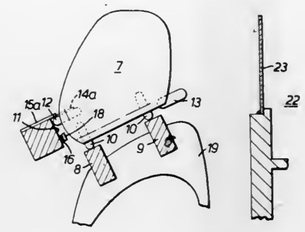
Ties dumped on the rails are withdrawn individually outwardly of the track by a tie clamp mechanism mounted on a jib supported by a boom extending laterally from an on-track vehicle. A pantograph system controls the orientation of the tie clamp mechanism, which grasps each tie firmly. This arrangement enables each such grasped tie to be pushed under the track by an inward swing of the jib.

3,780,665
ROLLER COASTER
Raymond J. Lohr; James Smith, and Lowell L. Bennett, all of Erie, Pa., assignors to Louis Marx & Co., Inc., New York, N.Y.
Filed Apr. 12, 1971, Ser. No. 133,100
Int. Cl. A63g *21/04*
U.S. Cl. 104—69 **12 Claims**



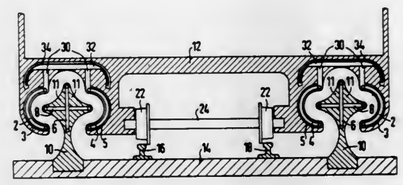
A roller coaster suitable particularly for young children such as children of pre-school age. A track is provided with a lower front end and a rear upper end while a vehicle is provided for free movement gravitationally down the track from its rear upper end toward its lower front end. A supporting structure supports the rear upper end of the track at the required elevation, this supporting structure also serving to support a releasable holding element which releasably holds a vehicle at the rear upper end of the track while a child climbs into the vehicle. A manually operable member is accessible to the occupant of the vehicle for displacing the holding member to a non-holding or release position, so that when the occupant desires the vehicle can be released for movement down the track.

3,780,666
TRANSPORTATION
Francis Cyril Perrott, c/o The Manor House, South Cerney, Cirencester, Gloucestershire, England
Filed June 28, 1971, Ser. No. 157,102
Claims priority, application Great Britain, July 24, 1970, 36,010/70; Nov. 9, 1970, 53,099/70
Int. Cl. E01b *25/26*
U.S. Cl. 104—88 **21 Claims**



Means of transportation comprise a track and vehicle guided along the track with the self-routing faculty of track selection. That is to say, two stationary guides are positioned at each branch of the track, and each vehicle carries means to select one or other of the guides and hence to follow one or other of the alternative routes at each track branch. For optimum track utilisation the vehicles, particularly at busy traffic periods, are grouped so that a plurality of vehicles run as a "contact train" with the individual vehicles in each group in contact one with the next. Although in contact they remain separate, so that at each branch any vehicle is free to follow the chosen or preprogrammed route at that branch.

3,780,667
ELECTRO-MAGNETIC SYSTEM FOR THE GUIDED SUSPENSION OF A MOVING VEHICLE
Jurgen Miericke, Nurnberg; Hans Hieronymus, Erlangen, and Franz Pawlitschek, Neunhof, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 3, 1972, Ser. No. 277,612
Claims priority, application Germany, Aug. 6, 1971, P 21 39 506.2
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 MS **16 Claims**

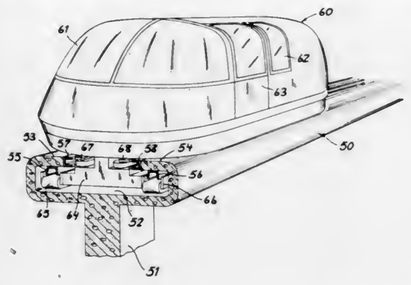


An electromagnetic system for the guided suspension of a moving vehicle above a track or roadbed utilizing along each side of the vehicle pairs of opposed superconducting loops defining elongated tubular cavities therebetween, and a pair of arrays of independent elongated inductive suspension and guidance loops disposed in cruciform arrangement with the suspension loops generally horizontal and the guidance loops generally vertical, the cavities of the vehicle adapted to receive the respective arrays of loops during traverse of the vehicle along the roadbed, whereby the vehicle is suspended above the roadbed by the induced suspension field and guided along the roadbed by the induced guidance field.

3,780,668
ELECTROMAGNETIC SUSPENSION AND/OR GUIDE SYSTEM ESPECIALLY FOR MAGNETICALLY SUSPENDED VEHICLES

Peter Schwarzler, Furstenfeldbruck; Gerhard Bohn, and Helmut Schauberger, both of Munich, all of Germany, assignors to Krauss-Maffei AG, Munich, Germany

Filed Aug. 11, 1972, Ser. No. 280,073
Claims priority, application Germany, Sept. 7, 1971, P 21 46 143.8
Int. Cl. B61b 13/08
U.S. Cl. 104—148 MS 10 Claims

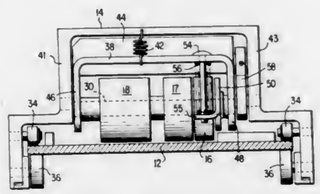


An electromagnetic suspension and guide system for magnetically suspended vehicles comprises a support or track along which the vehicle is displaceable and is provided with an armature rail of magnetically permeable material (e.g., a ferrous metal), while the vehicle is provided with at least one electromagnet cooperating with this armature rail. The electromagnet has a core of U-profile, the arms or shanks of which reach toward the armature rail which is likewise of U-profile whose shanks reach toward the electromagnet. The shanks of these two members overlap and the shanks of one member are inclined toward the shanks of the other. The shanks of the armature member may reach into the space between the shanks of the core member or vice versa.

3,780,669
IMPRINTER HAVING INDEPENDENTLY MOUNTED, PRELOADED PRINT ROLLERS

Franklin O. Geiger, Manassas, and James L. Young, Alexandria, both of Va., assignors to Farrington Business Machines Corporation, Springfield, Va.

Filed July 1, 1971, Ser. No. 158,944
Int. Cl. B41f 3/04
U.S. Cl. 101—269 23 Claims

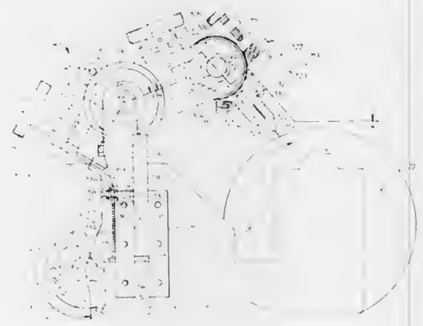


An imprinter for imprinting a plurality of fields on a document having at least two independently mounted print rollers for respectively imprinting the two fields where both print rollers are in printing position when the print rollers are moved in a predetermined direction with respect to the print bed during imprinting whereby interaction between the print rollers is minimized as they imprint at their respective fields on the document. At least one of the print rollers is preloaded and set to a minimum distance from the print bed so that the preloaded print roller raises from the print bed as raised characters on the printing plate are encountered whereby automatic compensation is provided for characters of varying height associated with the preloaded print roller.

3,780,670
DOCTOR BLADE ASSEMBLY

Norman C. Abler, Milwaukee, and David R. Hardt, Menomonee Falls, both of Wis., assignors to Faustel Incorporated, Butler, Wis.

Filed Aug. 7, 1972, Ser. No. 278,442
Int. Cl. B41f 31/04
U.S. Cl. 101—363 4 Claims

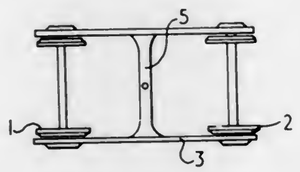


A doctor blade assembly for holding a doctor blade which wipes excess ink from an etched or engraved ink applicator roll in a printing press enables the blade to be moved to a variety of positions with respect to the roll, imparts a reciprocating motion to the blade, enables skew adjustment of the blade, and clamps the blade in a convenient position to facilitate its replacement.

3,780,671
ELASTOMERICALLY SPRING RAILWAY TRUCK BOLSTER

Reginald Harrison, Oadby, England, assignor to Dunlop Limited, London, England

Filed Jan. 31, 1972, Ser. No. 222,081
Claims priority, application Great Britain, Feb. 3, 1971, 3,765/71
Int. Cl. B61f 3/08, 5/08, 5/12
U.S. Cl. 105—197 A 5 Claims

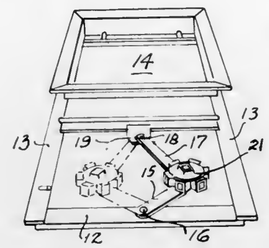


A three piece bogie for a railway vehicle in which the resilient connecting means between each solebar or side frame and the bolster comprises spring support means for vertical loads and at least two spaced-apart inter-engaging pairs of resilient members, one element of each pair mounted on the bolster and one on the solebar or side frame wherein the elements may only move relatively in a vertical direction and horizontal movement is resisted, of which the following is a specification.

3,780,672
HOPPER GATE TOGGLE OPERATING MECHANISM

Oliver C. Fuller, Woodstock, Ill., assignor to Evans Products Company, Plymouth, Mich.

Filed Mar. 28, 1972, Ser. No. 238,885
Int. Cl. B61d 7/02, 7/20, 7/26
U.S. Cl. 105—253 10 Claims

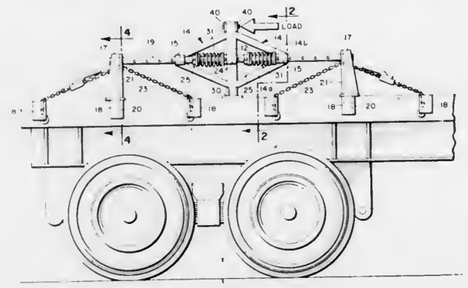


Mechansim for moving the gate of a material discharge chute which includes a toggle device actuated by applying a force at the joint between the toggle links. Such application may involve a manually operated lever readily applicable to and removable from the toggle device, but other means for exerting a thrust on the device are contemplated. Preferably the mechanism includes connections tending to lift the gate from its support on the chute.

3,780,673
RESILIENT SHOCK-ABSORBING BULKHEAD

William F. Doyle, 2818 McAlister St., Topeka, Kans., and Charles W. Artzer, 631 Freeman St., Topeka, Kans.

Filed Aug. 25, 1972, Ser. No. 283,761
Int. Cl. B60p 7/14
U.S. Cl. 105—376 11 Claims



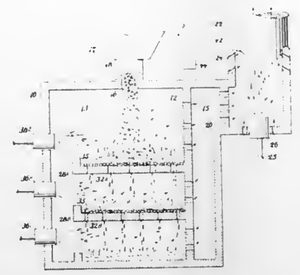
A bulkhead for use on vehicles having an open flat cargo carrying surface and stake pockets comprises a retaining panel removably attached to the bed of the vehicle by means of sleeves secured to the panel and slidably mounted on a supporting rail secured to posts disposed in stake pockets. Springs mounted on the rail are compressed when a load is applied to the panel by shifting cargo and to absorb the shock of the impact.

3,780,674
LIQUID INCINERATOR

Han Liu, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,472
Int. Cl. F23g 5/12
U.S. Cl. 110—8 R 4 Claims

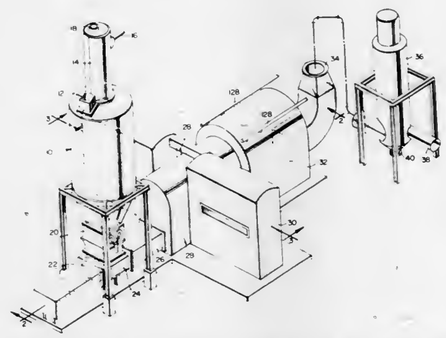
A waste incinerator for burning a variety of sludges, liquids and solid materials that can be reduced to a combustible liquid by exposure to heat. Such materials are fed into an incinerator and fall onto the uppermost of several superposed perforate beds. As the waste material is exposed to heat it becomes less viscous and slowly drips through the perforations of each bed to a subjacent bed where it is exposed to additional heat and ultimately gasified and burned.



3,780,675
PLASMA ARC REFUSE DISINTEGRATOR

James A. Frye, Oklahoma City; Ralph B. Morton, Del City, and Charles W. Vogler, Oklahoma City, all of Okla., assignors to The Boardman Company, Oklahoma City, Okla.

Filed Apr. 18, 1972, Ser. No. 245,216
Int. Cl. F23g 5/10
U.S. Cl. 110—8 E 12 Claims



A refuse disintegrator utilizing a plasma arc for the reduction of solid waste materials to an ionized gaseous state through heat oxidation, leaving only sterilized residues and resulting in almost total elimination of all materials introduced into the system. The system in operation utilizes a thermal reduction theory designed to break down all classes of refuse through the application of extreme high temperature, releasing the internal energy of all matter and provides a highly efficient and economic system and process susceptible of automated control depending upon the nature of emission from the system.

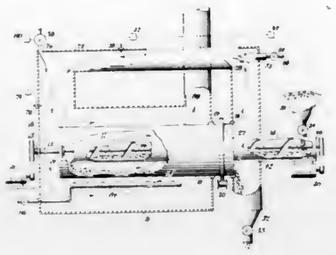
3,780,676
METALLIC RECOVERY SYSTEM

Noel D. Hazzard, and William M. Anderson, both of Wellsville, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed May 8, 1972, Ser. No. 253,673
Int. Cl. F23g 5/06
U.S. Cl. 110—8 A 8 Claims

A conversion system for waste having organic and inorganic components wherein the organic components are pyrolyzed in an essentially oxygen-free atmosphere so as to preclude the

oxidation of the inorganic constituents. An afterburner provides the heat necessary for burning pyrolyzed gases and the carbonaceous particulate matter produced in the pyrolyzing chamber. The pyrolyzing chamber is maintained at a suitable



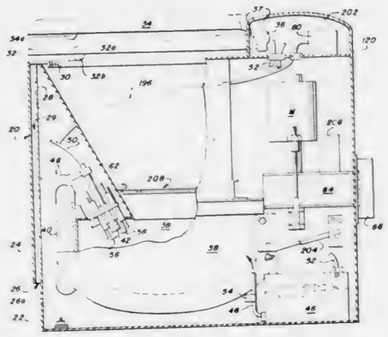
temperature for properly pyrolyzing waste material by tempering hot gases exhausting from the afterburner with cool ambient atmosphere, and then directing the mixed gases back over the pyrolyzing chamber.

3,780,677

INCINERATOR AND IGNITION SYSTEM COMBINATION

Donald P. Frankel, Lake Geneva, Wis., assignor to La Mere Industries, Inc., Walworth, Wis.

Filed June 28, 1972, Ser. No. 267,043
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 C **11 Claims**



An incinerating waste disposal plant, such as a dry sanitary toilet, including a fuel burner and an oscillator ignitition system for igniting the fuel. In the system disclosed, the oscillator is one in which the core of the inductive component is driven to saturation and provides intermittent high voltage across an igniter spark gap.

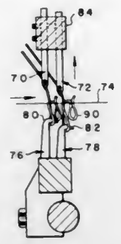
3,780,678

PROCESS AND APPARATUS FOR THE PRODUCTION OF TUFTED PILE FABRICS

Joe T. Short, West Point, Ga., assignor to Doering Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 10, 1972, Ser. No. 216,630
Int. Cl. D05c *15/22*
U.S. Cl. 112—79 A **12 Claims**

Improved apparatus for producing tufted pile fabrics comprising a tufting machine having plural rows of needles and loopers wherein the loopers in a first row of loopers in the direction of travel of a backing sheet are longer than loopers of the next row so that yarn loops formed in the backing sheet by the first row of loopers are not displaced by the loopers in the next row to cause irregular formation of loops in the tufted



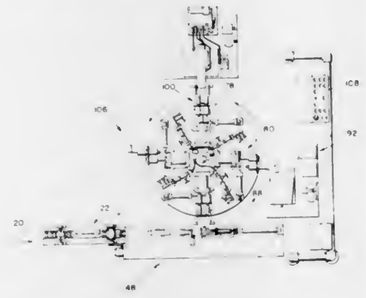
fabric product; also, a process for producing pile fabrics of uniform pile height by a loop robbing technique.

3,780,679

APPARATUS FOR PRODUCING ENDLESS BANDS

James Gordon Hanes, Jr., Pfafftown; James Frank King, 925 Goodwood Rd., Winston-Salem; Willie M. Lathery, 1342 Tredwell Dr., Winston-Salem; Howard L. Beamon, 2626 Dudley St., Winston-Salem, and Kenneth W. Newlen, 613 Runyon Dr., High Point, all of N.C.

Filed Sept. 29, 1971, Ser. No. 184,722
Int. Cl. D05b *23/00*
U.S. Cl. 112—121.27 **4 Claims**



An apparatus and method for automatically producing endless bands from strips of material wherein a segment of a predetermined length is detached from a material strip of greater length and subsequently joined together at its ends to form an endless band. A label is secured to the formed band at a predetermined location. The segment is preferably severed from the material strip, sewn together at its free ends, and provided with a desired label by a suitable apparatus adapted for barring and tacking operations. The various steps of construction are preferably completed at a plurality of work stations as a movable supporting surface moves the segment through a predetermined arrangement of said stations.

3,780,680

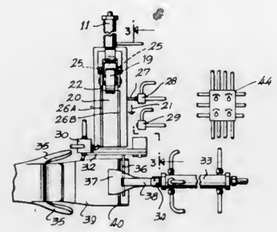
BELT-LOOP FEEDER, AND STRIP CUTTER

Jack E. Shuffield, Norwood, N.J., assignor to C & W Sewing Machine, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 294,223
Int. Cl. D05b *23/00*
U.S. Cl. 112—121.27 **7 Claims**

In a preferred embodiment, a belt loop strip receiving, advancing, cutting, and feeding apparatus automatic in operation at least per cycle upon manual initiation of a timer control, the functional parts thereof being pneumatically operated in the predetermined sequence of intermittent actuation of

respective parts, the feed strip typically being fed from a source such as a spool or reel, into a feed guide between opposingly pressed feed rollers for advancing intermittently the strip between and past open cutter opposing scissor blades onto a planar plate slide surface along a rearwardly disposed guide rail for aligning advancing strip axially laterally across the plate surface, the scissor blades being actuateable after advancement and alignment, the actuation-closing of the blade simultaneously causing a holder to press downwardly from above the plate surface securingly of the belt loop strip



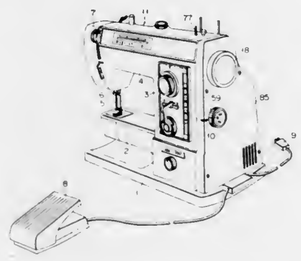
severed from the feed strip, and thereafter the holder being pneumatically advanced forwardly to slideably push the belt loop strip into a sewing machine belt-loop receiver at a point angularly to the plate slide surface at which point holding pressure of the holder is insufficient to secure the belt loop severed strip, whereupon the advanced holder withdraws without the severed strip left forwardly at the sewing machine belt-loop receiver, after the return of which, or immediately before the return of which, the scissor blade opens, the opening of the scissor blade simultaneously causing the holder to lift from its holding down position.

3,780,681

SEWING MACHINE WITH A NEEDLE POSITIONING DEVICE

Toshio Sasaki, Inazawa-chi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Mizuho-ku, Nagoya-shi, Japan

Filed Dec. 27, 1971, Ser. No. 212,327
Claims priority, application Japan, Dec. 30, 1970, 45/125473; Dec. 31, 1970, 45/128236
Int. Cl. D05b *69/22*
U.S. Cl. 112—219 A **19 Claims**



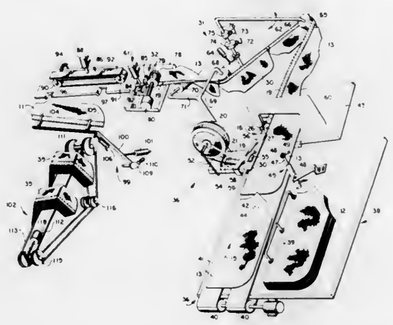
A sewing machine so designed as to cause an arm shaft to be subject to different drive controls according to the operating position of a selection knob, though a controller may be continuously depressed in the same manner, wherein, under the first operating position of the knob, the depression of the controller effects continuous normal stitching and the release of the controller brings the arm shaft to rest at a predetermined angular position; under the second operating position of the knob, the depression of the controller causes the arm shaft to make one rotation and be brought to rest at a predetermined angular position regardless of the succession of the depression of the controller; and under the third operating position of the knob, the bobbin winder is actuated with the arm shaft kept inoperative at a predetermined angular position independently of the depression of the controller.

3,780,682

METHOD OF MAKING A SHIRT FRONT ASSEMBLY

Wade W. Frost, Vidalia, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 79,031, Oct. 8, 1970, Pat. No. 3,675,604. This application Apr. 13, 1972, Ser. No. 243,753
Int. Cl. D05b *1/00, 23/00*
U.S. Cl. 112—262 **11 Claims**



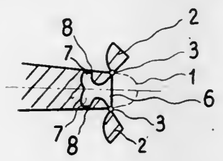
A shirt front assembly, method and apparatus wherein a connected series of center plait pattern parts and a series of shirt front pattern parts are fed simultaneously to a sewing machine and sewn together to form a connected series of shirt front assemblies. The connected series of shirt front assemblies are conveyed away from the sewing station to a cutting station where the center plait pattern parts are cut apart and trimmed so as to have their ends coextensive with the edges of the shift front pattern parts, and the cut-apart series of shirt front assemblies are stacked.

3,780,683

GEAR FOR BRAKING AND AUXILIARY STEERING SHIPS ON BRAKING THEM

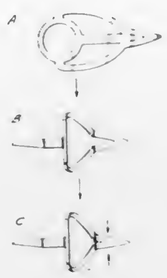
Jerzy Doerffer, 22 Lipca Str. 12, Sopot, and Walenty Milenuszkin, Andrezeja Struga Str. 6a, Gdansk, both of Poland

Filed June 8, 1971, Ser. No. 151,095
Claims priority, application Poland, June 9, 1970, 141212/70
Int. Cl. B63h *25/44*
U.S. Cl. 114—145 R **10 Claims**



To exert a braking force with optional auxiliary steering on a ship, the bulbous portion of a bulbous bow of the ship is formed with at least one displaceable member which can be moved from a retracted position where it is smoothly contoured in the hull to an extended position where it extends into the water to exert braking force on the ship. A watertight bulkhead beyond the bulbous portion is formed with a water inlet leading to a passage with side channels having outlets at the side of the hull, and these outlets can be selectively covered or opened by independently operable gates.

3,780,684
METHOD OF MAKING INTEGRAL GUIDE FOR FISHING LINES
Ryuichi Ohmura, 19-3 Minami-cho, Shizuoka, Japan
Division of Ser. No. 96,952, Dec. 10, 1970, Pat. No. 3,690,027.
This application Aug. 9, 1972, Ser. No. 279,248
Int. Cl. B21d *51/00*
U.S. Cl. 113—116 HH **1 Claim**



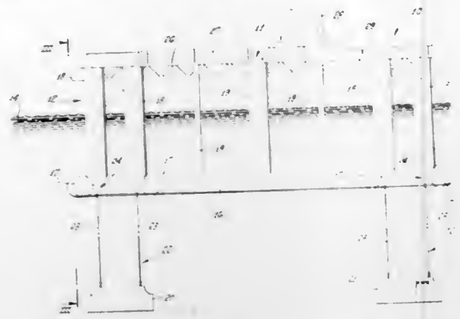
A method of producing an integral guide device for fishing lines comprising the steps of stamping a flat unitary stock of the guide device out of a piece of sheet metal, the stock having a ring, a pair of leg forming portions extending downwardly from the opposite peripheral sides of the ring and converging in a V-shaped lower end first foot forming portion and a second leg and foot forming portion extending downwardly from the lower periphery of said ring at a substantially midpoint between the first leg forming portions with the lower end thereof extending toward the V-shaped opening defined in the first foot forming portion and separated therefrom; bending the first leg and foot portions in a first direction away from the plane of the ring so as to form a pair of first legs which lie at a sloped angle to the ring plane and a common first leg which lies at right angles to the ring plane, respectively; and bending the second leg and foot forming portion in a second direction away from the ring plane opposite to the first direction so as to form a second leg which lies at a sloped angle to the ring plane and a second foot which lies at right angles to the ring plane, respectively.

ERRATUM

For Class 114—145 R see:
Patent No. 3,780,683

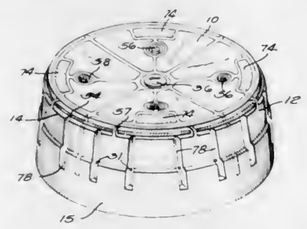
3,780,685
TENSION LEG OFFSHORE MARINE APPARATUS
Edward E. Horton, Portuguese Bend, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.
Continuation-in-part of Ser. No. 821,275, May 2, 1969, abandoned. This application Apr. 9, 1971, Ser. No. 132,791
Int. Cl. B63b *35/44*
U.S. Cl. 114—0.5 D **15 Claims**

An offshore mobile wave transparent marine apparatus constructed and arranged to be towed at a relatively rapid rate, stable and steady when anchored at a well site, and held by at least two virtually vertical mooring lines under selected tension. A marine apparatus having vertical buoyant columns related in size and location to horizontal buoyant members and designed for selected ocean and weather conditions, such as wave periods and height, whereby vertical forces acting on submerged substantially horizontal members and the vertical forces acting on the vertical members are offset and virtually canceled. Tensioned mooring means are held by restraint



means located below the center of buoyancy of the apparatus for providing a low center of roll.

3,780,686
FLOAT
Edward F. Brill, Oconomowoc, Wis., assignor to Beach-Buoy, Inc., Oconomowoc, Wis.
Filed Sept. 24, 1971, Ser. No. 183,316
Int. Cl. B63b *35/58*
U.S. Cl. 114—0.5 F **19 Claims**

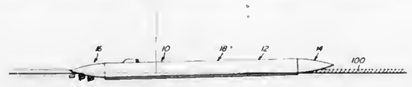


A float comprising a deck component has an upper deck wall and, in one embodiment, generally conical supports for said wall, the space about said supports being filled or partially filled either with air or buoyant material. Air is vented to atmosphere, preferably centrally through a port or ports to which air is guided either by a conical bottom surface of the deck component, or by channel means of progressively decreasing depth. A depending flaring skirt has a buoyancy preferably no greater than the weight of the float so that the float when unloaded rides with the bottom of the central vent substantially at water level. Water between the central vent and the peripheral skirt is trapped. A weight tending to tilt the float is opposed because water thus trapped within the skirt is lifted above normal level at the high side of the float. The moment arm of a superimposed weight carried on the float is less than the moment arm of the lifted water because the superimposed weight is limited in position by the form of the deck. The difference in dimension between the skirt and the deck component not only provides increased stability but facilitates nesting.

3,780,687
SHIP HULL CONSTRUCTION
James C. McDonald, Jr., 2033 Charles, Vidalia, La.
Filed Dec. 17, 1971, Ser. No. 209,297
Int. Cl. B63b *35/08*
U.S. Cl. 114—41 **8 Claims**

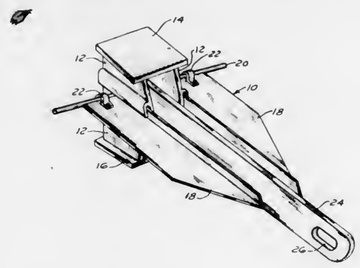
A cargo ship hull designed primarily for the transport of liquids and yet also adaptable for transporting solids. The hull is cylindrical in configuration and includes conical bow and

stern ends with the major portion of the length of the hull disposed between the bow and stern ends including an inner generally cylindrical cargo compartment downwardly offset relative to the centerline of the outer cylindrical skin of the hull and divided into longitudinally spaced compartment sec-



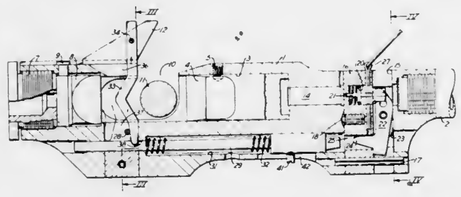
tions. Truss bracing is utilized throughout the length of the main cargo section between the outer hull and the inner compartment walls and a board structurally reinforced concrete bottom keel and ballast member extends longitudinally of the hull between the outer hull and the inner compartment wall.

3,780,688
ANCHOR HAVING IMPROVED FLUKE CROWN COUPLING
Daniel Comstock Hungerford, 11651 Lake House Ct., North Palm Beach, Fla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Sept. 7, 1971, Ser. No. 178,233
Int. Cl. B63b *21/44*
U.S. Cl. 114—208 **4 Claims**



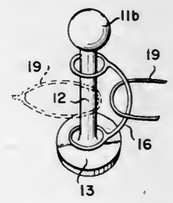
An anchor for marine vessels having an improved fluke which is removeably coupled to the crown assembly by a longitudinal flange disposed along the fluke inside edge. The removeable flukes allow the shank pivot shaft to be removeably coupled through the crown wall adjacent the fluke flanges.

3,780,689
SELF-COCKING EXPLOSIVELY ACTUATED CABLE CUTTER
Joseph L. Giebel, Pittsburgh, and Ernest E. Temple, Murrysville, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed July 19, 1971, Ser. No. 163,949
Int. Cl. B63g *7/02*
U.S. Cl. 114—221 A **1 Claim**



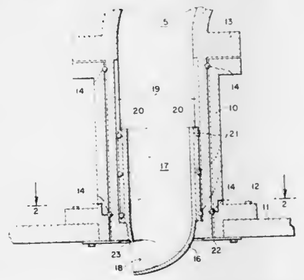
A cable cutter frame has a laterally opening recess near its front end for receiving a cable that can be cut by a chisel slidably mounted in the frame behind the recess when it is driven forward by an explosive charge. A plunger for actuating a firing pin is carried by the frame beside the recess and chisel and is slidable lengthwise of the frame. The plunger is provided adjacent the recess with a lateral notch that receives one end of a trigger extending transversely of the frame near the front of the recess in a position to be moved forward by a cable entering the recess, whereby to move the plunger forward against spring pressure. As the trigger is moved forward it withdraws from the notch, whereupon the plunger is driven rearwardly to actuate the firing pin. The anvil may be slidably mounted in the frame and provided with a shock absorber. The firing pin is preferably in the inner end of a transverse passage through the frame, in which a cartridge chamber is screwed.

3,780,690
LINE-POST COUPLINGS AND MARINE MOORING-TOWING DEVICES
Welbourne D. McGahee, Melbourne, Fla., assignor to Loop A Line, Inc., Melbourne, Fla.
Filed Oct. 10, 1972, Ser. No. 296,107
Int. Cl. B63b *21/04*
U.S. Cl. 114—218 **17 Claims**



Line-post couplings with marine mooring-towing and other applications having a post with an enlarged head and with mounting members including a fixed or movable clevis member whereby a line with a loop may be quickly attached and detached without the necessity of tieing and untieing knots. The enlarged head may be integral with the post or detachable. The clevis may include a pair of rings and be movable on the post or one ring may be omitted and the lower clevis end affixed to the post or post base. A line anti-fraying member may also be affixed to the clevis. A device may be mounted on a tow truck, dock, or a boat, and with slight modification the device may be mounted on dock pilings and bollards or lock walls with or without a float member.

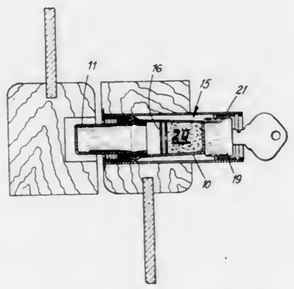
3,780,691
RETRACTABLE WATER JET FOR A WATER JET/STEERING AND PROPULSION SYSTEM
William Stelling, 175 W. 72nd St., New York, N.Y.
Filed Nov. 29, 1972, Ser. No. 310,294
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R **6 Claims**



A vertically moveable water jet thruster unit for a water jet propulsion and steering system of a water vessel. The water jet

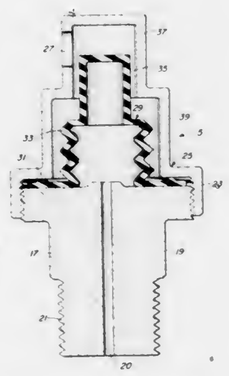
unit comprises a stationary support cylinder rigidly affixed to the hull of the water vessel, a rotatable support cylinder mounted in the stationary cylinder on roller bearings, and a vertically moveable water jet disposed in the rotatable support cylinder in guide tracks. Vertically disposed guide members affixed to the water jet are disposed in the tracks in the rotatable cylinder and guide the water jet vertically upwardly into the water vessel when an underwater collision occurs.

3,780,692
ALARM DEVICE
Phillip L. Nally, 205 W. Stephen Foster Ave., Bardstown, Ky.
Filed June 20, 1972, Ser. No. 264,415
Int. Cl. G08b *7/00*
U.S. Cl. 116—5 **7 Claims**



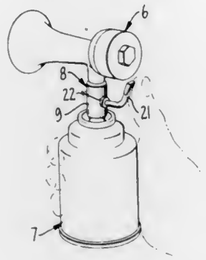
An alarm device having an open-ended compressed gas container means with a connection member adjacent the open end thereof; a whistle which extends across the container means adjacent to its open end, the whistle being actuated by a gas passing therethrough; and a destructable cap member which has a connection member sized to engage the connection member of the open-ended container means to interlock therewith to form a capsule for compressed gas, the cap being of suitable material such that when it is destroyed or removed the gas escapes through the whistle thus sounding the alarm.

3,780,693
VISIBLE FLUID PRESSURE INDICATOR
Edward L. Parr, 301 N. Cuyamaca, El Cajon, Calif.
Filed May 15, 1972, Ser. No. 253,545
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **4 Claims**



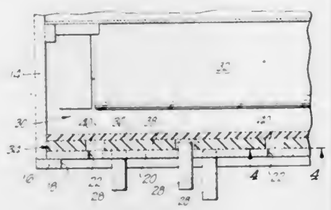
An indicator including a casing having a coupling connected with a source of fluid and a cap for the coupling, the cap having a window. The indicator also includes a closed, expansible and contractible container that is disposed within the cap, part of the container being visible through the window.

3,780,694
VALVE STRUCTURE FOR GAS OPERATED HORN
Robert L. Wilbur, North Windham, Maine, assignor to The Eastern Company, Naugatuck, Conn.
Filed May 5, 1972, Ser. No. 250,600
Int. Cl. G08b *21/00*
U.S. Cl. 116—112 **1 Claim**



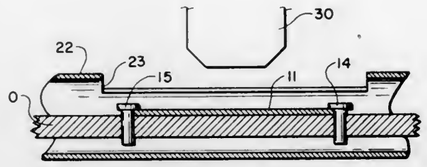
A novel form of valve is provided for controlling the release of the gas under pressure to a horn so that a simple and effective signalling device is provided.

3,780,695
WORK SCHEDULING APPARATUS
Willard H. Richard, 42865 Jefferson St., Fremont, Calif.
Filed Aug. 4, 1971, Ser. No. 168,889
Int. Cl. G08b *5/00*
U.S. Cl. 116—136 **17 Claims**



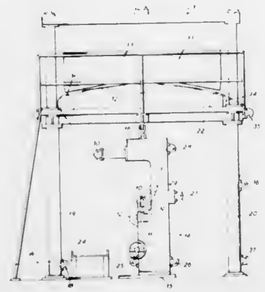
Work scheduling apparatus for scheduling and monitoring the status of a number of tasks specified by work orders and performed by operators which may be persons or machines. The apparatus includes a work scheduling board having timing means for indicating elapsed time and an array of work scheduling positions arranged in horizontal and vertical rows for selectively receiving coded markers representing the different tasks which may be specified by the work orders. One set of the parallel position rows are designated by indicia representing the different work operators, and the remaining rows and the markers are designated by indicia representing the several work orders to be executed and estimated task completion times. In use, the task markers are placed in the board positions in such a way that each marker indicates the estimated completion time of a designated task of a designated work order and the work operator who is to perform the task. The markers representing the tasks currently being performed by the operators are illuminated in a unique way so that the work scheduler may quickly determine by observation of the board the current status of each operator and task.

3,780,696
SUBSTRATE HOLDER FOR ARC PLASMA DEPOSITION
Richard W. Babbitt, Fair Haven, and Joseph LoCicero, Middletown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed July 11, 1972, Ser. No. 270,747
Int. Cl. C23c *13/08*
U.S. Cl. 118—49.5 **3 Claims**



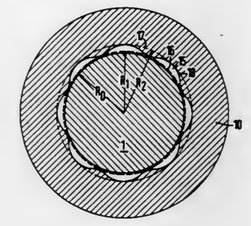
A tubular container, of refractory material has an opening in a top portion thereof. A horizontally disposed, thermally stable, perforated plate is supported by vertical portions of said container. A substrate, in alignment with said opening, is supported on said plate and clamped thereon by flanged pins combined with the perforations. An arc plasma gun deposits on the clamped substrate.

3,780,697
REVERSIBLE COATER
James J. Melead, Roscoe, and William P. Wentworth, Rockford, both of Ill., assignors to Beloit Corporation, Beloit, Wis.
Filed May 11, 1972, Ser. No. 252,277
Int. Cl. B05c *11/12*
U.S. Cl. 118—65 **13 Claims**



A coating mechanism for applying a coating to a traveling web wherein the web is received from a feed direction and the machine is to be used for coating either the upper or lower side of the web. The machine includes a pair of coating rolls forming a horizontal coating nip with the lower roll applying coating to the web, guide rolls for turning and guiding the web from the feed direction to the coating nip, an overhead dryer receiving the web from the nip, a frame supporting the guide rolls and coating rolls and pivotal about a vertical axis 180° between a first position wherein the web is wrapped in one direction around a lower guide roll to coat one surface of the web and a second position wherein the web is wrapped in the other direction around the lower guide roll to coat the opposite surface of the web.

3,780,698
WIRE PLATING APPARATUS INCLUDING DOCTORING DIE
Horst Schreiner, and Henryk Fidos, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Continuation-in-part of Ser. No. 88,285, Nov. 10, 1970, abandoned. This application Jan. 29, 1973, Ser. No. 327,852
Claims priority, application Germany, Nov. 13, 1969, P 19 57 033.4
Int. Cl. B05c *11/02*
U.S. Cl. 118—125 **6 Claims**

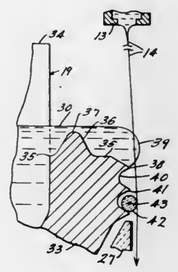


The invention relates to a device for tin plating copper jump wires. The copper wire passes through a tin bath and is guided through a stripper nozzle, whose outlet opening is below the plane of the bath surface.

The bore of the stripper nozzle possesses a wave shaped cross section. For a wire diameter of 0.5 mm, 4 to 20 half waves are provided and the diameter of the bore and the depth of the half waves are adjusted to the diameter of the wire.

The tin plated copper wires have a uniform tin layer with a thickness $> 3\ \mu m$ and are extremely well solderable.

3,780,699
FILAMENT COATING APPARATUS
Roger A. Kime, 101 De Rome Dr., Napoleon, Ohio
Division of Ser. No. 244,182, April 14, 1972. This application Nov. 6, 1972, Ser. No. 303,902
Int. Cl. B05c *3/176*
U.S. Cl. 118—420 **5 Claims**

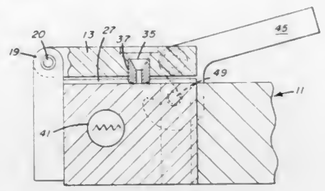


Method and apparatus for coating fibers of glass and the like with a liquid such as molten aluminum. The fibers are passed through a lip of the molten metal which projects from an upper edge of a vessel which holds a body of the molten metal. The coated fibers are then passed over a heated wiper to more uniformly distribute the molten metal on the fibers before the metal hardens. An automatic control is provided for maintaining a substantially constant molten metal level in the vessel as the metal is applied to the fibers.

3,780,700
TEMPLATE FOR THIN LAYER CHROMATOGRAPHY SAMPLES

Bob A. LaFleur, and Robert J. O'Brien, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 14, 1971, Ser. No. 189,112
Int. Cl. B05c 11/12
U.S. Cl. 118—503 9 Claims

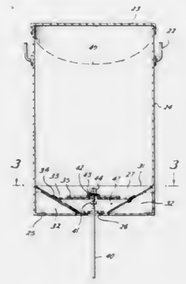


A template for holding a chromatographic sheet while permitting the application of a series of liquid samples rapidly, and on a well defined area of fixed size, comprises a base plate adapted to receive a chromatographic sheet on its surface, an applicator plate mating with the base plate and adapted to lie on top of the sheet, and means for clamping the parts together to hold the sheet in place. The applicator plate and the base plate are hinged together and provided with latches for clamping them together. To provide wells for receiving liquid samples, the applicator plate has a plurality of bores therethrough within which are pressed plastic bushings for engaging the chromatographic sheet without damaging its delicate surface. Also, two stop springs ease the movement of the applicator plate into register with the base plate so as to avoid damage to the chromatographic sheet. The base plate is provided with an abutment against which an edge of a chromatographic sheet is precisely positioned. The hinges are readily disengaged and reengaged to permit cleaning of the parts. Evaporation of solvent from the samples can be assisted by providing a suitable electrical heater in the base plate.

3,780,701
WILDLIFE FEEDER

William M. Wentworth, Sr., 619 Clower, San Antonio, Tex.

Filed Feb. 23, 1973, Ser. No. 335,100
Int. Cl. A01k 5/00
U.S. Cl. 119—51 R 11 Claims

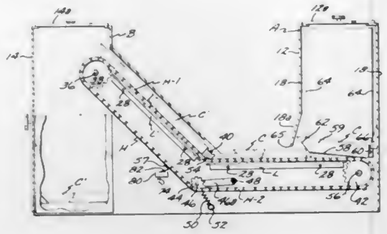


A wildlife feeder which includes a container with a bore in the bottom thereof, means in said container for directing the flow of feed toward a selected portion of said bottom, an annular member slidably mounted on said selected portion, and a rod pivotally mounted in said container, a portion of said rod adapted to pass through said annular member and said bore and terminate substantially below said container whereby feed carried in said container is dispensed through said annular member and said bore upon movement of said rod.

3,780,702
POWER OPERATED ANIMAL FEEDING AND WATERING DEVICE

Richard N. Waterbury, 4582 Banner Dr., Long Beach, Calif.

Filed Nov. 6, 1972, Ser. No. 303,679
Int. Cl. A01k 5/02
U.S. Cl. 119—51.13 8 Claims

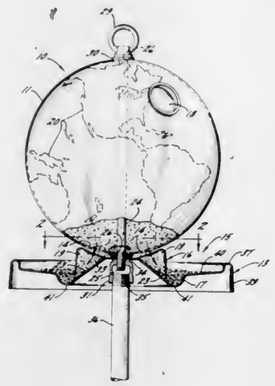


Power-operated device for periodically supplying an animal with a predetermined quantity of food, as well as maintaining a receptacle with water at a predetermined level, and from which receptacle the animal may quench its thirst.

3,780,703
BIRD FEEDER

Robert R. Boehland, Jr., Lynn, Wis., assignor to Feather Hill Industries, Inc., Zenda, Wis.

Filed June 23, 1972, Ser. No. 265,470
Int. Cl. A01k 5/00
U.S. Cl. 119—53 10 Claims



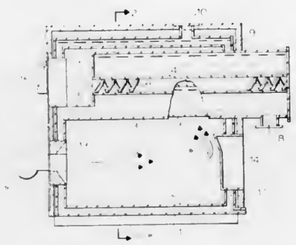
A bird feeder includes a transparent reservoir for storing a large quantity of feed for the birds to see so that more birds are attracted to the feeder. Orifices communicating with the reservoir are adjustable between open and closed positions to regulate the gravity flow of feed onto a tray located below the reservoir in order to maintain a limited but adequate amount of feed for the birds to eat.

3,780,704
BOILER

H. Cevdet Ozaltay, Kucukesat Caddesi, 55/13, Ankara, Turkey

Filed Jan. 15, 1973, Ser. No. 323,862
Claims priority, application Turkey, Jan. 19, 1972, 003222
Int. Cl. F22b 25/00
U.S. Cl. 122—149 5 Claims

A boiler has two main concentric cylinders defining a water jacket between them. A smaller cylinder, located inside the inner of the two concentric cylinders in the upper half thereof, contains a plurality of tubes each having turbulator means. Two more water-filled cylinders, still smaller in diameter, are connected to the water jacket and are arranged on both sides of the smaller cylinder in the upper half of the inner cylinder, in contact therewith and spaced from said inner cylinder by narrow passages. The combustion chamber is in the inner main cylinder, below said smaller cylinder and water-filled cylinders and bounded partly thereby. A convection chamber in the inner main cylinder is connected to said combustion chamber by the narrow passages. The tubes have an entrance

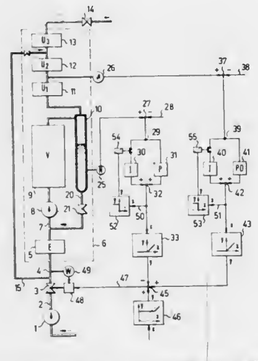


end spaced back from the front closure of the main cylinders, so that the combustion gases from the combustion chamber first pass into the convection chamber and flow toward the front closure and then enter and flow through the tubes, heating the water in the water jacket and in the water-filled cylinders. As a result, the flue gases produced by the combustion, return without any considerable pressure loss and at the same time decrease their temperature by transferring their enthalpy through convection, and the smaller cylinder and water-filled cylinders protect the flue gases produced by the combustion from the radiation effect of the combustion flame.

3,780,705
METHOD OF CONTROLLING THE FEED OF FORCED CIRCULATION STEAM GENERATORS

Dominique Le Febve de Vivy, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Sept. 25, 1972, Ser. No. 291,934
Claims priority, application Switzerland, Sept. 24, 1971, 13968/71
Int. Cl. F22d 5/26
U.S. Cl. 122—451 R 8 Claims

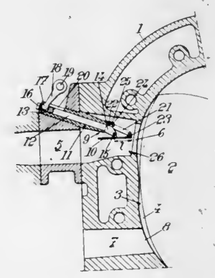


The rate of feedwater flow is controlled in a first load range by the level of water in the separator while in a higher load range the rate is controlled by the steam temperature. Signals are produced which are compared with preset values and are integrated so as to produce a negative control signal in one case and a positive control signal in the other case. Only one of these control signals is superimposed on a base signal only when the generator is in a respective load range so as to produce a command signal for adjusting the feed controller of the feed valve.

3,780,706
OBTURATING DEVICE FOR THE INTAKE PIPE OF AN INTERNAL COMBUSTION ENGINE, ESPECIALLY FOR A ROTARY PISTON ENGINE

Jean Panhard, Paris, France, assignor to Societe De Constructions Mecaniques Panhard & Levassor

Filed July 9, 1971, Ser. No. 161,063
Claims priority, application France, July 10, 1970, 7025860
Int. Cl. F02b 53/06
U.S. Cl. 123—8.01 1 Claim

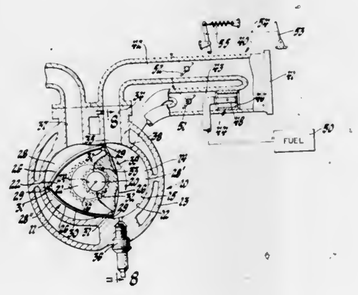


The device includes a valve adapted to be closed, when the intake of fuel is reduced, to prevent the entry of burnt gases into the intake pipe. The valve is actuated by a mechanism arranged so that the valve can be fully opened and can shut the intake pipe at a short distance from the peripheral surface of the combustion chamber of the engine. The device is especially useful for rotary piston engines with peripheral ports.

3,780,707
STRATIFIED CHARGE ROTARY COMBUSTION ENGINE

Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 1, 1972, Ser. No. 248,864
Int. Cl. F02b 53/04
U.S. Cl. 123—8.13 8 Claims



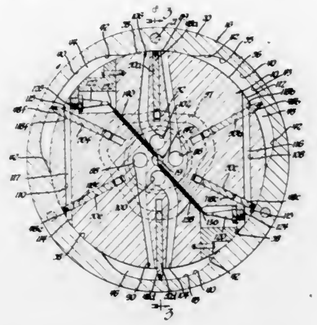
A rotary combustion engine having an intake arrangement providing a controlled peripheral variation in the air-fuel mixture in each working chamber to effect a trailing rich air-fuel region for ignition and a leading lean air-fuel region for continuing combustion.

3,780,708

ROTARY COMBUSTION ENGINE

Robert J. Angsten, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 15, 1972, Ser. No. 289,479
Int. Cl. F02b *53/04*
U.S. Cl. 123—8.17 **4 Claims**



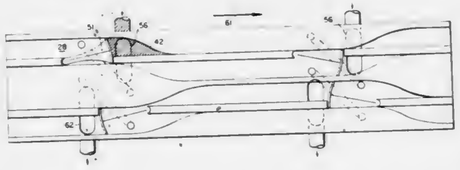
A rotary combustion engine has a rotor concentric with and rotatable about a stator with the rotor and stator cooperatively defining a plurality of working chambers that are spaced about and rotate with the rotor. A plurality of baffles are mounted on the stator and move radially inward and outward to follow the rotor's interior peripheral contour to sequentially divide each of the chambers during each rotor revolution into two sealed portions. As the chambers rotate, one of the baffles operates to provide one of the working chambers with a sealed chamber portion which expands during an intake phase while connected to an intake port in the stator and thereafter another baffle operates to provide this one working chamber with a sealed portion containing the intake mixture which is compressed during a compression phase and delivered by porting in this baffle to a storage charge chamber in the stator. Another baffle then separates this one working chamber into a sealed portion to which the compressed mixture is delivered from the storage chamber via porting in this baffle with the compressed mixture then being ignited by a spark plug on the stator. Another baffle then divides this one working chamber into a sealed portion from which the products of combustion are exhausted to an exhaust port in the stator while the other sealed portion of this one chamber undergoes a similar cycle on the same rotor revolution via similar intake porting, baffles, storage charge chamber, spark plug and exhaust porting.

3,780,709

ROTARY ENGINE HAVING AXIALLY SLIDING VANES

Benjamin F. Williams, Douglas, Ariz., assignor to Benwilco, Inc., Douglas, Ariz.

Filed Sept. 25, 1972, Ser. No. 291,757
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.23 **11 Claims**



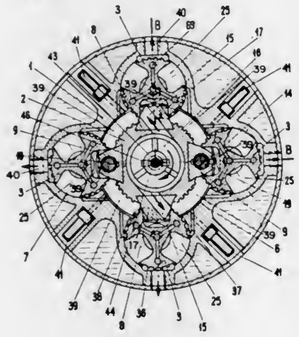
An internal combustion engine has a stator with an interior cylindrical surface symmetrical about an axis. A rotor within the stator is rotatable about the axis and has a pair of axially sinuous, peripheral channels open to the cylindrical surface. Annular flat plates in the stator extend radially into the channels dividing them into pockets. Axial movable vanes are disposed in the channels and in gaps in the plates. A combustible inlet port opens into one channel and an exhaust gas outlet port opens into the other channel. A combustion chamber having an ignition device has ducts leading to one stator opening adapted as the rotor revolves alternately to open into one channel and to be covered by the rotor and leading to another stator opening adapted as the rotor revolves alternately to open into the other channel and to be covered by the rotor.

3,780,710

ROTARY INTERNAL-COMBUSTION ENGINE

Zdislaw Ryszard Przybylski, Dachauer Strasse 266/1, Munich, Germany

Filed Oct. 21, 1971, Ser. No. 191,259
Claims priority, application Poland, Oct. 22, 1970, P-144010
Int. Cl. F01c *1/14*; **F02b** *53/04*
U.S. Cl. 123—8.47 **26 Claims**



A rotary internal combustion piston engine providing for relative operative positioning of the movable portions, such as rotary cogs and pistons to allow for multiple and varied utilization of the engine working volume. The pistons are divided into operative segments comprising suction-exhaust pistons and power-compression pistons having reduced clearance power loses and minimal or maximum pressure differentials as required by the relative pistons to allow for maximum efficiency.

3,780,711

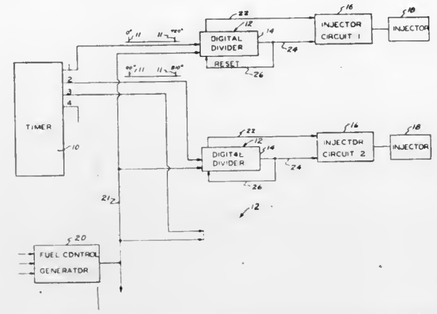
ELECTRONIC FUEL INJECTION SYSTEM

Allen W. Lindberg, Kirkwood, Mo., assignor to ACF, Industries, Incorporated, New York, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,633
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **11 Claims**

A sequential fuel injection system for an internal combustion engine has a separate electrical channel for each injector, each channel including a binary electronic counter. All said counters receive pulses from a voltage controlled generator whose frequency is set by the fuel demand. Engine

operated timing means cause the counters to operate sequentially. An injector may be put into operation while a preceding



injector is still being actuated, thus affording longer periods of injector operation.

3,780,712

MARINE ENGINE COOLING

John G. Pace, Port Huron, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 127,489, March 24, 1971, Pat. No. 3,734,170. This application Nov. 13, 1972, Ser. No. 306,247
Int. Cl. F28f *27/02*; **F01n** *3/04*; **F01p** *3/12*
U.S. Cl. 123—41.08 **3 Claims**

Improved water jacketed manifolds for marine engine cooling systems of the type wherein heated water which has circulated through an engine cooling system for cooling purpose is mixed in the improved engine exhaust manifold water jacket according to this invention with raw, relatively cool water to controllably cool the manifold and avoid condensing water from the exhaust gases flowing through the exhaust manifold.

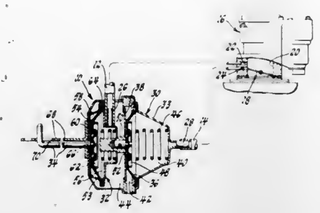
3,780,713

VACUUM-OPERATED SPARK ADVANCE DEVICE

Clarence L. Julian, Daleville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 5, 1972, Ser. No. 286,308
Int. Cl. F02p *5/10*
U.S. Cl. 123—117 A **2 Claims**

A spark advance device for an automobile ignition system having a pair of axially spaced vacuum operated actuators each of which houses a spring-biased diaphragm dividing the housing into a vacuum chamber and an atmospheric pressure chamber. The diaphragms of both actuators are adapted to move in the same direction when vacuum is applied to either actuator and the diaphragm of one actuator is connected to the housing of the other actuator while the diaphragm of the latter mentioned actuator has a control rod connected to the distributor of the ignition system. The arrangement is such



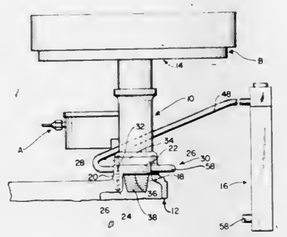
that when vacuum is sequentially applied to the actuators, the control rod initially moves a predetermined distance to advance the spark and subsequently moves a further distance in the same direction to further advance the spark.

3,780,714

FUEL VAPORIZER FOR INTERNAL COMBUSTION ENGINES

Dorris Leon Dillow, 541 E. Haven Dr., Centralia, Ill.

Filed Aug. 2, 1971, Ser. No. 168,076
Int. Cl. F02m *31/10*
U.S. Cl. 123—122 AA **1 Claim**



A tubing is tightly coiled in a frusto-conical shape and is vertically installed within the intake manifold chamber of an internal combustion engine below and in common mounting arrangement with a conventional carburetor for preheating and vaporizing the liquid fuel emitted from the throat of the carburetor. The coiled tubing has opposing open ends that are connected to the water cooling system of the engine and function as inlet and outlet ends for the thermostatically controlled passage of hot water through the coils of the tubing so that when the liquid fuel, passing through the vertical path defined by the turns of the tubing, comes in contact with the tubing it is instantaneously changed within the manifold chamber into a vapor.

3,780,715

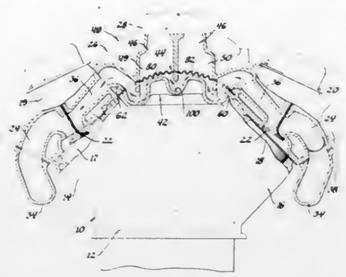
EARLY FUEL EVAPORATION INTAKE MANIFOLD

John L. Flitz, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1972, Ser. No. 310,813
Int. Cl. F02m *31/08*, *31/12*
U.S. Cl. 123—122 AB **3 Claims**

An early fuel evaporation intake manifold for an internal combustion engine includes a low thermal mass, thin metal gasket plate clamped between upper and lower manifold castings and having an integral heat exchanger forming the floor of the riser bore plenum. The gasket plate and a cored channel in the lower manifold casting define an exhaust crossover passage having a vertical run incident to the heat exchanger and flaring to a restrictive high aspect-ratio heat

transfer duct coextensive with the heat exchanger. The exhaust gases are directed against the heat exchanger at the vertical run and accelerate through the restrictive duct to break



up the stagnant fluid film at the heat exchanger for effecting rapid heating thereof to promote greater fuel vaporization during engine warmup.

3,780,716

FUEL INJECTION SYSTEMS

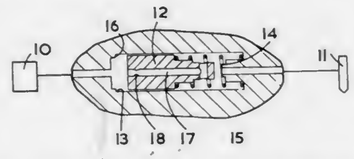
Ivor Fenne, Greenford, England, assignor to C.A.V. Limited, Birmingham, England

Filed Feb. 16, 1972, Ser. No. 226,793

Claims priority, application Great Britain, Feb. 18, 1971, 5,032/71

Int. Cl. F02m *39/00, 49/07*

U.S. Cl. 123—139 AS **5 Claims**



A fuel injection system for an internal combustion engine includes an accumulator in which fuel is stored at high pressure and an injector through which fuel flows to the combustion space of an associated engine. The injector incorporates valve means to control the quantity of fuel supplied to the engine and interposed between the injector and the accumulator is a piston slidable within a cylinder, the piston being urged in one direction by the flow of fuel and in the event that the valve means fails and remains in the open position, the piston moves a further amount into contact with a seating to prevent further flow of fuel through the nozzle.

3,780,717

AC IGNITION SYSTEM

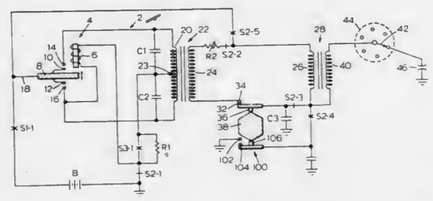
Miodrag Rakitch, 4 Honey Dr., Scarborough, Ontario, Canada

Filed Jan. 13, 1972, Ser. No. 217,601

Claims priority, application Canada, Mar. 26, 1971, 108785

Int. Cl. F02p *3/02, 3/04*

U.S. Cl. 123—148 AC **1 Claim**



An AC ignition system for automobiles, in which a vibrator operating at between 60 and 120 cycles per second supplies AC current through a transformer and through a set of normally open points to the primary of an ignition coil. When the points close, the coil is energized with AC and delivers high voltage to a spark plug during the time when the points are closed.

3,780,718

CARBURETOR FOR AN INTERNAL COMBUSTION ENGINE

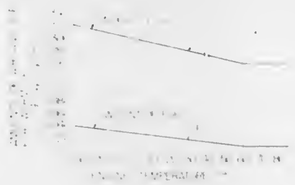
Shyuya Nambu, and Yukihiro Etoo, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed June 22, 1972, Ser. No. 265,352

Claims priority, application Japan, Oct. 25, 1971, 46/83896

Int. Cl. F02m *1/10*

U.S. Cl. 123—179 G **9 Claims**



A carburetor for an internal combustion engine having an auxiliary mixture supply control system which is adapted to supply the engine an enriched air-fuel mixture during starting and warm-up operations of the engine to effect satisfactory starting and warm-up operations of the engine, the quantity and air-fuel ratio of the enriched air-fuel mixture being varied in dependence on the variations in engine temperature. The auxiliary mixture supply control system includes an auxiliary fuel supply circuit for admitting additional air into a carburetor induction passage, an auxiliary air supply circuit for admitting additional air into the carburetor induction passage, a needle valve element located in the auxiliary fuel supply circuit to control the quantity of the additional fuel to be introduced into the carburetor induction passage, an air control valve element located in the auxiliary air supply circuit to control the quantity of the additional air to be introduced into the carburetor induction passage, a compression spring for biasing the needle valve element and the air control valve element to a position to decrease the quantities of the additional fuel and air, an actuating device for moving the needle valve element and the air control valve against the compression spring to a position to increase the quantities of the additional fuel and air, and an electronic control circuit responsive to the engine temperatures for varying the magnitude of electric current to be supplied to the actuating device in dependence on the variations in the engine temperature.

3,780,719

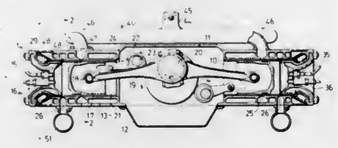
INTERNAL COMBUSTION ENGINE

Axel Hugo Weiertz, Bellevuevagen 24, Malmo, Sweden

Filed July 30, 1971, Ser. No. 167,708

Int. Cl. F01l *5/06*

U.S. Cl. 123—188 C **2 Claims**



An internal combustion engine having a cylinder and a piston reciprocable therein is provided with an inlet manifold having an air intake and a connection to the inlet of the cylinder, which forms a closed circulation path for air drawn into the inlet manifold when the engine is operating.

3,780,720

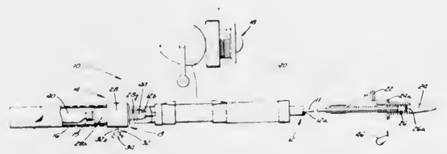
COMPRESSED AIR SPEAR PROJECTING DEVICE

John M. Alderson, 21332 Bulkhead Cir., Huntington Beach, Calif.

Continuation of Ser. No. 826,764, April 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 586,747, Oct. 14, 1966, abandoned. This application Mar. 31, 1971, Ser. No. 130,008

Int. Cl. F41b *11/00*

U.S. Cl. 124—11 A **1 Claim**



A valve, connectable to a source of compressed gas, having a closing member movable into and out of a valve closing position, and a triggering mechanism by which the closing member can be moved from that position. Gas pressure in the valve holds the closing member in its valve closing position until the triggering mechanism is actuated. The triggering mechanism includes a cam segment and a cam follower pin, the pin being positioned to unseat the closing member when induced to do so by movement of the cam segment. The valve can be used to control the flow of propulsion gas through a spear-fishing gun. A spear is mounted on a rod through which compressed air is forced. The compressed air is forced out through openings in the side of the rod so as to act on a flexible sleeve which in turn acts against the open end of the spear mounted on the sleeve. The pressure on the open end of the spear holds the spear in place while sufficient pressure for projecting the spear is being built-up in the hollow portion of the spear. The closed end portion of the hollow area of the spear is adjacent the open end of the rod from which the compressed air flows.

3,780,721

CIRCULATING-AIR OVEN WITH FILTER

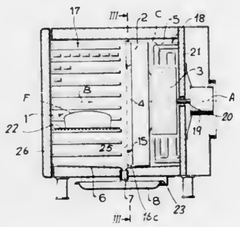
Wilfried Durth, Burbach-Wahlbach, Germany, assignor to Burger Eisenwerke A.G., Herborn/Dillkreis, Germany

Filed Apr. 24, 1972, Ser. No. 247,160

Claims priority, application Germany, Apr. 30, 1971, P 21 21 367.2

Int. Cl. F24c *15/32*

U.S. Cl. 126—21 A **7 Claims**



A fan is provided in an oven chamber and draws air axially in through a hood and expels it radially outwardly over a heating element to heat a foodstuff. A filter is provided across the mouth of the hood. The bottom of the chamber is dished upwardly concave and is provided at its lowest point with an outlet opening into a receptacle pan which catches condensate dripping from the filter. This filter is a stack of screens held in place in a frame by a retaining element having laterally projecting pins which engage slots in the frame bayonet-fashion and which are received in holders provided in the frame.

3,780,722

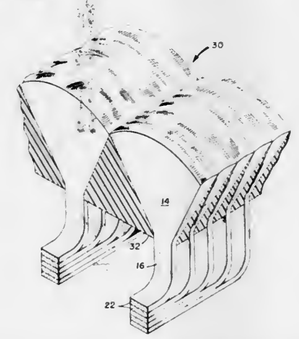
FIBER OPTICAL SOLAR COLLECTOR

Charles J. Swet, Mt. Airy, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 26, 1972, Ser. No. 247,774

Int. Cl. F24j *3/02*; **G02b** *5/16*

U.S. Cl. 126—270 **6 Claims**



The invention is an improved solar collector comprising a fiber optical solar receiver which passively concentrates incident solar energy for delivery as an intensified flux to an absorptive target. In one embodiment of the invention, the present solar collector comprises a boule of fibers shaped into an arcuate collecting surface at one end, the fibers tapering to a flat output plane at the opposing end of the boule. Solar radiation entering the collector at the collecting surface is concentrated within the tapered portion of the boule and delivered as an intensified flux to an absorptive target disposed in operative relation to the output plane, the absorptive target being either a cookpot, a thermal storage mass, or the hot junction of a thermoelectric generator.

3,780,723

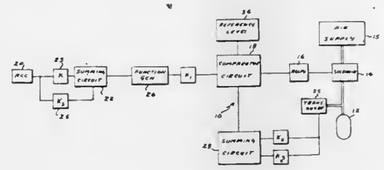
PRESSURE CONTROL SYSTEM FOR G-SUIT

Robert E. Van Patten, Kettering, Ohio, and Dana B. Rogers, Duxbury, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 18, 1972, Ser. No. 273,005

Int. Cl. A61f *5/37*

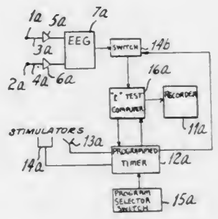
U.S. Cl. 128—1 A **2 Claims**



A control system for a G-suit having an acceleration signal and a time rate of change of the acceleration signal supplied to a summing circuit with the output of the summing circuit being supplied to a comparator through a function generator circuit. The function generator output is compared with a reference level in the comparator circuit with the output of

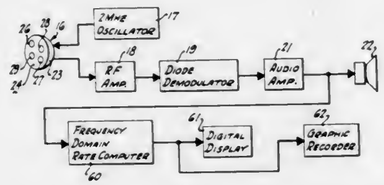
the comparator being used to energize a relay that controls a solenoid between the air supply and the G-suit. The function generator programs pressure to the G-suit according to a particular function of the output signal of the summing circuit. A pressure signal from the pressure suit and rate of change in suit pressure signal are summed in a second summing circuit with the output of the second summing circuit being used as a third input to the comparator circuit.

3,780,724
SENSATION-COGNITION COMPUTER EMPLOYING "T" TEST CALCULATIONS
Erwin Roy John, Riverdale, N.Y., assignor to Neuro-Data, Inc., Cliffside Park, N.J.
Continuation-in-part of Ser. No. 877,948, Nov. 19, 1969, abandoned. This application Aug. 20, 1971, Ser. No. 173,604
Int. Cl. A61b
U.S. Cl. 128—2.1 B **5 Claims**



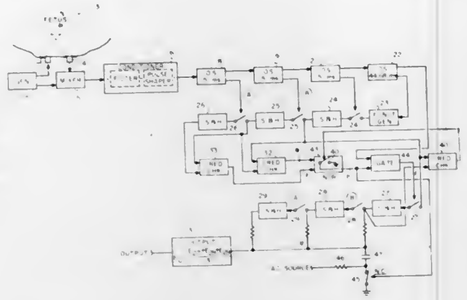
A patient who may be unable to cooperate is tested for auditory, visual and somatosensory perception. The apparatus includes an electroencephalograph, programmed stimulators, a *t*-test computer including an average response computer and a recorder. Evoked responses of the patient are elicited and the patient's short-term memory is tested.

3,780,725
FETAL HEARTBEAT MONITORING SYSTEM WITH PLURAL TRANSDUCERS IN ONE PLANE AND AT DIFFERENT ANGLES THERETO
Paul R. Goldberg, East Palo Alto, Calif., assignor to Smith Kline Instruments, Inc., Palo Alto, Calif.
Filed Mar. 4, 1971, Ser. No. 120,970
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 T **5 Claims**



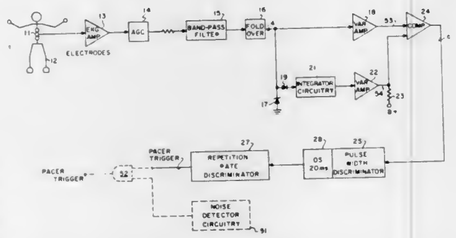
Fetal heartbeat monitoring system in which a plurality of ultrasonic beams are transmitted at different angles into the uterus of an expectant mother. A plurality of receiving transducers are inclined at different angles for receiving the signal as it is reflected from the fetus and/or uterus walls, the frequency of the reflected signal differing from that of the transmitted signal by an amount corresponding to the rate of the fetal heart motion. A system of rate computation from the resultant doppler fetal heart motion signal is employed which utilizes frequency domain techniques. The heart rate signal is extracted from the doppler heart motion signal by means of a diode demodulator and low frequency band pass filter.

3,780,726
HEARTBEAT RATE MONITORING
Fred Louis Hatke, Skillman, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation-in-part of Ser. No. 205,948, Dec. 8, 1971. This application July 13, 1972, Ser. No. 271,307
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 T **4 Claims**



Apparatus for monitoring the heartbeat rate of a patient comprising deriving, with pulse forming circuitry, electrical signals representative of heartbeat activity on a beat-to-beat data basis, a gating unit for normally passing the electrical signals, a first unit analyzing three successive ones of the electrical signals by a pair of credence checkers each having a preselected frequency tolerance to define a first criterion for distinguishing valid data and artifact and inhibiting operation of the gating unit upon detection of artifact, and a storage unit for receiving and averaging valid data over a period of three successive heartbeats to provide an output indicative of heartbeat rate. A second analyzing unit compares the third one of said signals with the last passed good data to define a second criterion for distinguishing valid data and artifact and upon detection of valid data inhibiting any effect on the gating unit by the first analyzer unit. Passed values are averaged and displayed and a visible indication denotes occurrence of an artifact.

3,780,727
CARDIAC PACER MONITORING MEANS WITH RATE AND PULSE DISCRIMINATION
Eugene King, Yardley, Pa., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Feb. 25, 1972, Ser. No. 229,422
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **6 Claims**



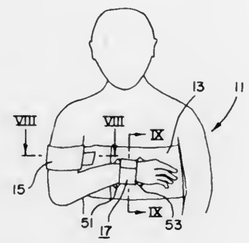
In a cardiac pacer monitoring system for use with pacer patients, apparatus for deriving reliable pacer trigger signals from electrocardiac activity including, processing the electrocardiac signal to exclude QRS and 60 Hz problems, integrating the processed signal to act as a threshold control, comparing the processed signal with the threshold and discriminating the comparator output with pulse width discriminator and repetition rate discriminator means.

3,780,728
WALKING DEVICE
Richard O. Stader, 163 Harvest Ln., Chambersburg, Pa.
Filed Aug. 1, 1972, Ser. No. 276,975
Int. Cl. A61f *5/04*
U.S. Cl. 128—83.5 **1 Claim**



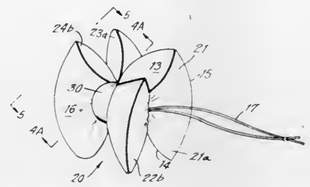
The combination of a stiff splint-like device for application to a cast on the user's lower leg and foot and tiltable therewith relative to the ground surface, and a ground-engaging resilient member rotatable horizontally about the upright axis of the device.

3,780,729
UNIVERSAL SHOULDER IMMOBILIZING SUPPORT
Robert E. Garnett, Memphis, Tenn., assignor to Richards Manufacturing Company, Memphis, Tenn.
Filed Dec. 28, 1971, Ser. No. 212,958
Int. Cl. A61f *5/40*
U.S. Cl. 128—94 **4 Claims**



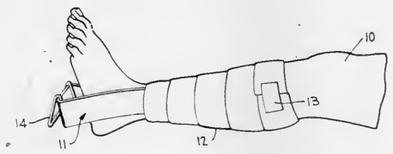
A support intended to be used to immobilize either shoulder of any one of a wide range of different size persons. The support includes a chest band having an open cell plastic foam sheeting, e. g., a polyurethane reticulated foam, constituting the inner surface thereof and a Velcro sensitive material covering the outer surface, a Velcro hooked member is attached to one end of the chest band for overlapping and grippingly engaging the outer surface to detachably hold the chest band snugly around the chest of different size persons. An upper arm band is included which may be detachably secured to the chest band at infinite locations thereon selectively for the size of the user for immobilizing the upper arm of the user. Also included is a wrist band which may be detachably secured to the chest band at infinite locations thereon selectively for the size of the user, thus immobilizing the forearm of the user.

3,780,730
CONTRACEPTIVE
Abner I. Weisman, 162 E. 95th St., New York, N.Y.
Filed May 28, 1971, Ser. No. 147,798
Int. Cl. A61f *5/46*
U.S. Cl. 128—127 **6 Claims**



A six-way acting vaginal contraceptive having a body of sponge-like resilient compressible absorbent material, the body being initially compressed on one axis by a string and on the other axis by a band to form two bifurcated butterfly ends which in turn form a pair of barriers across the vaginal canal, the inner barrier being adapted to lie against the cervix of the uterus and the edges of the butterfly ends being adapted to block the vaginal fornices. The barrier ends are impregnated with a spermicide and at least one end may be impregnated with a coital lubricant.

3,780,731
TRACTION STRIP
Henry A. Quello, Warsaw, Ind., assignor to Zimmer Manufacturing Company, Warsaw, Ind.
Continuation-in-part of Ser. No. 811,087, March 27, 1969, Pat. No. 3,536,072. This application Oct. 26, 1970, Ser. No. 83,705
Int. Cl. A61f *13/00*
U.S. Cl. 128—169 **10 Claims**

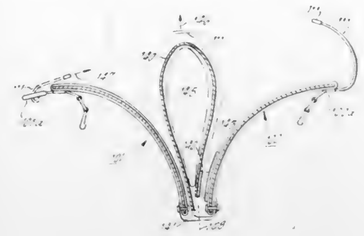


A traction strip comprising an outer layer of a spun bonded polyester and an inner layer selected from the group consisting of a cellular hydrophobic and a cellular hydrophillic sponge material bonded to one surface of the outer layer thereby forming a laminate.

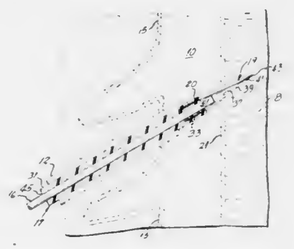
3,780,732
NON-GRAVITATIONAL INFUSION SET
Saul Leibinsoh, 11 Hagardom St., Rishon Lezion, Israel
Continuation-in-part of Ser. No. 753,405, Aug. 19, 1968, Pat. No. 3,595,232. This application Apr. 8, 1971, Ser. No. 132,516
Int. Cl. A61m *5/14*
U.S. Cl. 128—214 F **2 Claims**

A pressure-applying device for use in an infusion set for feeding blood, saline solution or other fluids from a compressible bag to a catheter or needle for administration to a patient. The device comprises at least a pair of highly resilient, arcuate shaped metallic plates pivoted along their adjacent edges and drawn together along their free edges by buckles or clasps. When pivoted into facing relation the adjacent convex surfaces of the plates act to squeeze fluid from the compressible

bag when positioned therebetween. Use of the device obviates the necessity to elevate the infusion bag during use, since infusion is effected by positive pressure rather than by gravity alone.



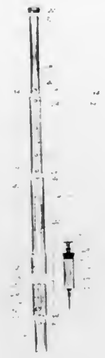
3,780,733
CATHETER
Manuel Martinez-Manzor, 19755 S.W. 304th St., Homestead, Fla.
Filed July 24, 1972, Ser. No. 274,438
Int. Cl. A61m *5/00*
U.S. Cl. 128—215 **5 Claims**



For use in administering continual spinal anesthesia, a catheter for longitudinal movement within the lumen of a relatively large needle used to approach just about to the spinal column to the end of the catheter, a thin needle with a through opening is secured and a stylet is provided in the catheter to advance the small needle relative to the large needle to pierce the wall of the spinal column in a relatively fine opening through which the anesthesia is administered.

3,780,734
HYPODERMIC SYRINGE HOLDER AND INJECTOR DEVICE
Goldwyn L. Wulff, 680 Nebraska Ave. S.W., Huron, S. Dak.
Filed Dec. 10, 1971, Ser. No. 206,787
Int. Cl. A61m *5/22*
U.S. Cl. 128—218 R **6 Claims**

A hypodermic syringe holder and injector device for use in the injection of large animals; the device includes a barrel, a telescoping handle member slidably mounted in the barrel, a syringe and needle guard retainer removably secured to the barrel and a needle guard slidably mounted in the retainer wherein the device is operable by placing the end of the needle guard against the hide of an animal and then pushing on the handle to thus insert the needle into the hide and then to eject the contents in the syringe through the needle.



3,780,735
DOSE SYRINGE
John A. Crouter, 1400 S. Elms Rd., Flint, Mich., and Richard J. Havas, 10259 W. Bristol Rd., Swartz Creek, Mich.
Filed Feb. 3, 1972, Ser. No. 223,243
Int. Cl. A61d *7/00*; **A61m** *31/00*
U.S. Cl. 128—223 **1 Claim**

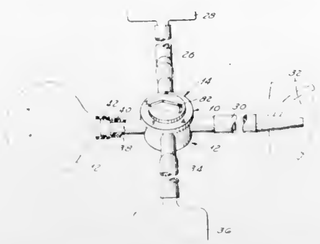


This dose syringe for animals has a plunger disposed for longitudinal movement in a tubular barrel. A medicating pill is held in the end of the barrel by radially and inwardly extending tabs hinged to front end of the barrel. A plunger longer than the barrel is fitted for longitudinal movement therein. When the plunger is stroked, the smooth tip of the plunger pushes the medicating pill over the base of the tongue while holding the tongue down so that the animal swallows the pill without gagging or similar distress. The plunger is tubular with a longitudinal passage completely therethrough and may be used to administer liquid medication to an animal.

3,780,736
SURGICAL VALVE ASSEMBLY FOR URINARY BLADDER IRRIGATION AND DRAINAGE
Allen S. Chen, 11933 Belleville Rd., Belleville, Mich.
Filed Oct. 20, 1972, Ser. No. 299,357
Int. Cl. A61m *1/00*
U.S. Cl. 128—231 **8 Claims**

An arrangement for irrigating a patient's bladder following prostate or bladder surgery which includes a four-position valve having four ports, the valve core being rotatable for interconnecting any two of the four ports so that the bladder may be irrigated with fluid by means of a compressible bulb or syringe connected to one of the ports and the bladder may also

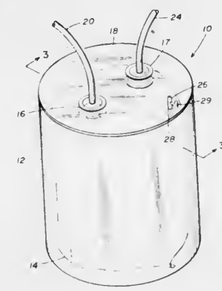
be conventionally drained into a bedside urinary bag without physically disconnecting the valve from either the urinary catheter, the source of irrigating fluid, the bulb or syringe, or the urinary drainage bag.



3,780,737
A METHOD OF TREATING BOVINE MASTITIS BY MEANS OF AN ERYTHROMYCIN SOLUTION
John Alexander Banford, Lake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Continuation-in-part of Ser. Nos. 562,107, July 1, 1966, abandoned, and Ser. No. , , Continuation of Ser. No. 720,452, April 11, 1968, abandoned. This application Mar. 9, 1971, Ser. No. 122,499
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 **4 Claims**

A method of treating bovine mastitis by injecting through the teat orifice of an infected quarter a solution of erythromycin in a fatty acid triglyceride having an iodine value of less than 42. This method, by virtue of the unique solution offers not only effective mastitis control, but also the distinct advantage of a shorter period of detactable drug residue in the milk than heretofore obtainable. Milk taken after the third milking following the last treatment is free from detectable erythromycin residue.

3,780,738
METHOD AND APPARATUS OF MEDICAL SUCTION
David W. Deaton, Dallas, Tex., assignor to Deaton Medical Company, Dallas, Tex.
Filed Dec. 8, 1971, Ser. No. 206,093
Int. Cl. A61m *1/00*
U.S. Cl. 128—277 **9 Claims**



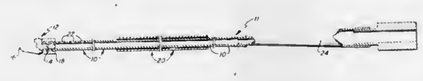
The specification discloses a medical suction apparatus including a generally rigid container for supporting a flexible drainage bag. A drainage conduit extends between the bag and the exterior of the container for connection to an area to be drained and a vacuum conduit extends from the bag to the exterior of the container for connection to a source of reduced pressure. A port extends through the walls of the flexible container to the space between the container and the flexible bag. A valve is disposed in the port for allowing air in the space to be removed in order to maintain the bag in an open position during suction operation. In one embodiment of the invention, air is removed from the space between the bag and the container by applying pressurized air to the interior of the bag. In another embodiment of the invention, air is removed between the bag and the container by the application of suction to the port.

3,780,739
DRAINAGE BAG ASSEMBLY WITH FLOW CONTROL FOR BODY FLUIDS
Mathilda C. Frank, 1800 E. 84th Ave., Denver, Colo.
Filed Dec. 7, 1971, Ser. No. 205,687
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **14 Claims**



A drainage bag assembly for containing body fluids of a patient includes a flat, generally oval-shaped envelope having a lower outlet opening. A receiving opening is located in an upper portion of the envelope which is surrounded by a flexible sealing ring for releasable sealing attachment of the bag to a flanged holder shield secured to the patient's body. An internal flow control valve permits fluid flow received in the receiving opening to pass into a storage chamber in the bottom of the envelope but inhibits reverse back-flow through the valve. In one form an on-off valve controls the discharge of the fluid contained in the envelope through the outlet opening.

3,780,740
INTUBATION DEVICE AND METHOD OF ADVANCING A TUBE PAST THE PYLORUS
James W. Rhea, 501 Alabama St., Bristol, Tenn.
Filed Nov. 1, 1972, Ser. No. 302,808
Int. Cl. A61m *25/00*
U.S. Cl. 128—350 R **7 Claims**



An intubation device providing communication into a patient's intestine. The device is formed of a soft flexible tube having a weighted front end, a soft flexible sleeve slidably mounted on the tube, and a collar mounted on the front end of the tube in registry with the sleeve. The front end of the device is inserted through a nasal passage of the patient and is advanced, by the coaction of the weighted plug and the advancement of the sleeve against the collar, to bring the plug and the front of the tube into the patient's stomach up to the pylorus. The sleeve is then withdrawn with respect to the collar and tube, then readvanced carrying the tube so as to provide slack in the front of the tube so that the coaction of peristalsis and the weighted plug will effect a transpyloric passage of the plug

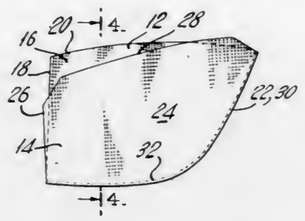
and the leading end of the tube. A passage extends between the interior and exterior of the tube at or near the front of the tube to permit fluid to flow between the tube and the intestine.

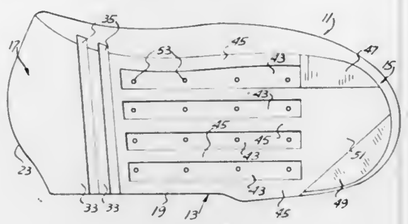
3,780,741

BREAST CUP CONSTRUCTION

Raymond C. Cole, Hillsdale, N.J., assignor to International Playtex Corporation, New York, N.Y.

Filed June 16, 1971, Ser. No. 153,522
Int. Cl. A41c *3/00*
U.S. Cl. 128—516 **8 Claims**





A breast receiving cup for a brassiere, and the method of manufacturing the cup, are disclosed in which the cup comprises an upper cup portion having a lower joining edge of predetermined curvature and a lower cup portion having an upper joining edge secured to the lower joining edge of the upper cup portion. The upper joining edge of the lower cup portion has the same predetermined curvature as the lower joining edge of the upper cup portion whereby the lower joining edge and the upper joining edge of the respective cup portions may be superimposed upon one another to facilitate securement of the upper and lower breast cup portions to one another during the manufacturing procedure. In the three-dimensional finished cup the resultant line of securement starts at a first point along the inner edge of the cup and extends towards its terminus at the outer edge of the cup. Depending upon the cup presentation desired, such line of securement will extend between such first point and its terminus without the line of securement dipping vertically below said first point. Conversely the line of securement may extend from a first point along the inner edge of the cup to its terminus at the outer edge of the cup without the line of securement extending above said first point. Moreover, such construction facilitates the utilization of, and makes possible the optimum use of a split seam construction for concealment of the seam line through sheer garments which is compatible to the less structured, rounder, softer and more natural look of today's fashion.

3,780,742

ORTHOPEDIC FOOT APPLIANCE

Milton H. Madgy, 29199 Wellington Ct., Apt. 46, Southfield, Mich.

Filed Sept. 11, 1972, Ser. No. 288,103
Int. Cl. A61f *5/14*
U.S. Cl. 128—588 **4 Claims**

An orthopedic foot appliance of resilient plastic that has a heel portion, of varying angles, a front section and an intermediate section, said sections and portion being of varying thickness. The front section is longitudinal convex-concave at its top and bottom with a thin forwardly extending convex tip. The intermediate section is longitudinally planar substantially along its top and bottom. The heel portion at the bottom has a rearwardly converging horizontally planar intermediate section and rearwardly converging inner and outer planar heel sections which are inclined upwardly and outwardly thereto.

An inner border extends along the top and is curved upwardly and outwardly and is of progressively increasing height from a limited height at the side of the front section to maximum height at the intermediate portion and slopes down and around the heel portion. The outer border is curved upwardly and outwardly of similar progressively increasing height, but starts at the side of the intermediate section and from front to rear is of corresponding less height than the inner border, to meet at the heel section. The intermediate section has formed in its under surface a series of elongated parallel spaced slots defining a series of elongated parallel spaced stress bars, there being air apertures extending between said slots and the upper surface of the intermediate section.

The orthopedic foot appliance has formed across the forward and under surface of its front section a series of parallel spaced transverse slots. There are transversely extending adjustment insert wedges of specific design and backing which have a flat under surface and upwardly extending elongated ridges which are snugly and removably nested frictionally in said transverse slots. The wedges have surfaces tapered at angles in the range of 2°–6°.

A metatarsal type insert pad has a longitudinal body of specific design with a flat under surface and has upstanding elongated ridges which fit snugly and removably nest in said transverse slots. Said body surface is flat transversely and tapers inwardly from front to rear to underlie a portion of the intermediate section.

3,780,743

FLAVORED TOBACCO PRODUCT

Donald L. Roberts, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Sept. 18, 1972, Ser. No. 289,856
Int. Cl. A24b *15/04*
U.S. Cl. 131—17 **10 Claims**

Addition of mesityl oxide condensation products to tobacco to enhance the flavor and/or aroma thereof.

The identifiable compounds in the condensation which have been found to be effective are 2-isopropenyl 1-3, 5, 5-trimethyl-2- cyclohexen-1- one, 1(cis-2 ketopropylidenyl) -3, 5,5 -trimethyl -2-cyclohexene, 1-(trans-2-ketopropyl- lidenyl)-3, 5,5-trimethyl-2-cylohexene, 5, 5-dimethyl -3-isobutenyl-2- cyclohexen-1- one and 2-acetyl-1-, 3-di dimethyl -4-isopropylcyclopentadiene and mixtures thereof.

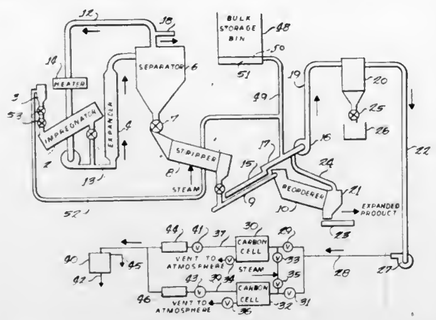
3,780,744

RECOVERY OF ORGANIC LIQUIDS USED FOR TREATING TOBACCO

Robert M. Neel, and Robert C. Johnson, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed June 26, 1972, Ser. No. 266,433
Int. Cl. A24b *3/18*
U.S. Cl. 131—143 **3 Claims**

The recovery of a vaporized organic liquid in a process for expanding tobacco in which tobacco impregnated with the organic liquid is heated to a temperature substantially above the boiling point of the organic liquid with the expanded tobacco being subsequently separated from the vaporized organic liquid. The recovery of organic impregnant is accomplished by collecting and combining impregnant-containing gases from various processing operations, removing entrained solid particles from the combined gas stream by passing through a separator, removing organic impregnant from the gas stream by passing through a bed of activated carbon and reclaiming the organic impregnant from the activated carbon.

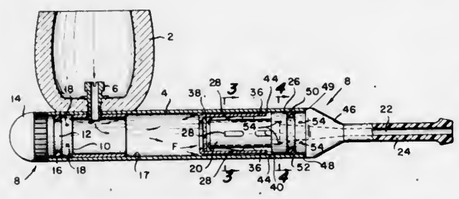


3,780,745

BIT CONSTRUCTION FOR SMOKING PIPES

Robert L. Smith, and William O. Smith, both of Stag Park Road, N.C.

Filed July 21, 1972, Ser. No. 273,759
Int. Cl. A24f *01/16*
U.S. Cl. 131—212 A **14 Claims**



A bit member having a smoke duct therethrough for use in combination with a smoking pipe including a bowl, a tubular stem for connecting the bowl to the bit and a receptacle-like retroverted-flow filter associated with the bit and disposed within the stem. The bit member comprises a generally tubular first portion adapted to fit telescopically within the stem, a generally tubular second portion adapted to fit telescopically within the filter, the second portion being coaxial with said first portion and extending forwardly from the first portion, the outer surface of the second portion being provided with a series of substantially uniform projections circumferentially disposed thereon, the outer surface of the second portion being further provided with a series of substantially uniform second projections circumferentially disposed thereon intermediate the first projections and the first portion, the outer surface of the second portion being provided with stop members for limiting the axial movement of the filter on the second portion, and a mouthpiece-like third portion extending rearwardly from the first portion.

The bit member first portion is also provided with a transverse O-ring retaining recess and a plurality of protuberances on each side of the recess.

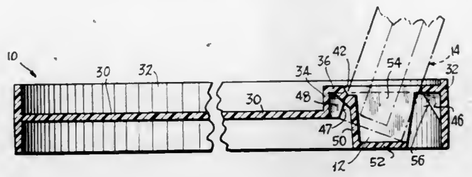
3,780,746

COMBINATION VANITY TRAY AND MIRROR

Thomas H. Hayes, Westport, Conn., assignor to VCA Corporation, Greenwich, Conn.

Filed Apr. 13, 1973, Ser. No. 350,968
Int. Cl. A45d *33/00*
U.S. Cl. 132—83 R **7 Claims**

A combination vanity tray and mirror wherein the tray has a socket arranged to receive the mirror handle in either of two sloped positions, extending either forward toward or rearward from the user. The socket, located in a peripheral portion of the tray, can be disposed either close to the user or more remote from the user by turning the tray. For the close position, the mirror handle extends over the tray and for the remote position, the handle extends oppositely, away from the tray. The mirror is double faced, having a planar reflecting surface at one side and a magnifying reflecting surface on its other side. Thus four different combinations are possible, involving the mirror. For a close positioning, the mirror can provide either a true image or else a magnified image, and such images can also be had for the remote position. In connection with the latter, the tray can be extended under the face of the user so as to catch powder and cosmetic particles that drop down during use. For the close-up position of the mirror, the thin mirror handle and disposition of the mirror proper still permit easy access to the tray. When dismantled, the mirror and tray can be nested flat to occupy a small space for storage and shipping.

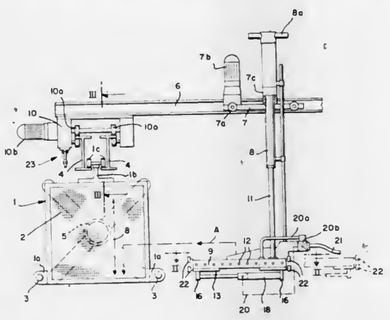


3,780,747

APPARATUS FOR CLEANING FILTER PLATES AND THE LIKE

Werner Stadie, Kettwig; Kurt Sperling, Essen; Rolf Deubner, Bochum, and Werner Pattberg, Essen, all of Germany, assignors to Pumpen und Maschinenbau Abel Kommanditgesellschaft, Essen, Germany

Filed Apr. 5, 1972, Ser. No. 241,199
Claims priority, application Germany, Apr. 21, 1971, P 21 19 295.0; Apr. 21, 1971, P 21 19 296.1
Int. Cl. B08b *3/02*
U.S. Cl. 134—43 **13 Claims**



A stack of flat plates consisting of rectangular frames spanned by filter cloth, normally held together under pressure, is overlain by a rail extending lengthwise of the stack and carrying a transverse beam on which a carriage supports a cleaning unit introduceable from the side into the space between two separated filter plates. The unit comprises a pair of horizontal or vertical spray tubes, each extending over the full width or height of the filter cloth, which are vertically or horizontally movable with the aid of a pair of guide rollers riding on opposide edge portions of the frame when driven apart by a fluid-operated expander. The correct positioning of the beam with reference to the separated filter plates can be

ascertained by a centering device adapted to be lowered into the intervening space, this device including two spreadable arms terminating in respective sensing rollers.

3,780,748
COLLAPSIBLE UMBRELLA

Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Calif.

Filed May 22, 1972, Ser. No. 255,425
Claims priority, application Germany, May 21, 1971, P 21 25 295.9
Int. Cl. A45b *19/04*
U.S. Cl. 135—20 R **4 Claims**

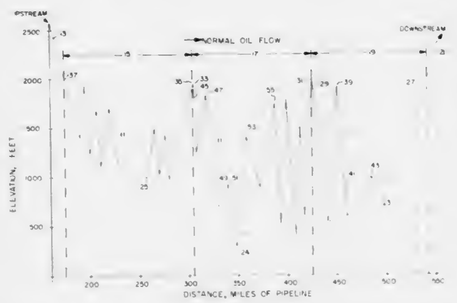


An umbrella having a telescopic stick and each dome rib has three telescopic sections and a parallelogram support structure including a foldable stretcher member hinged midway thereof connected to the dome ribs and to a fixed pivot point on the stick spaced from the crown. A strut member is pivoted to the stretcher members and is hinged to a movable runner on the stick.

3,780,749
PROCEDURE FOR ASSISTING RENEWAL OF OIL FLOW IN A PIPELINE

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 312,049
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 **9 Claims**

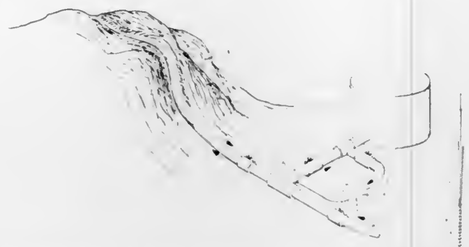


When the temperature is cold enough to gel quiescent oil, renewal of oil flow through a section of pipeline following uphill and downhill terrain is assisted after shutoff by a procedure conducted at an appropriate location along the pipeline where counterbalancing hydrostatic head pressures caused by elevation differences are exerted on both sides of the location. The hydrostatic head pressure exerted on one side of the location, preferably the upstream side, is first decreased by removing oil by pumping or drainage from that side while maintaining at some time during such removal a higher hydrostatic pressure on the other side of the location. Thereafter, shortly before restoring oil flow through the section, oil is caused to flow from the other side of the location into the side of decreased hydrostatic pressure.

3,780,750
FACILITATING RENEWAL OF OIL FLOW IN A PIPELINE

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 312,050
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 **7 Claims**

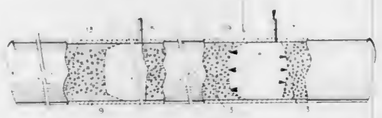


Renewal of oil flow through a section of pipeline in which quiescent oil has gelled is facilitated by causing a segment of the gelled oil to yield in either an upstream or downstream direction. A portion of the yielded segment is removed from the pipeline. Liquid oil of relatively low resistance to flow as compared to the yielded segment is passed through the section of the pipeline previously occupied by the yielded segment. Thereafter, the removed oil is returned into the pipeline. The yielded segment may be removed at an elevation below a significant portion of the segment of the gelled oil to be yielded. If the elevation difference is in a downstream direction, removal of the yielded segment may be used to decrease the hydrostatic pressure resisting renewal of oil flow. The hydrostatic head pressure caused by this elevation difference may be used to yield the segment of gelled oil and to cause a portion of the yielded segment to flow from the pipeline. As a less desirable alternative, a displacing fluid may be used to cause the segment of gelled oil to yield and flow from the pipeline.

3,780,751
RESTORING OIL FLOW IN A PIPELINE

Ralph E. Styring, Jr., Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 312,051
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 **20 Claims**

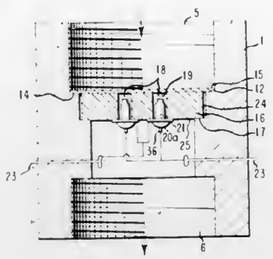


Liquid oil flow capacity through a portion of a pipeline blocked by cooled, gelled, stationary oil is restored at a lower than normal startup pressure. The blocked portion is divided into segments by spaced-apart injection points. A fluid, preferably a gas, is injected under controlled pressure into the injection points to displace the separate gelled segments and to degrade the gel strength of each displaced segment to the point that liquid oil flow through the blocked portion can be restored at a lower startup pressure. The fluid may be injected into the injection points simultaneously or sequentially. The individual segments may be displaced in an upstream direction, or in a downstream direction, or in both directions, toward naturally-occurring or artifically-created unblocked flow points.

3,780,752
EXPLOSIVELY ACTUATED VALVE

Kenneth W. Noddin, Wenonah, N.J., and Walter J. Simmons, Falling Waters, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 1, 1971, Ser. No. 119,645
Int. Cl. F16k *17/40*
U.S. Cl. 137—68 **4 Claims**

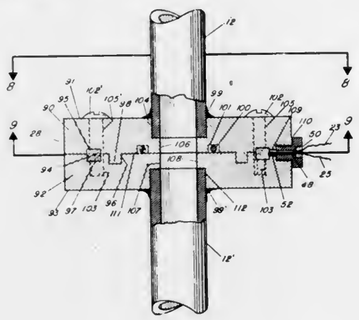


An explosively actuated valve sealed by a frangible diaphragm, e.g., tempered glass, which is opened with an expandable electroexplosive device which fractures the frangible diaphragm. The frangible diaphragm can be used in combination with a rupture disk.

3,780,753
IN-LINE EXPLOSION ARRESTER

Louis Jabiansky, Fair Lawn, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 139,337, May 3, 1971, Pat. No. 3,739,796.
This application Dec. 12, 1972, Ser. No. 314,299
Int. Cl. F16k *13/00*
U.S. Cl. 137—68 **1 Claim**



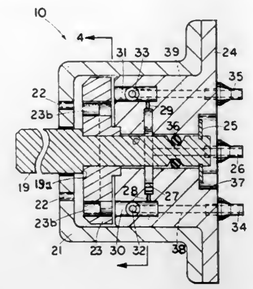
This invention relates to a system for detecting an explosion in a pipeline carrying molten explosive material and halting the spread thereof by blocking the propagation of the detonating wave by a detonation arresting means that is electrically activated by an electronic switch which is sensitive to the initial detonation.

3,780,754
FLUIDIC ANGULAR SHAFT POSITION SENSOR

Sergie Onufreiczuk, Audubon, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 1, 1972, Ser. No. 285,773
Int. Cl. F15b *5/00*
U.S. Cl. 137—82 **2 Claims**

A shaft position indicating system for measuring and indicating the angular position of a shaft. A pair of fixed, diametrically opposite nozzles, connected through fixed orifices to a fluid pressure source, confront a plate rotatingly fixed to the shaft with a noncircular, continuous groove symmetrical about its own axis with its locus displaced from the

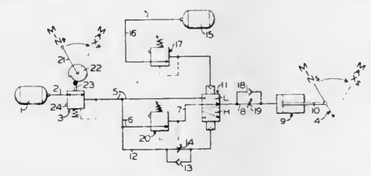


shaft axis, and having pressure relief holes angularly spaced through the plate at the groove. The position of the groove relative to the nozzles determines a back pressure differential linearly indicative of the angular position of the shaft.

3,780,755
AUTOMATIC SPEED CONTROL MEANS FOR A MARINE ENGINE

Tsutomu Matsuda, Akashi, and Makoto Takagi, Kobe, both of Japan, assignors to The Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Nov. 2, 1971, Ser. No. 194,899
Claims priority, application Japan, Nov. 5, 1970, 45/97423
Int. Cl. F16k *31/14*; F15b *13/042*; F02d *11/02*
U.S. Cl. 137—110 **9 Claims**

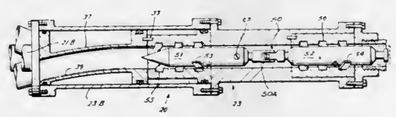


Suppression apparatus interposable between an operator's speed controller and a throttle device in a fluid pressure operable speed control system for a marine engine driving a propeller carried on a propeller shaft, all of which, therefore, are subject to the phenomenon of vibratory resonance occurring within a critical range of speeds or rpm of the engine, said suppression apparatus being operative for automatically suppressing the effectiveness of that portion of a change-of-speed signal, when initiated by the operator, that would, in the absence of such suppression apparatus, produce an engine speed falling within low and high engine speed limits defining said critical range.

3,780,756
SWITCH

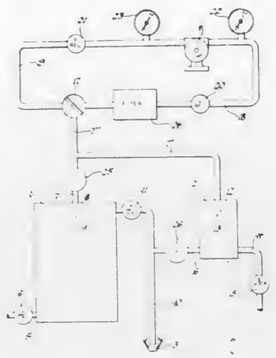
John V. Pennington, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Continuation of Ser. No. 121,883, March 8, 1971, abandoned.
This application Nov. 22, 1972, Ser. No. 308,796
Int. Cl. G05d *11/00*
U.S. Cl. 137—119 **39 Claims**



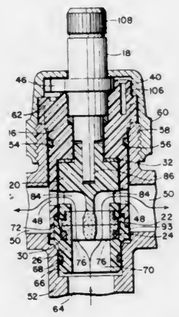
A switch for fluidly connecting a pipeline with a selected branch line in response to the passage of a tool therethrough.

3,780,757
WASTE DISPOSAL SYSTEM AND METHOD
Richard J. Jordan, Roseville, Mich., assignor to General Marine, Inc., Bloomfield Hills, Mich.
Filed May 10, 1971, Ser. No. 141,569
Int. Cl. B08b 3/00
U.S. Cl. 137—205 2 Claims



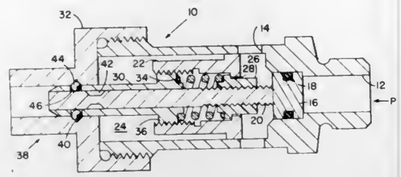
Vacuum and pressure are selectively applied by an air pump through a conduit interconnecting two tanks which have a second interconnecting conduit connectable to the access fitting of a boat waste receptacle. Application of vacuum withdraws the waste from the receptacle into one of the tanks and lake water into the second tank through a third conduit whose inlet end can be dropped overboard. The lake water is then expelled by air pressure into the receptacle as a flushing fluid and thence withdrawn into the first tank from which it and the previously withdrawn waste are finally expelled through a fourth conduit connectable to a public sewer or other disposal facility.

3,780,758
NON-METALLIC CARTRIDGE VALVE
Robert Wopke DeVries, Grand Rapids, Mich., assignor to Wolverine Brass Works, a Division of Wolverine Industries, Inc., Grand Rapids, Mich.
Filed Nov. 15, 1972, Ser. No. 306,598
Int. Cl. F16k 25/00
U.S. Cl. 137—454.6 20 Claims



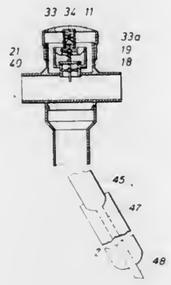
The valve is of the replaceable cartridge or unit type, and is constructed mainly of durable non-metallic materials which resist corrosion, wear, and adherence of foreign materials usually carried by the fluid under control of the valve; the valve featuring also a 90° limit of operating stem rotation and a minimum number of simple components capable of fabrication and assembly with great savings of time and labor so that the valve may be produced at low cost.

3,780,759
REUSABLE PRESSURE RELEASE VALVE
Daniel I. Yahle, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 10, 1972, Ser. No. 242,553
Int. Cl. F16k 17/06
U.S. Cl. 137—467 3 Claims



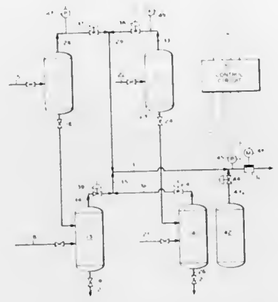
A reusable release valve for use in checking fluid systems, in areas such as missile stage controls, and to dump the fluid at a predetermined pressure. The system fluid causes pressure on a piston to release a latching mechanism whereby the system fluid is dumped through the release valve. After fluid dumping the valve is disassembled and reset for reuse.

3,780,760
VALVE, PREFERABLY FOR ANAESTHETIC PLANTS OF THE CLOSED TYPE
Ole Berner, Herlev, Denmark, assignor to Dameca A/S, Rodovre, Denmark
Filed July 22, 1971, Ser. No. 165,308
Claims priority, application Denmark, July 27, 1970, 3887
Int. Cl. F16k 15/06
U.S. Cl. 137—516.25 7 Claims



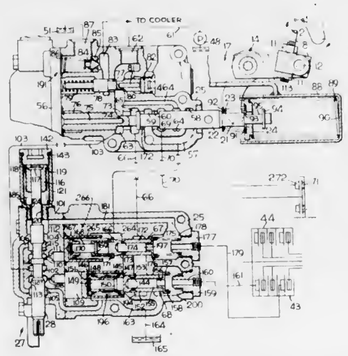
A valve for anaesthetic plants of the closed type, in which a valve plate may move between an upper and lower valve seat. When the plate is in a mean position the anaesthetic mixture may ooze out from the pipe circuit and, when the plate bears against one of the seats the valve is closed. The plate is fixed to a spring and its movement is limited by an elastic member on the valve housing, said member being movable along the axis of the spindle on which the valve plate is fixed. The valve plate is arranged in a central channel which communicates with a ring-shaped chamber, this chamber communicating with an outlet. The valve may be used either for intermittent operation or for operation in such a way that it opens at a pre-determined pressure or for working when the patient is breathing spontaneously because the valve shall invariably allow a certain small surplus quantity to escape the system. Finally the valve ensures that any surplus anaesthetic mixture can be easily conducted to the floor.

3,780,761
APPARATUS INCLUDING AN EQUALIZATION CHAMBER FOR DISCONTINUOUS VENTING OF A VESSEL
Bobbie L. Whitson, and John A. Morgan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 10, 1972, Ser. No. 225,171
Int. Cl. G05d 7/06, 16/18
U.S. Cl. 137—565 6 Claims



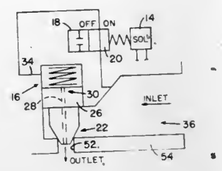
A vessel to be vented on a discontinuous basis is connected by first conduit means, containing a first valve means, to the inlet of a compressor. An equalization chamber is connected by second conduit means, containing a second valve means, to the first condut means at a point between the first valve means and the inlet of the compressor. The valves are selectively actuated to initially connect the vessel and the equalization chamber to permit the gas pressures therein to equalize, then to close off the chamber while the compressor withdraws additional gas from the vessel until the desired pressure is reached, and finally to withdraw gas from the chamber. The equalization chamber and compressor can be employed to sequentially vent a plurality of vessels. A control means can be utilized to perform the selective actuation of the valves.

3,780,762
HYDRAULIC VALVE
Ralph W. Matthews, and Robert E. Schott, both of New Berlin, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 22, 1972, Ser. No. 317,644
Int. Cl. F16k 11/10; F16d 67/04
U.S. Cl. 137—596 10 Claims



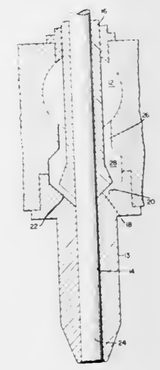
A hydraulic pressure modulated valve for controlling the operation of hydraulic brake and clutches.

3,780,763
PULSE RATIO MODULATION VALVE
Raymond B. Wisniewski, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation-in-part of Ser. No. 859,504, Sept. 19, 1969, abandoned. This application June 2, 1971, Ser. No. 149,345
Int. Cl. F16k 31/363
U.S. Cl. 137—599 3 Claims



A valve disposed for use in a rocket having thrust vector control means for attitude control of the rocket. The valve is operated by a normally-open two-way solenoid cartridge which controls a spring actuated disk valve for venting pressurized fluid from behind the valve pintle. The normally-open solenoid provides fluid control pressure for pintle closing and prevents valve pintle vibration during rocket engine vibration. In response to closing of the solenoid, the control pressure behind the pintle is vented and fluid supply pressure displaces the pintle from blocking an exit port in the valve body to provide fluid pressure flow therethrough.

3,780,764
NOZZLE SHUT-OFF AND FLOW CONTROL VALVE
Robert Joseph Geist, Isla Verde, P.R., assignor to Union Carbide Corporation, New York, N.Y.
Filed Apr. 7, 1972, Ser. No. 242,177
Int. Cl. B29f 1/00
U.S. Cl. 137—613 3 Claims

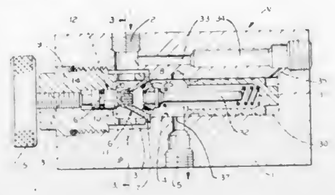


A combined nozzle shut-off and flow control valve for use with a plastic molding machine is disclosed comprising a valve body having a bore communicating with outlet passage means of reduced diameter and axially aligned with said bore and radial inlet passage means; a valve stem, having an inner axial passage, axially positioned within said bore and capable of relative axial movement therein; nozzle valve rod means slidably positioned in said valve stem inner axial passage and aligned to register in to effect closure of said outlet passage means; the lower surfaces of said bore and said valve stem having parallel annular surfaces providing a gap of variable width to effect flow control through said valve.

3,780,765
RESTRICTIVE FLOW REGULATING VALVE AND CONTROL CIRCUIT EMPLOYING SAME

Eugene E. Swatty, Euclid, Ohio, assignor to Fluid Controls, Inc., Mentor, Ohio

Filed Aug. 16, 1971, Ser. No. 172,137
Int. Cl. F16k *31/143*
U.S. Cl. 137—613 1 Claim



The restrictive flow regulating valve has a plug which is adjustable axially of a complementary valve sleeve to expose different lengths of a slot in the plug, dependent on the adjusted position of the plug, for predetermining different basic flows. The plug and sleeve have a lapped fit.

Concentricity of the plug and sleeve is assured during valve assembly by driving the plug into the sleeve while the sleeve is held in the valve body for limited radial movement with its passage normal to the plug axis so that the plug itself moves the sleeve into coaxial relation with the plug. The sleeve is then secured in coaxial relation in the body while so held by the plug.

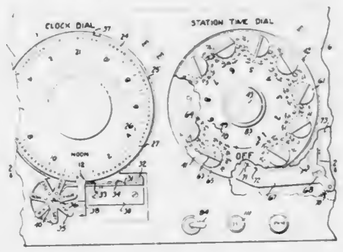
The valve is incorporated in an electro-mechanically operated hydraulic control circuit which controls the cycling of a cutting machine for rapid advance to feed starting position, and slower advance during feed and, optionally, for successive increments of the feed by which the tool cuts progressively deeper into the workpiece, each increment of feed being followed by rapid withdrawal of the tool to clear the chips and each withdrawal being followed, in turn, by a rapid advance to just short of the beginning of the next increment of cut.

The entire control is mounted on the machine itself so that it can remain fully installed relative thereto hydraulically and electrically if the machine is to be moved to a new worksite.

3,780,766
AUTOMATIC TIMING OF WATERING CONTROL SYSTEMS

Gustav A. Link, 3961 Mission Rd., Los Angeles, Calif.

Filed Jan. 8, 1973, Ser. No. 321,790
Int. Cl. A01g *27/00*; F16r *31/04*
U.S. Cl. 137—624.2 11 Claims

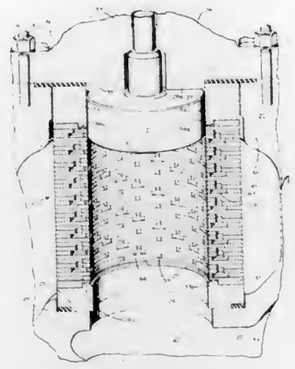


A watering or sprinkling control device for large areas comprising a motor driven timing rotor having timing control knobs at different control stations therearound representing different areas to be successively watered and wherein the knobs are adjustable relative to suitable indicia to predetermine the length of time watering is to occur in respective ones of the areas or, alternatively, to omit watering of such areas.

3,780,767
CONTROL VALVE TRIM HAVING HIGH RESISTANCE VORTEX CHAMBER PASSAGES

Karl Stanley Borg, Westboro, and Henry W. Boger, Westwood, both of Mass., assignors to Masoneilan International, Inc., Norwood, Mass.

Filed Dec. 18, 1972, Ser. No. 316,038
Int. Cl. F16k *47/04*
U.S. Cl. 137—625.3 30 Claims



A control valve trim cage having high resistance, fluid flow energy absorbing, vortex chamber passages opening between the cage bore and circumference.

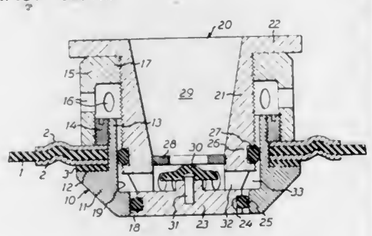
A control valve having a trim cage comprising a stack of like plates together formed with radially and axially distributed, vortex chamber passages extending between the stack walls. The control valve further having a valve plug axially shiftable within said stack to variously cover and uncover said plates and passages and thereby to adjust or regulate fluid flow through said valve.

An improved construction for the high resistance fluid passages of a stacked plate design of control valve trim wherein the passages are provided within or through one or more trim plates and are characterized each by a generally radially disposed, tangential inlet; a single, spiral flow vortex chamber; and a generally radially disposed, non-reversing outlet.

3,780,768
FILLING AND EMPTYING VALVE

Hans Sture Soderstrom, Trelleborg, Sweden, assignor to Trelleborgs Gummifabriks Aktiebolag, Trelleborg, Sweden

Filed Apr. 5, 1972, Ser. No. 241,261
Claims priority, application Sweden, Apr. 6, 1971, 4443/71
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.48 1 Claim



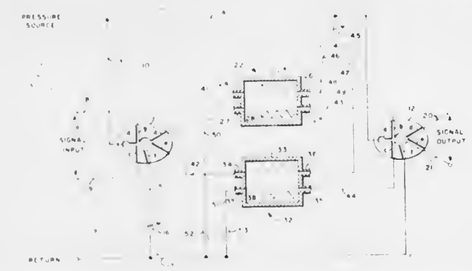
Filling and emptying valve for containers and especially for inflatable cushions for cargo protection. The valve comprises a valve housing for mounting in an opening in a wall of a container or cushion and a valve holding body with emptying, filling and closing valves. The emptying and closing valves

define a valve chamber, in which the non-return type filling valve opens. In the valve housing the valve holding body is movable between three working positions, a first position in which the valve is completely closed, a second position in which the closing valve is open and connects the valve chamber with the interior of the container or cushion and permits filling the container or cushion through the filling valve, and a third position in which the emptying and closing valves are open for connecting the interior of the container or cushion with the atmosphere.

3,780,769
FLUIDIC VARIABLE CAPACITANCE NETWORK

Walter M. Posingies, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 17, 1971, Ser. No. 209,299
Int. Cl. F15c *3/00*
U.S. Cl. 137—819 4 Claims

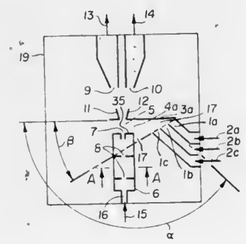


A fluidic variable capacitance network comprising a pair of bellows having non-linear pressure-displacement characteristics enclosed in pressurized enclosures, and an adjustable biasing network for controlling the operating point of the bellows. The capacitance of the bellows with respect to an AC pressure signal is a function of the nominal operating point of the bellows established by the biasing network. Also disclosed is a scheduled variable high pass fluid amplifier utilizing the variable capacitance network.

3,780,770
MULTIPLE INPUT FLUID JET ELEMENT FOR A FLUIDIC CIRCUIT

Arnulf Schwarz; Gerhard Konig; Manfred Pieloth, and Dietmar Lang, all of Dresden, Germany, assignors to Veb Reglerwerk Dresden, Dresden, Germany

Filed Mar. 31, 1972, Ser. No. 240,038
Claims priority, application Germany, May 27, 1971, WP F 15 c/ 155 394
Int. Cl. F15c *1/14*
U.S. Cl. 137—823 10 Claims

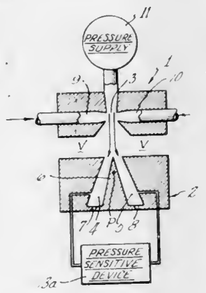


A fluidic circuit device incorporates one or more multiple input fluidic jet elements arranged so that the jet axes of each of the jets is directed to a mixing region at an obtuse angle with respect to a baffle, and the ends of the nozzles of the multiple jet element define a line or plane that is at an acute angle with respect to the baffle. The nozzle system is disclosed in combination with a wall attachment device, as an arrangement to permit the series or parallel combining of signals, and in an arrangement having opposed elements.

3,780,771
FLUIDIC DISPLACEMENT TRANSDUCER

Robert F. Kampe, West Hartford, and Albert H. White, Wethersfield, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Division of Ser. No. 874,856, Nov. 7, 1969, Pat. No. 3,613,708.
This application Oct. 14, 1971, Ser. No. 189,196
Int. Cl. F15c *1/14*, *3/10*
U.S. Cl. 137—829 6 Claims



A fluid amplifier is provided with pressure surfaces which are movable in response to the pressure differential between two opposed chambers. A power stream impinges on a splitter element which separates two channels which respectively communicate with the chambers, so that a control stream may direct the power stream into either channel and create a pressure differential between the chambers. When the pressure surfaces move, the splitter element again impinges on the power stream annulling the initial pressure differential. Either the splitting element or the orifice of the power stream is connected to the pressure surfaces so as to be movable therewith to change the relative location of the splitter element and orifice. The amplifier may be employed as either a position or force to pressure transducer or a pressure to position or force transducer. A fluidic closed loop pneumatic actuation system incorporates the amplifier to position a servo-valve controlled actuator.

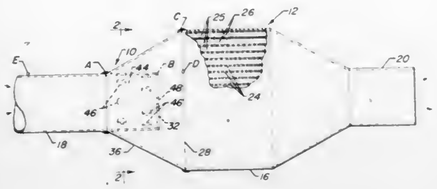
3,780,772
COUPLING ARRANGEMENT FOR PROVIDING UNIFORM VELOCITY DISTRIBUTION FOR GAS FLOW BETWEEN PIPES OF DIFFERENT DIAMETER

Robert D. Carnanhan, Barrington, and Karl J. Youtsey, Chicago, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 2, 1972, Ser. No. 231,141
Int. Cl. F15d *1/02*
U.S. Cl. 138—37 7 Claims

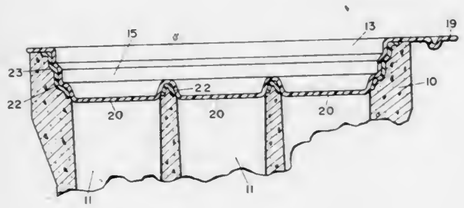
Coupling arrangement provides uniform velocity distribution between pipes of different diameters where the diameter differences are greater, and/or the axial spacing of the pipes is less than that which would be required to permit a uniform velocity distribution if a flared connector joined the ends of the two pipes. The coupling includes a frusto-conical transition member which connects the end of the larger pipe to the smaller pipe at a location which is spaced axially from its end. By closing the end of the smaller pipe except for at least one small opening proximate its axis and by providing a series of circumferentially spaced openings around its walls between its

end and the points at which the transition member is attached to it, it is possible to cause gas flow from the smaller to the larger pipe to have a substantially uniform velocity distribution across the end of the large pipe. The coupler is particularly useful in distributing polluted exhaust gases from a rela-



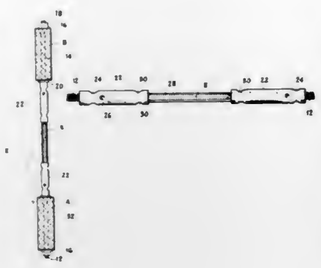
tively small diameter engine exhaust pipe to a relatively larger diameter honeycomb-shaped catalytic reactor element since it permits a minimum spacing between the exhaust pipe and catalytic element and a reduction in the amount of catalyst contained in the reactor.

3,780,773
CLOSURE FOR MULTIPLE PASSAGE CONDUIT
Sverre R. Haugen, Lanesboro, Minn.
Filed June 17, 1971, Ser. No. 153,965
Int. Cl. F16l *57/00*
U.S. Cl. 138—89 **3 Claims**



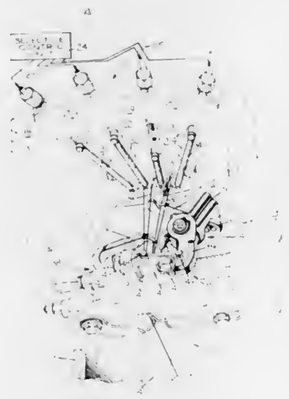
Closures for the respective male and female ends of a conduit are releaseably held on the conduit by frictional engagement with parts carried by the conduit. The closure for the recessed or female end of a multiple passage underground conduit is provided by a dish-shaped member which is formed of plastic sheet material. A plurality of projections extend downwardly from the bottom of the member and are positioned, respectively, in the ends of the passages. A peripheral skirt extending upwardly from the bottom of the member fits snugly in friction—tight engagement with the inner wall of the recessed end of the conduit. The other or male ends of the conduit may be closed by a similar dish-shaped member having projections extending upwardly from the bottom of the passages. A peripheral skirt also extends upwardly and frictionally engages a gasket carried from the outer side of the male end portion of the conduit.

3,780,774
JACK STICK CONNECTOR
Curtis M. Daniel, Rt. 5, Anderson, S.C.
Filed Jan. 27, 1972, Ser. No. 221,309
Int. Cl. D03c *13/00*
U.S. Cl. 139—87 **2 Claims**



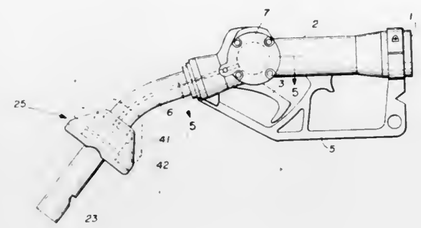
A device for connecting a jack stick to the harness frame of a loom in order to effect positive pull-down of the harness frame to cause shedding of the warp threads. The device includes a first and second connector means which are attached to the frame and jack stick, respectively. Positioned between the first and second connector means is an elongated flexible cable which allows the jack stick to move laterally relative to the frame during the weaving operation.

3,780,775
WEFT CONTROL MECHANISM FOR SHUTTLELESS LOOMS
Frederick L. Sprague, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Aug. 25, 1972, Ser. No. 284,499
Int. Cl. D03d *47/38*
U.S. Cl. 139—122 W **4 Claims**



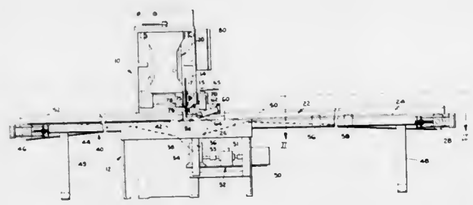
A weft control mechanism for shuttleless looms of the type adapted to insert weft yarn in the form of pairs of interconnected picks having means for inserting separate picks into the warp sheds which are drawn from separate sources of supply and which are guided to a position for presentation to the inserting means by a single weft presenting member.

3,780,776
SAFETY MECHANISM FOR AUTOMATIC NOZZLES
Hans Eric Eklund, Malmo, Sweden, assignor to AB Ljungmans Verkstader, Malmo, Sweden
Filed June 9, 1971, Ser. No. 151,330
Claims priority, application Sweden, June 16, 1970, 8311/70
Int. Cl. B67c *3/26*
U.S. Cl. 141—207 **9 Claims**



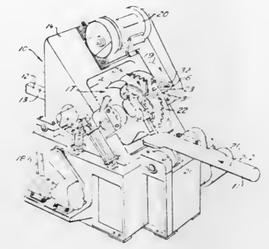
The safety mechanism of this invention forms a portion of an automatic nozzle for dispensing gasoline or the like. The mechanism includes a pressure control member movably mounted on the nozzle spout to engage the filler pipe on the tank being filled. When the control member engages the filler pipe, pressure is transmitted to a diaphragm and a locking device carried thereby to release the locking device and to permit operation of the nozzle.

3,780,777
DEFECTING SAW
John R. Davies, Grand Rapids, Mich., assignor to Oliver Machinery Company, Grand Rapids, Mich.
Filed Oct. 6, 1971, Ser. No. 186,897
Int. Cl. B27b *5/02*
U.S. Cl. 144—3 N **6 Claims**



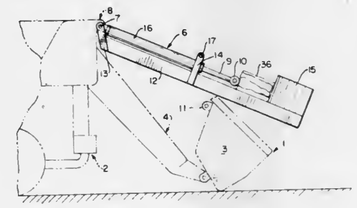
A defecting saw including a feed conveyor and a transversely movable rotating saw, both of which are controlled by means of a control circuit including a light detector for detecting fluorescent marks placed on a board to identify a defect area. An ultraviolet light source is mounted adjacent the saw blade together with the light detector such that, as a board is fed into the saw blade area by the feed conveyor, the detector will detect light from the illuminated fluorescent mark. The light detector is coupled to the control circuit which operates to stop the feed conveyor and simultaneously swing the rotating saw transversely across the board at the fluorescent mark. After a cut is made, the feed conveyor again starts until the next fluorescent mark is detected. Defects are thereby automatically cut away from the board when they are marked on either side by such fluorescent marks.

3,780,778
SAWING AND CHIPPING MACHINE
Frederic Frank Chapman, Coquitlam, British Columbia, Canada, assignor to Hawker Siddeley Canada Ltd., Toronto, Ontario, Canada
Filed Mar. 27, 1972, Ser. No. 238,115
Claims priority, application Great Britain, Aug. 14, 1971, 38,232/71
Int. Cl. B27c *1/08;* **B27l** *11/02*
U.S. Cl. 144—39 **7 Claims**



A sawing and chipping machine for providing a sawn face on a log having a rotable head on which a circular saw and chipping knives are mounted for sawing a slab from a moving log and at the same time reducing the slab to chips suitable for pulping.

3,780,779
LOG SPLITTING DEVICE ADAPTED TO UTILIZE POWERED PISTON ON TRACTOR
Richard J. Guy, 37 Redington St., Bay Shore, N.Y.
Filed Aug. 31, 1971, Ser. No. 176,544
Int. Cl. B27l *7/00*
U.S. Cl. 144—193 A **3 Claims**

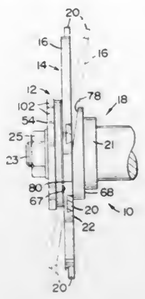


A hand portable attachment for splitting logs readily attachable to and adapted to cooperatively operate with a powered piston on a tractor or similar equipment. The attachment includes a frame detachably engageable to the equipment, a wedge mounted on the frame adjacent one end of the path of travel of the piston and holding brackets to align and steady the cylinder which carries the piston. Logs are placed between the piston and the wedge and urged against the wedge causing them to split.

3,780,780
ROTARY CUTTING BLADE
David D. Pettigrew, 11300 124th Ave. North, Largo, Fla., and Richard Vaughn, Highway 81-35, Dilley Hotel, Dilley, Tex.
Filed Oct. 2, 1972, Ser. No. 293,839
Int. Cl. B27b *33/00*
U.S. Cl. 144—238 **13 Claims**

An adjustable rotary dado blade assembly of the type designed to be mounted for relatively high speed rotation on an arbor or the like and including mounting means in the form of at least two cam assemblies movably engaging one another and the blade itself so as to position the blade in engagement

with a positioning surface, the configuration of which defines the angular orientation of the plane of the blade relative to the axis of rotation of the blade. The blade means includes a disc having a plurality of cutting elements formed about the

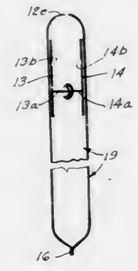


periphery in unequal spaced relation to one another and located so as to position the cutting edge of the cutting elements at different radial distances from the center of the blade disc so as to provide a substantially level dado.

3,780,781
OPENABLE BAG

Tatsuro Uramoto, c/o Seisan Nippon Sha, Ltd. New Kohjimachi Building, 3, 5-chome, Kohjimachi, Chiyoda-ku, Japan

Continuation-in-part of Ser. No. 882,491, Dec. 5, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 178,088
Int. Cl. B65d *17/24, 33/24*
U.S. Cl. 150—3 **12 Claims**



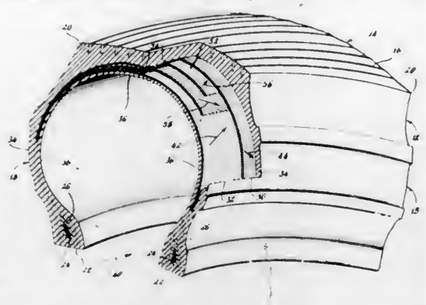
A plastic film structure for forming a bag including a sheet of thin plastic film with continuous shaped interlocking rib and groove profiles thereon either integral with the film or on strips which are fused to the film with the sheet having plastic reinforcing strips thereon between the profiles with the reinforcing strips providing tear guidelines for tearing off the top of a bag formed from the sheet to thereafter provide gripping flanges for separating the profiles and opening the bag.

3,780,782
TIRE WITH BELT BETWEEN BIAS CARCASS PLIES

George L. Jennings, Grosse Point Woods, and Parks M. Nichols, Detroit, both of Mich., assignors to Uniroyal Inc., New York, N.Y.

Continuation-in-part of Ser. No. 793,299, Jan. 23, 1969, abandoned. This application Dec. 17, 1970, Ser. No. 99,109
Int. Cl. B60c *9/20*
U.S. Cl. 152—356 **24 Claims**

A bias ply tire incorporates a pair of oppositely oriented non-woven breakers between two successive body plies in the region underlying the crown region of the tread layer. The breakers are inserted prior to shaping and curing. In a four-ply tire, one such pair of breakers preferably is inserted between the first and second, that is, the innermost, body plies, and another such pair of breakers may similarly be inserted between the third and fourth, that is, the outermost, body plies. Also, a third such pair of breakers may be inserted between the second and third body plies if further improved results are desired. The cord directions of each successive

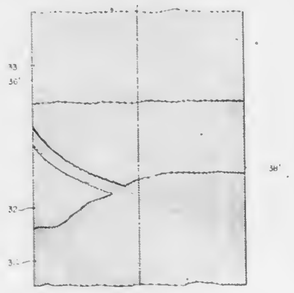


layer, whether a body ply or a breaker, may alternate relative to the longitudinal center line of the tire crown or the cords of successive coacting layers of breaker and body ply may be in the same general direction relative to the longitudinal center line of the tire crown. The result is an improvement in stability, owing to a lower cord angle in the crown region, without any sacrifice of ride softness, owing to a higher cord angle in the sidewall region.

3,780,783
TRIANGULATED CARCASS TIRE

Walter W. Curtiss, Jr., Brimfield, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 31, 1972, Ser. No. 258,109
Int. Cl. B60c *9/10*
U.S. Cl. 152—356 **11 Claims**



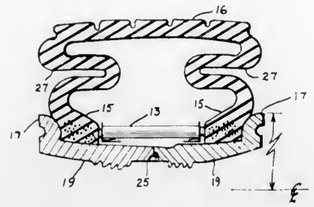
A pneumatic tire having three plies of tire cord fabric in which the cords in two of the plies follow a geodesic cord path and the cords in the third ply follow a conventional cord path The individual cords in all of the plies are of the same length and each ply has its radially inner ends turned about the respective bead core.

3,780,784
EXPANDABLE TIRE RETAINER ASSEMBLY

Carl P. Spier, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 7, 1972, Ser. No. 260,646
Int. Cl. B60c *17/00*
U.S. Cl. 157—1 **3 Claims**

A retainer assembly for use with expandable tires wherein a pair of circular metallic bands having a plurality of tabs extending radially outward therefrom are positioned around the wheel rims such that the tabs are located nearly adjacent the tire beads. A hollow spreader bar is positioned between the bands at each tab location and a headed stud is passed through

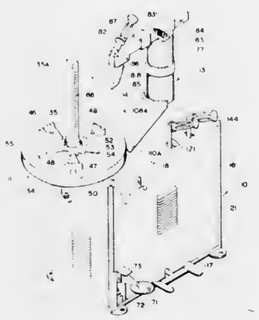


the tab inwardly into the spreader bar to maintain the tabs in spread condition which, in turn, holds the tire beads against the tapers or flanges of the wheel rim during the mounting process and would also operate to retain the tire on the wheel if and when an emergency "run-flat" condition existed.

3,780,785
BEAD BREAKER AND TIRE REMOVAL AND REPLACEMENT DEVICE

Matthew Schultz, Box 241, and William L. Schultz, Box 485, both of Red Lake Falls, Minn.

Filed Sept. 27, 1971, Ser. No. 184,101
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.24 **34 Claims**



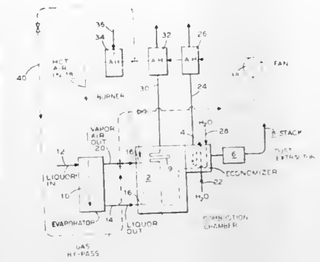
The wheel and tire are mounted for selective rotation horizontally and an upper bead breaking component is hydraulically controlled to swing into position and descend to break the top bead. A lower plate type bead breaker is hydraulically actuated to move upwardly to move the lower bead. The table is then rotated and a tire removal tool engaged upon the central standard for removing the tire from the rim. The same tool is reversed to install the tire on the rim.

3,780,786
DIRECT CONTACT EVAPORATORS

Pierre Henri Pacault, Ville d'Avray, and Marc Kagans, Asnieres, both of France, assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,353
Claims priority, application France, Jan. 29, 1970, 7002059
Int. Cl. B01d *1/16*
U.S. Cl. 159—4 A **3 Claims**

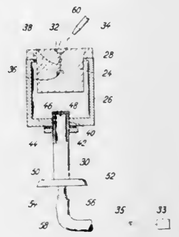
A direct contact evaporator for concentrating residual pulp liquor where the concentration of the liquor is accomplished by hot air. The combustion of the concentrated liquor in a boiler produces hot gases which are used to produce steam and to preheat the feed water with steam and hot water utilized in indirect heat exchangers to heat the air used in concentrating the liquor. Additional heat is applied to the air as generated by separate fuel combustion in a separate indirect air heater.



3,780,787
METHOD OF VACUUM INVESTMENT CASTING

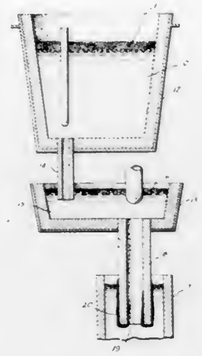
Jens Ejnar Rasmussen, Langgade 3, Randers, Denmark

Filed June 17, 1971, Ser. No. 154,000
Int. Cl. B22c *9/02*; **B22d** *27/16*
U.S. Cl. 164—35 **6 Claims**



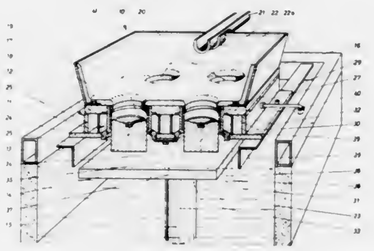
A method of making castings according to the wax elimination method, comprising the steps of mounting a wax pattern on a holding pin member, placing the pattern in a substantially centered position in a cuvette with said holding pin extending upwardly therefrom, pouring into said cuvette an investment slurry of a type setting into an air permeable, rigid, heat resistant block, allowing said slurry to set, causing said pattern and said holding pin to disappear from the mould block thus produced, placing said mould block in an opening in a vacuum chamber in such a manner that the hole left by said holding pin communicates with the atmosphere outside said vacuum chamber whilst a substantial portion of the remaining block surface is situated inside the chamber sealed off from the said atmosphere, filling liquid casting material into said hole in the mould block and subjecting said vacuum chamber to vacuum so as to cause said casting material to be sucked into the cavity left by said pattern, allowing the casting material to solidify and removing the mould block from the vacuum chamber, breaking the mould block in order to release the casting therefrom, and separating the part of the casting corresponding to said pattern from the part corresponding to the passage left by said holding pin, characterised by providing the top portion of said mould block with a radially protruding, annular flange prior to its introduction into the vacuum chamber and by inserting the mould block into the vacuum chamber opening so as to bring the said flange into sealing engagement with the edge of the opening by the movement thereagainst.

3,780,788
METHOD FOR CONTINUOUSLY CASTING STEEL USING A PARTIALLY COATED REFACTORY NOZZLE
George J. Sundy, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.
Division of Ser. No. 857,566, Sept. 12, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 178,506
Int. Cl. B22d *11/10*
U.S. Cl. 164—82 9 Claims



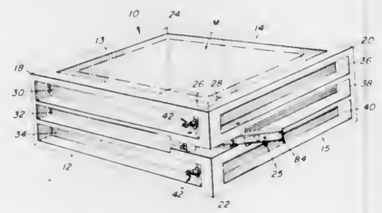
A method for continuously casting steel in which a refractory nozzle extending downwardly into the molten metal in the mold is coated with a carbonaceous material, for example coal tar pitch. A refractory nozzle coated with a carbonaceous material is also described.

3,780,789
APPARATUS FOR THE VERTICAL MULTIPLE CONTINUOUS CASTING OF ALUMINUM AND ALUMINUM ALLOYS
Manfred Unger, Sierre, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Continuation of Ser. No. 78,687, Oct. 7, 1970, abandoned. This application Aug. 2, 1972, Ser. No. 277,263
Claims priority, application Switzerland, Oct. 8, 1969, 15043/69
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 R 2 Claims



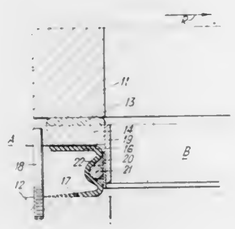
Apparatus for the vertical multiple continuous casting of aluminum and aluminum alloys comprising a distributing launder for the casting metal, a plurality of water-cooled continuous casting molds, a common lowering platform movably arranged in a pit and carrying the starting dummies of all the molds in a common fashion, the molds are disposed in a fluid-tight manner in a common cooling box, the distributing launder including openings which approximately match the cross section of the molds which are disposed below the level of the openings, a jacket surrounding each mold and forms with the exterior side of the associated molds a chamber for the cooling water and has apertures in its upper part for the inlet of the cooling water from the common cooling water box, the jacket also having further apertures in its lower part for the outlet of the cooling water from the chamber.

3,780,790
FOUNDRY FLASK
Thomas C. Hoffman, Dubuque, Iowa, assignor to The Adams Company, Dubuque, Iowa
Filed Mar. 21, 1972, Ser. No. 236,644
Int. Cl. B22c *21/00, 21/02, 21/10, 21/08*
U.S. Cl. 164—392 8 Claims



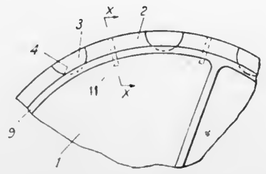
A break-open foundry flask having an adjustable toggle mechanism on opposite corners for facilitating the removal of the flask from its mold.

3,780,791
THERMAL REGENERATORS
Mark Cary Sedgwick Barnard, "St. Andrews" Upper Ladyes Hill, Kenilworth, and Lawrence Butler, 16 Henley Cres., Solihull, both of England
Filed Dec. 2, 1971, Ser. No. 204,168
Claims priority, application Great Britain, Dec. 4, 1970, 57861/70
Int. Cl. F28d *19/00*
U.S. Cl. 165—9 3 Claims



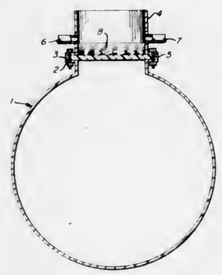
In a thermal regenerator for a gas turbine a matrix is rotatably mounted in a housing. To segregate high and low pressure gas flows through the matrix a sealing assembly is provided in which a pad seal is urged into contact with the matrix and the space between seal and housing is closed by an elastomeric curtain.

3,780,792
THERMAL REGENERATORS
James Alexander Ritchie, 22 Lundy View, Chelmsley Wood, Birmingham, England
Filed Mar. 22, 1972, Ser. No. 236,946
Int. Cl. F28d *19/00*
U.S. Cl. 165—9 5 Claims



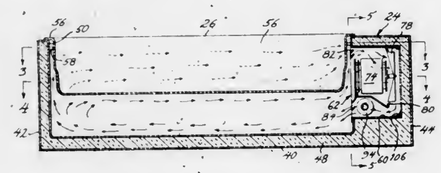
A microcellular ceramic thermal regenerator disc, for use in a gas turbine engine, has a slot formed in its periphery between adjacent pairs of drive pins, each slot having both its ends terminating short of the two end faces of the disc.

3,780,793
HIGH SERVICE TEMPERATURE PRESSURE SENSITIVE DEVICE
William J. Didycz, Whitehall Borough, and Almon D. Seabury, Hampton Twp., Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed Apr. 14, 1971, Ser. No. 133,938
Int. Cl. F24h *13/00*
U.S. Cl. 165—47 8 Claims



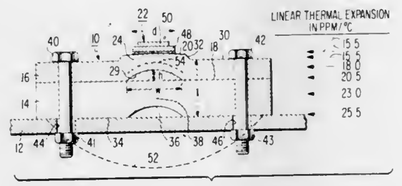
Rupture discs are combined with cooling means to provide high service temperature pressure sensitive devices.

3,780,794
FOOD TABLE
Bernard Staub, 522 Thrush Dr., Dresher, Pa.
Filed Dec. 2, 1971, Ser. No. 203,960
Int. Cl. F25b *29/00*
U.S. Cl. 165—58 15 Claims



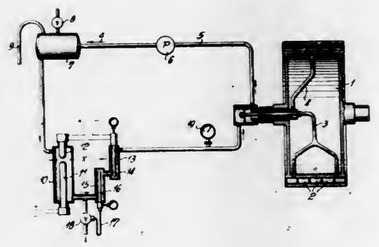
A food dispensing and storage device comprising a housing and a food dispensing pan positioned in the top of the housing. The housing includes a fan and a heat transfer means therein. The fan circulates air across the heat transfer means, under and around the food dispensing pan and back to the circulating fan. Thus, the air is completely circulated and re-circulated around the pan. A temperature sensing element measures the temperature of the return air, which temperature also reflects the temperature of the pan, and therefore its contents.

3,780,795
MULTILAYER HEAT SINK
Anthony Francis Arnold, Ringoes, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed June 19, 1972, Ser. No. 263,992
Int. Cl. F28f *7/00*
U.S. Cl. 165—80 18 Claims



An improved heat sink comprises an integral metallic structure, having upper and lower layers of different metals, respectively, fixed to each other to provide a common interface. The lower layer has a greater coefficient of thermal expansion than the upper layer. An upwardly extending dimpled portion of the upper layer is formed by a dent that extends upwardly from the common interface. When the heat sink is heated by a heat-producing device mounted on the surface of the dimpled portion, the lower layer tends to expand in an opposite direction to that of the dimpled portion of the upper layer, so that the dimpled portion is in compression, thereby limiting the amount of thermal expansion and distortion that would normally occur at the surface of the dimpled portion.

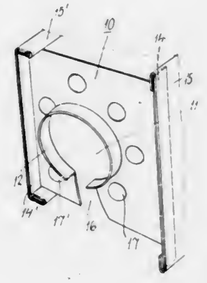
3,780,796
MULTICOLOUR PRINTING PRESS COMPRISING A BACKING CYLINDER CONTAINING HEATING CHAMBERS
Horst Miram, and Karl Heinz Schner, both of Lengerich, Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany
Filed Nov. 12, 1971, Ser. No. 198,315
Claims priority, application Germany, Nov. 12, 1970, P 20 55 584.4
Int. Cl. B60h *1/00*
U.S. Cl. 165—39 5 Claims



In a multi-colour printing press comprising a backing cylinder containing heating chambers traversed by a medium

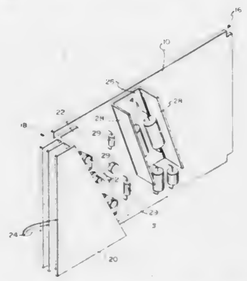
which is heated in a flow circuit, the said circuit including a heater and a thermostat downstream of the heater for controlling the heater, overheating of the backing cylinder arising out of hunting in the control effected by the thermostat is minimised by a temperature regulator which is effective to introduce a controlled amount of cold medium in the flow path between the heater and the thermostat whenever the temperature of the heating medium exceeds a predetermined value.

3,780,797
CONVECTORS
Sven Runo Vilhelm Gebelius, Fridhemsgatan 27, Stockholm, Sweden
Filed Feb. 28, 1972, Ser. No. 229,655
Int. Cl. F14f *1/30*
U.S. Ck 165—55 **3 Claims**



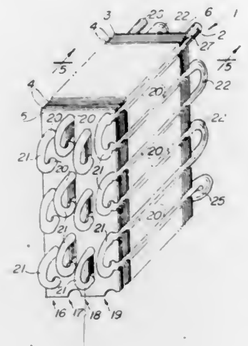
A heat exchange assembly and method of producing the same comprising a series of dished fin members disposed in spaced relationship between to opposite, longitudinally extending side members, each of the fin members being recessed for seating a pipe in which a heat exchange fluid is circulated and having a slot terminating in the recess to provide an entry passage for the pipe, the marginal edge portions of the slot being adapted to be twisted, bent or otherwise distorted by the forced insertion of the assembly over the pipe; the convex side of the dished fin members each having a collar projecting laterally about the recesses in a diverging direction from the convex side which collars clamp the fins about the pipe when the dished fin members are flexed or buckled towards their opposite convex position.

3,780,798
AIR DIRECTING HEAT SINK MOUNTING OF ELECTRICAL COMPONENTS
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Oct. 30, 1972, Ser. No. 301,903
Int. Cl. H02b *1/00*
U.S. Cl. 165—128 **4 Claims**



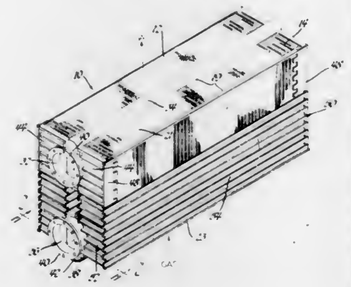
Electronic component mounting heat sink members for printed wiring cards have heat dissipating fins oriented with respect to the free convection air flow such as to direct heated air out of the equipment in which the components are used.

3,780,799
HEAT EXCHANGERS AND METHOD OF MAKING SAME
Stephen F. Pasternak, Park Ridge, Ill., assignor to Peerless of America, Incorporated, Chicago, Ill.
Continuation of Ser. No. 85,958, Nov. 2, 1970. This application June 26, 1972, Ser. No. 266,501
Int. Cl. F28f *1/30*
U.S. Cl. 165—150 **19 Claims**



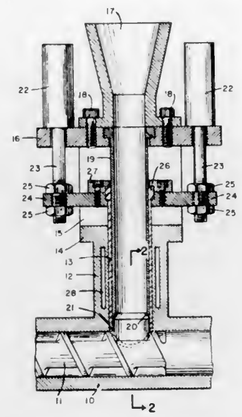
Heat exchangers of the combination plate-fin and side-entry cross-fin type embodying a one-piece cross-fin and a serpentine, one-piece tubular member with return bends disposed at opposite sides of the fins, and method of making the same.

3,780,800
REGENERATOR STRONGBACK DESIGN
Robert J. Flower, North Tonawanda, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed July 20, 1972, Ser. No. 273,444
Int. Cl. F28f *3/00*
U.S. Cl. 165—166 **3 Claims**



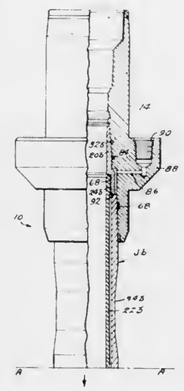
A heat exchanger adapted to preheat the inlet air of a gas turbine by transmitting heat from its exhaust gases and including heat exchange core sections formed of a plurality of spaced parallel plates between which the air and gas flows. The plates are held adjacent to one another against forces produced by compressed air within the core by a number of separate bands which extend around the core in planes substantially normal to the flow of hot gases passing through the core. The separate bands around the core permit it to expand without being greatly restrained by a less expansive or cooler single member around the core.

3,780,801
MATERIAL FEEDING APPARATUS
Edgar W. Irving, Jr., Somerville, N.J., assignor to Egan Machinery Company, Somerville, N.J.
Filed Jan. 29, 1973, Ser. No. 327,641
Int. Cl. F28f *5/06*
U.S. Cl. 165—120 **5 Claims**



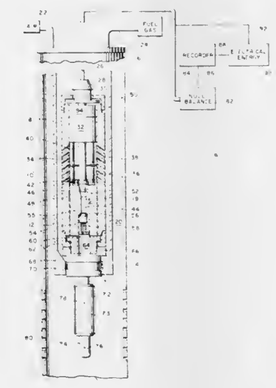
Feeding apparatus, especially for plastics extruders, for particulate materials which are difficult or impossible to feed with known feeders due to the materials being tacky and heat sensitive. A reciprocating sleeve in the feed inlet to the extruder provides a means of breaking up agglomerates of materials and preventing the bridging of the feed inlet caused by such agglomeration.

3,780,802
CONCENTRIC TUBING HYDRAULIC POWER UNIT, PARTICULARLY FOR DOWN-HOLE SAFETY VALVE ACTUATION
Willis M. Phipps, Pearland; Marvin L. Holbert, Jr., and John K. McGee, both of Houston, all of Tex., assignors to Gray Tool Company, Houston, Tex.
Filed May 10, 1972, Ser. No. 252,101
Int. Cl. E21b *17/00*
U.S. Cl. 166—89 **4 Claims**



Concentric tubing is supplied with fittings and seals to define an annulus about the inner tubing through which hydraulic fluid may be selectively pressurized to operate a down-hole tubing safety valve. This construction permits the unit to be rotated without fouling the control means for the valve, permits the unit to be raised and lowered through a stuffing box-type tubing hanger and to be used in single or multiple completions.

3,780,803
DOWNHOLE CONTROL VALVE FOR CATALYTIC WELLBORE HEATERS
William C. Hardy, Richardson, and Henry P. Lichte, Jr., Houston, both of Tex., assignors to Sun Oil Company, Dallas, Tex.
Filed May 17, 1971, Ser. No. 144,175
Int. Cl. E21b *43/24*
U.S. Cl. 166—59 **23 Claims**

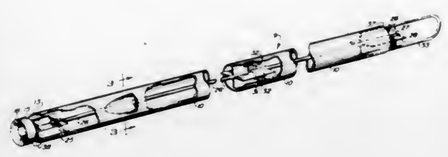


A downhole control valve is positioned in well pipe above a catalytic wellbore heater and is used to control fuel being fed to the heater.

3,780,804
CABLE MOUNTED BAILER FOR WELL DRILLING AND CLEANING

Vernon E. Pagel, 1332 E. Orangewood, Phoenix, Ariz.

Filed Oct. 10, 1972, Ser. No. 296,067
Int. Cl. E21b *27/00, 33/132*
U.S. Cl. 166—162 6 Claims



A well bailer having a sleeve or barrel with a valve head reciprocably supported therewithin and a cooperative arrangement of notches on said barrel and a barrel holder to fit into said notches to facilitate the controlled dumping of the bailer.

3,780,805
VISCOUS OIL RECOVERY SYSTEM

William G. Green, 10614 Hempstead Rd., Houston, Tex.

Filed Sept. 7, 1971, Ser. No. 178,287
Int. Cl. E21b *43/22, 43/27*
U.S. Cl. 166—266 8 Claims

A system to provide means for recovering crude oils known to exist in production formations which cannot be produced economically by systems now in operation and known to the industry. This type of oil will not flow into the wells drilled to produce it because it is too viscous, and has no mobility.

3,780,806
INVERTED MIXED LATEX FOR WATER FLOODING

Lawrence L. Bott, Oak Park, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Jan. 31, 1972, Ser. No. 222,302
Int. Cl. E21b *43/16*
U.S. Cl. 166—275 7 Claims

An improved water flooding process for recovering oil from a subterranean oil-bearing formation which comprises introducing a stable liquid dispersion of a water-soluble anionic vinyl addition polymer and a water-soluble cationic polymer into an input well penetrating the formation. The dispersion comprises:

A. A polymeric latex composed of a water-in-oil emulsion which contains dispersed therein a finely divided water-soluble anionic vinyl addition polymer, said polymeric latex having uniformly distributed therethroughout; and

B. A water-soluble cationic polymer;

with the weight ratio of A:B being within the range of 1:10 to 10:1 and the total amount of A+B present within said dispersion being within the range of from 0.001 percent to 75 percent by weight.

3,780,807
GRAVEL-PACKING METHOD AND COMPOSITION

John W. Graham, Alvin, and Wynn P. Rickey, Houston, both of Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Sept. 13, 1972, Ser. No. 288,859
Int. Cl. E21b *43/04*
U.S. Cl. 166—278 12 Claims

A well is gravel packed by injecting a fluid suspension of coarse particles having fine grains of sand or similar material bonded to their outer surfaces. The composite particles thus employed readily bridge together to form a bed which is capable of withstanding relatively high differential pressures.

3,780,808
SECONDARY RECOVERY METHOD

Charles A. Christopher, Houston; Joseph C. Allen, Bellaire, both of Tex., and Jack H. Kolaian, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

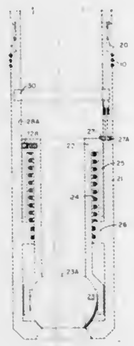
Filed Mar. 29, 1972, Ser. No. 239,388
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 10 Claims

A method of secondary recovery of hydrocarbons which involves injecting a fluid into an injection well and producing hydrocarbons from a production well involves the use of a novel thickened injection fluid. The fluid comprises an intimate mixture of water, hydrocarbon solvent and colloidal silica. The fluid is miscible with hydrocarbons in the reservoir and aqueous fluids and provides a decreased mobility ratio to enhance sweep efficiency.

3,780,809
METHOD AND APPARATUS FOR CONTROLLING WELLS

Robert C. Ayers, Jr.; Jack H. Bayless, both of Houston; John W. Graham, Alvin; James R. Lloyd, Houston; William D. Loth, Houston, and Robert E. Williams, Houston, all of Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Apr. 12, 1972, Ser. No. 243,360
Int. Cl. E21b *43/00*
U.S. Cl. 166—314 17 Claims

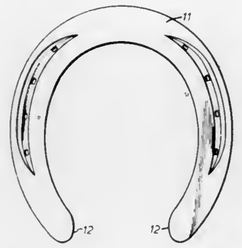


An improved method and apparatus are disclosed for controlling flow of fluid through a conduit disposed within a well extending beneath the surface of the earth. The apparatus includes a subsurface valve situated on the conduit and provided with means for actuating the valve between an open and closed position to control the flow of fluid through the conduit. The valve automatically closes at the end of a preset flow period unless reset in response to an external signal to reinitiate the predetermined period to closure. Normally a surface generated signal, as for example a pressure pulse, is periodically directed to the actuating means to reinitiate the flow period. The frequency of the pulses is adjusted as required to assure that the actuating means will receive a pulse prior to the end of the flow period so flow will not be interrupted. If the pulses are interrupted, as for example by a rupture in the well conduit, the valve will close automatically at the end of the flow period.

3,780,810
HORSESHOES

John Congreve Ashton, Sheffield, England, assignor to Benjamin Baker (Lye) Limited, Stourbridge, Worcestershire, England

Filed Aug. 2, 1972, Ser. No. 277,417
Claims priority, application Great Britain, Aug. 9, 1971, 37313/71
Int. Cl. A01l *1/00*
U.S. Cl. 168—4 14 Claims

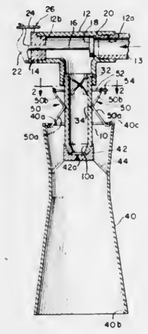


Horseshoe and method of manufacture which comprises casting of metal, preferably carbon steel and annealing. A horseshoe made by such method is capable of having any one or combination of features which are expensive, difficult or impossible to produce utilising conventional horseshoe manufacturing techniques.

3,780,811
METHOD OF FIRE PROTECTION USING RECIRCULATION OF COMBUSTION PRODUCTS

Cheng Yao, Weston, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Division of Ser. No. 198,386, Nov. 12, 1971, Pat. No. 3,708,015. This application Aug. 3, 1972, Ser. No. 277,495
Int. Cl. A62c *35/00*
U.S. Cl. 169—12 10 Claims

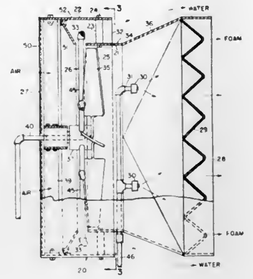


A method for fire protection wherein a nozzle discharges an extinguishant in response to a predetermined fire condition in a manner to create an aspiration effect which circulates the combustion products from the fire in a path including the fire. The circulation of the combustion products is terminated and the rate and manner of discharge of extinguishant from the nozzles can be changed in response to an additional predetermined fire condition.

3,780,812
METHOD AND APPARATUS FOR GENERATING FIRE-FIGHTING FOAM

Milton Lambert, 6236 Ellwell Cres., Rego Park, N.Y.

Filed July 6, 1971, Ser. No. 159,950
Int. Cl. A62c *5/02*
U.S. Cl. 169—15 7 Claims

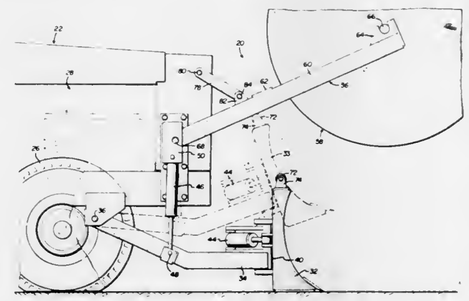


A fire protection method and apparatus for generating a high expansion foam. The method includes fluidizing the foams by wetting. The apparatus includes a housing having a source of foam solution under pressure and a source of water under pressure. The housing includes a fan and a perforated member. The fan is positioned in the housing to provide air flow across the perforated member which is wetted by the foam solution to produce high expansion foam bubbles. The fan is driven by a plurality of nozzles mounted both for discharging the water under pressure and for wetting the foam bubbles.

3,780,813
REEL LIFT AND SUPPORT FOR BULLDOZER

Charles J. Davis, and Billy M. Glass, both of Wichita, Kans., assignors to J. I. Case Company, Racine, Wis.

Filed Mar. 24, 1972, Ser. No. 237,784
Int. Cl. A01b *49/00*; E02f *3/76*
U.S. Cl. 172—438 7 Claims



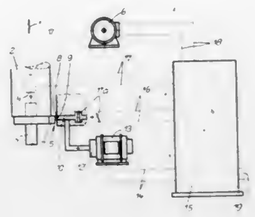
This disclosure relates to a wire or cable reel lift and support mechanism for a bulldozer, or the like, having a power lift dozer blade. The improved mechanism includes an H-shaped frame, which is pivotally supported on the bulldozer above the dozer blade, and a pair of drop links, pivotally connected to the dozer above the frame, and having end connectors which retain the frame in a generally upright position. A cable or wire reel is supported for rotation in yokes on the frame and the reel is raised and secured by lifting the dozer blade and securing the links to the frame. The frame and reel are then independent of the dozer blade.

3,780,814

SETTING DEVICE FOR THE STROKE POSITION OF A RECIPROCATING TOOL

Eugen Herb, Ditzingen, Germany, assignor to Firma Trumpf & Co., Ditzingen, Germany

Filed July 11, 1972, Ser. No. 270,713
Claims priority, application Germany, Aug. 19, 1971, P 21 41 521.4
Int. Cl. B26d 7/26
U.S. Cl. 173—2 18 Claims



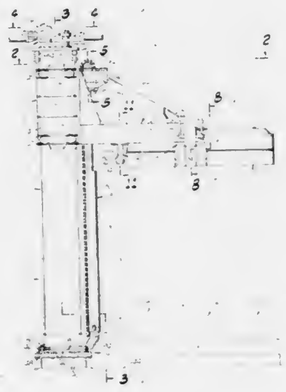
A reciprocating tool, such as a stamping or nibbling die, has an adjustment which is driven by an electric motor. An electromechanical, photoelectric, or air pressure checking device checks the stroke position of the tool and controls operation of the motor driving the adjustment. The checking device becomes operative automatically responsive to insertion of a new tool into a tool holder and, responsive to deviation of the stroke position from a nominal or preset value, controls the motor to operate the adjustment in a direction to restore the stroke position to the nominal value. When the stroke position attains the nominal value, the supply of energy to the motor, to the checking device, or to both is automatically interrupted.

3,780,815

POWER TONG POSITIONING APPARATUS

Charles Dwain Barron, Huntington; Bela Geczy, Glendale, and Carl Alfred Wilms, La Habra, all of Calif., assignors to Byron Jackson, Inc., Long Beach, Calif.

Filed Jan. 7, 1972, Ser. No. 216,216
Int. Cl. E21b 19/16
U.S. Cl. 173—43 13 Claims



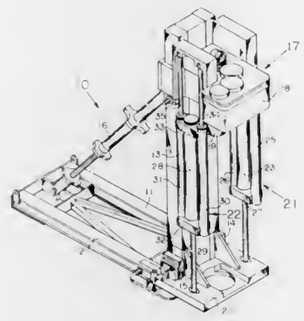
Well pipe positioning apparatus having a vertically disposed column formed of a central web joined between two parallel flanges and provided with bearing units adapted to be mounted in a well derrick to permit vertical and horizontal support for the column while permitting the column to pivot horizontally. A vertically movable rectangular hollow support collar is fitted about the column and supported in alignment for movement up and down the column by roller means rigidly mounted within the collar and mounted in rolling contact with the inside faces of the column flanges. A pipe tong support yoke structure is rigidly mounted at a first end to the support collar to extend horizontally and radially from the pivotable column. The yoke structure is adapted to receive and support a power tong assembly including a pipe back-up unit disposed in parallel relation to a pipe rotating unit through a supporting cradle means mounted to the second end of the yoke structure. The cradle means provides firm vertical support of the back-up unit in parallel relation to the yoke structure and provides support with limited vertical and radial movement of the rotating unit with respect to the back-up unit and to the support yoke. A power source providing linear movement is mounted in upright position adjacent the column with its lower end mounted to the lower support member and its upper end connected through a flexible force transfer means to the support yoke, the flexible force transfer means being anchored relatively between the yoke structure and the lower support member and being connected across a force transfer crosshead means mounted to the upper end of the power source.

3,780,816

EARTH BORING MACHINE WITH TANDEM THRUST CYLINDERS

Thomas L. Arrington, and Norman D. Dyer, both of Beaumont, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 14, 1972, Ser. No. 234,528
Int. Cl. E21c 5/11
U.S. Cl. 173—152 7 Claims



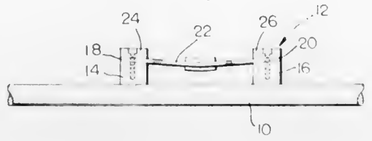
Rotary drilling means are mounted for travel along the support frames of a raise drill. At least one tandem thrust cylinder system provides the force for moving the rotary drilling means along the support frame. The tandem thrust cylinder system includes a first thrust cylinder and two second thrust cylinders mounted so that the thrust force and movement of said first thrust cylinder is directly opposed to the thrust forces and movements of said two second thrust cylinders. The combined cross sectional area of said two second thrust cylinders is substantially equal to the cross sectional area of said first thrust cylinder, thereby maintaining constant force throughout the stroke of the tandem thrust cylinder system. The cylinders are manifolded so that fluid enters one port and is routed to all of the cylinders to equalize the rate of travel and the forces exerted.

3,780,817

WEIGHING DEVICES

John A. Videon, 1336 S.E. 38th Pl., Gainesville, Fla.

Filed Feb. 28, 1969, Ser. No. 803,285
Int. Cl. G01g 19/08, 3/14, 23/26
U.S. Cl. 177—136 5 Claims



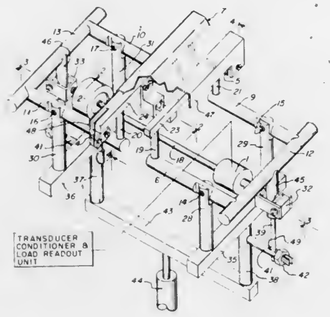
This invention is directed to a load-indicating apparatus for measuring the deflection of a relatively stiff non-spring member. The apparatus includes a non-spring member such as the stationary axle of a truck which is capable of flexing in a predetermined direction under load. Mounted on the axle are two spaced-apart, rigid supports which upstand therefrom in a direction whereby the upper ends of the supports will move toward and away from each other as the axle flexes. A transducer is connected to the upper ends of the supports for measuring the distance therebetween as they move and to provide an indication of the load on the axle.

3,780,818

FORCE TRANSMITTING APPARATUS WITH A SINGLE LOAD CELL

Donovan H. Lumby, Minneapolis, and Walter F. Sofie, St. Paul, both of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed June 19, 1972, Ser. No. 264,083
Int. Cl. G01g 21/08
U.S. Cl. 177—256 9 Claims



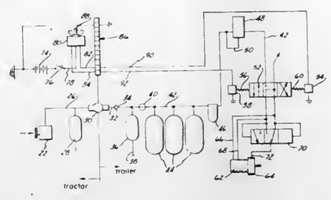
A force transmitting apparatus that has a generally horizontal weighing platform which transmits the weight of an object to a single load cell. Two similar spaced rigid frame structures connected to the platform by several tension members act as part of the mechanism of force transmission. The load cell itself is supported by a rigid member between two pivotal connections that may be constructed by a groove and knife edge. An overload device may also be employed on the same rigid member to prevent the cell from being subjected to loads above its upper rating. Additional pivotal mountings are used to join the rigid frame members to a supporting rigid frame structure that may be divided into two assemblies or may be one unitary assembly. A pump powered hydraulic cylinder may be used to raise the total structure with its platform and a readout unit may be used to record the force generated by an object on the platform.

3,780,819

LAND VEHICLE

John E. Coordes, Birmingham, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 13, 1971, Ser. No. 180,018
Int. Cl. B62d 59/04
U.S. Cl. 180—14 A 4 Claims



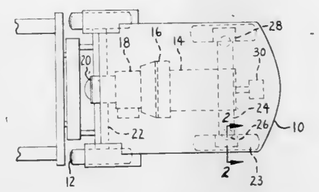
A traetor-semi-trailer vehicle has a power assist trailer axle in which the trailer axle is connected to be driven by an air motor driving the trailer differential through a clutch. The power assist motor and the clutch receive air from storage tanks on the trailer through a solenoid-operated control valve and a shuttle valve. An operator-operable switch controls the solenoid-operated valve. The tractor rear axle has a roll capability relative to the tractor front axle; since the tractor rear axle defines the attitudinal plane of the semi-trailer axle, the total vehicle can traverse very uneven terrain without lifting a wheel off the ground.

3,780,820

HYDROSTATIC AUXILIARY WHEEL MOTOR ASSIST DRIVE SYSTEM FOR VEHICLES

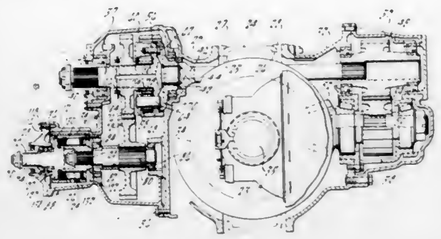
Delmar G. Schwab, and Dennis P. Graham, both of Milwaukie, Oreg., assignors to Hyster Company, Portland, Oreg.

Filed Apr. 23, 1971, Ser. No. 136,741
Int. Cl. B60k 17/34
U.S. Cl. 180—44 M 27 Claims



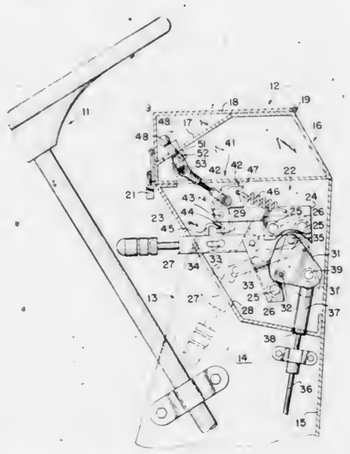
A rough terrain vehicle has a conventional engine-driven primary drive system and an auxiliary hydrostatic assist drive system having a higher ratio drive than the primary drive system. Thus in the assist system, wheel motors in the normally undriven wheels provide traction assist for the primary drivers only when and as needed. An engine-driven pump supplies pressure fluid to the wheel motors through the pivot joint between the vehicle's steering axle and the wheel spindle trunnions. A manually operated forward-reverse master control valve selectively energizes a hydraulic control circuit for the assist system including pressure-operated power control and shorting valves to ensure adequate supply of fluid to the wheel motors to meet demand under various modes of operation. The circuit enables five modes of operation, including a neutral mode, powered forward and reverse modes, a retard mode and an overrun mode. A motor circuit pressure-operated clutch modulator valve controls the engagement of a fluid activated friction clutch between each wheel motor and its driven wheel in a manner so that the clutch is variably engaged or disengaged automatically as dictated by the need for traction assist.

3,780,821
VEHICLE DRIVE SYSTEM
James M. Prange, Dearborn Heights, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Aug. 11, 1971, Ser. No. 170,690
Int. Cl. B60k *17/34*
U.S. Cl. 180—44 R **1 Claim**



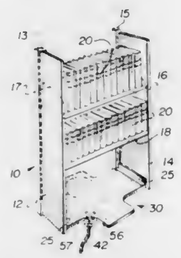
In a vehicle having spaced apart front and rear drive axle assemblies, a power plant and improved power train interconnecting the power plant with the front and rear drive axle assemblies and in which the improved power train includes a torque proportioning gear arrangement dividing torque between the front and rear drive axle assemblies, a first torque transmitting drive train interconnecting the torque proportioning gear arrangement and the power plant, a second torque transmitting drive train interconnecting the torque proportioning gear arrangement and the rear drive axle assembly, and a third torque transmitting drive train interconnecting the torque proportioning gear arrangement with the front drive axle assembly. The third torque transmitting drive train includes a clutch automatically operable to allow differential movement between the front and rear axle assemblies only upon the torque being transmitted by the third torque transmitting drive train reaching a predetermined magnitude.

3,780,822
VEHICULAR PARKING BRAKE CONTROL WITH LOCKABLE RELEASE MECHANISM
Dennis W. Frey, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 21, 1972, Ser. No. 282,135
Int. Cl. B60r *25/08*
U.S. Cl. 180—114 **2 Claims**



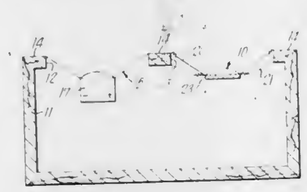
A vehicular parking brake control and lockable release mechanism to permit securing of a parking brake control lever in an engaged position, including a locking member arranged within a structural enclosure for engagement with the brake lever in its engaged position and a control element for moving the locking member into and out of engagement with the brake lever, the control element being disposed on a in compartment.

3,780,823
GROUND EFFECT DOLLY
Treffle Michaud; Lucien Hubert, and Gerard Poulin, all of Sherbrooke, Quebec, Canada, assignors to Universite de Sherbrooke, Sherbrooke, Quebec, Canada
Filed July 7, 1971, Ser. No. 160,494
Claims priority, application Canada, June 23, 1971, 116498
Int. Cl. B60v *1/00*
U.S. Cl. 180—121 **10 Claims**



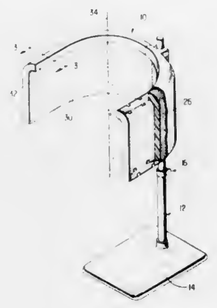
A ground effect dolly for moving library type bookstacks from one place on the floor to another and which can be operated by only one person if necessary. The dolly is formed of a rigid frame which is adapted to support the lower end portions of the vertical posts of a bookstack, and two sets of gas inflatable pads or cushions mounted to the undersurface of the platform. One set of pads serves to bear the major portion of the load, the other pads are used primarily for maintaining the load in an upright position during displacement. The pads are fed with a convenient gas such as air under pressure, and a distribution system enables control of the pressures in the auxiliary pads relative to the load bearing ones, as well as the relative pressures in the load bearing pads.

3,780,824
ACOUSTIC LOADING SYSTEM
Gilles Joseph Prince, 39 Goupil St., Sorel, Quebec, Canada
Filed Aug. 14, 1972, Ser. No. 280,403
Int. Cl. G10k *13/00*; **H04r** *1/28*
U.S. Cl. 181—31 B **4 Claims**



A loudspeaker system comprising an enclosure having at least one active radiator and at least one passive radiator mounted in respective openings in the enclosure. The passive radiator has a diaphragm supported by a highly compliant suspension. A mass is coaxially distributed and attached to the passive diaphragm. The mass is chosen so that the movement of the passive radiator will be substantially in phase with the movement of the active radiator within the frequency range of between approximately 20 Hz – 100 Hz. This mass is sufficient to reduce the natural resonance frequency of the loudspeaker system to a frequency substantially lower than its natural resonance frequency without the added mass attached to the passive diaphragm.

3,780,825
METHOD AND APPARATUS FOR ACOUSTICAL SHIELDING
Fred J. Rinaldi, 63 Wakelee Rd., Wolcott, Conn.
Filed Oct. 18, 1972, Ser. No. 298,794
Int. Cl. E04b *1/99*; **G10k** *11/04*
U.S. Cl. 181—33 G **5 Claims**



An open ended, generally U-shaped acoustical shield adapted for positionment with one open end thereof adjacent the body supporting surface of a bed to position the upstanding U-shaped shield in spaced, surrounding relation to the top and sides of the head of a recumbent.

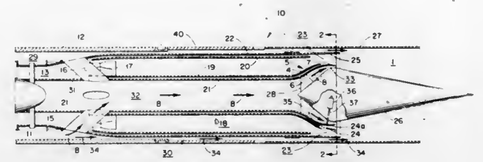
3,780,826
GAS SILENCING STRUCTURE
Franklin R. Hubbell, III, Brooklyn, N.Y., assignor to Tenneco Inc., Racine, Wis.
Filed Aug. 9, 1972, Ser. No. 279,245
Int. Cl. F01n *3/06*
U.S. Cl. 181—36 B **1 Claim**



An air gap conduit for exhaust gases of an internal combustion engine has openings located at high pressure points which connect the gas flow passage to the space between inner and outer layers of the pipe.

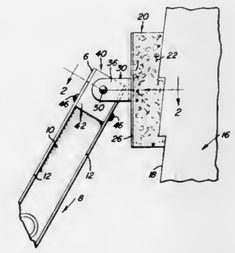
3,780,827
GAS TURBINE EXHAUST NOZZLE
David M. Straight, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Dec. 19, 1972, Ser. No. 316,618
Int. Cl. F01n
U.S. Cl. 181—43 **14 Claims**

An elongated hollow string is disposed in an exhaust nozzle combustion chamber and communicates with a source of air through hollow struts at one end. The other end of the string is bell-mouth shaped and extends over the front portion of a nozzle plug. The bell-mouth may be formed by pivotally mounted flaps or leaves which are used to vary the exhaust throat area and the area between the plug and the leaves. Air from the engine inlet flows into the sting and also between the combustion chamber and a housing disposed around the chamber. The sting air cools the plug and serves as a low velocity inner core



of secondary gas to provide noise reduction for the primary exhaust gas while the other air, when it exits from the nozzle, forms an outer low velocity layer to further reduce noise. The structure produces increased thrust in a turbojet or turbofan engine.

3,780,828
ANTI-SLIP LADDER ATTACHMENT
James E. Overturf, Newton, Iowa, assignor to William C. Ferguson, Newton, Iowa; a part interest
Filed June 16, 1972, Ser. No. 263,656
Int. Cl. E06c *7/48*, *5/36*
U.S. Cl. 182—111 **10 Claims**

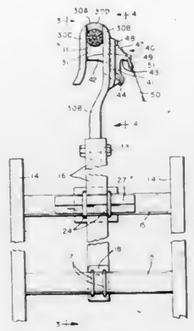


A safeguarding attachment for the upper end portion of a side rail of a ladder expressly constructed and adapted to minimize marring the exterior surface of aluminum or equivalent siding and which reduces the likelihood of accidental and dangeroud slipping of the inclined upper end of the ladder. The attachment is characterized, broadly stated, by a compressibly resilient pad having a forward surface adapted to reside against the siding-covered wall surface and a rearward side or surface provided with a rigid backing plate. A bracket has one end secured to the backing plate. An adapter is pivotally connectible to the desired ladder rail. An adjacent end of the bracket is pivotally connected to the adapter. Attachment means functions to operatively secure the adapter to the side rail. In addition connecting means functions to pivotally anchor the adapter on the ladder rail.

3,780,829
LADDER FOR EVACUATING PERSONS FROM CHAIR AERIAL CABLE LIFTS
Otto H. Wallingford, Auburn, Maine, assignor to Valley Engineering, Inc., Gray, Maine
Filed Oct. 26, 1972, Ser. No. 301,055
Int. Cl.³E06c *1/36*, *7/48*
U.S. Cl. 182—206 **9 Claims**

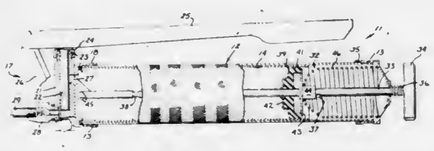
A ladder for evacuating persons from chair aerial cable lifts comprising, a rigid ladder, an elongate hook support member,

means for securing the lower end of the hook support member to at least one ladder rung and a hook which is substantially U-shaped in cross section attached to the upper end of the support member, the hook comprising an elongate outer end member and two spaced side members which combine to form a groove adapted to receive the cable of a lift, the longitudinal centerline of the groove extending substantially normal to the longitudinal centerlines of the rungs of the ladder when



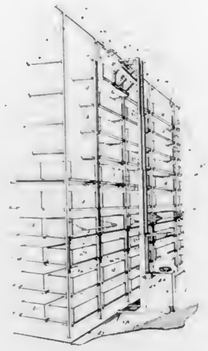
viewed from the top to cause the rungs of the ladder to be positioned substantially parallel to the front or forward end of a chair suspended from the cable and also to aid in preventing twisting of the ladder relative to the cable in use. In a preferred embodiment, a pair of semi-elliptical grooves are provided in the outer end member, one at each end thereof. In another preferred embodiment, the hook also comprises latch means for releasably closing the groove at a locality spaced below the elongate outer end member of the hook.

3,780,830
CARTRIDGE-TYPE GREASE GUNS
Robert J. Helgerud, Hopkins, and Ernest M. Simon, Golden Valley, both of Minn., assignors to K-P Manufacturing Co., Inc., Minneapolis, Minn.
Filed Apr. 24, 1972, Ser. No. 246,728
Int. Cl. G01f *11/06*
U.S. Cl. 184—105 A **11 Claims**



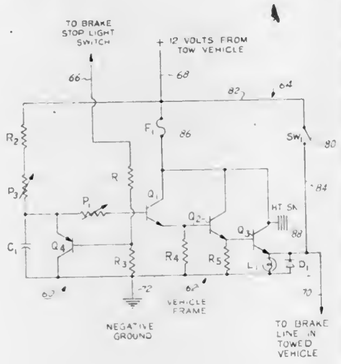
An improved grease gun of the plunger type which uses replaceable grease cartridges. The grease gun consists of a cylindrical container adapted to receive an open ended cylindrical grease cartridge. The plunger is spring biased to urge grease from the cartridge into a discharging device of the piston displacement type. The plunger is guideably carried within the cylindrical container by an elongated rod having a handle portion projecting rearwardly from the container. To insure proper insertion of the plunger into the rearward open end of the grease cartridge, abutment means are disposed at an intermediate point on the elongated rod and movable therewith. Insertion of a fresh grease cartridge into the cylindrical container from its forward end causes the plunger to seat on the cartridge mouth. With the gun assembled for use, forward movement of the rod causes the abutment means to engage and force the plunger into a proper position within the cartridge mouth.

3,780,831
MAST STABILIZER FOR LIFT TRUCKS
Richard W. Dickenson, deceased, late of Pickerington, Ohio (by Winifred Dickenson, executrix), assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Apr. 12, 1972, Ser. No. 243,249
Int. Cl. B66b *9/20, 7/02*
U.S. Cl. 187—9 **16 Claims**



Means for stabilizing the mast of a lift truck so that load sway is reduced and loads can be elevated to greater heights for loading into storage racks. Movement of the mast in a horizontal direction is arrested by a carriage which travels on vertical tracks as the lift truck mast is elevated.

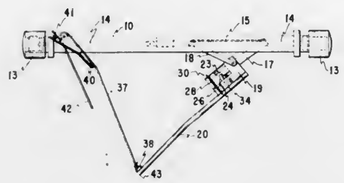
3,780,832
TRAILER BRAKE CONTROL SYSTEM
John J. Marshall, Grand Rapids, Mich., assignor to Aicheles Associates, Inc., Fort Wayne, Ind.
Filed July 3, 1972, Ser. No. 268,748
Int. Cl. B60t *13/74*
U.S. Cl. 188—3 R **9 Claims**



A trailer brake control system for use with the hydraulic brake system of an automobile having a brake light and a switch therefor responsive to fluid pressure, in which an adjustable time base circuit is connected to the light switch and produces a signal which is amplified by an amplifier circuit connecting the automobile electrical power supply with a line to the electric brake mechanism in the trailer. A variable resistor controls the time base circuit and is initially adjusted for the type of brakes and loads for synchronizing the operation of the brakes on the towed and towing vehicles for delaying the

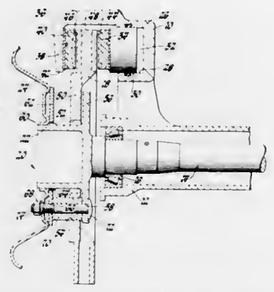
operation of the trailer brakes until the slower acting hydraulic brakes of the automobile have been applied. An emergency circuit controlled by a switch within easy reach of the driver of the automobile, bypasses both the time base and amplifier circuits to control directly the trailer brakes.

3,780,833
BRAKE FOR FARM WAGON
Henry L. Sundermann, Rt. 4, Box 79, Sioux Falls, S. Dak.
Filed Dec. 27, 1971, Ser. No. 211,907
Int. Cl. B60t *7/20*
U.S. Cl. 188—9 **5 Claims**



A brake system for farm wagons or the like providing brake shoes to engage the side of wheels or tires of the wagon. The shoes are pressed against the tires or wheels by a toggle mechanism actuated by a pull on a rope to engage the brake and a subsequent pull to release the brake. Automatic means enclosed in the tongue of the wagon is adapted to set the brake as a safety device.

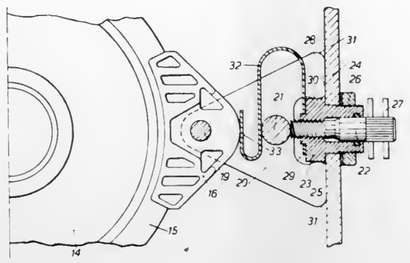
3,780,834
DISC BRAKE ASSEMBLY
Neil M. Lottridge, and Marc F. Momsen, both of Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 15, 1973, Ser. No. 323,951
Int. Cl. B60t *1/06*
U.S. Cl. 188—18 A **3 Claims**



A disc brake assembly, particularly adapted for rear brakes, in which the caliper is fixed to the axle housing and a slidable disc is mounted on a live axle extension section so that the disc is easily removable for brake service.

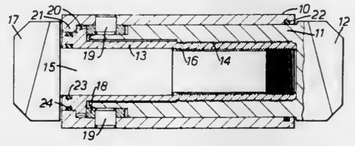
3,780,835
DISC BRAKES FOR VEHICLES
Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Tyseley, Birmingham, England
Filed July 20, 1971, Ser. No. 164,356
Claims priority, application Great Britain, July 24, 1970, 35,888/70
Int. Cl. F16d *51/62*
U.S. Cl. 188—74 **2 Claims**

In a disc brake in which a friction member is movable into engagement with the periphery of a rotatable disc in a direction substantially radial with respect to the disc, the friction member or a carrier for it has an engagement with a stationary member of such a form that angular movement of the



friction member with the disc on application of the brake produces a self-servo action urging the friction member towards the disc.

3,780,836
BRAKE ADJUSTER MECHANISMS
Charles Newstead, Tyseley, Birmingham, England, assignor to Girling Limited, Tyseley, Birmingham, England
Filed Apr. 30, 1971, Ser. No. 139,163
Claims priority, application Great Britain, May 1, 1970, 21,101/70
Int. Cl. F16d *65/46*
U.S. Cl. 188—79.5 SC **3 Claims**

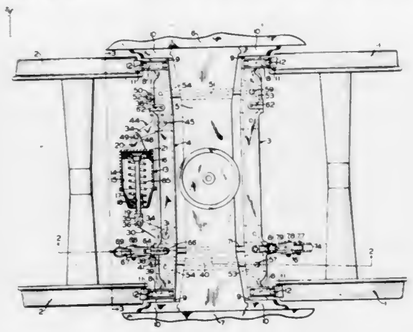


A brake adjuster mechanism for drum brakes has a cylindrical housing in which a sleeve is rotatable but restrained against axial movement. The sleeve has an external threaded portion and an internal threaded portion of opposite hands. A tubular adjusting member formed with a tappet at one end and having an internally threaded portion screws over the sleeve with the tappet projecting from one end of the housing. An adjusting member in the form of a shaft formed with a tappet at one end screws within the sleeve with the tappet projecting from the other end of the housing. A worm gear arrangement is provided for rotating the sleeve relative to the housing and the adjusting members are thereby moving the adjusting members towards and away from each other. In the retracted position the adjusting members overlap by an amount nearly equal to the length of the sleeve.

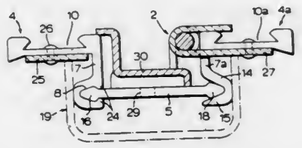
3,780,837
SINGLE CYLINDER TRUCK-MOUNTED BRAKE
Andrew G. Haydu, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Nov. 13, 1972, Ser. No. 305,858
Int. Cl. B60t *8/22*
U.S. Cl. 188—195 **12 Claims**

A brake rigging for a two-axle four-wheel railway car truck which embodies a brake cylinder disposed traversely between the side frames of the car truck and operatively connected to two parallel brake beams disposed on the respective opposite sides of a truck bolster through a linkage comprising a pair of

spaced-apart bell-crank levers pivotally mounted on one of the brake beams, one arm of these bell-crank levers being pivotally connected respectively to the body of the brake cylinder and the exterior end of the piston rod of the brake cylinder piston, and the other arm of these levers being pivotally connected respectively to one end of one of a pair of rods, the other end of each of which is pivotally connected to the other brake beam. The traversely disposed brake cylinder, together with the pair of spaced-apart bell-crank levers, insure that the pair of rods connecting these levers to the other brake beam are so spaced apart one from the other as to be sufficiently disposed beneath the truck bolster adjacent the outer ends thereof as to enable adequate vertical movement of the bolster, as the result of truck spring deflection due to load on the car, without movement of the bolster into contact with these rods which would inhibit or prevent free movement thereof. Therefore, while the car is either empty or fully loaded, whenever fluid under pressure is supplied to the brake cylinder, the two brake beams are moved in opposite directions without hindrance by the bolster to cause the application of brake shoes carried by the brake beams to the tread surface of each wheel of the car truck with the same-brake applying force.

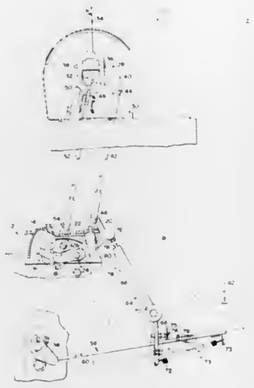


3,780,838
LUGGAGE CASE
Jack Slan, Toronto, Ontario, Canada, assignor to Dominion Luggage Co. Limited, Toronto, Canada
Division of Ser. No. 784,510, Nov. 19, 1968, Pat. No. 3,579,804. This application Oct. 29, 1970, Ser. No. 85,164
Int. Cl. A45c *13/04*
U.S. Cl. 190—49 **4 Claims**



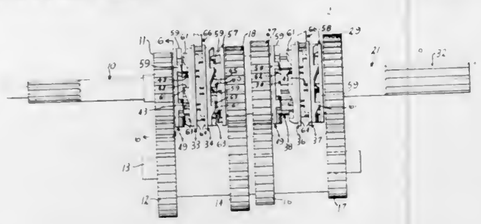
A luggage case comprises two opposed sections hinged together and having confronting edges adapted to interfit when the case is closed. The confronting edges of the sections are formed by matched bent edge strips extending around the sections; and each has a channel where a tongue strip extending around the confronting edges of the sections has one edge thereof permanently inter-locked in one of the channels, the inter-lock being the product of simultaneous bending of the tongue and edge strip, and the other edge of the tongue strip releasably interfitting in the other of the channels when the case is closed. Means is provided for releasably retaining the sections in closed relation.

3,780,839
INTERLOCK FOR TRANSMISSION AND PARKING BRAKE CONTROLS
Kenneth Roger Schroeder, Holy Cross, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Nov. 10, 1972, Ser. No. 305,474
Int. Cl. F16d *67/00*
U.S. Cl. 192—4 A **5 Claims**



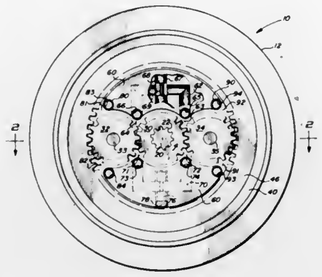
The control linkages for a change-speed transmission and a parking brake have interlocking parts which lock the transmission in neutral either when the transmission is in neutral and the parking brake is then engaged or when the parking brake is applied and the transmission is then shifted into neutral.

3,780,840
GEAR SELECTOR FOR A TRANSMISSION
Dalton A. Thomas, Alpine, Ala., assignor to Hazel A. Beasley, Childersburg; Woodford R. Thompson, Jr.; Hugh P. Carter and William K. Murray, Birmingham, Ala., part interest to each
Filed May 19, 1972, Ser. No. 254,862
Int. Cl. F16d *21/04*
U.S. Cl. 192—48.91 **12 Claims**



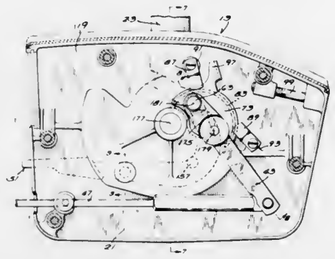
A selector for a transmission having power transmitting rotary members, such as gears, operatively connected to each other and mounted for rotation about an axis common with the axis of a shaft-like member. A gear selector element rotates with the shaft-like member adjacent each gear and is movable axially relative thereto with means urging each gear selector element away from the adjacent gear. Cooperating connector elements rotate with each gear selector element and the gear adjacent thereto. Each gear selector element is shifted toward the gear adjacent thereto by an actuator member to engage said cooperating connector elements until the actuator member is shifted and the connector element rotatable with the gear selector element moves to a position in advance of the connector element rotatable with said gear.

3,780,841
VARIABLE AUTOMATIC TRANSMISSION
William T. Wells, 1750 W. Ajo Way, Tucson, Ariz.
Filed Aug. 3, 1972, Ser. No. 277,911
Int. Cl. F16d *31/04*
U.S. Cl. 192—61 **6 Claims**



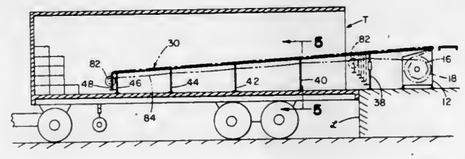
An automatic transmission is disclosed which changes the ratio of gearing between a driving member and a driven member by the use of hydraulic pumps to provide virtually unlimited variable gear ratios.

3,780,842
SINGLE CLUTCH AND THROTTLE LEVER COMBINED WITH A THROTTLE WARM UP LEVER
Roger B. Whipple, Waukegan, and Allan F. Miller, Lindenhurst, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed June 23, 1972, Ser. No. 265,600
Int. Cl. G05g *5/08, 11/00, 13/00*
U.S. Cl. 192—0.096 **21 Claims**



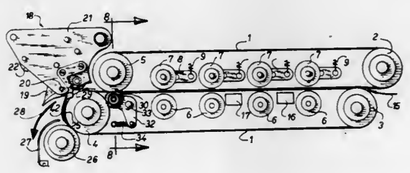
Disclosed herein is a control for the throttle and clutch of a marine propulsion device, which control comprises a control lever mounted on a frame for rotation about a first axis, means operably connecting the control lever to a clutch element movably mounted on the frame to cause clutch element movement in response to control lever movement, a warm up lever mounted on the frame for relative rotation therebetween about a second axis located to one side of the first axis in spaced relation therefrom, means connecting the warm up lever to a throttle arm for relative rotation therebetween about a third axis extending from the intermediate portion of the throttle arm and located below the first and second axes and on the one side of the first axis in spaced relation therefrom at a distance greater than the spacing between the first and second axes, and means operably connecting the control lever and the throttle arm for rocking the throttle arm about the means pivotally connecting the warm up lever to the throttle arm and for providing relative rotation between the control lever and the throttle arm about an axis extending from ajdacent one end of the throttle arm and located above the first axis and to the one side of the first axis at a distance less than the spacing between the first and second axes, whereby when the warm up lever is pivotally moved independently of movement of the control lever, the throttle arm is pivoted about the means connecting the throttle arm to the control lever and when the control lever is pivotally moved independently of the warm up lever, the throttle arm is pivoted about the means pivotally connecting the throttle arm to the warm up lever, and interengaging pin and slot means on the control lever and on the warm up lever affording pivotal movement of the warm up lever from an idle position when the the control lever is in the neutral position and affording pivotal movement of the control lever from the neutral position when the warm up lever is in the idle position and preventing pivotal movement of the warm up lever from the idle position when the control lever is displaced from the neutral position and preventing pivotal movement of the control lever from the neutral position when the warm up lever is displaced from the idle position.

3,780,843
VARIABLE-LENGTH CONVEYOR
Harold Joseph McGovern, Jr., Metairie, and Louis Albert Granja, New Orleans, both of La., assignors to United Brands Company, Boston, Mass.
Filed July 7, 1972, Ser. No. 269,729
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 TE **8 Claims**



This invention relates to conveyors and more particularly to a variable-length conveyor adapted to extend different distances as, for example, from a dock into a docked trailer so that articles being loaded into the trailer can be delivered at the output end of the conveyor at any point along the length of the trailer interior from the front to the rear as loading proceeds.

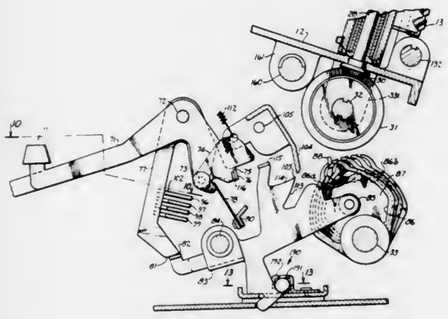
3,780,844
TICKET ACCEPTING MACHINES IN PARTICULAR FOR PUBLIC TRANSIT SYSTEM
Joseph Bali, 5059 Marsonneuve St., Montreal, Quebec, Canada
Filed Sept. 11, 1972, Ser. No. 288,063
Int. Cl. G07b *11/04*
U.S. Cl. 194—4 **1 Claim**



Tickets accepting machines arranged to curtail presently known ways of fraudulously using admission tickets, including transfers, to gain access into a public transit system. The tickets accepting machines are each provided with a ticket

multilating device whereby any ticket issuing from the machine, either legally or illegally, is visibly mutilated and improper for re-use in a tickets accepting machine of at least the same type. The mutilating device includes a rotary cutter arranged to severe a portion of each ticket inserted into the machine.

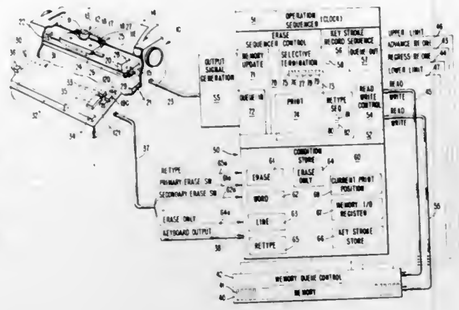
3,780,845
POWER DRIVEN TYPEWRITER WITH SINGLE TYPE HEAD
Robert E. Boyden, Temple City, Calif., assignor to Thomas O'Reilly, Santa Barbara, Calif.
Filed Sept. 4, 1970, Ser. No. 69,542
Int. Cl. B41j *23/04, 1/46*
U.S. Cl. 197—18 **16 Claims**



A power driven typewriter comprising a shiftable carrier supporting a rotatable and axially movable flexible type drum having a plurality of circumferentially extending rows of type characters thereon. Type keys, when depressed, each condition one each of two groups of actuators and cause operation of a power driven cyclically operable clutch which drives a power bail to operate the two conditioned actuators, one of which is effective to rotate the type drum from any position it may be in to a new position and the other actuator being effective to raise or lower the type drum from any position it may be in to a new position to thus align a type character corresponding to the key depressed at the printing position. Upon alignment of a selected type character, the type drum is flexed radially to cause an imprint. Means are provided to dampen torsional oscillation, wobble, etc. of the drum prior to imprinting.

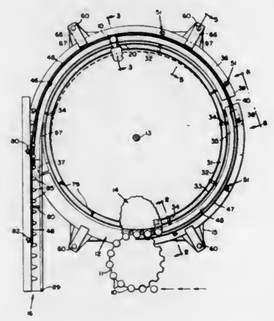
3,780,846
AUTOMATIC ERASING TYPEWRITER SYSTEM
Robert A. Kolpek, and Robert A. Rahenkamp, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 3, 1972, Ser. No. 277,718
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **20 Claims**

A typewriter having a character erase mechanism is combined with an automatic control system including a changeable memory that maintains a record of both characters printed and characters erased to enhance the typist's ability to edit and correct text as it is typed. With this system the typist can select automatic erasure of individual characters, selected words, or an entire line simply by depression of a key. Furthermore, typist can add, delete or correct words as desired and



the typewriter will automatically reprint correct text that was erased to enable such insertion or deletion.

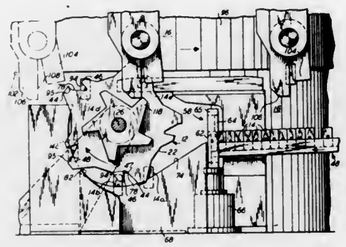
3,780,847
ROTARY FILLING MACHINE
Adelmar Faessler, Rochester, and Stewart E. Engle, Fairport, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed Jan. 13, 1972, Ser. No. 217,575
Int. Cl. B65g *47/00*
U.S. Cl. 198—25 **15 Claims**



Containers being filled with flowable material are held beneath filling assemblies on a rotating filling wheel by chucks and guide rails. Two chucks, one positioned above the other, are attached to the filling wheel by pivoted levers at each filling station. A cam follower connected to one of the chucks rides in a cam track defined by two strips which extend around the filler. These cam strips and some of the guide rails are attached to two ring segments. One of the segments is fixed in place and the other is pivoted at one end. When the free end of the pivoted ring segment is moved away from the fixed segment, the portion of the cam track attached to the pivoted ring segment, one bottom guide rail and one outer guide rail are moved away from the axis of rotation of the filling wheel; and the containers passing above this segment are gradually tilted. The containers are untilted as they move off the filling wheel onto a discharge conveyor by the guide rails and by a

discharge guide. The discharge guide is connected to one of the movable guide rails so that it moves with it.

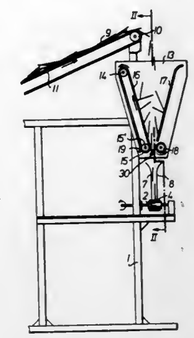
3,780,848
ARTICLE TRANSFERRING MECHANISM
Henry G. Studeny, La Grange Park, Ill., assignor to Western Electric Company Incorporated, New York, N.Y.
Filed Sept. 13, 1972, Ser. No. 288,659
Int. Cl. B65g *47/00*
U.S. Cl. 198—25 **10 Claims**



An article transfer wheel is formed from two circular discs, each having a plurality of article receiving indentations around the periphery thereof, mounted in a spaced relationship for rotation about an axis. Upon rotation of the transfer wheel successive elongated articles, from a supply of the articles, are received at each of their ends within an indentation on a different one of the discs at a first position along the periphery of the transfer wheel, and are rotated to a second position along the periphery of the transfer wheel which is arcuately spaced from the first position. Each article at the second position is pushed by one pair of successive pairs of clamping jaws in a direction to rotate the transfer wheel through the action of the pushed article upon the wheel. This causes the transfer wheel to rotate successive articles from the first position to the second position. As the following article rotates toward the second position, the pushed article is clamped within the pair of jaws to carry it out of its indentations and away from the transfer wheel as the following article reaches the second position. Repetition of the above sequence results in the serial transfer of articles from the supply of articles to successive clamping jaws.

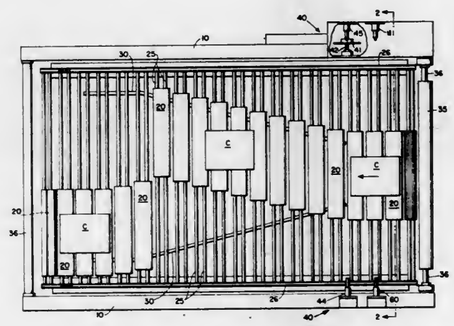
3,780,849
APPARATUS AND METHOD FOR ARRANGING FLAT ARTICLES ON A TROUGH CONVEYOR
Bernhard Hoehl, Litzelstetten, and Karl-Heinz Kummerer, Constance, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Continuation of Ser. No. 67,931, Aug. 28, 1971, abandoned. This application May 8, 1972, Ser. No. 251,222
Claims priority, application Germany, Aug. 30, 1969, P 19 44 180.6
Int. Cl. B65g *47/26*
U.S. Cl. 198—30 **9 Claims**

A funnel arrangement for delivering a uniform flow of flat articles to a trough conveyor, the funnel being arranged over the trough conveyor and two of the side walls of the funnel being parallel to the direction of movement of the trough conveyor, one side wall being constituted by an upwardly moving reach of a conveyor belt and at least part of the other side wall being formed by a conveying means opposite the lower part of the conveyor belt, the conveying means and the conveyor belt cooperating to form a slit-shaped outlet opening in the bottom of the funnel through which the flat articles are directed



downwardly by the conveying means onto the trough conveyor in a substantially uniform manner.

3,780,850
SLIDING PALLET ARTICLE SORTER
James L. McSwiggin, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio
Filed Oct. 6, 1972, Ser. No. 295,638
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AC **1 Claim**

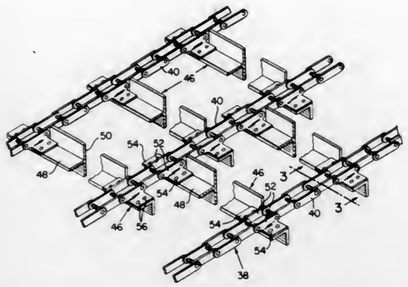


A sorter for articles, typified by cases of product, of the type wherein the cases are delivered to a single infeed station and discharged at one of two or more stations is provided. A plurality of "pallets" traverse an endless loop and slide laterally along rod-like members. The lateral movement is controlled by a diverting means which is responsive to a control signal and contacts a first protrusion, typically a pin, on the pallets. Preferably, the diverting means is articulated to provide very high speed switching. After the initial diversion, a guide rail contacts a second protrusion on the pallet and leads the pallets axially along the rod-like members to the desired lateral location for discharge as the pallet progresses along the sorter.

3,780,851
CROP FEEDING CONVEYOR FOR A HARVESTER
Darwin Carl Bichel, and Robert La Verne Malcolm, both of East Moline, Ill., assignors to Deere & Company, Moline, Ill.
Filed June 29, 1972, Ser. No. 267,506
Int. Cl. B65g *19/00*
U.S. Cl. 198—175 **3 Claims**

A self-propelled combine has a main separator body with a forward crop inlet and a feeder housing extending forwardly

from the crop inlet. A transversely elongated harvesting header is mounted on the forward end of the feeder housing and delivers the crop through a crop transfer opening in its rear wall to a chain-and-slat type conveyor mounted within the feeder housing and operative to move the crop upwardly and rearwardly along the floor of the feeder housing to the body inlet. The conveyor includes three transversely spaced chains trained around coaxial rear drive sprockets and a forward feeder drum. The chains are interconnected by transverse slats, which are arranged in staggered rows. Each chain has a T-shaped cross section with a stem portion parallel to the floor of the feeder housing in the lower run of the conveyor, the opposite ends of the stem portions being attached to one of the outer chains and the center chain. The cross portion of each slat in the lower run of the conveyor is normal to the floor and in advance of the stem portion for engaging the crop and moving it along the floor.

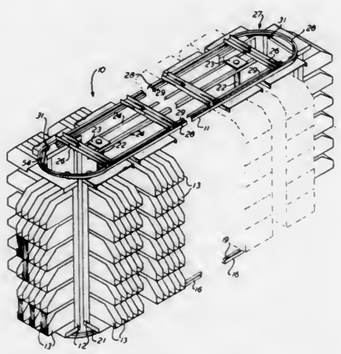


3,780,852

ARTICLE STORAGE AND RETRIEVAL APPARATUS

Morton A. Weiss, Springfield, and Bernard S. Speckhart, Short Hills, both of N.J., assignors to White Machine Co., Kenilworth, N.J.

Filed Feb. 2, 1972, Ser. No. 222,832
Int. Cl. B41j *29/16*
U.S. Cl. 198—181 **5 Claims**



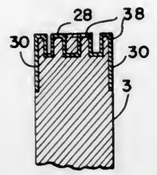
Apparatus for the storage and retrieval of inventories of articles of manufacture. The apparatus includes a vertical frame having a continuous oval track located at the base of the apparatus. A continuous conveyor is supported on the frame and guided on the oval trackway. The conveyor includes a plurality of side by side articulated, rigid support members of racks guided in a vertical attitude on the vertical frame. A plurality of vertically spaced storage bins are detachably secured on the support members or racks.

3,780,853

TYPE CASTING MATRIX AND SPACING

Robert R. Kuhn, 121 East Ln., Winchester, Va.

Filed May 19, 1971, Ser. No. 144,791
Int. Cl. B41b *11/02*; **B41c** *3/08*
U.S. Cl. 199—63 **4 Claims**



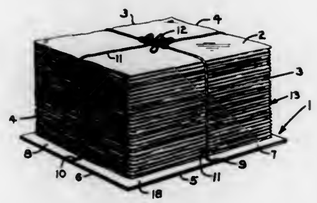
A type casting matrix and a matrix spacer or spacing for insertion between adjacent matrices in an assembled line of matrices for spacing the matrices, each having a hard metal coating on the casting edge and casting faces adjacent the casting edge thereof for preventing the adhesion of metal thereto during a hot metal typesetting operation and for preventing damage to the casting edge of the matrices. A plating holder is also provided for simultaneously plating a plurality of matrices and spacings on only the casting edges and casting bearing faces thereof; and the process of plating said matrices and spacings wherein the matrices and spacings are first cleaned to remove lead and other contaminants from the casting edge and casting bearing faces thereof and are then plated with a suitable hard metal alloy such as nickel cobalt alloy or the like.

3,780,854

PAPER STORAGE AND BALING CONTAINER

Wayne W. Ruppenthal, 1727 High, Topeka, Kans.

Filed June 28, 1971, Ser. No. 157,424
Int. Cl. B65b *13/18*; **B65d** *85/00*
U.S. Cl. 206—46 R **5 Claims**



A paper storage and baling device consisting of substantially rigid board member on which to stack half-folded newspapers and the like, said board member containing pre-determined lengths of baling strands to be pulled out and secured around a sufficient quantity of stacked papers forming a bale or bundle.

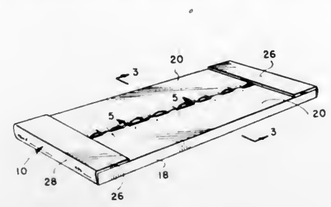
3,780,855

WINDING BOARD

John W. McLeod; Laverne E. Gray, and John F. Booth, all of Dallas, Tex., assignors to Lone Star Container Corporation, Dallas, Tex.

Filed Oct. 1, 1971, Ser. No. 185,545
Int. Cl. B65h *75/06*, *75/26*
U.S. Cl. 206—50 **26 Claims**

A winding board for providing a rigid member about which a length of cloth or the like may be wrapped constructed from corrugated material bent in the form of a rectangular tube with the edges of said corrugated material forming a central web extending the length of said winding board and wherein protrusions are formed in the exterior of said board adjacent said web and end flaps are attached to the exterior of said board to increase the frictional contact forces between said board and said cloth.

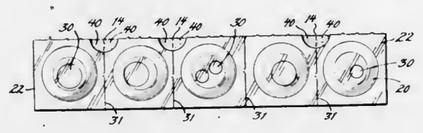


3,780,856

MEDICINAL DISPENSING DEVICE

Milton Braverman, Philadelphia, Pa., assignor to Medi-Dose, Inc., Sellersville, Pa.

Filed July 26, 1971, Ser. No. 166,165
Int. Cl. B65d *83/04*, *85/56*
U.S. Cl. 206—56 AB **2 Claims**



A medicinal dispensing device comprising a plurality of flanges having corners and being detachably connected along certain lines so that each flange may be separated from the remaining flanges, a chamber with an outer opening depending from each flange, the chamber being adapted to hold a drug, tablet, capsule, etc., a continuous closure member covering said chamber openings with certain portions of the interior surface of the closure member being in contact with the flanges, the closure member being perforated along certain lines closely corresponding to the flange lines, certain portions of the interior surface of the closure member being provided with a tacky adhesive coating which is in contact with said flanges, and certain other areas of the interior surface of the closure member being non-tacky and covering the chamber openings, at least one corner of each flange being removed in a cut-away area so that the existing corner of the closure member overlies the cut-away area to function as a lift tab to facilitate the separation of a portion of the closure member from a particular flange to provide access to the contents of the chamber.

The flanges are preferably provided in groups of 25, there being a cut-away area for at least one corner of every flange that is provided by the formation of a minimum number of punched openings, which minimum number is far less than the total number of 16 intersections that exist in a 5 × 5 pattern of flanges.

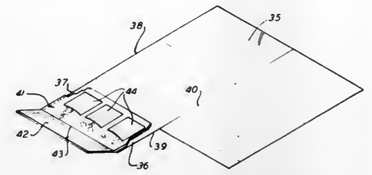
3,780,857

INSTRUMENT PACKAGE WITH STERILE FIELD

Joseph G. Rosano, Jr., Roselle Park, and Vincent L. Vaillancourt, Livingston, both of N.J., assignors to C. R. Band, Inc., Murray Hill, N.J.

Filed Dec. 30, 1971, Ser. No. 214,338
Int. Cl. A61b *19/02*
U.S. Cl. 206—63.2 **6 Claims**

A sterilizable sealed plastic sheet or film package containing a folded sheet of material adapted to form a sterile field when unfolded, said sheet being reinforced in a limited area by means of an attached relatively stiff sterilizable piece of cardboard, and said package also containing optionally, one or more instruments.

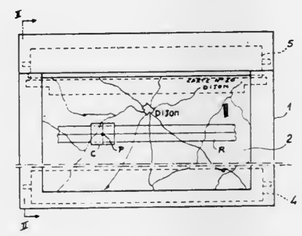


3,780,858

DEVICE FOR AUTOMATICALLY PRESENTING DOCUMENTS ON A READING TABLE

Andre Derre; Pierre Robert, both of Valence, and Claude Vuillemin, Etolle-sur-Rhone, all of France, assignors to Crouzet, Paris, France

Filed Feb. 5, 1973, Ser. No. 329,344
Claims priority, application France, Feb. 4, 1972, 72.04047
Int. Cl. B07c
U.S. Cl. 209—73 **9 Claims**



A device for automatically presenting documents on a reading table, said device comprising support means for the documents each of which is suspended by its upper edge which is integral with a rigid rod, said rigid rods being disposed in adjoining relation on said support means, guide means in a plane located above the plane of the support means, two endless bands which are driven in synchronism, each of which bands is disposed above the support means, the lower reach of each of said bands being substantially in the plane of said guide means, each of the bands comprising on its outer face a transverse recess arranged to be capable of receiving the end portion of a rod, and only one rod, said recesses being in alignment, and means for raising a rod, and only one rod, above the plane of the support means and bringing it above the plane of said guide means.

3,780,859

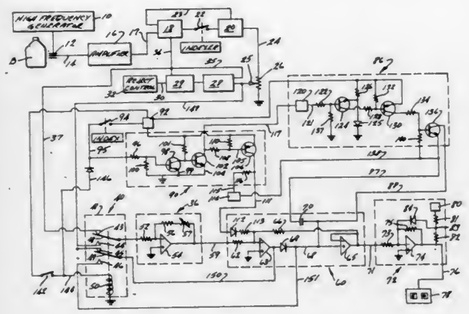
APPARATUS AND METHOD FOR DISPLAYING THE MINIMUM THICKNESS OF A DIELECTRIC MEMBER MEASURED BY A RADIO FREQUENCY THICKNESS GAUGE

Gerald F. Scherf, Holland, Ohio, and Robert D. Kohler, Temperance, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 8, 1973, Ser. No. 330,511
Int. Cl. B07c *5/08*
U.S. Cl. 209—73 **12 Claims**

Apparatus and method for displaying the minimum thickness of a glass container which is measured for thickness

by a radio frequency thickness gauge. One type of thickness measuring device for glass containers uses the attenuation of a radio frequency signal as a linear measure of thickness in terms of voltages. The output voltage is scaled to obtain a voltage which is numerically equal to the value of thickness of the container in thousandths of an inch. The thickness of the container may vary over a range of thicknesses. This invention



will hold the minimum thickness measured for a particular container and display this, in terms of the scaled voltage, as a digital number. This aids in detecting and diagnosing thickness flaws in glass containers. The circuit for holding the minimum thickness is erased of its previous reading and reset to accept a new minimum thickness as the measurement of a new container is begun.

3,780,860
FLOTATION OF COPPER SULFIDE ORES
Elias Fischer, Wilmette, Ill., assignor to Stephan Chemical Company, Northfield, Ill.
Filed May 17, 1971, Ser. No. 144,232
Int. Cl. B03d *1/06*
U.S. Cl. 209—167 **8 Claims**

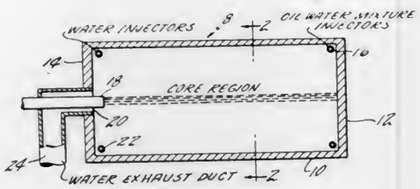
A novel flotation promoter used in the concentration of copper-bearing ores for the efficient selective flotation of copper values, including chalcopyrite, with suppression of iron pyrites; the promoter comprising a sodium sulfate of an aliphatic hydrocarbon having a carbon chain of less than 12 carbons.

3,780,861
GRANULAR FILTER MEDIUM
Gene Hirs, Detroit, Mich., assignor to Hydromation Filter Company, Livonia, Mich.
Filed Jan. 19, 1972, Ser. No. 219,145
Int. Cl. B01d *23/24*
U.S. Cl. 210—80 **1 Claim**

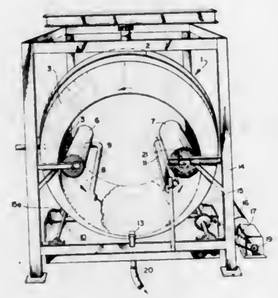
A method for filtering contaminants from suspension in liquids by utilizing, as a filter medium, granulated shells of black walnut (Juglans nigra L.).

3,780,862
VORTEX OIL-WATER SEPARATOR SYSTEM PROVIDING CLEAN WATER
Arthur E. Mesing, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 1, 1972, Ser. No. 230,665
Int. Cl. B01d *21/26*
U.S. Cl. 210—84 **7 Claims**

A vortex separator is used to separate a mixture of materials of different densities, such as an oil-water mixture, into two components. The mixture is injected tangentially into one end of a cylindrical chamber at a high flow rate to impart a swirl to the flow in the chamber. Clean or recirculated water is injected into the chamber from the opposite end wall. The separated water is exhausted from the chamber through a port in the center of the end wall containing the water injectors, and the separated oil is exhausted through a small duct located at the center of the water exhaust port. Two or more separators may be connected in series for applications in which a ship's ballast or bilge water is separated into a first component containing primarily oil which can be stored in a small volume, and a second component of substantially pure water which may be dumped overboard. A baffle plate may be added in the chamber to improve the separation process.

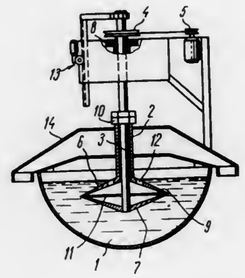


3,780,863
LIQUID FILTER
Douglas J. N. Light, Toronto, Ontario, Canada, assignor to Pollution Control Systems (International) Limited, Thornhill, Ontario, Canada
Filed July 10, 1972, Ser. No. 270,491
Claims priority, application Canada, Apr. 28, 1972, 140807
Int. Cl. B01d *33/18, 33/04*
U.S. Cl. 210—97 **14 Claims**



Liquid filtration apparatus has a drum mounted for rotation about a horizontal axis. A filter material is fed in the direction of rotation of the drum onto a lowermost region of the interior of the drum, and liquid to be filtered is discharged onto the filter material in this region. The filtered liquid is discharged from the drum through a slot extending around the wall of the drum, the inner surface of the wall being of concave cross-section and a heater dehumdifies the used filter material before it is wound up on a take-up roll within the drum.

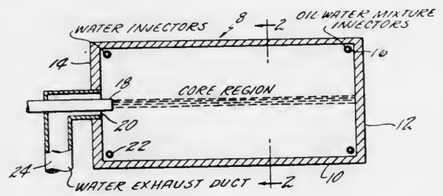
3,780,864
METHOD AND APPARATUS TO REFINE MELTS FROM SOLID IMPURITIES
Anatoly Vladimirovich Dolgov, Morskoi prospekt, 36, kv. 30; Leonid Vladimirovich Konovalov, ulitsa Permskaya, 1; Leib Benyaminovich Perkis, ulitsa Geodezicheskaya, 23, kv. 53; Stanislav Lvovich Deev, ulitsa Kirova, 80, kv. 44; Vitaly Evgenievich Dyakov, ulitsa Petukhova, 132, kv. 65; Alexandr Efimovich Semenov, ulitsa Zorge, 133, kv. 33, all of Novosibirsk; Evgeny Teodorovich Bauer, Fergana, poselok Kirgili, ulitsa Shirotnaya, 21 4, kv. 23, Fergana, and Serafim Nikolaevich Suturin, ulitsa Savvy Kozhevnikova, 2, kv. 22, Novosibirsk, all of U.S.S.R.
Filed Jan. 26, 1972, Ser. No. 220,847
Claims priority, application U.S.S.R., Mar. 31, 1971, 1636140; Mar. 2, 1971, 1629152; Nov. 20, 1967, 1197564; Nov. 4, 1969, 1374168
Int. Cl. B01d *35/02, 35/18*
U.S. Cl. 210—152 **4 Claims**



The method provides for filtration in the field of centrifugal forces generated in a filter immersed into the layer of a melt to be refined, with the solid impurities accumulating in the filter being strained from the residual melt beyond said layer of the melt to be refined.

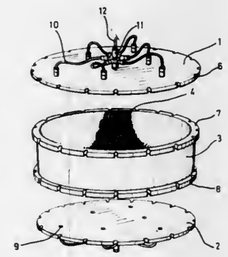
The apparatus comprises a melt bath provided with a rotor located thereabove and having a filter rigidly attached at bottom of the rotor, and being provided with a drive for immersing said filter into the melt.

3,780,865
VORTEX OIL-WATER SEPARATOR SYSTEM PROVIDING CLEAN WATER
David P. Miller, South Windsor, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 1, 1972, Ser. No. 230,663
Int. Cl. B01d *21/26*
U.S. Cl. 210—195 **9 Claims**



A vortex separator is used to separate a mixture of materials of different densities, such as an oil-water mixture, into two components. The mixture is injected tangentially into one end of a cylindrical chamber at a high flow rate to impart a swirl to the flow in the chamber. Clean or recirculated water is injected into the chamber from the opposite end wall. The separated water is exhausted from the chamber through a port in the center of the end wall containing the water injectors, and the separated oil is exhausted through a small duct located at the center of the water exhaust port. Two or more separators may be connected in series for applications in which a ship's ballast or bilge water is separated into a first component containing primarily oil which can be stored in a small volume, and a second component of substantially pure water which may be dumped overboard. A baffle plate may be added in the chamber to improve the separation process.

3,780,866
METHOD FOR THE SEPARATION OF SUBSTANCE MIXTURES BY CHROMATOGRAPHY AND A COLUMN MEANS ADAPTED TO BE USED FOR THE METHOD
Leif V. Ek, Jarfalla; Per L. Wallin, Uppsala, and Thure P. M. Tibbling, Bjarred, all of Sweden, assignors to Pharmacia Fine Chemicals AB, Uppsala, Sweden
Filed Nov. 16, 1971, Ser. No. 199,158
Claims priority, application Sweden, Nov. 20, 1970, 15713/70
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **1 Claim**

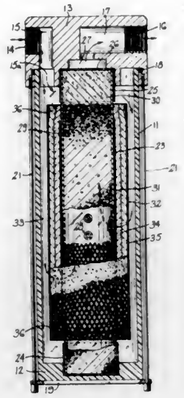


The present invention is concerned with a method for the separation of substance mixtures by chromatography. More particularly, the invention pertains to an improvement in a method for the separation of substance mixtures by chromatography while using a separating medium bed, a solution of the mixture to be separated being charged into the bed and an eluting agent being supplied to the bed in order to force liquid therethrough to recover at least two fractions of the substance mixture and the bed being maintained divided into at least two separate portions.

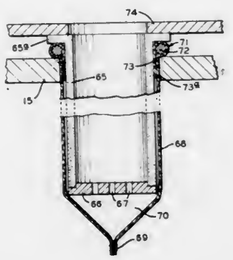
3,780,867
WATER PURIFICATION APPARATUS AND CARTRIDGE THEREFOR
Joseph V. Zirlis, Branford, Conn., assignor to H. N. Industries Inc., New Haven, Conn.
Filed Dec. 27, 1971, Ser. No. 212,029
Int. Cl. B01d *27/02*
U.S. Cl. 210—266 **14 Claims**

Two-stage water purification apparatus having a cartridge disposed within a housing provided with a removable cap. The cartridge comprises a casing containing activated charcoal, two superposed grid-like sleeves surrounding the casing, and a

diatomaceous earth layer between the two sleeves. Incoming water circulates from an inlet port in the cap through the outermost sleeve to the interior of the cartridge, and then out through an outlet port in the cap.



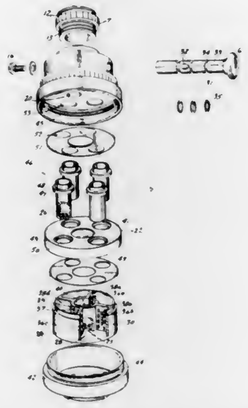
3,780,868
PRESSURE FILTER HAVING DEPENDING TUBULAR FILTER ELEMENTS
Harry Victor Miles, II, Westport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.
Continuation of Ser. No. 54,216, July 13, 1970. This application Apr. 19, 1972, Ser. No. 245,636
Int. Cl. B01d *29/24*
U.S. Cl. 210—333 **14 Claims**



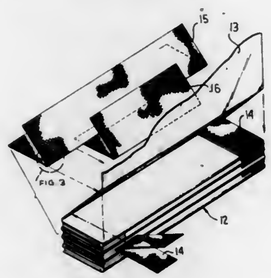
A pressure filter unit equipped with depending tubular filter elements comprising a tubular filter fabric element surrounding a rigid tubular liquid-permeable backing member, featuring an improved simple lead proof connection between the top ends of the filter elements and the supporting tube plate in the filter unit, which connection is resistant to backwash pressure supplied to the tubular filter elements through the upper open ends thereof.

3,780,869
MULTIPLE WATER-FILTER DEVICE
Zaharias Krongos, 128 Sherman Ave., New York, N.Y.
Continuation-in-part of Ser. No. 174,084, Aug. 23, 1971. This application May 16, 1973, Ser. No. 360,754
Int. Cl. B01d *29/24*
U.S. Cl. 210—317 **7 Claims**

In a preferred embodiment of the invention, a water-filter device is provided in which there are a plurality of insert filters into different compartments which insert filters are easily removed by unscrewing a bottom male portion from a top female portion, with the water being channeled to the respective filter compartments in parallel flow with one-another with the outlets of the several filter inserts being into the respective compartments and with the compartments being in flow series with one-another from a first compartment receiving water solely from the outlet of its insert filter to a final compartment of the series which has an outlet into a channel in flow communication with the main device water outlet, the compactness of filter material preferably of sheeps' wool varying from compartment to compartment in the flow series of compartments, with the first compartment of the series having an insert of least insert filter material density and the last compartment of the series having an insert filter of filter material of the greatest density, filter material being also in the compartment of the flow series with the filter material being outside of the inserted filter, the filter material out of the inserted filters being of about the same density for each of the series of compartments, and there being additionally provided a valve mechanism for alternately passing water through the filters when the valve is in one position and through a bypass conduit bypassing the filters in their entirety when the valve is in an alternate position, the valve being preferably manually controllable, a good part of the utility of the present invention being the high efficiency of the fiber system together with the ease of access to and replacement of the insert filters.

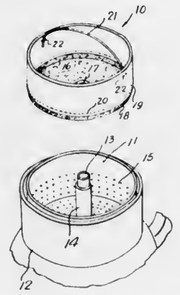


3,780,870
ARTIFICIAL BODY MEMBER
William G. Esmond, 537 Stamford Rd., Baltimore, Md.
Filed Feb. 22, 1972, Ser. No. 227,845
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **6 Claims**



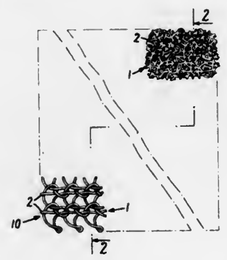
Artificial body member, such as a kidney or lung wherein either impurities are removed from blood or oxygen added thereto. The artificial body member includes a pleated web defining alternating first and second flow paths for blood in a treating fluid with the flow paths being maintained for the flow of fluids therethrough by means of spacers, the spacers being in the form of folded strips of mesh web material, this whole assembly being a core which is disposed within a housing and the housing having manifolds for the distribution of fluids.

3,780,871
DISPOSABLE LINER FOR COFFEE FILTER BASKET
Tommie Earl Hicks, Star Route, P.O. Box 22D, and Lavern John Amestoy, P.O. Box 460, both of Conrad, Mont.
Filed May 15, 1972, Ser. No. 253,274
Int. Cl. B01d *29/04*
U.S. Cl. 210—471 **4 Claims**



A disposable liner for coffee filter baskets used in coffee brewing pots of the type which includes the coffee supporting basket is disclosed as a removable member having a bail attached thereto for handling the liner. The liner is formed of a non-woven fiber material of a generally cylindrical form having a horizontal bottom wall with a hole formed therein to permit the percolator conduit to extend upwardly therethrough. An aluminum foil cover encloses the side walls of the liner and is stitched thereto to add strength to the side walls. The bail is used for removing the liner and the used coffee grounds following the making of the coffee with the liner preventing any grounds from reaching the coffee cup.

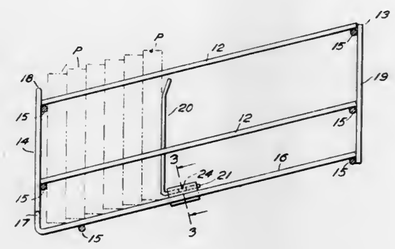
3,780,872
FILTERS COMPRISING ANISOMETRIC COMPRESSED AND BONDED MULTILAYER KNITTED WIRE MESH COMPOSITES
David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.
Division of Ser. No. 732,443, May 27, 1968, Pat. No. 3,690,606
Filed Sept. 29, 1970, Ser. No. 76,633
Int. Cl. B01d *27/06*
U.S. Cl. 210—493 **21 Claims**



Filters and filter units are provided which comprise as the filter sheet anisometric compressed and bonded knitted wire mesh composites composed of a plurality of sheets of knitted wire mesh, superimposed at random orientation with respect to each other, compressed or densified to a voids volume within the range from about 10 to about 90 percent, and bonded together. The sheets are taken in sufficient number, usually at least five and preferably ten or more, and as much as 1,000 or more, to form a self-supporting relatively non-resilient composite of high tensile strength and high breaking strength having an average pore diameter of less than 200 microns, and preferably less than 100 microns, that is relatively uniform in any unit area of the surface, and having an anisometric porosity, the through pores extending crosswise of the sheet greatly exceeding in number the through pores extending laterally of the sheet, which latter pores can be reduced virtually to zero in a highly compressed composite.

The composite is formed by superimposing a plurality of knitted wire mesh sheets, annealing the composite to avoid wire breakage during later processing, compressing the composite to the desired density and anisometricity by application of pressure in a direction approximately perpendicular to the plane of the layers of the composite, and bonding the sheet layers and wire filaments of the sheets together at their points of contact and/or crossing. The bonding holds the composite at the selected density, prevents relative movement of the wires in the composite, and in conjunction with the multilayer structure imparts the self-supporting nonresilient characteristic, together with high tensile strength and high breaking strength.

3,780,873
AUTOMATIC DISPLAY RACKS
Albert J. Silva, 2534 Oakes Dr., Hayward, Calif.
Continuation of Ser. No. 141,646, May 10, 1971, abandoned. This application Jan. 8, 1973, Ser. No. 321,802
Int. Cl. A47f *1/00, 3/00, 7/03*
U.S. Cl. 211—49 D **2 Claims**

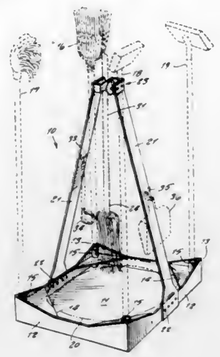


An automatic, package-positioning display rack adapted to stack uniformly sized packages in one or more compartments. The individual compartments are sloped downwardly from back to front causing the packages to slide forward whenever a gap is created by the removal of one or more of their number being removed from the rack. A slidably mounted stacker is provided which, bearing against the rearmost package of a group, ensures that this action will take place immediately upon the removal of any package.

3,780,874
UTILITY TREE
Hershel Stacy, Sr., Dice, Ky.
Filed Mar. 24, 1972, Ser. No. 237,783
Int. Cl. A47b *81/02*
U.S. Cl. 211—65 **2 Claims**

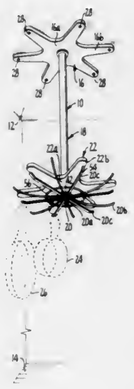
A unit for storing various household cleaning implements; the unit consisting of a shallow square pan that supports on opposite sides a pair of upwardly converging legs which at their top have a bracket for supporting a depending wet or dry

mop over the center of the pan; the corners of the pan having integral vertical sleeves for storing a broom, dust mop, waxer and sponge mop; each of the inclined legs additionally having



hooks along an intermediate post thereof for storing a dust pan and commode brush, while the pan is adaptable to receive a removable tray or pan which can be easily emptied of dripping water from a wet mop.

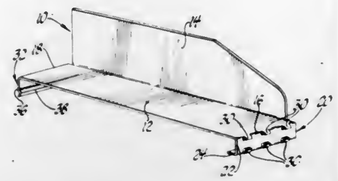
3,780,875
SUSPENDED HANGER
Lillian L. Scholl, 2545 Rivera St., San Francisco, Calif.
Filed June 14, 1972, Ser. No. 262,638
Int. Cl. A47f *5/08*
U.S. Cl. 211—115 **2 Claims**



A hanger for suspending articles, such as pots and pans, from an overhead surface.

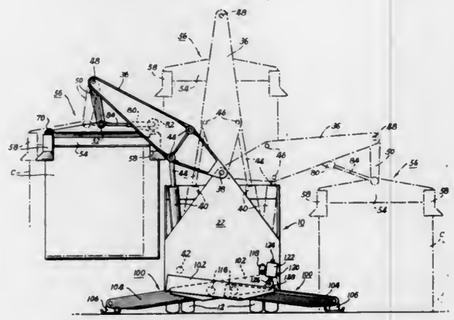
The hanger comprises a base member adapted to be secured to the overhead surface, a column secured to and suspended from the base member, a hanger assembly secured to the lower end of the column for rotation about the axis of the column, and an intermediate member secured to the column above and adjacent to the hanger assembly. In the preferred embodiment, the hanger assembly and intermediate member each comprise a hub having a plurality of spokes extending radially therefrom and the hanger assembly is rotatable relative to the intermediate member whereby the spokes of the assembly may be selectively moved out of alignment with the spokes of the intermediate member.

3,780,876
SHELF DIVIDER
Bobby L. Elkins, Parchment, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Jan. 18, 1972, Ser. No. 221,460
Int. Cl. A47f *5/00*
U.S. Cl. 211—184 **2 Claims**



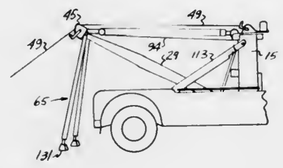
An adjustable shelf divider for shelving that includes a downwardly extending leg portion and return flange that wraps around the forward edge of a shelf and a downwardly extending leg portion and an offset irregularity thereon that engages over and pushes against the rearward edge of a shelf whereby the shelf divider is held firmly on a shelf.

3,780,877
FREIGHT CONTAINER TRANSFER MECHANISM
Semond Levitt, Huntingdon Valley, Pa., assignor to Gilbert Flexi-Van Corporation, New York, N.Y.
Filed Dec. 30, 1971, Ser. No. 214,037
Int. Cl. B66c *23/00*
U.S. Cl. 212—8 B **1 Claim**



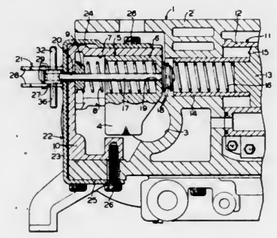
Freight container transfer apparatus having a pair of lifting beams mounted on support assemblies at opposite end portions of an elongated chassis for pivotal movement between opposite sides of the chassis, with spreader assemblies suspended at the outer ends of the beams for engaging the upper corners of a container, and hydraulic cylinders for swinging the beams to lift the chassis off a railroad car, highway trailer or other support (including the ground) at one side of the chassis, move it across the chassis in the space between the support assemblies and deposit it on the other side. One of the support assemblies is movable longitudinally of the chassis to accommodate different lengths of container. Hydraulically actuated stabilizer legs are engageable with the ground at each corner of the chassis to prevent overturning the chassis when the load is supported at one side, the legs being vertically adjustable to compensate for variations in ground level. Flared guide members at each end of the spreader assemblies are engageable with the corners of the container as the spreader assemblies are lowered onto the container to align them automatically with the corners of the container. Hydraulically actuated hanger links are pivotally connected between spreader assemblies and the ends of the beams to allow lateral movement of the spreader assemblies to compensate for greater lateral misalignment of the spreader assemblies with the container. Hydraulically actuated locks are provided for engagement with the corners of the container.

3,780,878
BOOM ASSEMBLY FOR LIFT AND TOW TRUCK
Dennis W. Morrow, Livonia, Mich., assignor to Eagle Industries, Inc., Dearborn, Mich.
Filed July 31, 1972, Ser. No. 276,902
Int. Cl. B66c *23/06, 23/62*
U.S. Cl. 212—59 R **6 Claims**



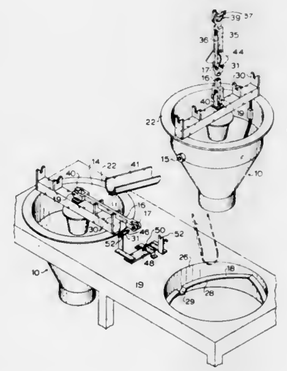
A lift and tow truck assembly having a bed and an upright support and a boom support block, with an elongated boom assembly swivelly mounted upon said block for universal adjustment. A head assembly mounting plate upon the free end of the boom assembly mounts a head assembly which includes a sheave for a load line. The load line sheave assembly is mounted upon the upright support and is connected to a winch assembly on the bed. A pair of rearwardly converging telescoping boom side supports at their one ends are pivotally connected to the boom support block for rotation on a horizontal axis with their other ends secured to the head assembly mounting plate. A head support assembly is connected to the head assembly and includes a block and tackle and suspension cable and is adapted for powered raising and lowering of the boom.

3,780,879
MANUAL LATCH RETRIEVER APPARATUS FOR CAR UNCOUPLER
Raymond C. Wright, Irwin, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Jan. 25, 1972, Ser. No. 220,577
Int. Cl. B61g *3/26*
U.S. Cl. 213—159 **10 Claims**



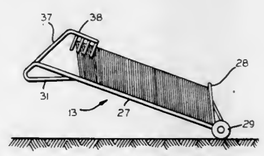
A manual latch retriever for use with automatic railway car couplers of the type wherein a latch member, upon coupling operation, is biased into engagement with a coupling pin for locking the coupler mating heads in a coupled relation, and wherein power operated means are employed for disengaging the latch member for permitting uncoupling of the cars, said latch retriever comprising manually operable lever means connected to said latch member and extending externally of the casing so as to be accessible for manual manipulation in withdrawing and disengaging the latch member from the coupling pin in the event of failure of the power operated means.

3,780,880
CRANE BUCKET EQUIPMENT
William A. Perry, 270 Cassandra Blvd., Apt. 409, Don Mills, Ontario, and Raymond O. Jobst, 1476 Trotwood Ave., Mississauga, Ontario, both of Canada
Filed Sept. 7, 1971, Ser. No. 178,005
Int. Cl. B67c *3/34*
U.S. Cl. 214—1 R **4 Claims**



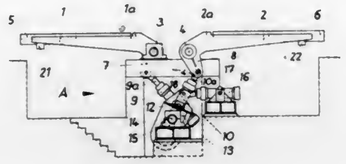
A holder with a capacity for two crane buckets holds one of these buckets for filling while the other is being emptied. On return of the emptied bucket to the holder a mechanism is equipped to detach the emptied bucket from the crane cable and to attach the filled bucket to the crane cable. The crane bucket is designed so that its weight operates hydraulic means for causing bottom opening and closing.

3,780,881
MOBILE STRUCTURE FOR HANDLING FLAT ARTICLES
James J. Friel, Miami, Fla., assignor to Container Corporation of America, Chicago, Ill.
Division of Ser. No. 196,482, Nov., 1971. This application Feb. 14, 1973, Ser. No. 332,257
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 QE **2 Claims**



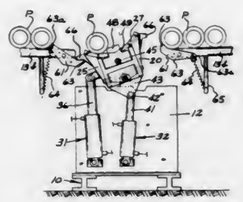
The structure referred to finds particular use with a machine for feeding paperboard blanks to a carton forming machine, for example.

3,780,882
PLATE TURN-OVER MECHANISM
Ruprecht Wagner, Scheidt/Saar, Germany, assignor to Moeller & Nuemann GmbH, Ingbert/Saar, Germany
Filed Dec. 14, 1972, Ser. No. 315,182
Claims priority, application Germany, Dec. 16, 1971, P 21 62 384.7
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 QA **3 Claims**



A hydraulically driven plate turn-over mechanism enabling inspection of both sides of rolled plates. The mechanism has two groups of turning arms which are independently pivotal by hydraulic actuators. The actuators are pivotally secured to a rocker which is pivotal about a hydraulic axis by means of a further actuator.

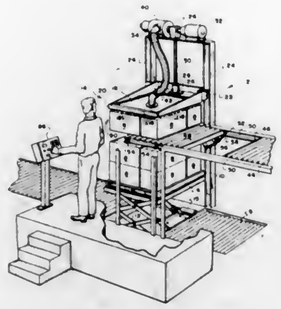
3,780,883
PIPE HANDLING SYSTEM FOR USE IN WELL DRILLING
Cicero C. Brown, c/o Brown Oil Tools, Inc., P.O. Box 19236, Houston, Tex.
Division of Ser. No. 125,740, March 18, 1971, Pat. No. 3,706,347. This application July 25, 1972, Ser. No. 275,024
Int. Cl. E21b *19/14*
U.S. Cl. 214—2.5 **4 Claims**



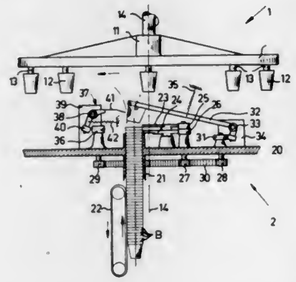
A pipe handling system for use in well drilling. The system includes pipe storage racks, power-operated conveyor means for advancing the pipe sections to a drilling derrick and for transferring the pipe sections from the storage racks to the conveyor means; power swivel means supported by the derrick hoist adapted for connection to the pipe sections, and power-actuated pivoting means connecting the power swivel means to the hoist to enable angular movement of the swivel means as required to effect alignment thereof with the forward ends of the pipe sections entering the derrick from the conveyor means.

3,780,884
ARTICLE TRANSFER DEVICE
Robert Keith Jones, Salt Lake City, Utah, assignor to Kenway Engineering, Incorporated, Woods Cross, Utah
Filed Apr. 3, 1972, Ser. No. 240,565
Int. Cl. B65g *59/04*
U.S. Cl. 214—8.5 D **2 Claims**

An article transfer device comprising a first conveyor, a platform positioned to permit transfer of articles between said platform and said first conveyor, a vacuum manifold mounted above said platform, a plurality of vacuum cups depending from said manifold and each having a bore communicating the gripping surface thereof with said manifold, elevating means for raising and lowering said platform into and out of a position to cause articles carried by said platform to engage at least one of said vacuum cups, a shuttle extendable to a position underlying said vacuum cups and retractable to a position removed from said vacuum cups, and a second conveyor positioned to permit transfer of articles between said shuttle and said second conveyor.

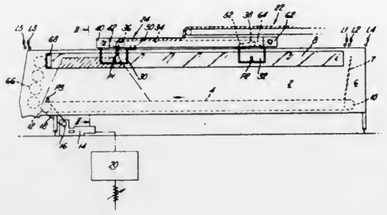


3,780,885
DEVICE FOR PLACING CUPS ON A MOVING CARRIER MEMBER
Humphrey Alphons Victor Van Der Roer, Freiburg, Switzerland, assignor to Polytype AG., Freiburg, Switzerland
Filed Aug. 31, 1972, Ser. No. 285,455
Claims priority, application Switzerland, Sept. 9, 1971, 013208/71
Int. Cl. B65g *59/10*
U.S. Cl. 214—8.5 A **11 Claims**



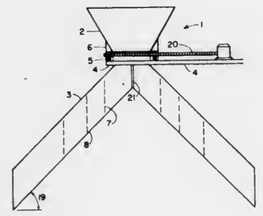
In transferring cups from a stationary stack of nested cups to a moving carrier member, such as a mandrel shaped to conform to the interior of the cup, a pair of pivotally mounted arms with releasable gripping members at their ends pick-up cups singly, and under a spring action, swing the cups through an arc into the path of the carrier member. As each cup is swung toward the carrier member, the plane of its opening assumes an oblique angular orientation relative to the axis of the carrier member so that the carrier member enters the cup opening and removes the cup from the gripping members. In addition, another pivotally mounted spring biased member follows the movement of the cup and urges it onto the carrier member after the cup has been displaced from the gripping member.

3,780,886
FEEDING OF TOBACCO AND OTHER MATERIALS
Edward James Allen, Southampton, England, assignor to W. H. Dickinson Engineering Limited
Filed Feb. 14, 1972, Ser. No. 226,164
Int. Cl. B65g *65/30*
U.S. Cl. 214—17 CA **13 Claims**



Apparatus for feeding especially tobacco comprises a silo which has a floor formed by a conveyor for carrying a mass of material in the silo towards a discharge end of the silo, and includes an infeed device which is arranged to move continuously along the conveyor in a controlled oscillatory motion having a mean position which, while the conveyor is stationary, moves from one end of the silo towards the other.

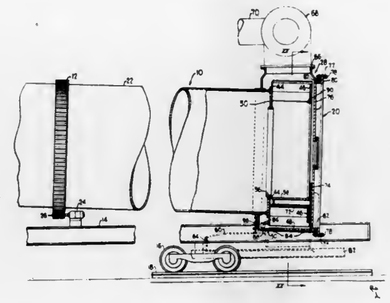
3,780,887
ROTARY DISTRIBUTOR MEANS AND METHOD
Garrell C. Bottoms, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Oct. 10, 1972, Ser. No. 296,506
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CB **8 Claims**



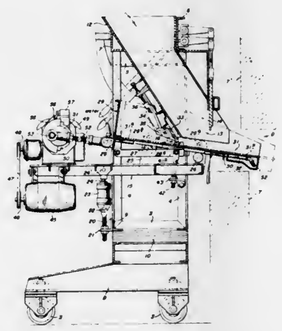
A rotary distributor apparatus with inclined conduits, stream dividers and multiple discharge ports and method are provided for uniformly distributing particulate material in a vessel for subsequent processing.

3,780,888
MATERIAL TRANSFER APPARATUS FOR A ROTARY DRUM
Erwin Hoffman, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Oct. 7, 1971, Ser. No. 187,404
Claims priority, application Germany, Oct. 22, 1970, P 20 51 907.7
Int. Cl. B66c *17/08*
U.S. Cl. 214—18 K **8 Claims**

A rotary drum is employed to quench the coke discharged from a coke oven and thereafter transfer the quenched coke to a fixed conveying device. The quenched coke is discharged onto the conveying device from the rotary drum through transfer apparatus that effectively seals the outlet of the rotary drum and collects the steam and dust formed during the quenching operation within the rotary drum through a second outlet suitably connected to air cleaner apparatus. The transfer apparatus includes a plurality of paddles connected to and rotatable with the rotary drum. The paddles are positioned within a fixed end housing and form pockets therebetween to convey upon rotation of the drum preselected quantities of quenched coke up a fixed arcuate plate to a discharge chute. A fixed arcuate sealing segment is positioned in spaced overlying relation with the arcuate plate and has sufficient length to overlie and enclose at least one pocket on opposite sides of the discharge chute. The upper portion of the arcuate plate forms a distributor to feed the quenched coke discharged from the rotary drum into the pockets formed by the paddles. The arcuate plate and arcuate sealing segment are connected to a fixed housing and are movable lincarly to compensate for expansion and contraction of the rotary drum.



3,780,889
GLASS BATCH FEEDER
John Earl Frazier, and Clifford F. Crouse, both of Washington, Pa., assignors to Frazier-Simplex, Inc., Washington, Pa.
Filed Nov. 9, 1971, Ser. No. 197,007
Int. Cl. C03b *3/00*
U.S. Cl. 214—33 **15 Claims**

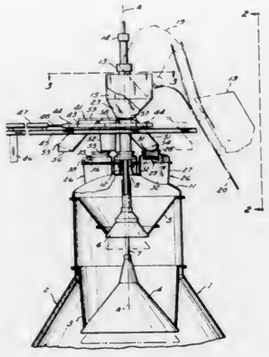


There is disclosed a blanket type batch feeder for a glass melting furnace having one or more charger plates supported in such a manner that the angle of slope of the charger plate may be adjusted about an axis that substantially coincides with the lower edge of the sand seal at the rear of the supply chute. Also the charger plate may be swiveled about an axis normal to its surface to change its angle with respect to the longitudinal axis of the furnace which it feeds.

3,780,890
FURNACE CHARGING APPARATUS

Warren E. Glover, Lakewood, Ohio, assignor to Arthur G. McKee & Company, Cleveland, Ohio

Filed Mar. 1, 1972, Ser. No. 230,606
Int. Cl. F27b 5/12
U.S. Cl. 214—36 27 Claims



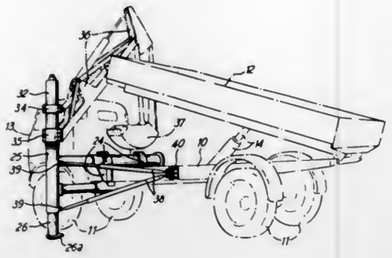
An apparatus for charging particulate burden material into a shaft furnace, such as a blast furnace, having a generally vertical axis. Several individual port means are spaced around the axis and mounted on the upper portion of the furnace above two superposed furnace bells in superposed stationary hoppers. Each of the port means has an upwardly open mouth, and individual valve means for closing the port means gas tight and for opening it independently of other port means so it can provide a flow of material into the furnace. Two externally supported non-rotatable independently laterally reciprocable chutes are mounted above the port means. Each chute has a plurality of lower discharge openings each of which is positionable over and alignable with the mouth of selected port means by proper reciprocable movement of the chute, to discharge material into the mouth so that material will pass from the chute into the furnace when the port means is open; and each chute has a corresponding number of upper openings adapted to receive charge material deposited in the chute and discharge it through the discharge opening that is aligned with an open port means. A stationary hopper is mounted above each chute to receive charge material from suitable material supply means such as a skip car or conveyor, and discharge it into the proper chute opening.

3,780,891
ATTACHMENTS FOR VEHICLES

Hubert Steiner, Newcastle-under-Lyme, England, assignor to H. Steiner Limited, Longton, Stoke-on-Trent, England

Filed Sept. 15, 1971, Ser. No. 180,586
Claims priority, application Great Britain, Sept. 26, 1970, 45,926/70
Int. Cl. B66f 9/00
U.S. Cl. 214—138 C 4 Claims

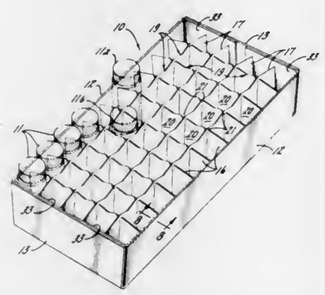
An attachment for a vehicle such as a truck and comprising a frame structure for mounting behind the driver's cabin and which can be extended to one side of the vehicle, a vertical post mounted at the outer end of the frame structure and having a retractible foot portion for engagement with the ground, the post serving to mount an excavator bucket or like attachment and being rotatable about its axis and tiltable in the plane of the frame structure.



3,780,892
METHOD OF TRANSFERRING SAMPLE VIALS TO AND FROM VIAL-CARRYING TRAYS

Edmund Frank, Chicago, Ill., assignor to Packard Instrument Company, Inc., Downers, Ill.

Division of Ser. No. 27,405, April 10, 1970, abandoned. This application Mar. 27, 1972, Ser. No. 238,125
Int. Cl. B65g 65/00
U.S. Cl. 214—152 1 Claim

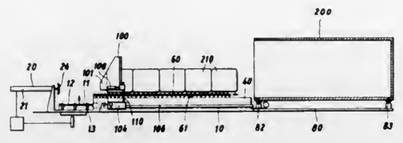


A disposable tray for holding sample vials and the like is provided, by means of which sample vials may be easily handled by automatic equipment. Loading of vials into vial holding compartments in the tray is facilitated by the provision of regular V-shaped notches along the upper edges of compartment-defining partitions. These notches cause any slightly misalined vial, upon its descent into the tray, to be cammed into the appropriate vial-holding compartment. Vial loading is further facilitated by the outer tray sides, which are formed so as to slant slightly toward the tray interior, thereby assisting in camming outer rows and columns of vials into the appropriate compartments. To provide compartments which may be accurately located under the descending vials, the partitions are rigidly secured to each other and to the tray sides. Tray rigidity is enhanced by tabs formed on opposite sides of the tray blank, which tabs are secured, upon tray formation, to the abutting tray sides. Removal of vials from the tray is made possible by the provision of a hole in each compartment bottom, through which may be inserted the tine of a vial-ejecting comb.

3,780,893
METHOD OF LOADING CONTAINERS WITH CARGO

Harry Lassig, and Anton Grosshauser, both of Hamburg-Schenefeld, Germany, assignors to Fordertechnische Forschungsgesellschaft mbH, Holstenplatz, Hamburg-Schenefeld, Germany

Filed Apr. 25, 1972, Ser. No. 247,287
Claims priority, application Germany, Feb. 5, 1972, P 22 05 505.6
Int. Cl. B65g 67/04
U.S. Cl. 214—152 1 Claim

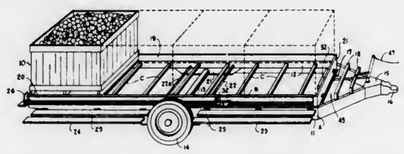


Method and apparatus for loading containers with cargo or for the compound stacking and setting down such cargo compounds on a loading platform of a transport vehicle or in a storage area in a warehouse a.s.o. The method comprises the steps of arranging the cargo in a predetermined manner by arranging the cargo in cargo units of a unit length corresponding substantially to the width of an available cargo space or cargo area, transferring such cargo units onto a hoisting track , hoisting the cargo units thereon up to the elevation of a conveying carriage, assembling a plurality of such cargo units on the conveying carriage in thereby forming a cargo compound of a length, width and height corresponding f.e. substantially to the internal cargo space dimensions of a container whereby the cargo units are moved through a contour sensing gate frame having gate wings which gate monitors the width and alignment of the cargo units being transferred onto the conveying carriage, driving the conveying carriage with the cargo compound assembled thereon into a cargo receiving area such as the internal cargo space of a container, moving the gate frame into a position adjacent the cargo receiving area, closing the gate wings on the gate frame and withdrawing the conveying carriage from the cargo receiving area whereby the gate wings serve as abutments and allow, during the reverse movement of the conveying carriage, to push the cargo compound off the conveying carriage so that the cargo will be put down on the cargo receiving area. The apparatus consists essentially of a base, a track, a conveying carriage, a gate frame, control and drive means and a mounting support for a container. Optionally a hoisting roller train and a feeding conveyor may be provided.

3,780,894
TRAILER

James C. Holmes, and Fred M. Holmes, both of Johnston, S.C.

Filed Sept. 8, 1969, Ser. No. 856,222
Int. Cl. B60p 1/24, 1/52
U.S. Cl. 214—505 2 Claims

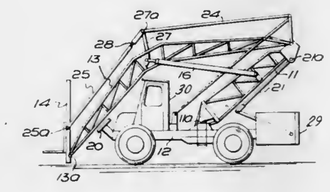


A trailer for transporting bulk boxes loaded with fruit from the field and the like, to a remote location. The trailer is provided with a flat bed which is pivotally carried on an axle so that such can be pivoted to an unloading position. The flat bed is weighted so that when such is loaded with bulk boxes it will pivot to the unloaded position, and when the bulk boxes are unloaded therefrom the flat bed will automatically return to the horizontal position. A retaining member is carried adjacent the rear end of the flat bed for preventing the bulk boxes from rolling off the bed. Means are provided for automatically lowering the retaining member out of the path of the bulk boxes as the flat bed pivots to the unloaded position.

3,780,895
LOAD HANDLING VEHICLE

Matthew Teasdale Campbell, Newcastle upon Tyne, England, assignor to Fork Lift Truck Patentees Establishment, Lemington, New Castle upon Tyne, England

Filed May 14, 1971, Ser. No. 143,339
Int. Cl. E02f 3/00
U.S. Cl. 214—770 7 Claims

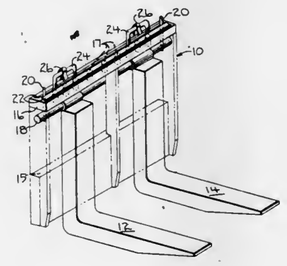


A load handling vehicle has load raising means comprising a box-section mast pivotally mounted on the vehicle chassis between its front and rear wheel units for displacement between a rearwardly extending generally horizontal position and a generally erect position, a cranked boom having one end pivotally connected to the free end of said mast and its other end adapted to receive a load carrying member such as a fork lift mast, a first operating means for effecting displacement of said mast and a second operating means for effecting angular displacement of the boom relative to said mast.

3,780,896
LIFT TRUCK FORK RETAINING PINS

John T. Crawford, Lyndhurst, Ohio, assignor to Towmotor Corp., Cleveland, Ohio

Filed Feb. 14, 1972, Ser. No. 225,811
Int. Cl. B66f 9/06
U.S. Cl. 214—731 3 Claims



A lift truck fork carriage construction is provided with fork positioning retainers that are securely mounted on the carriage structure whereby said retainers cannot be jolted off or misplaced from the fork carriage during lift truck operations.

3,780,897
STOPPERS

Victor Wassilieff, 84, rue de l'Assomption, Paris, France

Filed Feb. 8, 1971, Ser. No. 113,244
Claims priority, application France, Feb. 18, 1970, 7005737; Apr. 7, 1970, 7012464
Int. Cl. B65d 41/22, 41/20
U.S. Cl. 215—41 12 Claims

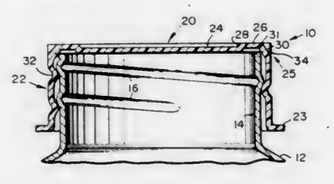
A container closure has a body, transverse closure means, a liquid-tight element having an annular face designed to place itself below and facing a non-cylindrical annular area of a container neck, and means capable of resilient deformation resting on the end face of the neck, so as to exert an axial traction on the body and to maintain the said annular face and area in mutual contact.

The closure may be formed from a one piece blank.

3,780,898
SCREW CAP CLOSURE

Gary G. Menkel, Holliswood, N.Y., assignor to Design Center, Inc., Long Island City, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,900
Int. Cl. B65d 41/04
U.S. Cl. 215—43 R 9 Claims

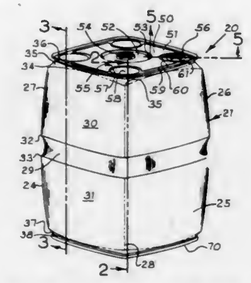


A screw type cap for containers is provided which is adapted to engage the sealing edge or the top of the neck of a container. The cap is formed with an annular groove about the periphery of the central portion of the top. The groove opens downwardly to receive and sealingly engage the sealing edge of the container. An internal liner may be inserted in the cap to improve the seal particularly when the cap is to be used to seal bottles whose top sealing edge is not uniformly normal to the longitudinal axis of the neck. The liner engages the sealing edge and is deflected upwardly with the internal groove receiving the deflected portion of the liner and maintaining it in sealing engagement with the sealing edge.

3,780,899
CONTAINER WITH CONCAVE BELT AND LOCK SEAM

Ralph E. Roper, Indianapolis, Ind., assignor to Wallace Expanding Machines, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 101,792, Dec. 28, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 195,583
Int. Cl. B65d 7/02
U.S. Cl. 220—5 R 11 Claims

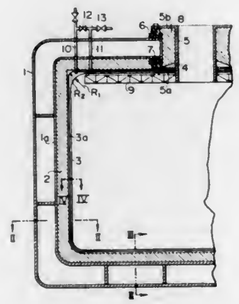


A container having a rectangular tubular body section sealingly joined to a top and bottom panel by curled lock seams. The tubular body has an upper and lower portion integrally joined together by a center concave smooth and rounded belt. The top and bottom panels are secured to the tubular body by means of curled lock seams. The containers are adapted to stack one upon another by means of the complementary configuration of the top and bottom panels. A V-shaped recess is located immediately adjacent each lock seam extending around the periphery of the top and bottom panels adding to the strength of the container.

3,780,900
LOW TEMPERATURE LIQUEFIED GAS TANK OF A MEMBRANE TYPE

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

Filed Oct. 22, 1971, Ser. No. 191,945
Claims priority, application Japan, Nov. 10, 1970, 45/98488
Int. Cl. B65d 25/18
U.S. Cl. 220—9 LG 7 Claims



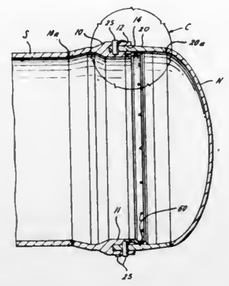
A tank of membrane type for containing low temperature liquefied gases such as petroleum gases, comprising an outer vessel of a rigid structure, an inner vessel made of a membrane or thin sheet for containing low temperature liquefied gases, and a heat insulating intermediate layer disposed between the outer and inner vessels, wherein the improvement resides in that a secondary inner vessel made of a membrane or thin sheet is provided between the heat insulating intermediate layer and the first mentioned or primary inner vessel as a secondary barrier wall which prevents the liquefied gases which may leak out of the primary inner vessel due to breakage thereof from affecting the heat insulating intermediate layer and the outer vessel.

3,780,901
PIN-TYPE VESSEL CLOSURE CONNECTOR

Raymond E. Pechacek, Houston, Tex., assignor to Hahn & Clay, Houston, Tex.

Filed Jan. 14, 1972, Ser. No. 217,827
Int. Cl. B65d 53/00; A47j 27/08
U.S. Cl. 220—46 P 5 Claims

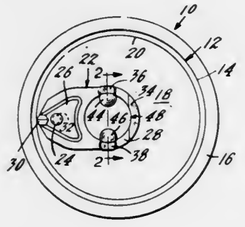
A pin-type vessel closure connector for connecting a vessel head or closure to a vessel shell or cylinder, wherein the connector includes an annular yoke welded to one part of the vessel, preferably the shell, and an annular connector finger on another part of the vessel, preferably the head, which yoke and finger are interfitting and are joined together by a plurality of circumferentially disposed releasable connector pins, and wherein a rocking seal is provided for sealing between the innermost ring of the yoke and the finger to maintain the seal during flexing thereof in response to varying pressures in the vessel.



3,780,902
CONTAINER END CLOSURE

Henry Sylvester Holc, Barrington, and Burton Frank Pillnik, Cary, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 17, 1972, Ser. No. 244,777
Int. Cl. B65d 17/20
U.S. Cl. 220—54 15 Claims



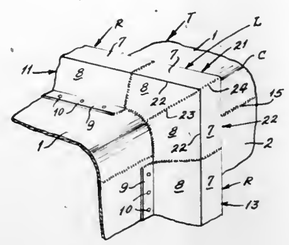
In a container subjected to internal pressure, a metallic end closure is provided having a central panel portion, a removable portion defined by a score line included in the central panel portion, and an opening tab attached to the removable portion proximate the periphery of the central panel portion, the pull ring or handle of the opening tab being radially inward from the point of attachment of the opening tab to the removable portion. The end closure is additionally provided with means on said central panel portion for releasably holding said opening tab substantially flat against said central panel portion when the central panel portion bulges outwardly due to the internal pressure of the container.

3,780,903
CORNER CONSTRUCTION FOR REINFORCING RIB ON TANK MADE FROM THIN SHEET METAL

Edward J. Clarkin, Florissant, and George D. Conlee, Glendale, both of Mo., assignors to Nooter Corporation, St. Louis, Mo.

Filed July 24, 1972, Ser. No. 274,322
Int. Cl. B65d 7/42
U.S. Cl. 220—71 9 Claims

The corner between adjacent ends of reinforcing ribs on adjacent walls of a tank is fabricated from two outer members which are assembled as a unit. The corner unit is then connected between the ribs on the adjacent angularly positioned walls by welding it into place to form the complete corner.

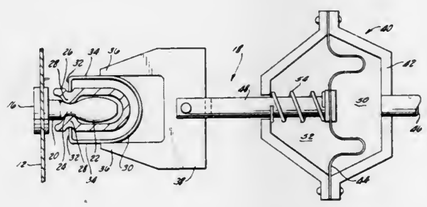


One of the ends of an outer member is preferably offset inwardly so as to fit within one cooperating rib for ease in assembling and welding.

3,780,904
PRESSURE COMPENSATING DOOR CATCH ASSEMBLY

Charles O. Stanford, Herrin, Ill., assignor to Fedders Corporation, Edison, N.J.

Filed Sept. 23, 1971, Ser. No. 183,042
Int. Cl. B65d 45/00
U.S. Cl. 220—55.3 6 Claims



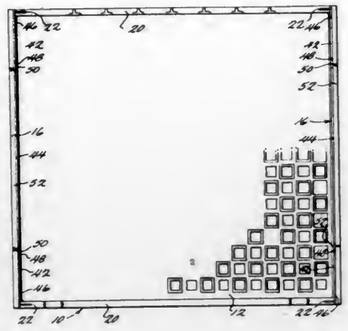
A pressure compensating door catch assembly for the door to a pressurized enclosure is provided. The assembly includes a strike affixed to the door, a catch affixed to the enclosure and a catch spring which exerts a biasing force on the catch. The force of the catch spring is determined by the bending moment arm of the spring which, in turn, is determined by the position of a shiftable fulcrum. The position of the fulcrum is governed by the pressure within the enclosure through a diaphragm and connecting rod.

3,780,905
90° STACKABLE AND NESTABLE TRAY

Ralph H. Herolzer, Cincinnati, Ohio, assignor to Vanguard Industries, Inc., Cincinnati, Ohio

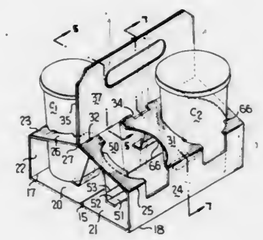
Filed Jan. 5, 1972, Ser. No. 215,528
Int. Cl. B65d 21/04
U.S. Cl. 220—97 D 5 Claims

A 90° stackable and nestable tray for bakery products or the like having inner and outer stacking rails along the lower edge of the end walls thereof centrally recessed to define floor engaging structures on opposite sides thereof operable to support the tray on a floor or the like to permit end wall entry of a hand truck, the floor engaging structures further defining



tray operable to be slidably supported on a like tray for movement into stably stacked relation thereon.

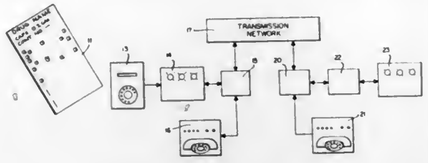
3,780,906
CUP CARRIER
James H. Katzenmeyer, Elkhart, Ind., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,705
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 **15 Claims**



This disclosure relates to a carrier having a plurality of openings formed in a top wall thereof for receiving a plurality of drinking cups or the like therein. A tab extends into each of the openings and is adapted to engage a container of a predetermined size positioned therein. Transversely adjacent openings each include a partition which is provided with fold lines for automatically varying the distance between each partition panel and its adjacent side panel to accommodate articles of different sizes at the bottoms thereof.

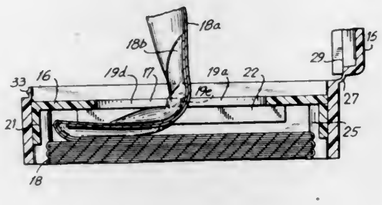
3,780,907
SYSTEM FOR REMOTE CONTROL OF PACKAGE-DISPENSING STATION
Walter E. Colburn, Drexel Hill; Howard M. Trowern, Jr., Malvern, and Franklin W. Kerfoot, Jr., Newtown Square, all of Pa., assignors to Parke, Davis & Company, Detroit, Mich.
Filed Oct. 3, 1969, Ser. No. 863,641
Int. Cl. E04h *1/00*
U.S. Cl. 221—2 **4 Claims**

A system for the remote control of a plurality of package-dispensing units is disclosed, wherein a data card and card dialer cooperate with a control station interface unit to transmit data across a telephone system network to a receiving station, where the data is operated on by a receiving station interface unit which selects and operates a designated package-dispensing unit, and sends a return signal to the control station. The receiving station interface unit logically operates on



the received data through a system of stepper switches and relays, causing solenoid release of a package from the selected dispensing unit.

3,780,908
BULK PACKAGE FOR INDIVIDUAL DISPENSING OF SUBSTANTIALLY WET SHEETS FROM STACKS
William E. Fitzpatrick, Wyckoff; Leonard Berger, Ridgewood, and Hayward B. Auerbach, Maywood, all of N.J., assignors to International Playtex Corporation, New York, N.Y.
Filed July 28, 1972, Ser. No. 274,134
Int. Cl. A47k *10/42*
U.S. Cl. 221—48 **9 Claims**

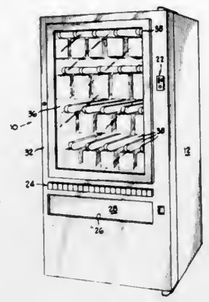


A bulk package for individually dispensing substantially wet sheets from a stack of such sheets, comprising a container receiving the stack of wet sheets and having an openable and readily resealable cover which, when closed, forms a substantially moisture-proof seal between the container and the atmosphere; and a barrier member overlying the stack of wet sheets and interposed between the stack and the cover and having a restricting opening whose proximate surfaces frictionally engage the adjacent surfaces of the successive sheets withdrawn from the stack such that when the uppermost sheet is pulled outwardly of the package through such opening the leading surfaces of the next succeeding sheet are drawn by and in contact with the uppermost sheet through the opening into frictional contact with the surfaces proximate thereto which produce a frictional force on the next succeeding sheet sufficient to overcome the force resisting separation of the two sheets yet not so large that the force required to remove the uppermost sheet will tear either of such sheets. The surfaces proximate the sheet restricting opening thus effect separation of the sheets with the leading surfaces of the next succeeding sheet extending outwardly of the opening positioned for subsequent manual grasping and removal from the package.

3,780,909
VENDING MACHINE
William H. Callahan, and Stephen I. Horvath, both of Aurora, Ill., assignors to Lektro-Vend Corp., Aurora, Ill.
Filed Aug. 4, 1971, Ser. No. 168,843
Int. Cl. G07f *11/00*
U.S. Cl. 221—85 **6 Claims**

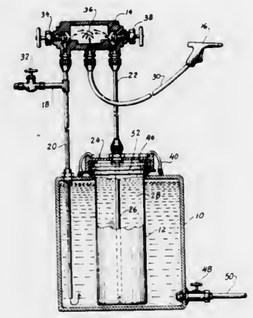
A vending machine for vending packaged products having a product compartment, a plurality of delivery arms located in

the product compartment, each including a movable endless chain having a plurality of pairs of package retention ele-



ments, the elements of each pair coacting to releasably retain an individual package to be vended.

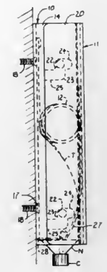
3,780,910
PRESSURIZED LIQUID MIXER AND DISPENSER
William Wagner, c/o Watsco, Inc., 1800 W. Fourth Ave., Miami Beach, Fla.
Filed May 11, 1972, Ser. No. 252,262
Int. Cl. B65d *35/28*
U.S. Cl. 222—95 **3 Claims**



A pressurized liquid mixer and dispenser, comprising a tank connected to a pressurized water source, a collapsible container in said tank containing a liquid other than water, a mixing chamber connected to said pressurized water source and said collapsible container, and a spray gun connected to said mixing chamber, whereby the water pressure in the tank expresses the liquid from the collapsible container and causes it to flow into the mixing chamber, where it is mixed with pressurized water and then dispensed through the spray gun.

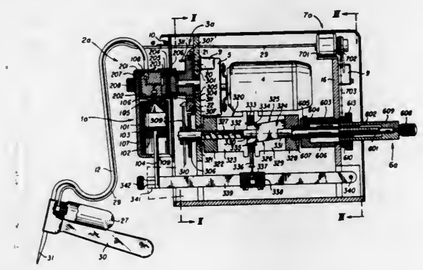
3,780,911
DISPENSING APPARATUS FOR COLLAPSIBLE TUBE CONTAINER
David L. Paige, 1682 Newfield Rd., Columbus, Ohio
Filed Jan. 3, 1972, Ser. No. 215,012
Int. Cl. B65d *35/28*
U.S. Cl. 222—101 **8 Claims**

A dispensing apparatus for ejecting paste-form substances from a collapsible-tube container is provided having a pair of interfitting, elongated channels assembled to receive a collapsible tube and permit relative limited compressive movement of the two channels. One channel is provided with an end wall for cooperatively engaging an end of the collapsible tube and restraining the tube against longitudinal movement in one direction. A roller positioned within the assembled channels for revolving movement about an axis transverse to the lon-



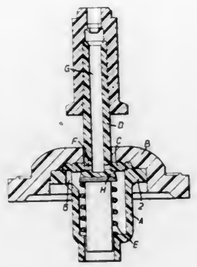
gitudinal axis of the channels is operated on by one of the channels to compress the collapsible tube disposed between the roller and the other channel. This compression expells the contents of the collapsible tube container with the relative movement of the two channels being limited to that for ejecting a predetermined quantity of the contents.

3,780,912
METERING AND DISPENSING APPARATUS
Manuel Claude Sanz, Geneva, Switzerland, assignor to Micromedic Systems, Inc., Philadelphia, Pa.
Continuation-in-part of Ser. No. 812,177, April 1, 1969, Pat. No. 3,669,319. This application Aug. 19, 1970, Ser. No. 27,289
Claims priority, application Switzerland, Apr. 2, 1968, 4868/68; Aug. 19, 1968, 12496/68
Int. Cl. G01f *11/06*
U.S. Cl. 222—282 **20 Claims**



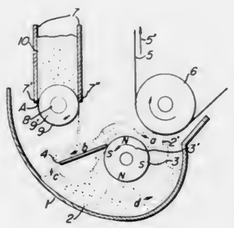
A metering and dispensing apparatus with a pump having intake and discharge strokes coupled to a switching valve which cylindrically connects the pump in open communication with a first, then a second port with an idling pause between the conditions. A mechanism converting rotary motion to sinusoidal reciprocating motion actuates the pump piston, the length of stroke of the piston being selectively adjustable within the motion conversion mechanism in accordance with an indicator indicative of the desired volume.

3,780,913
AEROSOL VALVES
William Edward Warren, Cuffley, England, assignor to Bespak Industries Limited, Hertfordshire, England
Filed Sept. 23, 1971, Ser. No. 183,148
Claims priority, application Great Britain, Sept. 30, 1970, 46,505/70
Int. Cl. B65d 83/14
U.S. Cl. 222—402.24 2 Claims



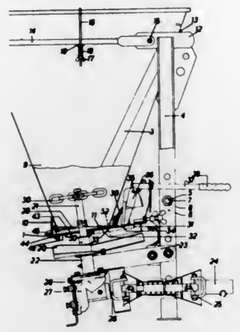
A moulded valve cup for an aerosol valve assembly which includes means for connecting the interior of the cup to the exterior thereof, the means comprising a flange at the upper end of the cup, a counter bore within the cup substantially equal to the thickness of the flange and an aperture extending through the flange in a direction parallel with the main axis of the cup and opening radially inwardly to the periphery of the counterbore over the full thickness of the flange. This construction avoids moulding problems of the prior art wherein the apertures are formed by separate movable pins in the moulding tool, which are expensive and are prone to leave vestigial flashes at their junction with a central core pin.

3,780,914
DEVELOPER PARTICLE SUPPLY DEVICE
Ryunosuke Nakano, Yokohama, and Yoshiyuki Fujiyama, Hino, both of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan
Filed Jan. 26, 1972, Ser. No. 220,870
Int. Cl. G01f 11/26
U.S. Cl. 222—407 4 Claims



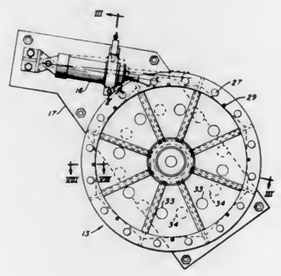
A developer particle supply device for supplying electrostatic developer particles into a developer storage chamber of an electrophotographic developing device. The supply device comprises a supply box in which the developer particles are stored and a supply roller serving as a bottom of the supply box. A space is formed between the roller and a lower end of the box to let the particles fall down therethrough. The surface of the roller is made of resilient material and a part thereof is pressed against another lower end of the box. By rotation of the roller, the particles are supplied through the space into the chamber.

3,780,915
DETACHABLE MOUNTING OF DISPENSER MACHINE PARTS
William Thomas Teagle, Blackwater, Truro, England
Filed May 4, 1971, Ser. No. 140,037
Int. Cl. B65d 47/00
U.S. Cl. 222—545 8 Claims



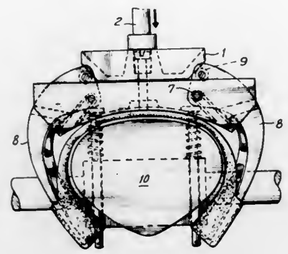
An adjustable plate for varying the size of the discharge aperture at the bottom of the hopper of a machine for broadcasting seed, fertiliser or other granular material, is supported in an aperture in a second plate, which clips onto a seat for the hopper, by means of a forked arm pivotally mounted on the second plate for movement about a vertical axis between a closed position in which the lower fork of the arm engages the underside of the adjustable plate and coacts with a pin on the latter to retain the plate in one of its positions of adjustment, and an open position in which the arm is swung clear of the adjustable plate.

3,780,916
ROTARY GATE FOR BOTTOM POUR VESSEL HAVING REMOVABLE NOZZLES
James T. Shapland, Wilkins Twp., Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Dec. 17, 1971, Ser. No. 209,034
Int. Cl. B22d 37/00
U.S. Cl. 222—555 6 Claims



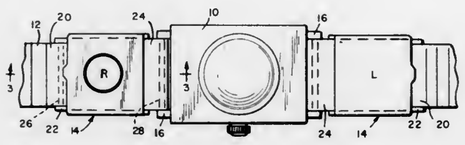
A rotary gate for a bottom-pour vessel has a plurality of removable and interchangeable refractory inserts, at least one of which has a nozzle opening therethrough. The inserts can be removed or replaced at any time they are not in the active position.

3,780,917
MACHINE HAVING GRIPPERS FOR SHAPING, FOLDING AND PRESSING COLLARS
Gunther Rosner, Sao Paulo, Brazil, assignor to G. Rosner & CIA LTDA, Sao Paulo, Brazil
Filed Feb. 7, 1972, Ser. No. 224,204
Int. Cl. A41h 43/00
U.S. Cl. 223—2 2 Claims



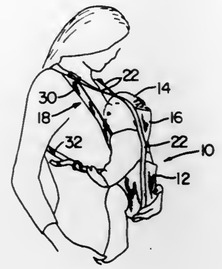
A machine to be used in the treatment of shirt collars. The machine has a stationary head against which a collar is to be placed during treatment thereof. A pair of elongated grippers are symmetrically arranged with respect to the latter head, and the head is situated between these grippers. A support structure supports the grippers for swinging movement toward and away from the head, while a suitable drive coacts with the grippers for simultaneously moving them toward and away from the head, a fluid-pressure unit coacting with the driving structure to actuate the latter to move the grippers toward and away from the head at the will of the operator of the machine.

3,780,918
WATCH BRACELET
Flora K. Curtis, 17 Barbarba Rd., Danvers, Mass.
Continuation of Ser. No. 67,043, Aug. 26, 1970, abandoned.
This application Sept. 8, 1972, Ser. No. 287,224
Int. Cl. A44c 11/00
U.S. Cl. 224—4 H 1 Claim



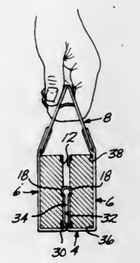
A watch bracelet of articulated or continuous construction and a pair of lens receptacles connecting the ends of the bracelet to the opposite sides of a watch, each receptacle having a pocket shaped to receive a lens and a hinged closure provided with a latch member for holding it closed until it is manually opened for the purpose of removing a lens.

3,780,919
INFANT CARRIER
Margaret S. Hansson, Boulder, Colo., assignor to Gerico, Inc., Boulder, Colo.
Filed Jan. 19, 1972, Ser. No. 218,917
Int. Cl. A47d 13/02
U.S. Cl. 224—6 9 Claims



A carrier for an infant child includes a fabric pouch in which the child can be seated having leg openings near its bottom end and a unique strap arrangement includes shoulder straps and reinforcing straps so connected to the pouch and to one another as to permit secure but adjustable suspension either from the front or back of the user. A head support is disposed between the open upper end of the pouch and the shoulder straps in a manner such that it can be retained in a head-supporting position or folded down into the pouch in an out-of-the-way position.

3,780,920
SKI CARRIER
Dale E. Green, 23109 56 West, Mountlake Terrace, Wash.
Filed Nov. 1, 1971, Ser. No. 194,272
Int. Cl. B65d 63/18, 69/00
U.S. Cl. 224—49 11 Claims

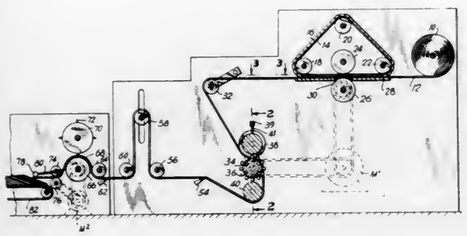


The opposing end portions of an elongated flexibly constructed strap are folded upwardly about a pair of longitudinally juxtaposed skis resting in a horizontal condition on the center portion of the strap, and a pair of handles formed on the end portions of the strap are gripped simultaneously in one hand to form a sling which, when raised, tightly corners about the skis and presses them together against a frictional interlock member that is upstanding on the center portion of the strap between the running surfaces of the skis. Moreover, to increase the frictional effect, the interlock member preferably has a pair of laterally outstanding ribs thereon which mate with the longitudinally extending grooves commonly provided in the surfaces of the skis.

3,780,921
METHOD AND APPARATUS FOR PRODUCING GANG OF SEPARABLY INTERCONNECTED ELONGATE ARTICLES

Harry J. Harp, Jenkintown, Pa., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 16, 1972, Ser. No. 263,637
Int. Cl. B26d 3/08, 9/00; B26f 3/02
U.S. Cl. 225—2 17 Claims

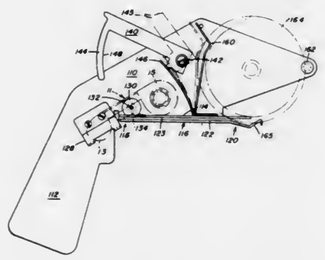


A continuous web of material is scored to delineate a plurality of separable, interconnected elongate articles each having an aperture. The apertures are used to advance the web through apparatus which comprises scoring and severing stations.

3,780,922
CARTRIDGE STRIPPER

John F. Bloemendaal, and Willis L. Stockdale, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,795
Int. Cl. G03b 1/56
U.S. Cl. 226—92 19 Claims

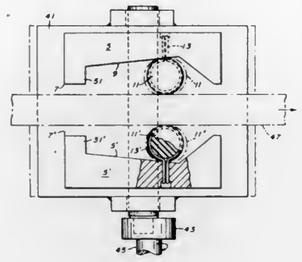


Apparatus for use in removing a strip of film from a cartridge, which film is interwound with a strip of backing material. The invention obviates the need for breaking open or otherwise mutilating the cartridge by withdrawing the backing material through the cartridge exposure aperture to, in turn, withdraw the film strip by contact with the backing material. The apparatus comprises a film guide track means and means for holding the cartridge adjacent one end of the track. A film guide means is disposed between the cartridge and the end of the track. Means is provided whereby pulling the backing paper around the film guide means and the end of the track causes the film to be withdrawn from the cartridge and to be guided into the track.

3,780,923
GRIPPING DEVICE

Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.

Division of Ser. No. 825,369, May 16, 1969, Pat. No. 3,653,708. This application Oct. 28, 1971, Ser. No. 193,599
Int. Cl. B65h 17/10
U.S. Cl. 226—151 9 Claims

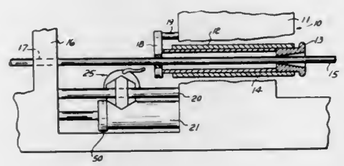


A gripping device is provided that has a pair of roller support members attached to a support means, the support members having confronting converging roller surfaces, with a resiliently secured roller on each surface in confronting relationship to the other roller. Motion of a member frictionally secured between the rollers in a direction away from the direction of convergence of the surfaces is easily achieved while any movement of the member in the direction of convergence of the surfaces causes a secure gripping of the member restraining it from such movement.

3,780,924
AUTOMATIC BAR FEEDER ATTACHMENT FOR MULTIPLE SPINDLE SCREW MACHINE

Josef Eichenhofer, Brampton, Ontario, Canada, assignor to Automatic Bar Feed Ltd., Ontario, Canada

Continuation-in-part of Ser. No. 884,653, Dec. 12, 1969, Pat. No. 3,599,852. This application May 3, 1971, Ser. No. 139,696
Int. Cl. B65h 17/22
U.S. Cl. 226—155 17 Claims

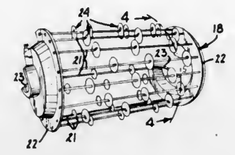


In a spindle bar machine having a hollow spindle through which a workpiece bar is cyclically advanced, a feeder formed of an elongated housing arranged transversely to the bar and rockingly mounted upon a machine shaft by a journal formed upon one end of the housing, with a motor arranged within the housing, and having a constantly rotating drive shaft extending out of the opposite end of the housing and carrying a roller arranged to periodically peripherally engage and longitudinally thrust the bar for advancing it. The housing is rocked about its journal towards and away from the bar by a housing cam follower engaging a machine. This device also includes a pneumatic push-back stop and related control equipment especially designed to fit existing multi-spindle machines.

3,780,925
RETRACTABLE WHEEL FOR PAPER GUIDING CYLINDER

Norman A. Ternes, 387 Minnesota Ave., St. Paul, Minn.

Filed Oct. 10, 1972, Ser. No. 296,116
Int. Cl. B65h 17/20
U.S. Cl. 226—191 11 Claims

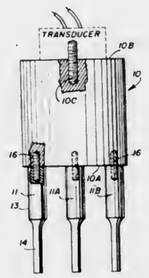


The disclosure is directed to a printed paper guiding reel or cylinder having a plurality of small wheel members defining the cylindrical paper engaging surface of the reel. Each of the wheel members is radially retractable to a position of non-engagement to permit selective positioning thereof relative to printed matter which is not yet dried. Retraction of the wheel member is effected by manual movement of the wheel relative to a supporting hub which is retainably disposed in a radial slot in the wheel. The opposite ends of the slot define positions of symmetric and eccentric rotation of the wheel. The slot is narrowed intermediate its ends to force the hub into one stable position or the other, and yielding openings are formed to permit flexure of the wheel in the area of the slot as it is moved between positions.

3,780,926
ULTRASONIC RIGID HORN ASSEMBLY

Paul H. Davis, St. Charles, Ill., assignor to Dukane Corp., St. Charles, Ill.

Filed June 2, 1972, Ser. No. 259,023
Int. Cl. B23k 5/20
U.S. Cl. 228—1 5 Claims



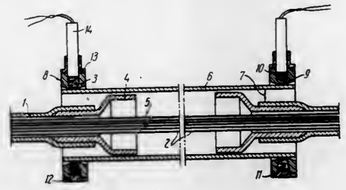
A versatile rigid horn assembly for distributing ultrasonic energy from at least one source to a plurality of spaced work areas is provided. This rigid horn assembly includes an elongated tool holder having an input region at one end and an output region at the other end. The tool holder is a horn of suitable metal and will have a length of at least one acoustical half wavelength, or any desired number of integral half wavelengths. Secured to and extending from the output end are rigid tool members, each of which is a horn and has a length of at least one acoustical half wavelength. Tool members may have lengths of integral half wavelengths, it being understood that tool members need not necessarily be of the same shape or length. The drawings illustrate various arrangements of tool members. The output end of a tool holder has means permitting attachment of a plurality of tool members, the means being arranged so that one or more various tool members may be disposed to provide different tool member patterns. The means for attaching a tool member to a tool holder includes threaded metal members each of which may be a threaded stud extending into a tapped recess in the tool holder, or elongated bolts each having an enlarged head disposed in bores extending longitudinally of the tool holder and having an interiorly shouldered part for each bore.

Alternatively, a tool member may include an integral threaded boss, or the tool holder and tools may be of brazable material and secured by brazing.

3,780,927
ENVELOPE FOR EXPLOSIVE CONNECTION OF METAL PIPES

Vladimir Mikhailovich Kudinov, ulitsa Filatova, 1/22, kv. 51; Jury Petrovich Bushtedt, Bulvar Likhacheva, 3, kv. 73; Daniil Andreevich Dudko, pereulok Mechikova, 3, kv. 7; Georgy Alexandrovich Arkangelsky, ulitsa Tsitadelnaya, 94/7, kv. 22; Georgy Ivanovich Pogoretsky, ulitsa Entuziastov, 35, kv. 151; Leonid Lexandrovich Volgin, ulitsa Erevanskaya, 14, kv. 33; Viktor Anatolievich Kotov, Goloseevo, 3, kv. 7; Boris Anatolievich Surnin, ulitsa Vandy Vasilevskoi, 3, kv. 34, all of Kiev, and Ikhail Vaslievich Degtyarev, ulitsa Polotskaya, 5, korpus 2, kv. 10, Moscow, all of U.S.S.R.

Division of Ser. No. 110,001, Jan. 27, 1971. This application Jan. 24, 1973, Ser. No. 326,270
Int. Cl. B23k 21/00; B23p 3/02
U.S. Cl. 228—3 1 Claim



The connecting together of metal pipes by explosive welding, particularly metal sheaths for communication cables in which pipes of different diameters are inserted one into another, and a ring-shaped explosive charge is disposed on the outer surface of the pipe of large diameter over the location of its prospective joint with the other pipe, whereafter explosion of the charge connects the pipes together. On the outside of the charge, an inertial envelope is formed of a material, easier to deform than the metal pipes to be welded together.

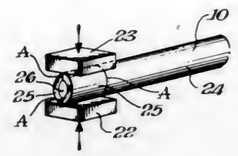
3,780,928
APPARATUS FOR STRIPPING BRITTLE WIRE INSULATION

George A. Shirn, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Dec. 23, 1971, Ser. No. 211,433
Int. Cl. B23k 29/00
U.S. Cl. 228—13 3 Claims

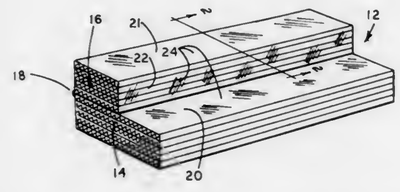
A weld of an insulated wire to a metal contact is produced by fracturing the insulation on the wire in a limited section between a pair of opposed hard, smooth surfaces to break the adhesion of the insulation to the wire followed by removing the split insulation and welding the wire cleared of insulation to the electrical contact. The removal of the insulation and the welding of the bare wire can be incorporated in a series of automatic steps for manufacturing an electrical component.

The apparatus for removing the insulation from the wire is a pair of opposing hard, smooth surfaces carried on means for



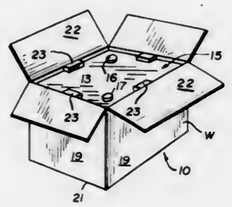
reciprocally moving the surfaces toward and away from each other to receive, compress and then release a wire section inserted between them.

3,780,929
PACKAGING CONSTRUCTION
Chris C. Terrasi, Grand Rapids, Mich., assignor to Stack-Pac Corporation, Grand Rapids, Mich.
Filed June 11, 1971, Ser. No. 152,226
Int. Cl. B65d *25/12, 5/50, 5/56*
U.S. Cl. 229—14 C **3 Claims**



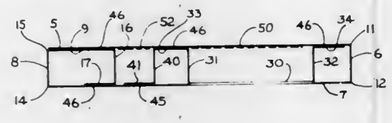
A corner post construction and a method of making same wherein an L-shaped post has a plurality of corrugated board plies adhesively secured together in a stack of such plies superimposed with respect to each other with one group of the stack being narrower than the other portion. A hinge connects the bottom narrower ply and top wider ply at a common edge. The abrasive inside edges of the narrower group of plies is coated with a soft, non-abrasive material to reduce the abrasive nature of the edge and to seal sawdust and dirt into the corner post edge. Other edges and surfaces which may contact articles within a package can also be coated.

3,780,930
PACKAGE STRUCTURE
Anthony J. Starr, Wilmington, Del., assignor to Container Corporation of America, Chicago, Ill.
Filed Mar. 31, 1972, Ser. No. 239,911
Int. Cl. B65d *5/40, 5/50, 5/60*
U.S. Cl. 229—14 BE **1 Claim**



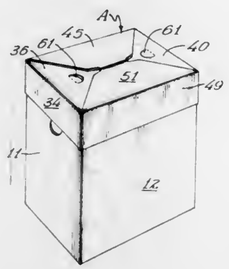
A package structure comprises a flexible hollow article having a vertical wall with vertically extending channels therein. Vertically extending load transmitting members are disposed within the channels and extend from the bottom of the article to the top thereof and an outer wrapper made of paperboard or the like surrounds the article and the load transmitting members and is in contact therewith. The wrapper, the load transmitting members, and the flexible hollow article therein are encircled by at least one flexible strapping member to take the lateral pressures incident to flowable material confined within the article. The packaging structure may be secured to a pallet having openings at the sides thereof for the entrance of the tines of a fork lift truck or the like. The load transmitting members are in bearing contact with the pallet to transmit the load from an upper package structure to a lower one.

3,780,931
COMPARTMENTED DISPLAY CONTAINER
Wallace E. Hanson, Springfield, Mass., assignor to Champion International Corporation, Hamilton, Ohio
Filed Nov. 18, 1971, Ser. No. 199,996
Int. Cl. B65d *5/48*
U.S. Cl. 229—27 **9 Claims**



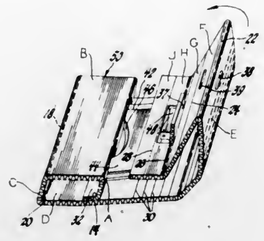
A one-piece paperboard compartmented display container is made from a T-shaped blank. The post or vertical part of the T is folded inside the container and has enough compartment-forming panels connected thereto as to divide the container into a number of compartments.

3,780,932
ONE PIECE RECLOSABLE CARTON
Edwin C. McLaren, Minneapolis, and Raymond Lund, Blaine, both of Minn., assignors to Hoermer-Waldorf Corporation, Ramsey County, Minn.
Filed Mar. 29, 1972, Ser. No. 239,228
Int. Cl. B65d *5/02*
U.S. Cl. 229—37 R **1 Claim**



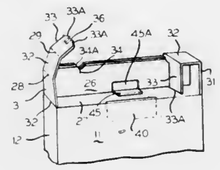
An open topped rectangular carton body is connected to a sleeve by pairs of flaps connecting the upper edges of the carton walls to the upper edges of the sleeve. In open position the flaps are substantially coplanar with the carton walls to which they are hinged. In closed position the flaps of each pair fold substantially into face contact and at right angles to the walls, closing the top of the carton body when the sleeve is telescoped onto the carton body.

3,780,933
WRAPPER FOR A SHEET METAL ARTICLE
Wayne E. Freeman, Grand Blanc, Mich., assignor to General Motors Corporation, Detriot, Mich.
Filed Apr. 12, 1972, Ser. No. 243,154
Int. Cl. B65d *65/12, 65/24, 85/54*
U.S. Cl. 229—40 **4 Claims**



A contoured wrapper-type package for shaped sheet metal articles or irregular form, the package being formed of die-cut and scored corrugated paper to provide a tubular portion of generally rectangular cross section having an aperture for accommodating a first projection on the sheet metal article, a central portion wrapped about an outer curved surface of the sheet metal article and conforming to the shape thereof, a bridging portion composed of a double thickness of the corrugated paper and adapted to extend over the concave side of the sheet metal article and terminate adjacent to the tubular portion, and a bracing portion having an aperture for engaging a second projection on the sheet metal article at a point remote from the first projection.

3,780,934
CONTAINER WITH LOAD CARRYING FEATURE
Jeffrey M. Gardner, Moline, Ill., assignor to Container Corporation, Chicago, Ill.
Filed May 22, 1972, Ser. No. 255,407
Int. Cl. B65d *5/46*
U.S. Cl. 229—52 B **Claims**



A shipping container has closure elements thereof arranged and folded to define a load carrying structure, the closure elements being first arranged in a conventional closing fashion. The container is formed from a cut and scored blank of paperboard and comprises opposed pairs of main and side panels defining a tube with closure elements foldably connected to one end of the tube to provide a closure therefor. Main and side closure flaps are foldably connected to the other end of the main and side panels and are folded into overlapping relationship to define a conventional closure for the correlative end of the tube. Such main closure flaps each have a score line therein to provide a pair of closure flap portions placed in facing relationship and a second pair of closure flap portions lying in the plane of the correlative end of the tube, such arrangement of the main closure flaps being provided so that the loaded container may be carried about after opening. The side closure flaps have spaced transversely extending scores providing a vertical side portion flanking ends of those portions of the main closure flaps in facing relationship, an intermediate portion overlying the facing flap portions and a distal portion in locking engagement with the facing flap portions.

3,780,935
SERUM SEPARATING METHOD
Michel J. Lukacs, Goshen, N.Y., and Ian H. Jacoby, Franklin Lakes, N.J., assignors to Lukacs & Jacoby Associates, Goshen, N.Y.
Filed July 10, 1972, Ser. No. 270,278
Int. Cl. B01d *21/26*
U.S. Cl. 233—1 A **3 Claims**

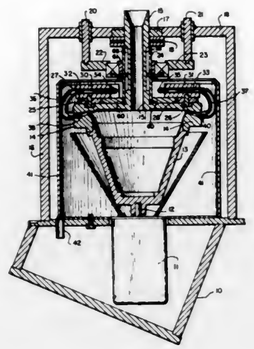


The separation of a sample of blood into serum and clot portions is accomplished by means of a sealant consisting essentially of a silicone fluid and silica dispersed therein. The separation is accomplished by inserting a device containing a supply of the sealant into a container holding a sample of the blood, the device being characterized by a nozzle portion which extends into the sample. The container and device are centrifuged so that it separates into serum and clot portions and the sealant, having a specific gravity of at least 1.026, separates the two portions.

3,780,936
MIXER-SEPARATOR FOR AUTOMATED ANALYTICAL CHEMISTRY SYSTEM
Ian E. Bush, Plainview, L. I., N.Y., assignor to The United States of America as represented by the Secretary, Department of Health, Education and Welfare, Washington, D.C.
Filed Jan. 5, 1972, Ser. No. 215,482
Int. Cl. B04b *1/14, 11/06*
U.S. Cl. 233—20 R **13 Claims**

A mixer-separator unit for use in automated analytical chemistry systems wherein two liquid phases are brought into intimate contact and then separated. The two liquids are put into a vessel where slow rotation slops them around in the ves-

sel to secure intimate mixing. Fast rotation is begun after a preset interval which results in fast and efficient centrifugal



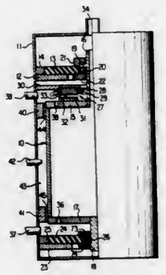
separation of the phases. After another interval tap jets are opened to withdraw the denser phase and then the lighter phase.

3,780,937

CENTRIFUGAL GAS SEPARATOR WITH ELECTRIC MOTOR DRIVE

Hisayoshi Tahara, Tokyo; Mituo Sakurai, Kawasaki, and Hayatoshi Yamada, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Feb. 24, 1971, Ser. No. 118,281
Claims priority, application Japan, Feb. 27, 1970, 45/16483
Int. Cl. B04b *9/02*
U.S. Cl. 233—24 **8 Claims**



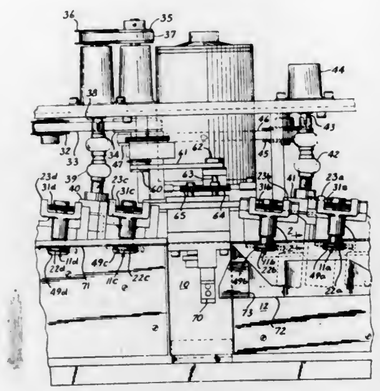
A centrifugal gas separator is disclosed which employs a vertically oriented centrifuge drum mounted on suitable bearings within a stationary housing and driven by an electric motor. The electric motor is constructed in annular form with its stator portion fixed to the stationary housing and its rotor portion fixed to the centrifuge drum and positioned generally below its stator portion. When the electric motor is energized, the magnetic attraction between its stator and rotor portions tends to lift the centrifuge drum, thereby reducing the weight supported by the bearings and reducing bearing wear. In addition, elastic or magnetic devices are alternatively provided to dampen the vibration of the rotating centrifuge drum.

3,780,938

METHOD AND APPARATUS FOR RECORDING DATA BY PERFORATING RECORD MEDIA

John E. Jones, Winnetka, and Orville T. Knutson, Antioch, both of Ill., assignors to Cummins-Allison Corp., Glenview, Ill.

Filed Jan. 31, 1972, Ser. No. 222,184
Int. Cl. G06k *1/04*
U.S. Cl. 234—1 **13 Claims**



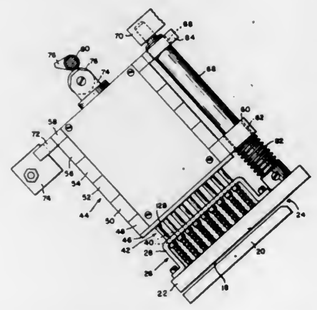
A system for perforating record media by the use of "stationary" perforating equipment, i.e., in which the punches do not move in the direction of movement of the record media. The record media is transported through the perforating equipment by frictionally engaging the surfaces of the record media with a plurality of continuously driven rollers. The continuous frictional drive applied to the record media is maintained during the perforating of the record media to obtain high throughput rates. The frictional drive rollers are skewed so as to urge the media against an inturned flange on one side of the media supporting surface. A photoelectric sensor senses the position of the record media for actuating the punches only when media is present at the perforating station.

3,780,939

SELECTIVE PUNCH

Paul E. Woodie, Baltimore, Md., assignor to American Totalisator Company, Inc., Towson, Md.

Filed Nov. 6, 1972, Ser. No. 304,195
Int. Cl. G06k *1/02*
U.S. Cl. 234—115 **8 Claims**



An apparatus for producing variable, information-bearing patterns of perforations on parking lot tickets comprises an

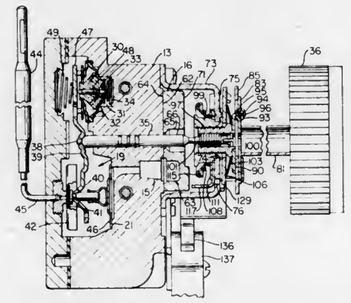
array of punches and an assembly of electrically selectable interposers which is movable as a unit whereby selected interposers operate corresponding punches. The interposers are arranged in layers, each layer of interposers being associated with a different row of punches. The interposers are guided in slots formed in individual blocks of an assembly of blocks, and are operated by solenoids mounted on circuit boards which are slidable into a mounting so that the circuit boards and interposers can be readily replaced. Maloperation of the solenoids produces an electrical signal by means of armature-operated switches utilizing foil elements on the circuit board as contacts.

3,780,940

CONTROL SYSTEM AND CONTROL DEVICE THEREFOR OR THE LIKE

Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 1, 1972, Ser. No. 258,798
Int. Cl. F23n *1/00*
U.S. Cl. 236—15 A **10 Claims**



A control device for interconnecting a source of fuel to a burner, the control device having a valve seat and a movable valve member for controlling the valve seat. A movable selector is carried by the control device and a clutch is adapted to interconnect the selector to the valve member, the clutch having means for moving the valve member from an "off" position to a full "on" position thereof, as the selector is moved in one direction from its "off" position to a first position thereof. The clutch keeps the valve member in the full "on" position thereof as the selector is moved in the one direction from the first position thereof to a second position thereof. The clutch thereafter moves the valve member from its full "on" position to a reduced "on" position thereof as the selector is moved in the one direction from the second position thereof to a third position thereof, the clutch being adapted to move the valve member from the reduced "on" position thereof back to the full "on" position thereof as the selector is moved in a direction opposite to the one direction from the third position thereof to the second position thereof.

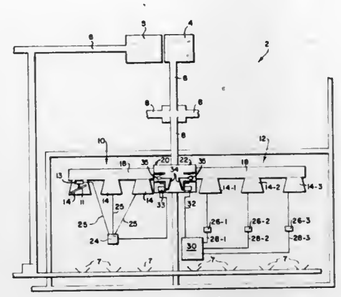
3,780,941

AIR CONDITIONING SYSTEM AND METHOD

Sam M. Blackwell, Chatham, N.J., assignor to A. I. McFarlan Company Incorporated of New Jersey, Springfield, N.J.

Filed June 29, 1972, Ser. No. 267,693
Int. Cl. G05d *7/06*
U.S. Cl. 236—49 **7 Claims**

A central air conditioning system insures acceptable operating conditions over a wide range of heat loads. Air at a controlled temperature and uniform pressure is supplied through high pressure ducts to the vicinity of each of the various zones of the building. The air for each zone then flows from the high pressure duct through a pressure-reduction box or pressure regulator to a low pressure duct from which the air is discharged through variable volume outlets which are thermostatically controlled so that they supply reduced quantities of air at reduced loads. The pressure regulator controls the flow



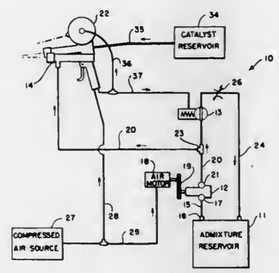
of air from the high pressure duct system to each low pressure duct so as to regulate the air pressure in the low pressure duct. The pressure regulator is controlled by the air temperature in the zone of its low pressure duct so that under low load conditions the air pressure in the low pressure duct is reduced below the pressure in that duct under high load conditions.

3,780,942

METHOD OF DISPENSING A MIXTURE OF RESIN AND EXPANDED THERMOPLASTIC SPHERES

James A. Scharfenberger, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

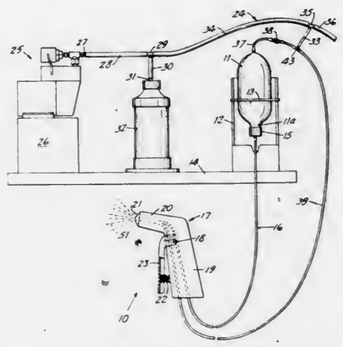
Division of Ser. No. 88,579, Nov. 12, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 293,809
Int. Cl. B05b *17/04*
U.S. Cl. 239—1 **3 Claims**



A system for and a method of dispensing an admixture including a thermosetting or thermoplastic resin and expanded thermoplastic spheres. The system includes a reservoir for the admixture. A pump, which as a rotary pump, has its inlet connected to the reservoir and is adapted to withdraw the admixture from the reservoir. The length of time that the admixture is subjected to such pressure of the pump is insufficient to either cause harmful rupturing of the expanded spheres or to cause generation of heat of sufficient magnitude to cause harmful curing of the resin. A dispensing apparatus is connected to the outlet of the pump and is adapted to spray the admixture when activated. A valve may be connected between the outlet of the pump and the reservoir. The valve is adapted to terminate the flow of the admixture to the dispensing ap-

paratus upon de-activation of the dispensing apparatus and to return the admixture withdrawn from the reservoir by the pump to the reservoir. The system may include a pressure balancing device to regulate the pressure of the system so that the system experiences little, if any, pressure differences when the system is cycled.

3,780,943
SPRAY APPARATUS AND METHOD
Duane F. Lilja, 2408 Central Ave., Minneapolis, Minn.
Filed Aug. 14, 1972, Ser. No. 280,476
Int. Cl. A01g *25/02*
U.S. Cl. 239—8 **13 Claims**



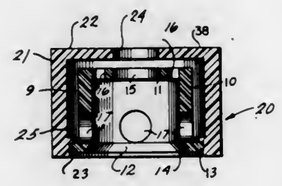
A spray apparatus and method operable to concurrently discharge a spray product and air under pressure upon a surface. The air progressively atomizes the spray product upon discharge from an applicator to convert it into a fine, particulate, uniform spray. Air supply means provides air under pressure to a spray applicator as well as a spray product reservoir. Erratic air pressure fluctuation is not present in the reservoir. The air pressure requirement for the spray apparatus is relatively small.

3,780,944
DRINKING STRAWS
Stanley G. Zubalik, 126 S. 127th St., Tacoma, Wash.
Filed Feb. 14, 1972, Ser. No. 225,951
Int. Cl. A47g *19/22*
U.S. Cl. 239—33 **9 Claims**



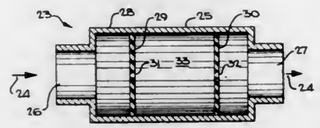
A drinking straw is compacted for storage, transport and especially for direct attachment to beverage containers designed for individual use and normally serving one person, such as those dispensed by vending machines. Also drinking straws are compacted for direct attachment in a group on other larger beverage containers such as family size, which are designed to contain multiple normal servings, thereby providing straws for more than one person. The availability of multiple straws, for example, is especially desirable when ice cream floats are served to a group.

3,780,945
FLUID IONIZATION
Nathaniel Hughes, Corona Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation-in-part of Ser. Nos. 827,451, April 23, 1969, Pat. No. 3,554,443, and Ser. No. 85,911, Nov. 2, 1970 abandoned.
This application Feb. 18, 1972, Ser. No. 227,589
Int. Cl. B05b *3/14*
U.S. Cl. 239—102 **6 Claims**



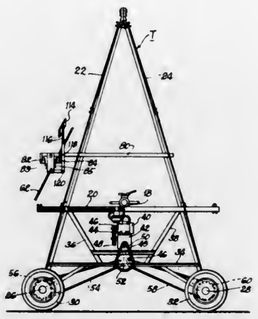
Pressure waves and ionization are produced by an energizing cell that is preferably made from a dielectric material such as Teflon. The cells are disclosed in several different configurations that serve to increase the level of ionization. A mixture is highly ionized by energizing one or more of its components prior to the formation of the mixture. If all the components are not separately energized, the mixture as a whole is energized after its formation. Important applications of the invention are in a paint sprayer and in an internal combustion engine, where engine emissions are reduced and engine performance is improved.

3,780,946
SELF-CLEANING EMITTER
Allan L. Smith, 4728 Bellue St., Carmichael, Calif., and James G. Bowen, 8875 N. Winding Way, Fair Oaks, Calif.
Filed May 30, 1972, Ser. No. 257,780
Int. Cl. B05b *15/02*
U.S. Cl. 239—107 **10 Claims**



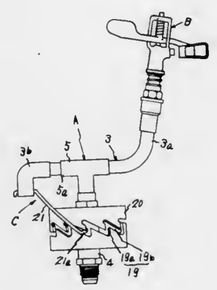
Formed within an emitter body is an elongated channel extending between a fluid inlet port and a fluid discharge port. The cross-sectional area of the channel is small in order to limit the fluid flow to a low level. To obviate clogging by sand particles, and the like, each channel has located transversely therein at least two spaced-apart resilient diaphragms each provided with a central orifice capable of enlarging as a particle lodges in the orifice and causes a pressure differential between the two opposite surfaces of the diaphragm. As the orifice expands, the particle is impelled through the orifice, thereby unclogging the orifice. This process is repeated as the particle proceeds through the emitter, the particle finally emerging from the emitter's discharge port onto the adjacent ground surface.

3,780,947
MOBILE IRRIGATION APPARATUS AND ALIGNMENT CONTROL
Max H. Ririe, Gering; Murray C. Roland, and Rich Olson, both of Scottsbluff, all of Nebr., assignors to Lockwood Corporation, Gering, Nebr.
Continuation-in-part of Ser. No. 129,793, March 31, 1971, Pat. No. 3,712,544. This application Mar. 24, 1972, Ser. No. 237,692
Int. Cl. B05b *3/00*
U.S. Cl. 239—177 **8 Claims**



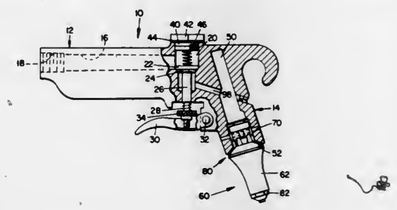
A mobile irrigation system which makes use of an elongate water distributor pipe mounted upon support towers for movement over terrain in which switch actuating means in each of the control towers is stabilized to minimize inadvertent movements and adjusted to compensate for wind effect with the result that better alignment is achieved between towers.

3,780,948
APPARATUS FOR AUTOMATICALLY SPRINKLING LIQUIDS
Hiromu Kumaoka, 214, Tokuda, Kibi-cho, Areta-gun, Wakayama-ken, Japan
Filed Apr. 17, 1972, Ser. No. 244,666
Int. Cl. B05b *3/08*
U.S. Cl. 239—236 **3 Claims**



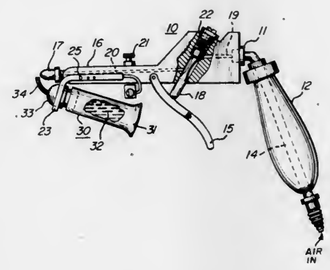
An apparatus for automatically sprinkling a liquid comprising a liquid supply vertical tube connected at its lower end to a liquid supply source, a swivel tube connected to the upper end of the vertical tube and adapted to be swivelled about the axis of the vertical tube while guiding the liquid from the vertical tube toward a horizontal or obliquely upward direction, a sprinkler having a jet nozzle and mounted on the distal end of the swivel tube and automatically rotatable by the jet energy of the liquid, the sprinkler being so positioned that the axis thereof intersects the axis of the vertical tube at an angle greater than 0° but smaller than 90°, and swivel control means mounted on the connection of the vertical tube and the swivel tube for swivelling the swivel tube while intermittently and angularly displacing the same in a definite direction by utilizing the reaction force of the liquid jet delivered from the sprinkler.

3,780,949
PRESSURE REDUCING AIR GUN
Thomas M. Gavin, 35 Roseland Ter., Longmeadow, Mass.
Filed Nov. 24, 1972, Ser. No. 309,065
Int. Cl. B05b *1/28*
U.S. Cl. 239—291 **3 Claims**



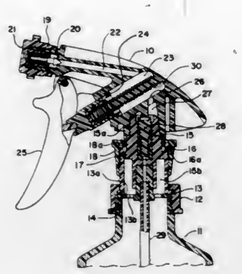
An air gun designed to offer extra protection in the forms of an air screen barrier developed around a main discharged air stream to reduce the danger of chip fly back and air overload pressure relief means for reducing static nozzle pressure to a value less than any value as established by any regulatory agency for safety purposes.

3,780,950
PAINT ACCOMODATING MODULES ADAPTED FOR USE WITH SPRAY GUNS
William B. Brennan, 26 Nottingham Rd., Edison, N.J.
Filed Feb. 7, 1972, Ser. No. 223,978
Int. Cl. B05b *7/08, 7/24*
U.S. Cl. 239—306 **7 Claims**



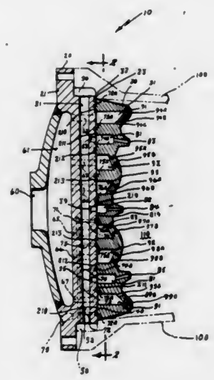
A paint containing module comprises a reservoir portion for containing a liquid such as paint. The reservoir portion is fabricated from a flexible transparent material and this portion communicates via an aperture with a liquid discharge portion having an arcuate arm with a liquid passageway, the passageway communicates with the reservoir portion at one end of the arm and with a tip portion at the other end of the arm. When the tip is held in close proximity to the nozzle of a spray gun the liquid is drawn via the passageway and discharged.

3,780,951
LEAKPROOF HEAD FOR HAND SPRAYER
Richard T. Powers, Cincinnati, Ohio, assignor to The AFA Corporation of Florida, Miami Lakes, Fla.
Filed Jan. 30, 1973, Ser. No. 327,968
Int. Cl. B65d *83/14*
U.S. Cl. 239—333 **8 Claims**



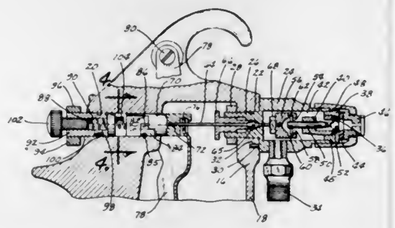
A hand-operated liquid sprayer attached to a liquid container is provided with a hand rotatable screw collar which can be screwed up or down to open or close an atmospheric vent passage to the container and thus to prevent liquid leakage from the container through the vent when the vent passage is closed regardless of the attitude of the container, and, to allow atmospheric venting of the container's interior when the vent passage is open.

3,780,952
TENSION BRAZED FACE INJECTOR
David H. Huang, Woodland Hills, Calif., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.
Filed May 17, 1972, Ser. No. 254,140
Int. Cl. F02m *55/00*
U.S. Cl. 239—424.5 **3 Claims**



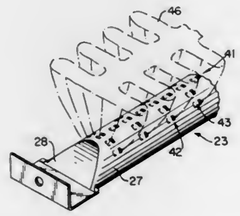
An injector for a liquid propellant rocket engine and a method of manufacturing the injector. The injector comprises a body structure portion of high strength, lightweight alloy to which is tension brazed a faceplate portion of nickel at each of the joints formed at the body structure-faceplate interface. Each brazed joint is divided by a purge groove. The interface as a whole, and the plurality of brazed joints, may be considered to be basically a flat-face brazed joint with its principal workload in tension. As a result of the segmented construction of the injector, and because of the purge grooves therein, the structural soundness of each brazed joint can be statically tested and definitely ascertained, prior to actual use of the injector, by pressurizing the purge grooves, and noting if there is any drop in the pressure. Additionally, premature contact by the liquid propellant constituents (e.g., fuel and oxidizer), because of leakage between propellant manifolds in the injector while the injector is in use, in flight or otherwse, is prevented by introducing an inert (i.e., non-reactive) gas pressurant, such as nitrogen, into the purge grooves at a pressure which is higher than the propellant constituents. Further, the method of manufacture permits the simple, reliable, low cost, and relatively rapid fabrication of the injector.

3,780,953
AIRLESS SPRAY GUN
Jerry P. Malec, 5108 N. 85th St., Omaha, Nebr.
Filed Jan. 21, 1972, Ser. No. 219,699
Int. Cl. B05b *1/30*
U.S. Cl. 239—526 **6 Claims**



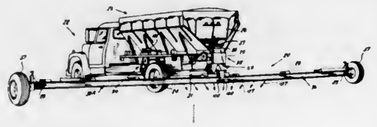
An airless spray gun is disclosed herein which has a substantially reduced number of component parts. The gun includes a trigger locking assembly for preventing the actuation of the spray gun as desired. The airless spray gun also includes a novel valve rod and means for detachably mounting the same in the gun which permits rapid assembly and disassembly of the gun. An improved valve seat is also disclosed which substantially reduces the cost of manufacturing the same.

3,780,954
BURNER CONSTRUCTION
Francis S. Genbauffs, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 37,654, May 15, 1970, Pat. No. 3,647,146.
This application Dec. 13, 1971, Ser. No. 207,675
Int. Cl. B05b *1/14*
U.S. Cl. 239—560 **5 Claims**



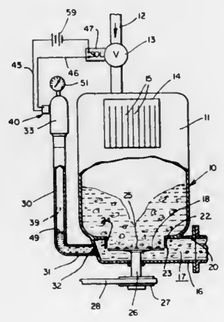
A burner construction having wall means defining a chamber for receiving fuel from a source thereof, the wall means having a plurality of port means passing therethrough and interconnecting the exterior of the wall means with the chamber whereby fuel will issue from the chamber out through the port means. The port means are arranged in a pattern through the wall means to define a first row of aligned spaced port means and a plurality of second rows of aligned spaced port means transverse and adjacent to the first row in spaced parallel relation to each other with the spacing between adjacent second rows being greater than the spacing between adjacent port means in the first row so that secondary air will be provided in a sufficient amount for all of the port means of the burner construction for proper fuel combustion.

3,780,955
METHOD AND APPARATUS FOR SPREADING A FERTILIZING MATERIAL
Harold S. Palmer, Oskaloosa, Iowa, assignor to Productive Acres Mfg., Co., Oskaloosa, Iowa
Filed Mar. 22, 1972, Ser. No. 237,162
Int. Cl. A01c *19/00*; **E01c** *19/20*
U.S. Cl. 239—672 **4 Claims**



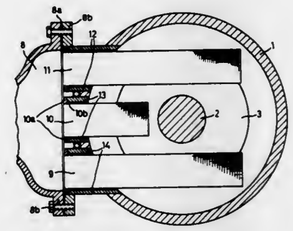
The method and apparatus provides for material from the discharge outlet of a vehicle body being divided into a predetermined number of equal but separate streams of material. A spreader belt projected transversely from one side of the vehicle body is divided transversely into sections corresponding in number to one half of the material streams. Each of the material streams is channeled to a corresponding transverse section on a spreader belt, after which the material is levelled to a uniform depth over the complete width of a spreader belt. The material is then progressively discharged to the ground at a constant rate in one direction transversely of a spreader belt and over the longitudinal length of such belt.

3,780,956
LIQUID LEVEL CONTROL FOR PULPING APPARATUS
Blaine Monroe Miller, Jr., Malvern; Wayne T. Buckman, Pipersville, and Ellis R. Warner, Jr., West Chester, all of Pa., assignors to The Hobart Manufacturing Company, Troy, Ohio
Filed Sept. 28, 1971, Ser. No. 184,460
Int. Cl. B02c *13/14*
U.S. Cl. 241—34 **9 Claims**



A liquid level control is provided for a pulping apparatus, wherein the pulping apparatus is of the type that is adapted to receive waste and other debris, along with water, for abrading or otherwise comminuting the waste in a water medium within the pulper, and then for discharging a slurry formed thereby, wherein the liquid level within the pulper must continuously or periodically be replaced. A closed-ended vertically disposed line is tapped into the lower end of the pulper, and adapted to receive liquid therein, with air being trapped at the upper end of the vertically disposed member. The trapped air is adapted for actuating a switch, which in turn actuates a valve or other suitable means for controlling the amount of water or other liquid to be supplied to the pulper. A pressure gauge may also be provided at the upper end of the closed-ended tubular member, in order to give a visual indication of the pressure of the trapped air. Also, a restricter may be provided between the lower end of the vertically disposed tubular member and the trapped air at the upper end that actuates the switch, for the purpose of retarding fluctuations, or providing a dampening effect with respect to fluctuations attendant to substantially instantaneous reductions in water level and/or pressure within the pulper.

3,780,957
SCREEN ARRANGEMENT FOR STIRRING MILLS
Karl-Heinz Wilhelm, Bobstadt, Germany, assignor to Firma Draiswerke GmbH, Manheim, Germany
Filed July 19, 1971, Ser. No. 163,672
Claims priority, application Germany, July 28, 1970, P 20 37 258.1
Int. Cl. B02c *13/284*, *17/16*
U.S. Cl. 241—172 **10 Claims**

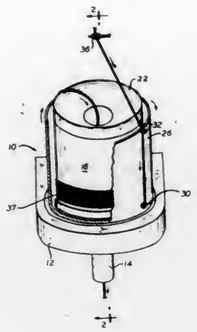


A closed stirring mill for processing solid materials in liquids having a stirrer and a plurality of spherical grinding elements and a screen arrangement at the ground material outlet to hold back the grinding elements wherein the screen arrangement consists of one or more screen cartridges attached to the jacket wall or the cover plate of the mill.

3,780,958
YARN FEEDING AND STORAGE DEVICE FOR TEXTILE PRODUCING MACHINE
Jose Castillo Deniega, Elmhurst, and Edward M. Tellerman, Woodmere, both of N.Y., assignors to Wesco Industries Corporation, Plainview, N.Y.
Filed Sept. 28, 1971, Ser. No. 184,527
Int. Cl. B65h *51/20*
U.S. Cl. 242—47.12 **3 Claims**

There is disclosed a device for feeding a filament from a supply thereof to a machine wherein said filament may be used for knitting, weaving or spooling. A storage drum is fixedly mounted at one end thereof to a frame member. The filament is guided in a first direction, from a supply thereof to a

position adjacent said one end of the drum, where it is wound about the drum to form a plurality of windings which advance in a second direction, opposite to said first direction, toward the other end of the drum. The filament is drawn off the drum



in said second direction to the other end of the drum, where it reverses direction and travels through an internal passage in the drum, in said first direction, and through an aperture in the frame member, toward the machine requiring said filament.

3,780,959

SUPPLY AND TAKE-UP SYSTEM FOR FILM AND THE LIKE

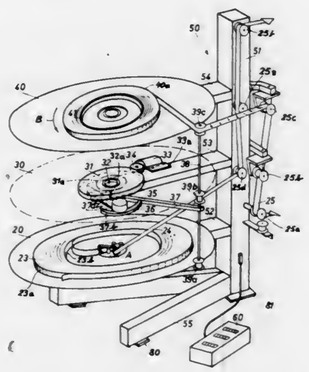
Willi Burth, Marienplatz 4, Ravensburg, Germany

Division of Ser. No. 874,334, Nov. 5, 1969, Pat. No. 3,661,337. This application Nov. 3, 1971, Ser. No. 195,228

Claims priority, application Germany, Oct. 18, 1964, P 19 52 592.9. The portion of the term of this patent subsequent to May 9, 1989, has been disclaimed.

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.18 **12 Claims**



A pair of coaxial horizontal disks, driven by respective motors, respectively support a supply coil and a take-up coil of a film strip passing through a projector on its way from the first to the second disk. A central cutout in the first disk accommodates the pivot of a lever whose free end has a bifurcation engaging a portion of the unwinding film strip formed into a loop by a pair of rollers disposed in the cutout downstream of that bifurcation. If the loop tightens or expands because of insufficient or excessive relative unreeling speed, the lever is deflected in one direction or the other to actuate one of two sensitive switches in a manner modifying the speed ratio of the two motors to restore the normal shape of the loop whereby the lever returns to a centered position.

3,780,960

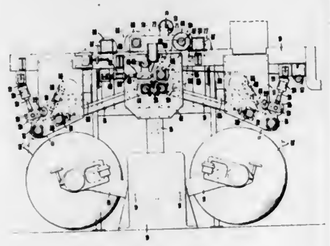
WEB SPLICING APPARATUS

Masateru Tokuno, Nishinomiya, and Tetsuya Sawada, Kyoto, both of Japan, assignors to Rengo Kabushiki Kaisha (Rengo Co., Ltd.), Osaka, Japan

Filed Oct. 6, 1971, Ser. No. 187,107

Int. Cl. B65h *19/18*

U.S. Cl. 242—58.1 **3 Claims**



A web splicing apparatus has a pair of bilaterally disposed suction boxes with a plurality of conveyor belts passing over the suction bozes and conveying liner paper toward the opposite terminal sections of the boxes while the liner paper is being sucked by the action of said suction boxes. Outlet rolls and press rolls disposed above the opposite terminal sections of the suction boxes guide the liner paper which has been transported by the conveyor belts over the suction boxes upwardly by holding the paper therebetween. Guide plates guide the liner paper transported by said rolls to a next apparatus for treating the paper. Means is provided for controlling the press rolls so that they separate from the outlet rolls or move into pressure contact with the outlet rolls during paper feeding for splicing the tip of a liner paper transported by one of the conveyor belts with another liner paper. A cutter is also provided for severing the butt of the liner paper after splicing, and a pair of holder means for holding webs is also provided.

3,780,961

CONTROLS FOR SPOOLING APPARATUS

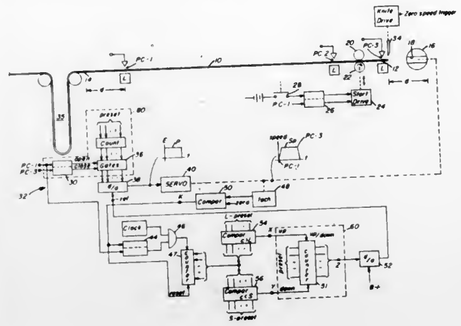
Ghassan N. Kahwati, Rochester; John N. Gade, Rush; James D. MacKay, Webster, all of N.Y., and Conrad J. Druzynski, Loveland, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 13, 1971, Ser. No. 143,059

Int. Cl. B65h *25/22*

U.S. Cl. 242—67.3 R **9 Claims**

A digital count is converted to an analog signal for application to a servo for driving spooling apparatus. The duration during which the spooling occurs is clocked. In the event the clocked duration gets to be too long, or short, the reference for the digital-to-analog converter is adjusted, respectively to increase or decrease the input to the servo. At one point during spooling, the count is gradually reduced (down-counting) to a certain level corresponding to a low spooling speed. The



duration for low speed spooling is also clocked, and the time for starting down-counting is regulated to keep constant the duration for low speed spooling.

3,780,962

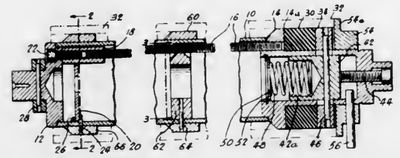
LIGHT RIGID MANDREL ABLE TO ENGAGE PAPER OR FIBRE TUBES

Josef Sykora, Drummondville, Quebec, Canada, assignor to Celanese Canada Limited, Montreal, Quebec, Canada

Filed June 1, 1972, Ser. No. 258,647

Int. Cl. B65h *75/24*

U.S. Cl. 242—72 **6 Claims**



A light rigid mandrel able to engage paper or fibre tubes so as to overcome the deflection of the tubes and prevent bunching of fabric as well as greatly reduce the damage generally caused by gripping. The mandrel comprises a tubular high strength aluminum body rigidly held under compression . The tubular aluminum body is provided with a deformable material able to engage an inner part of the paper or fibre tubes, so that light and inexpensive paper tubes could be used successfully for the first time.

3,780,963

WIRE-LOOPING APPARATUS

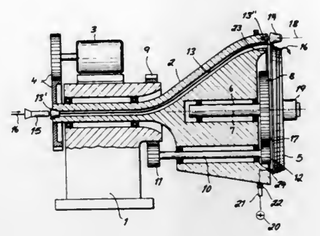
Horst-Dieter Hirschfelder, Langenfeld, Germany, assignor to Fried Krupp Gesellschaft mit Beschrankter Haftung, Altendorfer, Germany

Filed Nov. 9, 1971, Ser. No. 196,962

Int. Cl. B21c *47/14*

U.S. Cl. 242—82 **7 Claims**

Wire coming hot from a rolling mill traverses an eccentric duct in a rotating body and emerges therefrom at the periphery of a frustoconical disk which is centered on the axis of rotation and is held stationary by a planetary-gear system. A tapering guide roller, journaled on the body adjacent the outlet of the duct, helps wind the emerging wire about the disk periphery from which the wire loops slide off axially, the roller



axis being oriented skew to the axis of rotation to impart an axial component to the motion of the wire exiting from the rotating body.

3,780,964

DISPENSER HOUSING FOR WIRE AND THE LIKE

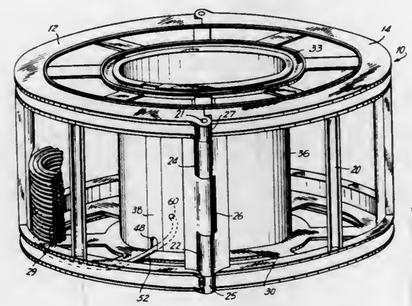
Jose Angel Fernandez-Colmeiro Gonzalez, Vigo, Spain, assignor to Fernandez-Colmeiro S.A., Vigo Pontevedra, Spain

Filed Feb. 9, 1972, Ser. No. 224,685

Claims priority, application Spain, Feb. 13, 1971, 388231

Int. Cl. B65h *49/00*

U.S. Cl. 242—129 **10 Claims**

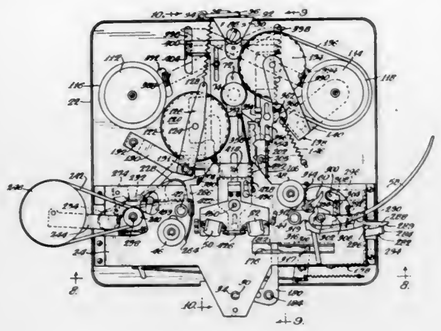


A spool for a coil of wire or other product includes a core about which a coil is wound and a housing disposed about the coil. The housing includes a pair of spaced disks to which the core is secured and a cylindrical section disposed between the outer peripheries of the spaced disks. The core consists of a tube and a connector which secures the tube to the disks, whereby the core is removable from the housing while leaving the coil intact within the housing. The two ends of the coil may be led to the center of the coil in such a manner that it is possible to carry out a continuous operation whereby the ends of one spool may be joined to the end of another spool, and this may be repeated as many times as necessary to join any number of spools as one continuous line so that as one coil is unwound, the next one automatically begins to unwind and so on down the line.

3,780,965
TAPE RECORDER

Norman L. Williams, Villa Park, and Allen L. Ryan, Chicago, both of Ill., assignors to Warwick Electronics Inc., Chicago, Ill.

Division of Ser. No. 666,739, Sept. 11, 1967, Pat. No. 3,606,202. This application Mar. 22, 1971, Ser. No. 126,914
Int. Cl. G11b 15/22
U.S. Cl. 242—204 5 Claims

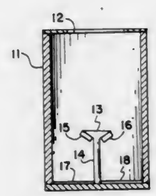


A two directional tape recorder apparatus having means for automatically threading tape from a supply reel to a take-up reel; means for effecting record, erase, and playback functions in either direction of movement of the tape; means for automatically reversing the direction of movement of the tape; and means for shifting transducing heads into operative association with different tracks on the tape during tape reversal. A scissors brake mechanism is provided for stopping supply and take-up turntables and to release the turntables for rotation during wind, rewind, fast wind and fast rewind operations; and a single control is provided to actuate separate slide members for selecting wind and rewind, and fast wind and fast rewind functions, with means being provided for shifting tape away from the transducing heads during fast wind and fast rewind functions.

3,780,966
ATTITUDE SENSOR

Arthur L. Newcomb, Jr., and Aubrey G. Price, both of Seaford, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 14, 1972, Ser. No. 289,049
Int. Cl. B64g 1/10
U.S. Cl. 244—1 SA 5 Claims

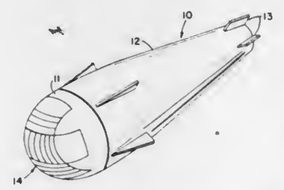


The invention consists essentially of two light sensors on a spacecraft that are mounted beneath a baffle which divides the light from a light source such as the sun or a star. The divided light reflects off of two reflective surfaces onto the two light sensors. When the spacecraft assumes its normal attitude the baffle divides the light from the light source into two equal parts cuasing the two light sensors to produce equal outputs. An electrical circuit containing the two sensors produces a zero voltage output when the outputs of the two light sensors are equal thereby indicating that the spacecraft is in its normal attitude relative to the light source. While the spacecraft is not in its normal attitude relative to the light source the two light sensors produce unequal outputs causing the electrical circuit to produce an output voltage. The amplitude and polarity of this output voltage are indicative of the attitude of the spacecraft and can be applied to the controls of the spacecraft to return it to its normal attitude.

3,780,967
HOMING MISSILE

Ernst T. Evers, and Robert L. Morgan, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 602,453, Dec. 13, 1966 abandoned. This application July 3, 1972, Ser. No. 268,248
Int. Cl. F42b 15/16, 15/00, 15/02
U.S. Cl. 244—3.16 2 Claims



A uniform array of quasi-optical horn shaped baffles are carried on the hemispherical nose of a missile. The horns are so made that each one has a field—of—view of a discrete portion of the space around the missile nose. Each horn is generally a hollow wedge with its point on the longitudinal axis of the missile, its open base on the nose of the missile, and with a photocell inside near its point. A discrete horn provides an output from its photocell for a particular point-source target. Each output causes a unique output from a digital—to—analog converter. The output of the converter is the input to a controller for the steering fins of the missile.

3,780,968
SOLID PROPELLANT ROCKET ENGINE CONTROL AND MISSILE CONFIGURATIONS

Arthur R. Parilla, P.O. Box 127, Mountain Lakes, N.J.

Continuation of Ser. No. 784,818, Dec. 18, 1968, which is a division of Ser. No. 607,068, Jan. 3, 1967, Pat. No. 3,489,373, which is a continuation-in-part of Ser. No. 302,222, June 14, 1963, abandoned. This application Dec. 16, 1971, Ser. No. 208,996
Int. Cl. F41g 7/00; F42b 5/18
U.S. Cl. 244—3.22 2 Claims

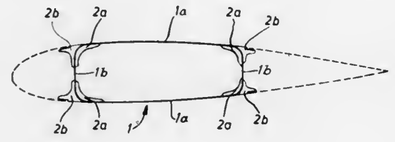
The shaping of solid propellant charges for rocket engines to provide increased acceleration at missile launch without exceeding maximum acceleration near burnout while minimizing missile size and weight. Illustrative is a long-range ballistic missile having multiple rocket engine stages arranged in tandem, in which each stage has a reaction nozzle and associated propellant charge having a shape which is coordinated with the missile flight trajectory including a substantially conical or frusto-conical configuration providing a burning surface which decreases in area with burning time. Variable area reaction nozzles can be employed in each stage in combination with the conically-shaped propellant charges to optimize engine efficiency and increase engine versatility.



3,780,969
WING CASE FOR AIR FOILS

Helmut Nussbaum, Bremen, and Hilmar Schnell, Delmenhorst, both of Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed Feb. 29, 1972, Ser. No. 230,236
Claims priority, application Germany, Mar. 2, 1971, P 21 09 692.4
Int. Cl. B64c 3/20, 3/26
U.S. Cl. 244—123 3 Claims



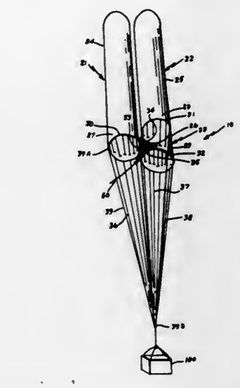
Wing case for air foils with a closed profile shell of laminated plastic reenforced preferably by boron fibers with different orientation; flanged bars as spars sandwich the shell at corners and being bonded thereto. Aluminum ribs are in the shell, the spars are preferably made of titanium, the numbers of lamina with fiber orientations in direction of wing span and ribs correspond to the differences in elastic properties of the two metals used for ribs and spars.

3,780,970
PARACHUTE APPARATUS

William R. Pinnell, Dayton, Ohio, assignor to The United states of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 27, 1972, Ser. No. 266,788
Int. Cl. B64d 17/34, 17/06
U.S. Cl. 244—152 4 Claims

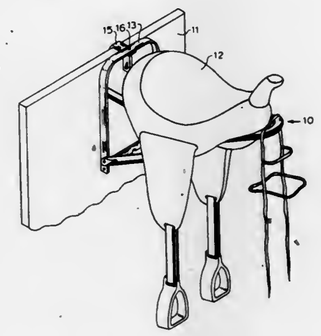
A parachute apparatus which includes a plurality of identical parachutes, each of which has a canopy, with the parachutes releasably connected together by a clustering web assembly. When the parachute apparatus is deployed with a common payload, the parachutes, with the clustering web assembly releasably connected thereto, form a cluster and carry the common payload. The web assembly holds a portion of the canopy of each of the parachutes in a reefed condition. At a preselected time, or at a preselected atmospheric pressure (or altitude), during descent of the clustered parachutes, the web assembly permits the simultaneous disreefing of all of the parachute canopies. As a result, all of the canopies simultaneously open; then they spread; and, then they inflate to the fully open position, simultaneously. Therefore, none of the canopies need be designed to withstand the overload which normally occurs because of the frequent non-simultaneous opening, and subsequent non-simultaneous inflating, of the canopies in a cluster of parachutes during descent. Further, the current need for the use of additional (and redundant) parachutes in a cluster to assure payload recovery when one or more canopies of the parachutes, which are normally in the cluster, fail to open and/or to inflate to the fully open position during descent, is obviated. The common payload is, thereby, safely delivered.



3,780,971
COLLAPSIBLE SADDLE RACK

Fred A. De Filipps, Maitland, Fla., assignor to The Fifth Third Bank, Cincinnati, Ohio

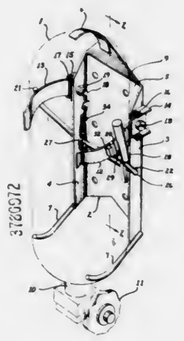
Filed Mar. 29, 1972, Ser. No. 239,212
Int. Cl. A47f 5/00
U.S. Cl. 248—309 4 Claims



A portable and collapsible saddle rack apparatus having a frame with a member for attaching and detaching the saddle

rack to a fence board, stall door, or the like. The frame has saddle supporting member hinged thereto and a supporting brace member also hinged to the frame and shaped in a manner to engage the saddle support member for locking it in place for supporting the saddle and which may be disengaged for collapsing the saddle rack. The brace member extends through the saddle support member with a portion protruding thereabove for holding the saddle on the saddle support member and for hanging bridle.

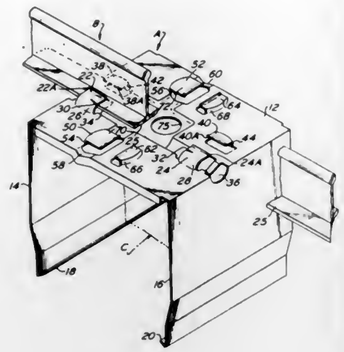
3,780,972
MOUNTING APPARATUS FOR GAS CONTAINERS
John C. Brodersen, 3017 W. Almeria, Phoenix, Ariz.
Filed May 22, 1972, Ser. No. 255,793
Int. Cl. A62c *39/00*
U.S. Cl. 248—313 **10 Claims**



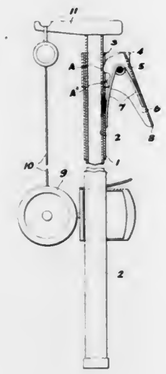
A mounting apparatus is disclosed for mounting oxygen filled gas containers used in conjunction with breathing apparatus during rescue operations. A base piece includes retaining members for positioning and retaining the gas container in the longitudinal axis. A pair of selectively actuated clamping arms extend from the base piece for positioning and retaining the gas container in the remaining two axes. A manually operated lever mechanism engages each of the clamping arms and locks the clamping arms about the gas container in a first position. In a second position, the manual lever mechanism releases the pair of clamping arms to permit the gas container to be withdrawn from the mounting apparatus. Supporting apparatus is also disclosed for supporting and storing the gas container in either a vertical or a horizontal position. The support apparatus includes quick release locking mechanisms operating in conjunction with pivotable support apparatus to permit quick access to the mounted gas containers.

3,780,973
HANGER FOR LIGHTING FIXTURES
John Dalton, Jr., Willingboro, N.J., assignor to Keystone Lighting Corporation, Bristol, Pa.
Continuation of Ser. No. 236,706, March 21, 1972, abandoned. This application Dec. 15, 1972, Ser. No. 315,492
Int. Cl. F16b *1/00*
U.S. Cl. 248—342 **15 Claims**

A hanger for supporting lighting fixtures from inverted T-bars of a suspended ceiling includes an inverted U-shaped member with a flat central portion and depending legs. Pairs of spaced tabs are struck from the central portion and extend in a plane thereabove facing in the same direction. Integrally struck clips face opposite the tabs and are spaced therefrom by a distance such that the width of the T-bar flange can be accommodated between the lips of the clips and the rear wall of the tabs. Arcuate depressions below the tabs and coextensive with the dimension across the hanger allow the hanger to be pivoted about the T-bar flange and then slidably interlocked under the clips by detents.

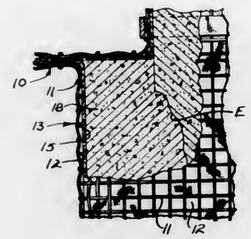


3,780,974
DEVICE FOR THE FIXING, BEING COMBINED WITH SLOW LOWERING, OF THE SLIDING POLE OF A PORTABLE MOTION PICTURE SCREEN STAND
Sasuke Takahashi, 34/11, Yasunakacho-6-chome, Yao City, Prefecture of Osaka, Japan
Filed Dec. 27, 1971, Ser. No. 212,001
Claims priority, application Japan, Dec. 30, 1970, 45/128356
Int. Cl. F16b *7/10*
U.S. Cl. 248—411 **3 Claims**



A device for the locking and slow lowering of the sliding pole of a portable motion picture screen stand, which is characterized by mounting a sliding pole into a hollow supporting pole so that the former can go up and down along the inside of the latter supporting piece is fixed to a hole which is provided at the upper part or at an appropriate part of the hollow supporting pole and a lever is hinged to said supporting piece by an axis. In addition, the lower end of said lever projects from the outside of the hollow supporting pole by the force of a spring and the inside of the lever comes in contact with the outside of the sliding pole with the upper and lower points of contact which are provided at about even distance from the axis and which have a dent therebetween.

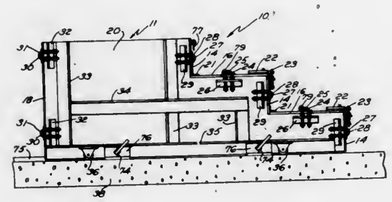
3,780,975
MEANS FOR PRODUCING CAST-IN-PLACE STRUCTURES IN SITU
Lee A. Turzillo, 2078 Glengary Rd., Akron, Ohio
Filed Nov. 23, 1971, Ser. No. 203,103
Int. Cl. E02d *5/60*
U.S. Cl. 249—1 **4 Claims**



Laminated sheet material, and apparatus utilizing the same, for producing and/or repairing structural bodies of self-hardening fluid cementitious material in a sub-aqueous and/or subterranian situs. Sheet material includes wire-mesh backing, and porous fabric bonded thereto, substantially without blocking of fabric pores, and is adapted for supplying in rolls or sheets to be cut and selectively formed at the situs into matrices or molds having body-forming cavities for producing or repairing concrete structures of many shapes and sizes.

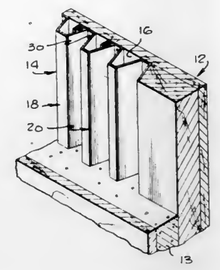
The apparatus includes such laminated sheeting formed as a substantially rigid matrix, suitably reinforced and/or anchored at the situs to have porous fabric layers presented inwardly, to define matrix cavity walls backed by the openwork material. Fluid cementitious material supplied to the matrix cavity adapted to harden into structural body corresponding to shape of matrix cavity, after which matrix can be readily removed therefrom.

3,780,976
CONCRETE FORM ASSEMBLY HAVING EXPANDABLE INNER CORE
Albert J. Messier, Mendon St., Blackstone, Mass.
Filed June 21, 1971, Ser. No. 154,919
Int. Cl. B28b *7/22*
U.S. Cl. 249—14 **8 Claims**



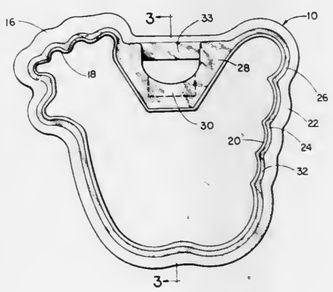
A form assembly for prefabricating a concrete structure by casting that includes an outer member and an inner member between which a cavity is defined, the inner member having expandable walls that are urged outwardly by jack elements and that are releasable to provide for removal of the inner and outer members after the structure is cast and is still curing in place.

3,780,977
CONCRETE FORM LINER
Stephan S. Dashew, Los Angeles, Calif., assignor to La Mesa Industries, Inc., Los Angeles, Calif.
Filed Dec. 10, 1971, Ser. No. 206,686
Int. Cl. E04g *11/08*; **B28b** *7/00*; **E04g** *9/08*
U.S. Cl. 249—15 **4 Claims**



A liner assembly for attaching to a structural concrete form to provide a desired texture to concrete walls and columns, including multiple form liner elements constructed to be snapped together and attached to the structural form. Each of the elements is trough shaped, with an inner wall and pair of side walls, one of the side walls having a flange with a first hook at its end, and the other side wall having a second hook and a retainer near the second hook. The form liner elements can be snapped together, with the first hook of one element retained between the second hook and retainer of another form liner element in an overlapping, interlocking connection, and the flanges of each of the elements can be nailed or otherwise fastened to the structural form. The interlocking elements allow an architect to vary the wall texture or pattern at selected areas, such as at doorways, and facilitates reuse of the liners because they can be taken apart and reassembled to any desired wall size, the interlocking feature preventing leakage of concrete between the liner elements.

3,780,978
FOOD COOKING FORM
Donald W. Proul, 1506 Mariners Dr., Newport Beach, Calif.
Filed Mar. 27, 1972, Ser. No. 238,438
Int. Cl. B28b *7/34*, *7/38*
U.S. Cl. 249—135 **2 Claims**



The invention provides a form which is used in conjunction with a frypan or grill for cooking foods. By confining eggs or batter or other food to be cooked to the area within the form, food products can be given an interesting and appealing ap-

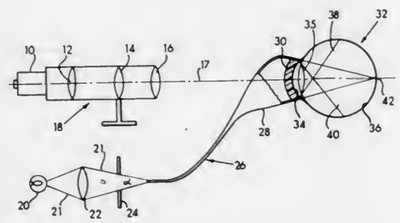
pearance. More than that, however, use of the form permits control of product thickness and provides a food product whose taste and "feel" differ from what that product would have in the absence of the form. The form is made of heat conductive metal, is plastic coated, and has mass and weight so that when used in conjunction with the hot surface of a frypan or grill, food is cooked rapidly at its outer edges and at its bottom to form a shell in which still-liquid portions of the body of foodstuff are contained when the form is lifted away to be used again.

3,780,979

ADJUSTABLE FUNDUS ILLUMINATION

Henri F. de Guillebon, South Hamilton, Mass., assignor to Clinitex, Inc., Danvers, Mass.

Filed May 12, 1972, Ser. No. 252,838
Int. Cl. G02b *5/16*; **A61b** *3/10, 3/14*
U.S. Cl. 351—16 **13 Claims**



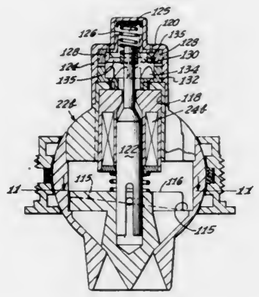
Method and apparatus are provided for wide angle illumination of the fundus of the eye. Even illumination of the fundus is obtained by adjustment of the input light to the optical fibers which controls the light beam transmitted from the fibers and the intensity and distribution thereof on the fundus.

3,780,980

REMOTELY CONTROLLED VENTILATION VALVE

Allen Kallel, Santa Ana, Calif., assignor to Wemac Company, Santa Ana, Calif.

Continuation of Ser. No. 829,672, June 29, 1969, abandoned. This application June 17, 1971, Ser. No. 154,215
Int. Cl. F16k *31/10*
U.S. Cl. 251—138 **12 Claims**



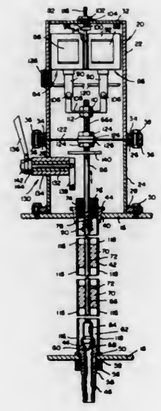
In an airplane ventilation system an overhead pressurized air outlet directs an air stream downward towards a passenger and is provided with a valve operated by a solenoid-actuated reciprocative means that cooperates with circumferential sets of teeth. The solenoid reciprocates the reciprocative means to cause the fixed teeth to rotate the reciprocative means step-by-step for operating the valve.

3,780,981

AUTOMATIC TANK PLUG VALVE

Vladimir Horak, 353 High St., Closter, N.J., and John Vretenar, 9110 Kennedy Blvd., North Bergen, N.J.

Filed Jan. 24, 1972, Ser. No. 220,231
Int. Cl. F16k *1/38, 31/10*
U.S. Cl. 251—144 **10 Claims**



An automatic plug valve is mounted within a tank containing fluid to be dispensed through an outlet opening having a valve seat. The valve includes a valve head having a conical shape which conforms to the frusto-conical shape of the valve seat. A valve stem is connected to the valve head and extends exteriorly of the tank. Automatic actuating means is provided to lift the valve stem and valve head at selected intervals, and manual adjustment means, located exteriorly of the tank, are provided for raising and lowering the valve actuating means to selectively regulate the distance through which the valve head is elevated.

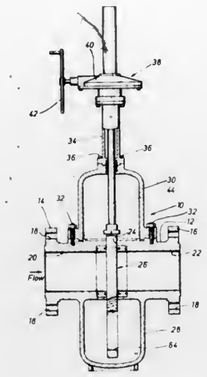
3,780,982

CONTROL PORTS FOR GATE VALVE STRUCTURE

Willard E. Kemp, Houston, Tex., assignor to ACF Industries, Inc., New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,287
Int. Cl. F16k *3/00*
U.S. Cl. 251—210 **9 Claims**

A gate valve structure having a slab gate with a relatively large diameter main port or bore therethrough and a plurality of relatively small diameter bores adjacent the main bore. Upstream and downstream seating assemblies are positioned on opposed sides of the slab gate. The small diameter control ports or bores have longitudinal axes inclined outwardly with respect to the upstream seating assembly with the inclination being of a magnitude to permit the downstream ends of the small diameter bores to clear the downstream seating assembly before the upstream ends of the bores are in fluid communication with the flowline thereby to minimize the fluid pressure differential upon the initial opening of the main bore.

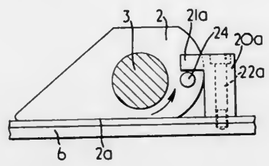


3,780,983

VALVES FOR CONTROLLING FLUID FLOW

Alan Eric Topham, 19 Kingston Rd., and Cedric Henry Topham, Woodlands View, Grindale Rd., both of Boynton, Bridlington, England

Filed Dec. 6, 1971, Ser. No. 205,268
Claims priority, application Great Britain, Dec. 7, 1970, 58031/70
Int. Cl. F16k *5/14*
U.S. Cl. 251—158 **3 Claims**



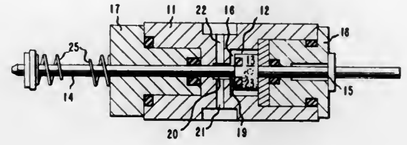
The invention refers to a quick acting valve of the kind in which a stopper co-operating with a seating in the valve body bore is carried by spring-loading means on an operating spindle extending across the back of the stopper and across the bore of the valve body, the spindle carrying at least one cam co-acting with the back of the stopper for effecting quick opening and closing rotation of the latter bodily with the spindle and also initial lifting and final seating movement of the stopper. The valve mechanism includes the provision of at least one stop member secured on the back of the stopper and arranged to be contacted by the cam or a projection from the latter during initial rotation of the cam for effecting, positive lifting of the stopper from its seating in the valve body bore for rotation with the cam, i.e., in the event of high fluid pressure acting on the back of the stopper and overcoming the normal lifting action of the spring loading means.

3,780,984

APPARATUS AND METHOD FOR FLUID HANDLING AND SAMPLING

William J. Ambrose, Springfield, Pa., and James E. McErlane, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 753,199, Aug. 16, 1968. This application Mar. 4, 1971, Ser. No. 121,147
Int. Cl. F16k *1/32*
U.S. Cl. 251—282 **3 Claims**



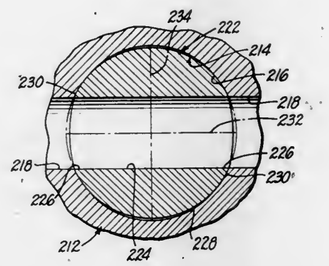
An apparatus and a method for handling and sampling fluids which comprises principally a nonpumping valve designed so that in operation it moves less than a microliter of fluid, and a pumping valve designed to aspirate a precisely determined amount of fluid into the body of the valve with no more motion than is inherent in the operation of the valve itself and with no change in the physical dimensions of the valve. These valves, when used in combination with a transfer probe and a pump designed to handle minute quantities of fluid, form a precision fluid handling and sampling system which will not contaminate or dilute the fluid to be sampled.

3,780,985

VALVE WITH ELLIPTICAL SEALING

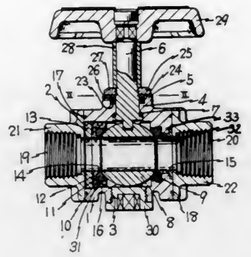
Dean A. Perry, 2235 W. 229th Pl., Torrance, Calif.

Filed Apr. 24, 1972, Ser. No. 246,765
Int. Cl. F16k *5/02, 5/06*
U.S. Cl. 251—309 **5 Claims**



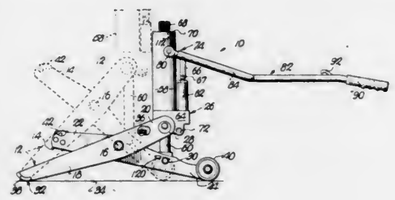
A plug or ball valve wherein either the rotary valve member, or its chamber in the valve body, is substantially elliptical in a plane perpendicular to the axis of rotation, with the axes of the ellipse so oriented that the clearances between the surface of the valve member and the surface of the valve chamber are a minimum around the ports in the valve body in the closed position of the valve member, and are a maximum intermediate the ports in the valve body in the closed position of the valve member. With this construction, maximum sealing effectiveness in the closed position of the valve member is achieved, along with other advantages, such as reducing the torque required to rotate the valve member.

3,780,986
BALL VALVE
Katsuji Fujiwara, 191, Nishitani, Hiraaka-cho, Kakogawa-shi, Hyogo-ken, Japan
Filed Apr. 12, 1972, Ser. No. 243,354
Claims priority, application Japan, Apr. 28, 1971, 46/34234
Int. Cl. F16k 5/06
U.S. Cl. 251—315 6 Claims



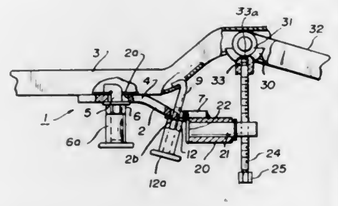
A ball valve includes a main body having an axially extending passageway within which a valve body is positioned. Within the passageway, the opposite sides of the valve body are fitted against valve seat members. One valve seat member is secured by a valve seat retainer which is adjustably secured within the passageway by a corrugated washer and an adjusting member in threaded engagement with the main body, the other valve seat is held by a projection on the main body which extends radially inwardly into the passageway. Extending annularly about the radially outer surfaces of each valve seat member is an annular groove which accommodates any heat expansion of the valve seat members. At each end of the passageway, an end member is clamped to the main body, one end member forms an inlet port and the other forms an outlet port. The ball valve can be easily disassembled for inspection purposes and its simple arrangement makes it easy to manipulate and maintain.

3,780,987
LOW PROFILE JACK FOR FORK LIFT TRUCKS
Roger L. Craft, and Gilbert W. Gaarder, both of St. Joseph, Mo., assignors to Gray Manufacturing Company, Inc., St. Joseph, Mo.
Filed July 9, 1971, Ser. No. 161,191
Int. Cl. B60p 1/48; B66f 3/22
U.S. Cl. 254—8 R 34 Claims



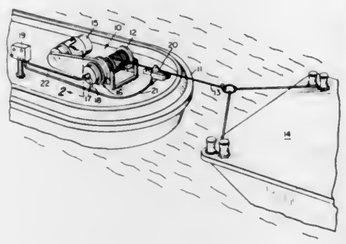
A low profile lifting jack having a walking beam frame with an object-engaging lifting member that travels in an arcuate path upwardly and forwardly toward the vehicle being lifted during the power stroke of the jack. A lift pad carried on the lifting member is movable between two positions presenting concavo-convex surfaces respectively for engagement with the vehicle being lifted. A permanently attached manual handle operates a fluid actuator integrally carried on the jack and is pivotal between a position facilitating transporting the jack, and another horizontal position for storage. The fluid actuator folds from a vertical operating position to a low, generally horizontal storing and carrying position.

3,780,988
BUSHING REPAIRING METHOD AND TOOL
John H. Castoe, Sunland, Calif., assignor to Branick Manufacturing Company, Fargo, N. Dak.
Filed Apr. 3, 1972, Ser. No. 240,352
Int. Cl. B66f 3/36, 3/00
U.S. Cl. 254—100 6 Claims



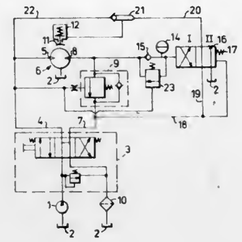
A bushing replacement tool including a saddle member to embrace and permit lowering of an end of the control arm of a front wheel assembly of a vehicle for servicing or removal of a bushing thereof. The saddle member is attached to a threaded shaft which imparts upward and downward movement of the saddle member as desired. The shaft is supported in a support bracket of the support member which is adapted to be attached to the underside of the vehicle.

3,780,989
TOWING WINCH
Earl A. Peterson, 4111 Chestnut Ave., Long Beach, Calif.
Filed Aug. 12, 1971, Ser. No. 171,278
Int. Cl. B66d 1/48
U.S. Cl. 254—173 R 11 Claims



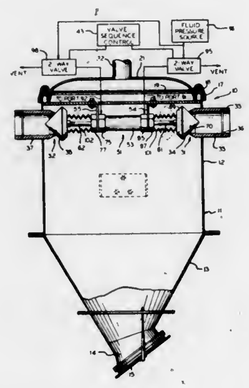
A towing winch incorporating apparatus for maintaining controlled tension in a towing cable and relative distance between the towing and towed object. A towing vessel is supplied with a winch incorporating a clutch capable of maintaining controlled tension in a towing cable. The clutch is controlled by a regulator system which is responsive to changes in the tension in the towing cable altering the output torque of the clutch to maintain a predetermined level of tension in the towing cable. Apparatus responsive to the linear displacement of the towing cable maintains a predetermined linear distance between the towing vessel and towed object.

3,780,990
BRAKE CONTROLLING DEVICE
Sven Bertil Gosta Edlund, and Bo Frans Ake Sodersten, both of Gullanget, Sweden, assignors to AB Hagglund & Soner, Ornskoldsvik, Sweden
Filed Jan. 24, 1972, Ser. No. 220,133
Claims priority, application Sweden, Jan. 28, 1971, 1029/71
Int. Cl. B66d 1/48, 5/02
U.S. Cl. 254—173 2 Claims



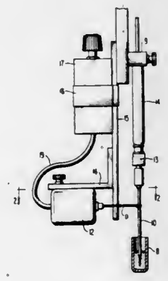
The present invention relates to a device for controlling the brake in winches which are driven by a hydraulic motor and have a brake which is engaged when not actuated and arranged to disengage when a pressure medium is delivered to a hydraulic cylinder connected to the brake. The invention is chiefly characterized by a brake controlling unit which is connected to the high pressure side of the motor and is arranged to regulate the supply of pressure medium to the brake's hydraulic cylinder, depending on the size of the motor load, so that during a lifting operation, the brake releases only after the pressure on the motor's high pressure side substantially corresponds to the pressure required to balance the load. In addition, means are provided to release the brake at a pressure during lowering of the load, independent of the size of the load.

3,780,991
PROPORTIONING HOPPER FOR GRANULAR MATERIALS
Arthur J. Evans, Northville, Mich., and Joseph C. Morin, New Westminister, British Columbia, Canada, assignors to Whitlock, Inc., Farmington, Mich.
Filed Aug. 17, 1972, Ser. No. 281,530
Int. Cl. B01f 5/00, 15/04
U.S. Cl. 259—18 7 Claims



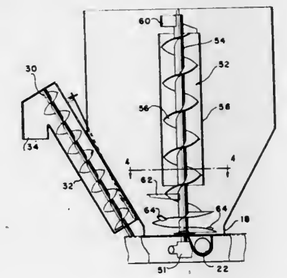
A proportioning hopper for granular plastics and like materials, having two aligned inlet ports on opposite sides of the hopper, with two conical closure members of moderately soft elastomer material each engaging one port in a line contact seal to close the port. A double-acting pneumatic or hydraulic cylinder retracts the closure members to admit material to the hopper; a biasing spring in the cylinder normally maintains both ports closed. The two closure members cannot be held open simultaneously. A timing and sequence control actuates the cylinder to open the ports alternately in timed sequence to mix two different materials in the hopper in predetermined proportions.

3,780,992
VIBRATING PIPETTE PROBE MIXER
Hiroshi H. Nishi, and Charles McCarthy, both of Rockville, Md., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.
Filed July 17, 1972, Ser. No. 272,144
Int. Cl. B01f 11/00, 15/02
U.S. Cl. 259—19 6 Claims



A vibrating pipette probe mixer is disclosed having means to vibrate the pipette so that when delivering extremely small quantities of liquid, accurate mixing and dispensing is achieved. The vibrating means may be either a mechanical vibrator attached to the pipette by a stiff wire or a fluidic oscillator attached to the pipette by opposing disc shaped diaphragms.

3,780,993
AGITATING EXTENSIONS FOR THE CENTRAL MIXING AUGER OF A GRINDER-MIXER
Charles M. Kline, Reinholds, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed May 31, 1972, Ser. No. 258,174
Int. Cl. B01f 5/12
U.S. Cl. 259—97 6 Claims



The present invention relates to the provision of a plurality of agitating extensions to the lower auger flighting of the cen-

tral mixing auger of a grinder-mixer of the type having a tank supported on a mobile frame. The agitating extensions are fixed directly to the lower flighting and project outwardly therefrom with the outer ends thereof terminate in close proximity to the side walls of the tank, thereby tending to engage and agitate material being contained within the lower portion of the mixing tank.

3,780,994

METHOD OF AND MEANS FOR ADJUSTING THE FLOW OF PLASTIC MATERIAL IN AN EXTRUDER CYLINDER

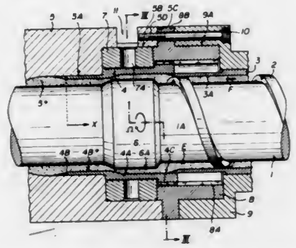
Klaus Kneller, Nurensdorf, Switzerland, and Gerard Schaeffer, Ambilly, France, assignors to Schweizerische Industrie-Gelellschaft, Neuhausen am Rheinfall, Switzerland

Filed Dec. 3, 1971, Ser. No. 204,488

Claims priority, application Switzerland, Dec. 22, 1970, 19028/70

Int. Cl. B29b 1/10; B30b 15/00

U.S. Cl. 259—191 **10 Claims**



To facilitate the linear adjustment of the flow rate of plastic material delivered by an extruder, of the type wherein a feed screw coaxially turns in a cylinder, an annular flow space is formed between the cylinder and an unthreaded downstream extension of the feed screw, this flow space including a constricted annular passage of variable length defined between two relatively axially shiftable collars on the cylinder and on the screw extension. In a specific embodiment, the cylinder is divided into an upstream section, a downstream section and an axially shiftable middle section, the latter carrying the outer one of the two collars and being held against rotation while a nut threadedly engaging that middle section is manually rotatable to displace it between a position of mutual alignment and a position of complete relative offset of these collars.

3,780,995

FEEDING ATTACHMENT FOR MACHINE PROCESSING FOAMABLE PLASTIC MATERIALS

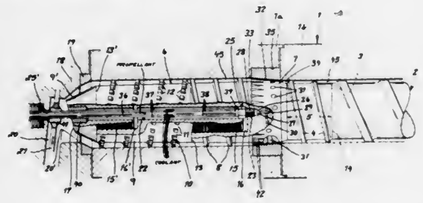
Erwin Burkle, Benediktbeuren, and Felix Loebe, Munich, both of Germany, assignors to Krauss-Maffel Aktiengesellschaft, Munich, Germany

Filed Nov. 1, 1971, Ser. No. 194,656

Claims priority, application Germany, Oct. 31, 1970, P 20 53 646.3

Int. Cl. B01f 7/08

U.S. Cl. 259—193 **27 Claims**



An attachment for a molding machine, serving to prepare an injectable mass including a propellant, has a plasticizing screw which feeds a mass of liquefied plastic material to a narrow peripheral gap between a rotating mixing head and a housing. One or more passages, connected to a source or propellant, open generally radially into this gap to admix the propellant with the plastic mass in a region in which this mass forms a thin layer moving perpendicularly to these passages.

3,780,996

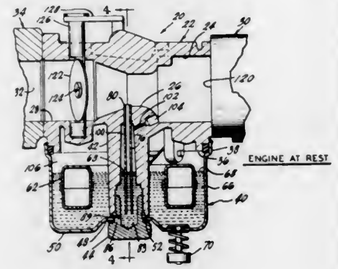
SELF-PRIMING CARBURETOR

Warren D. Nutten, Grafton, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation of Ser. No. 40,563, May 26, 1970, abandoned. This application Jan. 8, 1973, Ser. No. 322,029

Int. Cl. F02m 1/16

U.S. Cl. 261—72 **17 Claims**



A self-priming chokeless carburetor having only a throttle valve in the air-fuel mixture conduit supplemented by a relatively large priming well disposed serially between a fixed metering orifice communicating with the float bowl reservoir and the inlet to the main nozzle tube of the carburetor. When the engine is not running, the priming well fills with fuel to the level of the fuel in the float bowl. When the engine is cranked for starting, the supply of fuel in the well is drawn up the main nozzle to supply a rich mixture for starting. When the engine is running, the well cannot refill because fuel is aspirated from the well as fast as it is supplied thereto by the metering orifice.

3,780,997

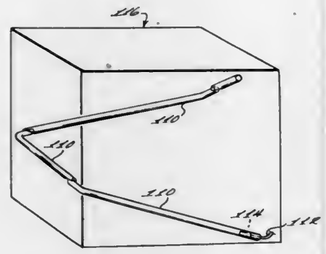
AEROBIC SEWAGE TREATMENT

William J. Hargraves, Dunedin, Fla., assignor to Bertran & Hargraves, Inc., Tampa, Fla.

Division of Ser. No. 813,242, April 3, 1969, abandoned. This application Apr. 19, 1971, Ser. No. 134,968

Int. Cl. B01f 3/04

U.S. Cl. 261—77 **4 Claims**



Diffuser means for effecting contact between gas and a mass of liquid sewage comprising a plurality of open ended, inclined air lift pipes immersed one above another in said sewage.

3,780,998

AERATING AND AGITATING DEVICE

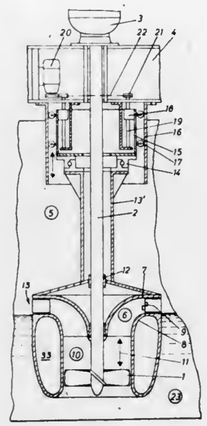
Bertram Botsch, Karlsruhe, Germany, assignor to Maschinenfabrik H. Geiger, Karlsruhe, Germany

Filed Dec. 21, 1970, Ser. No. 100,304

Claims priority, application Germany, Dec. 20, 1969, P 19 64 308.4

Int. Cl. B01f 7/16

U.S. Cl. 261—91 **17 Claims**



An apparatus for the aeration and agitation of fluids including a vertically suspended pumping wheel submerged in the fluid and a turbine wheel having outlet openings above the fluid surface, the pumping wheel creating a flow directed to the turbine wheel.

3,780,999

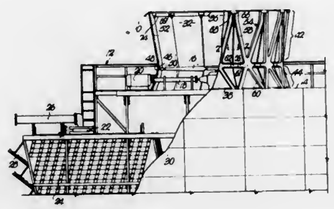
RIBBED FAN AIRFLOW STACK FOR WATER COOLING TOWER

Homer E. Fordyce, Kansas City, Mo., assignor to The Marley Company, Mission, Kans.

Filed Feb. 9, 1971, Ser. No. 113,857

Int. Cl. B01f 3/04

U.S. Cl. 261—109 **7 Claims**



A venturi-like airflow stack for induced draft water cooling towers employs a series of elongated, upright, longitudinally curved and transversely arcuate stave-like panels joined together by a series of releasable interconnections at their butt joints to form the wall of the stack. Each panel is provided with an external hoop length at the zone of greatest internal restriction; and opposed upper and lower V-shaped ribs having apexes which meet at a common junction with the respective hoop lengths. The hoop lengths and ribs are tubular in nature and are integral with the panels. Each hoop length is releasably coupled with its adjacent length and each leg of the upper ribs is releasably coupled with the proximal leg of the next adjacent panel for strengthening the wall and holding it against distortion.

3,781,000

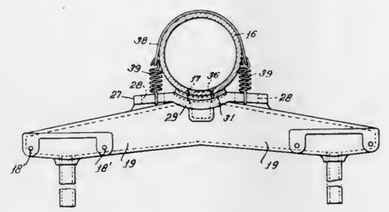
SPRING AND BOSS SPARGER-MOUNTING

Cornelis W. Paasschens, Schwalbach/Taunus, Germany, and Victor J. Nelson, Naperville, Ill., assignors to Chicago Bridge & Iron Company, Aurora, Ill.

Continuation of Ser. No. 845,377, July 28, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,364

Int. Cl. B01f 3/04

U.S. Cl. 261—124 **5 Claims**



A single or double sparger unit is held accurately positioned on a header by the combination of a boss formed on the saddle portion of the sparger unit, and which projects into an aperture in the header through which air is supplied to the sparger unit, and a spring system embracing the header and drawing the sparger unit into sealed relationship with the header. A saddle shaped portion of the sparger unit, surrounding the boss, engages the header through a sealing gasket. The spring system includes one or more stainless steel spring fasteners. Each fastener includes a band with a spring at each end hooked through a hole in the band and hooked to the sparger unit

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3,781,001

FEEDING ORES OR CONCENTRATES TO SMELTING FURNACES

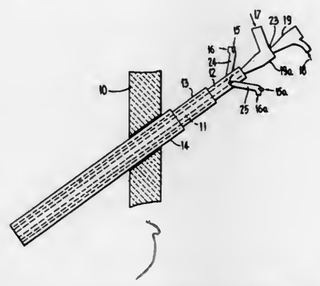
Barry Stewart Andrews, Glen Iris; Desmond Elwyn Fitzgerald, Blackburn, and Ian Edward Lewis, Valentine, all of Australia, assignors to Conzinc Riotinto of Australia, Limited, Melbourne, Victoria, Australia

Filed May 25, 1971, Ser. No. 146,670

Claims priority, application Australia, June 1, 1970, 1373/70

Int. Cl. C21b 7/16; C21c 5/48

U.S. Cl. 266—41 **12 Claims**



Method and apparatus for feeding particulate materials such as ores and/or concentrates and/or metal containing re-

treat materials, e.g., copper concentrate metal containing slags and the like to smelting and other furnaces. A stream of particulate material and oxygen-containing gas is delivered into the furnace through the first pipe, and a mixture of fuel and oxygen-containing gas is delivered through an annular space between the first pipe and a surrounding second pipe, the mixture of fuel and oxygen-containing gas being ignited as it enters the furnace so as to form a flame envelope surrounding the stream of particulate materials.

3,781,002

DUAL COAXIAL TUYERES

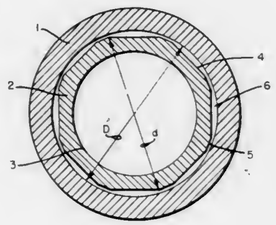
Camille Alphonse Courard, Angluer, Belgium, assignor to Centre de Recherches Metallurgiques, Brussels, Belgium

Filed Nov. 17, 1972, Ser. No. 307,697

Claims priority, application Belgium, Nov. 18, 1971, 775,527

Int. Cl. C21c *5/48*

U.S. Cl. 266—41 **6 Claims**



A dual coaxial duct tuyere for blowing oxygen and a protective fluid through the bottom of a metallurgical convertor, the outer duct being of a cylindrical shape and of dimensions adapted to receive the inner duct which has a circular passage coaxial with the outer cylinder and an external configuration comprised of at least six straight sides connected to each other by short arcuate sections, the length of each arcuate section being less than one-third the length of the straight sides.

3,781,003

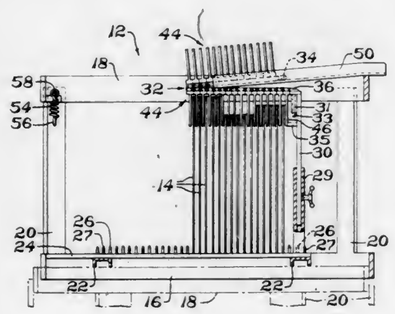
HANDLING GLASS-PLASTIC ASSEMBLIES

Willie G. DeAngelis, Brackenridge, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 12, 1972, Ser. No. 252,797

Int. Cl. B25b *11/20;* **B32b** *31/26*

U.S. Cl. 269—40 **7 Claims**



Apparatus for supporting a plurality of glass-plastic assemblies for lamination in an autoclave comprising bottom edge support structure including aligned bottom edge spacing elements, flexibly interconnected top edge engaging and spacing elements, and structure for making rigid the flexible interconnecting elements on which the top edge engaging and spacing elements are mounted.

3,781,004

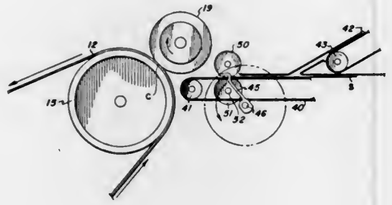
CONVEYING SYSTEM FOR ELECTROSTATOGRAPHIC PRINTING MACHINES

Gerald A. Buddendeck, Penfield; Lawrence C. Hubler, Fairport; Paul S. Heiler, Penfield, and Gilbert E. Koch, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1972, Ser. No. 284,829

Int. Cl. B65h *5/02, 9/06*

U.S. Cl. 271—10 **2 Claims**



An electrostatographic printing machine employing sheet conveyance along a path through the machine from a supply source to a sheet output delivery point having at least two conveyor mechanisms adapted to convey sheets along the paper path each at a different speed and a switching device arranged between the two conveyor mechanisms operatively connected to a time sequence programming system which controls the feeding or introduction of sheets of paper from the supply point to the first of the conveyor mechanisms in the paper path.

3,781,005

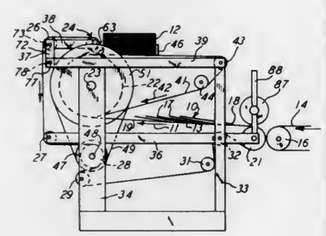
SHEET STACKER

Anton R. Stobb, and Walter J. Stobb, both of R.D. No. 1, Pittstown, N.J.

Filed Apr. 14, 1972, Ser. No. 244,199

Int. Cl. B65h *29/18*

U.S. Cl. 271—186 **6 Claims**



The sheet stacker having a supporting frame and two sets of conveyor belts for conveying a shingled stream of sheets therebetween and into an upwardly growing stack of sheets. One set of belts terminates adjacent the stack, and the other set of belts extends across the bottom of the stack to convey the sheets into the stack. A rotatable member exists at the terminal end of the one set of belts, and sheet-advancing mechanism is mounted on and driven by the terminal end of the one set of belts to engage the stream of sheets and urge them into the stack. A pivotally mounted support arm mounts the terminal end of the one set of belts, and an adjustable support extends from the rotatable member and down to the stream for supporting the sheet-advancing means in an adjustable manner. The sheet-advancing mechanism is in the form of a roller, and small belts extend from the roller to the rotatable member on the terminal end of the one set of belts, for driving the roller and for engaging the stream to advance it into the stack. Adjustable support floors extend beneath the spaced-apart belts in the other set of belts for curving the stream as it approaches the stack, and the sheet-advancing means is therefore also adjustably mounted to be positionable along with the adjustment of the support floors.

3,781,006

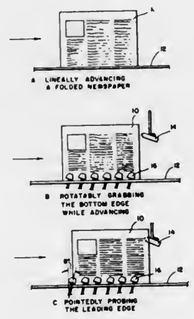
METHOD FOR SEPARATING PLURAL SHEETS

Charles H. Hart, Nazareth, Pa., and George R. Cashau, Philipsburg, N.J., assignors to American Newspaper Publishers Association Research Institute, Incorporated, Easton, Pa.

Division of Ser. No. 75,099, Sept. 24, 1970, Pat. No. 3,638,936. This application Nov. 15, 1971, Ser. No. 198,931

Int. Cl. B65h *3/32*

U.S. Cl. 271—18 R **1 Claim**



Method of separating a bundle of plural sheets of material, such as a folded newspaper, including lineally advancing the bundle in a vertical plane, rotatably grabbing the bottom edges of said bundle during said advancing, and pointedly probing the leading edge of said bundle at the top during said advancing so as to separate said sheets laterally from said vertical plane.

The method is particularly adapted to separating a printed newspaper prior to stuffing with inserts such as a TV guide, classified advertising, book review supplements, and the like.

3,781,007

SECTIONAL, FOLDING, COMBINATION DUMBELL-BAR BELL

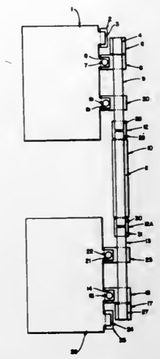
Richard E. Baker, and Elizabeth F. Baker, both of 2701 Arlington Blvd. No. 101, Arlington, Va.

Filed Nov. 1, 1972, Ser. No. 302,904

Int. Cl. A63b *11/02*

U.S. Cl. 272—84 **2 Claims**

A dumbell-barbell with two or more separate, collapsible containers which are filled as desired with fluid. These containers are suspended below opposite ends of a sectional bar to which they are fastened by bearings which allow the completely assembled sectional bar to rotate. The lateral movement of the containers is restricted by retainers on the ends of the bar. For compactness, the sections of the bar separate, and the containers are removable.



3,781,008

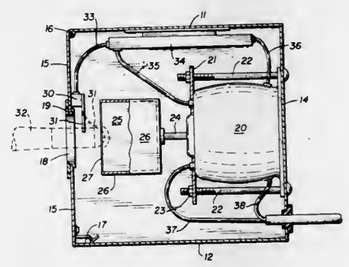
MOTOR ROTATED AND TIMED CUE CHALKER

Charles Espinoza, 1529 Tennyson, Denver, Colo.

Filed Aug. 21, 1972, Ser. No. 282,360

Int. Cl. A63d *15/16*

U.S. Cl. 273—19 **2 Claims**



A cue chalker comprising a housing and a block of chalk mounted in a holder rotated by a timed electric motor in the housing, the operation of the motor being started by switch means activated by a cue manually placed into contact with the chalk through an opening in the housing, and automatically stopped at the end of a predetermined time, such as 10 seconds, selected as the optimal time required for efficient chalking of a cue. The automatic stopping of the motor occurs regardless of whether the cue is in contact with the chalk. The switch means includes a starter device which is flexible to have wiping contact with the cue tip surface as the cue is being moved manually into chalking position, and is automatically returnable to its normal "off" position when the cue is withdrawn.

3,781,009

APPARATUS FOR AIDING BLIND BOWLERS

Leo Raymond Gagnon, 15505 Nordoff, Apt. 109, Sepulveda, Calif.

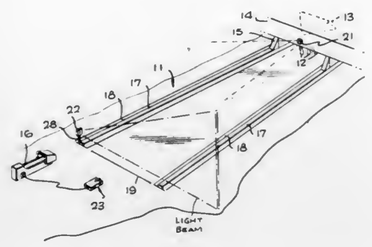
Filed Dec. 11, 1972, Ser. No. 314,127

Int. Cl. A63d *5/04*

U.S. Cl. 273—54 B **17 Claims**

Apparatus for aiding blind bowlers including a hand held unit incorporating position locating means utilizing a pair of

first optical sensors adapted to sense and actuate distinguishable non-visual signals in response to narrow beams of light directed along the imaginary center line and the foul line of the bowling alley, and pin indicating means in the form of



spring biased solenoid operated markers corresponding to the bowling pins and adapted to project from the face of the unit when second optical sensors mounted above the pins respond to light beams directed so as to be reflected into them by the standing pins.

3,781,010

BASKETBALL GAME AMUSEMENT DEVICE

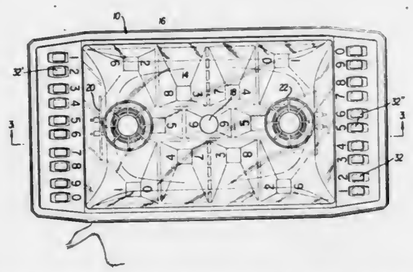
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan

Filed Mar. 7, 1972, Ser. No. 232,535

Claims priority, application Japan, Mar. 31, 1971, 46-24047

Int. Cl. A63f 7/06

U.S. Cl. 273—85 C **1 Claim**



A basketball game amusement device featuring a playing surface simulating a court and provided with a plurality of openings defining shooting positions. Elevated basket goals are located at each end of the playing surface. A plurality of rods are pivotably mounted below the playing surface, each rod terminating at one end in a button which when depressed raises the flange of the opposite end upwardly through one of the openings. As the ball falls into one of the openings within the playing surface, each of the players depresses his button corresponding to the opening causing the flanges of the rods to move upwardly within the opening to strike the ball. Each player fights for position to either use the flange of his rod to shoot the ball into his opponent's basket or block his opponent's shot. The buttons of each player are numbered to correspond to the openings within the playing surface. A clear plastic cover or dome keeps the ball in play.

3,781,011

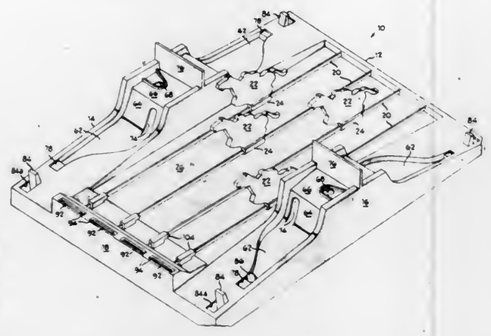
GAME WITH RACE FIGURE MOVEMENT DETERMINED BY PROJECTILE PROJECTING SKILL

Gordon A. Barlow, Evanston, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 14, 1971, Ser. No. 207,894

Int. Cl. A63f 9/14

U.S. Cl. 273—86 G **2 Claims**



An electromechanical racing game, having figures mounted for linear movement across the length of a game board with each of the figures being connected to motors for driving them along the game board. Intermittently actuable switch means is provided for intermittently driving the motors to propel each of the figures; with pin ball devices in the form of launching plungers and game balls arranged for launching towards said intermittent switch means so that, if properly launched, the pin balls will be deposited on a switch element which will close said switch means to intermittently drive said motor to advance a related figure along the game board.

3,781,012

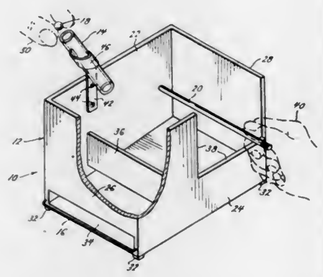
GRAVITY PROJECTOR BATTED BALL APPARATUS

Gary R. Slane, 12667 Olive St., St. Louis, Mo.

Filed Apr. 7, 1971, Ser. No. 131,557

Int. Cl. A63b 71/02

U.S. Cl. 273—95 R **7 Claims**



A game designed to use relatively small objects in a manner requiring direct action on the part of a participant or player challenging to finger dexterity, hand and eye coordination, and three-dimensional vision. A small open-top box adapted to be disposed on a table, and the like, is provided with an upwardly extending tube to receive a small ball dropped by one hand of a participant. The tube directs the ball into an area of the box to be struck by a pencil or similar bat held by the other hand of a participant and extending through an opening in one side of the box. In the box is a partition or barrier over which the participant attempts to bat the ball as it drops from the tube. A ball return is provided.

3,781,013

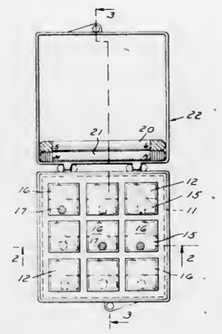
MAGNETIC TIC-TAC-TOE GAME

Walter G. Von Meyer, 1504 Port Jefferson Rd., Sidney, Ohio

Filed Jan. 31, 1972, Ser. No. 222,130

Int. Cl. A63f 9/00

U.S. Cl. 273—130 B **5 Claims**



A tic-tac-toe game in which the nine tic-tac-toe squares are represented by nine transparent compartments and the tic-tac-toe indicia are represented by magnetized discs having one color on one side and another color on the other side. Each compartment includes a transparent window and a pocket beneath and spaced from the window. Normally the colored magnetic discs are retained in pockets under transparent windows. The game is played by using magnetic wands having a color at one or both ends to match the colors of the magnetic discs, a disc being moved from its concealed position to a position under the window with the proper color corresponding to the color and polarity of the wand end being used.

3,781,014

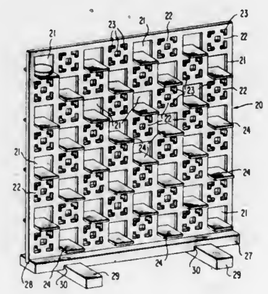
UPRIGHT CHECKERS AND CHESS GAME APPARATUS

Stanley J. Kolwicz, 16 Sanford Ave., Emerson, N.J.

Filed July 3, 1972, Ser. No. 268,887

Int. Cl. A63f 3/02

U.S. Cl. 273—131 AC **10 Claims**



A game apparatus particularly for checkers and chess is constructed to allow movement of the game pieces in a vertical plane while providing horizontal supporting surfaces therefor. Two or four people may play the game utilizing one or both sides of an upright game board. The apparatus is readily knocked down for convenient packaging and shipment and features detachable game piece support members or shelves. The apparatus may have a swiveled base for added convenience.

3,781,015

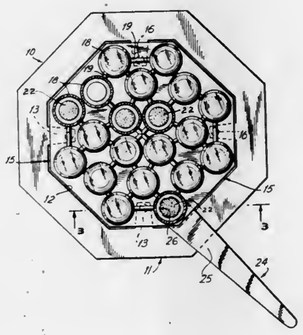
MAGNETIC GAME CONSTRUCTION

Julius Ellman, 1672 E. 7th St., Brooklyn, N.Y., and George Lerner, 12 Prospect Ct., Freeport, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,493

Int. Cl. A63f 9/08

U.S. Cl. 273—153 R **10 Claims**



A pair of lower and upper members, the latter having an array thereon of enclosures for spacedly containing respective magnet pieces while permitting inversion thereof within the enclosures under the influence of a manually manipulated magnetic control device.

3,781,016

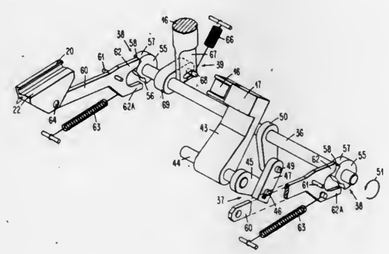
CASSETTE PLAYER

Kenneth E. Benton, Broomfield, and Vincent L. Jacques, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,890

Int. Cl. G11b 5/00

U.S. Cl. 274—4 C **30 Claims**



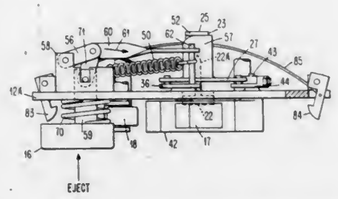
A cassette is loaded and ejected by a single-action mechanism. In loading, insertion of the cassette into the cassette player substantially simultaneously cocks the ejection mechanism, actuates a cassette holddown mechanism, and moves the pinch roller and transducer into a tape-operating relationship. A single-action release mechanism, such as a

push button, substantially simultaneously moves the transducer and pinch roller out of operative engagement with the tape in the cassette and releases and ejects the cassette.

3,781,017
CASSETTE PLAYER

Douglas S. Baldwin, Longmont; Kenneth E. Benton, Broomfield, and Vincent L. Jacques, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,891
Int. Cl. G11b 5/00
U.S. Cl. 274—4 C 8 Claims

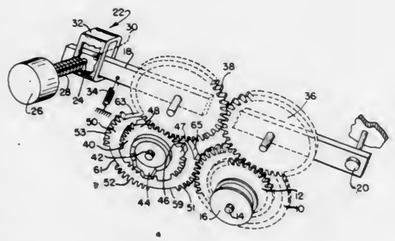


A single-action cassette loading and unloading mechanism is disclosed. In loading, insertion of the cassette into the cassette player cocks the ejection mechanism, actuates a cassette holddown mechanism, and moves the pinch roller and transducer into operating relationship with tape in the cassette. A single-action release mechanism, such as a push button, first moves the transducer and pinch roller out of operative engagement with the tape in the cassette, releases the cassette for ejection, and then ejects the cassette. Pivot axis of the mechanism is perpendicular to the plane of the cassette-receiving platform. A single extension spring is used to actuate mechanisms in response to a release actuation while another spring responds to cassette insertion for the single-action loading.

3,781,018
TAPE HEAD INDEXING AND SHIFTING APPARATUS

Thomas C. Cayton, Jr., Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 4, 1971, Ser. No. 186,160
Int. Cl. G11b 5/56
U.S. Cl. 274—4 A 4 Claims

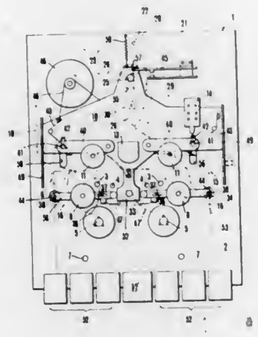


Apparatus utilizing the capstan flywheel of a multi-track tape recorder and/or reproducer to power apparatus for shifting the transducer head from one tape track to another, including gear means linking the flywheel to the cam which shifts the position of the transducer head, and a solenoid activated at the end of a tape track, causes engagement of the gear linkage, and means for automatically disengaging the shifting apparatus after the transducer head has been shifted and readying the same for future shifting.

3,781,019
AUTOMATIC CONTINUOUS RECORD/PLAYBACK MEANS FOR TAPE CASSETTE LOADING TAPE RECORDER

Junjiro Kikuchi, Nagano, Japan, assignor to Sankyo Kogaku Koygo Kabushiki Kaisha, Suwa-shi, Nagano, Japan

Continuation-in-part of Ser. No. 15,096, Feb. 27, 1970, abandoned. This application May 17, 1972, Ser. No. 254,208
Claims priority, application Japan, Feb. 28, 1969, 44-18659
Int. Cl. G11b 5/00
U.S. Cl. 274—4 E 7 Claims

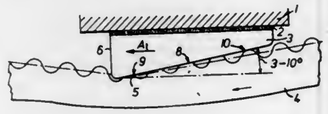


An automatic continuous record/playback means for a cassette tape recorder in which a magnetic tape provided with a plurality of tape tracks may be used for continuous reproduction, without having to turn the tape cassette over either manually or automatically on a multi-track replay equipment that has two capstans and two pressure rollers. Reproduction of all tracks is obtained by reversing the direction of tape travel. The automatic continuous record/playback means of the present invention principally comprises a pair of opposed pressure rollers and an elongated rocker arm member supported at its center on the tape recorder housing in a freely rockable manner in opposite directions. A rocking movement of the lever member around its pivotal point in either desired direction causes a respective pressure roller to selectively make engagement with its co-operable capstan so that the tape is advanced in a selected direction of travel. Head channels in the magnetic head may be alternatively brought into co-operation with any one of tape tracks, selected in accordance with the direction of the tape movement.

3,781,020
DIAMOND STYLUS FOR DISC RECORDS

Helmut Batsch; Benno Jahnel, both of Berlin; Ernst August Weinz, Idaroberstein; Wolfgang Berger, and Gerhard Dickopp, both of Berlin, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfort am Main, Germany

Filed Nov. 29, 1971, Ser. No. 202,988
Claims priority, application Germany, Nov. 30, 1970, P 20 60 317.2; Nov. 30, 1970, HGM 70 45 295.8
Int. Cl. G11b 3/44
U.S. Cl. 274—38 15 Claims

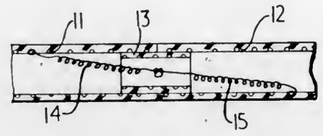


A pressure scanning diamond stylus having an elongated lower edge in a wear resistant crystallographic orientation.

3,781,021
FLAME RESISTANT SEALS

Richard N. Thomson, Markfield, near Leicester, and Michael F. Walker, Leicester, both of England, assignors to Dunlap Holdings Limited, London, England

Filed Aug. 23, 1971, Ser. No. 173,873
Claims priority, application Great Britain, Aug. 26, 1970, 40,920/70
Int. Cl. F16j 15/12
U.S. Cl. 277—164 9 Claims



A flame-resistant seal which is transversely stiff and resistant to kinking and buckling made from a layer of asbestos fabric and a layer of metal braid embedded in a flame-resistant polymeric material, e.g., fluorocarbon rubber. The seal may have a round or P-shaped cross-section and may form a continuous loop; it may form a flame-resistant cover for a hose or a wire.

3,781,022
PISTON RING AND CYLINDER LINER HAVING MINUTE OIL-RETAINING INDENTATION

Junichiro Kumabe, Tokyo, and Koichi Shimuzu, Okaya, both of Japan, assignors to Rikagaku Kenkyusho, Wako-shi, Saitama-ken and Teikoku Piston Ring Co., Ltd., Tokyo, both of Japan

Filed Nov. 30, 1970, Ser. No. 93,568
Claims priority, application Japan, Dec. 1, 1969, 44/95716; Dec. 1, 1969, 44/95717
Int. Cl. F16j 9/12, 11/04
U.S. Cl. 277—213 5 Claims

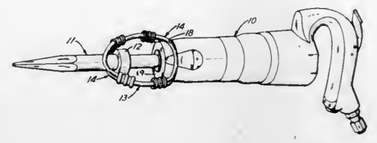


A piston ring or cylinder liner having on its sliding surface numerous minute indentations in a geometric grid pattern, said indentations being formed by closely spaced continuous helical grooves each formed in said surface with a repetitive depth variation to form thereby closely spaced successive ridges and valleys in each groove and with the spacing between successive of said ridges being less than the groove width.

3,781,023
SAFETY RETAINER FOR COLLARED CHISELS IN CHIPPING HAMMERS

James C. Boyd, c/o Tool Sales & Services Co., 1137 Electric Ave., Franklin Township, Westmoreland County, Pa.

Filed July 18, 1972, Ser. No. 272,783
Int. Cl. B25d 17/10
U.S. Cl. 279—19.6 2 Claims

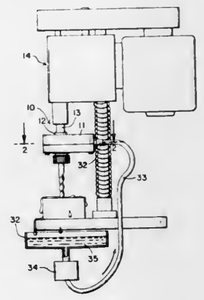


This disclosure relates to a retainer for the reciprocating chisel of a chipping hammer, constructed as a flexible sling secured to the end of the hammer barrel and embracing the chisel adjacent to a collar on the chisel shank.

3,781,024
PORTABLE DRILLING APPARATUS INCLUDING A MECHANICAL, RECIRCULATING COOLING SYSTEM

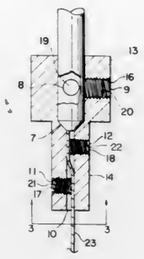
Herman Ganser, 8353 264th St., Floral Park, and Alfred Ganser, 86-09 208th St., Queens Village, both of N.Y.

Filed July 31, 1972, Ser. No. 276,476
Int. Cl. B23b 51/06, 31/02
U.S. Cl. 279—20 7 Claims



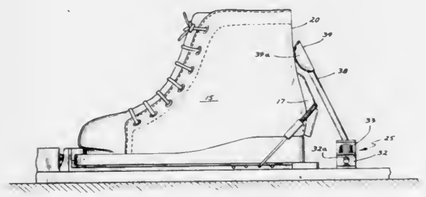
A portable drilling apparatus including a recirculating cooling system. A spindle, having a hollow central portion and a gear affixed thereto, is disposed through a housing in which a pair of idler gears are rotatably mounted. The idler gears mesh with the drive gear, and when the spindle is rotated, cooling liquid is drawn in through inlet passages by the suction created by the meshing gears. The liquid is pumped into the hollow spindle, and through a pair of longitudinally extending parallel apertures provided in a drill bit secured in the end of the spindle. The fluid is caught in a sump disposed below the material being drilled, and is pumped through a filter and hose coupling back to the housing by the gears.

3,781,025
RECIPROCATING SAW CHUCK
Nicola D'Angelo, 41 Washington St., Norwich, Conn.
Filed Feb. 1, 1972, Ser. No. 222,573
Int. Cl. B23b 31/10
U.S. Cl. 279—83 2 Claims



A chuck for flat saw blades to be mounted on reciprocating shafts of the sabre saw type and having two set screws on opposite sides of the chuck and longitudinally spaced from each other to force a slight "S" bend in the saw blade.

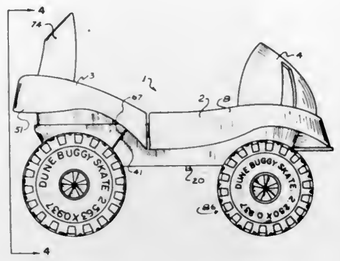
3,781,026
SKI STOPPING STRUCTURE
Boyd L. Bovee, Box 268, Conde, S. Dak.
Filed Nov. 17, 1972, Ser. No. 307,592
Int. Cl. A63c 7/10
U.S. Cl. 280—11.13 B 4 Claims



A stop structure for skis consisting of a plate member secured to a ski adjacent the rear of a ski boot, a spring tensioned arm journaled in said plate member, said arm being adapted to swing forwardly outwardly of the ski in the direction of said boot and said arm in operative cocked position bearing against the upper heel portion of said ski boot.

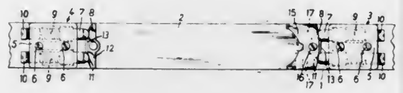
3,781,027
SELF BIASING ROLLER SKATE
Beverly W. Taylor, Hermann, Mo., assignor to Steven Manufacturing Co., Hermann, Mo.
Filed Sept. 27, 1971, Ser. No. 183,790
Int. Cl. A63c 17/02
U.S. Cl. 280—11.26 13 Claims

An adjustable length skate, preferably plastic, is provided having an improved construction for biasing those sections of the skate which grip the shoe of the wearer. The skate is a two piece platform, each platform being mounted on an axle-wheel assembly. The platforms are adjustable longitudinally with respect to one another and can accommodate a plurality



of wearer shoe sizes. The forward and rearward platforms also are biased with respect to one another. Biasing permits the skate to grip the shoe after insertion into the skate structure.

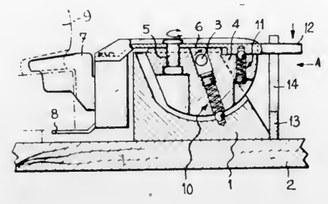
3,781,028
SAFETY SKI BINDING
Ernst Gertsch, Sparthaus Central, Wengen, and Ulrich Gertsch, 461 G Aenderbergstrasse, Matten, Interlaken, both of Switzerland
Filed Aug. 3, 1971, Ser. No. 168,561
Claims priority, application Switzerland, Aug. 6, 1970, 11857/70
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 K 4 Claims



A safety ski binding embodying a release plate intended to be fixedly retained at the ski boot and which can be locked with the ski through the agency of locking pins. According to important aspects of this invention it is contemplated that at the region of at least one end of the release plate there are provided two locking pins disposed adjacent one another to both sides of the central lengthwise axis of the associated ski, these pins cooperating with recesses provided at the relevant end of the release plate in such a manner that during sideward release of the release plate only always one of both locking pins comes into operable play, yet upon loading the release plate towards the top and in the lengthwise direction of the ski both locking pins come into play.

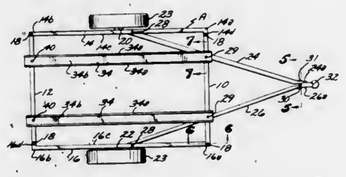
3,781,029
SKI ATTACHMENT
Georges Pierre Joseph Salomon, 34 Avenue de Loverchy, Annecy, France
Filed Nov. 26, 1971, Ser. No. 202,121
Claims priority, application France, Dec. 3, 1970, 7043513
Int. Cl. A63c 9/00
U.S. Cl. 280—11,35 T 8 Claims

A safety attachment for holding a boot onto a ski including a jaw portion which is subjected to the action of at least one releasable locking device allowing the jaw to open in a vertical and in a substantially horizontal plane. A first plate member is connected to the jaw and is displaceable laterally therewith; a second plate member is fixed in the longitudinal axis of the ski



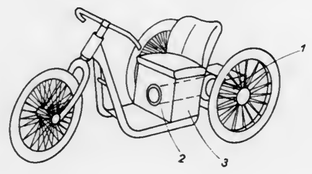
and cooperates with the first plate member to cause the return of the jaw in the said axis when the first plate is subjected to the action of a vertically actuatable element.

3,781,030
POWER DRAWN COLLAPSIBLE TRAILER
Palmer J. Ekedal, 18721 LaGuardia St., Rowland Heights, Calif.
Filed Aug. 30, 1972, Ser. No. 285,080
Int. Cl. B60p 3/06
U.S. Cl. 280—36 C 4 Claims



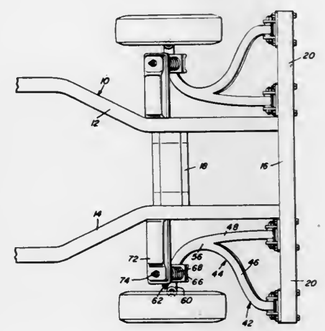
A trailer that includes a rectangular, load supporting frame that is defined by forward and rearward end pieces pivotally connected to first and second L-shaped side pieces. Two stub shafts that are longitudinally spaced from one another project from the center portions of the side pieces, and rotatably support two pneumatic tired wheels.

3,781,031
THREE WHEELED VEHICLES HAVING STATIC AND DYNAMIC EQUILIBRIUM
Pierre Patin, 58, rue de Serves 92, Boulogne-sur-Seine, France
Filed Sept. 26, 1972, Ser. No. 292,296
Claims priority, application France, Oct. 1, 1971, 71.35441
Int. Cl. B62d 61/06
U.S. Cl. 280—62 8 Claims



A three-wheeled vehicle having a frame symmetrical relative to a median plane and carrying a forward guiding wheel mounted, in the said median plane, on a fork with positive castor, a rear framework comprising two wheels mounted on an axle on either side of the median plane of the frame, an organ for pivoting the frame relative to the rear framework, comprising a cylindrical bearing rigidly attached to the framework and having an axis which is substantially horizontal and positioned in the median plane, and on which pivots a coaxial, cylindrical part, connected to the frame, and a device for locking the pivoting organ comprising a drum rigidly connected to the framework and coaxial with the cylindrical bearing and an organ for locking on the drum by friction, operated by a pendulum oscillating on either side of the median plane under the effect of weight and centrifugal force, characterized by the fact that the friction locking organ consists of at least one pair of belts wound symmetrically, each in one direction, on the drum and attached at one end to the pendulum and at the other end to the frame, the anchorage points of the said belts on the frame being spaced on either side of the median plane. The pendulum may alternatively consist of the frame of the vehicle itself, the said frame being suspended from a yoke positioned inside the housing and mounted pivotably on the cylindrical bearing, by means of at least one pair of suspension arms, positioned symmetrically each on one side of the median plane and each hinged about two axes parallel to the median plane, at their lower portion to the bottom of the housing and at their upper portion to the yoke.

3,781,032
TRAILING ARM SUSPENSION SYSTEM
Vincent Jones, 343 W. 3rd St., Tooele, Utah
Filed Apr. 24, 1972, Ser. No. 246,849
Int. Cl. B60g 11/16
U.S. Cl. 280—124 A 10 Claims

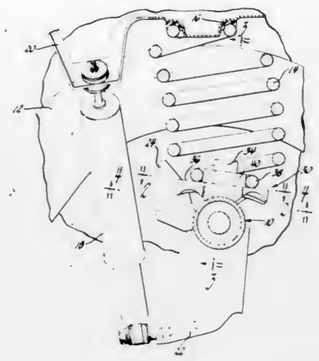


A generally Y-shaped vehicle suspension support arm with the free ends of the arms of the Y including structure for oscillatable support from a vehicle chassis portion about aligned horizontal transverse axes extending between the free ends of the Y arms. The free end of the base leg of the Y-shaped suspension arm curves laterally in the plane containing the arms of the Y and includes structure on its terminal end for oscillatably supporting a wheel spindle therefrom.

3,781,033
VEHICLE HEIGHT ADJUSTING SUSPENSION ARRANGEMENT
Robert M. Buchwald, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 8, 1972, Ser. No. 304,767
Int. Cl. B60g 11/16
U.S. Cl. 280—124 R 4 Claims

Suspension systems for automotive vehicles of the type employing primary coil suspension springs between the sprung

and unsprung masses are adapted for adjustment of the local suspension height and vehicle attitude or trim by including at either or both of the front and rear suspensions lower spring seats having one surface engaged by the lower end of the coil



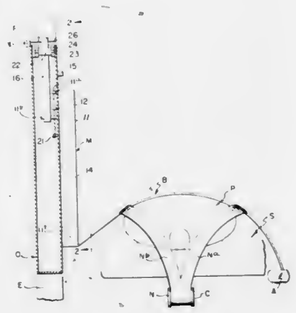
spring and an opposite surface having several pairs of parti-cylindrical seat faces complementary to the supporting axle housing or the like, the seats being rotatable to different orientations on the axle to select different amounts of elevation of the lower end of the spring.

3,781,034

VEHICLE SAFETY HARNESS RIGGING

Irlin Botnick, 3155 Kersdale Rd., Pepper Pike, Ohio, and Philip D. Golrick, Cleveland Heights, Ohio, assignors to said Botnick, by said Golrick

Filed June 3, 1971, Ser. No. 149,645
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **9 Claims**



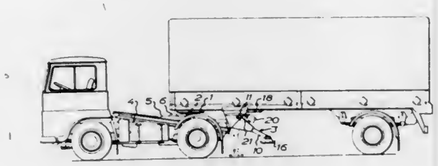
A forwardly swinging and hinged automobile door secures one end of a belt portion of safety strap rigging for an adjacent seat position by door mounted mechanism including a linkage engaging a door-framing fixed part of the vehicle; whereby the belt strap portion proximate the door space, with any shoulder strap connected thereto, is swung away from the seat upon door opening to facilitate entering and leaving the seat, and upon door closing is brought automatically into proper passenger restraining disposition relative to the seat. One end of the belt strap (and a ceiling-anchored end of any belt connected shoulder strap) is secured reeled on a respective strap and anchoring reel allowing normal movement of a person in the seat, but locking up the belt end, upon sudden vehicle deceleration either by incipient rapid payout under body exerted force on the belt or by a deceleration-sensing inertial lock in the reel.

3,781,035

SUPPORTING LEG STRUCTURES

Ralf Krister Ebbe Petersson, Alsterbro, and Bengt Roland Holmberg, Kalmar, both of Sweden, assignors to Kalmar Verkstads AB, Kalmar, Sweden

Filed July 1, 1971, Ser. No. 158,685
Claims priority, application Sweden, July 2, 1970, 9174/70
Int. Cl. B60s *9/10*
U.S. Cl. 280—150.5 **3 Claims**



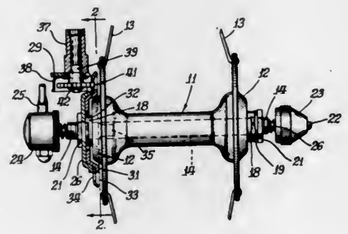
A semi-trailer supporting leg structure is mounted so as to permit pivotment by means of an operating mechanism between a ground engaging supporting position and a rest position in which the supporting leg structure is swung rearwardly out of contact with the ground. The operating mechanism is carried by the semi-trailer while the tractor has means for raising the front end of the semi-trailer for pivotment of the supporting leg or legs between the ground engaging position and the rest position while the supporting leg or legs are at least substantially completely relieved of the weight of the semi-trailer.

3,781,036

SPEEDOMETER DRIVER FOR BICYCLE QUICK-RELEASE HUBS

Frank P. Brilando, Niles, Ill., assignor to Schwinn Bicycle Company, Chicago, Ill.

Filed Nov. 6, 1972, Ser. No. 304,070
Int. Cl. B62k *3/00*
U.S. Cl. 280—289 **3 Claims**



Speedometer driver for use on quick-release hubs of bicycles comprising a mounting bracket with a vertical part having a circular portion with a central axle-engaging aperture offset axially to clear the cup end of the hub shell and thin enough to permit mounting on the axle in place of usual washer between adjacent cone and lock nut as a permanent part of the quick-release hub, key means on the axle-engaging portion of bracket cooperating with keyway on axle, dished bearing ring nested into and secured to offset portion of bracket with inner

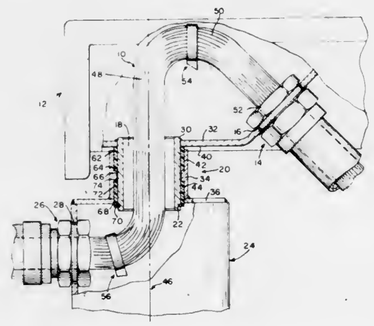
diameter larger than outer diameter of cone, a stamped driving gear having annular hub rotatably mounted on bearing ring between marginal portion thereof and mounting bracket, and the latter having a shelf portion extending at right angles to rotatably support a cable-rotating fitting and a plastic pinion actuated by the driving gear.

3,781,037

MEANS FOR EXTENDING WIRES THROUGH THE CENTER PIVOT OF AN ARTICULATED VEHICLE

Arthur J. Czajkowski, North Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 12, 1971, Ser. No. 188,044
Int. Cl. B60d *1/08*
U.S. Cl. 280—421 **1 Claim**



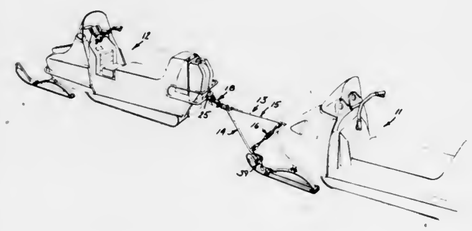
A means for extending wires through the center pivot of an articulated vehicle including an inner sleeve and an outer sleeve with a pair of bushings trapped therebetween to permit a bundle of wires to extend therethrough whereby the life of the wires is enhanced.

3,781,038

TOW BAR FOR TOWING DISABLED SNOWMOBILES

Francis D. Bachel, and Robert A. Voves, both of Hibbing, Minn., assignors to E-Z Tow, Inc., Hibbing, Minn.

Filed June 12, 1972, Ser. No. 261,604
Int. Cl. B62d *13/00*
U.S. Cl. 280—493 **6 Claims**



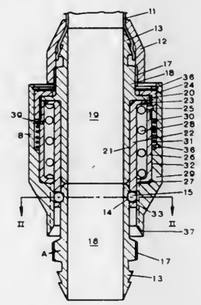
Apparatus for towing disabled snowmobiles, comprising a triangular frame of two elongated rod members pivotally connected at their forward end and an extensible adjusting member transversely connected therebetween. One end of the extensible member is removably connected to permit collapse of the frame when not in use. Each of the rod members pivotally carries at its rearward end a slotted member constructed and arranged to receive and retain the edge of a snowmobile ski. A ball hitch disposed at the forward end pivotally connects the apparatus to a towing snowmobile.

3,781,039

COUPLINGS

Walter Frederick Locke, Emsworth; Ernest Arthur Watson, Bedhampton, and Thomas Philip Edwards, Fareham, all of England, assignors to F.P.T. Industries Limited, Portsmouth, Hampshire, England

Filed Aug. 2, 1971, Ser. No. 168,206
Claims priority, application Great Britain, Aug. 12, 1970, 38,776/70
Int. Cl. F16l *37/00*; **F17d** *1/00*
U.S. Cl. 285—1 **2 Claims**



A coupling which will automatically disconnect when subjected to an axial load of more than a predetermined amount.

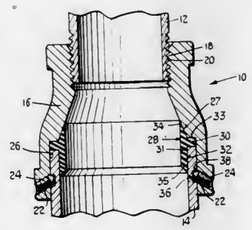
The coupling may be connected or disconnected manually by either a turning or a sliding movement of an external sleeve, this manual operation being separate from the automatic disconnection.

3,781,040

PIPE JOINT SEAL

John A. Lasko, 50 Notch Hill Rd., North Branford, Conn., and Elwood R. Horwinski, 727 Moss Farms Rd., Cheshire, Conn.

Filed Nov. 27, 1972, Ser. No. 309,902
Int. Cl. F16l *17/00*
U.S. Cl. 285—110 **6 Claims**



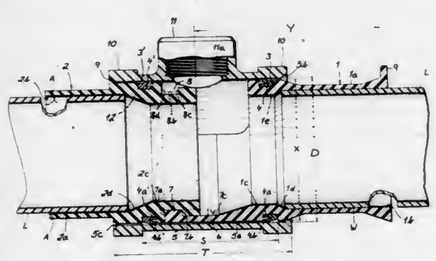
A pipe joint seal for coupling two adjacent ends of aligned pipe sections, the seal comprising an annular fitting member internally threaded at one end to receive a corresponding threaded end of one pipe section, and an annular resilient sealing ring having an external annular flange, the ring being carried in the bore of the fitting and being adapted for engagement with the end of the second pipe section. The ring com-

prises a cylindrical body portion extending on opposite sides of the flange, the body portion being for sealing engagement with the bores of the fitting and of the second pipe section such that the internal pressure of fluid carried by the pipe tends to cause radial expansion of the ring into forcible engagement with the bores. The fitting has a plurality of substantially radially extending holes in which there are received set screws, which can engage external shoulders of the second pipe section after the latter is received in the bore of the fitting, to force and maintain together the fitting and the second, unthreaded pipe section.

3,781,041
PIPE AND TUBE COUPLING

Aristovoulos G. Petzetakis, Thessaloniki & Chandri St., Moschaton/Piraeus, Greece

Filed Sept. 14, 1971, Ser. No. 180,299
Claims priority, application Greece, Oct. 31, 1970, 44019; Apr. 7, 1971, 45136
Int. Cl. F16l *17/02*
U.S. Cl. 285—111 4 Claims

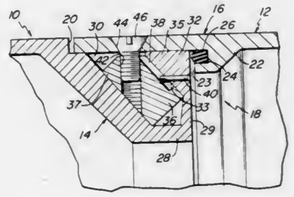


A pipe and tube coupling arrangement in which two coupling members are provided with transversely interfitting formations resisting axial separation and are thereby brought into axial alignment. A sleeve can then be axially shifted over the joint to prevent transverse separation. The coupling members are provided with annular grooves which receive respective sealing glands bearing outwardly upon the sleeve.

3,781,042
JOINT HAVING FORCE CONVERTING MEANS

Raymond J. Estlick, Winchester, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 30, 1970, Ser. No. 76,844
Int. Cl. F16l *19/06*
U.S. Cl. 285—339 2 Claims

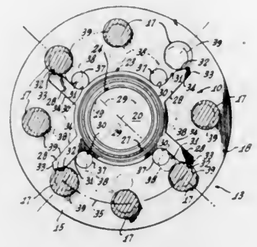


A joint comprising two parallel walls, one of which has a through hole aligned with a cavity in the other wall, and a fastening device extended through said hole and into said cavity to engage force-converting means whereby one wall is pulled radially toward the other and simultaneously moved parallel thereto.

3,781,043
MULTIPLE PIPE JOINT SEAL

Foster M. Hagmann, 130 N. Bristol Ave., Los Angeles, Calif.

Filed Jan. 17, 1972, Ser. No. 218,363
Int. Cl. F16l *17/00*
U.S. Cl. 285—363 11 Claims

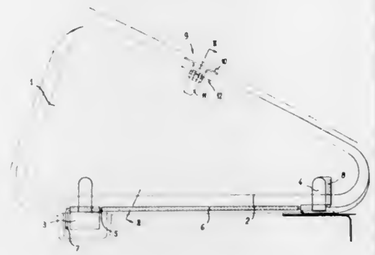


A flanged, bolted pipe joint with a seal clamped between the flanges of the joint and located on the bolts of the joint. The seal has an annular body with sealing rings thereon, and with four locating fingers projecting outwardly along perpendicular diameters of the joint for locating engagement with bolts of different standard sizes on different standard bolt circles of a series of joints. One alternative form has two oppositely facing fingers for straddling in-line bolts of a standard series, and additional forms illustrate the specific application of the invention to four different ASA standard sizes of pipe joint.

3,781,044
PIVOTING WINDOW LOCKING DEVICES

Marcel Quesnel, and Jean Guerin, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed May 1, 1972, Ser. No. 249,145
Claims priority, application France, May 10, 1971, 7116773
Int. Cl. E05c *3/06*
U.S. Cl. 292—200 7 Claims

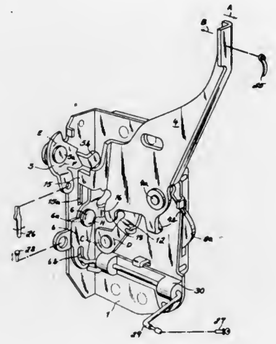


This locking device for holding a pivoting window, notably of a motor vehicle, in its closed, ajar or semi-open positions, comprising a torsion bar hinge along one side and on the opposite side said locking device, consists essentially of a three-lug member pivotally mounted about an axis parallel to said opposite side to the window frame, a first lug acting as a control lug, the second lug being substantially perpendicular to said first lug and adapted to retain the window ajar, the third lug acting as an intermediate locking lug driven with a moderate clearance and adapted to retain the window in its closed position, and resilient means normally urging said third lug in its locking position.

3,781,045
MOTOR-VEHICLE DOOR LATCH WITH LOCK MECHANISM ONLY ACTUATABLE WITH DOOR CLOSED

Hans-Dieter Watermann, Metzkausen, Germany, assignor to Arn. Kiekert Sohne, Heiligenhaus, Germany

Filed Jan. 24, 1972, Ser. No. 220,037
Claims priority, application Germany, Jan. 26, 1971, G 71 02 692.1; May 18, 1971, G 71 19 458.6
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 6 Claims

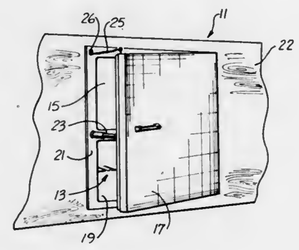


A door latch has a bifurcate pivotal lock pawl with a pair of arms embracing the lock pin on the doorpost to hold the vehicle door closed. A keeper in the form of a rotatable pin is formed with a notch so that as the door is closed the arms of the pawl in turn cam the keeper around and lodge behind this keeper. The keeper can be rotated both from inside and outside the vehicle to clear the arms of the pawl and enable the door to open. Similarly a lock mechanism can prevent the door-opening mechanism from functioning. The keeper fixedly carries a crank arm having a projection which prevents the lock mechanism from working in all but the closed position of the door to prevent the user from locking his keys in the vehicle. The arms of the pawl serve to arrest the keeper in different angular positions to effect this safety measure.

3,781,046
REFRIGERATOR DOOR SHOCK ABSORBER

Joseph D. Hinkle, Rowland Heights, Calif., assignor to Dam Fine Products Corporation, El Monte, Calif.

Filed Dec. 23, 1971, Ser. No. 211,597
Int. Cl. E05c *17/12, 17/36*
U.S. Cl. 292—264 4 Claims

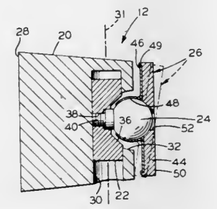


A shock absorbing device for use in holding open a door of a container in a vehicle including resilient means positionable between the door and an abutment for holding the door in an open position and connector means for preventing the door from opening more than a predetermined amount. The connector means allows the door to be opened less than said predetermined amount, and the resilient means is compressed between the door and the abutment even when the door is opened said predetermined amount.

3,781,047
ADJUSTABLE SUPPORT

Walter E. Surko, Jr., Southington, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Mar. 31, 1972, Ser. No. 240,220
Int. Cl. E05c *17/56*
U.S. Cl. 292—251.5 15 Claims

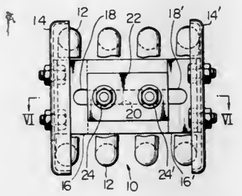


An adjustable magnetic door holder comprises an electromagnetic unit and an adjustable strike support which includes a base and an armature or strike plate. The strike plate is adjustably coupled to the base by a ball and socket joint carried by a cylindrical member supported for limited angular movement and axial translation relative to the base whereby wide variation of adjustment between the strike plate and base may be attained to facilitate precise alignment of the strike plate with the electromagnetic unit.

3,781,048
IMPACT ABSORBING DEVICE FOR BUMPERS

Masaaki Oguma, Tokyo, and Mitsugi Kurosaki, Yokosuka City, both of Japan, assignors to Nissan Motor Company Limited, Kanagawa-ku, Yokohama City, Japan

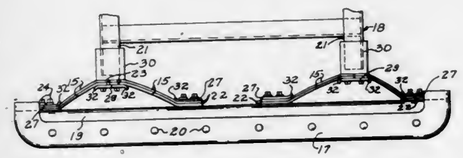
Filed Apr. 17, 1972, Ser. No. 244,649
Claims priority, application Japan, Aug. 27, 1971, 46/76758
Int. Cl. B60r *19/08*; B60g *13/02*
U.S. Cl. 293—89 10 Claims



The deformation of an impact absorbing device as caused when the device is subjected to an impact is restrained in a predetermined direction so that the device is capable of properly operating even though localized force or forces are imparted to the device. The impact absorbing device is made up of resilient spring means, a pair of support members holding the resilient spring means therebetween, and a pair of slide plates which project perpendicularly inwardly from the support members and which are clamped together in a manner to be slidable on each other so as to be moved in opposite directions when the resilient spring means is subjected to a

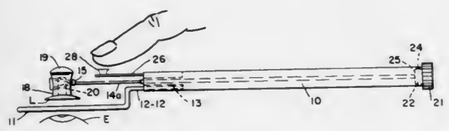
compressive stress and accordingly the spaced support members are moved toward each during a condition in which the device is encountering an impact. The device is usually combined with a fender to make up a bumper for vehicles.

3,781,049
RIGIDLY ATTACHED RESILIENT BUCKLING COLUMN BUMPER SUPPORT SYSTEMS
Ronald G. Cantrell, Birmingham, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Apr. 12, 1971, Ser. No. 133,137
Int. Cl. B60r *19/06*
U.S. Cl. 293—99 **6 Claims**



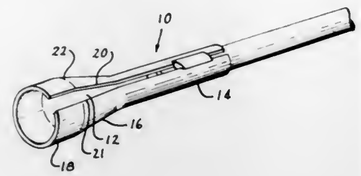
Resilient buckling column bars are rigidly attached to respectively a bumper and a support such as a vehicle frame for impact energy storing during displacement of the bumper relative to the support as permitted by the bars during impact force whereafter the bars return the bumper system to normal position. Ample support is provided by the bars to serve as the connecting structure between the bumper and the support without need for additional jacking bar connection.

3,781,050
EYE CONTACT LENS MANIPULATOR
Eugene S. Horres, 1736 Savanah Hwy., Charleston, S.C.
Continuation-in-part of Ser. No. 40,879, May 27, 1970, Pat. No. 3,645,576. This application Dec. 15, 1971, Ser. No. 208,156
Int. Cl. A61f *9/00*
U.S. Cl. 294—1 CA **2 Claims**



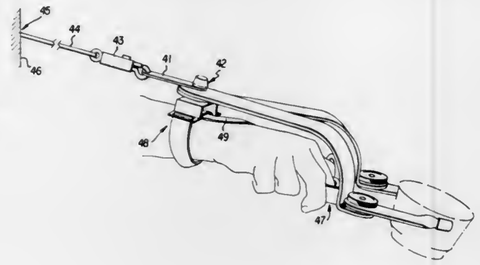
A device for inserting and removing a contact lens with respect to the eye. The device includes a tubular handle for mounting an oval loop to engage the eye lid to prevent eye blinking and a turnable control shaft with a flexible end portion extending from the handle for mounting a lens inserter and remover, and a finger activated spring filament to move the flexible end portion to and from the eye. The control shaft at the opposite end from the eye lid loop has keyed or secured to it a knurled knob with a reduced portion rotatable in the open end of the handle for turning the shaft and positioning the lens inserter and remover as desired. Also, the reduced portion of the knob includes a spring pressed ball to retain the shaft to its turned positions for lens insertion or lens removal.

3,781,051
MATCH HOLDER
James William Gibson, 811 3rd St., and James William Gibson, Jr., 1623 Coventry Rd., both of Massillon, Ohio
Filed Mar. 16, 1972, Ser. No. 235,246
Int. Cl. B25g *3/20*
U.S. Cl. 294—1 R **1 Claim**



A match holder comprises a split sleeve of resilient material such as spring steel. A single slit in the sleeve has a relatively narrow width at one end of the sleeve, a relatively wide width at the other end of the sleeve, and an intermediate portion in which the slit is tapered so as to diverge from its narrow width to its wide width. The sleeve, while generally cylindrical, is constructed with a greater diameter at the end thereof where the slit is wide. Latch means locally enlarging the slit at a part thereof where the slit is narrow are used in combination with an appropriately shaped rod member to allow a convenient attachment of an extension rod to the match holder.

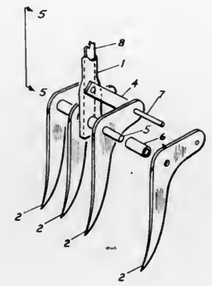
3,781,052
SAFETY APPARATUS
Robert G. Millington, Treichlers, Pa., assignor to Hims, Inc., Allentown, Pa.
Filed Apr. 3, 1972, Ser. No. 240,572
Int. Cl. B25b *7/04*
U.S. Cl. 294—25 **9 Claims**



A manipulating tool and apparatus for handling items in hazardous work zones, without entrance of the hands into the work zone, including a tool releasably mounted on the human hand. On installation the tool includes secondary restraining means engaging the hand to limit extension of the hand in emergencies.

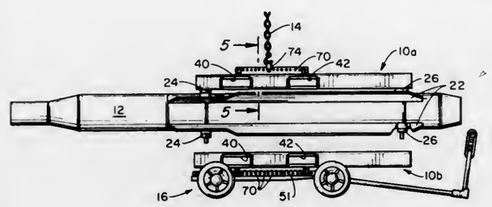
3,781,053
FORK
Norman L. Wicks, 1731 W. Capitol Ave., West Sacramento, Calif.
Filed June 18, 1971, Ser. No. 154,339
Int. Cl. A01d *9/02*
U.S. Cl. 294—55.5 **3 Claims**

A sturdy earth working fork-type tool characterized by heavy-duty identical digging and uprooting tines. Each inverted L-shaped tine comprises a downwardly tapering flat-faced pointed blade. The upper rearwardly angled head portions of the tines are apertured, bridge across and are operatively mounted on spaced parallel assembling and linking rods.



The lower end of a tubular but reinforced handle is joined to the forward rod and diverging braces carried thereby are secured to the rearward rod.

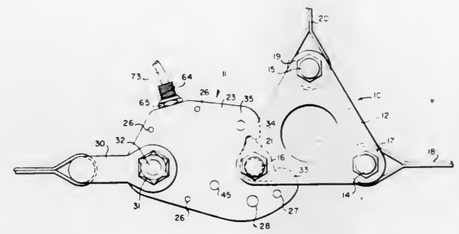
3,781,054
BEAM ARRANGEMENT FOR HANDLING HEAVY ELONGATE OBJECTS BY POWER MACHINERY
Clyde C. Cole, 5298 Harvard St., Ventura, Calif.
Filed Oct. 24, 1972, Ser. No. 299,994
Int. Cl. B66c *1/66*
U.S. Cl. 294—81 R **5 Claims**



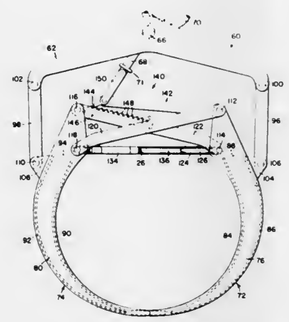
A support beam arrangement for handling heavy, elongate objects such as missiles and rockets having easily damaged external surface areas and which may be sensitive to shock. The arrangement permits such objects to be handled either by a fork lift truck or by the hoist line of an overhead crane and is adapted to be carried upon a conventional missile transporting cart having spaced, upright, load-supporting rails. The invention arrangement locks onto the usual forward and aft missile support lugs and includes lug-engaging shoes having stops that prevent separation of the missile from the support beam once the missile has been positioned in place and keeper pins inserted.

3,781,055
RELEASABLE COUPLING
John D. Keich, Mountain View, Calif., and George A. Laliberte, Hudson, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed July 14, 1972, Ser. No. 271,954
Int. Cl. B64d *17/38*
U.S. Cl. 294—83 A **7 Claims**

An improved releasable coupling for releasably connecting the elements of a system under tension load, as in a system for extracting a heavy cargo from an aircraft. The improvement comprises a reciprocative toggle linkage for releasably locking a latch element in engagement with a rotatable cam in a link assembly, and a roller bearing locking means for releasably locking the toggle linkage until it is purposely unlocked by withdrawing the roller bearing locking means from engagement with a rotatable lock link of the toggle linkage. When unlocking of the releasable coupling occurs, the high energy stored in the system is dissipated through bearing friction and air resistance on the rotating lock link together with the reciprocative but non-impacting action of the latch and the connecting rod which connects the latch to the lock link. Thus damage to the inner parts of the latch assembly of the releasable coupling is minimized since the impacting of internal parts occurring in prior releasable couplings is eliminated.



3,781,056
LOGGING GRAPPLE
Neil Edward Ransford, Dubuque, Iowa; Leland Glen Gilbert, Moerfelden, Germany, and Richard Herman Hunger, Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Oct. 12, 1971, Ser. No. 188,397
Int. Cl. B66c *1/42*
U.S. Cl. 294—112 **15 Claims**

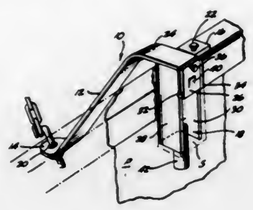


A log skidding tractor has a grapple-positioning boom mounted thereon. A cable-operated grapple is releasably coupled to the boom and is placed into log grasping positions by the boom. A cable for closing the tongs of the grapple is connected to a winch mounted on the tractor, which winch is operated to tension the cable and close the grapple. A latch mechanism on the grapple holds the tongs closed and permits the cable tension to be relaxed whereby the grapple may be released from the boom and the tractor may be driven to a more favorable position for skidding the load held by the grapple.

3,781,057
CAMPER TIE DOWN ARRANGEMENT

Larry N. Manuel, 16611 Grand Ave., Bellflower, Calif.

Filed Oct. 28, 1971, Ser. No. 193,532
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC 13 Claims

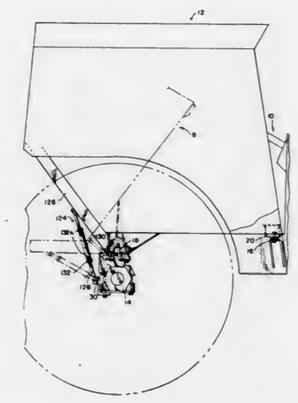


Camper tie downs for securing a camper to the side panels of a pickup truck. Different embodiments of camper tie downs each include a frontwardly projecting nose at the lowermost end of a main arm that angles toward one lateral side of the main arm. Two camper tie downs affixed to each truck side panel are used to anchor the camper against frontward and rearward shifting, tilting, and lifting relative to the bed of the pickup truck. A respective chain attached to the camper is anchored to each tie down by using a head bolt having a tilted head portion that mounts within an anchor hole in the camper tie down nose and is held therein by a threaded nut that engages the underside of the tie down nose.

3,781,058
SHOCK AND VIBRATION DAMPENING MOUNT ASSEMBLY

Walter Zlotko, Willow Springs, and Paul F. Stoeck, Wood Dale, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Mar. 3, 1972, Ser. No. 231,568
Int. Cl. B62d 27/04
U.S. Cl. 296—35 R 14 Claims

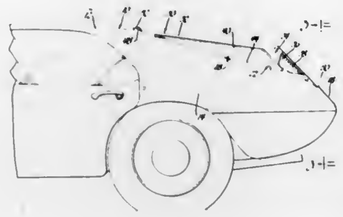


A plurality of elastomer means of varying deflection rates arranged such that vertical shock and dampening is achieved by a first low and a second high deflection rate means, lying in the same parallel plane. Both elastomer means have generally flat top and bottom faces, the second elastomer means being thinner than that of the first and positioned in close proximity thereto.

3,781,059
REMOVABLE VEHICLE BODY CLOSURE WITH DUAL USE INSTALLATION

William A. Davis, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 30, 1972, Ser. No. 257,601
Int. Cl. B60j 7/10
U.S. Cl. 296—137 B 3 Claims

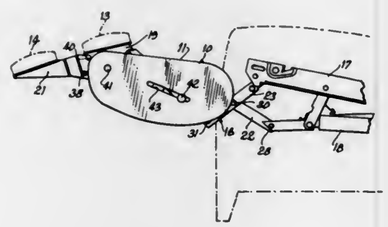


A vehicle body has an opening in the rear deck thereof defined by a flange. A closure panel has a peripheral flange. The flange on the body and the flange on the contoured closure panel are symmetrical with respect to a transverse axis therethrough so that the closure panel may be installed on the body in one use position to close the body opening and provide a coupe style body and installed on the body in a second use position upon 180° rotation about the transverse axis to provide a station wagon style body. A compressible seal located between the flanges provides a weathertight joint.

3,781,060
SAFETY GUARD FOR RECLINING CHAIR AND THE LIKE

Frederick R. Pentzien, Naperville, Ill., assignor to Kroehler Mfg. Co., Naperville, Ill.

Filed Sept. 1, 1972, Ser. No. 285,585
Int. Cl. A47c 3/03
U.S. Cl. 297—68 5 Claims

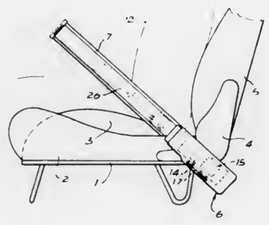


A safety guard for an exposed linkage of an extendable device utilized in reclining chairs and the like. The safety guard has a body member which fastens on one side of the linkage to restrict access to the space between adjacent links of the linkage in all positions of the linkage.

3,781,061
SAFETY DEVICE FOR A VEHICLE SEAT

Jurgen Walz, and Eberhard Faust, both of Stuttgart, Germany, assignors to Recaro GmbH & Co., Stuttgart, Germany

Filed Aug. 16, 1972, Ser. No. 281,047
Claims priority, application Germany, Aug. 21, 1971, P 21 42 020.2
Int. Cl. A62b 35/00; B60r 21/10
U.S. Cl. 297—388 33 Claims

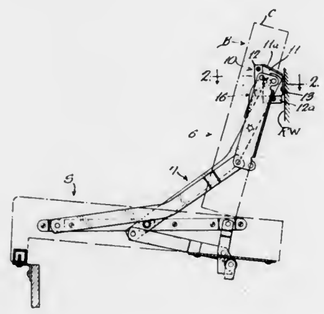


A safety belt arrangement for a vehicle seat to automatically position the seat belt around the seat occupant as soon as he is seated. One or several driven elongated carriers draw the seat belt into its interlocking position, are released for return to their starting positions as the latch mechanism is closed and are automatically reconnected to the component latch parts when the latch mechanism is unlocked. The operation sequence is activated by a switch in the seat cushion responding to pressure in excess of a given value. Structural details permit mounting the arrangement after car assembly and keep the device and the seat belt straps out of sight when not in use.

3,781,062
POSITIVE LATCH FOR MOVABLE BACK OF A SEATING DEVICE

David K. Farmer, Niles, and Theodore Dlufosinski, Chicago, both of Ill., assignors to The Seng Company, Chicago, Ill.

Filed July 25, 1972, Ser. No. 274,962
Int. Cl. A47c 1/10, 7/36
U.S. Cl. 297—379 6 Claims

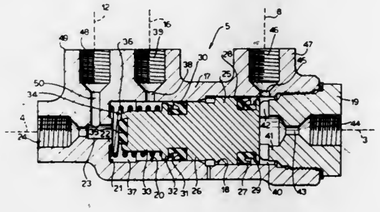


A positive but readily releasable latch means for retaining the backrest of a seating device in an upright position or releasing it to be swung forward about its lower end. The latch means includes a slotted plate mounted adjacent each end of the backrest, a fixed pin on each end of the backrest impaling the slot and freely movable in and out of it, and a combined latch dog and handle pivoted on each plate which is spring urged to a latching position and is manually movable to a release position in which the spring has moved over center to retain the latch dog in that position. The structure of the latch dog and handle are such that the latch dog can never fail to latch and can never block entry of the latch pins into the slots. The latch is particularly designed for convertible settee-beds of recreational vehicles, which must meet Federal Highway Safety specifications.

3,781,063
MOTOR VEHICLE BRAKING CIRCUITS

Luigi Valpreda, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

Filed Apr. 19, 1972, Ser. No. 245,454
Claims priority, application Italy, Apr. 28, 1971, 68412 A/71
Int. Cl. B60t 13/00
U.S. Cl. 303—6 C 6 Claims



A control device for motor vehicle hydraulic braking circuits of the type having separate circuits for the front wheel brakes and the rear wheel brakes and a pressure reducer for reducing the braking pressure applied to the rear wheel brakes in relation to the pressure applied to the front wheel brakes. The control device operates to short circuit or bypass the pressure reducer in the event of a loss of braking pressure in the front wheel braking circuit so that the maximum braking effect can be obtained from the rear wheels under these conditions. The device includes a piston and a valve controlling a bypass route which short circuits the pressure reducer, the piston is formed in two parts of different diameters and slides in a cylinder formed in two parts of correspondingly different diameters; hydraulic braking pressure is applied to one side of the piston from the front wheel braking circuit and to the other side of the piston from the rear wheel braking circuit so that the valve controlling the bypass route is closed under normal braking conditions, but opened if the pressure on the side of the piston supplied from the front wheel braking circuit should fall below its normal value. A spring biases the piston away from its operating position so that it is moved on enemy braking operation to ensure that it does not become inoperative due to a long period out of use.

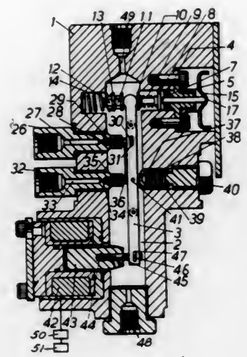
3,781,064
BRAKE CONTROL APPARATUS

Philip Augustus Taft, Solihull, England, assignor to Girling Limited, South Yardley, Birmingham, England

Filed Aug. 6, 1971, Ser. No. 169,697
Claims priority, application Great Britain, Aug. 14, 1970, 39,209/70
Int. Cl. B60t 8/06
U.S. Cl. 303—21 F 7 Claims

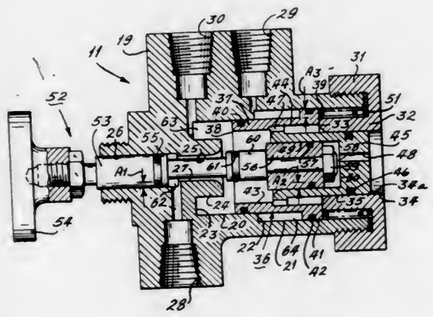
Brake control apparatus for use in a braking system in which an input force from an input member is applied to brake

applying means through a lever in the control apparatus, the lever controlling valves in a brake fluid circuit. A substantial proportion of the input force is absorbed by a spring and only the remaining portion of the input force acts on the lever to actuate the brakes. The apparatus includes deceleration



sensing means adapted to apply a force to the lever in opposition to the input force. The opposition force is substantially proportional to the deceleration of a wheel controlled by the brake circuit, when the deceleration of the wheel exceeds a predetermined value.

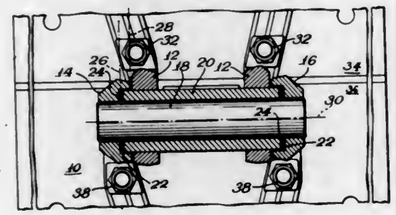
3,781,065
CONTROL VALVE
Raymond J. Kersting, Dellwood, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Feb. 11, 1972, Ser. No. 225,470
Int. Cl. B60t *15/16*
U.S. Cl. 303—71 **7 Claims**



A control valve for use in a brake system having dual fluid pressure sources and a spring setting pressure released brake actuator is provided with selectively operable means for applying to said actuator fluid pressure supplied from one of said sources and for venting the applied fluid pressure to atmosphere to effect spring setting actuation of said actuator, and resiliently urged means is provided for also venting the applied fluid pressure to atmosphere independently of said selectively operable means when the fluid pressure of the other of said sources acting on said resiliently urged means is less than a predetermined value.

This invention relates generally to control valves and in particular to push-pull type control valves for use in a fluid pressure system to control a spring setting pressure released brake actuator thereof.

3,781,066
TRACK PIN AND BUSHING SEAL ASSEMBLY
Jack M. Deli, Wheaton, and Ramiz Y. Hermiz, Addison, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Continuation of Ser. No. 639,442, May 18, 1967, abandoned.
This application June 16, 1969, Ser. No. 835,298
Int. Cl. B62d *55/20*
U.S. Cl. 305—11 **10 Claims**



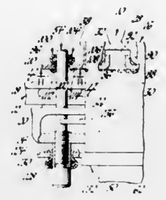
Track pin and bushing seal assembly of two Belleville spring washers separated by a flat metal washer.

3,781,067
BELT TRACK STRUCTURE
Merritt E. Dodson; Richard L. Marsh, both of Lincoln, and Frank C. Masters, Palmyra, all of Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 21, 1972, Ser. No. 290,935
Int. Cl. B62d *55/24*
U.S. Cl. 305—35 EB **20 Claims**



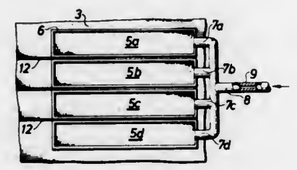
A belt track for a track-driven vehicle and a method of making the belt track. The belt track has an inner surface adapted for moving contact with rigid elements of the vehicle drive apparatus and the belt track supporting system. The inner surface of the belt track includes at least one surface portion comprised of a vulcanized rubbery composition of a polybutadiene polymer. Other different rubbery polymers such as styrene/butadiene or nitrile rubber may also be used in combination with the polybutadiene polymer. The surface portions provide a low friction, wear resistant surface which is resistant to temperature extremes. The belt track is particularly useful in conjunction with vehicle slider suspension systems and with driving systems in which a driving sprocket comes into moving contact with driving teeth or lugs formed on the inner surface of the belt track.

3,781,068
BUSHING ASSEMBLY
Frank W. Brooks, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 10, 1972, Ser. No. 279,485
Int. Cl. F16c *17/00*
U.S. Cl. 308—4 R **3 Claims**



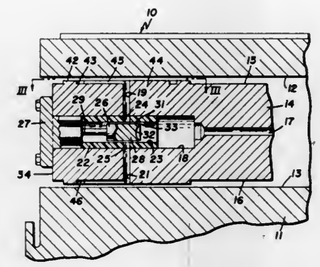
A bushing assembly installed in a sliding caliper, axially fixed rotatable disc, brake assembly in which the brake shoes transmit the brake torque to the caliper frame, which in turn transmits the brake torque to a fixed support member. The caliper assembly has a brake pad assembly including a brake shoe with ends extending laterally beyond the caliper frame and provided with a guide and support bushing assembly at each end, and a mounting plate operatively secured to the caliper frame. The mounting plate has laterally extending ends which each have a guide and support bushing assembly aligned with a similar arrangement in the noted brake shoe. Guide and support pins are fixed to the fixed support member and have portions extending through the bushing in the mounting plate and brake shoe ends so that the caliper is slidably supported and guided. Each bushing assembly includes an annular retainer having one end formed as an inwardly opening semi-torus and holding an elastomeric bushing engaging the associated pin in sliding relation, and the other end formed to lock the retainer in an aperture formed in the shoe or mounting plate end to which it is secured.

3,781,069
HYDROSTATIC BEARING
Gerszon Gluchowicz, Ddjursholm, Sweden, assignor to AB UVA, Bromma, Sweden
Filed May 24, 1971, Ser. No. 146,103
Claims priority, application Sweden, May 26, 1970, 7226/70
Int. Cl. F16c *17/00*
U.S. Cl. 308—5 R **2 Claims**



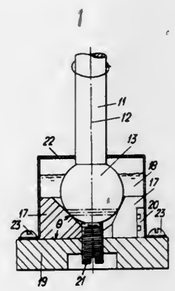
A hydrostatic bearing in which one of the opposed bearing members has a plurality of part-pockets in it into all of which the hydrostatic fluid is pumped and each of which is surrounded by a ridge. When an impact load is applied to the bearing, the hydrostatic fluid flows out through the gaps between the ridges of the one bearing member and the opposed bearing member into drainage grooves provided in the one bearing member which are disposed between adjacent ridges, and is recirculated.

3,781,070
MACHINE TOOL
Herbert R. Uhtenwoldt, Worcester; Richard E. Crossman, Leominster, and Charles T. Caliri, Worcester, all of Mass., assignors to Cincinnati Milacro-Heald Corp., Worcester, Mass.
Filed May 18, 1972, Ser. No. 254,500
Int. Cl. F16c *17/16*
U.S. Cl. 308—5 R **6 Claims**



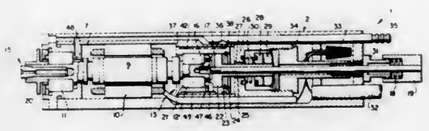
A machine tool in which a moveable table is mounted in opposed hydrostatic bearings which have means for regulating the flow to the bearings to maintain a stable position of the table despite changes in load.

3,781,071
ELASTOHYDRODYNAMIC BEARING ASSEMBLY
James Joseph Kauzlarich, Charlottesville, Va., assignor to Research Corporation, New York, N.Y.
Filed May 17, 1971, Ser. No. 143,943
Int. Cl. F16c *7/04, 17/06*
U.S. Cl. 308—9 **8 Claims**



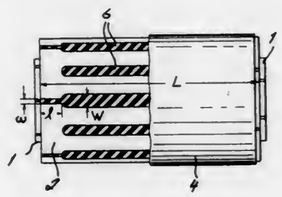
The invention discloses an elastohydrodynamic bearing assembly, with many configurations the simplest of which has a load supporting rotary shaft with a part-spherical tip supported in a pyramidal seat. An elastohydrodynamically compatible lubricant provides a thin film between the bearing surfaces. The seat provides multipoint self-aligning support and is elastically deformable; this, in conjunction with an increase in lubricant viscosity due to high operational pressures, enables the development of a satisfactory lubricant film in accordance with elastohydrodynamic lubrication theory.

3,781,072
BEARING ARRANGEMENT
Fritz Nattefort, Leichlingen, Germany, assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Mar. 2, 1972, Ser. No. 231,108
Claims priority, application Germany, Mar. 5, 1971, P 21 10 663.8
Int. Cl. F16c *35/12*
U.S. Cl. 308—15 **16 Claims**



Bearing arrangements for high speed rotating shafts which are capable of accommodating thermal expansion and thereby minimizing changes in the initial loading on the bearings and which are constructed so that the initial loading can be adjusted to a selected magnitude.

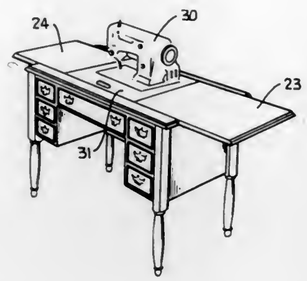
3,781,073
BEARING
Raoul Jorn, Hengnau, and Peter Reichardt, Fellbach, both of Germany, assignors to Raoul Jorn, Hengau, Post Wasserburgh A.B., Germany
Filed Feb. 22, 1972, Ser. No. 228,153
Claims priority, application Germany, Feb. 20, 1971, P 21 08 154.9; Sept. 6, 1971, P 21 44 507.8
Int. Cl. F16c *33/04*
U.S. Cl. 308—238 **60 Claims**



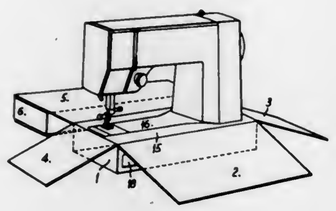
A bearing, joint or knuckle, e.g. between a steering rod and a lever or arm connected to a wheel in an automotive stearing linkage, is provided with an inner and/or an outer metal shell or sleeve to which a rubber layer is vulcanized, the force being transmitted between the inner surface and the outer surface of the joint through elastic deformation of the elastomeric layer. One or both of the shells is, according to the invention, slotted parallel to generatrices of the shell.

3,781,074
SLIDE TOP DESK
Robert Arthur Trueblood, Paoli, Ind., assignor to Cornwell Company, Inc., Paoli, Ind.
Filed Apr. 21, 1972, Ser. No. 246,411
Int. Cl. A47b *81/00*
U.S. Cl. 312—30 **12 Claims**

A desk suitable for housing a sewing machine is disclosed. The top of the desk has two sliding portions which can slide apart to allow a third hinged center section to be swung up into place between the two sliding portions. A sewing machine may be mounted on the center section and can be hidden from sight when the center section is lowered.



3,781,075
SEWING MACHINE CASE
Marcel Fresard, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Oct. 19, 1971, Ser. No. 190,625
Int. Cl. A47b *21/00, 95/02*
U.S. Cl. 312—208 **3 Claims**

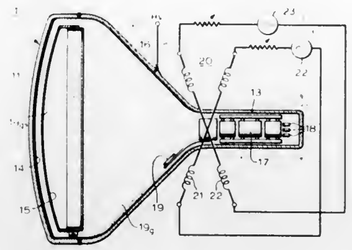


A sewing machine case comprises a rectangular box-like hollow pedestal to the upper edges of which are hinged four flaps. A base and lower free arm of the sewing machine can be removably housed in said pedestal, the free arm fitting in an opening in the upper surface of the pedestal which forms, with the flat upper surface of the free arm, a small work table. In a lowered position the flaps form access slopes to this table, a cover hinged on one flap being folded thereunder to hold the flap in the plane of the table. The flaps can be folded up and fixed to the cover to close the case around the machine.

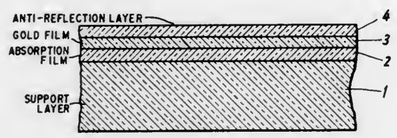
3,781,076
CATHODE RAY TUBE RECLAMATION PROCESS
Leonard Dietch, Skokie, and Martin L. Lerner, River Forest, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Dec. 6, 1971, Ser. No. 205,180
Int. Cl. H01j *9/50*
U.S. Cl. 316—2 **2 Claims**

A method of neutralizing an undesired constituent trapped within a cathode ray tube which includes a gas absorber con-

templates irradiating the constituent with a source of electromagnetic energy for a period of time sufficient to reduce the constituent to its gaseous reaction products and then effecting absorption of the gaseous products by pumping action of the gas absorber.



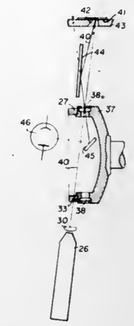
3,781,077
HEAT-REFLECTING WINDOW PANE
Rolf Groth, Mullensiefenring 8, 5810 Witten, Germany
Filed June 8, 1971, Ser. No. 151,035
Claims priority, application Germany, June 13, 1970, P 20 29 181.0
Int. Cl. G02b *5/26*
U.S. Cl. 350—1 **12 Claims**



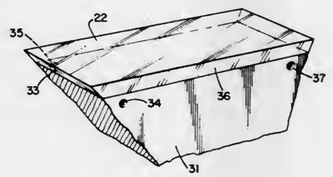
A heat-reflecting window pane which has a transmissivity of 20 to 60 percent for visible light comprises a transparent support layer provided with a heat-reflecting gold film and when installed presents the support layer to the exterior. An absorption layer is disposed between the transparent support layer and the gold film, such absorption layer being of a material and thickness such that the light transmissivity of the combined support and absorption layers is 10 to 65 percent less than that of the support layer alone. The support layer has a refractive index and absorption coefficient of the same order of magnitude and may comprise an element from the fourth period of the periodic table with an atomic weight between 20 and 28 or an alloy containing such an element. An anti-reflective layer is disposed on the other side of the gold film and may be covered by a transparent protective layer. The anti-reflective layer, e.g., made of zinc sulphide, is made of dielectric material which is substantially absorption-free for visible light and has a refractive index of more than 1.7.

3,781,078
OPTICAL SCANNER WITH LASER
Ernest Wildhaber, 124 Summit Dr., Brighton, N.Y.
Filed Dec. 20, 1971, Ser. No. 209,622
Int. Cl. G01n *21/30;* **G02b** *17/00;* **H04n** *3/00*
U.S. Cl. 350—6 **9 Claims**

In this optical scanner the light source is a laser emitting light through lenses of a rotor to a record. The laser unit emits light through a stationary line-like area. As the laser beam is of limited angular sweep the invention provides a refractory part rigid with the rotor and of varying thickness to deflect said beam, causing it to follow the lens of the turning rotor that projects said beam to the record. The refractory part may be in the form of a ring of an average radius approximately equal to the distance of said lenses from the rotor axis. Or it may be in the form of sectors alternating with said lenses.



3,781,079
ALIGNED SCANNING MIRROR
Hans A. Hug, Weston, and Paul W. Jone, Franklin, both of Mass., assignors to Identicon Corporation, Waltham, Mass.
Division of Ser. No. 89,250, Nov. 13, 1970, Pat. No. 3,657,792.
This application Feb. 4, 1972, Ser. No. 223,740
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **1 Claim**

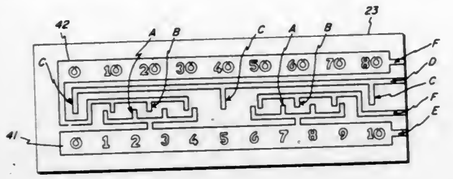


In a multifaceted mirror scanner, a mirror attached to a carrier that is precisely positioned receives energy from a collimated beam of light and reflects this energy toward a predetermined target point. The carrier is then deformed, such as by making a dimple near an edge where the mirror should be raised slightly, to deflect the beam so that the reflected image is precisely oriented on the target point.

3,781,080
LIQUID CRYSTAL DEVICE FOR GENERATING RETICLES IN OPTICAL EQUIPMENT
Siegfried Aftergut, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 30, 1972, Ser. No. 310,861
Int. Cl. G02f *1/16*
U.S. Cl. 350—10 **7 Claims**

Liquid crystal devices for generating reticles in optical in-

struments are described. The reticles include liquid crystal display devices having electrically selectable calibration scales



corresponding to different magnification powers of the optical instrument.

3,781,081

ELECTRO-OPTICAL WAVEGUIDE ARRANGEMENTS

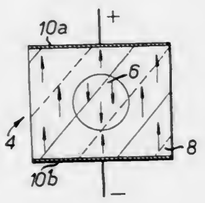
George H. S. Rokos, Twyford, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Apr. 17, 1972, Ser. No. 244,619

Claims priority, application Great Britain, Apr. 17, 1971, 9,757/71

Int. Cl. G02b 5/14; G02f 1/26

U.S. Cl. 350—96 WG **9 Claims**



An optical switching element is described which has at least two optical paths. The paths are formed by blocks of electro-optical material which, when subjected to an electrical field, suffers a change in refractive index. The material is sensitive to the polarity of the electric field and, by appropriately orientating the material forming the two paths, a common electric field applied across both paths will produce a change in refractive index in opposite senses in the two paths. This enables light transfer between the two paths to be controlled. Also described are logic elements formed by coupling two or more such switching elements.

3,781,082

REFLECTOR MOUNT FOR SPOKED WHEEL

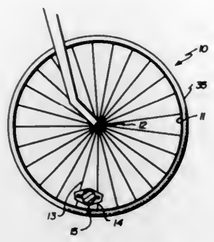
Henry Linder, Wood Dale, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Continuation-in-part of Ser. No. 254,950, May 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 228,178, Feb. 22, 1972. This application July 31, 1972, Ser. No. 276,452

Int. Cl. G02b 5/12

U.S. Cl. 350—99 **10 Claims**

Side reflectors mountable between adjacent spokes of a bicycle wheel, each reflector having an obverse side with a reflector element and a reverse side with frictional locking tabs formed at opposite ends. Closely dimensioned locking spaces are between the tabs and the reverse side of the plate so that adjacent bicycle spokes may be captured within the



spaces. The adjacent spokes urge portions of the locking tabs away from the reverse side of the plate, and thereby assume frictional locking engagement with the reflector.

3,781,083

LIGHT REFLECTING SYSTEM

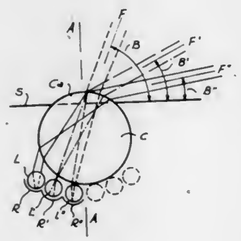
Ludwig Eigenmann, Vacallo, Canton Ticino, Switzerland

Filed July 10, 1972, Ser. No. 270,572

Claims priority, application Italy, Sept. 10, 1971, 26899 A/71

Int. Cl. G02b 5/12

U.S. Cl. 350—105 **8 Claims**



The disclosure describes an optical system adapted for providing road signs and markers and the like, and capable of reflecting incident light in essentially the same direction as that of incidence, regardless of the angle of incidence. The system comprises a primary surface layer of transparent spheres positioned to be impinged by light beams and capable of primarily focusing the light impinging thereon, a secondary lower layer comprising minor transparent spheres individually arranged for secondarily focusing of the light issued by the first spheres and located at different distances from the respective adjacent first sphere, and a sheet of reflective material having embossed concavities individually positioned adjacent to each minor sphere for reflecting the secondarily focused light, the spheres being at least partially embedded in a transparent bonding layer the index of refraction of which is lower than that of the spheres.

3,781,084

REVERSIBLE PHASE MODULATING ELEMENT

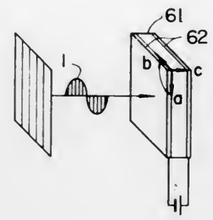
Akira Fukuhara, Tachikawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 9, 1971, Ser. No. 206,391

Claims priority, application Japan, Dec. 9, 1970, 45/108530; Dec. 25, 1970, 45/130687

Int. Cl. G02f 1/26

U.S. Cl. 350—150 **9 Claims**



A pattern generating device includes a plurality of biaxial birefringent irregular ferroelectric crystal elements, each crystal being cut such that mutually opposing planes are normal to any of the *a*-, *b*- and *c*-axis that a thickness between the planes is that of a half-wave plate, said crystal elements being arranged in the form of a matrix on an identical plane normal to incident light, a required information pattern being recorded on a photosensitive medium in a manner that elements corresponding to the information pattern are manipulated by a threshold voltage applied to the Z-planes of the respective elements so that a large-capacity information recording method can be carried out.

3,781,085

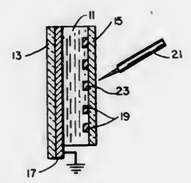
LIQUID CRYSTAL DISPLAY

Marshall Leibowitz, Englewood, N.J., assignor to Ing. C. Olivetti & C., S.p.A., Invrea, Italy

Filed May 10, 1972, Ser. No. 251,993

Int. Cl. G02f 1/16

U.S. Cl. 350—150 **6 Claims**



A liquid crystal display in which a layer of liquid crystal material is confined between a pair of spaced parallel substrates. A common electrode is deposited on one of the substrates, and a plurality of independent conductive spots are deposited on the interior face of the other of the substrates opposite to the common electrode. Electrical field producing means are provided for inducing a voltage in a selected conductive spot in order to excite the liquid crystal material between the selected conductive spot and the common electrode.

3,781,086

DOMAIN SWITCHING ELEMENT AND METHOD OF PRODUCING THE SAME

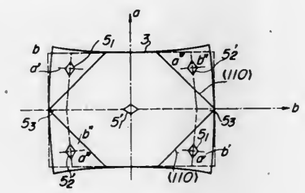
Akio Kumada; Yoshihiro Onishi, both of Kokubunji; Hirohumi Ogawa, Hichioji; Sakichi Ashida, Fuchu, and Saburo Nonogaki, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 27, 1972, Ser. No. 266,658

Claims priority, application Japan, June 30, 1971, 46-47217; June 30, 1971, 46-48330; Sept. 18, 1971, 46-72679; Sept. 18, 1971, 46-72680; July 28, 1971, 46-56539

Int. Cl. G02f 1/26

U.S. Cl. 350—150 **4 Claims**



A domain switching element using a plate of an irregular ferroelectric crystal cut perpendicularly to the ferroelectric axis of the crystal and having nucleus domains of multiple domain structure provided on both the sides of the switching region of the element in the direction <110> of the crystal, the nucleus domains extending along the direction <110>. The area of single domain having a predetermined polarity can be arbitrarily controlled in response to the polarity of the threshold voltage applied to the switching region.

3,781,087

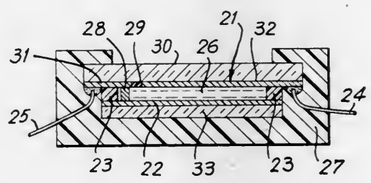
MOLDING CONSTRUCTION OF PLATES OF LIQUID CRYSTAL DISPLAY

Jin Nagasaki, Shimosuwa-Machi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 50,603, June 29, 1970, abandoned. This application May 8, 1972, Ser. No. 251,050

Int. Cl. G02f 1/34

U.S. Cl. 350—160 LC **5 Claims**

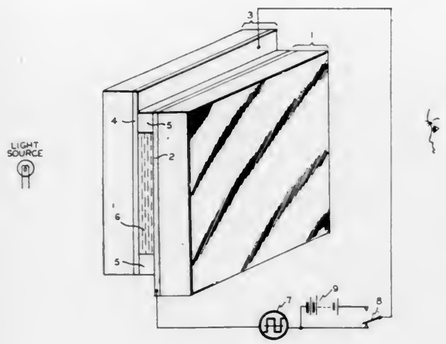


A method of preparing a liquid crystal device is disclosed in which two plates, at least one of which is transparent, are molded in situ within an encasement having a window therethrough through which said liquid crystal device can be viewed. The plates are spaced apart, forming, in combination with an insulating spacer, a chamber containing liquid crystal material. The molding operation seals the chamber against the entry of oxygen and moisture. The resultant device is stable because well sealed.

3,781,088
METHOD FOR CHANGING THE TRANSPARENCY OF A LIQUID CRYSTAL CELL

Masahide Tsukamoto, Katano-shi, and Tetsuro Ohtsuka, Takatsuki-shi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed July 27, 1972, Ser. No. 275,744
Claims priority, application Japan, July 29, 1971, 46-57365
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 12 Claims



A liquid crystal cell including a liquid crystal mixture comprising a nematic liquid crystal having a positive dielectric anisotropy and a stersidal compound which becomes light-transparent from an opaque state when the liquid crystal cell is subjected to an exciting electric field beyond a threshold value of the liquid crystal mixture. The decay time of the liquid crystal mixture required for the liquid crystal mixture to return from the light-transparent state to the opaque state after removal of the exciting voltage beyond the threshold value is increased by applying an a.c. bias voltage below the threshold value.

3,781,089
NEUTRAL DENSITY FILTER ELEMENT WITH REDUCED SURFACE REFLECTION

Robert J. Fay, and John R. Cicotta, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,326
Int. Cl. G02b 5/28; B32b 15/04
U.S. Cl. 350—164 4 Claims

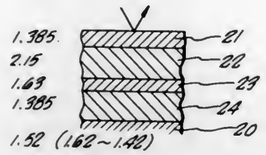


A neutral density filter element for use with photographic apparatus is formed by depositing alternate layers of a metal or metal alloy and a dielectric on a transparent substrate, to a predetermined optical density or reflectivity respectively. The initial and final layers are of the metal or metal alloy. The dielectric layer has a lower index of refraction than the metal or metal alloy layer. In the preferred embodiment Inconel is used as the metal alloy layer and silicon monoxide as the dielectric layer.

3,781,090
FOUR LAYER ANTI-REFLECTION COATING

Haruki Sumita, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami, Osaka, Japan

Filed Nov. 6, 1972, Ser. No. 304,140
Int. Cl. G02b 1/10
U.S. Cl. 350—164 20 Claims

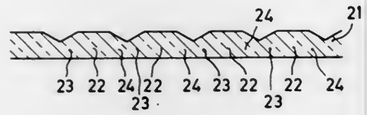


A multi-layered anti-reflection coating for use with a glass substrate includes four layers of material, the first layer furtherest from the substrate having an optical thickness of a preselected design wavelength, λ_o, in the range of $0.260\ \lambda_o > N_1d_1 > 0.230\ \lambda_o$ and an index of refraction in the range of 1.35 to 1.62. The second layer having an optical thickness in the range of $0.520\ \lambda_o > N_2d_2 > 0.400\ \lambda_o$ and an index of refraction in the range of 2.00 to 2.30. The optical thickness of one of the third and fourth layers is in the range of $0.500\ \lambda_o > Nd > 0.250\ \lambda_o$ while the optical thickness of the other layer of the third and fourth layers is in the range of $0.250\ \lambda_o > Nd > 0.060\ \lambda_o$. The third layer has an index of refraction in the range of 1.56 to 1.72 and the fourth layer closest to the substrate has an index of refraction in the range of 1.35 to 1.62. The optical thicknesses of the layers can be varied to compensate for any variations from the theoretical design index of refractions.

3,781,091
ARRANGEMENT FOR RENDERING THE STRUCTURE OF AN OPTICAL IMAGE SUBSTANTIALLY INVISIBLE

Eric Tapley Ferguson, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed July 12, 1972, Ser. No. 271,057
Claims priority, application Netherlands, July 17, 1971, 7109911
Int. Cl. G02b 5/00
U.S. Cl. 350—167 4 Claims

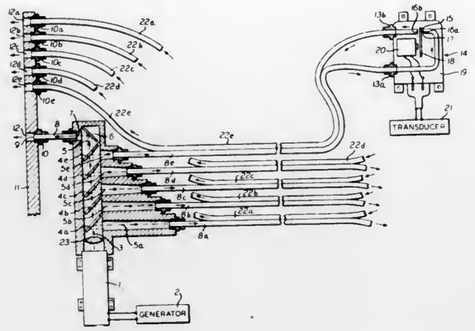


A device by which the structure of an optical image can be rendered substantially invisible. The optical image is made up of a plurality of light-emitting or light-deflecting elements, for example luminescent stripes of a colour television display screen, scanning lines of a television image or elements of a display panel. The arrangement comprises a light-transmitting plate which contains portions of alternately linearly varying the thicknesses. This enables the modulation transfer function for the spatial frequency $1/a\ m^{-1}$ to be made substantially zero and for the spatial frequency $1/2a\ m^{-1}$ to be made a maximum.

3,781,092
MONITORING SYSTEM

David L. Sussman, RD No. 2, Amhurst, Mass., and Arthur Sussman, 40 Lexington Ave., New York, N.Y.

Filed June 28, 1971, Ser. No. 157,567
U.S. Cl. 350—266 12 Claims



A light circuit which is the combination of a laser light source, optical fiber light paths, or more transducers, shutters or other light modulating means and appropriate readout device means which is preferably one which reads out directly in light terms. The transducer imparts information, suitable medical information to the modulator which in turn varies the laser light beam in the optical fiber path. The varied light beam is read directly without any energy converison being necessary.

3,781,093
ADJUSTABLE MIRROR STAND

Sophie Mary Grabijas, 14037 Crosley, Detroit, Mich.

Filed Oct. 18, 1971, Ser. No. 190,096
Int. Cl. G02b 5/08
U.S. Cl. 350—288 3 Claims

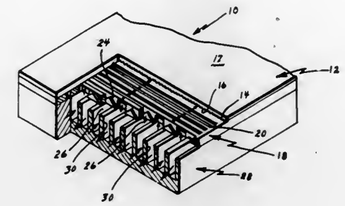


An adjustable mirror stand assembly such as may be used to assist in the application of make-up, has a pair of spaced apart pivoting units to allow substantially one hundred eighty degree spherical positioning at any angular relationship to a supporting surface. An adjustable length shaft further provides height variations of the mirror above the supporting surface.

3,781,094
LIQUID COOLED MIRROR STRUCTURE

Raymond H. Griest, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 15, 1972, Ser. No. 289,692
Int. Cl. G02b 5/08
U.S. Cl. 350—310 18 Claims

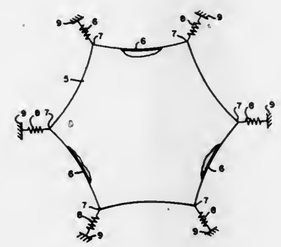


A liquid cooled mirror structure having a body, inner plate and face sheet. The body has longitudinal channels therein, the inner plate has narrow channels therein perpendicular to the longitudinal channels and the face sheet has a dense pattern of grooves therein perpendicular to the narrow channels. In operation coolant flows horizontally through the longitudinal channels, vertically through the narrow channels and horizontally through the grooves thereby cooling the face sheet by providing a high intrinsic impedance to the coolant flow, and high specific heat transfer coefficient, with a minimum of pressure drop.

3,781,095
REFLECTOR

Frank C. Rushing, Ellicott City, Md., and Lynford W. Gilbert, Palos Verdes Peninsula, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1969, Ser. No. 883,017
Int. Cl. G02b 7/18
U.S. Cl. 350—310 3 Claims

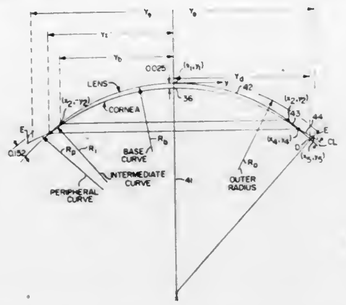


Described is an improvement in a thin membranous reflector having a continuous array of inwardly bending support cable means around its perimeter for stretched-flat tension-spring support at discrete outwardly extending apex locations of such array. The improvement resides in imparting a creep characteristic to such cable means which matches that of the reflector membrane while subjected to the flatness-inducing tensioning thereof, in behalf of assuring preservation of a stretched-flat state of such membrane for a prolonged period of time.

3,781,096
METHOD AND APPARATUS FOR DESIGNING CONTACT LENSES

Malcolm G. Townsley, Park Ridge, Ill., assignor to Wesley-Jessen, Inc., Chicago, Ill.

Filed Nov. 1, 1972, Ser. No. 302,777
Int. Cl. A61b *3/10, 3/14*; **G01b** *11/24*
U.S. Cl. 351—13 **10 Claims**

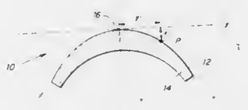


A method and apparatus for the design of contact lenses is disclosed wherein the contour of a patient's cornea is measured to generate a curve representing the contour of the cornea. With the desired bearing diameter of the contact lens and the apical clearance known along with the generated ellipse which represents the cornea contour, the base curve of the contact lens is computed which curve describes the interior surface of the optical zone of the contact lens. The intermediate, or bearing curve is then computed to parallel the curvature of the cornea such that the intermediate curve bears against the surface of the cornea, and finally the peripheral curve is computed based on the edge clearance and thickness desired. The design of the contact lens is completed by computing the front curve of the lens based on the prescription.

3,781,097
ASPHERIC LENS SURFACE

Edwin W. Bechtold, Manhasset, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed May 15, 1972, Ser. No. 253,011
Int. Cl. G02c *7/02*
U.S. Cl. 351—167 **6 Claims**



An aspheric ophthalmic lens series for use in the correction of aphakia. The series includes lenses having vertex powers extending from about +7.75 diopters to about +18 diopters and each of the lenses included within the series are provided with a front surface having an aspheric cross-sectional curvature defined by the equation

$$x = a/(by^2 + 1) + cy^2 + dy^4 - a$$

The lens series is designed to provide improved visual acuity to the aphakic patient throughout his normal range of vision while, at the same time, afford the fitter with substantial latitude in lens selection. The aspherically curved surfaces according to the present invention are also particulary well-suited for use in a series of multifocal lenses.

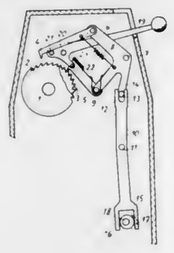
ERRATUM

For Class 351—16 see:
Patent No. 3,780,979

3,781,098
CONTROL APPARATUS FOR VARYING FOCAL LENGTH OF CINEMATOGRAPHIC ZOOM LENS

Wilfred Heiniger, and Gerard Lepinay, both of Yverdon, Switzerland, assignors to Bolex International SA, Sainte-Croix, Switzerland

Filed May 26, 1972, Ser. No. 257,075
Claims priority, application Switzerland, June 2, 1971, 8078/71
Int. Cl. G03b *3/00*
U.S. Cl. 352—140 **5 Claims**

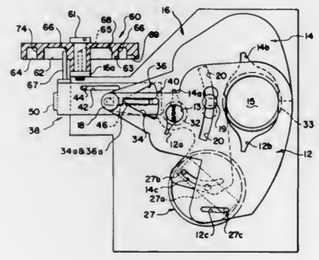


A cinematographic apparatus provided with a zoom lens comprising focal length varying means for varying the focal length of the lens during film standstill periods and for fixing the same during obturation periods.

3,781,099
AUTOMATIC OR PRESETTABLE DIAPHRAGM APPARATUS

Francis A. Williams, Webster, and Harvey H. Dudley, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,621
Int. Cl. G03b *7/10, 9/07, 19/18*
U.S. Cl. 352—141 **3 Claims**

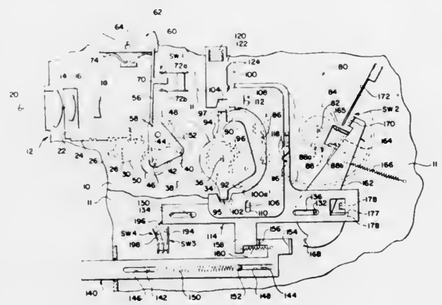


Diaphragm apparatus for use in a camera for alternatively providing either a continuous variable setting of an exposure aperture to sizes related to received light intensity or a preselectable, fixed exposure aperture size. The apparatus includes diaphragm blades coupled to a self-balancing, light responsive control circuit for establishing the size of the exposure aperture as a function of received light intensity, and switch means which when actuated disable the self-balancing circuit and configures the control circuit to drive the diphragm blades in a direction to form a minimum exposure aperture size. A mode selecting control emement, coupled with a diaphragm stop member, in a first position controls the switch and locates the stop member to permit the control circuit to operate in a mode which establishes an aperture size related to received light intensity, and in at least one other position controls the switch means and locates the aperture stop member so that the apparatus operates in a mode in which the diaphragm blades are driven toward a minimum aperture setting but engage the stop member to establish the preset aperture size.

3,781,100
MOTION PICTURE CAMERA DRIVE MECHANISM

Gerald L. Jenkins; Vernon H. Jungjohann; Edgar S. Marvin, all of Rochester, and Neil G. Seely, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 168,221, Aug. 2, 1971, Pat. No. 3,724,937.
This application Sept. 15, 1972, Ser. No. 289,517
Int. Cl. G03b *21/48*
U.S. Cl. 352—180 **3 Claims**



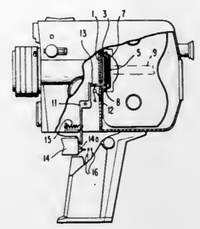
A motion picture camera drive mechanism includes a single motor which is used for driving (separately or simultaneously) a film pull down mechanism which advances film past an exposure aperture and a mechanism for adjusting at least one lens element in a zoom lens system. When the camera drive mechanism is to be energized, provision is made for first energizing a circuit to an automatic exposure control system and then operating the film pull down mechanism, thereby effecting correct exposure of the first frame of film.

3,781,101
CINEMATOGRAPHIC CAMERA

Keiji Kaneko, Kanagawa, and Toshio Yoshida, Saitama, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed June 30, 1972, Ser. No. 267,756
Claims priority, application Japan, June 30, 1971, 46/48264
Int. Cl. G03b *1/48*
U.S. Cl. 352—221 **13 Claims**

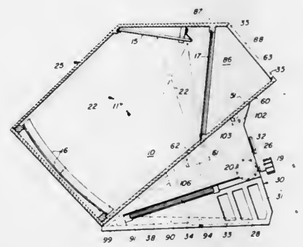
A motion picture camera with a film gate comprising an aperture plate and a pressure plate. The pressure plate holds the film in the camera against the aperture plate only when motion pictures are being taken. The camera includes apparatus for moving the pressure plate to a position where the film is not pressed against the aperture plate when pictures are not being taken. Upon the operation of a part of the camera normally operated when pictures are taken, the pressure plate is released so that it presses the film against the aperture plate.



3,781,102
MODULAR STRUCTURE FOR VIEWING APPARATUS

Jasper S. Chandler, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 19, 1971, Ser. No. 126,216
Int. Cl. G03b *23/12, 21/22*
U.S. Cl. 353—26 **12 Claims**

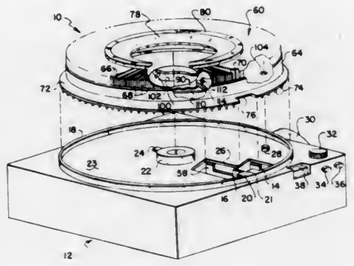


A viewing apparatus comprises at least two or, in some instances, three distinct modules. A base module includes a light source, a condenser lens system, a projection lens system, and a carrier for the type of photographic medium to be viewed, all of which are arranged in said base module. The base module also serves to support a housing module in which one or more mirrors are arranged for directing the projected image onto a front surface screen that is also mounted within the housing module. Filter means is arranged between the screen and a viewing opening in the housing module for compensating for the color temperature of the light source, thereby optimizing the luminance of the projected image reflected by the screen when viewed through the opening by an observer. The filter means also serves to reduce ambient light and is mounted in such a way as to seal the housing module against the entry of dust and dirt from the environs. In addition, the filter means provides a level of light (image luminance) that is suitable and comfortable for extended periods of viewing.

3,781,103
SLIDE TRAY

Matthew DiPietro, Webster, N.Y., assignor to Eastman Kokak Company, Rochester, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,763
Int. Cl. G03b 23/06
U.S. Cl. 353—111 1 Claim

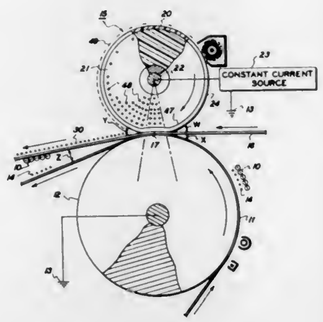


A slide tray and projector in which the tray has a circular compartmented body member for receiving slides and a slide retaining member or disc carried by and rotatable relative to the body member. When the slide tray is mounted on a projector, the slide retaining disc is held in a fixed position relative to the projector with an opening in the retaining disc aligned with the projector's slide projection gate. A plurality of pins on the body member are engageable by a rib on the projector for indexing the body member in forward and reverse directions. The pins are also engageable by a tray locking projection on the projector to precisely locate selected slide compartments in registry with both the opening in the retaining disc and the slide projection gate. A detent mechanism is provided for preventing rotation of the body member from a predetermined position relative to the retaining disc, and the detent mechanism is disengaged by a lever connected to the tray locking projection during the first operation of the indexing mechanism to permit movement of the body member relative to the retaining disc. In any other position of the body member relative to the retaining disc, the detent mechanism is ineffective to prevent rotation between the body member and the disc.

3,781,105
CONSTANT CURRENT BIASING TRANSFER SYSTEM

Thomas Meagher, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1972, Ser. No. 309,562
Int. Cl. G03g 15/16
U.S. Cl. 355—3 11 Claims



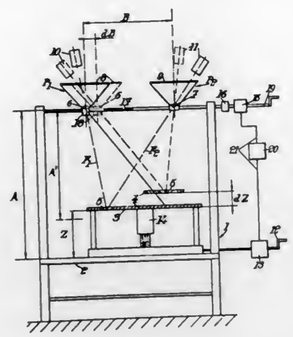
Electrostatic transfer of charged particles to a transfer member is accomplished using a roller electrode having electrically relaxable and self-leveling layers. The roller, along with the original support for the particles, defines a nip through which the transfer member is passed. Asymmetrical fields associated with the roller permit desirable post-nip air ionization while suppressing undesired pre-nip ionization. Constant current regulation of the roller current automatically corrects for electrical parameter variations affecting the desired field levels, such as variations in the thickness of the transfer member and variations in the resistance of the roller with relative humidity.

3,781,104
STEREOSCOPIC PLOTTING APPARATUS

Bernard Louis Yves Dubuisson, Paris, France, assignor to Societe Francaise D'Optique Et De Mecanique S. F. O. M., Rueil-Malmaison, France, part interest to each

Filed May 21, 1969, Ser. No. 826,618
Claims priority, application France, May 22, 1968, 68152653
Int. Cl. G03b 37/32, 35/14
U.S. Cl. 355—22 4 Claims

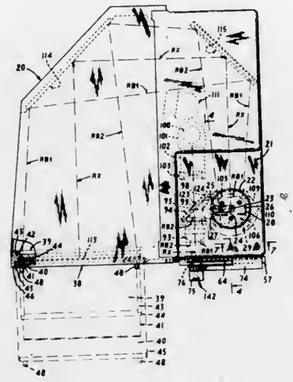
The apparatus comprises a table displaceable vertically by a manual control, and two projectors each projecting a photographic. The vertical displacement of the table causes, by a synchrotransmitter, a synchro-receiver and a threaded shaft, a proportional horizontal displacement of one of the projectors towards or away from the other projector. This apparatus brings out the relief, even if it is not very pronounced.



3,781,106
OPTICAL APPARATUS FOR PRODUCING AND/OR USING PHOTOCONDUCTIVE FILM HAVING A SPECULAR SURFACE SELECTIVELY DEFORMED IN IMAGE AREAS THEREOF

Gordon Lysle, Greenlawn, N.Y., assignor to Gordon Lysle Incorporated, East Northport, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,737
Int. Cl. G03g 15/00
U.S. Cl. 355—9 12 Claims

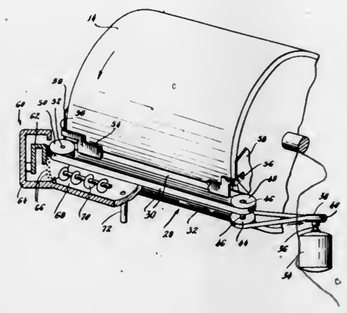


Optical apparatus to produce and/or use photoconductive and thermoplastic film having a specular surface selectively deformed in image areas thereof. A preferred form of this film is opaque. In one recording form of this apparatus an objective lens unit in an optical path defined by optical elements thereof receives a recording beam of light consisting of a bundle of light rays reflected from an image of a field of view, e.g., a flood lighted record sheet, and transmits this beam as an essentially collimated bundle of the rays bearing an image of the field of view to means holding such a film with its specular surface exposed in an optical aperture to this image-bearing beam. Electrostatic charge and heat applying means are located closely adjacent to, but spaced from the optical aperture to impose upon the film specular surface the electrostatic charge in a latent pattern corresponding to the darker areas of the image borne by the beam and to heat soften and deform by depression the electrostatically charged film surface areas which, upon cessation of radiation of the heat to this film surface, causes by cooling the temporary fixing or freezing of the deformed image darker portions to produce a rippled specular surface film. In another, projection form of the apparatus a projecting light source is associated with a beam splitter optically beyond such optical aperture and such an objective lens unit to project the bundle of light rays of an initial portion of a projection light beam from the beam splitter through the lens unit to such a rippled specular surface film exposed in the optical aperture. A secondary portion of this projection beam is then reflected back from the rippled specular surface of the film at the optical aperture along a common path through the lens unit to the beam splitter, where it is separated by the latter from the initial projection beam portion to be projected in focus to a display or read-out plane, such as a viewing screen. In still another form of the apparatus these recording and projection equipments or systems are combined to employ alternatively in the recording and projecting modes the same objective lens unit, the same film exposing optical aperture and the viewing screen which, in the recording mode, provides a support for any properly sized record sheet. A common light beam path is provided between the film exposing optical aperture and the viewing screen which has mounted therein between the beam splitter and the viewing screen a movable prism mount which selectively inserts into this path a common reflective prism in the recording mode and an amici prism in the projecting mode.

3,781,107
CLEANING APPARATUS

John Ruhland, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,146
Int. Cl. G03g 15/00
U.S. Cl. 355—15 8 Claims

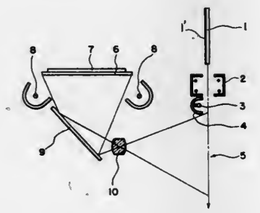


An endless loop cleaner in the form of a web or belt and which is composed of a material suitable for removal of marking material from an imaging surface. The web or belt is transported over an area of sweeping engagement with the imaging surface in a direction transverse to the longitudinal dimension of the imaging surface. After engagement, the web or belt is brought into engagement with a removal device for removing marking material from the web or belt. Alternatively, the web or belt is maintained in sweeping engagement with the imaging surface by a backing member which is positioned along an axis skewed with respect to the direction of movement of the web or belt such that a clean segment of the web or belt is continuously presented for the sweeping engagement.

3,781,108
METHOD AND APPARATUS FOR FORMING LATENT ELECTROSTATIC IMAGES

Masaya Ogawa, Abeno-ku, and Kuniki Seino, Amagasaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

Continuation of Ser. No. 850,383, Aug. 15, 1969, abandoned.
This application Apr. 17, 1972, Ser. No. 244,984
Int. Cl. G03g 13/00
U.S. Cl. 355—17 4 Claims



Method and apparatus for uniformly irradiating the surface of an N-type photoconductive material to decay a uniform

surface charge thereon so that the surface charge potential lies on a substantially linear, steeply sloping portion of the surface charge potential-to-exposure time characteristic of the photoconductive material, thereby reducing the image exposure time.

3,781,109

DATA ENCODING AND DECODING APPARATUS AND METHOD

George L. Mayer, Jr., New Orleans, La., and David L. Dobbins, McLean, Va., assignors to Coded Signatures Inc., New Orleans, La.

Division of Ser. No. 103,204, Dec. 31, 1970, Pat. No. 3,676,000. This application Nov. 10, 1971, Ser. No. 197,465

Int. Cl. G03b *27/68*

U.S. Cl. 355—52 **37 Claims**



Apparatus and method or system for encoding and recording coded data, and retrieving the same by decoding and display thereof for direct viewing or for viewing on a screen. The method comprises utilizing a multiple array lens, otherwise known as a "fly's eye" lens, for "scrambling" the data to be encoded and also for "unscrambling" or decoding the data. The encoding means includes photographic means for making a negative film, or a direct positive photo, of the image appearing at the back face of the encoding lens. In the case of a photographic negative, a positive print is made therefrom. The positive print, whether made directly or indirectly, is applied to a paste-up sheet, which is photographed and the negative thereof is used with a masking sheet to expose an offset printing plate. Alternatively, a positive printing plate can be made directly from the paste-up sheet and used for ink-printing the encoded data. The system includes decoding apparatus for converting the encoded data back to its original form for viewing and, if desired, display and comparison with other matter, which may appear on the same document containing the encoded data.

3,781,110

OPTICAL RANGE FINDING SYSTEM

Ludwig Leitz; Knut Heitmann, and Eckart Schneider, all of Wetzlar, Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

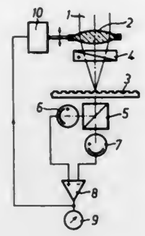
Filed Nov. 15, 1972, Ser. No. 306,535

Claims priority, application Germany, Nov. 15, 1971, P 21 56 617.6

Int. Cl. G01c *3/08*

U.S. Cl. 356—4 **22 Claims**

An optical range finding system wherein a local frequency component of the image of an object is generated and the position of the plane of maximum amplitude of the frequency component is established by an objective to produce the image, a grating located in the image space, a beam splitter for splitting the image into two components and photoelectric detectors receiving radiation which has been modulated by the



grating. The radiation constitutes at least part of each of the frequency components and the detecting means supply signals to a push-pull amplifier having a frequency equal to the local frequency. These signals are indicative of the position of the plane of maximum amplitude.

3,781,111

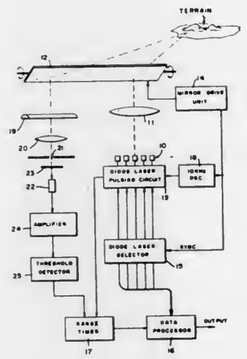
SHORT RANGE LASER OBSTACLE DETECTOR

James C. Fletcher, Administrator of the National Aeronautics & Space Administration, with respect to an invention of, and William L. Kuriger, 912 Schulze Dr., Norman, Okla.

Filed Mar. 16, 1972, Ser. No. 235,268

Int. Cl. G01c *3/08*

U.S. Cl. 356—5 **7 Claims**



A short range obstacle detector for surface vehicles is provided by an array of laser diodes operated one at a time, one for each of a plurality of adjacent azimuth sectors. A vibrating mirror a short distance above the surface provides continuous scanning in elevation for all azimuth sectors. A diode laser selector is synchronized with the vibrating mirror to enable one diode laser to be fired by pulses from a clock pulse source a number of times during each elevation scan cycle. The time for a given pulse of light to be reflected from an obstacle and received is detected as a measure of range to the obstacle.

3,781,112

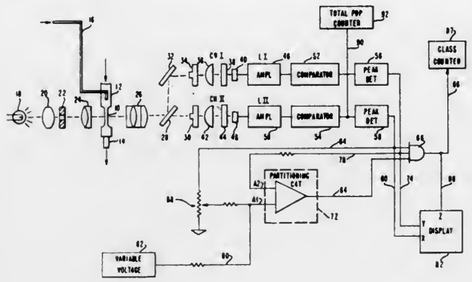
METHOD AND APPARATUS FOR ANALYSIS OF LEUKOCYTES USING LIGHT SCATTERED BY EACH LEUKOCYTE AT ABSORBING AND NON-ABSORBING WAVELENGTH

Warren Groner, Whitestone, and Wilberdan Victor George, Brooklyn, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,703

Int. Cl. G01n *33/16, 21/00*

U.S. Cl. 356—39 **10 Claims**



Electrical signals, originating from a pair of independent photodetectors and generated by different optical reactions to each one of a large number of leukocytes contained in a suspension and flowed sequentially at a rapid rate transversely through a beam of light, are coupled for interaction of a differential type to discriminate and indicate by display and/or counting a subclass of stained leukocytes in the suspension. The discrimination utilizes a significant increase in one of the optical reactions, which is a dark field reaction, and a reduction in the other optical reaction, which is also a dark field reaction, effecting superior discrimination, while counting the leukocytes of the subclass and unstained leukocytes of the main class. One of the optical reactions is a reaction of one of the detectors highly sensitive to light at wavelengths of stain and the other is a reaction of the other detector substantially insensitive to light at wavelengths of stain but sensitive to light at longer wavelengths. Both a method and apparatus for accomplishment of this technique of sample analysis are contemplated.

3,781,113

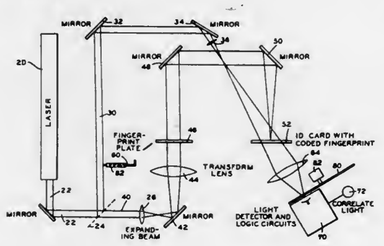
METHOD AND APPARATUS FOR PERSONAL IDENTIFICATION

Carlton E. Thomas, Van Nuys, Calif., assignor to KMS Industries Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 774,674, Nov. 12, 1968, abandoned. This application Oct. 26, 1971, Ser. No. 192,070

Int. Cl. G06k *9/08*

U.S. Cl. 356—71 **3 Claims**



A method and apparatus for creating an encoded fingerprint card which consists of a hologram of a fingerprint

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3,781,114

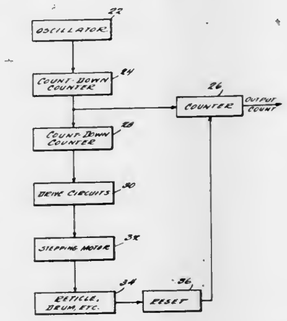
POSITION INDICATING SYSTEM FOR INDICATING THE ANGULAR POSITION OF A CONTINUOUSLY ROTATING MEMBER UTILIZING COUNTER MEANS

Robert W. Marsh, and Alden J. Mooers, both of Minneapolis, Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed June 18, 1969, Ser. No. 834,421

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 **11 Claims**



A position indicating system and more specifically an angular position indicating system for accurately indicating the angular position of a continuously rotating member wherein a stepping motor is continuously rotated to drive a reticle or other movable member and wherein a counter provides an accurate interpolation of the position of the member and of the motor between the step positions of the motor and wherein the ratio of the instantaneous count of the counter to the total count of the counter is equal to the ratio of the angular position of the stepping motor to 360°.

3,781,115

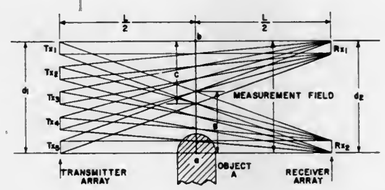
METHOD AND APPARATUS FOR NON-CONTACT SURFACE MEASUREMENT

Edwin R. Rader, and Clarence A. Ripley, Jr., both of Tallmadge, Ohio, assignors to Monitor Systems Corporation, Akron, Ohio

Filed Feb. 14, 1972, Ser. No. 225,973

Int. Cl. G01b *11/00, 11/04, 11/30*

U.S. Cl. 356—167 **18 Claims**



The invention relates to a method and apparatus to measure surfaces without contacting the surfaces. It incorporates a plu-

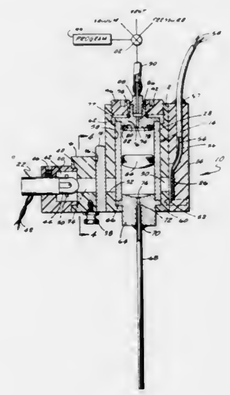
rality of light beams, means to sequentially actuate the beams and means to detect the beams as they are actuated. The surface of an object extending into the beams will interrupt one or more of the beams. The beam being partially interrupted is determined. Then the proportion of the partially interrupted beam is determined. The beams have a uniform light distribution across their width so the proportional measurement accurately determines the distance of surface intrusion. Since the position of the beam is known, a highly precise measurement of the position of the surface is achieved. If no beams are interrupted, new beam paths are established to provide a broad range of coverage. Electronic controls insure a fast response and accuracy to at least 0.0001 inches.

3,781,116

COLORIMETER WITH AUTOMATIC CUVETTE

Alan Richardson Jones, Miami, Fla., assignor to Coulter Chemistry, Inc., Maunabo, P.R.

Filed Oct. 14, 1971, Ser. No. 189,312
Int. Cl. G01n *1/10, 1/14*
U.S. Cl. 356—180 **18 Claims**



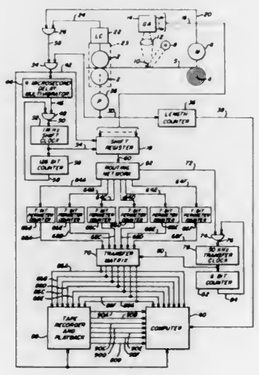
A colorimeter with a source of light arranged to have its beam directed through the transparent walls of a cuvette to a photoresponsive device to measure the absorbance of the liquid in the cuvette. The cuvette is a cylinder of glass or the like having an upper central port in its upper cylinder head surrounded by an O-ring and a lower central port in its lower cylinder head connected with a depending probe. A free moving piston is movable in the chamber of the cuvette but has an outer diameter slightly less than the inner diameter of the cylinder. The upper port is adapted to be connected to a source of vacuum or pressure alternatively. When the probe is dipped into a body of liquid with the upper port connected to a source of pressure, the piston moves down to the bottom head of the cylinder and due to its dimensional difference relative to the wall of the cylinder, air escapes past the piston. The piston's bottom face does not accurately seat on the bottom cylinder head which contains the bottom port and hence the air also passes out of the lower port and through the probe into the body of liquid. This causes bubbles to be forced into the liquid and mixes the same. The upper port is then switched to a source of vacuum and with the application of vacuum above the piston, the atmospheric pressure on the liquid forces it to rise in the probe and into the lower port of the chamber. The inrush of liquid carries the piston upward because the space between the piston and the wall of the cylinder is substantially sealed by capillary action of the liquid. The piston is preferably formed of carbon and hence is normally of a specific gravity greater than that of the liquid, but it rises with the liquid on account of the capillary force mentioned. When the piston reaches the upper head of the cylinder, it is sucked against the O-ring and is sealed thereat. So long as vacuum is applied to the upper port this situation obtains. During this period of time with the chamber filled with liquid, the absorbance of the liquid is measured. Thereafter, the upper port is once more switched to a source of pressure. This drives the piston and liquid downward until the lower head is reached. The continued application of air pressure drives all vestiges of liquid past the piston due to its sloppy fit within the cylinder and out of the probe, clearing the cuvette and probe for the next test. The upper port may then be vented, if desired, leaving the piston at the bottom of the cylinder.

3,781,117

APPARATUS FOR SURFACE INSPECTION OF MOVING MATERIAL

John F. Laycak, West Mifflin Borough; Gerald J. Readal, O'Hara Township, Allegheny County, and Samuel B. Prellwitz, Wilkinsburg Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 121,092, March 4, 1971, abandoned. This application Mar. 31, 1972, Ser. No. 240,086
Int. Cl. G01n *21/32*
U.S. Cl. 356—200 **4 Claims**



An inspection system for the surface of moving material where defects have a different optical appearance than the remainder of the strip. A plurality of photosensitive diodes positioned across the material detects defects periodically. Diode outputs are counted to identify the perimeter of a defect for each scan line. A computer determines the recognition vectors of the defect and identifies the nature of the defect, extent of the defect and the existence of a pattern of repetition.

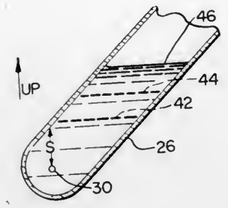
3,781,118

SEDIMENTATION MEASURING DEVICE

Michael M. Graham, San Francisco, Calif., assignor to The Heyman Laboratory, Cambridge, Mass.

Filed Oct. 27, 1972, Ser. No. 301,424
Int. Cl. G01n *21/22*
U.S. Cl. 356—201 **16 Claims**

Novel apparatus and process for increasing the reliability of short term sedimentation tests such as those carried out by the measurement of light transmitted through a liquid bearing the falling sediment. A particular advantage of the invention is that it provides a simple and inexpensive means for measuring



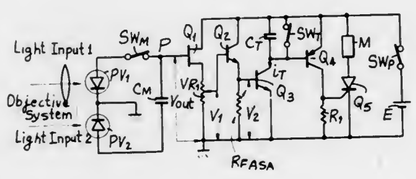
sedimentation rates on samples in test-tube-type containers without reliance on the care with which the container was filled.

3,781,119

DUAL LIGHT-MEASUREMENT AND COMPENSATION CIRCUITRY FOR CAMERAS

Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaru Kogyo Kabushiki Kaisha, Itabashi-ku, Tokyo-to, Japan

Filed Feb. 9, 1972, Ser. No. 224,719
Claims priority, application Japan, Feb. 22, 1971, 46/8483
Int. Cl. G01j *1/42, 1/10*
U.S. Cl. 356—222 **9 Claims**



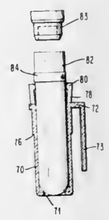
A light-measurement circuit to be used with cameras for determining the extent to which film is exposed. The light-measurement circuit has internal and external photosensitive structures for respectively receiving light inputs from an object to be photographed. The internal photosensitive structure receives the light input after the latter has passed through the camera objective while the external photosensitive structure receives a light input which does not pass through the objective. The external photosensitive structure can continue to receive a light input up to and during actual exposure of film while the internal photosensitive structure can receive a light input only prior to actual exposure of the film. These photosensitive structures are arranged to provide logarithmically transformed outputs which correspond to the light inputs received thereby, and these outputs are transmitted to a capacitor which is charged in accordance with the difference between the outputs. When film is actually exposed, an output determined by the capacitor and the external photosensitive structure is used to compute and determine the extent to which film is exposed, and as a result the output from the external photosensitive structure is compensated in accordance with the output from the internal photosensitive structure.

3,781,120

SELF-LOCATING SAMPLE RECEPTACLE HAVING INTEGRAL IDENTIFICATION LABEL

Alvin Engelhardt, Nanuet, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Division of Ser. No. 72,143, Sept. 14, 1970, Pat. No. 3,680,976, which is a continuation-in-part of Ser. No. 830,059, June 3, 1969, abandoned. This application May 3, 1972, Ser. No. 250,187
Int. Cl. G01n *21/16;* **B04b** *9/12*
U.S. Cl. 356—244 **13 Claims**



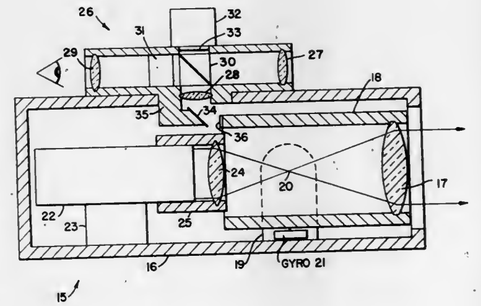
A liquid sample receptacle includes an integral label portion carrying machine-readable indicia identifying the sample source and located substantially parallel to the longitudinal axis of a cup portion. The sample receptacle is structured with respect to the turntable unit to properly align the machine-readable indicia for automatic readout.

3,781,121

STABILIZED LIGHT BEAM PROJECTION SYSTEM

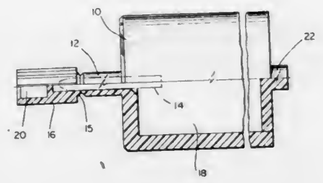
Richard A. Gross, San Jose, Calif., assignor to Mark Systems, Inc., Cupertino, Calif.

Filed June 22, 1970, Ser. No. 48,395
Int. Cl. G01c *9/02*
U.S. Cl. 356—247 **10 Claims**



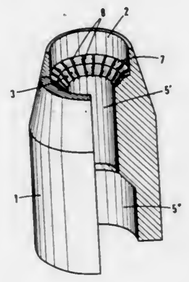
A laser stabilizing system having an inertially stabilized projection lens mounted for pivotal movement about its focal point. A light source, such as a laser, and means for focusing the light emitted therefrom to a real or virtual point image at the focal point of the projection lens are provided. A spotting telescope having a reticle pattern superimposed upon the image visible therethrough, the reticle pattern being optically coupled to the output direction of the device may also be provided.

3,781,122
ONE PIECE MARKER BODY WITH HERMETICALLY SEALED REMOVABLE CAP
James H. Chesseman, Laurel Springs, N.J., assignor to Graphic Controls Corporation, Buffalo, N.Y.
Filed Oct. 10, 1972, Ser. No. 296,258
Int. Cl. B43k 9/00
U.S. Cl. 401—202 3 Claims



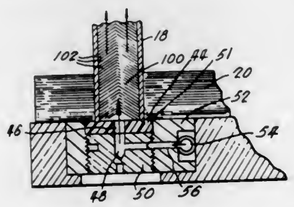
Hermetically sealed plastic marker body includes a nib-holding portion with a removable closure cap projecting therefrom and separated therefrom by a severable reduced wall thickness segment. In preferred embodiments, the removable closure includes mating recesses or other shapes to fit over the nib-holding body portion, thus acting as a removable cap, and over another portion of the body acting as a storage holder for the cap when not used to cover the nib-holding portion.

3,781,123
BALL-POINT PENS
Georg Linz, Silberstrasse 12, Nurnberg, and Lothar Sommer, Schlesierstrasse 5, Katzwang near Nurnberg, both of Germany
Continuation of Ser. No. 17,018, March 9, 1970, abandoned, which is a continuation of Ser. No. 633,873, April 26, 1967, abandoned. This application Nov. 30, 1972, Ser. No. 310,781
Claims priority, application Germany, Apr. 26, 1966, L 53,436
Int. Cl. B43k 7/10
U.S. Cl. 401—216 11 Claims



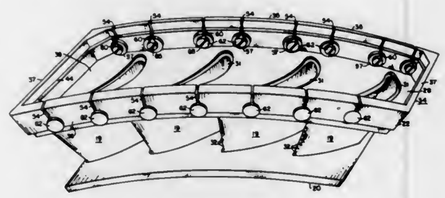
In a ball-point pen having a ball housing including a support wall and a bearing surface for seating a ball, and means at one end of the ball housing for communicating into a reservoir containing a pasty writing medium, a plurality of open channels are formed in the bearing surface for conducting the pasty writing medium from the reservoir to the ball, the cross sectional area of each open channel being less than 1,000 square microns, so that the capillary attraction between the open channels and the writing medium is great enough to move the writing medium from the reservoir to the ball against the force of gravity. The support wall and bearing surface are preferably dimensioned to define an annular collecting groove communicating between the surface of the ball and each of the open channels.

3,781,124
PAPER PLUG REMOVAL FROM DRILLED REAMS
Alistair Kenyon Bodycomb, Baie D'Urfe, Quebec, Canada, assignor to Domtar Limited, Montreal, Canada
Filed Feb. 22, 1972, Ser. No. 228,043
Int. Cl. B23b 47/34
U.S. Cl. 408—61 2 Claims



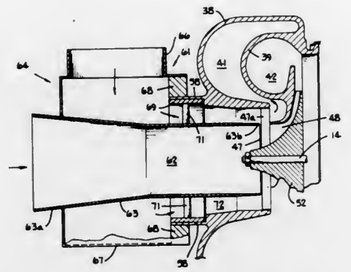
A device for drilling reams of paper utilizing a hollow drill and compressed air to eject the plugs formed by the drill up through the drill to an accumulating station.

3,781,125
GAS TURBINE NOZZLE VANE STRUCTURE
Thomas J. Rahaim, Claymont, and Leslie G. Kish, Wilmington, both of Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 7, 1972, Ser. No. 241,943
Int. Cl. F01d 5/14
U.S. Cl. 415—115 10 Claims



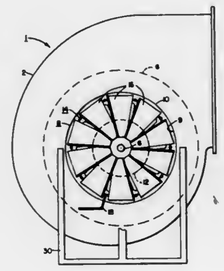
A nozzle vane structure for a gas turbine having a cavity in the outer shroud structure acting as a plenum chamber that provides pressurized coolant fluid to the vanes, and in which the internal stress effect due to large temperature gradients is minimized by a key-hole shaped slotted portion in the outer shroud having a thin walled sleeve split as its periphery and attached thereto and receiving a threaded sealing member therein to restrict coolant flow therepast during deformation incident to operation.

3,781,126
TURBOCHARGER COMPRESSOR WITH DUAL INLET AND COLLECTOR CHAMBERS
Edward F. Benisek, Indianapolis, Ind., assignor to Wallace-Murry Corporation, New York, N.Y.
Filed June 15, 1972, Ser. No. 263,009
Int. Cl. F04d 1/10, 29/58
U.S. Cl. 415—143 4 Claims



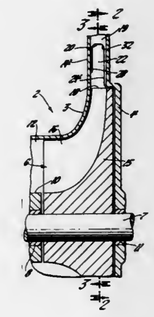
Disclosed is a single stage, centrifugal compressor component of a turbocharger for an internal combustion engine in which the vanes of the compressor wheel are formed to provide frontal vane portions extending radially beyond the adjoining vane portions. The intake for the compressor is formed to provide dual, discrete intake passages, one for the radially extending vane portions and one for the adjoining vane portions. An internal wall of the compressor wheel cover forms two discrete chambers or passages, one accommodating air flow induced by the radially extending vane portions, the other accommodating flow induced by the adjoining vane portions. The dual flow paths thus provided through the compressor component permits drawing cool, ambient air through an externally located heat exchanger and then into the intake of one compressor flow path, this air flow passing in heat exchange relation to the high pressure air output of the other compressor flow path. The cooled high-pressure air output, is injected as charge air into the air induction system of an internal combustion engine.

3,781,127
CENTRIFUGAL FAN INLET AND VANE CAPACITY CONTROL
Carl O. Wood, Needham Heights, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 14, 1972, Ser. No. 262,868
Int. Cl. F01d 7/00, 7/14
U.S. Cl. 415—147 4 Claims



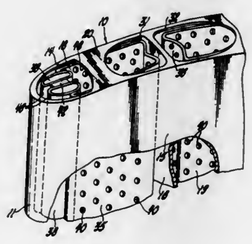
This invention relates to a centrifugal fan having an inlet cone and a rotating fan wheel, and more particularly to a centrifugal fan inlet capacity control. The capacity control consists of a plurality of spin inducing inlet vanes and means to pivotably support the vanes circumferentially around the outer wall of the inlet cone. The vanes may be pivoted in unison through their respective pivot axes which are adjacent the periphery of the inlet cone and generally parallel to the cone outer wall. As the vanes are pivoted away from the outer inlet cone wall, the induced spin can be thereby increased and also the volume of gas flowing through the inlet cone can be reduced.

3,781,128
CENTRIFUGAL COMPRESSOR DIFFUSER
Phiroze Bandukwalla, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 12, 1971, Ser. No. 188,133
Int. Cl. F04d 29/44, 17/60
U.S. Cl. 415—211 3 Claims



The diffuser of a centrifugal compressor having an unshrouded rotor has boundary layer fences on the walls bounding the diffuser in advance of the diffuser vanes. These vanes are directed across the direction of flow of boundary layer air on the diffuser wall and curve into the direction of the diffuser vanes as they merge with the leading edge of the vanes.

3,781,129
COOLED AIRFOIL
Robert H. Aspinwall, Zionsville, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 15, 1972, Ser. No. 289,417
Int. Cl. F01d 5/18
U.S. Cl. 416—97 4 Claims



A hollow air-cooled turbine blade or vane includes a liner for bringing cooling air into the blade and discharging it through two cooling air exhaust tubes disposed near the interi-

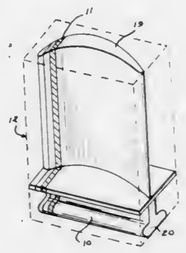
or of the leading edge and extending spanwise of the blade. These tubes define between them a slot nozzle for discharge of air from the liner for impingement cooling of the leading edge. The exhaust tubes have air entrance holes adjacent the leading edge. The pressure drop to cause the circulation of the air out through the tubes is caused by centrifugal force or pressure drop across the stage or both.

3,781,130

TURBINE BLADE MANUFACTURED OF SELF-CARRYING LAMINATES

Wayne A. Tall, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 27, 1972, Ser. No. 266,810
Int. Cl. F01d *5/08*
U.S. Cl. 416—97 **4 Claims**



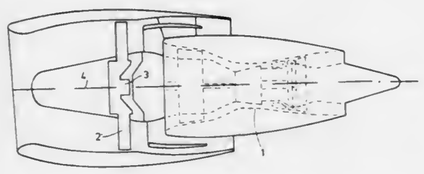
A turbine blade manufactured from a series of laminates each oriented in a radial-tangential plane for carrying its own centrifugal loads, and partially preformed by being initially cut into a shape suitable for stacking and bonding and being further perforated along boundaries outlining the final blade shape desired for facilitating the machine removal of excess material therefrom. Additional perforations are also incorporated in each laminate for outlining a series of built-in coolant passages.

3,781,131

VARIABLE PITCH ROTARY BLADING

David Roberts McMurtry, Bristol, England, assignor to Rolls-Royce, Limited, London, England

Filed Apr. 28, 1972, Ser. No. 248,410
Claims priority, application Great Britain, May 6, 1971, 14,173/71
Int. Cl. B64c *11/06*
U.S. Cl. 416—155 **4 Claims**



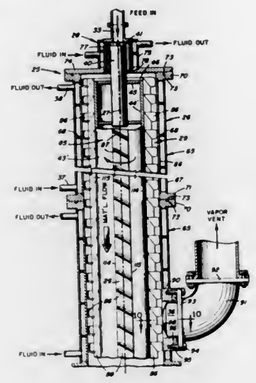
In a variable pitch fan gas turbine engine an actuator for changing the pitch of the blades is connected to each blade through two driving connections in parallel. The first driving connection is a relatively flexible shaft, and the second is a relatively stiff hollow shaft which surrounds the first shaft and is connected to it by means of splines. This arrangement allows for bending of the first-mentioned shaft and tilting of the hollow shaft to provide for relative movements between the actuator and the blades.

3,781,132

DEVOLATILIZER ROTOR ASSEMBLY

George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,187
Int. Cl. F04d *29/18*
U.S. Cl. 416—200 **6 Claims**



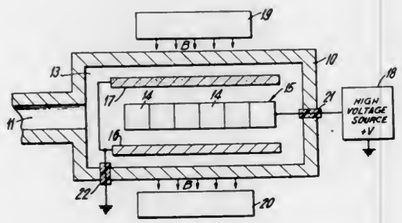
A rotor assembly suitable for use in a devolatilizer for processing relatively viscous materials to separate volatiles therefrom is described. The rotor assembly permits a high mechanical energy input to materials being treated, has low surging characteristics, and permits operating at relatively high speeds with low foaming tendencies. The rotor assembly employs a plurality of circumferentially positioned, radially projecting, plow blades arranged about a central shaft into a plurality of axially extending rows. The total blade land surface areas of the individual plow blades is controlled, as is the rotor assembly length to diameter ratio.

3,781,133

SPUTTER ION PUMPS

Lewis D. Hall, Palo Alto, Calif., assignor to Veeco Instruments, Inc., Plainview, N.Y.

Filed Mar. 6, 1972, Ser. No. 231,828
Int. Cl. F04b *37/02*
U.S. Cl. 417—49 **3 Claims**



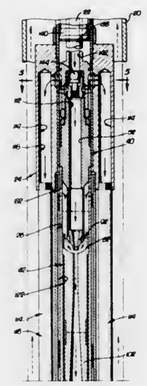
To increase the ionization in sputter ion pumps, a relatively high vapor pressure metal is provided which vaporizes when heated by the discharge, the vaporized atoms are ionized and accelerated to the sputtering electrode to enhance the sputtering action which in turn increases the pump speed.

3,781,134

WELL PUMPING SYSTEM WITH PARALLEL JET PUMPS

Francis Barton Brown, La Crescenta, and Vitolis Budrys, La Mirada, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed May 1, 1972, Ser. No. 249,086
Int. Cl. F04f *5/02*
U.S. Cl. 417—176 **5 Claims**



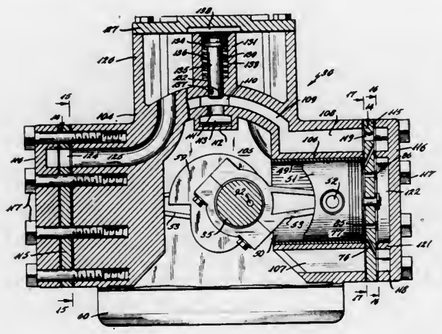
A well pumping system which includes a pump unit movable into and out of a well hydraulically and including a plurality of jet pumps connected in parallel. The jet pumps receive power fluid from a common power tubing through which the pump unit is movable between the surface and its operating position. The jet pumps discharge pressurized well fluid and spent power fluid into a common production tubing leading to the surface, the production tubing being the well casing in the particular embodiment disclosed.

3,781,135

REFRIGERANT COMPRESSOR FOR VEHICLES

Claude H. Nickell, Dearborn, Mich., assignor to Claude H. Nickell, Dearborn; Winfred D. Weldon, Detroit; Manuel Pinko and Adam Pianga, Dearborn, Mich.

Filed May 19, 1972, Ser. No. 255,235
Int. Cl. F04b *49/00*
U.S. Cl. 417—295 **8 Claims**



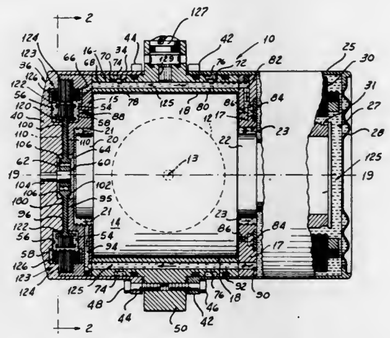
Compressor apparatus for use with a variable speed power plant to compress refrigerant vapor in an air conditioning system. The compressor includes a plurality of cylinders having pistons which are sequentially operated. Each of the cylinders is provided with refrigerant vapor from multiple chambers of limited capacity in communication with each other and with a plenum chamber of the compressor by metering structures so that the volume of refrigerant vapor being compressed is directly proportional to the speed of the vehicle and the condenser pressure of the system.

3,781,136

COMBINATION CENTRIFUGAL AND VISCOUS SHEAR ROTARY PUMP

Oscar D. Jacobson, 1142 Woodycrest Ave., New York, N.Y.

Division of Ser. No. 807,232, March 14, 1969, Pat. No. 3,643,519. This application June 30, 1970, Ser. No. 60,186
Int. Cl. F04b *35/04*; **F03b** *5/00*
U.S. Cl. 417—353 **3 Claims**



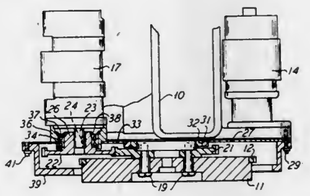
A combination centrifugal and viscous shear rotary pump of a disc impeller type with extremely shallow spiral grooves fabricated in both sides of the disk and in close proximity to smooth stator surfaces so as to cause a high viscous shear in a low viscosity fluid to effect an improved pressure rise in the spiral grooves as the disk rotates in a sense aiding in a centrifugal pumping action of the impeller disk. In operation, the disk floats hydrodynamically between the stator faces and on a center journal bearing so that there are no wear points during operation of the rotary pump which is particularly adapted for use in an arrangement for supplying fluid pressure to hydrostatically supported bearings of a gyroscope.

3,781,137

MOUNTING AND DRIVE FOR A HYDRAULIC PUMP ON AN ENGINE

William A. Engstrom, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

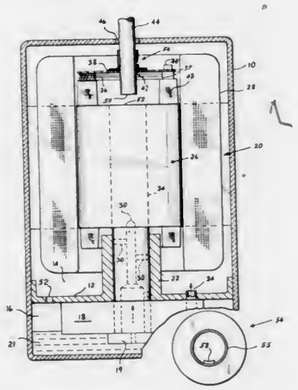
Filed Dec. 11, 1972, Ser. No. 313,783
Int. Cl. F04b *17/00*; **F16h** *37/00*
U.S. Cl. 417—360 **6 Claims**



A mounting and drive for a hydraulic pump on an engine having a crankshaft and a flywheel gear. Additional gear

means are in driving relation with the flywheel gear and extend from the crankshaft to the pump for powering the pump directly from the engine. A mounting plate is secured to the engine, and a bearing support and a pump bearing are on the mounting plate. A pump gear is supported in the bearing, and the pump shaft connects with the pump gear and is removable therefrom for removal or replacement of the pump. Also, the flywheel and the gears extending to the pump are removable for altering the gear ratio.

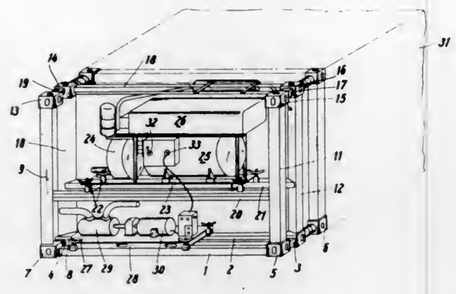
3,781,138
SEAL SLEEVE FOR OIL SEPARATOR
Frederich Otto Bellmer, Stanhope, N.J., assignor to Fedders Corporation, Edison, N.J.
Filed Apr. 24, 1972, Ser. No. 246,768
Int. Cl. F04b *39/02, 39/06*
U.S. Cl. 417—368 **8 Claims**



In a hermetically sealed motor-compressor unit, a gas discharge tube extends into said unit to a position between the windings of the motor rotor. A circular rotor plate is mounted to the end of the rotor and has an opening formed therein through which the discharge tube is disposed. A flanged sleeve is positioned around the discharge tube and is held in place on the tube by spring tension of the sleeve itself. A flange portion of the sleeve seals a gap between the rotor plate and the discharge tube to prevent the flow of refrigerant gas and oil therethrough. The rotor plate is positioned so as to separate entrained oil from the refrigerant gas and is utilized for motor cooling.

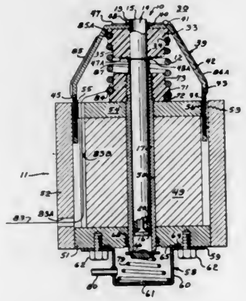
3,781,139
ENERGY SUPPLY UNIT FOR FREIGHT CONTAINERS
Hans-Heinrich Lohse, Hamburg, Germany, assignor to Contrans Gesellschaft fur Containerverken m.b.H., Hamburg, Germany
Filed Apr. 17, 1972, Ser. No. 244,605
Claims priority, application Germany, Apr. 19, 1971, G 71 14 870.4
Int. Cl. F04b *39/00*
U.S. Cl. 417—313 **7 Claims**

An energy supply unit for freight containers consisting of a structure having an internal combustion engine therein and at least one transducer. The structure is the same height as the



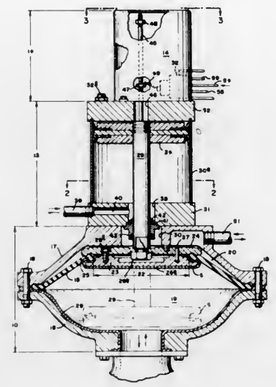
container and has a detachable means for rigid connection to said container.

3,781,140
SYNCHRONOUS RECIPROCATING ELECTRODYNAMIC COMPRESSOR SYSTEM
David J. Gladden, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed May 26, 1971, Ser. No. 147,026
Int. Cl. F04b *35/04*
U.S. Cl. 417—326 **9 Claims**



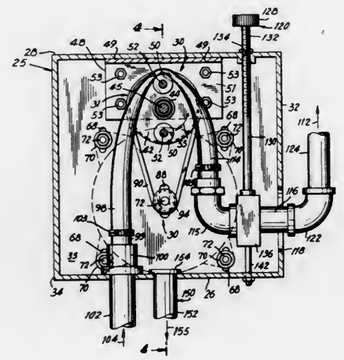
An electrodynamic compressor includes an electrical coil mounted for reciprocation in a magnetic field. A piston is connected to the coil for reciprocation with it. A resonance spring resiliently supports the coil and piston in a rest position. An electrical pulse of predetermined duration energizes the coil, and causes a magnetic force to be exerted on it thereby moving the piston to compress fluid and storing energy in the spring. As the piston nears the end of the compression cycle, the pulse is terminated and the piston and coil are returned under action of the spring. When the piston reaches the end of its return cycle, a circuit sensing the self-induced voltage in the coil energizes the coil as it again commences a compression cycle. As the load varies, the period between adjacent electrical signals also varies and remains synchronous with the cycle time of the mechanical reciprocating system so that the period of the electrical signal is always equal to the period of the natural oscillating frequency of the mechanical system.

3,781,141
AIR PRESSURE ACTUATED SINGLE-ACTING DIAPHRAGM PUMP
Robert A. Schall, Stamford, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.
Filed July 12, 1971, Ser. No. 161,464
Int. Cl. F16j *3/00;* **F04b** *43/00*
U.S. Cl. 417—395 **3 Claims**



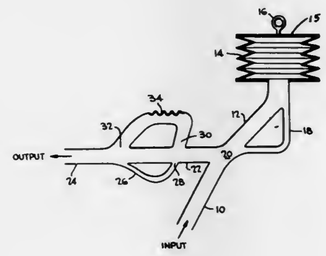
A single-acting fluid pressure actuated diaphragm pump wherein a high suction lift is attainable by connecting the pump diaphragm to a piston or auxiliary diaphragm operating in an auxiliary fluid pressure-actuated chamber connected to the pump housing, and equipped with a control system for maintaining the pump operating cycle, which control system in turn is actuated by the pump diaphragm.

3,781,142
PERISTALIC PUMP WITH ADJUSTABLE TENSIONING MEANS
Leon A. Zweig, North Bellmore, N.Y., assignor to Flow Technology Corp., Farmingdale, N.Y.
Filed Jan. 14, 1972, Ser. No. 217,746
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—477 **26 Claims**



The construction of a pumping system adapted for utilization in transfering fluids primarily in the graphic art. The pumping system includes housing means having an inlet opening and an outlet opening extending therethrough with pumping means mounted within the housing means and operatively connected with the inlet and outlet openings to receive a fluid in the inlet opening and pumping same through the pumping means to exit through the outlet opening, the said pumping means including, a rotary structure rotatably mounted within the housing means and having a plurality of spaced rotary members mounted thereupon for rotation therewith and independent rotation thereto and a fluid conducting tube positioned in relationship to said rollers as to be sequencially engaged, and rotating means coupled to said rotary structure. Coupling means are provided at each end of the fluid conducting tube for operatively connecting to the inlet and outlet openings, with regulating means associated with the fluid and movement relative to the rotary members wherein the tension in the conducting tube may be regulated. Guide means is associated with the regulating means to control the direction of movement thereof during adjustment, the guide means includes a pair of spaced apart supports secured to the housing means and confining the regulating means so that the latter may ride freely with respect thereto.

3,781,143
VALVELESS FLUID PUMP
Donald E. Wortman, 609 Muriel St., Rockville, Md.
Filed May 30, 1972, Ser. No. 257,736
Int. Cl. F04b *39/10;* **F15c** *1/08*
U.S. Cl. 417—557 **4 Claims**

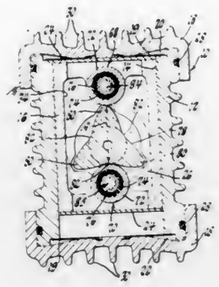


A driven fluid oscillator pump with no mechanical valves. Fluid flow is directed into a capacitance chamber of a modified RCR fluid oscillator and expelled such that a pulsed pumping action results. There are no valves in the pump, thus permitting corrosive and other such fluids to be pumped without damage or breakdown. The pump incorporates a fluid diode to prevent backloading of the capacitance chamber when it is expanding.

3,781,144
CAM OPERATED COMPRESSOR
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 27, 1972, Ser. No. 301,478
Int. Cl. F04b *21/04, 39/10*
U.S. Cl. 417—525 **3 Claims**

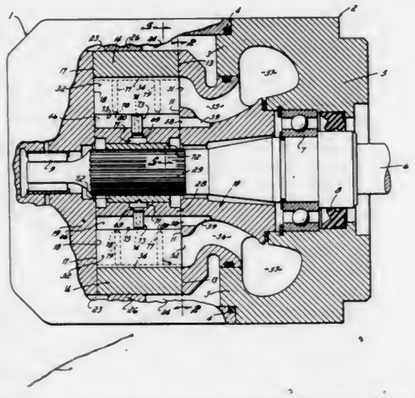
A refrigerant compressor with a dual ended and double acting piston which supports two roller bearings adjacent its ends. A cam portion on a drive shaft has diametrically opposite

large radius lobe portions and smaller radius portions which are positioned between the two roller bearings. The roller bearings are supported on eccentric pins which adjustably



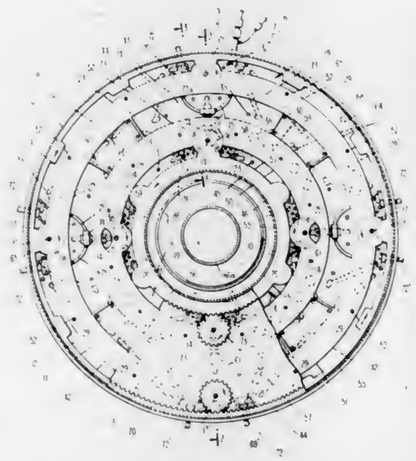
vary the distance therebetween for easier assembly of the drive shaft and simple adjustment of the clearance between the bearings and the surface of the cam portion.

3,781,145
VANE PUMP WITH PRESSURE RAMP TRACKING ASSIST
Jack W. Wilcox, Columbus, Ohio, assignor to Abex Corporation, New York, N.Y.
Filed May 10, 1972, Ser. No. 252,006
Int. Cl. F04c *17/00*
U.S. Cl. 418—1 **16 Claims**



Means for preventing vane "skip" or seperation from the cam surface of a vane pump, at the inner end of the pressure ramp on the cam surface. Flow restricting orifice means are provided for the respective vanes, such that the inward movement of the vane in its rotor slot in the pressure zone causes fluid to be displaced from the inner end of the vane slot through the orifice means, thereby establishing a pressure differential force beneath the vane which resists such inward vane movement. The increased pressure at the inner end of the vane slot is limited by partial release to the pressure port through an opening in the cheek plate, which communicates with the inner ends of the vane slots as the vanes are passing through the pressure zone at those vane positions at which the tracking assist is not advantageous.

3,781,146
ROTARY APPARATUS HAVING TWO ROTORS ENGAGING ROTARY DIVIDERS IN A HOUSING
Kenneth Clayton Bates, 28 Scenic Dr., Poughkeepsie, N.Y.
Continuation-in-part of Ser. No. 40,720, May 26, 1970, which is a continuation of Ser. No. 658,175, Aug. 3, 1967, abandoned. This application Aug. 19, 1970, Ser. No. 65,233
Int. Cl. F01c *1/30, 11/00;* **F04c** *23/00*
U.S. Cl. 418—6 **8 Claims**

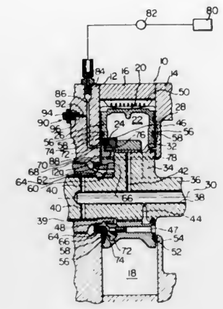


A readily reversible rotary apparatus combinable with an aircraft landing gear and other vehicles comprising a first mechanism selectively operable either as a compressor or as a prime mover selectively powered either by fluid pressure or by combustion of a confined fuel-air mixture under pressure and further comprising a second mechanism driven by the first for compressing air or a combustible mixture for controlled introduction into the expansion or combustion chambers of the first mechanism, said second mechanism being adapted for use also as a prime mover powered by fluid pressure. The flow of compressed and expanding gases in said apparatus is controlled primarily by rotatable elements.

3,781,147
SEALING DEVICE FOR A ROTARY INTERNAL COMBUSTION ENGINE
Munefumi Sato, Yokohama, Japan, assignor to Nisson Motor Company, Limited, Yokohama City, Japan
Filed Nov. 1, 1972, Ser. No. 302,722
Claims priority, application Japan, Nov. 13, 1971, 46/106190
Int. Cl. F01c *19/00;* **F04c** *27/00;* **F01c** *21/04*
U.S. Cl. 418—88 **2 Claims**

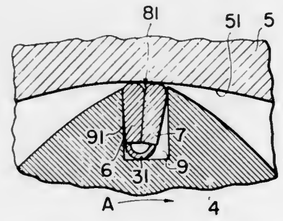
A sealing device for a rotary internal combustion engine of the type adapted for effectively sealing the engine from oil leakage by utilizing blow-by gases from the engine. The sealing device comprises a source of air under pressure, and an air supply passageway formed in a housing of the engine which is

connected to the source of air under pressure. The air supply passageway opens to a space in which the blow-by gases are introduced to urge an oil seal ring to a position to prevent



leakage of oil from the engine and continuously supplies into that space air under pressure of constant pressure level from the source of air under pressure.

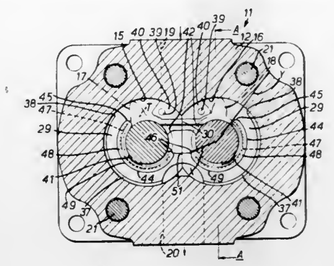
3,781,148
APEX SEAL ASSEMBLY OF A ROTARY PISTON ENGINE
Hiroshi Sakamaki, Tochigi, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed Mar. 10, 1972, Ser. No. 233,688
Claims priority, application Japan, Mar. 12, 19/1, 46/13586
Int. Cl. F01c *19/02*
U.S. Cl. 418—117 **4 Claims**



An apex seal assembly which has combined apex seal members with at least one side at an angle expanding toward the lower portion of the side surface and an arcuate spring of U-shape in section to hold the members together and in contact with the inner wall of a rotary piston engine.

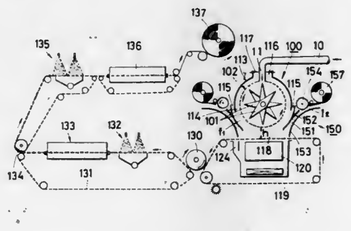
3,781,149
ROTARY FLUID-PRESSURE MACHINES
Cedric David Weaver, and Graham John Toogood, both of Cheltenham, England, assignors to Dowty Hydraulic Units Limited, Cheltenham, England
Filed July 12, 1971, Ser. No. 161,463
Claims priority, application Great Britain, Aug. 1, 1970, 37250/70
Int. Cl. F01c *19/08*
U.S. Cl. 418—131 **1 Claim**

A rotary fluid-pressure machine includes a casing, toothed intermeshing rotors supported for rotation in the casing, and wear plate means having a first side-face-portion and a second side-face-portion. The one portion is substantially co-planar with the other and both portions are engageable with a side face of a rotor. The second side-face-portion is of arcuate form, has better wear-resisting properties than said first side-



face-portion and has an outer periphery at a radial distance from the rotational axis of the rotor which is substantially the same as the radius of the trace of the roots of the teeth of the rotor. A part of the first side-face-portion crosses the gap between the two ends of the second side-face portion.

3,781,150
APPARATUS FOR PRODUCING MULTILAYER FIBROUS STRUCTURES
Hisashi Matsumura; Tadanori Samejima; Hiroshi Orito, all of Fujinomiya-shi, and Hisashi Ochiari, Numazu-shi, all of Japan, assignors to Honshu Paper Company Limited, Tokyo, Japan
Filed June 13, 1972, Ser. No. 262,185
Claims priority, application Japan, Dec. 29, 1971, 46/1229
Int. Cl. B29j *5/00*
U.S. Cl. 425—80 **2 Claims**

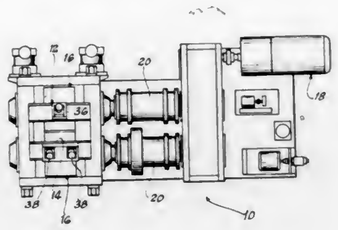


Apparatus for producing multilayer fibrous mats is provided which can mix and form alternate short and long fiber layers continuously in a single stage of process, both layers being held together by interfiber bonds at their interfaces under the influence of suction air. The apparatus is comprised of a disintegrator unit producing a short fiber layer and a defibrator unit operatively associated therewith for producing a long fiber layer, both units designed to deposit the respective fibers on a conveyor moving above suction boxes.

3,781,151
APPARATUS FOR AGGLOMERATING PARTICULATE MATERIAL
LeRoy S. Harris, Rolling Meadows, Ill., assignor to K-G Industries, Inc., Rosemont, Ill.
Filed Feb. 7, 1972, Ser. No. 224,196
Int. Cl. B29c *15/00;* **B30b** *11/18*
U.S. Cl. 425—145 **21 Claims**

An apparatus for processing particulate material wherein the material is fed between compacting rolls. The means for feeding the material comprise at least three feed screws

aligned so that the material is fed along the length of the nip of the rolls. The drive means for the feed screws comprise a variable drive means for intermediate screws whereby the intermediate screw operation can be adjusted relative to the screws



on the outside of the intermediate screws to provide control which achieves uniformity in the agglomerated product. The operation of the respective drive means may be automatically controlled by detecting means responsive to operating conditions.

3,781,152

APPARATUS FOR PRECIPITATING A LAYER OF SEMICONDUCTOR MATERIAL FROM A GASEOUS COMPOUND OF THE SEMICONDUCTOR MATERIAL

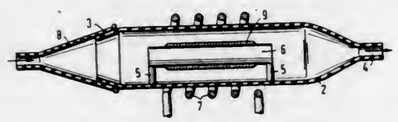
Wolfgang Keller, Pretzfeld; Arno Kersting, Erlangen, and Konrad Reuschel, Vaterstetten, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Erlanger, Berlin, Germany

Division of Ser. No. 872,278, Oct. 29, 1969. This application Jan. 31, 1972, Ser. No. 222,127

Claims priority, application Germany, Oct. 30, 1968, P 18 05 970.6

Int. Cl. B29c *23/00*; **B29d** *23/00*

U.S. Cl. 425—174.8 R **7 Claims**



Apparatus for producing a hollow semiconductor body, particularly of silicon. Semiconductor is precipitated on the outer surface of a heated carrier body. The carrier body is thereafter removed without damaging the semiconductor body.

3,781,153

DISK EXTRUDER FOR PROCESSING POLYMERIC MATERIALS

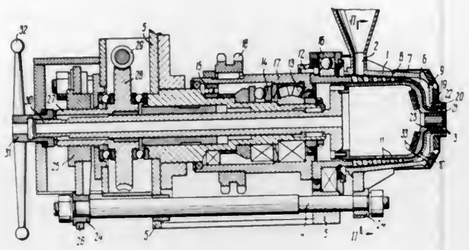
Jury Efimovich Lukach, ulitsa Tolstogo, 15, kv. 43; Vladimir Alexeevich Senatos, Brest-Litovsky prospekt, 106/2, kv. 182, and Arkady Demyanovich Petukhov, ulitsa Saljutnaya, 19, kv. 77, all of Kiev, U.S.S.R.

Filed Dec. 22, 1971, Ser. No. 210,896

Int. Cl. B29h *1/10*

U.S. Cl. 425—207 **4 Claims**

A disk extruder for processing polymeric materials, comprising a movable disk mounted in a housing and having the shape of a cup accommodating a stationary disk. Confined between the movable disk and the housing is one working space, and between the movable and stationary disks — another working space. The other working space is fed with the material to be processed through cuts made in the side wall of the movable disk.



3,781,154

DEVICE FOR FORMING SHEAR KEYWAYS ON SIDES OF EXTRUDED SLABS AND THE LIKE

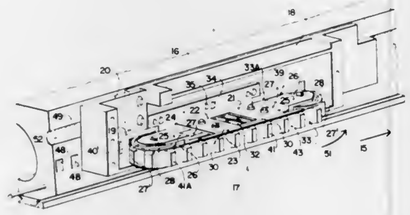
Denys Herbert, and Ernst Martens, both of Winnipeg, Manitoba, Canada, assignors to Spiroll Corporation Ltd., Winnipeg, Manitoba, Canada

Filed June 22, 1972, Ser. No. 265,150

Claims priority, application Great Britain, July 2, 1971, 31,221/71

Int. Cl. B29g *2/02*

U.S. Cl. 425—329 **33 Claims**



An endless belt with projections on the outer surface is mounted on the side plates of a concrete slab making machine so that as the slab is formed, horizontal shear keyways are formed in the sides of the slab. When adjacent slabs are grouted, the keyways and the grout form horizontal shear key assemblies which prevent horizontal and vertical movement from occurring from between slabs.

3,781,155

APPARATUS FOR INSERTING A FLEXIBLE PREFORM IN A MOLD

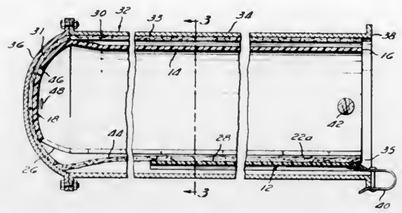
Arthur J. Wiltshire, 352 Dumbarton Blvd., Cleveland, Ohio

Filed Apr. 6, 1972, Ser. No. 241,707

Int. Cl. B28b *1/08*

U.S. Cl. 425—392 **8 Claims**

A method for inserting a flexible, oversized preform into an opening in a hollow mold is disclosed. The oversized preform is initially formed so as to have a configuration similar to that of the interior surfaces of the mold. The cross sectional size of the preform relative to the mold is temporarily reduced by forming an inwardly projecting furrow in the preform so that the preform may be inserted into the mold. An assembly for



inserting the preform into the mold and reducing the cross sectional size of the preform as it is inserted into the mold is also disclosed.

3,781,156

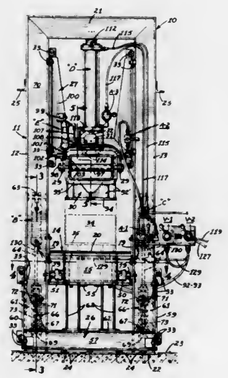
AUTOMATIC CONCRETE FORMING MACHINE FOR PRODUCING HIGH DENSITY PRODUCTS

Leon E. Moore, 1240 S. 31st Ave., Phoenix, Ariz.

Filed Dec. 16, 1971, Ser. No. 208,589

Int. Cl. B28b *1/00*

U.S. Cl. 425—424 **5 Claims**



A machine capable of producing various shaped high density concrete products automatically when its associated mechanical components, including a pre-shaped mold box, insertable and retractable core plugs and tiltable double faced tamping device are caused to perform their specific functions in timed sequence.

3,781,157

MOLD MOUNTING FOR MAKING CERAMIC BATHROOM PIECES

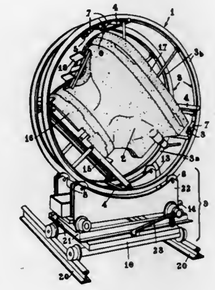
Robert Maringer, and Claude Cordelle, both of La Ferte Gaucher, France, assignors to Villeroy & Boch S.A., Gaucher, France

Filed July 8, 1971, Ser. No. 160,719

Claims priority, application France, July 9, 1970, 7025501

Int. Cl. B28b *1/28*

U.S. Cl. 425—435 **1 Claim**



The mold mounting according to this invention is intended for molds in the mass, mechanized production of sanitary pieces such as basins, bidets, toilets and the like of ceramic material, and permits a perfect positioning of the various mold portions and an easy handling of the mold in the desired positions corresponding to the slip casting, slip draining, mold piston stripping and piece stripping operations.

3,781,158

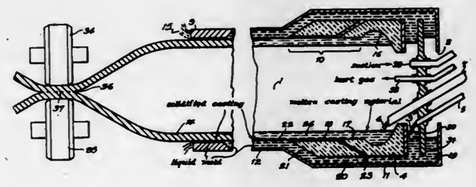
CONTINUOUS CENTRIFUGAL TUBE CASTING APPARATUS USING A LIQUID MOLD

George R. Leghorn, 1423 Washington Ave., Apt. 1, Santa Monica, Calif.

Continuation-in-part of Ser. No. 768,983, Oct. 21, 1968, Pat. No. 3,616,842, which is a continuation-in-part of Ser. No. 538,506, Feb. 11, 1966, Pat. No. 3,445,922. This application Oct. 28, 1971, Ser. No. 193,476

Int. Cl. B22d *11/02*

U.S. Cl. 425—435 **32 Claims**



A molten castable substance (as metals, glass, plastic, etc.) is continuously centrifugally cast to tube on a centrifuged lining of a heavier liquid mold material (examples of which are lead, tin, and Wood's metal). The molten substance is con-

tinuously introduced into the starting end of the centrifugal casting machine and forms a molten, axially moving, cylinder on the liquid lining. The substantially solidified tube floats out of the bore at the opposite end of the casting machine on a lining of the liquid mold material and without contacting the solid portions of the machine's exit orifice. The unrestricted floating of the tube out of the exit orifice is accomplished by decreasing the diameter of the tube in its molten state by applying a pressure differential between the liquid mold material and the gas internal to the tube being cast. The pressure differential is brought about by various methods as disclosed in the specification. Prior art methods for the continuous centrifugal casting of tube on a liquid mold lining depend on thermal shrinkage of the tube, as it cools in the mold, to permit egress from the machine. Due to the applied pressure differential, such thermal shrinkage to permit unrestricted exit of the tube does not have to be a requirement of the present invention and, as a result, product variability and casting rates can be greatly increased.

3,781,159

COUNTERBALANCED MOUNT FOR SEPARABLE MOLD

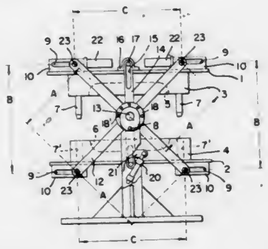
Rolf Lidl, Munich, Germany, assignor to Krauss-Maffei A.G., Munich, Germany

Filed Dec. 8, 1971, Ser. No. 206,005

Claims priority, application Germany, Dec. 9, 1970, P 20 60 478.8

Int. Cl. B29c *3/02*

U.S. Cl. 425—450 **7 Claims**



A mount for a separable mold has a pair of elements each carrying one mold member and displaceable towards and away from each other. A lever arrangement including at least one rigid link is provided between the two elements so that on displacement of one of the elements in one direction the other is displaced in the opposite direction. With one element arranged above the other its weight plus that of its mold member counterbalances that of the other element and its mold member so that the only force that need be exerted to open the mold is that necessary to overcome friction and inertia. The lever linkage can be a pair of lever arms arranged as a scissor whose central pivot point is also a pivot for the whole mold to allow positioning thereof. Alternatively the elements can be pivoted with one acting as a first-order lever and the other as a third-order lever and with the various lever arms so dimensioned that the mold opens automatically when filled and closes automatically when emptied.

3,781,160

PREFILL VALVE FOR MOLDING MACHINES

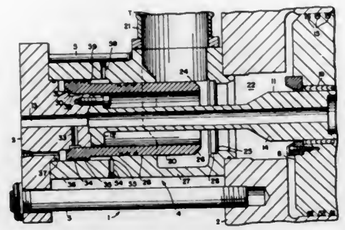
Vincent J. Mankowsky, Westchester, and Clarence J. Ceroke, Homewood, both of Ill., assignors to U.S. Industries, Inc., New York, N.Y.

Filed Feb. 2, 1971, Ser. No. 111,929

Int. Cl. B29h *5/24*

U.S. Cl. 425—450 **8 Claims**

A prefill valve assembly for a hydraulically actuated molding machine, including a poppet shiftable axially within a valve cylinder between open and closed positions, wherein fluid pressure from the main hydraulic circuit is used to move the



poppet to closed position rapidly, thereby reducing the overall cycle time of the machine.

3,781,161

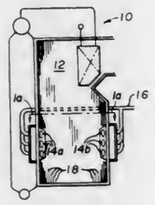
CONTROL LOGIC TEST CIRCUIT

Jack Ascher Schuss, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 3, 1972, Ser. No. 214,877

Int. Cl. F23n *5/24*

U.S. Cl. 431—16 **11 Claims**



Means are provided for rapidly, completely, and substantially automatically checking the integrity of the logic and related circuitry employed to control and direct the initiation and termination of combustion at elevations of burners in a furnace. The existing burner control logic is utilized in the generation of substantially all of the input signals to remaining logic under test. The driven devices, such as burner guns, fuel valves, etc., are prevented from responding to their command signals supplied by the control logic. These command signals appearing at the outputs from the control logic system are indicative of proper operation of the logic required to produce them. The feedbacks to the control logic from the sensing devices associated with the driven devices are operative to indicate the fact that the disabled driven devices have not responded correctly to input commands during startup and to effect the necessary commands resulting in a shutdown sequence of the control logic. Means are provided for simulating the two or three signals required for proper sequential operation of the logic which fail to appear when the existing logic is operated in a test mode.

3,781,162

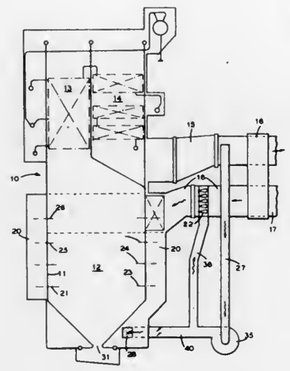
REDUCING NOX FORMATION BY COMBUSTION

Alexander H. Rudd, Akron; John H. Kidwell, Alliance, and Thomas J. Murray, Wadsworth, all of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,850

Int. Cl. F23l *7/00*

U.S. Cl. 431—115 **8 Claims**



Apparatus for mixing recirculated flue gases with combustion air delivered to a furnace to reduce the formation of NO_x caused by the combustion of fuel. The recirculated gas is mixed with combustion air prior to delivery of the mixture to the furnace so that the mixture is substantially uniform when delivered to the combustion chamber.

3,781,163

LIGHTER WITH A CAPACITY DISCHARGE IGNITION SYSTEM AND MEANS FOR PREVENTING AUTOMATIC RECHARGING OF SAID CAPACITOR

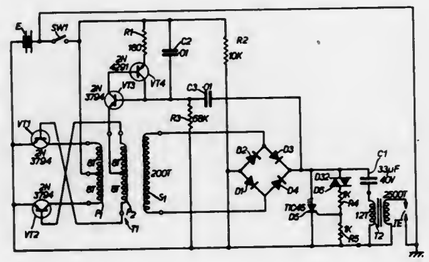
Christopher William Ovens, Bracknell, England, assignor to Dunhill Lighters Limited, London, England

Filed July 14, 1972, Ser. No. 271,670

Claims priority, application Great Britain, June 7, 1972, 26,546/72

Int. Cl. F23q *3/01*

U.S. Cl. 431—266 **8 Claims**



A smoker's lighter having a capacitor discharge electric ignition in which the recharging of the capacitor is prevented by means of a two transistor semiconductor switch. Reactuation of a manual ignition switch is necessary before the capacitor can be recharged. Automatic discharge of the capacitor is achieved by use of a trigger diode controlling a thyristor.

3,781,164

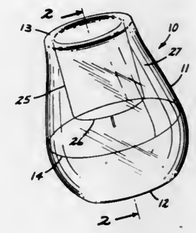
ANTI-SPILL CONTAINER

Dennis McCaffery, 551 Silver Lake Rd., New Brighton, Minn.

Filed Sept. 25, 1972, Ser. No. 291,963

Int. Cl. F23d *3/16*

U.S. Cl. 431—291 **4 Claims**



An anti-spill container for candles of the type wholly contained within the container is shown including a tubular body having a closed end and an open end. An inwardly directed tubular flange extends from the open end in a direction axially into the tubular container to define an annular recess which opens toward the closed end of the tubular body for collection of melted material from a lighted candle when the container is turned on its side.

3,781,165

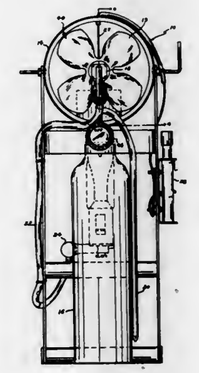
FORCED AIR HEATER

David B. Wilkinson, 1723 Fernmont Dr., New Carlisle, Ohio

Filed Feb. 1, 1973, Ser. No. 328,823

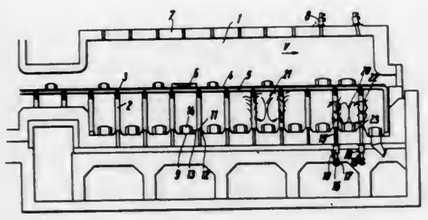
Int. Cl. F23l *9/04*

U.S. Cl. 432—62 **7 Claims**



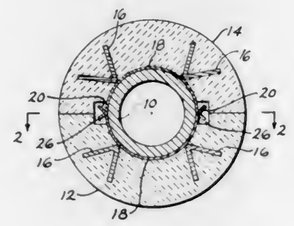
A forced air heater having a pair of fuel burners supplying heat to a plenum chamber with a fan for providing a flow of air through the plenum chamber. Gaseous fuel supplied to the burners from a high pressure fuel containers drives a pneumatic motor which in turn drives the fan. The fuel leaving the motor output ports is supplied to the burners.

3,781,166
INDUSTRIAL FURNACE
Eckard Bunzel, Neuss; Robert Spessert, Bergisch-Gladbach; Karl Rieskamp, Mulheim/Ruhr, and Willi Hildebrand, Dinslaken-Hiesfeld, all of Germany, assignors to OFU Ofenbau-Union GmbH, Duesseldorf, Germany
Filed Aug. 13, 1971, Ser. No. 171,675
Claims priority, application Germany, Aug. 17, 1970, P 20 40 766.3
Int. Cl. F27b 9/14
U.S. Cl. 432—126 9 Claims



An industrial furnace for heating metal plate and the like with flames directed at the horizontally disposed plate from above and below by suitably mounted jets. The lower jets are raised above the furnace floor and when operated in a turned-down or low heat output mode discharge the fuel gas and/or flame at a speed greater than the free-fall speed of scale and the like dropping from the plates to prevent a clogging of the burners. The floor burners are further provided with vertically extending gas discharge pipes which terminate in scale collection containers so that scale dropping into the burners when the burners are turned off falls through the operative burner portions for collection and subsequent removal without obstructing the burner.

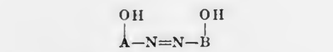
3,781,167
NO-WELD REFRACTORY COVERING FOR WATER COOLED PIPES
George Harvey Ahonen, Welland, Ontario, Canada, assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Nov. 29, 1972, Ser. No. 310,312
Int. Cl. F27b 9/14
U.S. Cl. 432—234 6 Claims



An insulating jacket for water cooled pipes which can be quickly and easily installed.

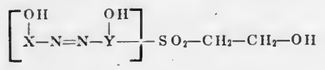
3,781,168
PROCESS FOR PREPARING NAVY-BLUE AND GREY 1:2 CHROMIUM AND COBALT COMPLEX AZO-DYESTUFF MIXTURES FOR NATURAL AND SYNTHETIC POLYAMIDE AND POLYURETHANE FIBRES
Fritz Meininger, Frankfurt am Main, and Hermann Fuchs, Kelkheim/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed July 31, 1972, Ser. No. 276,762
Claims priority, application Germany, Aug. 2, 1971, P 21 38 525.1
Int. Cl. C09b 45/48; D06p 3/24
U.S. Cl. 8—26 8 Claims

A process for preparing new navy-blue and grey 1:2-chromium and cobalt complex azo dyestuff mixtures in which, in a single-pot-process, mixture of two water-insoluble o,o'-dihydroxy azo dyestuffs of the general formulae



(1)

and



(2)

wherein A and X are radicals of diazo components of the benzene series, which may contain non-ionic substituents, B and Y are radicals of coupling components of the naphthalene series which may contain non-ionic substituents, whereby the portion of the dyestuff (2) containing the β-hydroxyethyl sulfonyl group amounts to a maximum of 50 mol-percent, on the condition that the gram atom ratio of chromium to cobalt amounts to 5:1 to 20:1, are chromated and subsequently cobaltated, as well as the dyestuff mixtures obtained by this process which have a very good affinity to natural or synthetic fibres containing nitrogen with very good fastnesses to ligt and to wetting of their dyeings. They also show very good migration properties in the dyeing of the wool, polyamide and polyurethane fibres, so that dyeings having a considerably better levelness are obtained.

They, furthermore, can be more easily wetted and dispersed.

3,781,169
DISPERSING AND STABILIZING AGENTS FOR DYESTUFFS
Reinhold Deubel, Altenhain; Helmut Diery, Kelkheim, both of Germany; Wolfgang Klinner, Sao Paolo, Brazil; Karl-Hermann List, Frankfurt, and Heinz Uhrig, Steinbach, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed July 1, 1971, Ser. No. 159,065
Claims priority, application Germany, July 3, 1970, P 20 32 926.4
Int. Cl. D06p 1/22; C09b 67/00
U.S. Cl. 8—34 2 Claims

Dispersions of pigments, disperse- or vat-dyestuffs, wherein the dispersing agent is formed either by co-condensation of a phenolic component, formaldehyde and an alkali metal sulfite or of a sulfonated phenolic component and formaldehyde. These dispersions are characterized in that the dispersing agent used shows an improved dispersing effect. Furthermore, they can also be used when being neutralized for the dispersing alkali sensitive dyestuffs and they show no tendency to soil the fabrics so that also clean shades may be dyed.

3,781,170
LIGHTWEIGHT METAL COMPOSITE MATERIAL AND PROCESS FOR PRODUCING SAME
Masaaki Nakao, Urawa; Zenya Shiiki, and Yasuo Amagi, both of Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed July 15, 1971, Ser. No. 165,780
Claims priority, application Japan, July 17, 1971, 46/62114; Aug. 10, 1971, 46/69218
Int. Cl. B22f 7/00
U.S. Cl. 29—182.5 9 Claims

A lightweight metal composite material having hollow microspheres homogeneously dispersed in a light metal selected from the group consisting of aluminum, aluminum-base alloys and magnesium-base alloys. The hollow microspheres are composed of a material which is capable of withstanding the sintering temperature of the light metal, for example, a carbonaceous material such as carbon or graphite, a ceramic such as hard glass, a natural glass or silica or a metal such as copper, nickel or iron. The surface of the granular hollow microparticles are coated with the light metal, and sintered during or after a pressure shaping treatment. Alternately the mixture may further be mixed with a thermocurable binder.

3,781,171
ADDITIVE COMPOSITION FOR THE COMBUSTION AIR IN INTERNAL COMBUSTION ENGINES
Gino Maccaferri, Via Castiglione 26, Bologna, Italy
Filed Sept. 24, 1971, Ser. No. 183,677
Int. Cl. C10l 5/10, 5/40
U.S. Cl. 44—1 R 4 Claims

An additive composition for the combustion air in internal combustion engines, comprising from 40 to 80 percent by weight of an inert support, from 5 to 10 percent by weight of diphenyl, from 5 to 10 percent by weight of hexamethylenetetramine, and from 5 to 40 percent by weight of a binding agent chosen from either camphor or paradichlorobenzene.

3,781,172
PROCESS FOR THE MANUFACTURE OF MICROCRYSTALLINE FUSED ABRASIVES
Edgar A. Pett, 410 Main St., and Gordon Kinney, 364 Church St., both of Chippawa, Ontario, Canada
Continuation-in-part of Ser. No. 720,082, April 10, 1968, abandoned. This application Dec. 14, 1970, Ser. No. 98,014
Int. Cl. C09c 1/68
U.S. Cl. 51—309 6 Claims

A method of manufacturing fused microcrystalline abrasives which comprises pouring a molten abrasive composition over relatively cold lumps of abrasive material of essentially the same composition and of approximately the same degree

of microcrystallinity as is desired in the final product. The poured melt freezes very rapidly in the interstices formed by said lumps, and at such a rate that the frozen melt possesses such a high degree of microcrystallinity that the resultant numerical average crystal size is less than 50 microns.

3,781,173
METHOD FOR PROVIDING METALLIC CARBIDE COATINGS ON GRAPHITE

John M. Napier, 113 Dartmouth Cir., and Anthony J. Caputo, 112 Caldwell Dr., both of Oak Ridge, Tenn.

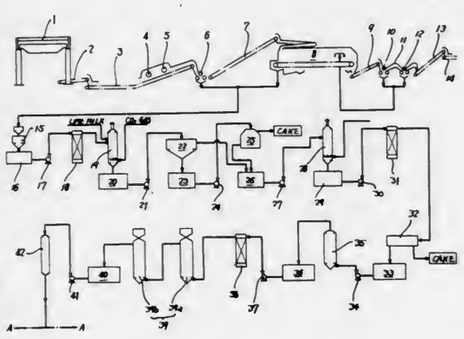
Filed Jan. 12, 1971, Ser. No. 116,703
Int. Cl. C23c *11/08, 13/04*
U.S. Cl. 117—95 **1 Claim**

Metallic or nonmetallic carbide coatings of substantially uniform thickness are provided on internal surfaces of elongated bores within a graphite substrate by vapor deposition. The coating process is achieved by the thermal decomposition of a selected halide and the inter-reaction with a hydrocarbon gas at temperatures of 900°–1200°C. at atmospheric pressure. A temperature gradient along the length of the bore is used to control the coating deposition rate for providing a carbide coating of substantially uniform thickness.

3,781,174
CONTINUOUS PROCESS FOR PRODUCING REFINED SUGAR

Yoshiaki Nishijima, and Kazutaka Adachi, both of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, Japan

Filed Oct. 13, 1971, Ser. No. 188,851
Claims priority, application Japan, Oct. 16, 1970, 45/90153
Int. Cl. C13d *3/06, 3/14, 3/18*
U.S. Cl. 127—46 A **8 Claims**

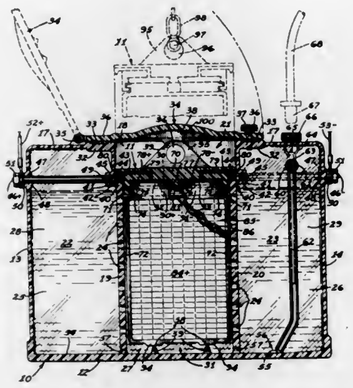


A continuous process for producing refined sugar from juice extracted from sugarcane or other raw material comprises removing part of the impurities and part of the coloring matter in the juice by the use of a continuous carbonation process, decolorizing the juice by the use of granular active carbon, further removing the impurities and coloring matter remaining in the juice by using a combination of ion-exchange resin and ion-exchange membrane electrodialysis, concentrating the purified juice, and crystallizing the concentrated juice to form refined sugar.

3,781,175
STORAGE BATTERY WITH EXCHANGEABLE ELEMENTS

Lewis R. Kinsey, 108 S. 25th St., Phoenix, Ariz.

Filed Feb. 18, 1971, Ser. No. 116,400
Int. Cl. H01m *35/00*
U.S. Cl. 136—7 **4 Claims**

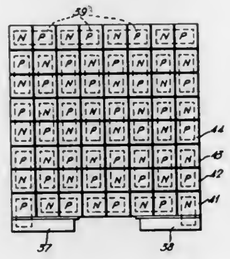


A rebuildable, rechargeable wet cell storage type battery employing a novel replaceable modular plate structure.

3,781,176
THERMOELECTRIC UNITS

Alan William Penn, Reading, and Frank Beighbour, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 25, 1971, Ser. No. 109,486
Claims priority, application Great Britain, Jan. 30, 1970, 4,729/70
Int. Cl. H01v *1/32*
U.S. Cl. 136—212 **7 Claims**



To provide for connection of electrical leads a metal strip is secured by adhesive to the side of a thermoelectric unit comprising an assembly of thermoelectric elements. Insulating material is interposed between the metal strip and the unit. An end face of the metal strip is formed flush with the end faces of the thermoelectric elements. An electrically conductive bridge is formed from the end face of the metal strip to an appropriate end face of a thermoelectric unit.

3,781,177
ISOSTEARIC ACID COATED, NON-DUSTING ALUMINUM PARTICLES

Thomas J. Kondis, Pittsburgh, and Rolf Rolles, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 249,112, May 1, 1972, abandoned. This application Apr. 26, 1973, Ser. No. 354,801
Int. Cl. C06b *19/02*
U.S. Cl. 149—6 **8 Claims**

Aluminum powder coated with isostearic acid exhibits substantially no dusting during handling thereby enhancing safety and environmental aspects.

3,781,178
PROPELLANT COMPOSITION WITH A HYDROXY-TERMINATED COPOLYMER-BINDER-CATALYST OF BUTADIENE AND ACRYLATE

Mart G. Baldwin, Newtown, Pa., and Samuel F. Reed, Jr., Huntsville, Ala., assignors to Rohm and Haas Company

Division of Ser. No. 849,255, July 31, 1969
Filed May 13, 1971, Ser. No. 143,274
Int. Cl. C06b *11/00*
U.S. Cl. 149—19 **2 Claims**

The copolymers of carboranyl methyl acrylate and butadiene and pertinent solid propellant formulations are disclosed. The copolymers serve as a binder for solid propellant compositions and also serve to increase the burning rate of solid propellants wherein used.

The copolymers are produced in an organic solvent when polymerization is initiated by an azo type initiator selected from the initiators consisting of azo-bis-(2-methyl-5-hydroxyvaleronitrile), azo-bis-(hydroxyethyl-2-methyl propionate), and azo-bis-(2-methyl-3-hydroxypropionitrile).

3,781,179
COMPOSITIE PROPELLANTS WITH A DIFUNCTIONAL BALLISTIC MODIFIER CURING AGENT

Chester W. Huskins, 623 Owens Dr. Southeast, Huntsville, Ala., and Albert J. Thomas, Jr., 1721-B Reap Dr., Fayetteville, Ark.

Division of Ser. No. 129,196, March 29, 1971. This application Aug. 4, 1972, Ser. No. 278,494
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 **3 Claims**

Disclosed is the liquid, olefinic ferrocene derivative derived from vinyl magnesium chloride and diacetyl ferrocene, which derivative can be co-cured with hydroxy terminated polybutadiene polymers (HTPB) to yield a polymeric binder system for propellants having a chemically bound ballistic modifier as an integral part of the binder. The ferrocene derivative is a difunctional compound having two hydroxyl groups per molecule. Curing of the HTPB and the dihydroxy-ferrocene compound is accomplished by diisocyanates which is added in sufficient quantity so that all the hydroxyl groups of the HTPB and the ferrocene derivative are reacted.

3,781,180
AMMONIUM NITRATE-FUEL OIL COMPOSITION CONTAINING AMMONIUM NITRATE PRILLS OF DIFFERENT POROSITY, HARDNESS, AND DENSITY

Paul Stanley Harrison, Flemington, and Gwyn Harries, Elsternwick, Victoria, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

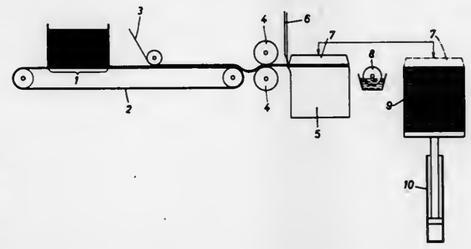
Filed May 4, 1971, Ser. No. 140,106
Claims priority, application Australia, May 18, 1970, 1227
Int. Cl. C06b *1/04*
U.S. Cl. 149—21 **9 Claims**

Ammonium nitrate — fuel oil compositions comprising ammonium nitrate prills and fuel oil wherein between 15 and 90 percent w/w of said prills have an oil porosity of more than 5 g of oil per 100 g of ammonium nitrate and between 10 and 85 percent w/w of said prills have an oil porosity of less than 2 g of oil per 100 g of ammonium nitrate.

3,781,181
PROCESS FOR THE MANUFACTURE OF A CARPET WITH PILE THAT IS VERTICALLY LINED UP IN ROWS AND WITH RIBBON-SHAPED INTERLAYERS WHICH RUN THROUGH PART OF THE HEIGHT OF THE PILE AND ARE ATTACHED TO THE ROWS OF PILE

Ruedi Reinhard, Gruger 4917, Melchnau, Switzerland

Filed May 18, 1970, Ser. No. 38,308
Claims priority, application Switzerland, May 21, 1969, 7759/69
Int. Cl. B32b *31/12*
U.S. Cl. 156—72 **3 Claims**

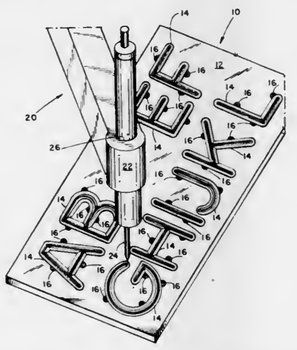


A process for the manufacture of a carpet with pile that is vertically lined up in rows, and with ribbon-shaped interlayers which run through part of the height of the pile and are attached to the rows of pile.

3,781,182
MASTER TEMPLATE FOR ENGRAVING

Jerome Friedman, No. 19 Glenada, Roslyn, N.Y.

Filed Aug. 10, 1971, Ser. No. 170,602
Int. Cl. B44f *1/00;* **B32b** *31/18;* **G09f** *7/10;* **B23d** *5/04*
U.S. Cl. 161—5 **6 Claims**



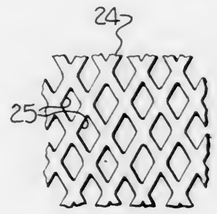
A master template and method of forming same, the template comprising a mounting plate, and independent characters provided on the mounting plate, the independent characters each including opposite surfaces, one of which surfaces is concealed and extends in flush relation along said mounting plate and the other of which surfaces is exposed relative to said mounting plate. The independent characters may be of three-dimensional, two-dimensional, or of sunk nature and each have substantially identical raised or recessed extents transversely of the mounting plate. A solvent is utilized for connecting the characters to the mounting plate such that the concealed portion of each of the characters substantially

remains in generally flush relation with the mounting plate and the transverse extent of each of the characters remains substantially identical relative to one another on the mounting plate.

3,781,183
NET-LIKE THERMOPLASTIC MATERIAL AND PRODUCTS

Martin Doll, Patterson, N.C., assignor to Cellu Products Company, Patterson, N.C.

Division of Ser. No. 837,162, June 27, 1969, Pat. No. 3,642,967. This application July 26, 1971, Ser. No. 166,102
Int. Cl. B32b *3/10*
U.S. Cl. 161—109 **5 Claims**



Net-like thermoplastic materials and products formed therefrom use properties of thermoplastic materials to provide improved packaging material such as wrapping materials and receptacles, through slitting and opening of sheet material and heat setting of the material in the opened condition and in any desired configuration.

3,781,184
SAFE BI-MODAL WINDSHIELDS

Joseph J. Domicone, and Theodore R. Kozlowski, both of Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 24, 1971, Ser. No. 146,176
Int. Cl. B32b *17/10, 27/08*
U.S. Cl. 161—165 **1 Claim**

This invention relates to motor vehicle windshields having a glass outer layer and a soft plastic inner layer which is protected from abrasion by a thin film of a low-permeability polymer such as polyvinyl fluoride. Such windshields provide nearly ideal protection from head and face lacerations in collisions at speeds up to about 36 m.p.h., and additionally provide excellent concussion protection.

3,781,185
METAL AND CHLOROPRENE RUBBER COMPOSITE MATERIAL

Hideaki Takamatsu, Tokyo; Noboru Murashima, and Koichi Nishihira, both of Kobe, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo and Bando Chemical Industries, Ltd., Hyogo-ku, Kobe, Japan

Filed June 18, 1970, Ser. No. 47,381
Claims priority, application Japan, June 20, 1969, 44/48411; June 20, 1969, 44/48412; June 20, 1969, 44/48413
Int. Cl. B32b *15/04*
U.S. Cl. 161—217 **4 Claims**



A vulcanizing agent and other component chemicals necessary for rubber formulation are added to a coprecipitate containing chloroprene rubber and barium silicate, and the rubber compound so obtained is subjected to blending. Further, the rubber compound is overlaid with a metal sheet and valcanized under application of heat and pressure, whereby a metal and chloroprene rubber composite material is produced.

3,781,186
LAMINATES OF STYRENE POLYMERS AND POLYPHENYLENE OXIDE

Karl Stange, Hambach; Helmut Jenne, Schriesheim, and Ulrich Koenig, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Mar. 27, 1972, Ser. No. 238,639
Int. Cl. B32b *27/08*; **C08f** *31/00*
U.S. Cl. 161—253 **5 Claims**

Laminates of polyphenylene oxide as layer A and a styrene polymer as layer B. Layer A contains more than 20 percent of polyphenylene oxide; layer B is a styrene polymer containing more than 40 percent of polymerized units of styrene. The laminates may be used in the manufacture of film or sheeting, e.g. for packaging purposes.

3,781,187
METHOD OF SEPARATING BARK COMPONENTS

Frank S. Trocino, Eugene, Oreg., assignor to Bohemia Lumber Company, Incorporated, Eugene, Oreg.

Filed Mar. 8, 1972, Ser. No. 232,737
Int. Cl. C11b *1/00*; **D01c** *1/00*
U.S. Cl. 162—93 **10 Claims**

Douglas Fir bark is extracted with a hot neutral organic solvent to separate the wax from the bark. Thereafter, the residue is heated to desolventize the same and expand the cork fraction substantially in size. Such facilitates efficient subsequent mechanical classification of the cork, bark fiber, and nonfibrous phloem fractions of the bark to a high degree of purity and quality.

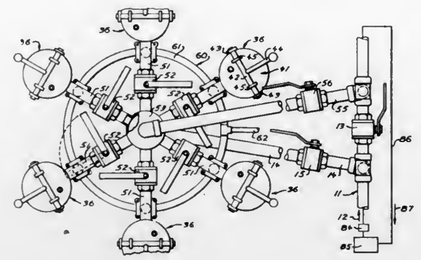
3,781,188
EXPERIMENTAL RESEARCH PULP DIGESTER ASSEMBLY

John M. Bagley, and John L. Keays, both of Vancouver, British Columbia, Canada, assignors to Ellett Copper and Brass Company Ltd., Vancouver, Canada

Continuation of Ser. No. 888,590, Dec. 29, 1969, abandoned. This application Feb. 22, 1972, Ser. No. 228,247
Int. Cl. D21c *7/12*
U.S. Cl. 162—233 **2 Claims**

Method of processing, digesting, or pulping samples of e.g. a body of wood chips under conditions reproducing experimental or production runs with precision. Samples are processed in sealed cannisters with heat supplied by liquid circulating

through each at a constant temperature, processing in any cannister is terminated at a required time within seconds, the contents are cooled, the cannister unsealed and contents tested to determine progress. Apparatus using the method has hot liquid supply to each cannister from a manifold through



conduits of equal length so that the temperature in each is the same, valves in conduits and in discharge conduits can be closed, selectively isolating any cannister. Water is introduced to flush and cool. Means are provided to alter the temperature of liquid supplied to a particular cannister.

3,781,189
SPENT NUCLEAR FUEL SHIPPING CASKS

Alvin H. Kasberg, Murrysville, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

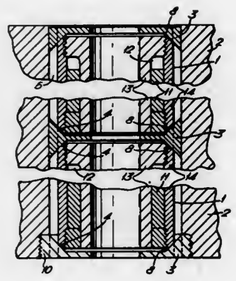
Filed July 7, 1971, Ser. No. 160,498
Int. Cl. G21c *19/00*; **G21f** *5/00, 1/08*
U.S. Cl. 176—28 **4 Claims**

UH_3-Ductile metal cermet is used as a radiation shield in a shipping cask for spent nuclear fuel rods.

3,781,190
GAS COOLED NUCLEAR REACTORS

Allan Clarkson Rapier, Seascale, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 10, 1972, Ser. No. 233,445
Claims priority, application Great Britain, Mar. 22, 1971, 7,508/71
Int. Cl. G21c *5/06, 5/14, 3/16*
U.S. Cl. 176—59 **4 Claims**

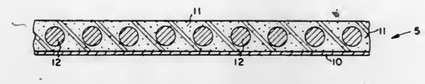


Nuclear reactor wherein stacks of fuel elements are supported centrally within vertical channels of a graphite moderator by annular discs disposed at each end of each fuel element. The discs have inner and outer diameters to correspond with inner and outer diameters of the fuel elements and conical seats complementary to tapers on the ends of the fuel elements. The lowermost disc is secured to the wall of the channel whilst the remainder are free to slide. The construction maintains uniform coolant flow passages through and about the fuel elements and allows for irradiation growth of the fuel elements and graphite moderator.

3,781,191
NUCLEAR CONTROL ROD HAVING EMBEDDED FILAMENTS

Cecil R. Jones, Hamden, Conn., assignor to Transfer Systems Incorporated, New Haven, Conn.

Filed Feb. 22, 1972, Ser. No. 228,067
Int. Cl. G21c *7/10*
U.S. Cl. 176—86 R **8 Claims**



A nuclear reactor control rod for regulating or shutting-down the power of a nuclear reactor is described. The control rod features filaments of a neutron absorber bonded together and to a foil backing to form a sheet. Plural sheets are laminated to form a plate, and plural plates may be joined together in a cruciform shape. A preferred method to make such a control comprises forming the sheets by plasma-spraying a corrosion-resistant metal to bond the filaments to the foil backing.

3,781,192
TEST FOR HEMOLYTIC STREPTOCOCCI AND TEST MEDIA THEREFOR

Harrison F. Wood, 183 Livingston St., New Haven, and Sidney Bernstein, 49 Harbor View Ave., Milford, both of Conn.

Filed May 1, 1972, Ser. No. 248,816
Int. Cl. C12k *1/10*
U.S. Cl. 195—100 **8 Claims**

The presence of beta hemolytic streptococci in a test culture is rapidly ascertained by inoculating a solid nutrient medium such as blood agar with the test culture, wherein the medium contains a ribonucleic acid preparation consisting essentially of ribonucleic acid core, and observing the medium for appearance of markedly enhanced hemocytic characteristics of the streptococci.

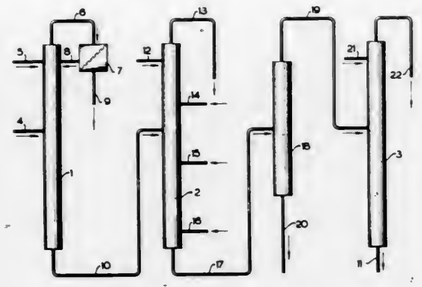
3,781,193
PROCESS FOR ISOLATING ACRYLIC ACID FROM AQUEOUS CRUDE ACRYLIC ACID BY DISTILLATIONS WITH 3,3,5-TRIMETHYCYCLOHEXAMONE AND THIN LAYER EVAPORATION

Kurt Sennewald; Heinz Erpenbach; Heinz Handte, all of Cologne; Georg Kohl, Hurth-Burbach, and Winfried Lork, Erftstadt-Friesheim, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Jan. 31, 1972, Ser. No. 222,003
Claims priority, application Germany, Feb. 1, 1971, P 21 04 506.7
Int. Cl. C07c *57/04*; **B01d** *3/36*
U.S. Cl. 203—8 **13 Claims**

Acrylic acid and acetic acid are isolated from aqueous crude acrylic acid containing acrylic acid and acetic acid and contaminated with minor proportions of formaldehyde and higher boiling constituents, such as maleic acid and polymeric acrylic acid, by subjecting the aqueous crude acrylic acid to extractive azeotropic distillation in the presence of a distillation aid. More particularly the aqueous crude acrylic acid is distilled in a first distilling column in the presence of 3,3,5-trimethylcyclohexanone as the distillation aid under a pressure between 20 and 80 mm mercury; an azeotrope of 3,3,5-trimethylcyclohexanone and water and the bulk of the formaldehyde are removed near the head of the column and acrylic

acid, acetic acid and minor proportions of distilling aid, residual formaldehyde and higher boiling constituents are obtained in the column's base portion; the base product coming from the first distilling column is delivered to a second distilling column and distilled therein under a pressure between about 20 and 80 mm mercury while obtaining, as the distillation residue, acrylic acid free from acetic acid, distilling aid and higher boiling constituents; the distillation residue coming from the second distilling column is delivered to a thin



layer evaporator and the acrylic acid together with the distilling aid are evaporated therein under a pressure between 20 and 80 mm mercury so as to free the acrylic acid from the said higher boiling constituents; acrylic acid in vapor form escaping at the head of the thin layer evaporator and contaminated with distilling aid is introduced into a third distilling column and separation firstly into acrylic acid and secondly into distilling aid is effected therein under a pressure between about 20 and 60 mm mercury.

3,781,194

PROCESS FOR THE PHOTOCATALYTIC OXIDATION OF HYDROCARBONS INTO ALDEHYDES AND KETONES

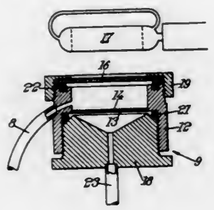
Francois Juillet; Stanislas Teichner, and Marc Formenti, all of Villeurbanne, France, assignors to Agence Nationale de Valorisation de la Recherche, Paris, France

Filed Sept. 15, 1970, Ser. No. 72,341

Claims priority, application France, Sept. 15, 1969, 6931280

Int. Cl. B01j *1/10*; **C07c** *3/24*

U.S. Cl. 204—162 R **10 Claims**



Process for the oxidation of gaseous hydrocarbons or hydrocarbons in the gaseous or vapour state, in heterogeneous phase, which comprises producing, at a temperature below 100°C, a circulation or continuous flow of a gaseous mixture of of gas and vapours containing the hydrocarbon to be oxidised and oxygen into contact with a catalyst subjected to ultra-violet radiation, this catalyst being constituted by a metal oxide containing or retaining by adsorption molecules of oxygen which are mobile under irradiation, such as titanium dioxide, the ultra-violet radiation being at least partly within the domain of wavelengths lower than the wave length of the radiation whose energy is that of the prohibited bandwidth of the oxide.

3,781,195

PROCESS FOR THE PRODUCTION OF GASEOUS OLEFINS FROM PETROLEUM DISTILLATE FEEDSTOCKS

Paul Trevor Davis, Feltham; Terence George Glover, Isleworth, and John Robert Jones, Walton-on-Thames, all of England, assignors to BP Chemicals International Limited, London, England

Filed Dec. 30, 1971, Ser. No. 214,468

Claims priority, application Great Britain, Jan. 6, 1971, 605/71; Sept. 14, 1971, 42,765/71

Int. Cl. C10g *37/00*

U.S. Cl. 208—57 **6 Claims**

Olefins, e.g., ethylene and propylene, are produced by hydrogenating a petroleum distillate feedstock, e.g., a petroleum vacuum distillate feedstock (b. pt. 300° – 650°C), over a catalyst containing combinations of Ni, Mo, Co and Won SiO_2/Al_2O_3 bases, preferably $Ni/W/SiO_2/Al_2O_3$, under reaction conditions such that a substantial quantity of aromatics in the feedstock are hydrogenated. The whole product of hydrogenation is then thermally cracked in the presence of steam, producing an increased yield of gaseous olefin products.

3,781,196

STABILIZING A HYDROCRACKED LUBE OIL BY SOLVENT EXTRACTION

Sheldon L. Thompson, Glen Mills, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 875,502, Nov. 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 530,580, Feb. 28, 1966, abandoned. This application Sept. 1, 1972, Ser. No. 285,709

Int. Cl. C10g *13/02*

U.S. Cl. 208—96 **19 Claims**

Process of preparing lubricating oils of improved quality stability in color and sludge formation of oils hydrogenated at temperatures above 650° F. by serially extracting same subsequent to hydrogenation with a solvent having preferential solubility for aromatics.

3,781,197

PROCESS FOR CRACKING HYDROCARBONS CONTAINING HYDRODESULFURIZED RESIDUAL OIL

Millard C. Bryson, Conway; Joel D. McKinney, Indiana; Robert A. Titmus, Pittsburgh, and Frederick K. White, Allison Park, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 10, 1972, Ser. No. 216,428

Int. Cl. C10g *11/04*, *37/00*; **C10l** *1/04*

U.S. Cl. 208—120 **19 Claims**

In fluid catalytic riser cracking of a gas oil with a zeolite catalyst the inclusion of controlled amounts of residual oil in the feed results in an improvement in octane value and/or improvement in the distribution of octane value of the gasoline product. The octane number improvement is further enhanced by hydrodesulfurizing the residual oil prior to charging to the FCC unit. However, residual oil is relatively difficult to vaporize and the extent of its vaporization will depend on the equilibrium flash vaporization temperature at the bottom or inlet of the riser. Therefore, the quantity of residual oil in the feed must be controlled in relation to the equilibrium temperature in order to, on the one hand, vaporize and crack a sufficient quantity of residual oil to obtain the octane improvement effect, while, on the other hand, keeping the quantity of residual oil which remains unvaporized below a specified level.

3,781,198

PROCESS FOR MAKING ELECTRODE GRADE COKE

Raymond Wynkoop, Gladwyne, and Edward M. Kohn, Philadelphia, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Feb. 2, 1972, Ser. No. 223,025

Int. Cl. C10g *9/14*, *9/28*, *23/02*

U.S. Cl. 208—86 **4 Claims**

A process for producing electrode grade coke from high sulfur and metal containing hydrocarbon resids comprising the steps of (1) heating the resid at 325–375° C. in the presence of finely divided sodium and under nitrogen or hydrogen pressure of about 1500 p.s.i.g. for 1–3 hours, (2) washing the sodium treated material with water and CO_2 at elevated temperature, (3) deasphalting the washed material by an aliphatic hydrocarbon extraction to yield a petroleum fraction low in sulfur and metals, and (4) coking said petroleum fraction to obtain an electrode grade coke.

3,781,199

CATALYTIC HYDROCRACKING OF AMMONIA CONTAINING FEEDSTOCKS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,185

Int. Cl. C10g *23/00*

U.S. Cl. 208—89 **16 Claims**

Hydrocarbon feedstocks in admixture with ammonia, as for example the total effluent derived from the catalytic hydrofining of a nitrogen containing feedstock, are subjected to hydrocracking in the presence of a stabilized, ammonia-resistant Y zeolite catalyst. Stability to steam and ammonia is imparted to the zeolite base during conversion from its original sodium form to a decationized and/or hydrogen form by a novel sequence of: (1) partial exchange of ammonium ions for sodium ions, (2) steam calcination, (3) further ion exchange of ammonium ions for sodium ions, and (4) recalcining the twice-exchanged zeolite in intimate admixture with a finely divided, hydrous metal oxide such as alumina.

3,781,200

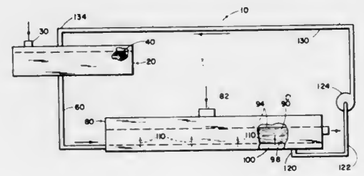
FLUOROCARBON AND OXYGEN-PROVIDING COMPOUND TREATMENT OF WASTE WATERS

Manuel Grant Hicks, 1927 S. 8th St., Omaha, Nebr. 68108

Continuation-in-part of abandoned application Ser. No. 139,986, May 3, 1971. This application Sept. 18, 1972, Ser. No. 290,159

Int. Cl. B01d *11/04*

U.S. Cl. 210—21 **5 Claims**



A process of using heavy Freon as a solvent for H_2O_2, ozone, oxygen or air for carrying these oxygen providers beneath a body of sewer water so that oxygen diffuses upwardly into the water from the Freon to control septic odors or to cause aerobes to thrive and so that material such as fat in the water is dissolved in the Freon to facilitate its extraction.

3,781,201

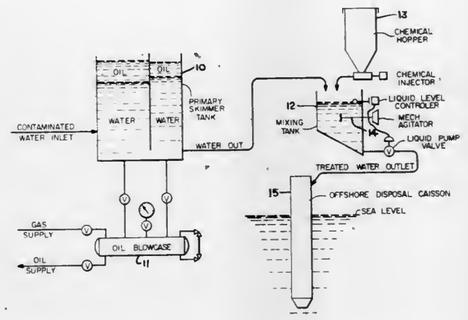
METHOD FOR SEPARATING OIL FROM A MIXTURE OF OIL AND WASTE WATER FROM AN OFFSHORE RIG

Charles J. Carmichael, 2278 Telestar St., Harvey, La. 70058, and Albert G. Franklin, 2712 Holiday Drive, New Orleans, La. 70114

Filed Jan. 24, 1972, Ser. No. 219,944

Int. Cl. B01d *15/00*

U.S. Cl. 210—27 **5 Claims**



The present disclosure is directed to separating oil from a mixture of oil and waste water on offshore rigs where the water cannot merely be allowed to wash overboard containing oil which pollutes the environment and endangers marine life. The mixture of oil and water is first passed through a primary skimmer tank where oil that quickly separates from water is skimmed off into a blow case and water from the bottom of the skimmer tank is fed to a mixing tank where gypsum and lime are added and the gypsum-oil and excess gypsum and other pollutants are mechanically separated from the water.

3,781,202

SPIN FINISH FOR POLYAMIDE YARN PROCESSED AT HIGH TEMPERATURE

Robert Moore Marshall, Chesterfield County, and Kimon Constantine Dardoufas, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,828

Int. Cl. D06m *13/30*

U.S. Cl. 252—8.7 **4 Claims**

A spin finish composition for nylon feeder yarn to be processed at high temperature into carpet yarn, such as by steam jet texturing, comprising coconut oil, sulfonated natural petroleum product and other essential components results in improved processing and better quality yarn.

3,781,203

THICKENED ACID COMPOSITIONS AND METHODS FOR MAKING SAME

Robert P. Clark, Skanesteles, N.Y., and Milton Freifeld, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Original application May 27, 1968, Ser. No. 732,111, now abandoned. Divided and this application Mar. 17, 1971, Ser. No. 125,422

Int. Cl. C08f *29/30*; **E21b** *43/27*

U.S. Cl. 252—8.55 C **6 Claims**

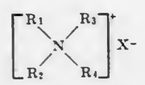
A composition adapted for the thickening of aqueous acid compositions, such compositions so thickened, and a method for preparing such thickening compositions, such thickening compositions consisting essentially of the interaction product of (a) polyvinyl alcohol containing from 1 to 20% unsaponified 1 to 4 carbon atom fatty

acid ester groups with (b) an equimolar interpolymer of an α,β-unsaturated aliphatic dicarboxylic acid anhydride with an α-olefinic comonomer selected from the group consisting of alkyl vinyl ethers, vinyl esters, α-olefins, acrylic acids and acrylic acid esters, (a) and (b) being present in the molar ratio of 100:1 to 1:10.

3,781,204
TEXTILE TREATING COMPOSITION
Mamoru Katsumi, Toshio Sato, and Tadao Hara, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
No Drawing. Filed Dec. 17, 1971, Ser. No. 209,454
Claims priority, application Japan, Dec. 23, 1970, 45/117,164
Int. Cl. D06m *13/46;* **B44d** *5/06*
U.S. Cl. 252—8.75 **1 Claim**

A textile treating composition essentially consisting of the following three ingredients (1) to (3):

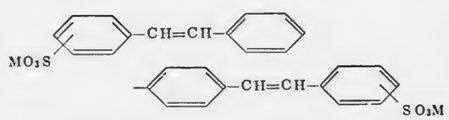
(1) 1 to 10 parts by weight of a cationic surface active agent of the general formula:



wherein R_1 and R_2 are alkyl radicals of 12–22 carbon atoms, R_3 and R_4 are alkyl radicals of 1–4 carbon atoms and X^- is a halogen ion, $CH_3SO_4^-$ or

$$C_2H_5SO_4^-,$$

(2) 0.05 to 0.5 part by weight of an optical brightener of the general formula:



wherein M is an alkali metal or an ethanol amine, and

(3) 0.5 to 10 parts by weight of a cationic surface active agent which is characterized by that

(i) it has one or more of cationic nitrogen atoms in a molecule,

(ii) it has 1 to 3 polyoxyethylene groups attached on said cationic nitrogen atoms, each of the polyoxyethylene groups having a terminal hydroxy radical and having oxyethylene units of 1–14 moles, and

(iii) it has one or two of RCH_2-, $RCONH(CH_2)_n$- or $RCOO(CH_2)_n$-, in which R is an alkyl radical of 11–21 carbon atoms and *n* is an integer of 1 to 3, in a molecule.

3,781,205
COMPOSITE BEARINGS
James Cairns and Nicholas Walton, Cherry Hill, N.J., assignors to Garlock, Inc., Palmyra, N.Y.
No Drawing. Filed Feb. 2, 1970, Ser. No. 8,065
Int. Cl. C10m *7/34*
U.S. Cl. 252—12.6 **12 Claims**

A composite bearing comprising a backing member to which there is secured a dimensionally stable bearing surface layer comprising a solid lubricant selected from the group consisting of the sulfides, selenides, and tellurides of molybdenum, tungsten, and titanium, lead diiodide, boron nitride, carbon, graphite, and polytetrafluoroethylene and fibers of a material characterized by a heat distortion temperature exceeding that of polytetrafluoroethylene and selected from the class consisting of aromatic polyamides, carbon, graphite, aromatic polysulfones, aromatic polyimides and aromatic polyester-imides.

3,781,206
LUBRICANT COMPOSITIONS
Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
No Drawing. Filed Nov. 5, 1971, Ser. No. 196,203
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 R **6 Claims**

The antioxidant properties of lubricants are improved by adding thereto an antioxidant amount of an alkoxydiarylamine.

3,781,207
DEVELOPER MIXTURE FOR ELECTROSTATIC PRINTING
Richard F. Tamm, Elmhurst, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
No Drawing. Filed Dec. 18, 1968, Ser. No. 784,888
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 **1 Claim**

In an electrostatic printing process employing a developer mixture comprised of electrically conductive carrier particles and electrostatically attractable toner particles, the speed of printing is increased by incorporating in the developer mixture finely divided particles having a particle size of between about .007 and about 0.09 micron.

3,781,208
LIQUID DEVELOPERS CONTAINING AZO DYES
Yasuo Ueda, Kobe, Yasutoki Kamezawa and Tatsuo Aizawa, Osaka, and Toshimitu Ikeda, Himeji, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan
No Drawing. Filed Apr. 28, 1970, Ser. No. 32,733
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **10 Claims**

A liquid developer comprising a dispersion of a dye or pigment having a long chain alkyl group in the molecule structure in a liquid hydrocarbon. The liquid developer for electrophotography is excellent in dispersibility of the image-forming dye or pigment particles, uniformity in charge polarity, storage stability, distinct-image forming ability and image-fixing property, and such liquid developer can be prepared without aid of conventional modifiers such as control agents, dispersing agents and fixing agents.

3,781,209
METHOD OF PRODUCING HOMOGENEOUS RODS OF SEMICONDUCTOR MATERIAL
Konrad Reuschel, Vaterstetten, Wolfgang Dietze and Alfred Muhlbauer, Munich, and Herbert Sandmann, Vaterstetten, Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Germany
Filed Dec. 2, 1971, Ser. No. 204,188
Claims priority, application Germany, Dec. 2, 1970, P 20 59 360.6
Int. Cl. B01j *17/08*
U.S. Cl. 252—62.3 R **8 Claims**

A perpendicular tube of semiconductor material is filled with crystalline semiconductor waste and/or dopant. A molten zone is guided through the tube and the filling, whereby the filling fuses with the tube.

3,781,210
MAGNETIC COATING COMPOSITION
Virgil Allan Lohoff, Santa Clara, Calif., assignor to Memorex Corporation, Santa Clara, Calif.
No Drawing. Filed May 16, 1972, Ser. No. 253,832
Int. Cl. H01l *1/26*
U.S. Cl. 252—62.54 **2 Claims**

A fluid, heat curable thermosetting magnetic coating composition in which magnetic particles are dispersed in a solution of five components which upon evaporation of the solvent and heating form a durable resin matrix having the magnetic particles dispersed in it. The five components in solution are an epoxy resin having a molecular weight of about 400–4000 per epoxy group, an amine aldehyde condensation product containing secondary amine groups, a polyamine containing primary amine groups, a polyvinyl acetal resin, and a silanol modified silicone resin.

3,781,211
MAGNETIC COATING COMPOSITION
Virgil Allan Lohoff, Santa Clara, Calif., assignor to Memorex Corporation, Santa Clara, Calif.
No Drawing. Filed Aug. 10, 1972, Ser. No. 279,517
Int. Cl. H01f *1/26*
U.S. Cl. 252—62.54 **4 Claims**

A fluid, heat curable thermosetting magnetic coating composition consisting of magnetic particles dispersed in a solution of three components which upon evaporation of the solvent and heating form a durable resin matrix having the magnetic particles dispersed in it. The three components in solution are an epoxy resin having a molecular weight of about 400–4000 per epoxy group, a polyamine containing at least one primary amine group and a polyvinyl acetal resin. The solvent must be capable of dissolving the three components, must be inert to them at temperatures up to solvent boiling point and must consist to the extent of at least 33 volume percent of diethylene glycol dimethyl ether.

3,781,212
AEROSOL ENZYME DETERGENTS STABILIZED WITH CARBON DIOXIDE
Winston B. Smillie, Santa Ana, Calif., assignor to Townsend and Townsend, San Francisco, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 56,638, July 20, 1970. This application Oct. 27, 1972, Ser. No. 301,548
Int. Cl. C11d *7/42*
U.S. Cl. 252—89 **6 Claims**

Stable liquid or semi-liquid detergent compositions are provided, preferably in the form of foamy aerosols, containing hydrolytic enzymes stabilized by colloidal silica and/or dissolved carbon dioxide.

3,781,213
METHOD FOR THE PREPARATION OF HOMOGENEOUS METERABLE PASTES AND SUSPENSIONS OF PHTHALIC ACIDS AND GLYCOLS, FOR FEEDING PLANTS, MORE PARTICULARLY CONTINUOUS ESTERIFICATION PLANTS
Francesco Siclari, Barlassina, and Franco Magnoni and Battista Morandi, Milan, Italy, assignors to Snia Viscosa Societá Nationale Industria Applicazoni Viscosa S.p.A., Milan, Italy
Filed Oct. 20, 1971, Ser. No. 190,912
Claims priority, application Italy, Oct. 21, 1970, 7,223/70
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 **10 Claims**

A method and an apparatus are disclosed for preparing phthalic acid-glycol mixtures for esterification. A problem which is frequently encountered in preparing such paste is the retention of the homogeneousness of their composition, especially in continuous esterification installations. Contrary to widely accepted and well established technical views, it has been discovered that, by keeping the mixtures or pastes at a comparatively low temperature, the preferred range being between 35° C. and 20° C., the problem indicated above, and others connected therewith, are happily solved and the undesirable formation of lumps and incrustations is effectively prevented.

3,781,214
PHOTOPOLYMERIZABLE PRINTING INK
Yuhei Nemoto, Tokyo, and Shiro Takahashi, Omiya, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan
No Drawing. Filed Nov. 23, 1971, Ser. No. 201,497
Claims priority, application Japan, Nov. 25, 1970, 45/103,301
Int. Cl. C09d *11/10*
U.S. Cl. 260—22 TN **3 Claims**

Photopolymerizable printing ink which is cured under irradiation of ultraviolet rays and is characterized in that the same comprises a photopolymerizable, unsaturated compound obtained by the reaction of (I) a hydroxyl group-containing, fatty oil-soluble compound with (II) a compound containing an isocyanate group and a photopolymerizable, unsaturated bond, and a glyceride of an unsaturated fatty acid containing a conjugated double bond, as the essential vehicle components.

3,781,215
PROCESS FOR COMMINUTING FLUORESCENT WHITENING AGENTS AND COMPOSITIONS OBTAINED THEREBY
Theodore A. Langstroth, Cincinnati, Ohio, assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 839,703, July 7, 1969. This application Nov. 22, 1971, Ser. No. 201,198
Int. Cl. D06l *3/12*
U.S. Cl. 252—301.3 W **4 Claims**

A process for comminuting relatively large crystals of solid fluorescent whitening agents to a particle size having a diameter no greater than 5 microns which comprises grinding a water-wet presscake of said agent with at least one molecular equivalent of anhydrous sodium sulfate for each ten molecular equivalents of water present in the presscake and the fluorescent whitening compositions obtained thereby.

3,781,216
PROCESS FOR THE PRODUCTION OF OXIDE AND CARBIDE CONTAINING NUCLEAR FUEL PARTICLES FOR HIGH TEMPERATURE REACTORS
Karl-Gerhard Hackstein, Hanau, Martin Kadner, Dornigheim, and Horst Förster, Hanau, Germany, assignors to Nukem Nuklear-Chemie und- Metallurgie, GmbH, Wolfgang, near Hanau am Main, Germany
No Drawing. Filed June 29, 1971, Ser. No. 158,094
Claims priority, application West Germany, July 28, 1970, P 20 37 232.1
Int. Cl. C01g *43/02*
U.S. Cl. 252—301.1 R **12 Claims**

Spherical oxide or carbide fuel particles of uranium and/or thorium are formed by dropping an aqueous salt solution of the heavy metal, e.g., uranyl and/or thorium nitrate into an alkaline, preferably ammoniacal, precipitation bath. The solution also includes an organic polymer, preferably polyvinyl alcohol or partially hydrolyzed polyvinyl acetate, which delays the precipitation of the heavy metal compound in an alkaline medium. The polymer must be able to maintain the surface tension in spite of the precipitation of the uranium or thorium. The polymer is precipitated by an alcohol, e.g. primary or isopropyl alcohol followed by conventional drying, hardening calcining, and sintering or melting the product.

3,781,217
METHOD OF REPRESSING THE PRECIPITATION OF CALCIUM FLUOZIRCONATE
Billie J. Newby and Donald W. Rhodes, Idaho Falls, Idaho, assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed July 3, 1972, Ser. No. 268,262
Int. Cl. C01g *43/00*
U.S. Cl. 252—301.1 W **9 Claims**

Boric acid or a borate salt is added to aqueous solu-

tions of fluoride containing radioactive wastes generated during the reprocessing of zirconium alloy nuclear fuels which are to be converted to solid form by calcining in a fluidized bed. The addition of calcium nitrate to the aqueous waste solutions to prevent fluoride volatility during calcination, causes the precipitation of calcium fluozirconate which precipitate further tends to form a gel at fluoride concentrations of 3.0 M or greater. The boron containing species which are introduced into the solution by the addition of the boric acid or borate salt retard the formation of the calcium fluozirconate precipitate and prevent formation of the gel. These boron containing species can be introduced into the solution by the addition of a borate salt but preferably are introduced by the addition of an aqueous solution of boric acid.

3,781,218

HYDROXY-FATTY ACID AMIDE POLYOXYALKYLENE ETHER: SOAP COMPOSITIONS

Horoshi Suzuki and Yoshiro Tsutsui, Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,845
Claims priority, application Japan, Mar. 7, 1970, 45/19,500

Int. Cl. B01f *17/22;* **C07c** *103/12;* **C11d** *9/46*
U.S. Cl. 252—356 **1 Claim**

As non-ionic surface active agents are generally low in toxicity they are commonly used as additives in pharmaceuticals, cosmetics, foodstuffs, etc. However, non-ionic surface active agents which exhibit antimicrobial action or rust-inhibiting property have not hitherto been known. The present invention uses hydroxy-fatty acid amide polyoxyalkylene ether, as the active ingredients. As this substance is superior in antimicrobial action and rust-inhibiting property, the surface active agents manufactured according to the present invention exhibit not only the superior properties inherent in the conventional surface active agents, e.g., emulsifying and dispersing power, but also superior rust-inhibiting property and antimicrobial action. Further, if metal soap is added to the surface active agents, the aforementioned properties become more conspicuous.

3,781,219

HALIDE ADDITION AND DISTRIBUTION IN THE REACTIVATION OF PLATINUM-RHENIUM CATALYSTS

Marvin F. L. Johnson, Homewood, and Stuart L. Graff, Calumet City, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,551
The portion of the term of the patent subsequent to Jan. 2, 1989, has been disclaimed

Int. Cl. B01j *11/18*
U.S. Cl. 252—415 **19 Claims**

A process for reactivation, including chlorination, of a fixed bed of carbon-fouled, platinum group metal- and rhenium-containing, alumina-supported catalyst is disclosed which involves contacting the catalyst with an oxygen-containing gas, then with a gaseous stream containing inert gas, oxygen and vaporous chlorine-containing agent until at least about 0.2% chlorine has been added to the catalyst based on the total weight of catalyst in the bed. Contact of the catalyst is then continued with a gaseous stream containing inert gas, oxygen and a minor amount of water vapor to distribute chlorine in the catalyst bed.

3,781,220

CATALYST FOR ETHYLENE POLYMERIZATION AND COMPOLYMERIZATION WITH α-OLEFINS

Alexandr Evgenievich Shilov, Vorobievskoe shosse 2, kv. 22, Moscow, U.S.S.R.; Fridrikh Stepanovich Dyachkovsky, ulitsa Tretya 2, kv. 2, p/o Chernogolovka, Moskovskaya oblast, Noginsky raion, U.S.S.R.; Nikolai Mikhailovich Chirkov, ulitsa Vavilova 55/5, kv. 6, Moscow, U.S.S.R.; and Petr Evgenievich Matkovsky, ulitsa Pervaya 16, kv. 26, p/o Chernogolovka, Moskovskaya oblast; Khaim-Mordkhe Aronovich Brikenshtein, ulitsa Vtoraya 5, kv. 1, p/o Chernogolovka, Moskovskaya oblast; Galina Albertovna Beikhold, obschezhitie NNTS, kv. 412, p/o Chernogolovka, Moskovskaya oblast, and Ljudmila Nikolaevna Russian, ulitsa Pervaya 2a, kv. 41, p/o Chernogolovka, Moskovskaya oblast, all of Noginsky raion, U.S.S.R.

No Drawing. Filed May 20, 1971, Ser. No. 145,521

Int. Cl. C08f *3/04*
U.S. Cl. 252—429 B **5 Claims**

A catalyst for ethylene polymerization and copolymerization with α-olefins, comprising a cyclopentadienyl of a Me- or MeO- halide, such as dicyclopentadiene compounds of titanium, vanadium and zirconium chlorides; an organometallic compound, such as diethylaluminum chloride, a Lewis acid such as $AlCl_3$, BF_3, $SnCl_4$, $TiCl_4$, ethylaluminum dichloride and tetraalkyl tin compounds and a halogen containing solvent.

As a Lewis acid aluminum trichloride, ethylaluminum dichloride, tetraalkyltin, boron trifluoride or tin tetrachloride is preferably used.

The present catalyst finds application in the processes of proudcing polymers based on ethylene and may be particularly employed for producing impact-resistant polyethylene.

3,781,221

CATALYST COMPOSITIONS CONTAINING PLATINUM AND LEAD AND PROCESS FOR PREPARING THE SAME

Naoya Kominami, Tokyo, Toshiyuki Iwaisako, Oi, and Kusuo Ohki, Yamato, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,197
Claims priority, application Japan, Aug. 18, 1970, 45/71,733

Int. Cl. B01j *11/12*
U.S. Cl. 252—432 **15 Claims**

Novel catalyst compositions are provided comprising an alumina carrier with pores of a pore diameter distribution having a peak in the range of 2,000–7,000 A. and an active agent containing platinum and lead supported on said alumina carrier. Such a catalyst composition can be prepared by a process comprising incorporating powdered alumina into specific organic substance, subjecting the resulting mixture to a molding, followed by firing to produce an alumina carrier having pores of the above-mentioned specific pore diameter distribution and making the active agent supported on the alumina carrier. The thus obtained catalyst is, due to its selective high activity, particularly useful in the reforming of hydrocarbons.

3,781,222

DEHYDRATION CATALYSTS, PARTICULARLY FOR THE DEHYDRATION OF DIOLS

Joseph Edouard Weisang and Georges Szabo, Le Havre, and Jean Maurin, Montivilliers, France, assignors to Compagnie Francaise de Raffinage, Paris, France

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,892
Claims priority, application France, Apr. 16, 1970, 7013791

Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **4 Claims**

Catalysts and methods of preparing the same for the dehydration of diols, e.g. 2-methyl-2,3-butanediol to isoprene, constituted at least in part of a pyrophosphate of at least one metal belonging to the group consisting of lithium, sodium, strontium, and barium.

3,781,223

CATALYST FOR OXIDATIVE DEHYDROGENATION

Darrell W. Walker, Floyd E. Farha, Jr., and Brent J. Bertus, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed May 6, 1971, Ser. No. 140,966

Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **5 Claims**

Organic compounds are dehydrogenated to compounds having a higher degree of unsaturation by contacting the feedstock in the vapor phase in the presence of an oxygen-containing gas with a catalyst comprising at least one of nickel, cobalt or iron in association with tin and phosphorus. Representative of such conversions is the oxidative dehydrogenation of butane to butenes and butadiene, isopentane to isoamylenes and isoprene, and butenes to butadiene. The conversion products are valuable compounds particularly useful as intermediates for the preparation of polymeric materials such as synthetic rubbers and the like.

3,781,224

METHOD OF ACTIVATING A CATALYST

Natale Ferlazzo, Milan, Giambattista Antonelli, Brugherio, and Giancarlo Aglietti, Milan, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,201
Claims priority, application Italy, Nov. 12, 1970, 31,630/70

Int. Cl. B01j *11/06, 11/50*
U.S. Cl. 252—447 **11 Claims**

Silver-based catalysts for the oxidation of ethylene are activated by heating in nitrogen then in nitrogen with an oxygen content progressively raised to 20%.

3,781,225

TREATMENT OF COLLOIDAL ZEOLITES

Albert B. Schwartz, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 842,014, July 15, 1969. This application Apr. 17, 1972, Ser. No. 244,907

Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **17 Claims**

This invention relates to treatment of formed colloidal size zeolites to facilitate subsequent processing by removing soluble salts from aqueous suspension of said colloidal zeolite in the mother liquor remaining after crystallization, without appreciably changing the zeolite concentration in the suspension. Such treatment involves contacting said zeolite suspension with cation and anion exchange resin particles larger than about 10 microns in diameter.

3,781,226

TREATMENT OF COLLOIDAL ZEOLITES

Albert B. Schwartz, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 842,014, July 15, 1969. This application Apr. 17, 1972, Ser. No. 244,908

Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **12 Claims**

This invention relates to treatment of formed colloidal size zeolite to facilitate subsequent processing by removing soluble salts from an aqueous suspension of said colloidal zeolite in the mother liquor remaining after crystallization, without appreciably changing the zeolite concentration in the suspension. Such treatment involves contacting the aqueous suspension of the zeolite with a semipermeable membrane which is in contact, at the side opposite the zeolite suspension, with an aqueous treating solution.

3,781,227

CATALYST FOR HYDROGENATION OF NITRO-COMPOUNDS AND A METHOD OF PRODUCING SAME

Dmitry Vladimirovich Sokolsky, prospekt Abaya 31, kv. 38; Gaukhar Daulenovna Zakumbaeva, prospekt Abaya 31, kv. 36; Kair Akhmetovich Zhubanov, prospekt Abaya 34, kv. 21; Evgeny Petrovich Mazin, ulitsa Spartaka 14, kv. 4; and Nikolai Illarionovich Scheglov, ulitsa Aue Zova 136, kv. 22, all of Alma-Ata, U.S.S.R.; and Evgeny Pavlovich Fokin, ulitsa Pravdy 1, kv. 14; and Vladimir Arkadievich Livanov, Novosibirsk, ulitsa Zoloto-Dolinskaya 9, kv. 28, both of Novosibirsk, U.S.S.R.

No Drawing. Filed Jan. 15, 1971, Ser. No. 106,932

Int. Cl. B01j *11/22*
U.S. Cl. 252—466 J **6 Claims**

A catalyst for the hydrogenation of nitro-compounds which is comprised of a nickel-aluminum alloy promoted with a metal or mixtures of metals of Group VIII and containing an addition of a metal of the Group II.

A method of producing said catalyst comprising alloying nickel and aluminum with a metal or mixtures of metals of Group VIII and a metal of Group II with the subsequent leaching of 3–5 wt. percent of aluminum from the alloy obtained.

The present catalyst exhibits high stability, is capable of a prolonged and continuous service life, providing an 80–100% yield of the desired products.

3,781,228

LAUNDRY PRODUCT CONTAINING ENZYME

Robert William McDonnell, Teaneck, and Maung Hla Win, Berkeley Heights, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 733,298, May 31, 1968. This application Dec. 17, 1971, Ser. No. 209,355

Int. Cl. C11d *3/22, 7/42, 11/00*
U.S. Cl. 252—539 **6 Claims**

Laundry product containing granules of a binding agent, such as polyvinyl alcohol or caroxyalkyl cellulose, and a detergent builder salt, such as sodium tripolyphosphate, and bound to and substantially homogeneously distributed on the surface of the granules, an enzyme.

ERRATUM

For Class 260—22 TN see:
Patent No. 3,781,214

3,781,229

STORAGE STABLE PREMIX FOR PRODUCTION OF POLYURETHANE FOAM

William E. Smith and Charles M. Orlando, Schenectady, N.Y., and Robert W. Barito, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

No Drawing. Filed Oct. 31, 1972, Ser. No. 302,426

Int. Cl. C08g *22/34, 22/48, 41/04*
U.S. Cl. 260—2.5 BE **6 Claims**

A method for making rigid foam is provided by using an amine catalyst and blowing agent with a stable premix of an isocyanate terminated prepolymer and an epoxy resin. The premix is stabilized by the use of an effective amount of certain Lewis acid stabilizers, such as thionyl chloride.

3,781,230

MICROCAPSULAR OPACIFIER SYSTEM

Anthony E. Vassiliades, Deerfield, Edward F. Nauman, Lake Forest, and Shrenik Shroff, Chicago, Ill., assignors to Champion International Corporation, New York, N.Y.

Original application Dec. 23, 1968, Ser. No. 786,337, now Patent No. 3,585,149. Divided and this application Mar. 16, 1971, Ser. No. 124,985

Int. Cl. B01j *13/02;* **B44d** *1/02;* **C09d** *5/00*
U.S. Cl. 260—2.5 B **29 Claims**

Opacifiers comprising air-containing microcapsules hav-

ing an average particle diameter of below about one micron provide highly opaque surfaces when coated onto and/or incorporated into fibrous and non-fibrous substrates. The opacifiers are produced by heating liquid-containing precursor microcapsules at temperatures sufficient to expel the liquid and provide air in the microcapsule.

3,781,231

PHYSICALLY REINFORCED HYDROPHILIC FOAM AND METHOD OF PREPARING SAME

Edward W. Janssen, Roseville, and Robert C. Kyle, Minneapolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,559
Int. Cl. C08g *22/44, 51/14*
U.S. Cl. 260—2.5 BE **6 Claims**

Resilient, relatively dense, open-celled, filled polyoxyalkylene/polyisocyanate foam compositions of high resistance to bottoming out which are highly hydrophilic and dimensionally stable with absorption of water, and a process for the preparation of these compositions.

3,781,232

GRAFT COPOLYMERS HAVING BRANCHES WHICH ARE ALTERNATING COPOLYMERS, AND PROCESSES THEREFOR

Norman G. Gaylord, New Providence, N.J., assignor to Gaylord Research Institute, Inc., Newark, N.J.

No Drawing. Filed Aug. 25, 1970, Ser. No. 66,885
Int. Cl. C08f *24/56*
U.S. Cl. 260—17.4 GC **11 Claims**

A method for preparing novel graft copolymers in which the branches are alternating copolymers, by reacting two comonomers, under conditions whereby alternating copolymers are formed, in the presence of an agent capable of forming a complex with one of the monomers and a preformed polymer having active hydrogen atoms.

3,781,233

BLOWING AGENTS

Erwin Muller, Leverkusen, Wolf-Dieter Wirth, Odenthal, Johannes Blahak, Cologne, and Harry Rohr, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 25, 1972, Ser. No. 256,730
Claims priority, application Germany, May 26, 1971, P 21 26 145.0
Int. Cl. C08j *1/20*
U.S. Cl. 260—2.5 R **13 Claims**

The invention relates to the use of bisbenzazimide compounds as blowing agents for the production of cellular and porous articles from acrylonitrile, butadiene and styrene copolymers. The blowing agents do not liberate any corrosive, discoloring, malodorous or toxic decomposition products.

3,781,234

FLEXIBLE POLYAMIDE HOT MELT ADHESIVE MADE FROM ETHYLENE DIAMINE AND AN ACID COMPONENT CONTAINING A POLYMERIC FATTY ACID AND HEPTADECANE DICARBOXYLIC ACID

Manfred Drawert, Werne, and Eugen Griebsch, Unna, Germany, assignors to Schering AG., Bergkamen, Germany

No Drawing. Filed June 20, 1972, Ser. No. 264,545
Claims priority, application Germany, June 26, 1971, P 21 31 931.3
Int. Cl. C08g *20/00*
U.S. Cl. 260—18 N **3 Claims**

Flexible polyamides, suitable for use as hot melt adhesives and as coating materials, prepared by condensing ethylene diamine with an acid component comprising 1,8- and/or 1,9-heptadecane dicarboxylic acid, a dimerized fatty acid, and, optionally, a further codicarboxylic acid having 7 to 20 carbon atoms.

3,781,235

METHOD FOR MAKING RIGID FOAM AND COMPOSITIONS USING SUCH METHOD

Gene F. Trott, Clarksville, Ind., and William E. Smith, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

No Drawing. Filed Oct. 31, 1972, Ser. No. 302,427
Int. Cl. C08g *22/48, 45/12*
U.S. Cl. 260—2.5 BE **6 Claims**

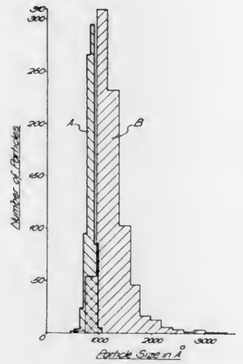
A method for making rigid foam is provided by using an amine catalyst and blowing agent with a stable premix of an isocyanate terminated prepolymer and an epoxy resin. The premix is stabilized by the use of a dicarbonyl compound, such as an aliphatically unsaturated imide or anhydride.

3,781,236

METHOD OF TREATING A POLYMER LATEX

Kenneth John Bassham, Southampton, and Alan Arthur John Feast, Eastleigh, England, assignors to The International Synthetic Rubber Company Ltd., Southampton, Hampshire, England

Filed June 9, 1972, Ser. No. 261,391
Claims priority, application Great Britain, June 14, 1971, 27,748/71
Int. Cl. C08d *9/14*
U.S. Cl. 260—23.7 M **8 Claims**



A method of modifying the particle size distribution of a carboxylated polymer latex comprises:

(1) admixing with the latex sufficient of a second emulsifier, which is an organic carboxylic acid salt, at least partially to replace the first emulsifier on the latex particles with the second emulsifier, and

(2) passing the latex containing at least 15% by weight of polymer particles through a constriction at a pressure of not less than 1,000 p.s.i.g.

The process is particularly applicable to latices having a particle size of less than 1,000 A. enabling a latex of increased number average particle size to be obtained. This, in turn, enables concentration of the treated latex to a high solids content.

3,781,237

USE OF A POLYSILOXANE TO ELIMINATE SURFACE FLAWS IN IMIDE AND AMIDE-IMIDE POLYMER FILMS

William M. Alvino and William R. Koryak, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 94,944, Dec. 3, 1970. This application July 13, 1972, Ser. No. 271,428
Int. Cl. C08g *41/04, 47/10*
U.S. Cl. 260—29.1 SB **12 Claims**

A casting solution, comprising a solvent solution of

an aromatic polyamic acid and an effective amount of a lower alkyl polyorganosiloxane, is applied as a wet film to a substrate and cured at an elevated temperature to provide defect free high temperature polyimide and polyamide-imide films.

3,781,238

AQUEOUS CHAIN EXTENSION OF NCO PREPOLYMER WITH TERTIARY AMINO POLYOL USING NONIONIC SURFACTANT, AND AQUEOUS DISPERSION PRODUCED

Joan K. Helm, Buffalo, N.Y., assignor to Textron, Inc.

No Drawing. Continuation of abandoned application Ser. No. 768,892, Oct. 18, 1968. This application Aug. 4, 1971, Ser. No. 169,061
Int. Cl. C09d *5/02;* **C08g** *22/14*
U.S. Cl. 260—29.2 TN **24 Claims**

There is disclosed a method for preparing an aqueous dispersion from a free isocyanate group-containing polyurethane prepolymer made from diisocyanate and polyoxypropylene polyol or polyoxybutylene polyol. The prepolymer is reacted with a defined tertiary aminopolyol, e.g., methyl diethanolamine, in the presence of a hydroxyl-containing, nonionic surface-acting agent and water. The resulting aqueous dispersion of polyurethane is particularly useful as a coating for various solid substrates.

3,781,239

FLUOROCARBON POLYMER COMPOSITION CONTAINING AN ADHESION PROMOTER

James Derek Birchall, Norley, John Edward Cassidy, Hartford, and Frank Smith, Widnes, England, assignors to Imperial Chemical Industries, Limited, London, England

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,635
Claims priority, application Great Britain, Dec. 11, 1970, 59,006/70, 59,009/70
Int. Cl. C08f *45/22, 45/72*
U.S. Cl. 260—30.6 R **10 Claims**

This invention relates to fluorocarbon polymer compositions. In particular it relates to dispersions of fluorocarbon polymers in liquid media and dry mixtures containing fluorocarbon polymers. The invention also relates to methods of making such compositions and to methods of coating substrates using compositions in liquid media. It further relates to articles made from or made by use of fluorocarbon polymer compositions.

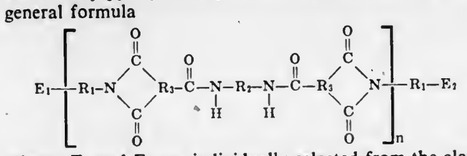
3,781,240

POLYIMIDE MOLDING POWDERS

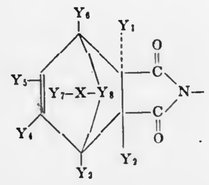
Hyman R. Lubowitz, Hawthorne, Calif., assignor to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,417
Int. Cl. C08g *20/32, 51/02, 51/10*
U.S. Cl. 260—37 NT **6 Claims**

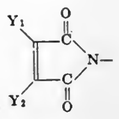
Improved polyimide molding powders are formed at low cost by pyrolytically polymerizing compounds of the general formula



where: E_1 and E_2 are individually selected from the class consisting of



and



where:

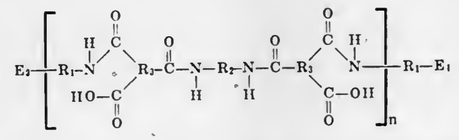
X is a member of the class consisting of carbon, oxygen, sulfur, and carbonyl Y_1–Y_6; and Y_7 and Y_8 when present, are individually selected from the class consisting of hydrogen, aromatic groups, substituted aromatic groups, saturated or unsaturated hydrocarbon groups, having 1 to 6 carbon atoms, alkyl ethers, aryl ethers, halogens, and nitro groups;

R_1 and R_2 are individually selected from the class consisting of aromatic groups, substituted aromatic groups, saturated and unsaturated hydrocarbon groups, saturated and unsaturated heterocyclic groups, and mixtures thereof;

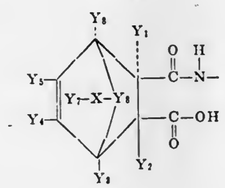
R_3 is selected from the class consisting of substituted aromatic groups, unsubstituted aromatic groups, saturated cyclic groups, unsaturated cyclic groups, saturated heterocyclic groups, and unsaturated heterocyclic groups, and

n is one or more for a single prepolymer and statistically greater than 0 for a mixture.

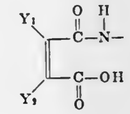
The molding powders may also be formed by pyrolytically polymerizing the novel amic-acid precursors of said prepolymers which are characterized by the formula



where: E_3 and E_4 are individually selected from the class consisting of



and



where: X_1, Y_1–Y_6 and Y_7 and Y_8 are defined as defined above; and R_1, R_2, R_3 and n are as defined above.

3,781,241

FRICTION PARTICLE FOR BRAKE LINING

Frank S. Grazen, Melvin L. Buike, and Frank M. Bryzinsky, North Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Oct. 30, 1969, Ser. No. 872,753, now Patent No. 3,658,751. Divided and this application Oct. 12, 1971, Ser. No. 188,598
Int. Cl. C08g *37/18, 51/10*
U.S. Cl. 260—38 **8 Claims**

A friction particle, useful in applications where cashew nut shell oil friction particles have been used, may be prepared by the reaction at a temperature from about 225

to about 400 degrees Fahrenheit of a non-oxyalkylated resole with resin selected from the group consisting of an oxyalkylated resole, an alkylated resole, an alkylated novolac, an oxyalkylated novolac, and mixtures thereof until it is insoluble, infusible, and does not soften slightly under mechanical force at temperatures below about 400 degrees Fahrenheit, and has substantially no cohesive or bonding strength.

3,781,242

LIGHT STABILIZED POLYPROPYLENE CONTAINING A HINDERED PHENOL, A PHOSPHITE AND A BENZOTRIAZOLE

Ronald D. Mathis, Taylors, S.C., and Jack P. Guillory, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Feb. 17, 1972, Ser. No. 227,252
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.7 P **1 Claim**

Polymeric compositions are stabilized against degradation in physical and chemical properties from exposure to actinic radiation by incorporating into such compositions an additive system comprising at least one secondary organic phosphite ester in combination with at least one 2-(2'-hydroxy-5'-alkylphenyl)benzotriazole. Optionally, the stabilizer additive systems further comprise hindered phenols.

3,781,243

POLYMERIZATION OF VINYL AND VINYLIDENE COMPOUNDS

Erich Gulbins, Heidelberg, Alfred Hauss, Ludwigshafen, Friedrich Kieferle, Limburgerhof, and Jenoe Kovacs, Roxheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,491
Int. Cl. C08f *15/00, 3/30, 3/40*
U.S. Cl. 260—87.5 C **3 Claims**

Homopolymerization or copolymerization of vinyl chloride, vinylidene chloride or vinyl acetate M in bulk, suspension or emulsion in the presence of free radical generating initiators, polymerization aids and at least 0.1% by weight of a copolymerizable compound R containing at least two conjugated carbon-carbon, carbon-nitrogen or carbon-oxygen multiple bonds, the copolymerization parameter r_R being equal to or greater than 1, the copolymerization parameter r_M being less than 1 and the ratio $r_R:r_M$ being more than 20:1, and the compound R being added in portions of not more than 0.01% by weight (based on the monomers M) to the polymerization mixture when the momentarily developed heat of polymerization has exceeded the desired value, said addition being continued until the said value is again reached.

3,781,244

PROCESS FOR PREPARING EPOXIDIC RESINS

Silvio Vargiu and Mario Pitzalis, Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Apr. 24, 1972, Ser. No. 247,165
Claims priority, application Italy, Apr. 30, 1971, 23,913/71
Int. Cl. C08g *30/04*
U.S. Cl. 260—47 EP **7 Claims**

Improved epoxy resins, for electrical and other purposes, are prepared in a two-stage process in which an intermediate epoxy product is prepared from epichlorohydrin and 2,2'-bis(4-hydroxycylohexyl) propane in the presence of sodium hydroxide in equivalent quantities with respect to the epichlorohydrin, and the product is caused to react with a further quantity of bisphenol A until epoxy resins are obtained which have epoxy equivalents in excess of approximately 1,000.

3,781,245

TITANIUM HYDRIDE CATALYZED POLYESTER POLYCONDENSATION

Yoshio Itabashi, Susumu Saito, and Masao Seki, Hofu, Japan, assignors to Kanebo, Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 868,884, Oct. 23, 1969. This application Mar. 10, 1972, Ser. No. 233,812
Claims priority, application Japan, Oct. 25, 1968, 43/78,122, 43/78,123
Int. Cl. C08g *17/015*
U.S. Cl. 260—75 R **3 Claims**

Polyalkylene terephthalates and polyesters consisting mainly of the polyalkylene terephthalate are produced easily and cheaply by using titanium hydride having a low hydrogenation degree or a mixture of metallic titanium and stoichiometric titanium hydride as a catalyst. The thus obtained polyesters are substantially colorless and have an even color tone between lots.

3,781,246

PROCESS FOR THE PRODUCTION OF POLYIMIDES BY REACTING A SCHIFF BASE WITH A CYCLIC ACID ANHYDRIDE

Wilfried Zecher, Cologne-Stammheim, and Rudolf Merten, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 41,680, May 25, 1970, which is a continuation of application Ser. No. 748,209, July 29, 1968, both now abandoned. This application Dec. 3, 1971, Ser. No. 204,774
Claims priority, application Germany, Aug. 7, 1967, F 53,163
Int. Cl. C08g *20/32*
U.S. Cl. 260—78 TF **2 Claims**

A process for the production of polyimides by reaction of Schiff's bases and cyclic dicarboxylic acid anhydrides at temperatures of from 0 to 450° C.

3,781,247

PYROLYTIC POLYMERIZATION CATALYST

Eugene A. Burns, Palos Verdes Peninsula, and Robert J. Jones, Hermosa Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Feb. 1, 1972, Ser. No. 222,692
Int. Cl. C08f *27/00*
U.S. Cl. 260—78.4 D **6 Claims**

Polymerization times and temperatures for alicyclic endo capped prepolymers are reduced by the inclusion of a Lewis acid-type catalyst. Effective amounts ranging preferably 1% to 3% by weight of a Lewis acid selected from any of the alkyl derivatives of or the halide salts of tin, aluminum, zirconium, zinc, vanadium, antimony, germanium, or titanium may be added to the prepolymer.

3,781,248

METHOD OF PRODUCING ACRYLIC COPOLYMER

Hiroshi Sakai, Ehime-ken, Satoshi Hamada, Matsuyama, Yoshio Yamanaka, Ehime-ken, Isao Ito, Matsuyama, and Zenji Izumi, Hideji Kitagawa, Eiji Mukoyama, Zennosuke Suzuki, Tadashi Kato, and Shuntaro Hosaka, Ehime-ken, Japan, assignors to Toray Industries, Inc., Chuo-ku, Tokyo, Japan

Filed Aug. 12, 1971, Ser. No. 171,185
Claims priority, application Japan, Aug. 13, 1970, 45/70,436
Int. Cl. C08f *3/76, 15/22*
U.S. Cl. 260—793 M **5 Claims**

A monomer mixture consisting essentially of acrylonitrile, a polymerizable vinyl monomer more hydrophobic than acrylonitrile and a polymerizable vinyl monomer more hydrophilic than acrylonitrile is polymerized in a reaction medium consisting of dimethyl sulfoxide and water. A relatively homogeneous acrylic copolymer dispersion is obtained within a relatively short period of time at a high conversion ratio.

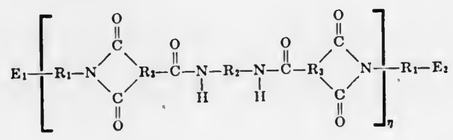
3,781,249

POLYAMIDE-IMIDES AND PRECURSORS THEREOF

Hyman R. Lubowitz, Hawthorne, Calif., assignor to TRW Inc., Redondo Beach, Calif.

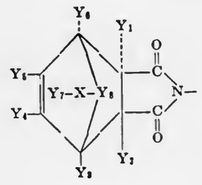
No Drawing. Filed Dec. 30, 1971, Ser. No. 214,416
Int. Cl. C08g *20/32, 51/02*
U.S. Cl. 260—78 TF **31 Claims**

Polyamide-imides having high thermal and mechanical stability formed at low cost by pyrolytically polymerizing novel prepolymers of improved solubility characterized by the general formula

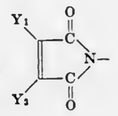


where:

E_1 and E_2 are individually selected from the class consisting of



and



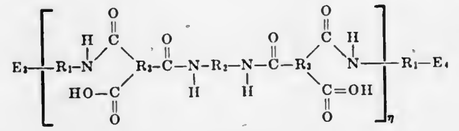
where: X is a member of the class consisting of carbon, oxygen, sulfur, and carbonyl Y_1–Y_6; and Y_7 and Y_8 when present, are individually selected from the class consisting of hydrogen, aromatic groups, substituted aromatic groups, saturated or unsaturated hydrocarbon groups having from 1 to 6 carbon atoms, alkyl ethers, aryl ethers, halogens, and nitro groups;

R_1 and R_2 are individually selected from the class consisting of aromatic groups, substituted aromatic groups, saturated and unsaturated hydrocarbon groups, saturated and unsaturated heterocyclic groups, and mixtures thereof;

R_3 is selected from the class consisting of substituted aromatic groups, unsubstituted aromatic groups, saturated cyclic groups, unsaturated cyclic groups, saturated heterocyclic groups, and unsaturated heterocyclic groups; and

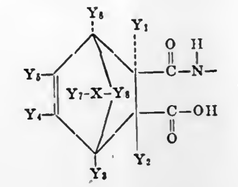
η is one or more for a single prepolymer and statistically greater than 0 for a mixture;

The polyamide-imides may also be formed by pyrolytically polymerizing the novel amic-acid precursors of said prepolymers which are characterized by the formula

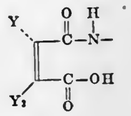


where:

E_3 and E_4 are individually selected from the class consisting of



and



where: X_1, Y_1–Y_6 and Y_7 and Y_8 are defined as defined above; and

R_1, R_2, R_3 and η are as defined above.

The pyrolytically polymerized prepolymer is useful as an adhesive, molding composition, coating, or as a matrix material in the preparation of high strength laminates and composites.

3,781,250

PROCESS FOR THE VULCANIZATION OF HOMO- OR COPOLYMERS OF CONJUGATED DIENES

Jurgen Wolpers, Haltern, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,757
Claims priority, application Germany, Feb. 24, 1970, P 20 08 479.1
Int. Cl. C08c *11/54;* C08d *9/00;* C08f *27/06*
U.S. Cl. 260—79.5 B **8 Claims**

Vulcanizates of homo- and copolymers of conjugated dienes with improved heat-aging characteristics are produced employing a vulcanization system which comprises an organic dithiol, e.g., dodecane-1,12-dithiol, a vulcanization accelerator, and sulfur.

3,781,251

ALKOXY SILYL ALKYL COMPOUNDS AND POLYMERS THEREOF

Matthew Edward Hermes, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Apr. 28, 1970, Ser. No. 32,739, now Patent No. 3,714,214. Divided and this application Sept. 29, 1971, Ser. No. 184,948
Int. Cl. C08f *15/02, 15/06*
U.S. Cl. 260—80.71 **6 Claims**

A silyl vinyl ether having the formula

$$CH_2{=}CHO(X)_y\overset{(R)_y}{\overset{|}{Si}}{-}(OR')_{(3-y)}$$

wherein X is an alkylene group of 2 to 10 carbon atoms, or an alkyleneoxyalkylene group of 4 to 16 carbon atoms, R is an alkyl group of 1 to 6 carbon atoms, y is 0, 1 or 2, and R' is an alkyl group of 1 to 6 carbon atoms; silyl fluoroolefin polymers made by polymerizing the silyl vinyl ether with fluoroolefins, and, optionally, with other vinyl ethers and/or ethylene and/or propylene and/or fluorine-substituted vinyl ether; compositions containing polysilicic acid and silyl fluoroolefin polymer made by polymerizing the silyl vinyl ether with fluoroolefin, and, optionally, with other vinyl ethers; coating compositions containing a compatible solvent and the polysilicic acid/silyl fluoroolefin polymer composition; articles coated with the silyl-fluoroolefin polymer/polysilicic acid com-

position and a process for coating them; and polymers made by polymerizing the silyl vinyl ether with formaldehyde or trioxane and, optionally, with alkylene oxides and/or dioxolane and/or alkyl vinyl ethers.

3,781,252
POLYMERS CONTAINING A DIFLUOROAMINO RADICAL

Raymond M. Price, Applegate, Calif., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Original application Oct. 23, 1969, Ser. No. 869,454. Divided and this application June 15, 1971, Ser. No. 155,674
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.73 **10 Claims**

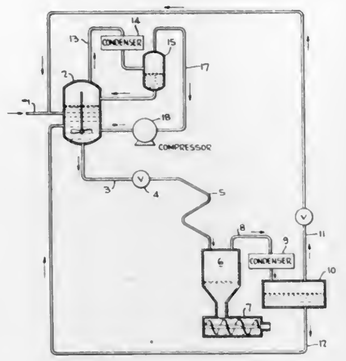
High energy copolymers or terpolymers that have high NF_2 content. The polymers are used in solid propellant composition and are made by incorporation of small quantities of non-energetic monomer molecules with basic side chain ester groups into energetic difluoramino polymers by copolymerization techniques which increase the affinity of the polymers for acidic difluoramino plasticizers [e.g., TVOPA, 1,2,3-tris(1,2-bis-(difluoramino) ethoxy)propane] or OPE, 1,2-bis[2,2,3-tris(difluoramino) propoxy] - 1,2 - bis(difluoroamino)ethane. Higher plasticizer to polymer ratios result in a higher difluoramino content in the binder system and a correspondent higher energy propellant wherein used. Representative of the non-energetic monomer molecules, (also referred to as inert nonfunctional material), are methyl acrylate and methyl methacrylate which are paired in a reaction with a selected energetic difluoramino material such as 2,3-bis(difluoramino)propyl acrylate (NFPA), 2,3-bis(difluoramino)propyl methacrylate (NFPMA), or the like to yield a copolymer. A ternary copolymer is produced when a functional monomer selected from hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, or hydroxypropyl acrylate, is employed along with the paired reactants of the reaction. The resulting ternary copolymer is a prepolymer capable of being cured to form polyurethane polymers. Further, a ternary copolymer having different functionality results when a functional monomer selected from glycidyl methacrylate, glycidyl acrylate, acrylic acid, or methacrylic acid is employed in a reaction with the paired reactants specified above. This type ternary copolymer is capable of being cured to epoxy polymers.

3,781,253
PROCESS FOR THE PREPARATION OF ETHYLENE POLYMER OR COPOLYMER

Akikazu Mori, Otake, Hideo Nara, Iwakkuni, Toshiki Kataoka, Waki-Mura, Norio Kashiwa and Tadaichi Tokuzumi, Otake, and Yutaka Horota and Hiroshi Fujimura, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of abandoned application Ser. No. 881,718, Dec. 3, 1969. This application May 15, 1972, Ser. No. 253,654
Claims priority, application Japan, Dec. 3, 1968, 43/88,081
Int. Cl. C08f *1/42, 3/06, 15/04*
U.S. Cl. 260—85.3 R **4 Claims**

A process for the preparation of polyethylene which comprises polymerizing ethylene in solution phase (the solution phase excludes a polymer or copolymer existing in solid phase, but included such polymer in molten state), in a polymerization solvent of linear or cyclic pentane, hexane, or heptane in the presence of a carrier-supporting Ziegler catalyst, while maintaining the polymer concentration in the polymerization system at not higher than 20% by weight and controlling the polymerization temperature by forcedly circulating an inert gas through the polymerization zone; subjecting the liquid phase reaction product containing the formed ethylene polymer or copolymer in molten state to a lower pressure not higher than the polymerization pressure, which allows vaporization of the solvent in the liquid phase, to evaporate and separate the solvent; and recovering the softened or molten state ethylene polymer or copolymer from which the solvent has been removed.



3,781,254
PROCESS FOR THE PRODUCTION OF POLYMERS IN THE PRESENCE OF A REDOX CATALYST SYSTEM

Friedrich Engelhardt, Frankfurt am Main, and Joachim Ribka, Offenbach am Main, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed July 31, 1972, Ser. No. 276,598
Claims priority, application Germany, Aug. 10, 1971, P 21 39 959.7
Int. Cl. C08f *3/90, 15/22*
U.S. Cl. 260—85.5 R **4 Claims**

Compounds of the formula

$$R^1-CH-CH_2SO_2-R^1 \quad (I)$$
$$\quad\quad R^2$$

wherein R^1 is alkyl, cycloalkyl, aryl, aralkyl, one of the aforesaid radicals substituted by lower alkyl or chlorine, or

$$-CH_2-CH-R^3$$
$$\quad\quad R^2$$

R^2 is hydrogen or methyl and R^3 is carboxyl, carboxylate base addition salt radical,

$$-CON\begin{matrix}R^4\\R^5\end{matrix}$$

wherein R^4 and R^5 are hydrogen or alkyl, cyano, $COOR^6$ wherein R^6 is alkyl, alkanoyl, cycloalkanoyl, benzoyl, phenylacetyl or one of said

$$-CON\begin{matrix}R^4\\R^5\end{matrix}$$

$COOR^6$ alkanoyl, cycloalkanoyl, benzoyl or phenylacetyl radicals substituted by lower alkyl or chlorine are used as reducing component in a redox catalyst system in the polymerization of olefinically unsaturated monomers.

3,781,255
PROCESS FOR THE SUSPENSION OF POLYMERIZATION OF VINYL CHLORIDE

Thomas Balwe, Johann Bauer, and Alex Sabel, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed July 28, 1970, Ser. No. 59,022
Claims priority, application Germany, Aug. 8, 1969, P 19 40 475.2
Int. Cl. C08f *3/22*
U.S. Cl. 260—87.1 **1 Claim**

Process for polymerizing vinyl chloride, and for copolymerizing vinyl chloride and up to 30% by weight of other ethylenically unsaturated monomers in aqueous phase containing a suspension agent, which comprises heating the suspension to a temperature of 30 to 90° C., under a pressure of up to 15 atmospheres, in the presence of a mixture of acetyl cyclohexyl sulfonyl peroxide and a perester of branched carboxylic acids and α-branched hydroperoxides of the general formula

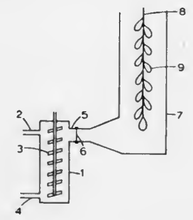
$$R_1-\underset{R_3}{\overset{R_1}{C}}-O-O-\overset{O}{\overset{\|}{C}}-R$$

where R represents branched alkyl groups with 3 to 18 C atoms, R_1 hydrogen or alkyl groups with 1 to 4 C atoms, R_2 alkyl groups with 1 to 4 C atoms and R_3 straight-chain or branched alkyl groups with 1 to 18 C atoms.

3,781,256
PROCESS AND INSTALLATION FOR THE PREPARATION OF HOMO- OR COPOLYMERS OF ETHYLENE

Constant P. M. Sadee, Brunssum, Christianus W. J. van Koppen, Sittard, and Henricus A. A. Koenders, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Nov. 29, 1971, Ser. No. 202,873
Claims priority, application Netherlands, Nov. 27, 1970, 7017347; July 21, 1971, 7110020
Int. Cl. C08f *1/60, 3/04, 15/00*
U.S. Cl. 260—86.7 **2 Claims**



A process and apparatus is described to minimize the danger of aerial explosions which occur during the high pressure, high temperature polymerization of ethylenic monomers. The process involves rapidly discharging at least 0.3 kg. of water per kg. of reactor contents into the safety passageway and outlet pipe within 10 seconds following the operativeness of such safety passageway by the opening of valve means when an excessive pressure level is reached within the reactor. Various apparatus structures are also disclosed adapted for practicing this process wherein the water is held in rupturable bags or, e.g., is discharged into the escaping gas stream through valve-operated spray means, or in other ways.

3,781,257
COPOLYMERIZATION OF CYCLOPENTENE WITH POLYCYCLIC POLYOLEFINES

Gottfried Pampus and Nikolaus Schon, Leverkusen, Josef Witte, Cologne, and Gunter Marwede, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 93,472, Nov. 27, 1970. This application Dec. 2, 1971, Ser. No. 204,372
Claims priority, application Germany, Dec. 10, 1969, P 19 61 865.6
Int. Cl. C08f *15/04*
U.S. Cl. 260—88.2 D **7 Claims**

A process for the preparation of copolymers from cyclic monoolefins and cyclic polyolefins by polymerization in an inert organic solvent in the presence of an organo-metallic mixed catalyst, characterized in that the catalyst used is an organo-metallic mixed catalyst of (a) a reaction product of a tungsten halogen compound with an epoxide or a halogen substituted and (b) an organic aluminum compound.

3,781,258
POLYTETRAFLUOROETHYLENE POWDER AND METHOD OF PREPARATION THEREOF

Yutaka Kometani, Sanda-shi, Shun Koizumi, Osaka, and Takeshi Suzuki, Takeaki Nakajima, and Chuzo Okuno, Settsu-shi, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 456,551, May 17, 1965. This application Sept. 11, 1968, Ser. No. 759,218
Int. Cl. C08f *3/24, 47/02*
U.S. Cl. 260—92.1 **3 Claims**

A method of preparing a polytetrafluoroethylene powder having good fluidity which comprises stirring at a temperature of 0–200° C. in the presence of water a composition consisting of one part by weight of a polytetrafluoroethylene powder the diameters of which particles are not more than 300 microns and 0.1–3.0 parts by weight of a water immiscible liquid having a boiling point 0–150° C. and capable of wetting polytetrafluoroethylene, the amount of said water being 1.5–50 parts by weight based on the composition.

3,781,259
POLYMERIZATION OF ACENAPHTHYLENE AND INDENE

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 29, 1970, Ser. No. 76,606
Int. Cl. C08f *7/02*
U.S. Cl. 260—93.5 C **4 Claims**

A method and catalyst for polymerizing acenaphthylene and indene employing a hydrocarbyl aluminum dihalide catalyst.

3,781,260
PROCESS FOR METALATION

Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of abandoned application Ser. No. 44,468, June 8, 1970, which is a continuation-in-part of application Ser. No. 712,946, Mar. 14, 1968. This application Oct. 21, 1971, Ser. No. 191,098
Int. Cl. C08d *5/02*
U.S. Cl. 260—94.7 A **16 Claims**

A polymer (either a dead polymer or a lithiated live polymer) which contains a plurality of olefinic and/or aryl groups is metalated by reacting with (a) a hydrocarbon lithium and (b) a compound of an alkali metal other than lithium in which the metal is attached to a hetero atom, such as a hydroxide, alkoxide, a thiosalt or an amide. The resulting metalated polymer can be

reacted to introduce reactive groups of different types, such as carboxyl, hydroxyl, etc. along the chain. For example, polybutadiene can be reacted with n-butyllithium and sodium or potassium alkoxide, and the resulting product can then be reacted with styrene or carbon dioxide, etc. and then neutralized to produce a polybutadiene containing styryl or carboxyl, etc. groups.

3,781,261
METALATING RUBBER POLYMERS
Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Feb. 3, 1972, Ser. No. 223,365
Int. Cl. C08d *5/02*
U.S. Cl. 260—94.7 **2 Claims**

Rubber polymers which are (1) homopolymers or copolymers of conjugated dienes or (2) copolymers of a conjugated diene and a vinyl aromatic monomer are metalated by reaction with alkyl or aryl sodium or potassium in combination with a lithium alkoxide. Sodium or potassium alkoxide may also be present.

3,781,262
PROCESS FOR METALATION
Adel F. Halasa, Bath, and Mark L. Stayer, Suffield, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Feb. 4, 1972, Ser. No. 223,620
Int. Cl. C08d *5/02*
U.S. Cl. 260—94.7 A **2 Claims**

Polymers and copolymers of conjugated dienes (butadiene, isoprene, etc.) and copolymers of such a conjugated diene with a vinyl aromatic hydrocarbon (styrene, etc.) are metalated with an alkyl lithium, e.g. butyllithium, together with a mixture of (1) a potassium or sodium alkoxide and (2) lithium t-butoxide.

3,781,263
PROCESS FOR METALATION
Adel F. Halasa, Bath, and George B. Mitchell, Canton, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed July 13, 1972, Ser. No. 271,474
Int. Cl. C08d *5/02*
U.S. Cl. 260—94.7 A **4 Claims**

Polymers and copolymers of conjugated dienes (butadiene, isoprene, etc.) and copolymers of such a conjugated diene with a vinyl aromatic hydrocarbon (styrene, etc.) are metalated with an alkyl lithium, e.g. butyllithium, together with potassium hydroxide or potassium oxide or a potassium salt of an inorganic acid.

3,781,264
PROCESS FOR TEXTURIZING MICROBIAL CELLS BY ALKALI-ACID TREATMENT
Cavit Akin, Oakbrook, Ill., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Oct. 29, 1970, Ser. No. 85,282
Int. Cl. C07g *7/00;* **D01f** *9/04*
U.S. Cl. 260—112 R **8 Claims**

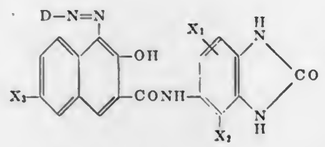
Protein-containing single cel micro-organisms are prepared into texturized products by a process in which an aqueous slurry of protein-containing microbial cells is mixed with an acid or alkaline activating agent to activate the cell mixture after which the activated mixture of protein-containing microbial cells and activating agent is passed through an acid bath, if an alkaline activating agent is employed, or through an alkaline bath, if an acid activating agent is employed, the acid bath having a pH in the range of about 3.5 to 5.5 and the alkaline bath having a pH in the range of about 7.5 to 10.5. The texturized protein product prepared by the process is suitable for use as an additive to or a substitute for conventional foods. In addition, the protein products prepared by the process are suitable, for example, in the preparation of bio-degradable containers, packaging materials, and utensils.

3,781,265
METHOD OF PREPARING CONSISTENTLY HIGH-QUALITY VINYLIDENE FLUORIDE POLYMER
Julius Eugene Dohany, Berwyn, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
No Drawing. Filed Oct. 17, 1972, Ser. No. 298,328
Int. Cl. C08f *3/22, 15/08*
U.S. Cl. 260—92.1 R **5 Claims**

Vinylidene fluoride polymers of high-quality are prepared consistently by a process of suspension polymerization in which the chain transfer agent (acetone), initiator (diisopropylperoxydicarbonate), reaction accelerator (1, 1,2-trichlorotrifluoroethane) and monomer are fed incrementally to the aqueous reaction medium.

3,781,266
WATER-INSOLUBLE PHENYL-AZO-NAPHTHYL-AMIDO-BENZIMIDAZOLONE DYESTUFFS
Erich Dietz, Kelkheim, Taunus, Joachim Ribka, Offenbach am Main, and Willi Steckelberg, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,607
Claims priority, application Germany, Aug. 21, 1969, P 19 42 507.1
Int. Cl. C09b *29/20, 29/36;* **D06p** *1/08*
U.S. Cl. 260—157 **7 Claims**

Water-insoluble monoazo dyestuffs of the general formula



wherein D is a radical of the terephthalic acid mono amide series and X_1, X_2 and X_3 are hydrogen, halogen, alkyl or alkoxy. Said pigments can be used, for instance, for the dyeing, printing or coloring of lakes, lake-formers, solutions or products made of acetyl cellulose, natural or synthetic resins, polystyrene, polyolefins, polyacrylic compounds, polyvinyl compounds, polyesters, rubber, casein or silicone resins, textile fibers, cellulose ethers or esters, polyamides, polyurethanes or paper. These dyestuffs show good fastness properties to light, weather and migration; have a high thermal stability and high tinctorial strength; and are resistant to the influence of solvents, acids and alkalis.

3,781,267
O-ESTERS OF MONOSACCHARIDES HAVING ETHER GROUPINGS
Roland Jaques, Allschwil, and Alberto Rossi, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed June 23, 1970, Ser. No. 49,185
Claims priority, application Switzerland, July 3, 1969, 10,204/69
Int. Cl. C07c *47/18, 69/32*
U.S. Cl. 260—210 R **10 Claims**

The invention concerns O-esters of monosaccharides with optionally substituted 2-R—O-benzoic acids, which ester compounds contain at least one saccharide hydroxy group esterified by a 2-R—O-benzoyl residue, in which R represents hydrogen, an optionally substituted hydrocarbon residue, or the acyl residue of an organic acid, and at least one saccharide-hydroxy group etherified by an optionally substituted hydrocarbon residue, and in which ester compounds further saccharide hydroxy groups may be free, etherified by an optionally substituted hydrocarbon residue, or esterified by the acyl residue of an organic acid, which exhibit antiinflammatory, antiarthritic and analgesic effects.

3,781,268
ANTIBIOTIC DERIVATIVES OF KANAMYCIN
Hiroshi Kawaguchi, Takayuki Naito, and Susumu Nakagawa, Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 162,315, July 13, 1971. This application Jan. 27, 1972, Ser. No. 221,378
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 AB **13 Claims**

Derivatives of kanamycin A and B have been prepared which possess substantially improved antibacterial activity. An example of such an agent is 1-[L-(—)-γ-amino-α-hydroxybutyryl]-kanamycin A [IVa, BB-K8].

3,781,269
2,3-ALKYLIDENE-RHAMNOPYRANOSIDES AND PROCESS FOR PREPARING THEM
Werner Haede and Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Kurt Radscheit, Kelkheim, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Apr. 29, 1971, Ser. No. 138,762
Claims priority, application Germany, May 2, 1970, P 20 21 557.0
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 **4 Claims**

Rhamnopyranosides substituted by alkylidene, cyclohexylidene and tetrahydropyranylidene are disclosed as being effective therapeutic agents against cardiac insufficiency.

3,781,270
SUBSTITUTED METHANO DIBENZAZOCINES AND DIBENZAZONINES
William J. Houlihan, Baden, Austria, and Jeffrey Nadelson, Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed Sept. 13, 1971, Ser. No. 180,128
Int. Cl. C07d *41/00*
U.S. Cl. 260—239 BB **3 Claims**

Dibenz[c,f] azocines and dibenz[c,g] azonines, e.g. 5,12-dihydro - 6 - methyl-5,12-methano-6H-dibenz[c,f] azonines. More partciularly, it relates to substituted methano-5H-dibenz[c,g] azonine hydrochloride are prepared by reducing a corresponding azocinone or azoninone and are useful as anti-depressant agents.

3,781,271
PROCESS FOR THE PRODUCTION OF 14β-HYDROXY-Δ16- AND 7α-HYDROXY-Δ4-STEROIDS
Hansuli Wehrli, Schaffhausen, and Oskar Jeger, Zollikerberg, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed July 20, 1971, Ser. No. 164,432
Int. Cl. C07c *173/10*
U.S. Cl. 260—239.55 R **19 Claims**

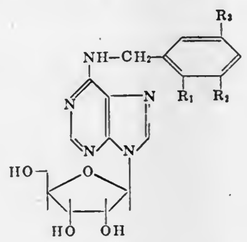
The present invention concerns a process for the production of 14β-hydroxy-Δ16-steroids and 7α-hydroxy-Δ4-steroids which simultaneously are substituted in the 20- or 3-position respectively by an oxo radical and α may be further substituted as defined, and the new compounds obtained thereby the process consists in reacting corresponding 14β,15β-epoxy-20-oxo-Δ16-steroids or 6α,7α-epoxy-3-oxo-Δ4-steroids in the presence of a pallidum hydrogenation catalyst such as palladium on barium sulphate with a partially hydrogenated aromatic hydrocarbon such as cyclohexene. Compounds obtained by this process are useful as intermediates for the synthesis of batrachotoxinine A or analogs thereof. Specific embodiments are 3β-methoxy-3α,9α-epoxy-11α,18-diacetoxy-14β - hydroxy - 20-oxo-Δ16-5β-pregnene and 3β-methoxy-3α,9α-epoxy-7α,9α, 18-triacetoxy-14β-hydroxy-20-oxo-Δ16-5β-pregnene.

3,781,272
TRIPEPTIDE
George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
No Drawing. Filed Mar. 24, 1972, Ser. No. 237,877
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **8 Claims**

The new blocked tripeptide Y-(Nᵅ-R')Arg-Pro-Gly-R wherein R is hydroxy, methoxy or amino, R' is a suitable blocking group and Y is hydrogen or an easily removable protective group has been found to be a valuable intermediate for the preparation of large peptide chains, such as for instance, the decapeptide Gn-RH.

3,781,273
N(6)-BENZYL-ADENOSINE COMPOUNDS AND THERAPEUTIC COMPOSITIONS
Wolfgang Kampe, Heddesheim, Erich Fauland, Mannheim-Waldhof, Max Thiel, Mannheim, Karl Dietmann, Mannheim-Vogelstang, and Wolfgang Juhran, Mannheim, Germany, asssignors to Boehringer Mannheim GmbH, Mannheim, Germany
No Drawing. Filed Feb. 3, 1971, Ser. No. 112,424
Claims priority, application Germany, Feb. 18, 1970, P 20 07 273.5
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R **18 Claims**

Novel 2,3- or 2,5-disubstituted N(6)-benzyl-adenosine derivatives of the following formula



wherein

R_1 is halogen, alkyl, alkoxy or alkylthio;

R_2 and R_3 are members of the group consisting of hydrogen, halogen, alkyl, alkoxy and alkylthio with the proviso that one and only one of R_2 and R_3 is hydrogen;

are outstandingly effective coronary dilators and lower the free fatty acid content of serum.

3,781,274
2-METHYLTHIOADENOSINE-5'-MONOPHOSPHATE
Mary Helen Maguire and Geoffrey Gough, Mosman, and Frank Michal, Lane Cove, New South Wales, Australia, assignors to The University of Sydney, New South Wales, Australia
No Drawing. Original application Dec. 8, 1969, Ser. No. 883,354, now Patent No. 3,678,162. Divided and this application Jan. 21, 1972, Ser. No. 219,912
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R **2 Claims**

2-methylthioadenosine-5'-monophosphate and the ammonium, sodium and potassium salts thereof and pharmaceutical compositions and methods of inhibiting or preventing thrombus formation with these compounds.

3,781,275
ELECTRICAL SUBSTRATES
Louis J. Lombardi, Roselle, Roy J. Coyne, Oak Lawn, and Charles E. Green, Brookfield, Ill., assignors to The Richardson Company, Cook County, Ill.
No Drawing. Original application Sept. 12, 1969, Ser. No. 857,571, now Patent No. 3,681,474. Divided and this application Apr. 27, 1972, Ser. No. 247,944
Int. Cl. C08g *45/18*
U.S. Cl. 260—227 **6 Claims**

A circuit board with hydrocarbon substrate based on a

polymer of a C_4 to C_8 conjugated diene with more than 50% of its unsaturation being 1,2 is improved by the combination of a second hydrocarbon polymer with lower amounts of 1,2 unsaturation and correspondingly higher amounts of 1,4 unsaturation.

3,781,276

6-AZIDO-6-DEHYDRO STEROIDS OF THE PROGESTERONE SERIES, METHODS FOR THEIR MANUFACTURE AND INTERMEDIATES PRODUCED THERBY

Elliot L. Shapiro, Cedar Grove, N.J., George J. Teutsch, Nancy, France, and Hershel L. Herzog, Glen Ridge, N.J., assignors to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 58,163, July 24, 1970. This application July 11, 1972, Ser. No. 272,937

Int. Cl. C07c *173/10*

U.S. Cl. 260—239.55 **26 Claims**

6-azido-6-dehydroprogesterones and 6-azido-1,6-bis-dehydroprogesterones possess progestational and anti-androgenic properties. Preferred are the 6-azido-16-methylene-17α-lower alkanoyloxy-4,6-pregnadiene-3,20-diones. Compounds useful as intermediates are 6β-azido-7α-hydroxyprogesterones and the 7α-acylates thereof.

The 6-azido-6-dehydroprogesterones are prepared by treating a 6α,7α-oxido-4-pregnene with an alkali metal azide in an aqueous inert organic solvent; esterifying the thereby formed 6β-azido-7α-hydroxy - 4 - pregnene; and treating the resulting 6β-azido-7α-acyloxy-4-pregnene with a tetraalkylammonium halide in an aprotic solvent. Alternatively, the 6-azido-4,6-pregnadienes are prepared by treating a 6β-azido-7α-hydroxyprogesterone or 7α-acylate thereof with concentrated hydrochloric acid in a lower alkanoic acid in an inert solvent.

3,781,277

DIOXO-THIAZOLIDINYL DERIVATIVES OF 6-AMINOPENICILLANIC ACID

Ronnie D. Carroll, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed July 27, 1971, Ser. No. 166,561

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **5 Claims**

Novel dioxo-thiazolidinyl derivatives of 6-aminopenicillanic acid which exhibit activity against a variety of gram negative organisms are disclosed. A typical embodiment of 6-[2-(2,4-dioxo-5-thiazolidinyl)acetamido]penicillanic acid.

3,781,278

NOVEL p-PHENYLSTILBYL HETEROCYCLIC AND NAPHTHYL-VINYLPHENYLENE HETEROCYCLIC OPTICAL BRIGHTENERS

Adolf Emil Siegrist, Basel, Peter Liechti, Binningen, Erwin Maeder, Aesch, Basel-Land, Leonardo Guglielmetti, Birsfelden, and Hans Rudolf Meyer and Kurt Weber, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 588,318, Oct. 21, 1966. This application Aug. 28, 1970, Ser. No. 68,014

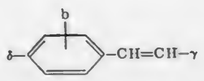
Claims priority, application Switzerland, Oct. 28, 1965, 14,902/65; July 4, 1966, 9,649/66

Int. Cl. C09b *23/00*

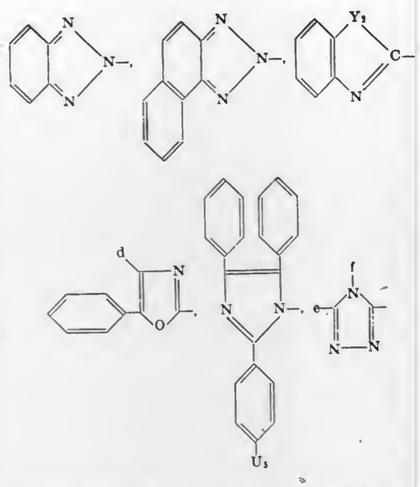
U.S. Cl. 260—240 CA **6 Claims**

The present invention relates to new compounds of the formula

(I)



in which *b* represents a hydrogen atom or a methyl group, γ represents a diphenyl or 1-naphthyl or 2-naphthyl residue and δ denotes a residue of the series



where (I) *d* represents hydrogen or phenyl, *e* and *f* represent phenyl, stilbenyl, p-phenylstilbenyl or benzostilbenyl, and furthermore Y_2 represents a bridge member —O— ,—NH— or —N(alkyl)—, where (II) U_5 denotes hydrogen, a styryl residue or a p-phenylstyryl residue, and where (III) terminal phenyl or naphthyl residues may contain alkyl, halogen or alkoxy groups. These new compounds represent valuable optical brightening agents.

3,781,279

STILBENE OPTICAL BRIGHTENERS

Nathan N. Crounse and Kantilal B. Desai, Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Feb. 23, 1971, Ser. No. 118,076

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 CA **2 Claims**

Benzofurans, benzothiophenes, indoles, naphthofurans and benzofuranobenzofurans which are substituted by 4-vinylphenyl groups wherein the 2-position of the vinyl is substtiuted by a monovalent aromatic radical having one to three aromatic rings are optical brightening agents useful for whitening and brightening natural and synthetic fibers, papers, resins and the like. The compounds are conveniently prepared by interacting benzofurans, benzothiophenes, indoles, naphthofurans or benzofuranobenzofurans which are substituted by a p-tolyl group, with an aromatic aldehyde or preferably the anil derivative thereof.

3,781,280

FLUORO-PYRIDINE DERIVATIVES AND THERAPEUTICALLY ACCEPTABLE SALTS THEREOF

Lars Anders Fritz Carlsson, Bromma, Ake John Erik Helgstrand, Enborna, and Berndt Olof Harald Sjoberg and Nils Erik Stjernstrom, Sodertalje, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

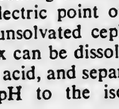
No Drawing. Continuation-in-part of application Ser. No. 689,751, Nov. 15, 1967, now Patent No. 3,637,714, dated Jan. 25, 1972. This application Aug. 20, 1971, Ser. No. 173,679

Claims priority, application Sweden, Nov. 16, 1966, 15,717/66; Great Britain, Mar. 23, 1967, 13,687/67; Apr. 26, 1967, 19,174/67

Int. Cl. C07d *31/34*

U.S. Cl. 260—240 J **18 Claims**

Compounds selected from the group consisting of fluoro-pyridine derivatives of the general formula



and therapeutically acceptable salts thereof. These compounds exhibit vasodilating properties and are effective in lowering excessive lipid and free fatty acid concentration in serum of animals, including man.

3,781,281

2-ARYLIDENE - 1,3-DITHIOLES AND PREPARATION THEREOF FROM ACETYLENES, CARBON DISULFIDE, AND AROMATIC ALDEHYDES IN THE PRESENCE OF ALIPHATIC PHOSPHINES

Harris Dale Hartzler, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 55,596, July 16, 1970. This application Nov. 8, 1972, Ser. No. 304,596

Int. Cl. C07d *71/00*

U.S. Cl. 260—240 F **15 Claims**

Disclosed herein is a new process for making 2-arylidene-1,3-dithioles, novel products made thereby and a utility for the products, i.e., the inhibition of vinyl polymerization. The process comprises reacting an aromatic aldehyde or dialdehyde with carbon disulfide and an acetylenic compound in the presence of a trihydrocarbylphosphine.

3,781,282

CEPHALOSPORIN PROCESS AND PRODUCT

William L. Garbrecht, 4114 Ponderosa Blvd., Indianapolis, Ind. 46250

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,218

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **8 Claims**

Cephalosporin esters are de-esterified by reduction in acid medium in DMF, the cephalosporin values are separated as a complex thereof with DMF, and if desired, the complex is purified by dissolution in an acidified DMF/polar solvent mixture, and precipitation therefrom with added base to pH 6.5 to 7.5. Cephalosporin antibiotic, e.g., cephalexin, can be recovered from purified cephalosporin·DMF complex by dissolution in acidified water, heating the solution to 40° to 70° C. to form the monohydrate, and treating the solution with base to raise the pH to the isoelectric point of the antibiotic in that solvent system. If unsolvated cephalosporin antibiotic is desired, the complex can be dissolved in aqueous acetonitrile with the aid of acid, and separated from that medium by adjusting the pH to the isoelectric point in that medium.

3,781,283

PROCESS FOR PREPARING CEPHEM-4-CARBOXYLIC ACID ESTERS

Dieter Bormann, Kelkheim, Taunus, and Manfred Worm, Mainz, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

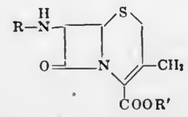
No Drawing. Filed Dec. 28, 1971, Ser. No. 213,217

Claims priority, application Germany, Dec. 28, 1970, P 20 64 107.0

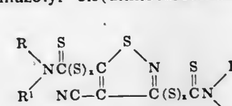
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **6 Claims**

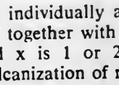
Process for preparing a cephem-carboxylic acid ester of the formula



by heating a penicillin oxide of the formula



in a solvent with a phosphonium salt of the formula



In the formulas: R is acyl; R′ is alkyl, substituted alkyl, cycloalkyl, or aryl; R_1, R_2, and R_3 are each substituted or unsubstituted hydrocarbon; R_4 is methyl substituted by an electron-attracting group, and may contain a further substituent; and X is an anion.

3,781,284

PROCESS FOR MAKING 4-(3-AMINO-2-HYDROXYPROPOXY)-1,2,5-THIADIAZOLES

Leonard M. Weinstock, Belle Mead, Roger J. Tull, Metuchen, and Dennis M. Mulvey, Whitehouse Station, N.J., assignors to Charles E. Frosst & Co., Kirkland, Quebec, Canada

No Drawing. Original application Apr. 21, 1969, Ser. No. 818,474, now Patent No. 3,657,237. Divided and this application Aug. 16, 1971, Ser. No. 172,232

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 **4 Claims**

Preparation of S-3-X-4-(3-substituted amino-2-hydroxypropoxy)-1,2,5-thiadiazole beta adrenergic blocking agents using as starting material an optically active alkamine in the sinister configuration, or a derivative of said alkamine, which is reacted with an 3-X-4-chloro-1,2,5-thiadiazole. Novel 3-morpholino-4-chloro-1,2,5-thiadiazoles and novel alkamines and their preparation also are described.

3,781,285

CYANOISOTHIAZOLYL BIS(DITHIOCARBAMATES)

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 861,137, Sept. 25, 1969. This application Oct. 4, 1971, Ser. No. 186,416

Int. Cl. C07d *91/12*; **C08f** *27/06*

U.S. Cl. 260—247.1 **13 Claims**

Cyanoisothiazolyl bis(dithiocarbamates) of the formula

wherein R and R′ individually are alkyl, cycloalkyl, or aryl, and R and R′ together with the nitrogen atom form a heterocycle, and x is 1 or 2 which are useful for accelerating the vulcanization of rubber.

3,781,286

PROCESS FOR THE PREPARATION OF AMIDES OF NITROGEN HETEROCYCLIC COMPOUNDS

Francesco Minisci, Milan, Remo Galli, Torricella del Pizzo, and Adolfo Quilico, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,445

Claims priority, application Italy, Nov. 21, 1969, 24,704/69

Int. Cl. C07d *51/76, 51/78*

U.S. Cl. 260—250 R **5 Claims**

A process is disclosed for the preparation of amides of nitrogen aromatic heterocyclic bases wherein a hetero-

aromatic base, preferably in salt form is reacted with a formamide, $HCONR_2$, wherein R is hydrogen or an alkyl group having from 1 to 5 carbon atoms, preferably CH_3, and with a radical R'O• wherein R' is hydrogen, an alkyl or a cycloalkyl group. The source for the R'O• radicals is a redox system consisting essentially of $R'OOH+Fe^{++}$, wherein R' is hydrogen, an alkyl or a cycloalkyl group, at temperatures between −10° and 60° C., and preferably at temperatures between −5° and +35° C.

3,781,287

PROCESS FOR THE REGENERATION OF DEACTIVATED CARBON CATALYST

Yelagondahally S. Suryanarayana and Luther J. Reid, Jr., Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 11, 1971, Ser. No. 142,392

Int. Cl. C07d *55/42*

U.S. Cl. 260—248 C **2 Claims**

A process for regenerating deactivated (spent) carbon catalyst by subjecting the catalyst to a treatment with chlorine gas at a temperature of at least 375° C. for a time period of at least five minutes, and preferably several hours. Desirably, the amount of chlorine gas used is at least about 0.1 lb. to about 1 lb. for each lb. of the spent carbon catalyst being treated.

3,781,288

1-METHYL-3-HALOMETHYL-2,4-DIOXO-1,3-DIHYDROQUINAZOLINES

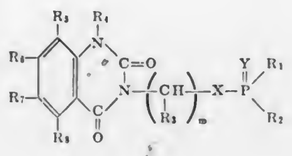
Daniel D. Rosenfeld, East Brunswick, and Martin L. Gorbaty, Elizabeth, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original application Apr. 22, 1970, Ser. No. 31,008, now Patent No. 3,681,352. Divided and this application May 22, 1972, Ser. No. 255,360

Int. Cl. C07d *51/48*

U.S. Cl. 260—260 **2 Claims**

Uracil phosphates containing a fused aromatic ring have been shown to possess insecticidal activity. The structures of these compounds can be characterized as follows:



wherein R_5, R_6, R_7 and R_8 can be the same or different and can equal hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, halogen, cyano, thiocyano, nitro, C_2–C_6 carboalkoxy, C_1–C_6 haloalkyl, C_2–C_6 acyl, C_1–C_6 alkylsulfoxide and sulfone, C_1–C_6 thioalkyl, C_1–C_6 alkoxy, C_1–C_6 alkylamino and C_2–C_6 dialkylamino, C_1–C_6 sulfonamido and carboxylic acid; X is O or S; Y is O or S; *m* is 1 or 2; R_1 is C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_6–C_{10} aryl, C_6–C_{10} aryloxy and C_1–C_6 alkyl; R_2 is C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_6–C_{10} aryl, C_6–C_{10} aryloxy, and C_1–C_6 alkyl; R_3 is hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, C_1–C_6 haloalkyl and C_6–C_{10} haloaryl; R_4 is hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, C_1–C_6 haloalkyl, C_6–C_{10} haloaryl, C_1–C_6 alkylamino, C_2–C_6 dialkylamino, C_2–C_6 acyl, C_1–C_6 alkylsulfoxide or sulfonyl, C_1–C_6 alkoxy, C_2–C_6 alkyloxyalkyl and C_2–C_6 alkylthioalkyl.

3,781,289

7-CHLORO-1-METHYL-5-PHENYL-s-TRIAZOLO [4,3-a]QUINOLINES

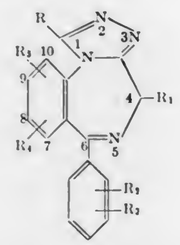
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Feb. 9, 1971, Ser. No. 114,049, now Patent No. 3,709,898. Divided and this application May 11, 1972, Ser. No. 252,506

Int. Cl. C07d *33/50*

U.S. Cl. 260—288 R **2 Claims**

A multistep process for the production of triazolobenzodiazepines of the Formula I:



I

wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; wherein R_1 is hydrogen or alkyl defined as above; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting hydrogen, alkyl defined as above, fluorine, chlorine, bromine, nitro, cyano, trifluoromethyl, alkoxy of 1 to 3 carbon atoms, inclusive, amino, alkanoylamino in which the alkanoyl group is of 1 to 3 carbon atoms, inclusive, alkylthio, in which the alkyl group is defined as above, alkylsulfinyl, in which the alkyl group is defined as above, and dialkylamino, in which the alkyl group is defined as above, and for some of intermediates is claimed. The final compounds and intermediates are tranquilizers and sedatives and are useful in mammals, including man and birds.

3,781,290

PHENOXYPHENYL PHENYLTHIOPHENYL AND PHENYLAMINOPHENYL PIPERAZINYLTHIOUREAS

Ruediger Spaun, Bottmingen, Alain Claude Rochat, Birsfelden, Jean-Jacques Gallay, Magden, and Paul Brenneisen, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

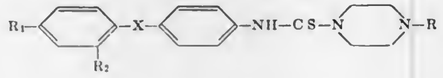
No Drawing. Filed Aug. 27, 1971, Ser. No. 175,723

Claims priority, application Switzerland, Sept. 2, 1970, 13,111/70; Dec. 23, 1970, 19,065/70

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 C **10 Claims**

New thioureas in which a p-phenoxyphenyl, p-phenylthio-phenyl or p-phenylaminophenyl radical is attached to one nitrogen atom and which are substituted at the other nitrogen atom either by two lower alkyl groups or a polymethylene bridging member of 2 to 6 carbon atoms, whereby one of the methylene groups can be replaced by an optionally substituted imino group, processes for the production of the new compounds and compositions containing these compounds. Particularly useful as anthelmintic agents are compounds of the formula



in which R_1 is hydrogen, chlorine, bromine, C_1–C_4 alkyl, C_1–C_4 alkylthio or C_1–C_4 alkoxy; R_2 is hydrogen, C_1–C_4 alkyl or nitro; X is oxygen, sulfur or imino; and R is C_1–C_4 alkyl, phenyl, C_1–C_4 hydroxyalkyl or ethoxy carbonyl.

3,781,291

SILYLATED 1,4-DIHYDROPYRIDINES

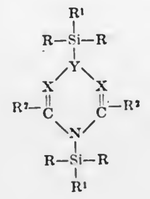
Reinhard A. Sulzbach, Basseisdoferstrasse 111, Kloten, Switzerland, and Abul F. M. Iqbal, Steinackerstrasse 8, Glattbrugg, Switzerland

No Drawing. Filed May 26, 1971, Ser. No. 147,191

Int. Cl. C07d *29/40*

U.S. Cl. 260—290 H **4 Claims**

Silylated nitrogen containing heterocyclic compositions of the formula



wherein X and Y are selected from the group consisting of C—R^3 and N with the proviso that no nitrogen atom is adjacent to another nitrogen atom; R is a member selected from the group consisting of hydrocarbyl, heterocyclic, silyl and stannyl wherein the member may be attached via an oxygen atom; R^1 is a member selected from the group consisting of hydrocarbyl, heterocyclic, silyl, stannyl and hydrogen wherein the member may or may not be attached via an oxygen atom; R^2 is a member selected from the group consisting of hydrocarbyl, heterocyclic, silyl, stannyl, hydrogen, tertiary amino, phosphino, oxophosphino, acetal and ketal wherein said member may or may not be attached via an oxygen atom and wherein R^2 and X together may be an ortho condensed cyclic or polycyclic system; and R^3 is a member selected from the group consisting of hydrocarbyl, heterocyclic, silyl, stannyl, hydrogen, tertiary amino, phosphino, oxophosphino, acetal and ketal wherein said member may or may not be attached via an oxygen atom.

Exemplary of such compositions are 1,4-bis-(trimethylsilyl)-1,4-dihydropyridine, 1,4,4-tris-(trimethylsilyl)-1,4-dihydropyridine, 1,4-bis-(trimethyl)-1,4-dihydroquinoline, and 1,4 - bis - (trimethylsilyl) - 1,4 - dihydropyrazine. The compositions of the invention are useful as catalysts for the addition of chlorosilanes to esters and ketones and as reducing agents for preparing hydrogenation catalysts from noble metal compounds such as rhodium and platinum.

3,781,292

SYNTHESIS OF PYRIDINE BASES FROM OLEFINS

Yasuo Kusunoki, Hiroshi Okazaki, Yoshinori Sato, and Eiichi Sano, Kitakyushu, Japan, assignors to Yawata Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 816,401, Apr. 15, 1969. This application Nov. 2, 1971, Ser. No. 195,042

Claims priority, application Japan, Apr. 19, 1968, 43/25,868

Int. Cl. C07d *31/06*

U.S. Cl. 260—290 P **15 Claims**

Method for synthesizing pyridine bases by reacting olefins with ammonia in the presence of a palladium tetrammine complex which is provided with prolonged activity by means of a copper (II) salt and oxygen.

3,781,293

METHANOBENZO[b]THIOPHENES

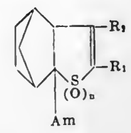
Melvin Harris Rosen, Florham Park, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,720

Int. Cl. C07d *63/18*

U.S. Cl. 260—293.57 **3 Claims**

2,3-diaryl-7a-amino - 3a,4,5,6,7,7a - hexahydro-4,7-methanobenzo[b]thiophene-1-oxides, e.g. those of the formula



Am=tert. amino

$R_{1,2}$=iso- or heterocyclic aryl

n=1 or 2

or salts thereof, are antifertility agents.

3,781,294

CERTAIN DIBENZO[b,f]THIEPIN[4,5-d] IMIDAZOLES

Joseph G. Lombardino, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application Mar. 31, 1971, Ser. No. 129,977, now Patent No. 3,711,489. Divided and this application July 31, 1972, Ser. No. 276,597

Int. Cl. C07d *31/40, 49/36*

U.S. Cl. 260—294.8 A **6 Claims**

2-substituted dibenzo[b,f]thiepin[4,5-d]- and dibenzo-[3,4,7,8]cycloöcta[1,2-d]imidazoles and the pharmaceutically acceptable acid addition salts thereof, a novel class of anti-inflammatory agent.

3,781,295

PYRIDYL KETIPATE LACTONES AND DERIVATIVES

Blaine M. Sutton, Hatboro, Pa., assignor to Smithkline Corporation

No Drawing. Original application July 6, 1971, Ser. No. 160,190, now Patent No. 3,714,173, dated Jan. 30, 1973. Divided and this application Sept. 7, 1972, Ser. No. 287,189

Int. Cl. C07d *31/36*

U.S. Cl. 260—295 R **7 Claims**

Pyridyl ketipate lactones and derivatives having antiarthritic activity prepared by alcoholysis of an appropriate pyridyl substituted dilactone.

3,781,296

COMPLEX MIXTURES OF N-BENZYL-DIHYDRONICOTINIC ACID DIMERS AND METAL SALTS THEREOF AND DERIVATIVES THEREOF

Carl C. Greco, Garnerville, N.Y., Stanley B. Mirviss, Stamford, Conn., and Arthur E. Martell, College Station, Tex., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,201

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 R **7 Claims**

There is disclosed the preparation of novel compositions comprising complex mixtures of salts of di-(1-benzyl-3-carboxyl-1,2-dihydropyridyl-2) ethers, the salts of the corresponding sulfides and polysulfides and the position isomers and other products resulting from the reaction between a 1-benzyl-3-carboxy-pyridinium halide and an alkali metal, or ammonium, hydroxide, sulfide or polysulfide. These complex mixtures are particularly suitable for use as brightening agents of the alkaline cyanide zinc plating baths employed for the electrodeposition of zinc, as sequestrants and as stabilizers for plastics and rubbers.

3,781,297
PROCESS FOR PREPARING 2-AMINOBENZOTHIAZOLE AND ITS N-ALKYL SUBSTITUTION PRODUCTS FROM 2-MERCAPTOBENZOTHIAZOLE

Dieter Pawellek, Leverkusen, and Karlfried Wedemeyer, Cologne-Stammheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 2, 1971, Ser. No. 204,313
Claims priority, application Germany, Dec. 8, 1970, P 20 60 197.2
Int. Cl. C07d *91/46*
U.S. Cl. 260—305 **6 Claims**

2-aminobenzothiazole and its N-alkyl substituted products are prepared reacting 2-mercaptobenzothiazole with an amine and sulfur dioxide inthhe presence of a metal oxide, hydroxide or salt catalyst at elevated temperature and pressure.

3,781,298
PREPARATION OF 2-PYRROLIDINONE

Ronald I. Davis, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,685
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.5 FN **3 Claims**

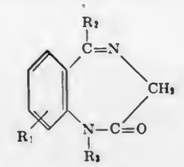
A process for preparing 2-pyrrolidinone which comprises reacting succinonitrile in aqueous solution and in the absence of added ammonia with hydrogen in the presence of a Raney cobalt catalyst, at a temperature of from about 250° C. to about 300° C. and at a hydrogen pressure of from about 2000 to about 3500 p.s.i.g.

3,781,299
2-AMINOMETHYL-INDOLE DERIVATIVES

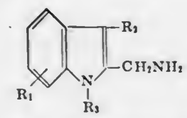
Hisao Yamamoto, Nishinomiya, Shigeho Inaba, Takarazuka, Toshiyuki Hirobashi, Kobe, Mitsuhiro Akatsu, Ikeda, Isamu Maruyama, Minoo, and Takahiro Izumi, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Original application Apr. 16, 1969, Ser. No. 816,824, now Patent No. 3,634,402. Divided and this application Nov. 19, 1970, Ser. No. 91,169
Claims priority, application Japan, Aug. 19, 1968, 43/59,363; Oct. 9, 1968, 43/73,797
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 **1 Claim**

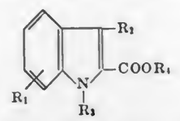
1,4-benzodiazepine derivatives, which are useful as tranquillizers, muscle-relaxants, anti-spasmodics and hypnotics and represented by the formula,



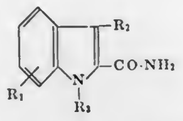
wherein R_1 signifies a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group or a trifluoromethyl group; R_2 signifies a lower alkyl group or an aralkyl group; and R_3 signifies a hydrogen atom, a lower alkyl group, an aralkyl group, a cycloalkylalkyl group or an unsubstituted or halogen-substituted phenyl group, are produced by contacting a 2-aminomethyl indole derivative of the formula,



wherein R_1, R_2 and R_3 are as defined above, with an oxidizing agent such as ozone, hydrogen peroxide, a peracid or chromic acid. The 2-aminomethyl indole derivative is produced, for example, by amidation of an indole-2-carboxylic acid derivative of the formula,



wherein R_1, R_2 and R_3 are as defined above, and R_4 signifies a hydrogen atom or a lower alkyl group, and reducing the resulting indole-2-carboxylic acid derivative of the formula,



wherein R_1, R_2 and R_3 are as defined above.

3,781,300
METHOD OF PRODUCING 2-HALO-3-SUBSTITUTED INDOLES

Milton Wolf, West Chester, John H. Sellstedt, St. Davids, and Harry Rosen, Drexel Hill, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application June 9, 1969, Ser. No. 831,702, now Patent No. 3,594,391. Divided and this application Jan. 15, 1971, Ser. No. 106,875
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 **1 Claim**

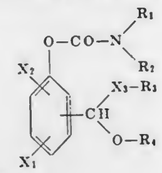
There are disclosed 2-halo-3-substituted indoles which are useful as bronchodilators. Also disclosed is a process for preparing some of said compounds by halogenation of appropriate 3-substituted indoles.

3,781,301
PHENYL CARBAMATES

Erwin Nikles, Liestal, and Volker Dittrich and Ladislaus Pinter, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of application Ser. No. 2,445, Jan. 12, 1970, which is a continuation-in-part of application Ser. No. 728,835, May 13, 1968, which in turn is a division of application Ser. No. 493,256, Oct. 5, 1965, all now abandoned. This application Nov. 10, 1971, Ser. No. 197,474
Claims priority, application Switzerland, Oct. 8, 1964, 13,113/64
Int. Cl. A61k *27/00*; **C07d** *13/04, 89/06*
U.S. Cl. 260—327 U **10 Claims**

O-phenylcarbamates, e.g. those of the formula



R_1=H, alkyl or alkenyl
R_2=alkyl or alkenyl
$R_{3,4}$=alkyl, alkenyl, alkynyl
R_3+R_4=alkylene or alkenylene
$X_{1,2}$=H, aliphatic radical, halogen or nitro
X_3=O or S

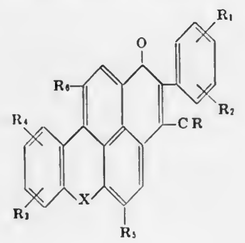
are biocides, e.g. insecticides.

3,781,302
BENZOXANETHENE AND BENZOTHIOXANTHENE DYESTUFFS

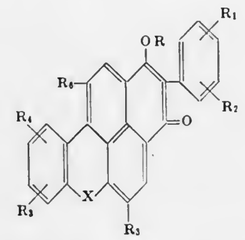
Otto Fuchs, Frankfurt am Main, Ernst Spietschka, Oberauroff, Taunus, Jürgen Hohn Kelsterbach, and Helmut Tröster, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 20, 1971, Ser. No. 145,510
Claims priority, application Germany, May 23, 1970, P 20 25 291.9
Int. Cl. C07d *7/42, 65/16*
U.S. Cl. 260—328 **6 Claims**

Mixtures of isomers of benzoxanthene or benzothioxanthene dyestuffs of the general formulate



(1)



(2)

wherein X is oxygen or sulfur, R an optionally substituted alkyl group, an acyl or arylsulfonyl group, R_1 and R_2 are hydrogen or halogen atoms, alkyl, aryl, acyl, acyloxy, carbalkoxy, alkoxy, nitro, alkylthio or alkylsolfonyl groups or they form together a condensed benzene ring, R_3 and R_4 are hydrogen or halogen atoms, alkyl, alkoxy, aryl, carbalkoxy or nitrile groups, R_5 and R_6 represent hydrogen or optionally substituted alkoxy groups, and a process for preparing them. The dyestuffs are very suitable for the dyeing of synthetic materials, especially for the dyeing of polyethyleneglycol terephthalate. Moreover, these dyestuffs may be used as fluorescent dyestuffs in the mass dyeings of synthetic polymers. The resulting dyeings are distinguished by a good fastness to light, wet processing and thermofixation.

3,781,303
METHOD OF PREPARING TRICYCLOHEXYLIDENE PEROXIDE

Paul R. Story and Peter Busch, Athens, Ga., assignors to Story Chemical Corporation

No Drawing. Filed June 29, 1970, Ser. No. 50,963
Int. Cl. C07d *19/00*
U.S. Cl. 260—338 **1 Claim**

A method for the preparation of mixed tricyclohexylidene peroxide and dicyclohexylidene peroxide or dicyclohexylidene peroxide alone comprising reacting a peroxide selected from the group consisting of 1-hydroperoxy 1'-hydroxydicyclohexyl peroxide and 1,1'-dihydroperoxydicyclohexyl peroxide with an organic solvent and a strong acid catalyst. Another method is disclosed for the preparation of tricyclohexylidene peroxide and dicyclohexylidene peroxide or tricyclohexylidene alone comprising reacting a peroxide selected from the group consisting of 1-hydroperoxy 1'-hydroxydicyclohexyl peroxide and 1,1'-dihydroperoxydicyclohexyl peroxide with a liquid carboxylic acid and strong acid catalyst. Also disclosed are new and useful improvements in the method for the preparation of 1-hydroperoxy-1'-hydroxydicyclohexyl peroxide comprising reacting cyclohexanone with aqueous hydrogen peroxide and a strong acid catalyst.

3,781,304
PRODUCTION OF TRIOXANE

Hugo Fuchs and Albrecht Hilt, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,375
Int. Cl. C07d *19/00*
U.S. Cl. 260—340 **4 Claims**

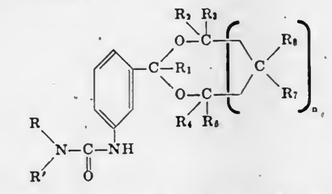
Production of trioxane from aqueous formaldehyde solutions in the presence of mixtures of boric acid and phosphoric acid as acid catalysts.

3,781,305
SUBSTITUTED UREIDO DIOXOLANES AND DIOXANES AND THEIR UTILITY AS HERBICIDES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,316
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **52 Claims**

Substituted ureido dioxolanes and dioxane compounds having the formula



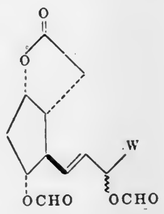
in which R is lower alkyl, R' is selected from the group consisting of lower alkyl and hydrogen; R_1, R_2, R_3, R_4, R_5 and R_7 each are independently selected from the group consisting of hydrogen and lower alkyl; R_6 is selected from the group consisting of lower alkyl, haloalkyl, hydrogen, hydroxymethyl, lower alkoxy carbonyloxymethyl, N-lower alkyl carbamoyloxymethyl and S-lower alkylthiocarbonyloxymethyl; and n is 0 or 1. These compounds are useful as herbicides.

3,781,306
BICYCLIC LACTONE DIFORMATE

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Application Sept. 16, 1971, Ser. No. 181,246, now Patent No. 3,711,515, which is a continuation-in-part of abandoned application Ser. No. 93,483, Nov. 27, 1970. Divided and this application Dec. 15, 1972, Ser. No. 315,366
Int. Cl. C09d *5/32*
U.S. Cl. 260—343.3 **4 Claims**

Process for preparing bicyclic lactone diol diformates of the formula



wherein W is 1-pentyl, cis 1-pent-2-enyl or 1-pent-2-ynyl. The lactone diol diformates are useful intermediates in preparing prostalglandins having pharmacological utility.

3,781,307
RUTHENIUM CATALYZED PROCESS FOR THE ALKYLATION OF KETONES

Pierre Chabardes and Yvon Querou, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Aug. 11, 1969, Ser. No. 849,162
Claims priority, application France, Aug. 12, 1969; 162,770
Int. Cl. C07c *49/06*; **C07d** *5/16*
U.S. Cl. 260—347.8 **11 Claims**

Primary alcohols condense with ketones containing at least one alpha hydrogen atom in the presence of a basic compound and a catalyst based on a noble metal of Group VIII of the Periodic Table to give higher ketones.

3,781,308
PREPARATION OF 5-BENZYL-3-FURYLMETHANOL

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed July 3, 1972, Ser. No. 268,306
Int. Cl. C07d *5/20, 5/26*
U.S. Cl. 260—347.8 **2 Claims**

Thermal condensation of 5-benzylfuran with an alkyl propiolate to form an intermediate bicyclic compound which, by reverse reaction and subsequent reduction of the ester group, yields 5-benzyl-3-furylmethanol, useful as intermediate in the manufacture of pyrethroid insecticides.

3,781,309
ALLYL ETHERS

Madhukar Subraya Chodnekar, Basel, Albert Pfiffner, Pfaffhausen, Norbert Rigassi, Arlesheim, Ulrich Schwieter, Reinach, and Milos Suchy, Basel, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,599
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 R **8 Claims**

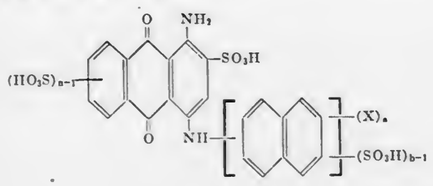
Allyl ethers or esters of aliphatic alcohols or acids wherein the aliphatic chain contains an epoxide group and at least 7 carbon atoms. The ethers and esters are useful in killing and preventing the proliferation of insects by upsetting their hormonal balance.

3,781,310
WATER-SOLUBLE ANTHRAQUINONE DYESTUFFS

Fritz Meininger and Hartmut Springer, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,656
Claims priority, application Germany, Oct. 24, 1969, P 19 53 600.6
Int. Cl. C09b *1/34*
U.S. Cl. 260—374 **5 Claims**

A water-soluble anthraquinone dyestuff having in form of the free acid the formula



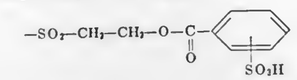
in which X represents $-SO_2-CH=CH_2$,

$-SO_2-CH_2-CH_2-OH$,

$-SO_2-CH_2-CH_2-O-SO_3H$,

$-SO_2-CH_2-CH_2-S-SO_3H$,

$-SO_2-CH_2-CH_2-O-PO_3H_2$,



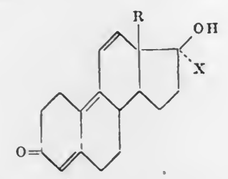
or $-SO_2-CH_2-CH_2-N$ (lower alkyl)$_2$, n is 1, 2 or 3, a is 1 or 2 and b is 1, 2, or 3, said dyestuffs being highly suitable for the dyeing or printing of leather, wool, silk, fibrous materials of polyamides, polyurethanes and particularly of native or regenerated cellulose, the dyeings and prints obtained on the said materials showing intense blue to green-blue shade and being distinguished by very good fastness to wet processing and a good fastness to light.

3,781,311
NOVEL PREPARATION OF TRIENIC STEROIDS

Julien Warnant, Neuilly-sur-Seine, and Jean Jolly, Fontenay-sous-Bois, France, assignors to Roussel UCLAF, Paris, France

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,731
Claims priority, application France, Feb. 19, 1971, 7109709
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.45 **6 Claims**

A novel process for the preparation of trienic steroids of the formula



(I)

wherein R is alkyl of 1 to 4 carbon atoms and X is selected from the group consisting of aliphatic of 1 to 6 carbon atoms optionally substituted and cycloalkyl of 3 to 6 carbon atoms and to novel intermediates for the said process.

3,781,312
PROCESS FOR PREPARING 3-HYDROXY-9α-HYDROGEN - 11α - HYDROXY-RING A-AROMATIC STEROIDS

Gordon Hanley Phillipps, Wembley, and John Peter Turnbull, London, England, assignors to Glaxo Laboratories Limited, Greenford, England

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,177
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.45 **13 Claims**

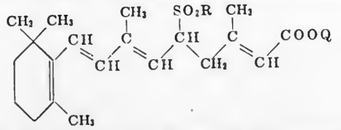
3-hydroxy-9α-hydrogen - 11α-hydroxy-ring A-aromatic steroids are prepared by reducing a 3-hydroxy- or -acyloxy-9α-hydroxy-11β-nitro-oxy-ring A-aromatic steroid with a borohydride reducing agent such as sodium or potassium borohydride.

3,781,313
SULFONE INTERMEDIATES FOR THE SYNTHESIS OF VITAMIN A

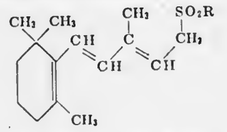
Marc Julia, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France

Claims priority, application France, Jan. 20, 1971, 7101792
Int. Cl. C07c *143/90*
U.S. Cl. 260—402 **8 Claims**

Vitamin A acid and its esters, which are known intermediates for the production of vitamin A, are made by the action of alkali on sulphones of the formula:



where R is an aryl radical and Q is hydrogen or an organic radical, themselves made by reaction of γ-halogenosenecioates on sulphones of formula:



which in turn are made by the action of an aryl sulphinate on vinyl-β-ionol.

3,781,314
POLYENE COMPOUNDS

Werner Bollag, Basel, Norbert Rigassi, Arlesheim, and Ulrich Schwieter, Reinach, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 14, 1971, Ser. No. 162,598
Int. Cl. C07c *3/02*
U.S. Cl. 260—410.9 **8 Claims**

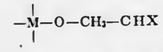
The compound 5,5-dimethyl-cyclopent-1-ene having an acetyl, hydroxyethyl or lower alkyl group in the 2-position and 3,7-dimethyl-nona-2,4,6,8-tetraenoic acid or tetraenol derivative in the 1-position useful as anti-tumor agents as well as a method for preparing these compounds from vitamin A acid derivatives.

3,781,315
HALO ALKOXY METAL COMPOUNDS

Anthony E. Pepe, Hacienda Heights, and Hakam Singh, Newhall, Calif., assignors to Products Research & Chemical Corporation, Burbank, Calif.

No Drawing. Filed July 9, 1971, Ser. No. 161,920
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **10 Claims**

Tin and titanium compounds containing, as the functional group, the radical



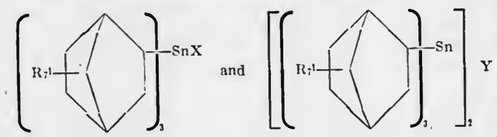
in which M is tin or titanium and X is chlorine or bromine, said compounds being useful as catalysts for curing polysiloxane, polyurethane, and epoxy polymers. There is also disclosed a method for making such organometallic compounds which includes the step of reacting tin or titanium compounds having from 1 to 4 chlorine or bromine atoms with epoxy organic compounds.

3,781,316
TRI-2-NORBORNYLTIN COMPOUNDS

Melvin H. Gitlitz, Edison, N.J., assignor to M&T Chemicals Inc., Greenwich, Conn.

No Drawing. Filed Dec. 18, 1972, Ser. No. 316,045
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **5 Claims**

Tri-2-norbornyltin compounds of the general formulae



wherein X is hydrogen, halogen or a secondary amine radical; each R is a hydrocarbon radical and said R's, together, are members of the group consisting of (a) a pair of hydrocarbon radicals that are unlinked directly to each other, and (b) a pair of hydrocarbons that are linked directly to each other to form a ring; and n is a whole number ranging from 2 to 6. The respective members are useful as a component of a catalyst system in the polymerization of olefins, diolefins and polyenes, and may be prepared by a substitution reaction of a diamine chlorohydrate with an aluminum hydride.

effectively combat fungi and mites when applied to objects, particularly plants, that are susceptible to attack by these organisms. The present compounds are particularly advantageous in that they are non-phytotoxic and therefore will not damage plants to which they are applied. In the foregoing formulae each R^1 is individually selected from hydrogen and lower alkyl radicals, X is a chlorine, bromine, fluorine, hydroxyl, carboxylate, phenoxy, alkoxy ($-OR^2$) or mercaptide ($-SR^2$) radical wherein R^2 represents an alkyl or aryl radical containing between 1 and 12 carbon atoms, inclusive and Y is an oxygen, sulfur, or a sulfate radical.

3,781,317
SILVER KETENIDE AND PREPARATION THEREOF

Derek Bryce-Smith, Highland Wood House, Mill Lane, Kidmore End, and Ernest Thomson Blues, 36 Reeds Ave., Earley, Reading, England

No Drawing. Original application Mar. 20, 1970, Ser. No. 21,529, now Patent No. 3,647,720. Divided and this application Nov. 24, 1971, Ser. No. 202,018
Int. Cl. C07f *1/10*
U.S. Cl. 260—430 **8 Claims**

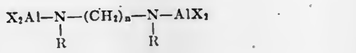
The invention relates to material containing a new form of silver referred to as cluster silver in which the atoms are arranged in a lattice different from the face-centred configuration of conventional silver, and in particular to silver metal, silver compounds, silver complexes and to a new compound silver ketenide, containing cluster silver, which material is characterized in possessing a magnetic susceptibility which is field dependent, such magnetic properties being developed in the cluster silver by thermal treatment or treatment with aqueous media or methanol. The invention also relates to the uses of such material, particularly its use as a catalyst in the oxidation of organic material, and its capacity to generate carbon suboxide.

3,781,318
NOVEL DIAMIDODIALANES AND PROCESS FOR THE PREPARATION THEREOF

Margherita Corbellini, Milan, and Agostino Balducci, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,052
Claims priority, application Italy, Mar. 11, 1970, 21,750/70
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 R **10 Claims**

A new class of diamidodialanes, represented by the formula:



3,781,319
PROCESS FOR PREPARING ISOCYANATES

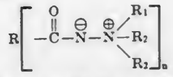
Stanely Wawzonek, Iowa City, Iowa, and Richard C. Gueldner, Starkville, Miss., assignors to State of Iowa, University of Iowa, Iowa City, Iowa

No Drawing. Continuation-in-part of application Ser. No. 839,650, July 7, 1969, which is a continuation-in-part of abandoned application Ser. No. 482,941, Aug. 26, 1965. This application Sept. 28, 1970, Ser. No. 76,327

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 P **16 Claims**

Isocyanates are prepared by pyrolyzing an aminimide having the formula



wherein R_1, R_2 and R_3 are alkyl, aryl and radicals in which R_2 and R_3 are joined to form a heterocyclic ring, R is an aliphatic, cycloaliphatic or aromatic group and *n* is an integer of at least 1, usually 1 to 4.

3,781,320
PROCESS FOR MANUFACTURE OF ORGANIC ISOCYANATES

Carl F. Irwin, New Castle, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 846,210, July 30, 1969, which is a continuation-in-part of abandoned application Ser. No. 687,293, Dec. 1, 1967. This application Feb. 9, 1971, Ser. No. 113,939

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 PH **22 Claims**

Organic isocyanate compounds can be prepared with surprising efficiency by (a) continuously feeding to a suitable high-shear reaction zone an amine solution and a phosgene/isocyanate solution in specified proportions: (b) mixing the solutions under certain conditions of shear, pressure, and temperature while continuously moving them through the high-shear reaction zone until substantially all the amine has reacted with the mixture; (c) continuously removing the mixed and reacted material from the reaction zone (followed if desired by allowing the material to undergo further reaction while flowing to an isocyanate isolation means and/or recycling through the high-shear reaction zone); and (d) isolating isocyanate compound from the resulting material. An apparatus having beneficial utility in carrying out this process comprises a mixer which provides not only the inlet and outlet characteristics needed for a fast and efficient operation, but also an annular high-shear mixing zone formed between the tubular inner wall of a cylindrical vessel and the outer ends of the blades of a coaxial rotor rotating therein.

3,781,321
PREPARATION OF AROMATIC ISOCYANATES

Thomas J. Hurley, Jr., Madison, and Martin A. Robinson, Orange, Conn., assignors to Olin Corporation, New Haven, Conn.

No Drawing. Original application June 21, 1968, Ser. No. 738,829, now Patent No. 3,654,279. Divided and this application May 12, 1971, Ser. No. 143,171

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 PC **4 Claims**

A new composition of matter having the formula

$$PdL(CO)X_2$$

where L is a Lewis base and where X is a halogen. This composition is prepared by reacting carbon monoxide with a Lewis base and a palladium-containing material selected from the group consisting of

(a) palladium dihalide
(b) a mixture of elemental palladium with an acid halide, and
(c) mixtures thereof,

in the presence of a liquid reaction medium. The resulting complex is useful as a catalyst in the preparation of organic isocyanates by reacting carbon monoxide with an organic nitro compound.

3,781,322
HALOHYDRIN THIOL DIENOATES

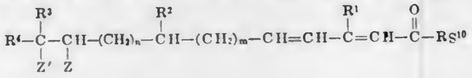
Clive A. Henrick, 1621 Channing Ave. 94304, and John B. Siddall, 2470 Greer St. 94303, both of Palo Alto, Calif.

No Drawing. Original application Feb. 16, 1971, Ser. No. 115,725, now Patent No. 3,706,733. Divided and this application Aug. 18, 1972, Ser. No. 281,887

Int. Cl. C07c *153/07*

U.S. Cl. 260—455 R **10 Claims**

Aliphatic 2,4-di-unsaturated thiolesters useful as intermediates and for the control of insects of the formula:



wherein:

m is zero or the positive integer one, two or three;
n is the positive integer one, two or three;
Z is bromo, chloro, fluoro or hydroxy;
Z′ is bromo, chloro, fluoro or hydroxy; and
R^{10} is lower alkyl, provided that when Z′ is bromo, chloro or fluoro, then Z is hydroxy and when Z′ is hydroxy, then Z is bromo, chloro or fluoro R′=hydrogen or lower alkyl and R^2, R^3, R^4 are lower alkyl.

3,781,323
CYANO- AND TRIFLUOROMETHYL-SUBSTITUTED 6-NITROANILINES

Klaus Wagner and Ludwig Eue, Cologne, and Erich Klauke, Odenthal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

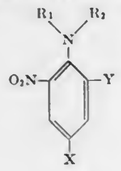
No Drawing. Filed Feb. 9, 1971, Ser. No. 114,071

Claims priority, application Germany, Feb. 28, 1970, P 20 09 497.7

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **20 Claims**

Novel 6-nitroaniline compounds of the formula



in which

R_1 is hydrogen, substituted or unsubstituted alkyl or aryl, or cycloalkyl;
R_2 is hydrogen, alkyl or alkenyl; and
R_1 and R_2 together can form a heterocycle; and of X and Y one is cyano and the other trifluoromethyl

are herbicides having outstanding activity and selectivity.

3,781,324
CERTAIN 6-TRIFLUOROMETHYLCYTOSINES AND THIOCYTOSINES, THEIR SYNTHESIS, AND THEIR USE IN THE SYNTHESIS OF URACILS AND THIOURACILS

Albert William Lutz, Montgomery Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

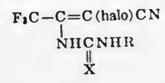
No Drawing. Original application Nov. 3, 1969, Ser. No. 873,679, now Patent No. 3,635,977. Divided and this application Aug. 9, 1971, Ser. No. 170,350

Int. Cl. C07c *121/30, 121/52*

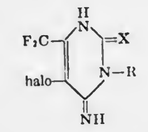
U.S. Cl. 260—465 D **2 Claims**

3-amino-2-substituted - 4,4,4 - trifluoro-2-butenenitriles are reacted with isocyanates or isothiocyanates in the pres-

ence of an inert solvent and from 0.75 to about 1.0 mole equivalents of strong base per mole of butenenitrile to produce the novel ureido butenenitriles of the formula:



wherein R is alkyl, alkenyl, phenyl, benzyl and substituted derivatives thereof and X is sulfur or oxygen. The ureido butenenitriles are treated with additional base to produce novel cyclic cytosines of the formula:



wherein R and X are as defined above. The cytosines can be produced directly by treating 3-amino-2-substituted-4,4,4-trifluoro-2-butenenitrile with at least 1.0 mole equivalent of base. The novel compounds are useful intermediates in the preparation of herbicidal uracils and thiouracils.

3,781,325
15-METHOXY-PGF$_{2\alpha}$

Frank H. Lincoln, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 4, 1971, Ser. No. 140,252

Int. Cl. C07c *61/32, 69/74*

U.S. Cl. 260—468 D **4 Claims**

Prostaglandin E_2-type and $F_{2\alpha}$-type compounds with a methoxy group replacing the hydroxyl at the C–15 position are disclosed. These are useful for the same pharmacological purposes as the unsubstituted prostaglandins.

3,781,326
PHOSPHORYLATED THIOUREA COMPOSITIONS

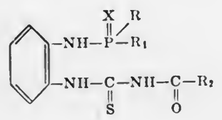
Alexander Mihailovski, 1812 Delaware St., Berkeley, Calif. 94703, and Don R. Baker, 15 Muth Drive, Orinda, Calif. 94563

No Drawing. Original application Dec. 29, 1971, Ser. No. 213,714. Divided and this application Feb. 26, 1973, Ser. No. 336,111

Int. Cl. C07f *9/22*

U.S. Cl. 260—470 **3 Claims**

New compounds corresponding to the generic formula:



wherein X can be selected from oxygen and sulfur, R and R_1 can be the same or different and can be selected from lower alkyl and lower alkoxy, R_2 can be selected from lower alkyl, lower alkoxy and lower thioalkyl. The compounds are useful fungicides and biocides.

3,781,327
META-CARBANILATE ETHERS

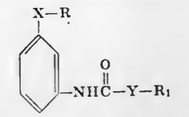
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,004

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **13 Claims**

Meta-carbanilate ethers and sulfides having the formula



in which X is oxygen or sulfur; Y is oxygen or sulfur; R is branched and straight chain alkyl, alkenyl, vinyloxyalkyl, ketoalkyl, or alkylthioalkyl; and R_1 is alkyl or alkenyl. The compounds of this invention are useful as herbicides.

3,781,328
PHENOXY-ALKYL-CARBOXYLIC ACID COMPOUNDS

Ernst-Christian Witte, Mannheim, Kurt Stach, Mannheim-Waldhoe, Max Thiel, Mannheim, Felix Helmut Schmidt, Mannheim-Seckenheim, and Harald Stork, Mannheim-Feudenheim, Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

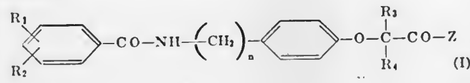
No Drawing. Filed Sept. 7, 1972, Ser. No. 287,114

Claims priority, application Germany, Oct. 1, 1971, P 21 49 070.0; June 22, 1972, P 22 30 383.9

Int. Cl. C07c *103/30*

U.S. Cl. 260—471 R **23 Claims**

Novel phenoxy-alkyl-carboxylic acid compounds of the formula:



(I)

wherein

R_1 and R_2, which may be the same or different, are hydrogen, halogen, lower alkyl or lower alkoxy;
R_3 and R_4, which may be the same or different, are hydrogen or lower alkyl;
n is 1, 2 or 3; and Z is hydroxyl or lower alkoxy;

and the pharmacologically compatible salts thereof, are remarkably effective in lowering the serum lipid level and cholesterol level without inducing undesirable side effects.

3,781,329
ELECTRONEGATIVELY SUBSTITUTED CARBOXYPHENYL OXALATES AS SUPERIOR CHEMILUMINESCENT MATERIALS

Laszlo Joseph Bollyky, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Dec. 18, 1969, Ser. No. 886,406, now abandoned. Divided and this application Dec. 23, 1971, Ser. No. 211,809

Int. Cl. C07c *69/36*

U.S. Cl. 260—479 S **4 Claims**

New compounds which are reactive with hydrogen peroxide in the presence of a solvent and a fluorescer to produce visible chemiluminescent light. The light capacity of the electronegatively substituted carboxyphenyl oxalate reaction is superior to that of the similarly electronegatively substituted phenyl oxalate reaction.

3,781,330
ORTHOAMINOPHENYL-N-METHYLCARBAMATES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,215
Claims priority, application Switzerland, Oct. 31, 1969, 16,282
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 4 Claims

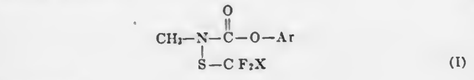
N-monosubstituted o-aminophenylcarbamates are effective against pests, in particular against insects, nematodes and representatives of the order Acarina. They may be used in the form of pesticidal preparations.

3,781,331
N-TRIHALOMETHANESULFENYL-N-METHYL-CARBAMATES

Engelbert Kühle, Bergisch Gladbach, Erich Klauke, Odenthal-Hahnenberg, Wolfgang Behrenz, Cologne, and Paul Ernst Frohberger, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,746
Claims priority, application Germany, Aug. 20, 1970, P 20 41 322.3
Int. Cl. C07c *149/24*
U.S. Cl. 260—479 C 7 Claims

N-trihalomethanesulfenyl-N-methyl-carbamates of the general formula



(I)

in which

X is chlorine or fluorine, and

Ar is a phenyl or naphthyl radical optionally substituted by at least one lower alkyl, alkoxy, alkylmercapto, dialkylamino, trifluormethyl, halogen or nitro radical,

which possess insecticidal, acaricidal, fungicidal, bactericidal, microbicidal, algicidal and bird-repellent properties.

3,781,332
PROCESS FOR THE EXTRACTION OF METHACRYLIC ACID FROM AQUEOUS SOLUTIONS

Ryozi Sato, Takaoka, and Yasuyoshi Chino, Tokyo, Japan, assignors to Nippon Zeon Co., Ltd.

Filed Dec. 23, 1971, Ser. No. 211,416
Claims priority, application Japan, Dec. 28, 1970, 45/119,626
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 14 Claims

A process for separating methacrylic acid from an aqueous solution by use of an extraction solvent composed of methyl or ethyl methacrylate and not more than 50% of xylene, ethyl benzene or a mixture thereof.

3,781,333
BETA,BETA-DIMETHYL ACRYLATES

Heinrich Kappeler, Wurenlos, and Jost Wild, Zurich, Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Original application Dec. 23, 1968, Ser. No. 786,413, now Patent No. 3,700,717. Divided and this application Aug. 23, 1972, Ser. No. 283,005
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 1 Claim

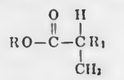
A synthetic process for producing lavandulol (III) and lavandulyl acetate (V) economically and in pure form is disclosed. This is accomplished by a novel process involving making lavandulic acid (II by the rearrangement of a novel compound, 2-methyl-buten-2-yl-β,β-dimethyl acrylate (I). The lavandulic acid so formed may be reduced to lavandulol (III) or lavandulal (IV), converted into a lower alkyl ester (V) or into the novel lavandulic acid nitrile (VI). Lavandulol (III) may be transformed into the novel lavandulyl β,β-dimethyl acrylate (VII).

3,781,334
ALKYL LACTOYL FUMARATES, MALEATES AND SALTS THEREOF

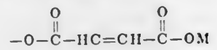
Thomas P. Kichline, Chesterfield, and James F. Conn, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Sept. 13, 1968, Ser. No. 759,796, now Patent No. 3,582,354. Divided and this application Oct. 28, 1970, Ser. No. 84,900
Int. Cl. C07c *69/68*
U.S. Cl. 260—484 A 4 Claims

Novel compounds having the following formula:



wherein R is a saturated, ethylenically unsaturated, or diethylenically unsaturated aliphatic hydrocarbon radical having from about 12 to about 22 carbon atoms and R_1 is a radical having the following formula:



wherein M is H, alkali metal, alkaline earth metal or ammonium are useful as emulsifiers in bakery products.

3,781,335
PREPARATION OF DIFLUORONITROETHYL-PERFLUORO ACRYLATE AND RELATED COMPOUNDS

Leonard O. Ross, Sunnyvale, and Marion E. Hill, Palo Alto, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Jan. 11, 1972, Ser. No. 217,042
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 H 6 Claims

Perfluoroacrylyl chloride is reacted with 2,2,2-difluoronitroethanol under basic catalytic conditions to produce 2,2,2-difluoronitroethylperfluoro acrylate with

$$NO_2CF_2CH_2OCF_2CFHCOCl$$

Under acidic catalytic conditions the terminal fluorine is replaced giving ClCF=CFCOCl with ester and alcohol adduct products. The use of reduced pressure was found necessary in the production of the initial acid chloride reagent. Other related derivatives are described.

3,781,336
METHOD FOR PRODUCING METHACRYLIC ACID AND ITS ESTERS

Masazumi Chono, Oimachi, and Hitoshi Nakajima, Masayoshi Taguchi, and Noriaki Matsuo, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 24, 1972, Ser. No. 229,110
Claims priority, application Japan, Feb. 24, 1971, 46/8,632; Sept. 23, 1971, 46/73,793
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 D 7 Claims

An economical method for producing methacrylic acid and its esters from at least one organic compound selected from the group consisting of isobutyric acid and its esters by the dehydrogenation reaction with sulfur is provided. This method comprises adding said organic compound to the reaction system together with 0.3–70.0 gram atoms of sulfur vapour and as a catalyst, 0.5–30.0 mols of hydrogen sulfide per one mol of said organic compound at a temperature in the range of 400°–560° C.

3,781,337
ELIMINATING CARBON DIOXIDE FROM FORMYLOXYALKYNES

Walter Himmele, Walldorf, Werner Fliege, Otterstadt, and Helmut Froehlich, Karlsruhe, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,731
Int. Cl. C07c *1/20, 67/00*
U.S. Cl. 260—491 12 Claims

A process for the catalytic elimination of carbon dioxide from formyloxyalkynes which bear a formyloxy group on at least one of the carbon atoms in the α-position to the triple bond. The process is important for example for the production of alkynyl formates such as 2-butyn-1-yl formate, 2-pentyn-1-yl formate and 3-hexyn-2-yl formate from the corresponding alkynediol diformate and for the production of alkynes and allenes from alkynediol diformates or alkynyl formates.

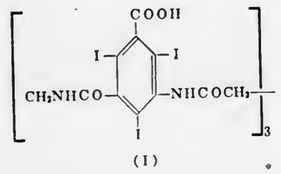
3,781,338
NITRILOTRIACYLTRIIMINO-TRIS-(2,4,6-TRIIODOBENZOIC ACID) COMPOUNDS

Philip E. Wiegert, St. Louis County, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 780,296, Nov. 29, 1968. This application Feb. 8, 1971, Ser. No. 113,630
Int. Cl. C07c *101/26*
U.S. Cl. 260—501.11 10 Claims

Nitrilotriacyltriimino - tris - (2,4,6-triiodobenzoic acid) compounds are useful as X-ray contrast agents. Solutions of their water-soluble salts are less hypertonic than conventional aqueous vasographic media of equivalent iodine content.

A typical symmetrical member of the series has the following structure:



(I)

3,781,339
SULFONATE MIXTURES BASED ON DERIVATIVES OF OLEFINS OF THE VINYL, VINYLIDENE AND INTERNAL TYPES HAVING FROM 12 TO 16 CARBON ATOMS PER MOLECULE

Melvin E. Tuvell and William J. Dewitt, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1970, Ser. No. 85,838
Int. Cl. C07c *143/04, 143/10, 143/16*
U.S. Cl. 260—513 R 7 Claims

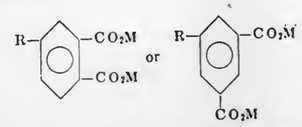
It is disclosed that olefin sulfonates obtained by saponifying the reaction product of SO_3 and olefins having from about 12 to about 16 carbon atoms per molecule provide excellent hard water detergent materials when the olefins are predominantly unbranched acyclic terminal monoolefins in admixture with from about 3 to about 30 mol percent of beta-branched terminal olefins and from about 3 to about 12 mol percent of internal olefins. Preferred olefin sulfonates are the sodium and potassium salts of alkene sulfonic acids and of hydroxy alkane sulfonic acids. The mixtures of the present invention involve sulfonates with from about 64 to about 97 percent C_{16}, from zero to about 15 percent C_{14} and from about 3 to about 33 percent C_{12} carbon atoms per molecule, in percent by weight.

3,781,340
ALKYL PHTHALIC ACID COMPOUNDS

Stephen E. McGuire, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,035
Int. Cl. C07c *63/16, 63/20, 63/24*
U.S. Cl. 260—515 P 4 Claims

Novel surface active agents are provided having the general formula:



wherein R is a tertiary alkyl group containing from about 8 to about 16 carbon atoms and M is a cation selected from the group consisting of Li, Na, K, Rb, Cs, Ca, Mg. NH_4 and substituted ammonium.

3,781,341
DISPROPORTIONATION OF ALKALI METAL SALTS OF AROMATIC CARBOXYLIC ACIDS

Yu-Lin Wu and Paul S. Hudson, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed June 25, 1971, Ser. No. 156,984
Int. Cl. C07c *63/14, 63/26*
U.S. Cl. 260—515 P 6 Claims

A slurry comprised of an alkali metal salt of an aromatic carboxylic acid, a disproportionation catalyst, and an inert high-boiling organic dispersant is subjected to heating at an elevated temperature in the presence of a gas atmosphere to form a polycarboxylate having at least one additional carboxyl group.

3,781,342
PRODUCTION OF TERTIARY ALKYL SUBSTITUTED ORTHO-TOLUIC ACIDS AND ESTERS THEREOF

Bernard S. Friedman and Steven B. Nason, Chicago, Ill., assignors to Atlantic Richfield Company, Los Angeles, Calif.

No Drawing. Filed Mar. 14, 1973, Ser. No. 340,990
Int. Cl. C07c *63/04*
U.S. Cl. 260—515 R 9 Claims

Preparation of tertiary alkyl derivatives of ortho-toluic acid and the lower alkyl esters thereof is accomplished by carbonylating a branched olefin with carbon monoxide in the presence of a mineral acid catalyst and heating the resulting carbonylate and the ortho-toluic acid or lower alkyl ester thereof to obtain carbon monoxide and a tertiary alkyl derivative of ortho-toluic acid or ester thereof.

3,781,343
HYDROLYSIS OF AROMATIC DINITRILES

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., St. Davids, Pa.

No Drawing. Filed Apr. 12, 1973, Ser. No. 350,433
Int. Cl. C07c *63/00, 63/26*
U.S. Cl. 260—515 P 4 Claims

A process for the preparation of an aromatic acid such as terephthalic acid by hydrolysis of terephthalonitrile which comprises subjecting terephthalonitrile to aqueous hydrolysis in a closed reactor at 200° C. to 300° C. until a hydrolysis equilibrium is obtained, venting the closed system to remove more than 50% of available, ammonia, adjusting the venter system to a molality of terephthalate from 1.5 to 2.5, saturating the system with carbon dioxide, and isolating the precipitated terephthalic acid by separation under a pressure of about 50 to about 900 p.s.i.g.

3,781,344
PROCESS FOR MANUFACTURING TEREPHTHALIC ACID BY OXIDATION OF PARA-XYLENE

Jacob Alagy, La Celle-St.-Cloud, and Christian Busson, Rueil-Malmaison, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

No Drawing. Filed May 1, 1972, Ser. No. 248,803
Claims priority, application France, May 6, 1971, 7116492
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R 9 Claims

A process for manufacturing terephthalic acid comprises oxidizing para-xylene in liquid phase, recovering the resulting terephthalic acid, concentrating the recovered liquid phase, washing the same with water, separating the solid by-products from the liquid phase and recycling the liquid phase to the oxidation reactor.

The process may be used over long periods without a substantial yield decrease.

3,781,345
METHOD OF PREPARING 2,4-DIMETHYL-ISOPHTHALIC ACID

Philmore M. Scudder, Havertown, Pa., and Robert W. Warren, Pitman, N.J., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed Feb. 24, 1971, Ser. No. 118,376
Int. Cl. C07c *63/02, 63/14*
U.S. Cl. 260—524 R 1 Claim

2,4-dimethylisophthalic acid, its esters and a process for preparing the acid by partial oxidation of prehnitene with aqueous permanganate.

3,781,346
PROCESS FOR PURIFICATION OF NAPHTHALENE CARBOXYLIC ACIDS

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed May 25, 1972, Ser. No. 257,026
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 5 Claims

A process for the purification of naphthalene carboxylic acids containing an aldehyde impurity which comprises heating a solid ammonium salt of said acid while sweeping said solid salt with steam.

3,781,347
PROCESS FOR PURIFICATION OF TEREPHTHALIC ACID

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed May 25, 1972, Ser. No. 257,027
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 5 Claims

A process for the purification of terephthalic acid containing an aldehyde impurity which comprises heating a solid ammonium salt of said terephthalic acid at a temperature of from about 200° C. to about 300° C. while sweeping said solid salt with steam.

3,781,348
PROCESS FOR THE PRODUCTION OF THIOCORNINE

Kiyoshi Kominato and Yutaka Kominato, both of 15, Hagigakakiuchicho, Shimokamo Sakyo-ku, Kyoto-shi, Japan

No Drawing. Original application Nov. 4, 1968, Ser. No. 773,294, now Patent No. 3,626,003. Divided and this application Nov. 6, 1970, Ser. No. 87,608
Claims priority, application Japan, Nov. 8, 1967, 42/71,834
Int. Cl. C07c *101/04*
U.S. Cl. 260—534 S 8 Claims

Thiocornine, an amino acid, and thiamamidine phosphoric cysteine are obtained from vegetable sources, e.g. Allium plants, or animal sources. The compounds are therapeutically useful.

3,781,349
PREPARATION OF POLYGLYCOLIC ACID IN FINELY DIVIDED FORM

Wallace Burton Ramsey, Stamford, and Darwin Fiske De Lapp, New Canaan, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Feb. 25, 1971, Ser. No. 118,974
Int. Cl. C07c *59/12*
U.S. Cl. 260—535 P 9 Claims

This invention relates to a process for producing finely divided polyglycolic acid comprising dissolving said polyglycolic acid in an inert solvent and then adding a non-solvent for the polyglycolic acid to the solution thereby producing polyglycolic acid particles in finely divided form.

3,781,350
PROCESS FOR PREPARATION OF ω-HYDROXY SATURATED ALIPHATIC MONOCARBOXYLIC ACIDS

Yutaka Fujita, Toshiki Toda, and Tsuneo Shimada, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed July 6, 1972, Ser. No. 269,305
Claims priority, application Japan, July 9, 1971, 46/50,849; Sept. 29. 1971, 46/76,194; Oct. 2, 1971, 46/77,297, 46/77,298; Oct. 30, 1971, 46/86,401
Int. Cl. C07c *59/04*
U.S. Cl. 260—535 R 11 Claims

Saturated aliphatic dicarboxlic acids of 4 to 12 carbon atoms can be converted to the corresponding ω-hydroxy saturated aliphatic monocarboxylic acids in high yields and with high selectivity when they are contacted with hydrogen together with saturated aliphatic glycols of the same number of carbon atoms in the presence of a catalyst comprising (1) metallic cobalt derived by reducing at least one cobalt compound (first component) selected from the group consisting of cobalt oxides, cobalt carbonates and cobalt hydroxides and (2) a metal and/or a metal compound derived by reducing at least one compound (second component) selected from the group consisting of phosphates, borates, molybdates and tungstates of iron, zinc or cobalt, oxides and hydroxides of iron, rhenium, zinc, phosphorus, boron, molybdenum or tungsten, and carbonates of iron or zinc.

3,781,351
PREPARATION OF ALPHA-HYDROYAMIDES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,157
Int. Cl. C07c *103/16;* C07d *103/26*
U.S. Cl. 260—559 R 15 Claims

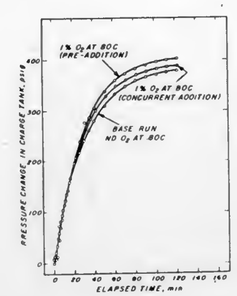
Formamide or a substituted formamide is reacted with a carbonyl compound having from 2 to about 12 carbon atoms in a liquid reaction medium containing a ruthenium or osmium catalyst, preferably in complex association with a biphyllic ligand, at a temperature of from 50° to 300° C. to form an alpha-hydroxyamide. A typical process comprises reacting formamide with an excess of benzaldehyde in the liquid phase in the presence of ruthenium trichloride in complex association with triphenylphosphine to produce alpha-hydroxyphenyl acetamide.

3,781,352
PROCESS FOR PREPARING FORMAMIDE IN THE PRESENCE OF OXYGEN

John O. Hawthorne, Penn Hills Township, Allegheny County, and Samuel B. Schlosberg, Monroeville, Pa., assignors to United States Steel Corporation

Filed Aug. 31, 1971, Ser. No. 176,456
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 R 8 Claims

The addition of oxygen to the carbon monoxide-ammonia or carbon monoxide-amine reaction system used



to prepare formamides significantly increases the reaction rate.

3,781,353
PROCESS FOR PREPARING 5-LOWER ALKANOYL BENZOPHENONES UTILIZING CERIC SALTS

Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application May 13, 1970, Ser. No. 37,021, now Patent No. 3,627,754. Divided and this application Sept. 8, 1971, Ser. No. 178,802
Int. Cl. C07c *103/42*
U.S. Cl. 260—562 P 5 Claims

The present invention relates to processes for the preparation of 7-lower alkanoyl-1,4-benzodiazepin-2-ones utilizing ceric salts. The 7-lower alkanoyl benzodiazepin-2-ones are known to be useful as muscle relaxants, sedatives and anticonvulsants.

3,781,354
PROCESS FOR PURIFICATION OF N-ACETYL-P-AMINOPHENOL

John Richard Kosak, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 88,179, Nov. 9, 1970. This application June 12, 1972, Ser. No. 261,811
Int. Cl. C07c *103/38*
U.S. Cl. 260—562 B 2 Claims

Color exhibiting by-products produced in the acetylation of p-aminophenol to N-acetyl-p-aminophenol are removed from the N-acetyl-p-aminophenol by treating a hot aqueous solution of N-acetyl-p-aminophenol with ferric chloride to oxidize the by-product to the colored state and adsorbing the colored by-product on activated carbon. The activated carbon is then removed and the N-acetyl-p-aminophenol is recovered from the solution.

3,781,355
PESTICIDAL COMPOUNDS AND COMPOSITIONS

Ian Robert Harrison, Bleasby, John Felix McCarthy, Bramcote Hills, and Bryan Harper Palmer, Burton Joyce, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 430, Jan. 2, 1970. This application Dec. 1, 1970, Ser. No. 94,209
Claims priority, application Great Britain, Dec. 12, 1969, 60,793/69; Aug. 26, 1970, 41,120/70
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R 7 Claims

Novel 1,5-diphenyl - 3 - methyl-1,3,5-triazapenta-1,4-dienes, processes for their production and pesticidal, especially acaricidal and insecticidal, compositions and methods are described.

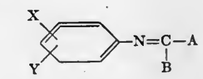
Preferred compounds are particularly active against cattle tick and red spider mite.

3,781,356
BROMOPHENYLFORMAMIDINES

Dieter Duerr, Bottmingen, Hans Aebi, Riehen, and Ludwig Ebner, Stein, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Application Aug. 7, 1969, Ser. No. 864,244, now abandoned, which is a division of application Ser. No. 569,828, Aug. 6, 1966, now Patent No. 3,487,156, which is a continuation-in-part of abandoned application Oct. 8, 1965, Ser. No. 515,772, which in turn is a division of application Ser. No. 262,863, Mar. 5, 1963, now Patent No. 3,284,289. Divided and this application Feb. 22, 1972, Ser. No. 228,327
Claims priority, application Switzerland, Mar. 8, 1962, 2,800/62
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R 2 Claims

Compounds of the formula



in which

X is hydrogen, chlorine, bromine, lower alkyl, lower alkoxy or CF_3,

Y is hydrogen, bromine, lower alkyl, lower alkoxy halophenoxy or CF_3,

A is di-lower-alkylamino, piperidino, pyrrolidino, morpholino, 4-methylpiperazino or hexamethyleneimino, and

B is hydrogen or methyl,

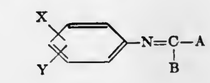
and their salts, are pesticidally effective compounds useful for the control of acarids and insects. Of particular note is the compound in which Y is bromine in the 4-position, X and B are hydrogen, and A is dimethylamino.

3,781,357
ALKYLPHENYL- AND CHLOROPHENOXY-PHENYL-FORMAMIDINES

Dieter Duerr, Bottmingen, Hans Aebi, Riehen, and Ludwig Ebner, Stein, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Division of application Ser. No. 864,244, Aug. 7, 1969, now abandoned, which is a division of application Ser. No. 569,828, Aug. 6, 1966, now Patent No. 3,487,156, which is a continuation-in-part of application Ser. No. 515,772, Oct. 8, 1965, now abandoned, which in turn is a division of application Ser. No. 262,863, Mar. 5, 1963, now Patent No. 3,284,289. Divided and this application Feb. 22, 1972, Ser. No. 228,343
Claims priority, application Switzerland, Mar. 8, 1962, 2,800/62
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R 5 Claims

Compounds of the formula



in which

X is hydrogen, chlorine, bromine, lower alkyl, lower alkoxy or CF_3,

Y is hydrogen, bromine, lower alkyl, lower alkoxy halophenoxy or CF_3,

A is di-lower-alkylamino, piperidino, pyrrolidino, morpholino, 4-methylpiperazino or hexamethyleneimino, and

B is hydrogen or methyl,

and their salts, are pesticidally effective compounds useful for the control of acarids and insects. Of particular note are those compounds in which Y is lower alkyl or chlorophenoxy, X and B are hydrogen, and A is dimethylamino.

3,781,358
INTERMEDIATES FOR PREPARING ACRIDINES

Elvin L. Anderson, 246 Nicholson Drive, Moorestown, N.J. 08057, and Harold Graboyes, 1506 Sheffield Lane, Philadelphia, Pa. 19151

No Drawing. Application Feb. 25, 1971, Ser. No. 118,976, now Patent No. 3,692,834, which is a continuation-in-part of application Ser. No. 732,869, May 29, 1968, now Patent No. 3,625,945. Divided and this application June 30, 1972, Ser. No. 267,852

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 B **2 Claims**

Diphenyl-2-carboxaldehyde derivatives prepared by reacting a diphenylamine - 2 - carboxylic acid benzenesulfonylhydrazide with a base and hydrazine, semicarbazide, thiosemicarbazide or phenylhydrazine, are reacted with a mineral acid to produce acridines. The acridines are useful as intermediates for preparing 9-aminoalkylacridans having pharmacodynamic activity.

3,781,359
PRODUCTION OF 2-HYDROXY-3,5,6-TRICHLOROBENZYLAMINES

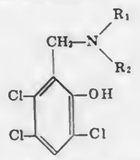
David I. Randall, and Joseph P. Copes, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,364

Int Cl. C07c *87/28*.

U.S. Cl. 260—570.9 **2 Claims**

The invention describes 2-hydroxy-3,5,6-trichlorobenzylamines, having the formula:



Where R_1 and R_2 may each be hydrogen, hydrocarbon groups, substituted hydrocarbon groups or taken together with the nitrogen atom, form a heterocyclic ring, and salts thereof; and novel methods for their synthesis.

They are useful as buffering agents, lubricating oil additives and chemical intermediates and appear to affect enzyme systems.

3,781,360
2-POLYFLUOROLOWERALKYLAMINO BENZOPHENONES

John G. Topliss, West Caldwell, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of application Ser. No. 142,051, May 10, 1971, which is a continuation-in-part of application Ser. No. 811,637, Mar. 28, 1969, now Patent No. 3,641,147, which is a continuation-in-part of abandoned application Ser. No. 703,245, Feb. 6, 1968, which is a continuation-in-part of application Ser. No. 650,581, July 3, 1967, now Patent No. 3,429,874, which is a continuation-in-part of application Ser. No. 603,737, Dec. 22, 1966, which in turn is a continuation-in-part of application Ser. No. 520,658, Jan. 14, 1966, both now abandoned. This application May 5, 1972, Ser. No. 250,704

Int. Cl. C07c *97/00*

U.S. Cl. 260—570 AB **6 Claims**

This invention relates to 2-polyfluoroloweralkylamino benzophenones of matter useful as intermediates in the preparation of 2-oxo-1,3-dihydro-2H-1,4-benzodiazepines, and the N-N-oxides thereof, having a polyfluoroloweralkyl radical attached at the 1-position thereof and to the methods for making and using such novel chemical intermediates.

3,781,361
N-(4-ALPHA,ALPHA-DIMETHYLBENZYLPHENYL)-1- or -2-NAPHTHYLAMINES

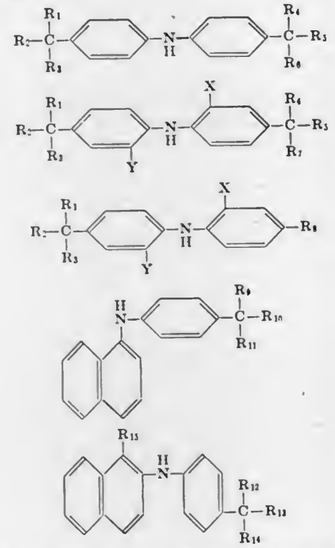
Edward L. Wheeler, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Application Jan. 12, 1970, Ser. No. 2,382, now Patent No. 3,666,716, which is a division of application Ser. No. 540,817, Apr. 7, 1966, now Patent No. 3,505,225. Divided and this application May 22, 1972, Ser. No. 255,495

Int. Cl. C07c *87/28*

U.S. Cl. 260—570 R **3 Claims**

Derivatives of diphenylamine or phenylnaphthylamine of the types



where R_1, R_9 and R_{12} are phenyl or p-tolyl groups and the remaining R's, X and Y may be alkyl or various other substituents, are useful antioxidants for lubricating oils or for various polymeric substrates (e.g. polypropylene) especially in combination with a dialkyl thiodipropionate. Typical antioxidants are 4,4'-bis-(alpha,alpha,-p-trimethylbenzyl)diphenylamine made by reacting p,alpha-dimethylstyrene with diphenylamine, and N-(4-alpha,alpha-dimethylbenzylphenyl) - 1 - (alpha,alpha-dimethylbenzyl)-2-naphthylamine made by reacting alpha-methylstyrene with N-phenyl-2-naphthylamine.

3,781,362
REMOVAL OF 1,2-DIAMINOCYCLOHEXANE IMPURITY FROM CRUDE HEXAMETHYLENEDIAMINE

Robert Clifford Blackstone, Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 7, 1972, Ser. No. 278,461

Int. Cl. C07c *87/14*

U.S. Cl. 260—583 N **6 Claims**

A process for removing 1,2-diaminocyclohexane impurity from crude hexamethylenediamine by contacting the crude hexamethylenediamine with a carbohydrate having from 3 to 12 carbon atoms and an acid catalyst to produce a reaction product of low volatility and thereafter distilling the hexamethylenediamine of reduced impurity level from the reaction product.

3,781,363
FUEL AND LUBE COMPOSITIONS

Larry Plonsker, Bloomfield Hills, Warren L. Perilstein, Orchard Lake, and Robert E. Malec, Birmingham, Mich., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Original application Nov. 16, 1970, Ser. No. 90,003, now Patent No. 3,700,598. Divided and this application Aug. 24, 1972, Ser. No. 283,630

Int. Cl. C07c *87/04*

U.S. Cl. 260—583 P **7 Claims**

The dispersant and detergent properties of lubricating oils and liquid hydrocarbon fuels such as gasoline are improved by addition of a small but effective amount of an N-hydrocarbyl-substituted nitrilotris ethylamine. The hydrocarbyl group is preferably a polyolefin group, such as a polybutene group, having a molecular weight of from about 300 to 20,000 more preferably from 500 to 2,000.

3,781,364
SATURATION OF UNSATURATED ALDEHYDES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,464

Int. Cl. C07c *45/12*

U.S. Cl. 260—601 R **6 Claims**

It is disclosed that ethylenically unsaturated aldehydes can be saturated without hydrogenation of the aldehyde group by contacting the aldehyde with carbon monoxide and water in the presence of a rhodium, iridium or ruthenium complex with a biphyllic ligand catalyst. The reaction is performed under relatively mild conditions at temperatures from 30° to 300° C. and at pressures from 1 to about 1000 atmospheres using an aqueous liquid phase having dispersed or dissolved therein the catalytic quantities of the noble metal-biphyllic ligand complex.

3,781,365
STABILIZATION OF AQUEOUS FORMALDEHYDE SOLUTIONS

Roy H. Prinz, Robstown, and Bob C. Kerr, Kingsville, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Application Dec. 13, 1967, Ser. No. 690,059, which is a continuation-in-part of application Ser. No. 360,137, Apr. 15, 1964, which is a continuation-in-part of application Ser. No. 77,525, Dec. 22, 1960, now abandoned, which in turn is a continuation-in-part of applications Ser. No. 811,250, May 18, 1959, now Patent No. 3,137,736, Ser. No. 744,059, June 24, 1958, and Ser. No. 858,868, Dec. 11, 1959, both now abandoned. Divided and this application Jan. 5, 1970, Ser. No. 5,407

Int. Cl. C07c *47/04*

U.S. Cl. 260—606 **3 Claims**

One aspect of this invention relates to the stabilization of aqueous solutions of formaldehyde with a small amount of a sorbitan ester of a higher fatty acid.

Another aspect of the invention includes the heat treatment of an aqueous formaldehyde solution containing a small amount of any of certain dissolved organic colloids as a stabilizer, to further increase the stabilization of the solution.

3,781,366
PREPARATION OF α-DITHIOLS

Alain Pfister and Emmanuel Arretz, Pau, and Alain Donche, Lescar, France, assignors to Societe Nationale des Petroles d'Aquitaine tour Aquitaine, Courbevoie, France

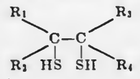
No Drawing. Filed Aug. 27, 1971, Ser. No. 175,754

Claims priority, application France, Aug. 31, 1970, 7031660

Int. Cl. C07c *149/06*

U.S. Cl. 260—609 R **10 Claims**

A process for producing α-dithiols with the general formula:



in which R_1, R_2, R_3 and R_4, identical or different, can each be either hydrogen or alkyl radicals such as methyl, ethyl, propyl, possibly substituted by halogen, thiol or hydroxyl groups is disclosed.

This process consists in causing a reaction to occur between an organic ester of a 2-mercaptoalkyl and an alkaline sulphydrate in an aqueous solution in the absence of an organic solvent at temperatures ranging between 50° C. and 160° C., and recovering by decantation the dithiol constituting the organic layer.

The α-dithiols are used in polymerization reactions. They are adducts on double bonds, and are used in the fields of insecticides, pesticides, and fungicides.

3,781,367
PREPARATION OF 4-MERCAPTOPHENOLS

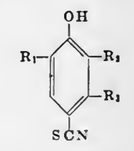
Robert J. Laufer, Colts Neck, N.J., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Jan. 15, 1970, Ser. No. 3,193

Int. Cl. C07c *149/36*

U.S. Cl. 260—609 D **9 Claims**

Certain thiocyanophenols are converted by caustic hydrolysis under certain conditions to mercaptophenols. The thiocyanophenols which are so converted are those having the following general formula:



where R_1 is hydrogen or a C_1–C_4 alkyl radical; R_2 is hydrogen or a C_1–C_2 alkyl radical; and R_3 is hydrogen or a methyl radical, provided that R_2 is hydrogen when R_1 is a butyl radical.

3,781,368
PRODUCTION OF ALLYLIC ETHERS

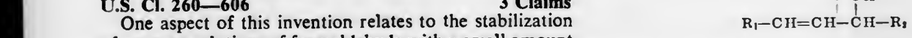
Robert Schwenn Neale, Ossining, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Jan. 12, 1971, Ser. No. 105,944

Int. Cl. C07c *41/10*

U.S. Cl. 260—611 R **17 Claims**

A liquid phase process for the production of allylic ethers comprising admixing an allylic alcohol having the following structural formula:



wherein R_1 and R_2 are alkyl radicals, straight or branched chain, having 1 to 7 carbon atoms, cycloalkyl radicals having 4 to 10 carbon atoms, aryl radicals having 1 to 2 benzene rings, or alkylene portions of an alicyclic ring, each portion having 1 to 3 carbon atoms, and from zero to six mols per mol of the allylic alcohol of an alcohol having the following structural formula:



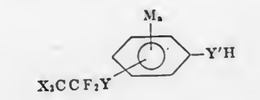
wherein R_3 is an alkyl or alkenyl radical, straight or branched chain or cyclic, having 1 to 20 carbon atoms; R_4 is an alkylene radical, straight or branched chain, having 2 to 10 carbon atoms; and n is zero or, provided R_3 is an alkyl radical, an integer from 1 to 100, in the presence of an effective amount of a catalyst consisting essentially of a molybdenum-oxygen complex wherein the molybdenum is in the oxidation states of +4, +5, or +6, or mixtures thereof, and at least 10 mol percent of the molybdenum is in the +5 oxidation state and at a temperature sufficiently high for a reaction to take place.

3,781,369
SUBSTITUTED HALOALKOXY PHENOLS

Eric R. Larsen, Midland, Bernard R. Andrejewski, Linwood, and Fred Y. Edamura, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,683
Int. Cl. C07c 43/22
U.S. Cl. 260—613 D 9 Claims

Novel substituted haloalkoxy- or haloalkylthio-phenol or thiophenol compounds corresponding to the formula:



wherein

Each X independently represents hydrogen, bromo, chloro or fluoro, with the proviso that at least one X is always bromo, chloro or fluoro;

Y and Y′ each independently represent oxygen or sulfur;

Each M independently represents bromo, chloro, fluoro, iodo, nitro or loweralkyl containing from 1 to about 4 carbon atoms, both inclusive, and

a represents an integer of from 1 to 3, both inclusive.

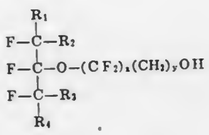
The novel compounds of the present invention are suitable for use as herbicides, fungicides and insecticides, and are further useful as intermediates in the preparation of substituted ethyl phenoxyacetate compounds, which in turn have utility as herbicides.

3,781,370
NOVEL FLUORINATED ALCOHOLS

Louis G. Anello, Orchard Park, and Richard F. Sweeney, Elma, N.Y., and Morton H. Litt, Cleveland, Ohio., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 721,089, Apr. 12, 1968, which is a continuation-in-part of application Ser. No. 633,359, Apr. 25, 1967, now Patent No. 3,514,487. This application Dec. 18, 1970, Ser. No. 99,722
Int. Cl. C07c 43/00
U.S. Cl. 260—615 F 5 Claims

Novel alcohols of the formula:



wherein

(a) R_1–R_4 are each independently selected from the group consisting of F, Cl, and perhaloalkyl groups having from 1–9 carbon atoms in which the halo atoms are selected from fluoro and chloro, or when taken together the R_1 and R_4 groups may be perhaloalkylene groups forming a cycloaliphatic structure having from 4–6 carbon atoms in which the halo atoms are selected from fluoro and chloro, with the proviso that no more than three of the R_1–R_4 groups are perhaloalkyl groups; and

(b) *x* may be an odd or even integer from 3–20 and *y* may be an odd or even integer from 2–20;

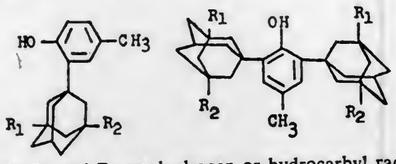
are useful as surfactants and as solvents for solution polymerization, and as intermediates for the production of a variety of acids, acid derivatives and polyacrylates which are valuable as surfactants and oil, stain and water repellent compositions.

3,781,371
2-ADAMANTYL- AND 2,6-DIADAMANTYL-p-CRESOLS

Alfred F. Talbot, Wallingford, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Jan. 24, 1973, Ser. No. 326,343
Int. Cl. C07c 39/12
U.S. Cl. 260—619 D 11 Claims

New adamantane substituted cresols having the structures:



wherein R_1 and R_2 are hydrogen or hydrocarbyl radicals containing from 1 to 10 carbon atoms selected from the group of alkyl, cycloalkyl and aryl. The novel compositions of matter are useful as polymer stabilizers which inhibit the decomposition of hydrocarbon polymers like polyethylene, polypropylene, polybutenes, styrenebutadiene copolymers, poly(4 methyl pentene) and the like.

3,781,372
PROCESS FOR PURIFICATION OF HEXACHLOROPHENE

Leon M. Polinski, North Plainfield, N.J., and Milton M. Sonn, Bronx, N.Y., assignors to Givaudan Corporation, Clifton, N.J.

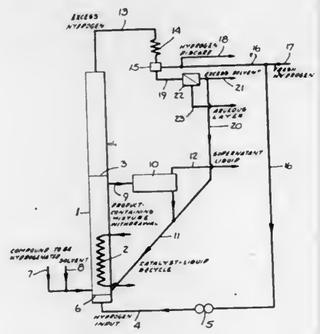
No Drawing. Filed Apr. 13, 1971, Ser. No. 133,711
Int. Cl. C07c 37/22
U.S. Cl. 260—619 A 9 Claims

There is provided a novel method of purifying hexachlorophene by removing therefrom unreacted trichlorophenol. The method comprises treating solutions of hexachlorophene contaminated with trichlorophenol which is a starting material in the process of manufacture of the principal product, with molecular sieves of predetermined pore size which selectively remove the trichlorophenol.

3,781,373
CONTINUOUS PROCESS FOR CONDUCTING LIQUID PHASE CHEMICAL REACTIONS

Georges Gobron and Robert Pipon, Melle, France, assignors to Melle-Bezons, Melle, France

Original application Mar. 9, 1967, Ser. No. 621,881, now Patent No. 3,546,296. Divided and this application Dec. 4, 1970, Ser. No. 95,074
Claims priority, application France, Mar. 10, 1966, 52,904
Int. Cl. C07c 31/18
U.S. Cl. 260—635 C 4 Claims



This disclosure describes a process and apparatus for continuously carrying out a reaction of the type in which

a gaseous phase is dispersed throughout a liquid phase to maintain a particulate solid suspended in the liquid phase. The reaction is carried out in an elongated reaction vessel while continuously introducing liquid phase, and continuously withdrawing liquid phase containing solid phase and dissolved products. A portion of the liquid phase containing the dissolved products is continuously collected and a portion, together with the solid phase is returned to the reaction mixture. The reaction apparatus is designed so that under the conditions of the reaction there is a continuous flow of the liquid phase throughout the apparatus without pumping.

3,781,374
METHOD FOR THE ISOLATION OF TETRANITROMETHANE FROM A SOLUTION OF NITRIC ACID WITH COMPARATIVELY LOW CONTENTS OF TETRANITROMETHANE

Kåre Ragnvald Fossan, Nora, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

No Drawing. Filed Dec. 11, 1972, Ser. No. 314,071
Claims priority, application Sweden, Aug. 3, 1972, 10,098/72
Int. Cl. C07c 79/14
U.S. Cl. 260—644 4 Claims

A method for the isolation of tetranitromethane from a solution of nitric acid with comparatively low contents of tetranitromethane is disclosed according to which method a mixture comprising tetranitromethane and nitric acid is subjected to distillation to cause an azeotropic mixture of 30% of tetranitromethane and 70% of HNO_3 to evaporate, whereafter the distillate consisting of the azeotropic mixture is added with water in order to break the azeotrope.

3,781,375
PROCESS FOR PREPARATION OF 1,5-DIMETHYL NAPHTHALENE AND/OR 1,6-DIMETHYL NAPHTHALENE AND CATALYST COMPOSITION TO BE USED FOR SAID PROCESS

Takeo Shima, Takanori Urasaki, Isau Oka, and Wataru Funakoshi, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,615
Claims priority, application Japan, Dec. 26, 1970, 45/129,786; Sept. 29, 1971, 46/76,193
Int. Cl. C07c 15/24
U.S. Cl. 260—668 D 16 Claims

In the process for preparing 1,5-dimethyl naphthalene and/or 1,6-dimethyl naphthalene by catalytically dehydrogenating 1,5-dimethyl tetralin and/or 1,6-dimethyl tetralin at 300–450° C. in the gas phase in the presence of a dehydrogenation catalyst, an improvement wherein the gas phase catalytic dehydrogenation is carried out in the presence of a catalytic amount of a chromia-alumina catalyst.

3,781,376
DEHYDROGENATION PROCESS AND CATALYST

Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

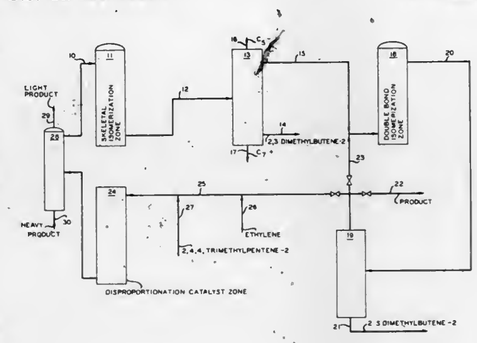
No Drawing. Filed June 30, 1971, Ser. No. 158,531
Int. Cl. C07c 3/28, 11/12
U.S. Cl. 260—683.3 10 Claims

Magnesium chromites promoted with aluminum have been found to be superior to chromia-alumina type dehydrogenation catalysts, for example, in the dehydrogenation of n-butane. The aluminum is either added to the preformed magnesium chromite or is incorporated into the spinel structure of the chromite itself or added in both ways. The aluminum will be present in the catalyst from all sources in an atomic ratio of Al:Cr of 0.0004 to 1.2:1. The atomic ratio will more usually be 0.04 to 0.8:1, Al:Cr.

3,781,377
ISOMERIZATION OF NEOHEXENE

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company

Continuation-in-part of abandoned application Ser. No. 859,815, Sept. 22, 1969. This application Dec. 6, 1971, Ser. No. 205,377
Int. Cl. C07c 5/24
U.S. Cl. 260—683.2 11 Claims



Neohexene is skeletally isomerized to 2,3-dimethylbutene-2 with excellent selectivity and conversion utilizing an alumina catalyst containing 0.1 to 0.2 weight percent sodium oxide and having a surface area of 150 to 180 square meters per gram. 2,3-dimethylbutene-1 produced in the reaction is double bond-isomerized to provide additional 2,3-dimethylbutene-2. Where the neohexene is produced by disproportionation of 2,4,4-trimethylpentene-2 and ethylene, a dimethylbutene-1 fraction containing methylpentenes from the second isomerization step can be advantageously fed to the disproportionation catalyst zone, thereby eliminating the problem of separating the methylpentenes.

3,781,378
HIGH TEMPERATURE MEMBRANE MATERIALS

Simon W. Kantor, Schenectady, and Peter C. Juliano, Scotia, N.Y., assignors to General Electric Company

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,973
Int. Cl. C08g 47/10
U.S. Cl. 260—824 R 5 Claims

Block copolymers of polydiorganosiloxane and polycarbonate are provided having improved heat distortion and useful as high temperature membrane material. The polydiorganosiloxane-polycarbonate block copolymer membranes can be steam sterilized at elevated temperatures without altering membrane structure. A method for making such block copolymers also is provided utilizing certain dihydric phenols derived from cyclic ketones such as fluorenyl bisphenols, to make the polycarbonate blocks.

3,781,379
POWDERED COATING COMPOSITIONS CONTAINING GLYCIDYL METHACRYLATE COPOLYMERS WITH ANHYDRIDE CROSSLINKING AGENTS AND FLOW CONTROL AGENT

Ares N. Theodore, Farmington, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,224
Int. Cl. C08g 45/04
U.S. Cl. 260—836 9 Claims

Powder coating compositions are disclosed. In general, individual powder coating compositions of this invention are a mixture of several materials. One of the important materials is a copolymer of glycidyl methacrylate and an ethylenically unsaturated compound

formed to obtain a copolymer with a glass transition temperature in the range of 40° C. to 90° C. and a molecular weight ($\overline{M}_n$) in the range of 2500 to 8500. The glacidyl methacrylate is present in the copolymer from at least about 5% by weight to no more than about 20% by weight. Another important material of each coating composition is a crosslinking agent formed in an anhydride of a dicarboxylic acid present in the amount of 0.4 to 1.0 anhydride groups for each epoxy group in the copolymer, A third important material used in forming each powder coating composition is a flow control agent which forms at least 0.05% by weight of the mixture. The flow control agent is a polymer having a molecular weight ($\overline{M}_n$) of at least 1000. The flow control agent also has a glass transition temperature at least 50° C. below the glass transition temperature of the copolymer. Other materials such as pigments, catalysts, antistatic agents and plasticizers may be used in individual compositions.

3,781,380
POWDER COATING COMPOSITIONS CONTAINING GLYCIDYL ESTER COPOLYMERS, CARBOXY TERMINATED POLYMERIC CROSSLINKING AGENTS, AND FLOW CONTROL AGENTS

Santokh S. Labana, Dearborn, and Yun Feng Chang, Plymouth, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,229
Int. Cl. C08g *45/04*
U.S. Cl. 260—836 **22 Claims**

Powder coating compositions are disclosed. In general, individual powder coating compositions are a mixture of the following materials. A copolymer of glycidyl methacrylate and an ethylenically unsaturated compound is formed in such proportions as to obtain a copolymer with a glass transition temperature in the range of 40° C. to 90° C. and a molecular weight ($\overline{M}_n$) in the range of 2500 to 8500. The glycidyl methacrylate is present in the copolymer from at least about 8% by weight to no more than about 30% by weight. Another material of the coating composition is a cross linking agent formed of a carboxy terminated polymer present in the amount of 0.8 to 1.1 carboxy groups for each epoxy group in the copolymer. A third material used in forming the powder coating mixture is a flow control agent which forms at least 0.05% by weight of the mixture. The flow control agent is a polymer having a molecular weight ($\overline{M}_n$) of at least 1000. The flow control agent also has, at the baking temperature of the powder coating composition, a lower surface tension than the surface tension of the copolymer.

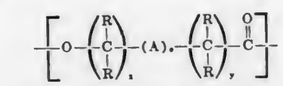
3,781,381
NYLON POLYMERS BLENDED WITH CYCLIC ESTER POLYMERS

Joseph Victor Koleske and Clyde Jesse Whitworth, Jr., Charleston, W. Va., and Robert Dean Lundberg, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 812,314, Apr. 1, 1969. This application May 6, 1971, Ser. No. 140,951
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 PE **12 Claims**

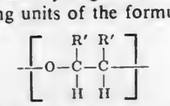
Uniform, thermoplastic, normally solid blends containing cyclic ester polymers containing recurring units of the formula

(I)



wherein each R, individually, is selected from the class consisting of hydrogen, alkyl, halo, and alkoxy; A is the oxy group; x is an integer from 1 to 4; y is an integer from 1 to 4; z is an integer of zero or one; with the provisos that (a) the sum of $x+y+z$ is at least 4 and not greater than 7, and (b) the total number of R variables which are substituents other than hydrogen does not exceed 3, with or without recurring units of the formula

(II)



wherein each R′ is selected from the class consisting of, individually, hydrogen, alkyl, cycloalkyl, aryl, and chloroalkyl, and together with the ethylene moiety of the oxyethylene chain of Unit II, a saturated cycloaliphatic hydrocarbon ring having from 4 to 8 carbon atoms, and thermoplastic, normally solid polymer which can be a condensation polymer, and/or an addition polymer of olefinically unsaturated monomers having no more than one hydrogen bonded to each carbon of each olefinically unsaturated group thereof, including such polymers as cellulose derivatives, nylons, polyester polymers, polyoxyalkylenes, polycarbonates, poly(fluorocarbons), coumarone-indene resins, maleic acid or anhydride addition polymers and copolymers, stilbene addition polymers and copolymers, chlorinated polyethers, aromatic poly(hydroxy ether) polymers, polysulfones, polypeptides, etc.

These novel blends are useful in the production of fibers, films, coatings, adhesives, wire and cable coatings, molding materials, extrusion materials, or shaped articles, having one or more unique properties, such as, dyeability, improved stress crack resistance, improved optical properties, e.g., improved hiding power, low haze, high gloss and/or high light transmission, improved plasticization, improved toughness, improved melt processability, improved impact resistance, and/or improved ability to disperse additives, such as, fillers, coloring agents, antioxidants, extenders, etc.

3,781,382
THERMOPLASTIC RESIN MIXTURE AND PROCESS FOR PRODUCING THE SAME

Shinichi Izawa, Tokyo, and Kunio Toyama, Kazuhiko Harada, and Yoshiaki Sugawara, Kanagawa, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,171
Claims priority, application Japan, Sept. 8, 1970, 45/78,220
Int. Cl. C08f *27/00*; C08g *43/02*
U.S. Cl. 260—874 **6 Claims**

Polyphenylene ether compositions which are useful for parts of electric devices, and having particle sizes of 5 micron or larger, together with aromatic monovinyl compound polymers. They are prepared by the oxidative polymerization of 2,6-dimethylphenol or the like by air, in the presence of a catalyst therefor, aromatic monovinyl compound and a medium which dissolves the above-mentioned compounds but does not dissolve polyphenylene ether having a specific viscosity of 0.25 or more, wherein the concentration of the above-mentioned phenol is 15 to 35% by weight, and the polymerization product is dispersed in water and then the dispersion is polymerized to polymerize the aromatic vinyl compound.

3,781,383
IMPACT VINYL AROMATIC POLYMERS AND THEIR PREPARATION

Arnold B. Finestone and Richard C. Westphal, Leominster, and Charles Brac, Jr., Sterling, Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.

No Drawing. Continuation of abandoned application Ser. No. 850,640, Aug. 15, 1969. This application Jan. 24, 1972, Ser. No. 220,526
Int. Cl. C08f *19/08*
U.S. Cl. 260—876 **19 Claims**

Impact vinyl aromatic polymers having improved surface appearance, good impact and tensile strengths and good flow characteristics are prepared by mass polymerizing, until about 2 to 15% of the monomer has been converted to polymer, at least one monovinyl aromatic compound having dissolved therein at least one 1,3-butadiene rubbery polymer, adding a mercaptan molecular weight modifying agent to the polymerization mixture and completing the polymerization.

3,781,384
POLYMERIZATION OF ABS RESINS IN THE PRESENCE OF UNSATURATED ALPHA-METHYLSTYRENE DIMERS

Arnold B. Finestone, Leominster, Jack Milgrom, Concord, and Stephen V. Slovenkal, Leominster, Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.

No Drawing. Continuation of abandoned application Ser. No. 850,639, Aug. 15, 1969. This application Jan. 24, 1972, Ser. No. 220,524
Int. Cl. C08f *15/40, 19/02, 19/08*
U.S. Cl. 260—879 **16 Claims**

Solvent resistant polymers having improved surface appearance, and good impact and tensile strengths are prepared by mass polymerizing, until about 2 to 15% of the monomeric components are converted to polymer, a monomeric mixture of at least one monovinyl aromatic compound and at least one unsaturated organonitrile compound, the monomeric mixture having dissolved therein at least one rubbery polymer, adding unsaturated alpha-methylstyrene dimers to the polymerization mixture and completing the polymerization.

3,781,385
POLYMERIC PHENOLIC PHOSPHOROUS ACID ESTER AMIDES

Elmar H. Jancis, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,077
Int. Cl. C07f *9/08, 9/12*
U.S. Cl. 260—930 **12 Claims**

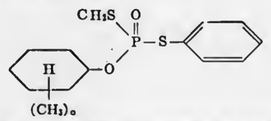
Polymeric phenolic phosphorous ester amides, made by reacting an alkylated hydroquinone (e.g., 2,5-di-tert.-butylhydroquinone) with phosphorus trichloride and subsequently reacting the product with an amine (e.g., diisopropylamine), are useful as stabilizers for polymers (e.g., polypropylene, polyvinyl chloride EPDM)..

3,781,386
O-(METHYLCYCLOHEXYL)-S-METHYL-S-PHENYL-PHOSPHORODITHIOLATES

Shigeo Kishino, Yasuo Yamada, Yoshio Kurahashi, and Toyohiko Kume, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

No Drawing. Filed July 7, 1972, Ser. No. 269,699
Claims priority, application Japan, July 16, 1971, 46/52,393
Int. Cl. A01n *9/36*; C07f *9/16*
U.S. Cl. 260—958 **7 Claims**

O - (methylcyclohexyl)-S-methyl-S-phenyl-phosphorodithiolates of the general formula



(I)

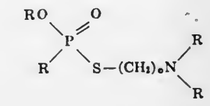
in which n is 1 or 2, which possess fungicidal and bactericidal properties.

3,781,387
PREPARATION OF O-ALKYL S-DIALKYL-PHOSPHONOTHIOLATES

Arthur Henry Ford-Moore, Salisbury, and Alan Bebbington, Wistaston, Crewe, England, assignors to the Minister of Supply in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland

No Drawing. Filed Nov. 2, 1956, Ser. No. 620,155
Claims priority, application Great Britain, Nov. 3, 1955, 31,438/55
Int. Cl. C07f *9/40*
U.S. Cl. 260—979 **4 Claims**

1. Process for the production of O-alkyl S-dialkylaminoalkyl alkylphosphonothiolates of the formula:



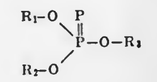
in which R denotes lower alkyl groups of not more than 3 carbon atoms and n represents a number from 1 to 3, which process comprises the half hydrolysis of an O,O-dialkyl alkylphosphonothionate with ethanolic sodium hydroxide by heating the mixture at reflux temperatures to form a monoalkyl hydrogen alkylphosphonothionate, separating the said monoalkyl hydrogen compound and reacting the same with sodium methoxide in methanol to form the corresponding sodium salt, then removing the methanol by azeotropic distillation with benzene and reacting the said sodium salt with a dialkylaminoalkyl chloride by heating the mixture at reflux temperatures and then allowing the mixture to cool to room temperature, ading a low-boiling hydrocarbon to precipitate the sodium chloride by-product, filtering the same and isolating the product from the filtrate by distillation.

3,781,388
PHOSPHATES

Herbert Jenkner and Otto Konigstein, Cologne, Germany, assignors to Chemische Fabrik Kalk GmbH

No Drawing. Filed Sept. 21, 1971, Ser. No. 182,543
Claims priority, application Germany, Sept. 25, 1970, P 20 47 195.8
Int. Cl. C07f *9/08*
U.S. Cl. 260—953 **9 Claims**

A flame-proofing agent, to polymers, of the formula:



R_1 being an halogenated alkyl group; R_2 is an alkyl group and R_3 is a hydroxy alkyl group.

3,781,389
PROCESS FOR THE PRODUCTION OF SUBSTITUTED THIONOPHOSPHORYL CHLORIDES

Peter Beutel, Mannheim, and Karl-Heinz Koenig, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed June 21, 1971, Ser. No. 155,229
Claims priority, application Germany, July 21, 1970, P 20 36 048.9
Int. Cl. C07f *9/20*
U.S. Cl. 260—986 **11 Claims**

A process for the production of substituted thionophosphoryl chlorides by reaction of thionophosphoric acids with phosgene.

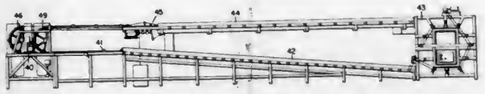
3,781,390
CONTINUOUS MOLDING METHOD

Howard F. Wells, Rochester, N.Y., assignor to The Schlegel Manufacturing Co., Inc., Rochester, N.Y.

Application Jan. 22, 1969, Ser. No. 814,868, now Patent No. 3,700,368, which is a continuation-in-part of abandoned application Ser. No. 460,404, June 1, 1965. Divided and this application July 19, 1972, Ser. No. 273,172

Int. Cl. B29c *5/10*

U.S. Cl. 264—47 8 Claims



A continuous foamed strip molding method uses two continuous lengths of mold halves that snap-fit together to hold the foamed strip and are flexible enough to be driven in a curved path with one mold half inside the other for high speed and adequate cure time in relatively small space.

3,781,391
METHOD FOR PRODUCING ACRYLIC HOLLOW FIBERS

Keitaro Shimoda, Keijiro Kuratani, and Akira Sugiura, Saidaiji, Japan, assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 792,819, Jan. 21, 1969. This application July 25, 1972, Ser. No. 274,935

Claims priority, application Japan, Jan. 24, 1968, 43/4,477

Int. Cl. D01f *7/00*

U.S. Cl. 264—53 10 Claims

The formation of acrylic fibers with void spaces therein by wet spinning employing aqueous thiocyanate salts as both polymer solvent and fiber coagulant by dispersing selected volatile liquids in the spin dope at a concentration of 25–100 weight percent based on the weight of polymer therein, (a) spinning the spin dope into the coagulant maintained at less than about 20° C., (b) washing the coagulated wet gel fibers at a temperature below about 40° C. and (c) thereafter passing the fibers through boiling water or water vapor prior to or in conjunction with hot-drawing so as to volatilize the volatile liquid and obtain void spaces within the fibers.

3,781,392
PRODUCTION OF SINTERED POROUS METAL FLUORIDE PELLETS

Lowell W. Anderson and Michael J. Stephenson, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 7, 1971, Ser. No. 187,573

Int. Cl. B01j *1/22;* C01f *7/50;* C04b *35/64*

U.S. Cl. 264—65 7 Claims

Porous pellets characterized by a moderately reactive crust and a softer core of higher reactivity are produced by forming agglomerates containing a metal fluoride powder and a selected amount of water. The metal fluoride is selected to be sinterable and essentially non-reactive with gaseous fluorinating agents. The agglomerates are contacted with a gaseous fluorinating agent under controlled conditions whereby the heat generated by localized reaction of the agent and water is limited to values effecting bonding by localized sintering.

3,781,393
PROCESS FOR THE CONTINUOUS PRODUCTION OF A RANDOM-FILAMENT FLEECE

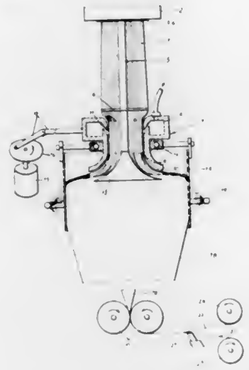
Karl-Heinz Feltgen, Dormagen, and Günther Espanion, Cologne-Mauenheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Original application Sept. 7, 1968, Ser. No. 848,138, now Patent No. 3,621,531. Divided and this application July 15, 1971, Ser. No. 165,779

Claims priority, application Germany, Sept. 7, 1968, P 17 85 302.0

Int. Cl. B29c *17/04*

U.S. Cl. 264—89 6 Claims



Process for forming a random-filament fleece by supplying filaments to a trumpet-shaped aerodynamic takeoff which throws the filaments against a collecting means where the filaments adhere to form a tubular fleece.

3,781,394
METHOD FOR FORMING ARTICLES FROM PLASTIC SHEET MATERIAL

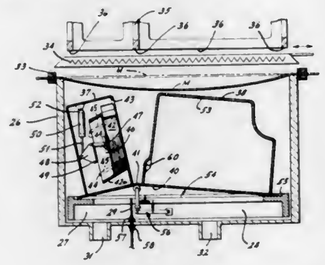
Norman F. Houghton, Connersville, Ind., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Mar. 20, 1972, Ser. No. 235,968

The portion of the term of the patent subsequent to Jan. 9, 1990, has been disclaimed

Int. Cl. B29c *17/04*

U.S. Cl. 264—89 2 Claims



A vacuum-forming operation in which a pair of adjacent compartment liners are formed from a single sheet of thermoplastic material. A sheet of thermoplastic material is disposed to extend over the molds, and is heated, causing it to soften while the molds are held in pivoted position in which the confronting surfaces are substantially spaced from one another. Mold assist-plugs and the molds are then moved, relative to one another, to urge the sheet into general close conformity with the molds. While the sheet of material is still soft, the assist-plugs further are caused to engage the mold frame structure, through the

intermediacy of the sheet, pivoting the frame structure and causing adjacent wall portions of the molds to move toward one another and assume their closely spaced position. Air entrapped between the heated sheet and the walls of the mold not provided with the auxiliary section is then evacuated through a number of small ports or vents in the walls, thereby forming one of the desired liners, whereupon the auxiliary section of the other mold is projected and air entrapped between the heated sheet and the mold is evacuated, forming the other of the desired liners with an undercut region. The liners are then cooled, the extended auxiliary mold section is retracted from the undercut region, and the liners are stripped as a unit from the molds.

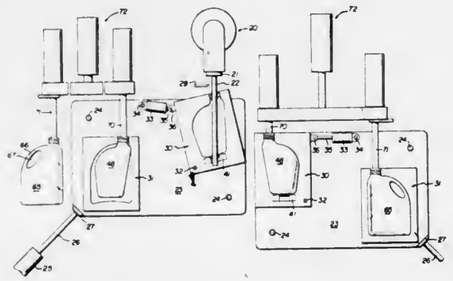
3,781,395
METHOD FOR BLOW MOLDING PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Jan. 28, 1971, Ser. No. 110,685

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 8 Claims



A method of blow molding plastic articles in two blowing stages. A freely extruded pendant tubular parison is first blown into a pre-form, then the pre-form, while at the temperature most conductive to orientation, is blown to its final configuration. By performing certain operations on the pre-form prior to the final blowing step, improved products can be made. For example, by pinching shut a portion of the pre-form, handled containers can be made on a free extrusion blow molding machine. By stretching the pre-form prior to final blowing, containers of increased top-load or stacking capabilities can be made.

3,781,396
METHOD OF MANUFACTURING SYNTHETIC RESIN-CEMENT PRODUCTS

Minoru Okuda, Satoru Aikawa, Hiromu Kaidzu, and Eiichi Tajima, Tokyo, Japan, assignors to Tajima Oyo Kako Co., Ltd., Tokyo, Japan

No Drawing. Filed Feb. 17, 1972, Ser. No. 227,260

Claims priority, application Japan, Feb. 26, 1971, 46/9,385

Int. Cl. B28c *5/00;* B28b *3/12, 3/20*

U.S. Cl. 264—140 5 Claims

A method of manufacturing products of synthetic resin-cement, which comprises the means of shaping a compound consisting mainly of a thermoplastic synthetic resin, cement, and sand and/or asbestos as the filler in addition thereto by kneading while applying heat, and the means of hardening the resulting products by heating while applying pressure in the presence of water.

3,781,397
CONTINUOUS PRODUCTION OF PREFORMED MOLDING MATERIALS

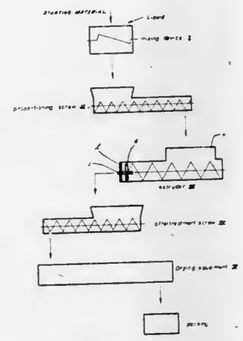
Richard Gauer, Wiesbaden, and Uwe Skurnia and Manfred Richter, Wiesbaden-Biebrich, Germany, assignors to Chemische Werke Albert, Wiesbaden-Biebrich, Germany

Continuation of abandoned application Ser. No. 777,299, Nov. 20, 1968. This application Dec. 10, 1970, Ser. No. 96,983

Claims priority, application Germany, Nov. 22, 1967, P 16 29 732.8

Int. Cl. B01j *2/20*

U.S. Cl. 264—142 3 Claims



A process for the continuous production of dust-free preformed molding materials, substantially uniform in geometrical and physical properties and chemical constitution, in a single step and without an intermediate drying, wherein a hardenable synthetic resin is mixed with reinforcing materials and additives in a mixing device, then continuously fed by a metering screw into an extruder provided with a perforated disc and a cutter head, in which it is compressed, preformed and precut, wherein the extrudate is passed to an aftertreatment screw wherein it is divided in granules having a substantially uniform length, smooth surface and rounded ends and then dried.

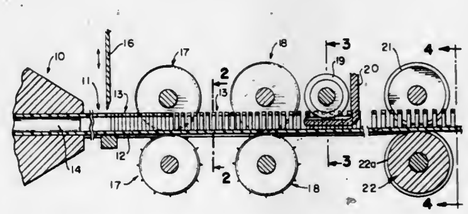
3,781,398
HOOK FASTENER ELEMENT AND METHOD OF MANUFACTURE

George H. Erb, Rutland, Vt., assignor to American Velcro, Inc.

Filed May 11, 1972, Ser. No. 252,239

Int. Cl. B28b *11/16;* B29d *5/00*

U.S. Cl. 264—146 10 Claims

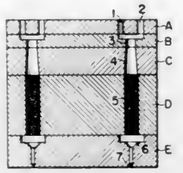


A hook fastener element formed from extruded stock having a base sheet and adjacent longitudinally arranged parallel members of generally heart-shaped cross section integrally connected to said base and apparatus and method for forming hooks from said extruded stock.

3,781,399
METHOD FOR PRODUCING A COMPOSITE FIBER

Hidehiko Kobayashi, Kiichiro Sasaguri, and Masaaki Shiga, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sept. 16, 1969, Ser. No. 858,295
Claims priority, application Japan, Oct. 2, 1968, 43/71,742; Nov. 1, 1968, 43/79,271, 43/79,272
Int. Cl. B29f *3/10*
U.S. Cl. 264—171 2 Claims

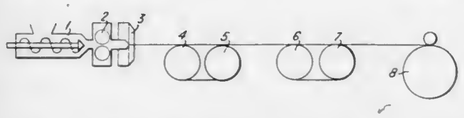


A method for producing a composite polymeric fiber which involves introducing a first polymer having fiber forming properties into a first inlet zone, introducing a second polymer having fiber forming properties into a second inlet zone, said first and second polymers having inherently poor adherent properties relative to each other, causing *all* of said first and second polymers exiting from said first and second inlet zones to flow into a mixing zone that does not communicate with any other inlet zones, said mixing zone being at least partially filled with a packing material having a diameter of about 0.2 mm. to 2 mm. and which forms a bed at least 5 mm. thick and causing *all* of the polymers flowing through said packed mixing zone to thereafter be extruded through a *single* spinning hole as a *single* composite fiber, the single composite fiber exiting from said single spinning hole having a jagged boundary interface for the component polymers, said jagged boundary interface being minutely and irregularly complicated when viewed from both the transverse and longitudinal axes of the filament.

3,781,400
PROCESS FOR PRODUCING ELASTIC FILAMENTS AND BRISTLES

Paul Couchoud and Vincent Rochina, Lyons, France, assignors to Societe Rhodiaceta, Paris, France

Original application Dec. 24, 1969, Ser. No. 887,987, now abandoned. Divided and this application Sept. 28, 1971, Ser. No. 184,631
Int. Cl. D01d *5/12*
U.S. Cl. 264—210 F 11 Claims

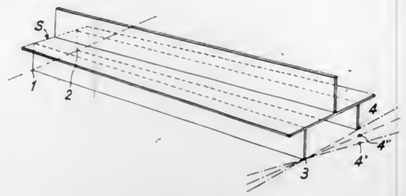


The invention comprises filaments and bristles having a basis of a diorganopolysiloxane which combine a kilometric breaking strength above 1.25 with an elongation at break of at least 300%. They are made from diorganopolysiloxanes in which at least 60% of the organic substituent groups are methyl and a small proportion (0.3–2%) are vinyl, by extrusion followed by stretching, a heat treatment to "vulcanize" the products, a further stretch and preferably a further heat treatment. The products may also be given a third heat treatment while wound up on a support. The composition which is extruded contains, besides the diorganopolysiloxane, a filler, a cross-linking catalyst, preferably of the free radical type, and optionally a plasticizer, especially an organisilicon compound.

3,781,401
METHOD OF MAKING SKEW ELEMENTS OF PRESTRESSED CONCRETE

Jean Courbon, Tour de Seine, 39 Quai de Grenelle, Paris XV, France

Continuation-in-part of application Ser. No. 882,586, Dec. 5, 1969. This application Jan. 11, 1972, Ser. No. 217,010
Int. Cl. B28b *21/60*
U.S. Cl. 264—228 5 Claims

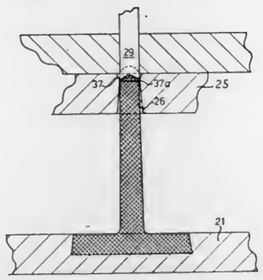


This method of producing a skew structure from a rectilinear structure without causing its ultimate distortion to impose a stress thereto, consists in applying firstly to said structure, during the storage thereof for curing purposes. a provisional distortion in the same direction as said ultimate distortion but of higher value, thus introducing a stress substantially equal, but in a direction substantially opposite, to that introduced by the distortion necessary for restoring the corresponding structure to the desired ultimate distortion, and subsequently imposing said ultimate distortion to said structure after a suitable time period.

3,781,402
PROCESS FOR THE PRODUCTION OF BRUSHES OR A PART THEREOF INCLUDING THE BRISTLES

Peter Hanggi, 23b Birchlerstrasse, 8600 Dubendorf 2, Switzerland, and Hermann Budmiger, 114 Muhlmatt, 4206 Seewen, Switzerland

Filed Nov. 12, 1971, Ser. No. 198,163
Claims priority, application Switzerland, Nov. 12, 1970, 16,769/70
Int. Cl. B29c *17/02*
U.S. Cl. 264—243 7 Claims



Brushes or parts thereof including the bristles are produced by injecting plastic material into the cavity of a mold comprising a plurality of segments each having at least one opening therein, the openings forming the cavity. The openings in the segments at opposite ends of the cavity are designed to retain a base section and a head portion respectively of the molded plastic material so that when these two segments are subsequently moved away from each other the connecting plastic material is stretched forming bristle shafts of improved strength with the molecules therein oriented. The head portion is then either severed from the shaft or means is provided for pressing the head portion through the hollow spaces of each of the intermediate segments to remove the brush or part thereof from the mold.

3,781,403
RECOVERY OF PROTACTINIUM FROM MOLTEN FLUORIDE NUCLEAR FUEL COMPOSITIONS

Charles F. Baes, Jr., and Carlos E. Bamberger, Oak Ridge, and Robert G. Ross, Kingston, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

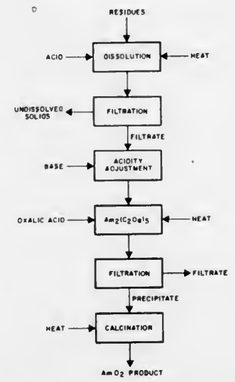
Filed Nov. 30, 1971, Ser. No. 203,246
Int. Cl. C01g *57/00*
U.S. Cl. 423—5 2 Claims

A method is provided for separating protactinium from a molten fluoride salt composition consisting essentially of at least one alkali and alkaline earth metal fluoride and at least one soluble fluoride of uranium or thorium which comprises oxidizing the protactinium in said composition to the +5 oxidation state and contacting said composition with an oxide selected from the group consisting of an alkali metal oxide, an alkaline earth oxide, thorium oxide, and uranium oxide, and thereafter isolating the resultant insoluble protactinium oxide product from said composition.

3,781,404
AMERICIUM RECOVERY FROM REDUCTION RESIDUES

William V. Conner, Nederland, and Stephen G. Proctor, Denver, Colo., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed May 18, 1972, Ser. No. 254,690
Int. Cl. C01g *65/00*
U.S. Cl. 423—11 3 Claims



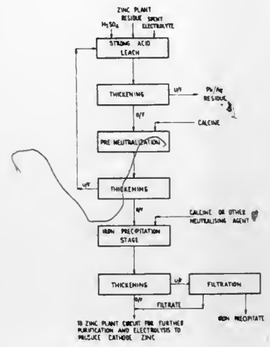
A process for separation and recovery of americium values from container or "bomb" reduction residues comprising dissolving the residues in a suitable acid, adjusting the hydrogen ion concentration to a desired level by adding a base, precipitating the americium as americium oxalate by adding oxalic acid, digesting the solution, separating the precipitate, and thereafter calcining the americium oxalate precipitate to form americium oxide.

3,781,405
METHOD OF REMOVING DISSOLVED FERRIC IRON FROM IRON-BEARING SOLUTIONS

Robert William Allan, Moonah, Curzon John Haigh, Lindisfarne, and John Hamdorf, Howrah, Tasmania, Australia, assignors to Electrolytic Zinc Company of Australia Limited, Melbourne, Victoria, Australia

Filed Feb. 10, 1971, Ser. No. 114,293
Claims priority, application Australia, May 15, 1970, 1,223/70
Int. Cl. C01g *49/02*
U.S. Cl. 423—142 6 Claims

Aqueous acidic solutions containing dissolved ferric iron, together with any one or more of the cations zinc, copper, cobalt or nickel, such solutions having been prepared by the acid leaching of ores, concentrates, calcines, or residues containing iron and zinc, copper, cobalt or nickel, are treated to precipitate the iron in a form possessing greatly enhanced settling and filtering properties. The precipitation of the iron in this easily separable form



is conducted in an agitated reaction vessel to the contents of which are added the ferric iron bearing aqueous acidic solution and a neutralizing agent so that in the reaction vessel the dissolved ferric iron concentration is maintained at less than 1 gram per litre, the pH is maintained in the range 1.7 to 3.5, and the temperature is maintained in the range 50° C. to the boiling point.

3,781,406
PROCESS OF TREATING AUTO EXHAUST WITH SHRINKAGE RESISTANT COPPER ALUMINATE-RARE EARTH CATALYSTS

James F. Roth, Maryland Heights, James W. Gambell, Creve Coeur, and Charles R. Penquite, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed July 7, 1971, Ser. No. 160,549
Int. Cl. F01n *3/14;* B01j *9/04*
U.S. Cl. 423—213.2 14 Claims

A shrinkage resistant auto exhaust catalyst comprised of an alumina support and specified amounts of copper, chromium, and specified rare earth compounds, is employed under oxidizing conditions to oxidize carbon monoxide and hydrocarbons in exhaust.

3,781,407
INERT GAS SYSTEM FOR A TANKER

Tatsuo Kamijo and Densuke Nagakura, Yokohama, Japan, assignors to Mitsubishi Kakoki Kaisha, Tokyo, Japan

Filed Oct. 4, 1971, Ser. No. 186,004
Claims priority, application Japan, Feb. 24, 1971, 46/8,617
Int. Cl. C01b *17/00*
U.S. Cl. 423—242 8 Claims

An inert gas for flooding compartments or other oil containers of a tanker or other vessel is produced by stripping flue gas of its SO_2 content with an aqueous sodium hydroxide or sodium carbonate solution in a scrubber, and oxidizing the resulting sodium sulfite in the solution with atmospheric oxygen in the same scrubber, whereupon a sodium sulfate solution is obtained which may be discharged overboard without damage to marine life.

3,781,408
AIR POLLUTION CONTROL
Ping-Wha Lin, 506 S. Darling, Angola, Ind. 46703
Continuation-in-part of abandoned application Ser. No. 36,861, May 13, 1970. This application Mar. 16, 1972, Ser. No. 235,343
Int. Cl. B01j *9/04, 9/08;* C01l *17/00*
U.S. Cl. 423—244 10 Claims

Combustion gasses from fuel-burning furnaces are treated to separate solid particles such as fly ash and to oxidize the sulfur dioxide gas (SO_2) contained therein to sulfur trioxide (SO_3). The SO_3 is reacted with excess lime (CaO) to form calcium sulfate ($CaSO_4$). The $CaSO_4$, unspent lime particles, some of which have cracked outer shells of $CaSO_4$, and collected fly ash are packaged dry and used in appropriately blended form together with cement and sand, gravel, or rock to form construction materials, the average percentage of $CaSO_4$ therein being regulated to control the setting time of the cement. The proportion of the excess lime is automatically regulated by process-control devices which continuously monitor and control the reaction applying the parameters of fuel composition, and sulfur oxide level in the combustion gasses.

3,781,409
STABILIZATION OF HYDROGEN PEROXIDE
Theodore F. Munday, Kendall Park, and Kenneth J. Radimer, Little Falls, N.J., assignors to FMC Corporation, New York, N.Y.
No Drawing. Filed Feb. 28, 1972, Ser. No. 230,067
Int. Cl. C01b *15/02*
U.S. Cl. 423—273 9 Claims

Hydrogen peroxide is stabilized against decomposition with a high pH stock solution containing a water-soluble tin compound. Preferably a complexing agent is added either to the high pH stock solution or directly to the hydrogen peroxide solution. The resulting stabilized hydrogen peroxide solution has excellent shelf life and superior resistance to contaminant-induced breakdown of the stabilizing chemicals into a sludge.

3,781,410
PROCESS FOR THE CONCENTRATION AND DEFLUORINATION OF PHOSPHORIC ACID
Georg von Semel, Dortmund, Germany, assignor to Friedrich Uhde GmbH, Dortmund, Germany
Filed July 12, 1971, Ser. No. 161,842
Claims priority, application Germany, Sept. 12, 1970, P 20 45 180.3
Int. Cl. C01b *25/26*
U.S. Cl. 423—321 6 Claims

A process for raising the concentration of phosphoric acid from the 30 to 40 percent to 70 percent and more at low energy requirements while removing any fluorine components. Weak phosphoric acid is contacted and stripped with a low boiling substance that is substantially insoluble in water and phosphoric acid. The vapors are then condensed, the condensates collected and separated, the water expelled is discharged, and the substance is recycled in the process.

3,781,411
PROCESS FOR THE PRODUCTION OF HYDRAZOIC ACID
Charles M. Rowan, Jr., Fort Lauderdale, Fla., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 24, 1970, Ser. No. 92,373
Int. Cl. C01b *21/08*
U.S. Cl. 423—406 23 Claims

The production of hydrazoic acid by acidifying an alkali metal azide or alkaline earth metal azide is described. The by-product salt of the acid concurrently produced is separated from the liquid, and the separated liquid is brought into contact with further quantities of the alkali metal azide or alkaline earth metal azide. Azide and acid values which would otherwise be lost in the by-product stream are retained.

3,781,412
METHOD OF REDUCING POTASSIUM ION CONCENTRATION IN PERCHLORATE SOLUTIONS
Raymond C. Rhees, Henderson, Nev., assignor to Kerr-McGee Chemical Corp.
No Drawing. Filed Jan. 6, 1969, Ser. No. 789,416
Int. Cl. C01b *11/18*
U.S. Cl. 423—476 16 Claims

A method of reducing the potassium ion concentration in a perchlorate solution to less than about 5 mg. potassium per liter by contacting the perchlorate solution with crystals of the perchlorate salt of which the solution is formed. The potassium ions in the solution, upon contacting the crystals, exchange with ions in the crystals and are adsorbed on the crystals to thereby remove potassium from solution. The solution when separated from the crystals, provides a solution from which a perchlorate salt, substantially free of potassium impurities may be produced.

3,781,413
GAS PURIFICATION
Robert E. Opferkuch, Jr., Kettering, and Michael G. Konicek, Dayton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.
Filed Oct. 27, 1971, Ser. No. 192,847
Int. Cl. C01b *17/04*
U.S. Cl. 423—574 6 Claims

SO_2 and H_2S are removed from a gas containing either one, or both with one in stoichiometric excess of the other, by the reaction of SO_2 and H_2S in the presence of sulfuric acid.

For example, flue gas treatment in the presence of sulfuric acid solutions is possible at temperatures above 200° F., and preferably above the melting point of sulfur. By selecting the proper concentration of sulfuric acid solution, the water balance between the hot entering gas and the acid solution is maintained without the necessity to significantly cool the entering gas.

ERRATUM

For Class 423—574 see:
Patent No. 3,781,445

3,781,414
ORGOTEIN-POLYSTYRENE LATEX DIAGNOSTIC FOR RHEUMATOID FACTOR
Wolfgang Huber, San Francisco, Calif., assignor to Diagnostic Data, Inc., Mountain View, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 708,492, Feb. 27, 1968. This application Aug. 31, 1971, Ser. No. 176,731
Int. Cl. G01n *31/00, 33/16*
U.S. Cl. 424—12 10 Claims

The sensitivity of polystyrene latex susceptible to coagulation by rheumatoid factor-containing serum is increased by a mixture of such latex and orgotein.

3,781,415
PRODUCT, PROCESS AND COMPOSITION
Sandor Karady, Elizabeth, Seemon H. Pines, Murray Hill, Manuel G. Ly, New Brunswick, and Meyer Sletzinger, North Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Application Mar. 23, 1970, Ser. No. 22,076, which is a continuation-in-part of application Ser. No. 835,307, June 18, 1969, both now abandoned. Divided and this application Sept. 9, 1971, Ser. No. 179,225
Int. Cl. A61k *27/00*
U.S. Cl. 424—308 12 Claims

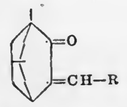
A novel compound is used to inhibit mammalian decarboxylase, the compound being selected from the group consisting of L-α-hydrazino-α-substituted - (3,4 - dihydroxyphenyl) propionic acid substantially free of the D isomer, the lower alkyl esters thereof, and the pharmaceutically acceptable salts thereof, wherein the substituent is lower alkyl. Compositions and method of treatment are included.

3,781,416
CARBON DISULFIDE DISINFECTANT FOR COCCIDIA OOCYSTS AND WORM EGGS
Karl-Georg Ellinger, Hamburg, and Henning Schumacher, Friedrichsgabe, Germany, assignors to Sterwin A.G., Zug, Switzerland
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,054
Int. Cl. A01n *11/06;* A61k *27/00*
U.S. Cl. 424—44 15 Claims

A method is provided for killing coccidia oocysts and worm eggs by contacting them with carbon disulfide which is released by adding an acid to a dithiocarbamate salt.

3,781,417
LIGHT PROTECTION AGENT FOR COSMETIC PURPOSES
Reiner Welters and Horst Russmann, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
No Drawing. Continuation-in-part of abandoned application Ser. No. 190,630, Oct. 19, 1971. This application Dec. 27, 1972, Ser. No. 318,998
Claims priority, application West Germany, Oct. 22, 1970, P 20 51 824.5
Int. Cl. A61l *23/00*
U.S. Cl. 424—59 13 Claims

Topical cosmetic compositions containing as an ultraviolet absorbent comprising a compound of the formula



wherein R is p-tolyl or styryl.

3,781,418
PROCESS FOR COLORING THE SKIN WITH γ-DIALDEHYDES
Jean Pomot, Neuilly-sur-Seine, and Georges Rosenbaum, Asnieres, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
No Drawing. Filed Oct. 21, 1970, Ser. No. 82,836
Claims priority, application Luxembourg, Oct. 22, 1969, 59,682; Mar. 6, 1970, 60,481; Sept. 30, 1970, 61,789
Int. Cl. A61k *7/02*
U.S. Cl. 424—63 2 Claims

A process for coloring the skin comprising applying to the skin in amounts sufficient to develop a coloring of the skin which resembles the tan coloring obtained by prolonged exposure to sunlight, a composition comprising a solution of gamma-dialdehyde.

3,781,419
SCILLILOIDGLYCOSIDE CONTAINING POISON COMPOSITIONS
Tsugiharu Tokunaga, 3–2–35 Yawatacho, Musashinoshi, Tokyo, Japan
No Drawing. Filed June 25, 1970, Ser. No. 49,941
Claims priority, application Japan, July 11, 1969, 44/54,553
Int. Cl. A01n *17/14;* C07c *173/00*
U.S. Cl. 424—84 10 Claims

An effective rodenticidal ingredient, insensitive to atmospheric moisture, is provided by complexing scilliloidglycoside with a phospholipid in the presence of cacao lipid and yoke lipid protein. The effective rodenticidal ingredient is then admixed with various known ingredients such as feeds, pigments, and the like, to form an effective rodenticidal composition.

3,781,420
ANTIBIOTIC TSUSHIMYCIN AND PRODUCTION THEREOF
Haruo Nishimura, Ashiya-shi, and Hideo Otsuka, Toyonaka-shi, Japan, assignors to Shionogi & Co., Ltd., Higashi-ku, Osaka, Japan
Continuation of abandoned application Ser. No. 762,036, Sept. 24, 1968. This application Dec. 19, 1969, Ser. No. 882,784
Claims priority, application Japan, Oct. 4, 1967, 42/63,957; Oct. 7, 1967, 42/64,842
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 6 Claims

A new antibiotic, tsushimycin, having the antibacterial properties with low toxicity, and a process for preparing the same being characterized by cultivating a tsushimycin-producing strain of microorganism belonging to the genus Streptomyces in an aqueous nutrient containing medium under aerobic conditions. Hydrogenated tsushimycin being produced by a catalytic reduction and having similar antibacterial properties and toxicity.

3,781,421
COMPOSITIONS FOR THE NUTRITION OF ANIMALS
Denise Mancy, Charenton, and Leon Ninet and Jean Preud'Homme, Paris, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Continuation-in-part of application Ser. No. 507,773, Nov. 15, 1965, now Patent No. 3,658,987, and a continuation of abandoned application Ser. No. 625,951, Mar. 27, 1967. This application Jan. 10, 1972, Ser. No. 216,830
Claims priority, application France, Nov. 18, 1964, 995,376; Apr. 4, 1966, 56,322
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 6 Claims

The antibiotic 8,036 R.P.—produced by the culture of *Streptomyces canadiensis* (NRRL 3155)—is used as a supplement for animal feedstuffs to accelerate the growth of domestic animals, more especially poultry.

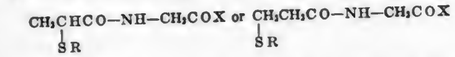
3781,422
THERAPEUTIC SOLUTION OF IRON AND LIPOSOLUBLE VITAMINS
Manfred Bohn, Hofheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengeselischaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Oct. 13, 1971, Ser. No. 189,044
Claims priority, application Germany, Oct. 15, 1970, P 20 50 630.3
Int. Cl. A61k *27/00*
U.S. Cl. 424—147 9 Claims

A solution, useful for the joint parenteral administration of iron and certain liposoluble vitamins to young animals, comprising colloidally dissolved iron, an ionogenic surface-active agent, one or more liposoluble vitamins such as A, D, or E, and a non-ionogenic surface-active agent. Methods of making such a solution.

3,781,423
METHOD FOR PREVENTING COLORING OF VITAMIN C
Katsuo Aoka, Nishinomiya, Kozo Yatani, Hikari, Eishi Kometani, Ibaraki, and Seiji Izuhara, Osaka Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan,
No Drawing. Filed Jan. 14, 1969, Ser. No. 791,192
Claims priority, application Japan, Jan. 18, 1968, 43/2,813
Int. Cl. A61k *15/00*
U.S. Cl. 424—175 23 Claims

Coloring of vitamin C compositions is prevented by

incorporating an effective amount, as an anti-coloring agent, of a mercaptopropionylglycine of the formula:



wherein R stands for H, acetyl or benzoyl and X for —OH or —NH_2, or a mixture of more than one of them, into a composition containing vitamin C.

3,781,424

HEMORRHOID TREATMENT PREPARATION PRODUCED FROM HOT CHERRY PEPPERS

Edwin K. Ponvert, 3713 Little Neck Point, Virginia Beach, Va. 23452

Continuation-in-part of application Ser. No. 656,700, July 28, 1967, which is a continuation-in-part of application Ser. No. 402,018, Oct. 6, 1964, both now abandoned. This application July 21, 1970, Ser. No. 56,826

Int. Cl. A61k *27/00*

U.S. Cl. 424—195 9 Claims

The present invention relates to a process, and the product thereof, whereby a new composition of matter is produced. This new composition of matter has no known chemical formula, it being a complex mixture of many chemicals of unknown organic structure. This new composition of matter, a soft solid residue of *Capsicum anuum*, is intended for oral administration in various forms, and prescribed dosages, to human beings suffering from hemorrhoids. Hemorrhoids, are not known to exist in animals. It is, therefore, intended as a hemorrhoidal remedy for the relief of hemorrhoids in mankind.

3,781,425

CONTROL OF INSECTS, NEMATODES AND ACARINAE WITH PHOSPHONYL-CARBAMYL-OXY-PHOSPHONATES

Henry Martin, Gellertstrasse 24, and Jozef Drabek, Herrengrabenweg 14, both of Basel, Switzerland

No Drawing. Original application Aug. 6, 1970, Ser. No. 61,819, now Patent No. 3,705,212. Divided and this application Nov. 14, 1972, Ser. No. 306,502

Claims priority application Switzerland, Aug. 11, 1969, 12,130/69

Int. Cl. A01n *9/36*

U.S. Cl. 424—204 8 Claims

2,2,2-trihalo - 1 - [O,O-dialkylphosphonylcarbamoyloxy]ethylphosphonic acid ester are very effective substances for combatting insects, nematodes, members of the order Acarina and plant-pathogenic bacteria and fungi. They may be applied in the form of pesticidal preparations.

3,781,426

PHOSPHORIC ACID ESTERS AND PESTICIDAL PREPARATIONS CONTAINING THEM

Ernst Beriger, Allschwil, and Ladislaus Pinter, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

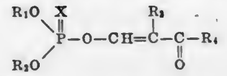
No Drawing. Original application July 24 1967, Ser. No. 655,289, now Patent No. 3,594,454. Divided and this application Mar. 9, 1971, Ser. No. 122,501

Claims priority application Switzerland, July 25, 1966, 10,735/66

Int. Cl. A01n *9/36*

U.S. Cl. 424—212 10 Claims

This invention relates to a compound of the formula



in which R_1 and R_2 are identical or different lower alkyl groups, X is an oxygen or a sulphur atom, R_3 represents a hydrogen atom, an alkyl group or a halogen atom and R_4 represents a lower alkoxy group, an alkyl group or an unsubstituted or substituted aryl group. The compounds are useful for combating insects and acarids.

3,781,427

PHOSPHORIC ACID ESTERS AND THEIR USE AS INSECTICIDES

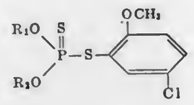
Ernst Beriger, Neuallschwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Apr. 27, 1970, Ser. No. 32,414, now Patent No. 3,725,513. Divided and this application Jan. 17, 1973, Ser. No. 324,468

Int. Cl. A01n *9/36*

U.S. Cl. 424—217 4 Claims

Dithiophosphates of the formula



wherein R_1 and R_2 represent alkyl radicals of up to 4 carbon atoms are effective pesticidal, agents, preferably for combating insects, nematodes and members of the order Acarina. The dithiophosphates may be used in pesticidal preparations.

3,781,428

HYDROPHOBIC INSECTICIDAL COMPOSITIONS

Claude Hennart, Aubervilliers, France, and Laszlo Moldovanyi, Basel, and Willy Roth, Strengelbach, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 5, 1971, Ser. No. 104,059

Claims priority, application Luxembourg, Jan. 9, 1970, 60,170

Int. Cl. A01n *9/36*

U.S. Cl. 424—219 24 Claims

Hydrophobic insecticidal compositions comprising as essential components certain volatile phosphoric or thiophosphoric acid esters, at least one straight—or branched—chain higher alkane having at least 18 carbon atoms and having a vapor pressure at 20° C. of less than 0.001 torr, and a melting point of less than 120° C., and at least one incorporating agent which has a vapor pressure at 20° C. of less than 0.01 torr, and a melting point of less than 120° C. and which is selected from certain alkanones, certain alkenones, certain alkanophenones, certain halogenated alkanes, certain hydrocarbons and halogenohydrocarbons having at least one benzene nucleus and certain carboxylic acid esters of alkanols or alkanediols. These compositions are useful in evaporators for producing an atmosphere toxic to insects.

3,781,429

METHOD OF INHIBITING ULCEROGENESIS INDUCED BY NON-STEROIDAL ANTI-INFLAMMATORY AGENTS

Ruth Partridge, Pearl River, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,710

Int. Cl. A61k *27/00*

U.S. Cl. 424—234 9 Claims

This disclosure describes the method of inhibiting the ulcerogenic effect induced by non-steroidal anti-inflammatory agents in mammals by administering orally the prostaglandins of the E series and certain 11-deoxy derivatives thereof and the prostaglandins of the A series.

3,781,430

DIURETIC FORMULATIONS

Edward J. Cragoe, Jr., Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 800,260, Feb. 18, 1969, which is a continuation-in-part of application Ser. No. 538,532, Feb. 7, 1966, both now abandoned, which is a continuation-in-part of application Ser. No. 313,315, Oct. 7, 1963, now Patent No. 3,313,813, which in turn is a continuation-in-part of abandoned application Ser. No. 234,230, Oct. 30, 1962.

This application Dec. 21, 1971, Ser. No. 210,577

Int. Cl. A61k *27/00*

U.S. Cl. 424—246 6 Claims

A potassium conserving diuretic, (3,5-diamino-6-chloropyrazinoyl)guanidine hydrochloride, is co-administered with a potassium excreting diuretic (ethacrynic acid and hydrochlorothiazide) to avoid hypokalemia in patients.

3,781,431

BENZOMORPHAN DERIVATIVES AS ANALGESIC AGENTS

Hans-Werner Schubert and Friedrich Hoffmeister, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

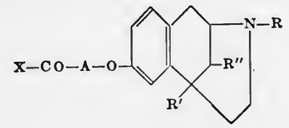
No Drawing. Original application May 14, 1970, Ser. No. 37,331. Divided and this application Sept. 27, 1972, Ser. No. 292,768

Claims priority, application Germany, May 17, 1969, P 19 25 296.1

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 22 Claims

An analgesic composition is produced which comprises an analgesically effective amount of a benzomorphan of the formula



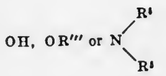
wherein

R is methyl, cyclopropylmethyl or cyclobutylmethyl;

R′ and R″ are the same or different, and are methyl or ethyl;

A is straight or branched chain alkylene or alkylidene of 1 to 4 carbon atoms or alkenylene of 2 to 4 carbon atoms, unsubstituted or substituted by phenyl or phenyl substituted by methyl, methoxy, chloro, nitro or acetylamino;

X is



wherein

R‴ is a straight or branched chain alkyl of 1 to 11 carbon atoms or straight or branched chain alkenyl of 2 to 11 carbon atoms, and

R^4 and R^5 are the same or different, and are hydrogen, alkyl of 1 to 4 carbon atoms, or R4 and R^5 together with the nitrogen atom form a pyrrolidine, piperidine or morpholine ring;

in combination with a pharmaceutically acceptable, nontoxic inert diluent or carrier. The composition may be administered orally or parenterally.

3,781,432

CORONARO-DILATING AND ANTIANOXEMIC MEDICINES

Roland Yves Mauvernay, Norbert Busch, Jacques Simond, and Jacques Moleyre, Riom, France, assignors to Centre Europeen de Recherches Mauvernay, Riom, France

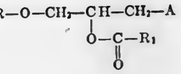
No Drawing. Continuation of abandoned application Ser. No. 749,277, Aug. 1, 1968. This application Aug. 23, 1971, Ser. No. 174,179

Claims priority, application France, Aug. 3, 1967, 116,738; Mar. 14, 1968, 143,676

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 9 Claims

A method of treating a patient to produce coronodilation and to provide anti-arhythmic activity, comprising administering to the patient a therapeutically effective dose of a compound having the formula



wherein

R is alkyl with 1 to 5 carbon atoms, alkenyl, alkynyl, phenyl, a nitro substituted phenyl, or arylalkyl,

R_1 is phenyl, methoxyphenyl, pyridyl, furyl, arylalkyl, or arylalkenyl,

A is morpholyl, N-methylpiperazinyl, or N-benzylpiperazinyl.

3,781,433

PIPERAZINYL-SUBSTITUTED-TRICYCLIC COMPOUNDS AS TRANQUILLIZERS

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Application Jan. 18, 1971, Ser. No. 107,521, now Patent No. 3,692,788, dated Sept. 19 1972, which is a continuation-in-part of abandoned application Ser. No. 795,048, Jan. 29, 1969. Divided and this application July 13, 1972, Ser. No. 271,491

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 23 Claims

The compounds are 2-alkyl-4-(4′-substituted-1′-piperazinyl)-9,10-dihydro - 4H - benzo[5,6]cyclohepta[1,2-d] oxazoles and thiazoles; the substituents being methyl, ethyl or 2-hydroxyethyl, e.g. 2-methyl-4-(4′-methyl-1′-piperazinyl) - 9,10 - dihydro - 4H-benzo[5,6]cyclohepta-[1,2-d]oxazole. The compounds are useful therapeutically.

3,781,434

METHODS OF PRODUCING ANTIARTHRITIC ACTIVITY USING 3-SUBSTITUTED PHENYL-2-THIO-1,3-THIAZANE-2,4-DIONE

Charles E. Berkoff, Huntingdon Valley, Blaine M. Sutton, Hatboro, and Donald T. Walz, Drexel Hill, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,610

Int. Cl. A61k *27/00*

U.S. Cl. 424—246 4 Claims

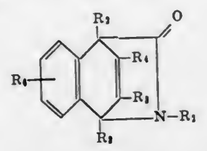
Pharmaceutical compositions having antiarthritic activity which comprise a 3-substituted phenyl-2-thio-1,3-thiazane-2,4-dione and methods of producing antiarthritic activity by administering internally said compositions.

3,781,435
STEROID ANAESTHETICS
Benjamin Davis, Chalfont St. Peter, Derek Roger Pearce, Bracknell, and Gordon Hanley Phillipps, Wembley, England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England
No Drawing. Original application June 17, 1970, Ser. No. 47,163, now Patent No. 3,714,352, dated Jan. 30, 1973. Divided and this application Jan. 5, 1973, Ser. No. 321,274
Claims priority, application Great Britain, June 20, 1969, 31,371/69
Int. Cl. A61k 17/00
U.S. Cl. 424—239 37 Claims

There are disclosed anaesthetic compositions for parenteral administration comprising an aqueous solution containing at least 1 mg./ml. of 3α-hydroxy-5α-pregnane-11,20-dione, at least 1% by weight of a non-ionic surfactant, and as solubility promoter a 3α-hydroxy-5α-pregnane-11,20-dione having at the 21-position a lower alkanoyloxy, hemisuccinyloxy or benzoyloxy group.

3,781,436
THERAPEUTIC COMPOSITIONS
Cornelius Edmond Giurgea, Brussels, Belgium, assignor to UCB, Societe Anonyme, Saint-Gilles-lez-Brussels, Belgium
No Drawing. Filed Oct. 20, 1971, Ser. No. 191,063
Claims priority, application Great Britain, Oct. 22, 1970, 50,215/70
Int. Cl. A61k 27/00
U.S. Cl. 424—258 8 Claims

A pharmaceutical composition comprising a pharmaceutical excipient and a therapeutically effective amount of a 1,4 - dihydro-1,4-etheno-isoquinolin-3(2H)-one having the formula



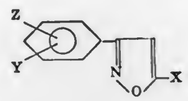
wherein R_1, R_2, R_3, R_4 and R_5 are each a member selected from the group consisting of hydrogen, alkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, said alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, aryl and aralkyl; and R_6 is a member selected from the group consisting of hydrogen, halogen, alkyl and alkoxy having 1 to 4 carbon atoms and trifluoromethyl.

3,781,437
1,2,3,4,8,9-HEXAHYDRO - 3 - METHYLPYRIDOL [4',3':2,3]INDOLO[1,7-ab][1]BENZAZEPINE AND THE 3-ETHYL HOMOLOG AS TRANQUILIZERS
Alan A. Rubin, Rockville Centre, N.Y., assignor to Endo Laboratories, Inc., Garden City, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 170,991, Aug. 11, 1971. This application June 2, 1972, Ser. No. 258,955
Int. Cl. A61k 27/00
U.S. Cl. 424—263 7 Claims

Two known compounds, 1,2,3,4,8,9-hexahydro-3-methylpyrido[4',3':2,3]indolo[1,7 - ab][1]benzazepine and 3-ethyl - 1,2,3,4,8,9-hexahydropyrido[4',3':2,3]indolo[1,7-ab][1]benzazepine, are effective both as minor tranquilizers (anxiolytics) and as major tranquilizers (antipsychotics). As minor tranquilizers they are effective at non-ataxic doses, and are not likely to cause addiction when abused. Addition salts of these compounds with pharmaceutically acceptable organic or inorganic acids can be used with the same effect.

3,781,438
ARYLISOXAZOLES AS NEMATICIDES
Loren Kenneth Gibbons, Medina, N.Y., assignor to FMC Corporation, New York, N.Y.
No Drawing. Filed Mar. 27, 1972, Ser. No. 238,613
Int. Cl. A01n 9/22, 9/28
U.S. Cl. 424—272 9 Claims

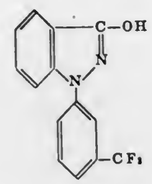
Nematicidal compositions are described which have as the nematicidal component thereof an arylisoxazole of the formula:



wherein X is chloro, bromo or cyano, Y is hydrogen, fluoro, chloro, bromo, cyano, lower alkyl or lower alkoxy and Z is hydrogen, chloro or methyl.

3,781,439
PHARMACEUTICAL COMPOSITION HAVING ANALGESIC AND ANTIPHLOGISTIC ACTIVITIES
Giorgio Zoni, Milan, Italy, assignor to Italfarmaco S.p.A., Milan, Italy
No Drawing. Filed Feb. 25, 1971, Ser. No. 118,938
Claims priority, application Italy, Dec. 15, 1970, 33,026/70
Int. Cl. A61k 27/00
U.S. Cl. 424—273 5 Claims

1-(m-trifluoromethylphenyl)-3-hydroxy-1H-indazole of the formula:



as well as pharmaceutical compositions containing it as the active ingredient have been found to have analgesic and antiphlogistic activities

3,781,440
ANIMAL FEED COMPOSITIONS AND METHODS
Gino J. Marco, Webster Groves, Mo., and Robert B. Grainger, Palm Desert, Calif., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Nov. 7, 1969, Ser. No. 874,957
Int. Cl. A61k 27/00
U.S. Cl. 424—300 13 Claims

Feed compositions containing at least one compound of the class of thiolcarbamates are useful for improving the growth response in animals.

3,781,441
USE OF 4-CHLORO-3,5-DINITROBENZENESULFONAMIDE AS A FUNGICIDE
Jerry H. Collins, Elizabeth, N.J., assignor to Esso Research and Engineering Company
No Drawing. Original application May 1, 1970, Ser. No. 33,859, now abandoned. Divided and this application Jan. 17, 1972, Ser. No. 218,611
Int. Cl. A01n 9/16
U.S. Cl. 424—321 1 Claim

Soil fungi are controlled with 4-chloro-3,5-dinitrobenzenesulfonamide.

3,781,442
BROMOACETANILIDES USEFUL AS BIOCIDES
Don R. Baker, Pinole, and Eugene G. Teach, El Cerrito, Calif., assignors to Stauffer Chemical Company, New York, N.Y.
No Drawing. Original application Mar. 12, 1969, Ser. No. 806,717, now abandoned. Divided and this application Mar. 24, 1971, Ser. No. 127,774
Int. Cl. A61k 27/00
U.S. Cl. 424—324 3 Claims

Bromoacetanilides as new compositions and their activity as microbiocides. Representative compounds include 3'-hydroxy bromoacetanilide, 3'-(N-methylcarbamoyloxy) bromoacetanilide, 3'-(N-isopropylcarbamoyloxy) bromoacetanilide, 3'-(N-allylcarbamoyloxy) bromoacetanilide and 4'-hydroxy bromoacetanilide.

3,781,443
PHENETHANOLAMINE N-METHYL TRANSFERASE INHIBITING BENZYLAMINES
Ray W. Fuller and Bryan B. Molloy, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed Oct. 26, 1971, Ser. No. 192,315
Int. Cl. A61k 27/00
U.S. Cl. 424—330 6 Claims

The enzymatic activity of phenethanolamine N-methyl transferase (PNMT) in effecting the N-methylation of norepinephrine is inhibited by contacting the PNMT with certain benzylamines.

3,781,444
HYPOCHOLESTEROLEMIC COMPOUNDS
Bobby R. Ezzell, Houston, Tex., Eugene R. Fluck, Berwyn, Pa., and Louis R. Haefele, Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
No Drawing. Continuation-in-part of abandoned application Ser. No. 105,076, Jan. 8, 1971. This application Nov. 12, 1971, Ser. No. 198,445
Int. Cl. A61k 27/00
U.S. Cl. 424—331 3 Claims

Benzyl-substituted cyclooctanone compounds which exhibit hypocholesterolemic properties.

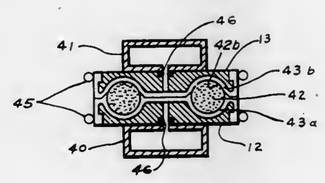
3,781,445
RECOVERY OF SULPHUR
Gerald Moss and Dennis F. Rosborough, Oxford, England, assignors to Esso Research and Engineering Company
Continuation of abandoned application Ser. No. 861,779, Sept. 29, 1969. This application Dec. 10, 1971, Ser. No. 206,808
Int. Cl. C01b 17/04
U.S. Cl. 423—574 2 Claims

Tail gas from a Claus unit is contacted with a bed of fluidized sulphur reactive material such as lime under oxidizing conditions in an absorber in order to remove sulfur compounds therein. Essentially sulphur-free gas is discharged from the absorber. Absorber bed material containing sulfate (e.g., $CaSO_4$) is transferred to a regenerator where the corresponding oxide (e.g., CaO) is regenerated under reducing conditions.

3,781,446
CARBAMYLOXYBENZYLIDENEMALONONITRILE INSECTICIDES
Roger P. Cahoy and John Sanjean, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Original application Sept. 8, 1970, Ser. No. 70,529, now Patent No. 3,694,483. Divided and this application May 11, 1972, Ser. No. 252,205
Int. Cl. A01n 9/20
U.S. Cl. 424—300 5 Claims

The carbamyl derivatives of 4-hydroxy-3,5-di-tert.butyl benzylidenemalononitrile are compounds which possess a high order of activity as miticides, insecticides and fungicides. New compounds of this class, for example, 3,5-di-tert.butyl - 4 - (3-bromophenylcarbamyloxy)benzylidenemalononitrile, are particularly effective against corn rootworm while possessing less toxicity to warm blooded animals than the most closely related prior art compound.

3,781,447
METHOD AND APPARATUS FOR PRODUCING AN ANNULAR SKINLESS SAUSAGE PRODUCT
Thomas Durso, 8111 Gross Point Road, Morton Grove, Ill. 60053
Continuation-in-part of abandoned application Ser. No. 791,368, Jan. 15, 1969. This application Feb. 12, 1971, Ser. No. 114,956
Int. Cl. A22c 11/00
U.S. Cl. 426—513 9 Claims



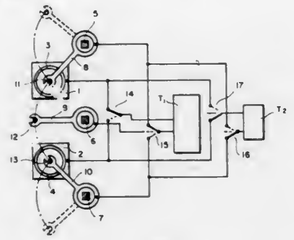
A method and apparatus for the manufacture of annular skinless sausage products by placing sausage batter into a pair of cooperating molds, locking the molds together, cooking the batter, and removing the annular sausage product from the molds. In the illustrated embodiment, air pressure is used to free the sausage from the mold.

ELECTRICAL

3,781,448
ELECTRIC SLAG REFINING PROCESS AND APPARATUS

Wolfgang Holzgruber, Kapfenberg; Peter Machner, Leoben; Adolf Schneihofer, Kapfenberg; Otmar Kleinhagauer, Kapfanberg, and Peter Cerwenka, Kapfenberg, all of Austria, assignors to Gebr. Bohler & Co. AG., Vienna, Austria

Filed June 6, 1972, Ser. No. 260,122
Claims priority, application Austria, June 9, 1971, 4973
Int. Cl. H05b *3/60*
U.S. Cl. 13—12 **3 Claims**

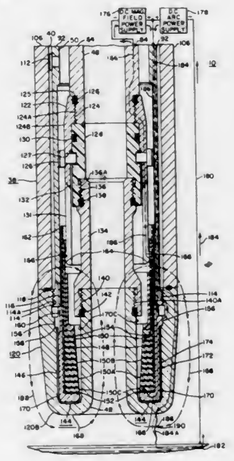


To produce an ingot consisting of a metal alloy, substantially the entire ingot is formed in an ingot mold by fusing down remelting electrode material in a liquid slag bath contained in said mold while electric a.c. power is supplied to said slag bath from first a.c. transformer means. The ingot in said mold is subsequently subjected to top end heating in that electric a.c. power is supplied to said liquid slag bath from second a.c. transformer means having a lower nominal power than said first transformer means.

3,781,449
NONCONSUMABLE ELECTRODE FOR AN ELECTRIC ARC FURNACE WITH INTEGRATED COOLING AND ELECTRICALLY CONDUCTING MEANS

Charles B. Wolf, Irwin, and Ronald R. Akers, Trafford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 1, 1972, Ser. No. 258,731
Int. Cl. H05b *7/08*
U.S. Cl. 13—18 **38 Claims**

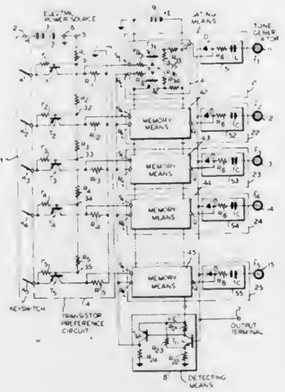


An electrode suitable for providing an electrical arc between the tip of the electrode and a melt in an electric furnace. The tip of the electrode upon which the arc plays also includes an electromagnetic coil which is used to move the arc over the entire circumferential area of the tip of the electrode by magnetic influence. Consequently, no single small section of the tip of the electrode becomes overheated. The heat generated both at the point of arc attachment to the tip and within the magnetic field coil creates a heat flux which must be removed to maintain the integrity of these parts. A channel is provided to conduct cooling fluid, such as water, simultaneously to both the tip and the electromagnetic coil to cool them. In addition, a portion of the electrode includes an electrical conductor which acts as a common conductor for the electrical power supply for the electromagnetic coil and for the arc producing tip of the electrode. This conductor also forms part of the cooling path.

3,781,450
SIGNAL-SELECTING SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

Takatsugu Nakajima, Neyagawa-shi, Osaka-fu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 7, 1972, Ser. No. 311,728
Claims priority, application Japan, Dec. 13, 1971, 46-101311
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.01 **4 Claims**

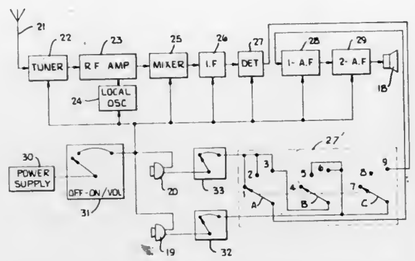


A signal selecting system for an electronic musical instrument comprising tone generators, gating means, keyswitches and a transistor preference circuit. The transistor preference circuit comprises a plurality of bias resistors, a plurality of transistors and a plurality of base resistors for the respective transistors. The transistors are controlled by the keyswitches so as to produce control voltages at the collectors thereof, respectively, whereby when one or more keyswitches are simultaneously closed, only one transistor is conductive and so the corresponding gating means is actuated so as to select preferentially only one output tone signal.

3,781,451
GUITAR, RADIO, MICROPHONE COMBINATION WITH SELF-CONTAINED ENERGY SOURCE AND AMPLIFIER

Frank D. Nolan, Clinton, Ind., assignor to Bruno Contri, Clinton, Ind.

Filed Dec. 7, 1972, Ser. No. 312,859
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.16 **8 Claims**

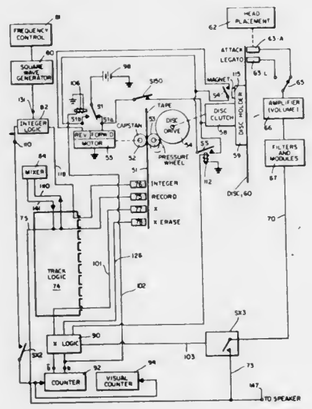


A musical instrument which has a guitar, radio and microphone connected to a source of electrical energy and to a single amplifier. The main body of the guitar is hollow having a battery pack and radio mounted therein. A microphone is mounted to the main body of the guitar and is connected to the battery pack and to the amplifier of the radio. Means are mounted to the main body beneath the guitar strings for producing audio electrical signals in proportion to the sounds generated by the strings. The means are connected to the radio amplifier. Switches are mounted to the main body and are connected to the radio, microphone and means for allowing the musician to selectively connect the microphone, guitar and radio together for producing a combined sound through the radio speaker or alternatively for operating only the microphone or the microphone and guitar.

3,781,452
METHOD AND APPARATUS FOR ASSEMBLING RECORDINGS OF MUSICAL SCORES

Andre C. Vauclain, 20 Old Gulph Rd., Gladwyne, Pa.

Filed Jan. 6, 1972, Ser. No. 215,875
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.28 **18 Claims**

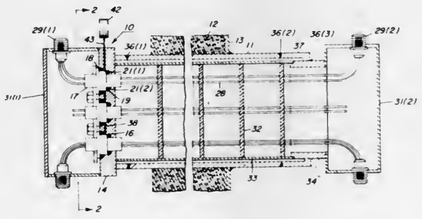


A complete musical score is recorded from stored pitches and notes by first recording basic timing signals for the entire score on a first track of a multi-channel tape, and then recording separately the part of each instrument involved in the score, note by note, on a separate track, and referenced in time to the basic timing signals. The different instrument recordings are combined, through a sequence of mixing operations, to provide a single track compilation of the entire score.

3,781,453
ELECTRICAL PENETRATION ASSEMBLY

Forrest E. Funk, San Jose; Richard T. Oda, Sunnyvale; Norman G. Luria, and Edward G. Margherone, both of San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 12, 1972, Ser. No. 243,310
Int. Cl. G21c *13/02*
U.S. Cl. 174—11 R **24 Claims**



An assembly of double-sealed modules for passing electrical conductors through the wall of a vapor and pressure sealed containment vessel.

3,781,454
ELECTRIC HIGH-TENSION CONDUCTOR ASSEMBLY

Willi Olsen, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 13, 1972, Ser. No. 314,561
Claims priority, application Germany, Dec. 23, 1971, P 21 65 283.5
Int. Cl. H02g *15/22*; **H01b** *9/04, 9/06*
U.S. Cl. 174—11 R **9 Claims**

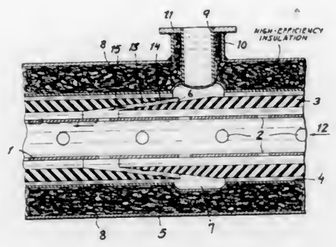


An electric high-tension conductor assembly includes an electric conductor which carries a high-voltage current and a grounded electrically conductive enclosure surrounding this conductor with the latter spaced from the inside of this enclosure, the conductor and enclosure being elongated and the enclosure having an end cap in which the conductor has a terminating end spaced therein. Provision is made to assure that any arc formed between the conductor and the enclosure travels to that terminating end of the conductor and stays there. The enclosure's end cap is made safely resistant to the stationary arc. Therefore, the enclosure itself may be made on non-magnetic metal, to prevent excessive eddy current losses, with a wall thickness and/or composition only safely adequate to be resistant to the traveling arc.

3,781,455
LOW-TEMPERATURE CONDUCTOR ARRANGEMENT

Ullrich Hildebrandt, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed June 20, 1972, Ser. No. 264,562
Claims priority, application Germany, June 21, 1971, P 21 30 692.3
Int. Cl. H01v *11/00*
U.S. Cl. 174—15 C 14 Claims

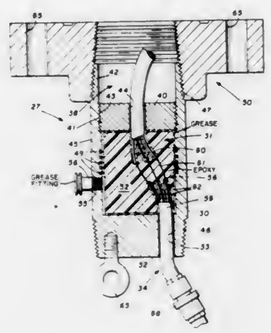


A low-temperature conductor is enclosed in a conduit traversed by a low-temperature fluid, e.g. a liquefied gas, which in addition to being supplied at any extremity of the cable is introduced in part at intermediate locations along its length with a flow-velocity component toward the conductor without interrupting the outer conduit or exposing the conductor to ambient conditions.

3,781,456
PRESSURE SEALED CABLE PACKOFF AND METHOD FOR MAKING AND USING SAME

Charles R. Knowles, Anchorage, Alaska, and Douglas J. Ruckel, Corpus Christi, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Aug. 1, 1972, Ser. No. 277,057
Int. Cl. E21b *33/00*; H02g *15/00*
U.S. Cl. 174—23 R 9 Claims



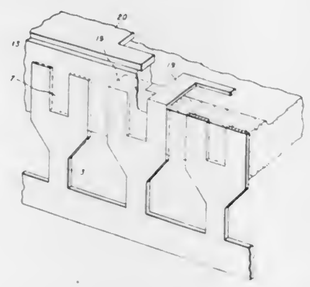
Apparatus for feeding a multi-conductor cable through a wall separating two environmental zones, such as pressure zones of a Christmas tree of a wellhead, includes a hollow body inserted through the wall separating the zones. The hollow body is filled with epoxy and a pressurized packing material forced into nonconducting interfaces between the epoxy and the hollow body. Conductor spacers are provided in one embodiment to prevent the conductors of the cable from shorting.

Also presented is a method for achieving a seal in effecting a cable feedthrough from one environmental zone to another including running the cable through an enclosure defining body, removing the insulation from the wires within the enclosure, filling the enclosure with a hardening cement or resin, such as epoxy, exposing the enclosure to a fluid under pressure, and injecting, under a higher pressure, a packing material into the nonjoined interfaces between the epoxy and the walls of the enclosure.

3,781,457
GLASS DUAL-IN-LINE HEADER

Michael H. McKerreghan, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 26, 1972, Ser. No. 257,271
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 S 2 Claims



The disclosure relates to a glass or ceramic filled glass dual-in-line header wherein the leads on the lead frame extend perpendicular to the plane of the glass and closely adjacent the sides of the glass during fabrication. The leads of the lead frame are bonded to the glass along three surfaces thereof to provide superior standoff sheer reliability and resistance to header cracking, resulting in loss of hermeticity. The glass on the upper surface of the lead frame extends to the edge of the header. A larger cavity for reception of a semiconductor chip is provided due to smaller lead lengths on the glass surface. The leads of the lead frame include a window which extends within the glass and outwardly, thereby providing a seal within the window to provide stronger lead anchoring and to provide the header with better stress capability.

3,781,458
INSULATED CABLE SPLICE AND METHOD FOR MAKING THE SAME

Francis A. May, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 179,445, Sept. 10, 1971. This application May 8, 1972, Ser. No. 250,889
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C. 4 Claims

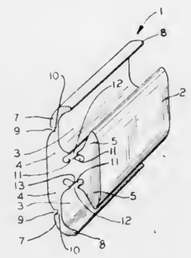


The insulated cable splice joins the end portions of a metallic conductor by positioning the end portions in a metallic sleeve in overlapped relation to each other and the sleeve is deformed to frictionally engage the metallic conductor end portions. The surface of the cable adjacent the exposed end portion of the metallic conductor is buffed and thereafter the exposed end portions of the conductors on opposite sides of the metallic sleeve are helically wrapped with a tape to compress the conductor strands adjacent to the edges of the cable insulation. The recessed portion in the splice formed between the edges of the cable insulation is filled with an elastomeric filler material, preferably by helically winding a strip of elastomeric filler material over the exposed conductor end portions and the metallic sleeve. The outer surface of the filler material has a diameter slightly larger than the diameter of the sheath of insulation on the conductor. A liquid cement is applied to the outer buffed surface of the cable insulation and over the filled recessed portion between the edges of the cable insulation. A strip of elastomeric tape is helically wound in overlapped relation around the outer surface of the cable insulation and the helically wound elastomeric tape extends for preselected distances on opposite sides of the metallic sleeve. A portion of the cement applied on the surface of the cable insulation remains exposed beyond the ends of the tape winding. Thereafter, a plurality of elongated strips of flame and abrasion resistant tape are positioned longitudinally on the cable insulation in overlying relation with the helically wound elastomeric tape. The strips of flame and abrasion resistant tape are arranged with the side edges in overlapped relation to provide a water resistant splice. Strips of flame and abrasion resistant tape are helically wound about the end portions of the longitudinal strips and over portions of the cable insulation having the exposed layer of cement thereon to seal the ends of the splice. The above described helically wound elastomeric tape and plurality of strips of longitudinally positioned abrasion resistant tape may also be employed to repair damaged insulation on a cable where the conductor does not require splicing.

3,781,459
COMPRESSION CONNECTOR FOR ELECTRICAL CONDUCTORS

Vernon E. Peek, Birmingham, Ala., assignor to Anderson Electric Corporation, Leeds, Ala.

Filed July 20, 1972, Ser. No. 273,468
Int. Cl. H02g *15/08*
U.S. Cl. 174—94 R 11 Claims

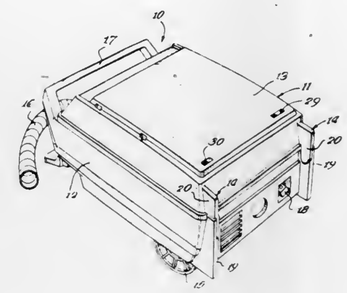


The compression connector has a body with a conductor receiving recess opening outwardly laterally of the body and defined by spaced side walls extending endwise of the body. The outer edge of one side wall has an integral tab. A longitudinal groove in the side wall at the inner edge of the tab reduces the thickness of the wall to provide a hinge-like connection such that the tab can be swung inwardly into the open side of the recess and into engagement with a conductor in the recess so as to close the open side of and partially fill the recess around the conductor. The side walls and tab can be distorted into tight embracing relation to the conductor by die crimping forces applied toward the base of the recess. Longitudinal slots are provided in the body and open laterally into the bottom of the recess and slope outwardly from each other in a direction away from the base of the recess. The connector, with a given size recess, can connect to conductors throughout a wide range of diameters.

3,781,460
VACUUM CLEANER CONSTRUCTION

George A. Westergren; Warren H. Fish, both of White Bear Lake; Stanley R. Crooks, Shakopee, and David G. Koland, Sandstone, all of Minn., assignors to Whirlpool Corporation, Benton Harbor, Minn.

Filed June 13, 1972, Ser. No. 262,360
Int. Cl. H05k *5/02*
U.S. Cl. 174—52 R 12 Claims

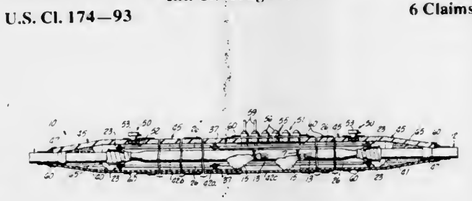


A vacuum cleaner construction comprising an improved means for pivotally connecting a cover to a base in a canister type vacuum cleaner. The pivot means includes integral camming structure for camming the connector elements apart to release the cover from the base as an incident of a forceful urging of the cover beyond the normal open position. Removable switch and light means are mounted on the cover adjacent the pivot means.

3,781,461
CABLE SPLICE ASSEMBLY AND METHOD

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331 20th St., Santa Monica, Calif.

Continuation-in-part of Ser. No. 76,758, Sept. 30, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,522
Int. Cl. H02g *15/18*
U.S. Cl. 174—93 6 Claims

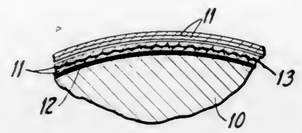


A versatile, readily expandable cable splice assembly and method utilizing a high strength conductive member to interconnect the electrical shields of the cable ends and additionally to transfer cable tension forces across the splice independently of the splice conductors. The assembly includes a plurality of components designed for telescopic assembly to provide a splice enclosure of resilient non-conductive split tubes chargeable with potting compound of either the setting or non-setting type. If the latter type is employed, the splice assembly may be re-entered whenever it is desirable for servicing or the addition of branchout service lines to customers served by the cable.

3,781,462
PAPER-INSULATED ELECTRICAL CONDUCTOR AND METHOD OF MAKING SAME

Adrian Y. Santos, Yonkers, and Charles Feder, Riverdale, both of N.Y., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Filed May 25, 1972, Ser. No. 256,896
Int. Cl. H01b *7/02*
U.S. Cl. 174—121 B **3 Claims**

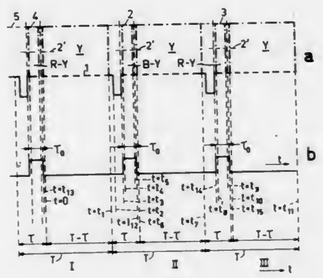


Interposed between the conductor and the helical or longitudinal wrapping of paper insulation is a layer of self-setting, heat sealable emulsion having adhesive properties and which is inert, water soluble and free of metal. The emulsion is absorbed by the innermost lay of the paper and causes it to adhere to the next outer paper lay, while the outer portion of the paper which is not exposed to the saturated portion remains loosely formed around the conductor. Upon drying of the paper insulation, the solid portion of the emulsion remains as a film on the periphery of the conductor and the innermost surface of the paper.

3,781,463
COLOUR TELEVISION CIRCUIT

Willem Van den Bussche, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 199,975
Claims priority, application Netherlands, Nov. 28, 1970, 7017427
Int. Cl. H04n *7/12, 9/02*
U.S. Cl. 178—5.4 CD **20 Claims**



A colour television system particularly intended for video recording in which two chrominance signals are transmitted line-sequentially in a time-compressed form during the line blanking period, preferably during the back porch of the line synchronisation. To this end they must be slowly written in and quickly read out in a bucket-brigade delay line by means of write and read control signals.

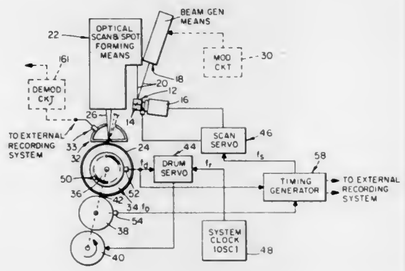
Two series-arranged bucket-brigade delay lines are provided at the receiver end, the first receiving the incoming signal and writing in and reading out this signal by means of write and read control signals. Said write and read control signals at the receiver end have the same frequencies as the read and write control signals, respectively, at the transmitter end. The output of the first bucket-brigade delay line is a direct output, but it is also connected to the input of the second bucket-brigade delay line to which a control signal is applied mainly during the line scan period, which control signal has the same frequency as the write control signal at the transmitter end.

The luminance signal is processed, with the required delay, in parallel with the chrominance signal.

3,781,464
LIGHT SCANNING APPARATUS AND METHOD FOR CONVERTING DISPLAY INFORMATION INTO STORABLE VIDEO DATA

Samuel Bousky, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 17, 1972, Ser. No. 218,200
Int. Cl. H01j *29/70*
U.S. Cl. 178—5.4 ES **11 Claims**



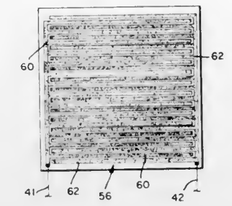
A display scanner system and method selectively scans a reflective display surface, and provides conversion of the display information to storable video signals. The system is responsive only to the diffuse reflection of the reflected light from the display surface, but not to the specular reflection therefrom. A motor driven, optical scan device converges one or more beams to respective focused spot or spots, while directing same through a selected arc to define a scan line, and also converts the input angular scan to a flat field scan. Selectively movable support means is provided to support and move the display surface in a direction normal to the scan line direction, and also to index to new positions along the line scan direction as required when scanning a wide display with a plurality of adjacent or overlapping rows of scan lines. In the color embodiment a group, or groups, of three light sensors are employed, with appropriate color separation filters to provide color video data signals. The multiple beam embodiment employs temporal and/or spacial separation of beams, to provide a reduction in deadtime between scans, and/or to obtain interlace information.

3,781,465
FIELD SEQUENTIAL COLOR TELEVISION SYSTEMS

Michael N. Ernstoff, Mar Vista; Eric R. Fehr, Los Angeles; William C. Hoffman, and Richard N. Winner, both of Torrance, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 8, 1972, Ser. No. 232,891
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 BD **3 Claims**

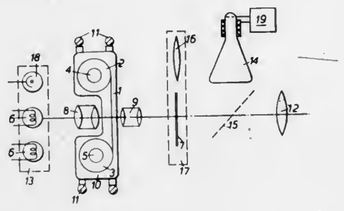
A high brightness field sequential color telvision display system utilizing electronically controllable color switching of a tri-color liquid crystal filter positioned in front of a monochrome cathode ray tube. The liquid crystal structure provides a color change in response to electronic pulses and color switching is the result of an orientation aligned in the direction of the light path or in a direction substantially normal to the light path. The orientation of the host crystal domain results in a similar orientation of associated dye domains or molecules. For each of the basic red, green and blue colors, a field sequential operation is performed by applying switching pulses so that a field is provided normal to the direction of the light path in a liquid crystal cell of the selected color. To rapidly clear a selected cell to a clear state, a field is applied substantially parallel to the light path. The color image is formed in the field sequential fashion by placing the spectral filter in front of a cathode ray tube and observing the various intensities of white light on the face of the tube through the composite filter.



3,781,466
INFORMATION STORAGE APPARATUS

Kenneth Robson Brown, Midlothian, Scotland, assignor to Ferranti Limited, Hollinwood, Lancashire, England.

Filed Apr. 11, 1972, Ser. No. 242,929
Claims priority, application Great Britain, Apr. 13, 1971, 9214/71.
Int. Cl. H01j *29/89*; **H04n** *1/24*
U.S. Cl. 178—6.8 **7 Claims**



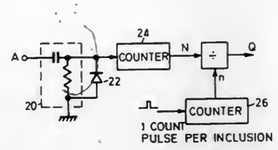
Information storage apparatus for use as a back-up store for a moving-map display has the information encoded onto part of the film carrying the map charts. To read the information the optical system is modified so that the information is scanned by a flying-spot scanner.

3,781,467
METHOD AND APPARATUS FOR MEASURING THE LENGTH OF ELONGATE FEATURES HAVING A SUBSTANTIALLY COMMON ORIENTATION EMPLOYING LINE SCANNING

Michael Richard Soames, Fulbourn, England, assignor to Image Analysing Computers Limited, Melbourn Nr. Royston, Hertfordshire, England

Filed Apr. 27, 1972, Ser. No. 248,244
Claims priority, application Great Britain, Apr. 28, 1971, 11,822/71
Int. Cl. G01n *21/32, 15/02*; **H04n** *7/18*
U.S. Cl. 178—6.8 **5 Claims**

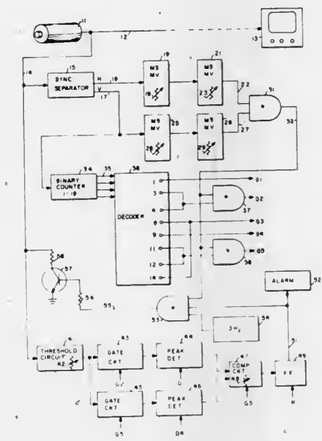
A method and apparatus is described for measuring the length of elongate features having a substantially common orientation in which a video signal is obtained by line scanning and measurements are made on the video signal of electrical pulses derived therefrom by detection. Contrary to conventional practice the method of the invention proposes that the field containing the features be orientated so that the features are perpendicular to the direction of line scanning. The length measurement is then obtained by counting the number of line scan intersections with a feature.



3,781,468
TELEVISION SURVEILLANCE SYSTEM

Marc Chomet, East Northport, and Donald E. Ellison, Sea Cliff, both of N.Y., assignors to Sanders Associates Inc., Nashua, N.H.

Filed June 21, 1972, Ser. No. 265,105
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **7 Claims**



A surveillance system is described in which a television camera views the general scene under surveillance and in which the magnitude of the video signal pertaining to a preselected portion thereof and occurring during one or more fields is stored and compared with a reference signal or with the magnitude of the video signal pertaining to the same preselected portion and occurring during one or more subsequent fields, whereby, in either case, a difference in magnitude in excess of a predetermined threshold is indicative of the motion of an object in such portion.

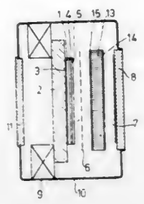
3,781,469
OPTIC RELAY FOR SCANNING BY MEANS OF A LIGHT BEAM

Jacques Donjon, Yerres, and Gerard Joseph Marcel Marie, L'Hay-les-Roses, both of France, assignors to U. S. Philips Corporation, New York, N.Y.

Filed July 14, 1971, Ser. No. 162,565
Claims priority, application France, July 17, 1970, 7026419
Int. Cl. H04n *3/02, 9/14*
U.S. Cl. 178—7.3 D **2 Claims**

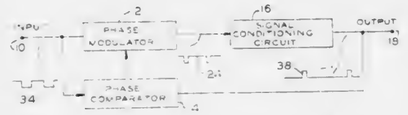
An optic relay comprising a double refracting crystalline

plate which can be varied by the Pockels effect, the signal being applied between two transparent layers.



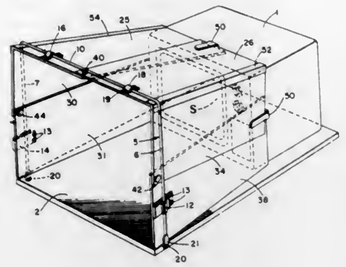
According to the invention the scanning of one of the faces of the plate is realized by a light beam acting on a photoemissive layer or a photoconductive layer.

3,781,470
PHASE CONTROL SYSTEM FOR SIGNAL CONDITIONING CIRCUITS
John J. Horn, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Oct. 27, 1971, Ser. No. 192,818
Int. Cl. H04n 5/04; H03b 3/04; H04b 3/04
U.S. Cl. 178—7.3 R **7 Claims**



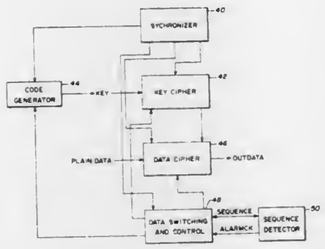
A phase modulator produces a controlled variable phase shift in the input signal being supplied to a signal conditioning circuit so as to maintain the total phase shift between the original input signal and the output signal of such circuit at a predetermined constant value, even though such circuit itself produces undesirable or spurious and unpredictable varying phase shifts in the signal being modified due to changing circuit conditions such as changes in temperature of components in the circuit, changes in current flow through such components or changes in voltage applied to such components. A phase comparator compares a portion of the output signal of the signal conditioning circuit with a portion of the input signal and supplies a control voltage to the phase modulator. This control voltage causes the phase modulator to vary the phase shift of the input signal in a direction resulting in such constant phase shift. The disclosed signal conditioning circuit is a horizontal deflection circuit for a television monitor. In the phase comparator, a selected portion of blanking pulses at the output of the deflection circuit and a selected portion of alternate cycles of a symmetrical square wave from a horizontal oscillator are employed to set and reset a gating multivibrator to produce an unsymmetrical square wave which gates an integrator. The output of the integrator is a control voltage which varies with any variations in the time interval between such selected portions of the blanking pulse and input signal. The circuit shown may also include a synchronizing circuit for synchronizing the horizontal oscillator with synchronizing pulses derived from a television signal.

3,781,471
TELEVISION SCREEN LIGHT SHIELD
Charles C. Hoffberger, II, 200 Cross Keys Rd., Baltimore, Md., and Charles A. Rivlin, 2245 Regene Dr., Baltimore, Md.
Filed Dec. 27, 1972, Ser. No. 319,005
Int. Cl. H01j 24/06; H04n 5/64
U.S. Cl. 178—7.82 **9 Claims**



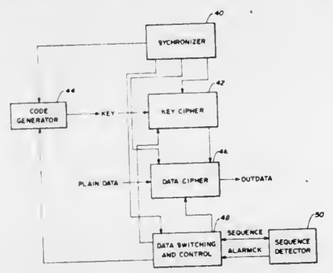
An extremely simple and inexpensive light shield or shroud for television screens, adjustable in nature, for encircling the screen of a television set (or the front end of the set itself), thus enabling viewing of the screen in sunlight or other areas where excessive light reduces the contrast in the screen such as to otherwise prevent adequate viewing. In collapsed form, the shield lies flat for shipment or storage purposes, yet it can be readily pivoted in place, with the two adjustable sides being raised, together with the top, and then conformed in dimension to the top and sides of the television set, thus to adequately shield the screen from sunlight (or artificial glare) by the resultant enclosure. The entire assembly is pivoted to a baseboard upon which the set rests, a pivoted frame attached to said baseboard providing support for the two top and two side elements, each of said elements having a pivoted, adjustable means permitting variation in size (height and width) to accommodate the particular size of the set to be used. Such adjustments, once made, are fixed in position by suitable clips and/or a pin-slot arrangement having a built-in retention ability, thus providing assurance that the unit is fixedly maintained in adjusted position.

3,781,472
DIGITAL DATA CIPHERING TECHNIQUE
George E. Goode, Richardson; Barrie O. Morgan, and Kenneth M. Branscome, both of Dallas, all of Tex., assignors to Datotek, Inc., Dallas, Tex.
Filed Apr. 15, 1971, Ser. No. 134,319
Int. Cl. H04l 9/04; H04k 1/00
U.S. Cl. 178—22 **21 Claims**



The specification discloses a ciphering system for providing security to digital transmission. To encode with the system, a clear text signal is clocked through a binary counter for a number of steps determined by a limit signal derived by a pseudorandom digital signal. To prevent transmission of clear text in case of a malfunction of the system, the clear text is compared with the ciphered output text and an alarm indication is generated upon correspondence of the clear text and the ciphered text for a predetermined number of digital bits. The alarm circuitry is checked and is required to be operative before the ciphering system may be operated. Speed trap circuitry prevents the system from being operated above a preselected frequency to reduce the possibility of breakdown of the system code by high speed analyzation procedures.

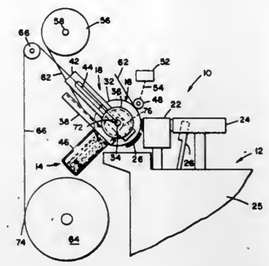
3,781,473
RANDOM DIGITAL CODE GENERATOR
George E. Goode, Richardson, and Kenneth M. Branscome, Dallas, both of Tex., assignors to Datotek, Inc., Dallas, Tex.
Filed Apr. 15, 1971, Ser. No. 134,320
Int. Cl. H04k 1/00; H04l 9/04
U.S. Cl. 178—22 **27 Claims**



The specification discloses a random code generator for generating a randomized digital key stream. A plurality of shift registers are each operable to generate a randomized digital signal, the cycle period of each of the shift registers being prime to one another. Nonlinear combining circuitry receives and combines the digital signals generated by the shift registers for production of a randomized digital key stream. Mode control circuitry is responsive to the key stream for randomly varying the interconnection and mode of operation of the shift registers between a plurality of different modes. Circuitry is also responsive to the key stream for randomly varying the number of steps taken by the shift registers during the various modes of operation. The shift registers are operable during a priming mode to generate a random prime signal for synchronization of encoding and decoding ciphering devices. If desired, a read only memory may be connected into the generator to further randomize the digital key stream.

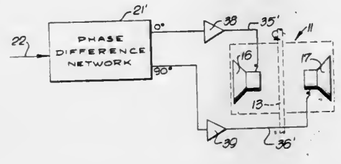
3,781,474
HYBRID ELECTROSTATIC-IMPACT PRINTER
Philip J. Rice, Jr., Atherton, Calif., assignor to American Express Investment Management Corporation, San Francisco, Calif.
Filed Mar. 6, 1972, Ser. No. 231,957
Int. Cl. H04l 17/00
U.S. Cl. 178—25 **8 Claims**

Hybrid electrostatic-impact printer combining a retractable web feeder, on which is mounted an electrostatic printer, and a mechanical impact printer. The hybrid printer allows for rapid receipt and transmission of alpha-numeric information with easy adaptation from the electrostatic mode to the



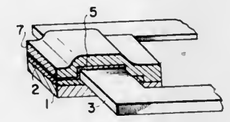
mechanical impact mode by movement of the web feed roller into and out of engagement with the mechanical impact printer.

3,781,475
COUNTERBALANCED TWO SPEAKER ROTARY TREMOLO DEVICE
Paul H. Sharp, Sierra Madre, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed May 26, 1971, Ser. No. 147,023
Int. Cl. G01h 1/02
U.S. Cl. 179—1 J **14 Claims**



A rotary tremolo device employs a pair of outwardly facing speakers mounted in counterbalanced relationship on a rotatable support. The speakers are respectively driven by signals derived from the same source but differing in phase, preferably by 90 electrical degrees, so as to provide an asymmetrical sound radiation pattern. As the support is rotated at about five to eight revolutions per second, a tremolo and vibrato effect is produced. The support may also be rotated at slower or faster speeds to produce other effects.

3,781,476
MAGNETIC HEAD HAVING A COMBINATION CORE FORMED FROM A PRETREATED MAGNETIC LAYER
Masanobu Hanazono, and Osamu Asai, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 27, 1971, Ser. No. 212,383
Claims priority, application Japan, Dec. 25, 1970, 45/117606
Int. Cl. G11b 5/16
U.S. Cl. 179—100.2 C **12 Claims**



A magnetic head for use in a magnetic disc of a computer, a magnetic drum or a video tape recorder manufactured

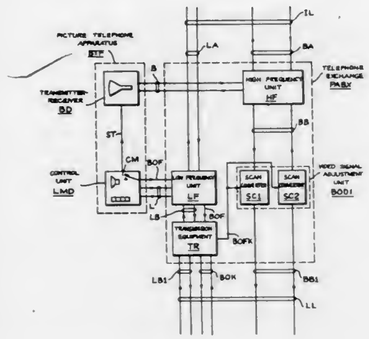
through by a thin film technique. A first portion of the magnetic core thereof is a pretreated rolled permalloy which reduces the magnetic reluctance of the core to almost one-half of that of the conventional cores. This first portion taken with a second portion form a somewhat U-shaped core. Between the open ends is disposed a conductive layer surrounded by one or more dielectric layers. A supporting insulating layer may be provided over the second portion of the core.

3,781,477

PICTURE TELEPHONE SYSTEM AT WHICH THE VIDEO SIGNAL IS ADAPTED TO THE CHARACTER OF THE PICTURE

Nils Olof Johnannesson, Bandhagen, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 858,397, Sept. 16, 1969, abandoned. This application May 17, 1971, Ser. No. 144,162
Claims priority, application Sweden, Oct. 8, 1968, 13536/68
Int. Cl. H04m *1/00*
U.S. Cl. 179—2 TV **3 Claims**



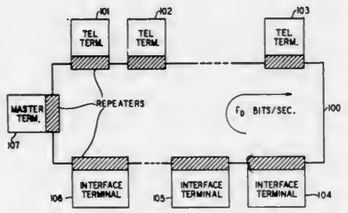
In a picture telephone system means are included at both ends of a telephone connection between two subscribers for adjusting the frame rate of pictures so that with a limited channel band width good resolution is obtained both for stationary detailed pictures such as documents and for moving pictures requiring less resolution such as conversing subscribers.

3,781,478

MULTIPLEX COMMUNICATION SYSTEM

Donald Edgar Blahut, Bloomfield, and Fritz Edgar Froehlich, New Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 7, 1972, Ser. No. 269,824
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AL **20 Claims**



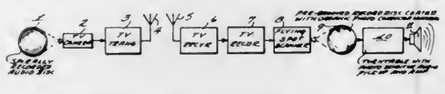
A time division multiplex communication system is described which includes a master timing station and a plurality of station sets serially interconnected forming a closed unidirectional transmission loop. Data and supervisory signals originating at a station set, together with digitally encoded speech, are time division multiplexed onto the loop, the information being inserted m bits at a time in a particular TDM channel associated with the called set. Each station set is arranged to store and repeat m bits at a time, the received digital bit stream, which may comprise data or supervisory signals while at the same time monitoring its assigned channel for the presence of information being transmitted thereto. A called set is arranged to extract and decode information contained in its channel, also m bits at a time. Since, for n station sets, the $n \times m$ bits on the loop at any given time can be stored within the stations, the number n of stations can be changed without alteration of any other equipment on the loop. Supervisory logic within each station set controls various set functions, including busy tone generation, ringer control, ringback indication, and so forth. One or more station sets may be modified to provide an interface with outside lines.

3,781,479

METHOD AND APPARATUS FOR TRANSMITTING TIME COMPRESSED AUDIO INFORMATION

Maxmillian Augustus Swoboda, College Park, Md., assignor to Jack L. Lahr, Washington, D.C. and Jack M. Benson, Silver Spring, Md.

Filed Jan. 26, 1970, Ser. No. 5,659
Int. Cl. H04m *1/00*
U.S. Cl. 179—15.55 T **10 Claims**



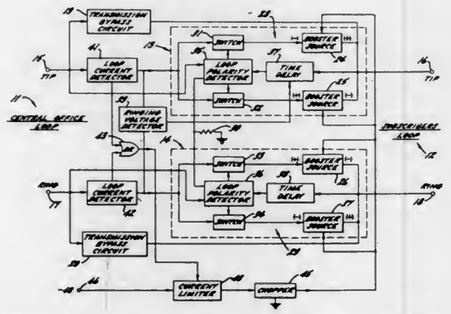
This specification discloses a method of storing, transmitting and selectively retrieving a large quantity of information such as audio signals over a wide bandwidth communication system such as television. An entire block of such information is recorded at a real-time rate, rapidly transmitted in its entirety at a greatly accelerated rate by a relatively wide bandwith signal, received and re-recorded at substantially the same accelerated rate for subsequent reproduction of the audio information at a real-time rate. Several specific methods and apparatus are disclosed for carrying out these concepts.

3,781,480

LOOP EXTENDER

Ralph R. Roge, Du Page County, Ill., assignor to Wescom, Inc., Downers Grove, Ill.

Filed Nov. 10, 1970, Ser. No. 88,270
Int. Cl. H04q *1/30*
U.S. Cl. 179—16 F **10 Claims**



To increase the effective signaling and supervisory range of a central office, a loop extender has tip side and ring side

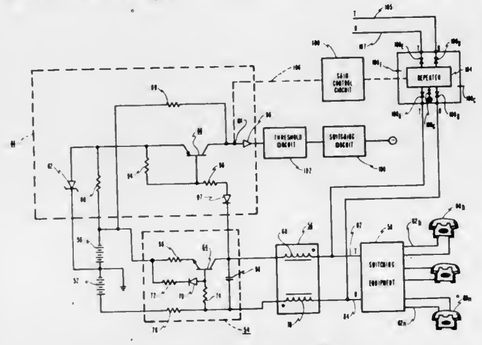
booster circuits, each of which comprise a pair of oppositely polarized floating booster voltage supplies and a loop polarity detector for selectively switching one of such supplies into series with the central office battery. Time constant circuits are associated with each of the loop polarity detectors so that they follow changes in the d. c. polarization of the central office ring and tip leads relative to one another and to ground, but not the a.c. swings of any ringing voltage that may be present. Provision is made, however, for overriding the time constant circuit for the tip side polarity detector in the absence of a ringing voltage so that it can then follow short time constant changes in the d. c. polarization of the tip lead. The booster voltage supplies are secondary supplies which are energized by power from a primary supply only in the presence of a control signal in one or both of the central office tip and ring leads, whereby the power drained by the loop extender is minimized. Further, the maximum current that can be drawn from the primary supply is limited, thereby protecting the loop extender and other central office equipment against being damaged in the event that the output of the loop extender is inadvertently short circuited or coupled to a low impedance subscriber's loop.

3,781,481

AMPLIFIER SELECT AND CONTROL CIRCUIT

William E. Shaffer, and Charles C. Krawczyk, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,228
Int. Cl. H04b *3/36*
U.S. Cl. 179—16 F **12 Claims**



The disclosed amplifier select and control circuit provides a means for connecting an amplifier in a telephone connection as required to compensate for the loss of voice signals because of attenuation in the system. The amplifier select and control circuit comprises a current limiting circuit for the direct current flow in the telephone connection and a detector circuit to provide a signal that is a function of the resistance of the connected telephone line. When the resistance is above a preset level, an amplifier or repeater is connected into the connection. An additional feature is the provision of an automatic gain arrangement to vary the gain of the amplifier or repeater as a function of the resistance of the line.

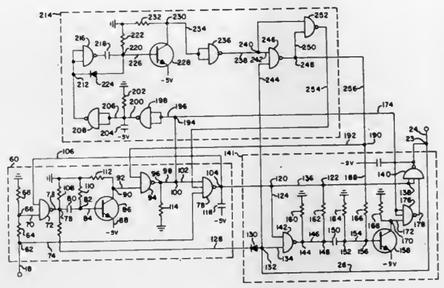
3,781,482

PULSE-CORRECTING SYSTEM FOR A TELEPHONE SIGNALING SYSTEM

Otto G. Wisotzky, San Francisco; Tom L. Blackburn, San Jose, and Roy J. G. Urbach, Redwood City, all of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 31, 1972, Ser. No. 222,183
Int. Cl. H04q *1/36*
U.S. Cl. 179—16 EA **12 Claims**

Pulse correcting circuitry, including three timing means, which provide minimum "break" and "make" pulse intervals at a receiving terminal. A first timer delays and subtracts a first predetermined time duration from the input pulse and delays the appearance of the pulse at the output of the first timer by this first predetermined time duration. A second timer is operatively connected with the first timer and prevents activation of the first timer for a second predetermined time interval in order to prevent operation of the pulse correcting circuitry on spurious pulses. Following the second



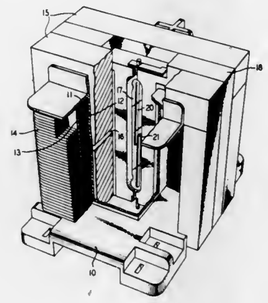
predetermined time interval, the state of the outputs of the second timer are set and they are held for a third predetermined time interval. When the first and second timers permit an output to occur from the first timer, a third timer is activated and this timer insures that the pulse output has a minimum length. Where the input pulse to the first timer is longer than the minimum length, the output pulse is equal to the input pulse.

3,781,483

LINE FEED AND ISOLATION TRANSFORMER WITH INTEGRAL LOOP SUPERVISION

Cecil Winston Deisch, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1971, Ser. No. 204,001
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 F **4 Claims**

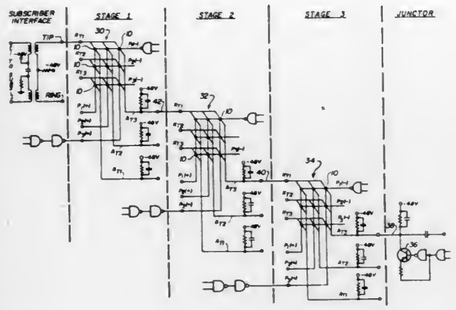


Apparatus is disclosed for providing all of the functions of battery-feed, isolation, and supervision for a line circuit in a communication switching system. The apparatus comprises a primary and a secondary winding coupled inductively via a magnetic core which includes an air gap. A reed contact pair is positioned across the air gap to operate and give indication of the presence of magnetic flux across the air gap resulting from current flow in the primary winding.

3,781,484
PATH SELECTION TECHNIQUE FOR ELECTRONIC SWITCHING NETWORK

Max S. Macrander, Warrenville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 23, 1971, Ser. No. 211,500
Int. Cl. H04q 3/50
U.S. Cl. 179—18 GF 9 Claims

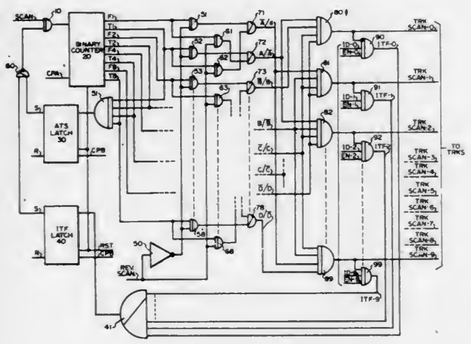


A switching circuit using crosspoint switching elements including a four terminal pnpn semiconductor device such as a thyristor, a cathode terminal for connection to an information signal line, an anode terminal for connection to another signal line and P(−) and P(+) terminals for receiving control signals to interconnect the information signal lines through the crosspoint switching element, and means for biasing the cathode terminal negative with respect to ground and for biasing the anode terminal at ground potential, thereby eliminating extra voltage sources required in such prior art crosspoint switching elements and decreasing the amount of the normally required gate current.

3,781,485
TRUNK SELECTION SCANNING CIRCUIT

John W. Woodward, Schaumburg, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 9, 1972, Ser. No. 279,113
Int. Cl. H04m 3/22
U.S. Cl. 179—18 FG 9 Claims

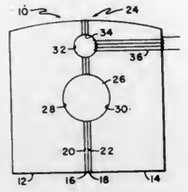


A scanning circuit for selecting outgoing or two way trunk circuits in a crosspoint switching system, where two attempts are made to select an idle trunk. The first scan is made in one direction, with the second scan made in the reverse direction.

3,781,486
MAGNETIC HEAD TRANSDUCER

Michael B. Maryatt, Cupertino, and James M. McCoy, San Jose, both of Calif., assignors to Avco Corporation

Filed Apr. 26, 1972, Ser. No. 247,690
Int. Cl. G11b 5/22, 5/42
U.S. Cl. 179—100.2 C 6 Claims

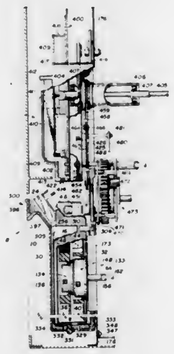


A thin layer of nonmagnetic material, such as silicon dioxide, is chemically vapor deposited on confronting gap faces of a pair of ferromagnetic pole pieces. The pole pieces are bonded together in abutting relationship so that the nonmagnetic material defines a transducing gap between the pole pieces. Preferably the pole pieces are formed in relatively thick blocks that are bonded together after the nonmagnetic material is deposited and then sliced to form a plurality of individual transducers.

3,781,487
REEL-OVER-REEL VIDEO TAPE CARTRIDGE AND TRANSPORT APPARATUS WITH SLIDING PIVOT

William W. Swain, San Jose, and Richard A. Hathaway, Saratoga, both of Calif., assignors to Avco Corporation, New York, N.Y.

Filed Apr. 16, 1971, Ser. No. 134,677. The portion of the term of this patent subsequent to May 23, 1989, has been disclaimed.
Int. Cl. G11b 23/04
U.S. Cl. 179—100.2 Z 1 Claim

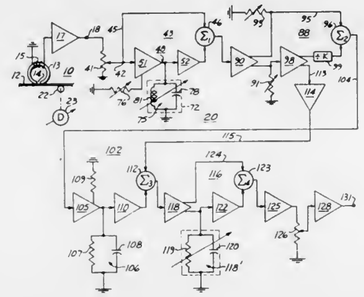


The invention herein disclosed comprises an improved video tape cartridge, in combination with handling apparatus included in a tape transport of the type having rotatably mounted multiple transducers. The cartridge is of the reel-over-reel type and it is placed into the ejector element of novel handling apparatus comprising an ejector and a carriage. As the cartridge is placed in the ejector, being located by a slot and spline arrangement, a brake within the cartridge housing is released. The carriage is swingably mounted so that it is swung from an inclined position into a vertical position and then displaced forwardly in order to locate a poised span of tape relative to the multiple tranducers. During the movement of the carriage, a lid is opened in order to expose the said span of tape. Additionally, during such movement, clutch formations formed on the reels grasp respective spindles rotatably mounted on the tape transport. As the cartridge is moved into position locator pins on the tape transport register with aligned openings on the face of the cartridge. The cartridge is formed with integral compartments for the reception of tape pick-up elements and a pressure roller.

3,781,488
PLAYBACK SYSTEM WITH FREQUENCY EQUALIZATION BY CASCADED CIRCUITS PERFORMING IN ACCORDANCE WITH PARTIAL FRACTION EXPANSIONS OF FACTORIAL EQUALIZING FUNCTION TERMS

Robert A. Byers, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 22, 1971, Ser. No. 155,564
Int. Cl. G11b 5/44
U.S. Cl. 179—100.2 K 19 Claims



Non-linear frequency response of a recorded signal playback system is equalized with the aid of an equalizing function. This function is analyzed into a number of factorial terms. A partial fraction expansion is performed on each term. A number of cascaded electric circuits is provided for performing the equalizing function on played-back electric signals. The cascaded circuits include for each factorial term an electric circuit for performing in accordance with the particular partial fraction expansion a function conforming to the particular term. The played-back electric signals are subjected to the cascaded circuits to equalize the non-linear frequency response of the playback system.

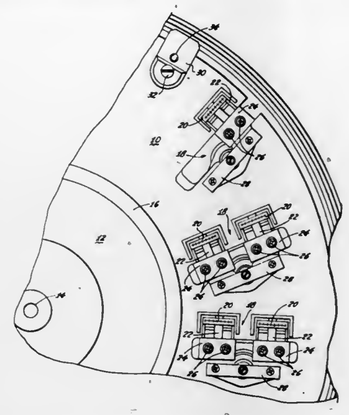
The playback system may be a multi-speed playback system, in which case one of the function-performing circuits is adjusted for each speed of the playback system to adapt the equalization to the particular speed.

3,781,489
METHOD AND APPARATUS FOR ALIGNING MAGNETIC HEADS IN A MAGNETIC DISC RECORDER

Abraham Brand, Encino, Calif., assignor to General Instrument Corporation, Hawthorne, Calif.

Filed Aug. 2, 1972, Ser. No. 277,327
Int. Cl. G11b 5/56
U.S. Cl. 179—100.2 R 17 Claims

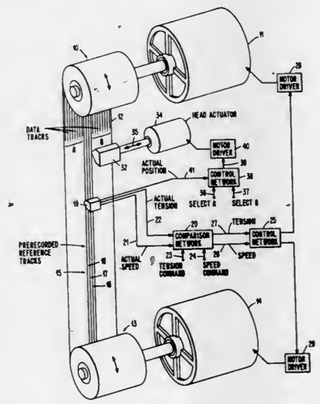
A method and apparatus for accurately aligning a plurality of magnetic heads in a magnetic disc recorder and reproducer, including the use of a transparent disc member having radial lines arranged around a central opening of the disc member, and having lines perpendicular to the radial lines also arranged around the central opening, and with the combination of the radial lines and the lines perpendicular to the radial lines forming locations for the alignment of the magnetic heads, and with the magnetic heads divided into groups supported in comb members accurately located to properly position the magnetic heads in a group relative to each other and to provide the air gaps of such group of magnetic heads to be along a straight line and with each comb member supported by a mounting means and with the transparent disc member including openings located adjacent to the radial lines to provide access to the mounting means to provide for the proper alignment of the groups of magnetic heads.



3,781,490
WEB TENSION AND SPEED CONTROL IN A REEL-TO-REEL WEB TRANSPORT

William B. Phillips, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 198,925, Nov. 15, 1971, abandoned. This application June 1, 1973, Ser. No. 365,891
Int. Cl. G11b 19/28
U.S. Cl. 179—100.2 S 7 Claims



A reel-to-reel magnetic tape transport for a relatively wide tape which carries a number of laterally spaced data track groups and prerecorded reference tracks. Control transducer means senses the reference tracks and provides an output signal indicative of increments of tape movement. This information is used to derive an output signal indicative of the tape speed, i.e., displacement per unit time. The control transducer

means also provides a signal indicative of the lateral position of the tape. The control transducer means includes a tension transducer which provides an output signal indicative of the tape tension. The lateral tape position signal controls the lateral position of a data processing head. The tape speed signal and tape tension signal jointly control the two reel drive motors to maintain a desired tape speed, i.e., a desired incremental tape distance per unit time, and a desired tape tension.

3,781,491

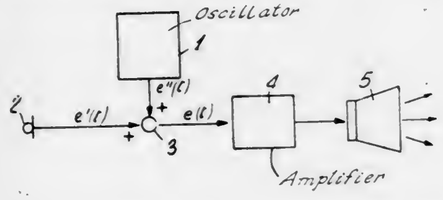
METHOD AND APPARATUS FOR MAKING THE HUMAN VOICE AUDIBLE AND COMPREHENSIBLE TO SEVERELY DEAF PERSONS

Emanuele Biondi, Via Ippolito Nievo 28/1, and Leonardo Biondi, Via Rontgen 19, both of Milan, Italy

Continuation-in-part of Ser. No. 803,321, Feb. 28, 1969, abandoned. This application June 23, 1971, Ser. No. 156,109

Int. Cl. H04r *25/00*

U.S. Cl. 179—107 R **5 Claims**



A method and apparatus is provided for making the human voice audible and comprehensible to severely deaf persons which includes transforming an acoustic information signal corresponding to the human voice to corresponding electric signals, and summing these electric signals with a generated periodic signal or pseudo-carrier to provide a summation signal which is amplified and transformed to an acoustic signal. The method is based on the theory that the summation signal can pass through a diseased synapsis more easily than the separate information signal or the pseudo-carrier signal.

3,781,492

HEADSET

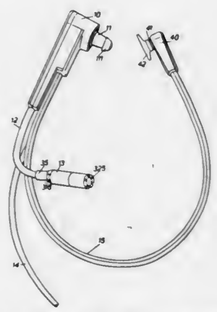
William D. Cragg, Harlow; Leslie E. B. Dymoke-Bradshaw, Edgeware; Anthony C. Batchelor, London, and Ronald D. Carter, Warwick, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 22, 1972, Ser. No. 290,905

Claims priority, application Great Britain, Oct. 21, 1971, 48,953/71

Int. Cl. H04m *1/05*; **H04r** *1/28*

U.S. Cl. 179—156 A **20 Claims**



A headset includes a main housing containing a miniature demountable earphone, a microphone pre-amp and a snap-on earpiece. The housing is connected to one end of an adjustable boom having a pressure gradient microphone at the other end. The microphone has a piezoelectric disc transducer mounted midway from either end of a cylindrical housing and perpendicular thereto, the cylinder halves being separate acoustic resonators of predetermined frequency to provide an upper limit of operation.

3,781,493

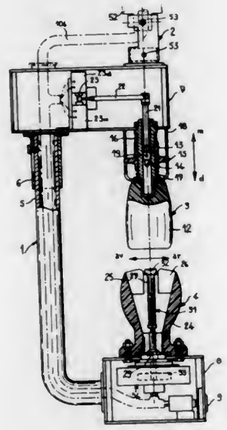
GROUND LEVEL CONTROL SYSTEM FOR LIFTING APPARATUS WITH UNIVERSAL TYPE CONTROLLER FOR SWITCH ASSEMBLIES

Michel Darmon, Paris, France, assignor to I.N.R.S., Paris, France

Filed Apr. 21, 1972, Ser. No. 246,438

Int. Cl. H01h *3/00*

U.S. Cl. 200—6 A **10 Claims**



A system for controlling from ground level a lifting apparatus which is adapted to move a load in a vertical direction and two horizontal directions comprises an operating support suspended from the lifting apparatus by an antigyratory suspension on which are mounted manipulators controlling switch means causing movement of a load carried by the lifting apparatus, the manipulators being moved to operate switch means in directions parallel to the directions of displacement of the load to be caused thereby and in the same sense of direction.

3,781,494

CAM OPERATED IGNITION POINT ASSEMBLY

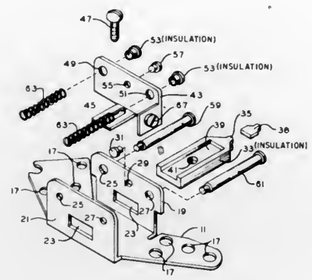
Paul Tremarco, Hewitt, N.J., assignor to Edson Enterprises, Inc., Hewitt, N.J.

Filed Jan. 9, 1973, Ser. No. 322,113

Int. Cl. H01h *19/62*

U.S. Cl. 200—30 A **11 Claims**

An improved set of ignition points for use in automobile engines and the like in which the points are opened and closed by a plunger wherein the moving point is maintained parallel to the fixed point by a pair of guide pins. The points are mounted on a base member which contains a plurality of holes to permit the points to be used as a direct replacement.



3,781,495

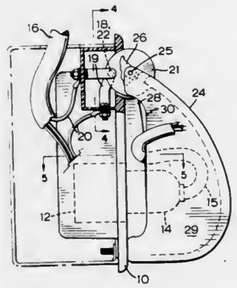
SAFETY SWITCH WITH HINGE TYPE INTERLOCKING MECHANISM FOR OPERATING SWITCH CONTACTS OR PREVENTING ACTUATION THEREOF

John Peter Splingaerd, 715 Pine St., Dunnville, Ontario, Canada

Filed Sept. 29, 1972, Ser. No. 293,433

Int. Cl. H01h *9/22*

U.S. Cl. 200—50 A **9 Claims**



In association with an electrical outlet there is provided a cover member which is pivotally mounted to the outlet mounting plate for movement between a first position in which the cover member covers the electrical outlet and a second position in which this outlet is uncovered. An electric switch is connected in circuit with the electrical outlet whereby when the switch is in an open condition the electrical outlet is deenergized, and when the switch is in a closed condition the electrical outlet is energized, the switch incorporating a disc of electrically insulating material which is mounted on the cover member coaxially with the pivotal mounting thereof and through which a body of electrically conducting material is eccentrically mounted. The disc thus turns in the appropriate direction during pivotal movement of the cover member between the first and second positions thereof, the body of electrically conducting material being disposed between and in contact with spaced electrical contacts of the switch when the cover member is in the first position so that the switch is thus in the closed condition, and a portion of the disc of electrically insulating material being disposed between the contacts of the switch when the cover member is in the second position so that the switch is thus in the open condition.

3,781,496

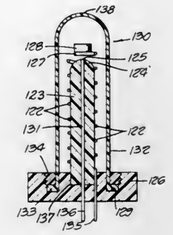
TIMING SENSOR SWITCH WITH OSCILLATING COIL SPRING AND METAL MASS CONTACT

John Leslie Jones, Sr., 1070 Glen Oaks Rd., Pasadena, Calif.

Division of Ser. No. 063,750, Aug. 14, 1970, Pat. No. 3,690,695. This application Sept. 5, 1972, Ser. No. 286,463

Int. Cl. 200 *61.51*; **H01h** *35/14*

U.S. Cl. 200—61.45 R **1 Claim**



An impact sensor switch with an oscillating conductive coil spring having a mass of metal rigidly attached thereto engages a fixed contact upon deflection of the coil spring and metal mass.

3,781,497

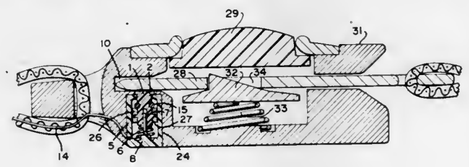
SEAT BELT BUCKLE PLUNGER TYPE SWITCH AND HOUSING CONTAINING BELT LATCH MECHANISM

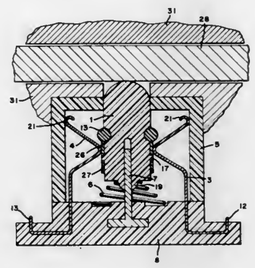
Robert L. Stephenson, Sterling Heights, and Yogendra S. Loomba, Roseville, both of Mich., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed Oct. 12, 1972, Ser. No. 297,137

Int. Cl. H01h *13/62*

U.S. Cl. 200—61.58 B **19 Claims**



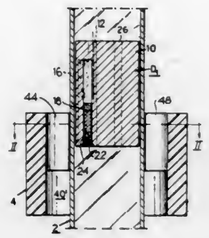


A vehicle seat belt buckle adapted for use in a warning system comprising in combination a buckle with slot for receiving a tongue in locking engagement, which tongue upon insertion into the buckle depresses a plunger switch either from a closed circuit position to an open circuit position or from an open circuit position to a closed circuit position, as desired. The plane surface of the tongue maintains the plunger switch in the depressed position until said tongue is unlatched and withdrawn from the buckle.

3,781,498
LIQUID LEVEL DETECTOR

Zvi Kamil, Tel Aviv; Yoel Amir, Omer, and Omri Talmon, Beer-Sheva, all of Israel, assignors to Beta Engineering & Development Ltd., Beer-Sheva, Israel

Filed June 26, 1972, Ser. No. 266,447
Int. Cl. H01h 35/18
U.S. Cl. 200—84 C 7 Claims

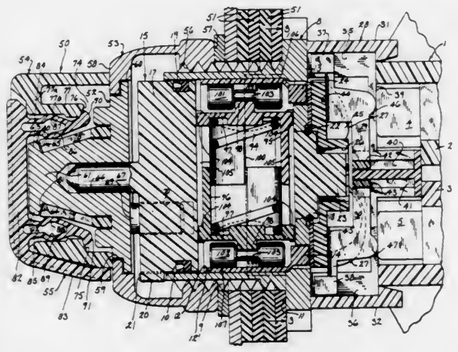


A liquid-level detector comprises a sensing device including a magnetically-actuated switch and a fixed magnet whose magnetic field causes the switch to normally assume one operating condition. The sensing device further includes a movable magnet movable from a first position where it exerts no significant influence on the magnetic field of the fixed magnet to a second position wherein it influences the magnetic field of the fixed magnet to cause the switch to assume its other operating condition. The detector further includes a float carrying a float magnet adapted to move the movable magnet to actuate the switch.

3,781,499
SELECTOR SWITCH WITH PARTICULAR OPERATOR MEANS, AND DETENTS WHICH ARE RESTRAINED FROM ROTATION

Gilbert A. Reichert, Greendale, and Earl R. Moehrle, Milwaukee, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Sept. 18, 1972, Ser. No. 286,531
Int. Cl. H01h 3/08, 3/50
U.S. Cl. 200—166 SD 11 Claims

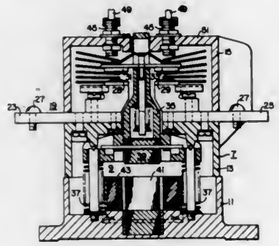


A selector switch actuator includes an actuator sleeve having a cam surface formed around its interior surface. A rotor is journaled within the actuator sleeve and includes a bias spring located within a transverse opening formed through the rotor. A roller is rotatably attached to each end of the spring by a spring seat and the rollers are forced radially outward with equal, but opposite force against the cam surface to force the rotor into one of a plurality of selectable positions. An easily assembled knob structure is shown which includes a threaded cover that attaches to the actuator sleeve to fasten the switch to a mounting wall.

3,781,500
GAS COOLED ELECTRICAL CONTACTOR

Kurt A. Grunert, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 2, 1972, Ser. No. 294,135
Int. Cl. H01h 1/62
U.S. Cl. 200—166 K 10 Claims

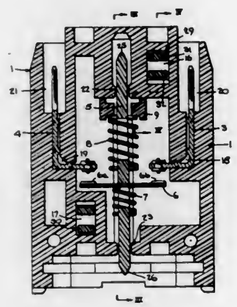


A contactor characterized by an electrically insulating housing containing a plurality of sets of contacts including corresponding pairs of stationary contacts and movable contacts movable between open and closed positions with respect to each other; the housing having a top wall extending over the movable contacts, gas coolant means for directing currents of coolant gas onto each set of contacts in a direction aligned with the path of travel of the movable contacts, and the gas coolant means comprising a gas manifold connected to gas conduits leading to the top of the housing in which gas inlet nozzles are provided for directing the currents of gas to each set of contacts, particularly during the time the switches are closed.

3,781,501
SINGLE POLE ELECTRIC SWITCH WITH CONTACTS CONVERTIBLE FROM NORMALLY OPEN TO NORMALLY CLOSED AND VICE VERSA

Giuseppe Borghetti, Turin, Italy, assignor to Telemeccanica Elettrica Officine Meccaniche Riunite S.p.A., Milan, Italy

Filed Dec. 11, 1972, Ser. No. 313,844
Claims priority, application Italy, Dec. 22, 1971, 32766 A/71
Int. Cl. H01h 1/34
U.S. Cl. 200—166 BC 8 Claims

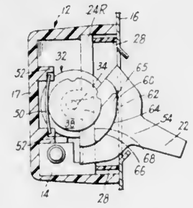


An electric switch having fixed contacts on a housing and having an invertible bar slidable therein, the bar carrying a contact bridging arm with contacts engageable with the fixed contacts, a contact pressure applying spring acting between the bar and the arm and a return spring acting between the bar and an abutting element mounted off-center on an invertible and removable lid for the housing. In one position of the bar and lid, the contacts are normally open and in the inverted position thereof, the contacts are normally closed, the contact position being indicated by symbols alternately exposed depending on the lid position.

3,781,502
MERCURY SWITCH WITH HEAT SINK CONTACT

Walter C. Schumacher, Warwick, and Ralph L. Graves, East Greenwich, both of R.I., assignors to General Electric Company, Providence, R.I.

Filed Apr. 28, 1972, Ser. No. 248,407
Int. Cl. H01h 29/20
U.S. Cl. 200—226 16 Claims



A mercury switch is provided which gives a mercury button a higher switching capacity in terms of the level of electric power which can be switched. The switch is provided with novel contacts which have spring action to enhance both electrical contact and transfer of heat from the button and from the switch. Greater compactness of switch structure is achieved in spite of the higher power switching capability built into the switch thus reducing crowding of wire connections within the wall box in which the switch is mounted.

3,781,503
SOLID STATE INDUCTION COOKING APPLIANCES AND CIRCUITS

John D. Harnden, Jr., and William P. Kornrumpf, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,424
Int. Cl. H05b 5/04
U.S. Cl. 219—10.49 23 Claims

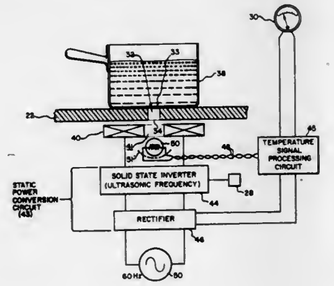


An economical smooth-top cooking appliance for inductively heating cooking utensils preferably comprises a flat air-core induction heating coil driven at an ultrasonic frequency by a simplified one-thyristor, one-transistor, or two-transistor resonant inverter. The series and parallel resonant circuits in the inverters are formed by a capacitor and the induction heating coil. The one-thyristor series resonant circuit is desirable because power control to adjust the cooking temperature is obtained by the combined effect of increasing the frequency and amplitude of the sinusoidal current pulses supplied to the coil. The coil is also movable to change the gap spacing between coil and utensil to vary the coupled power. Flux beneath the coil is used for warming purposes.

3,781,504
INDUCTION COOKING APPLIANCE INCLUDING TEMPERATURE SENSING OF INDUCTIVELY HEATED COOKING VESSEL BY RADIATION DETECTION MEANS

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,351
Int. Cl. H05b 5/04
U.S. Cl. 219—10.49 8 Claims



Herein disclosed is an induction range having a counter on which there is rested a cooking vessel to be inductively heated by an induction coil having an air core; the induction coil being located below the counter. The counter has a passage therethrough extending from the top, or working, surface thereof, on which the cooking vessel rests, to a lower surface thereof near the induction coil. The passage in the counter and the induction coil's core are in register. A bolometer is situated below the induction coil. The vessel rests on the working surface of the counter and covers the passage so that the bottom of the vessel is in an unobstructed line with the bolometer. The bolometer receives radiant heat energy from the inductively heated vessel and is instrumental in determining the temperature thereof.

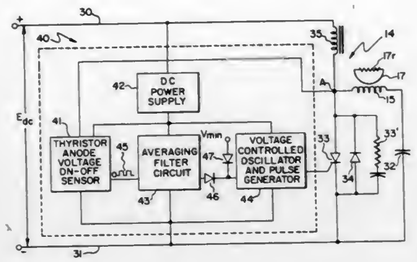
3,781,505
CONSTANT DUTY CYCLE CONTROL OF INDUCTION COOKING INVERTER

Robert L. Steigerwald, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 28, 1972, Ser. No. 267,143
Int. Cl. H05b 5/04
U.S. Cl. 219—10.49 12 Claims

In a solid state cool-top cooking appliance for inductively heating a utensil, an inverter for driving the induction heating coil utilizes a constant duty cycle control circuit to optimize performance with the utensil coupled with and removed from the energized coil. To compensate for the increased period of oscillation when unloaded, the inverter operating frequency is automatically decreased to reduce voltage and current stresses on circuit components. Conversely, the operating frequency increases when loaded to couple more power to the utensil. An on-off sensor continuously senses an inverter circuit parameter indicative of the load condition, such as a volt-

age divider and associated switch for sensing the thyristor anode voltage. The sensed information is processed by the control circuit in closed feedback loop manner to vary the



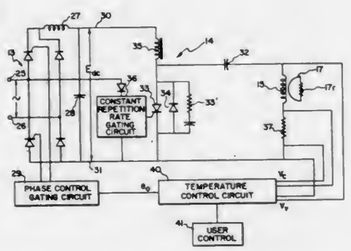
thyristor gating signal repetition rate. Disclosed with regard to a one-thyristor series resonant inverter, the technique is applicable to inverters generally.

3,781,506

NON-CONTACTING TEMPERATURE MEASUREMENT OF INDUCTIVELY HEATED UTENSIL AND OTHER OBJECTS

Marshall D. Ketchum, and Milton D. Bloomer, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 28, 1972, Ser. No. 276,164
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **23 Claims**



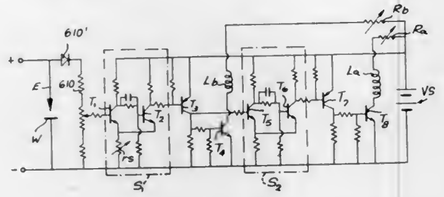
A solid state cool-top induction cooking appliance equipped to set and maintain a selected utensil temperature. A non-contacting temperature sensing technique is based on sensing an inverter power circuit parameter that varies with the utensil temperature, and thus does not require holes in the cooking surface or sensors that project above. The power circuit parameter is typically an interval of oscillation or a damping factor, such as the interval between zero-crossing points of the instantaneous induction heating coil current. The temperature signal derived therefrom is corrected for other circuit factors, for example, a variable input voltage, that also cause a change in the selected power circuit parameter. A user control setting signal can also be summed with the temperature signal. The corrected temperature signal is employed in closed feedback loop fashion to adjust the power coupled to the utensil to maintain the set temperature. The method of measuring and controlling temperature is applicable to inductively heated objects other than cooking utensils, and induction heating apparatus incorporating the temperature control circuitry is useful in a variety of applications.

3,781,507

SERVOSYSTEM FOR ELECTRICAL MACHINING PROCESSES

Kiyoshi Inoue, 3-chome 16-8, Kamiyoga, Setagaya-ku, Tokyo, Japan

Division of Ser. No. 19,364, March 13, 1970, Pat. No. 3,686,461. This application July 17, 1972, Ser. No. 272,463
Claims priority, application Japan, Mar. 13, 1969, 44/18991; Apr. 2, 1969, 44/25317; Apr. 2, 1969, 44/25318; Apr. 30, 1969, 44/33960; May 30, 1969, 44/42188; Nov. 1, 1969, 44/87832; Nov. 26, 1969, 44/94741; Nov. 26, 1969, 44/94742
Int. Cl. B23p *1/14*
U.S. Cl. 219—69 G **9 Claims**



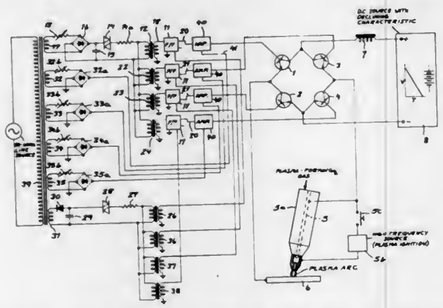
A servosystem for electrical maching processes adapted to regulate a spark-discharge gap in electrodischarge machining and other material-removal, shaping or forming operations in which the energy of an electrical discharge across the gap is exploited. Instead of the usual reference voltage or other electrical value for comparison with a gap parameter whereby the difference or other algebraic comparison controls the electrode drive, a gap detector is provided to feed a substantially continuous (anlog) value to a discriminator having a threshold value and producing a digital output in accordance with the comparison. The digital output represents an "advance" or a "retract" condition and is communicated via a suitable switch or amplifier to the respective electromagnetic member of the control system, the latter member being a servomotor mechanically coupled with the movable electrode or a fluid-control valve hydraulically or pneumatically coupled with the movable electrode.

3,781,508

APPARATUS FOR PLASMA WELDING

Horst Dauer, Pfaffenhofen, and Peter Hildebrandt, Ismaning, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Sept. 13, 1971, Ser. No. 179,896
Claims priority, application Germany, Sept. 18, 1970, P 20 46 227.5
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **8 Claims**



Plasma welding of light-metal workpieces and materials subject to oxidation is carried out using square-wave alternat-

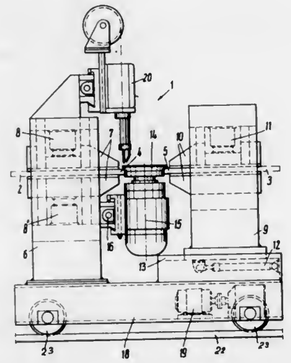
ing current. The energization circuit comprises a bridge of controllable rectifier-type elements, the welding electrode network being positioned in a diagonal of the bridge while a direct-current source with a declining characteristic is connected across the other diagonal.

3,781,509

METHOD AND DEVICE FOR WELDING ALIGNED SHEET METAL PLATES TOGETHER FOR FORMING A BAND FOR MAKING SPIRAL SEAM TUBES

Heinz Krakow, Hamburg, Germany, assignor to Blohm & Voss AG., Hamburg-Steinwerder, Germany

Filed May 13, 1971, Ser. No. 143,035
Claims priority, application Germany, June 4, 1970, P 20 27 439.9
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R **7 Claims**



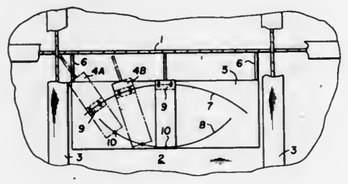
A continuous band for use in making spiral seam tubes is made by horizontally aligning sheet metal plates in a common horizontal plane and clamping each adjacent end of the plates separately. A milling cutter is introduced in a slot formed between the adjacent transverse edges of these plates to trim and chamfer these two transverse edges simultaneously. Thereupon at least one of the clamping devices for clamping one of the plates is moved toward the other clamping device holding the other plate so that a welding joint is formed between the two transverse edges, which are then welded together.

3,781,510

APPARATUS FOR WELDING INTERRUPTED SEAMS

Ulrich Ploetz, Rostock-Warnemunde, and Wolfgang Thiesen, Rostock, both of Germany, assignors to VEB Ingenieurburo Schiffbau, Rostock-Osthafen, Germany

Filed July 9, 1971, Ser. No. 161,004
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **4 Claims**



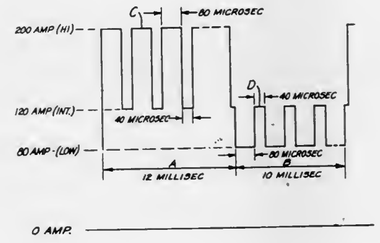
Welding apparatus is traversed along a weld gap to be welded, from one interruption of the required weld seam to another such interruption. Incident thereto, the apparatus is manipulated so that near the first interruption the weld arc is in trailing position but near the second interruption it is in leading position relative to the welding apparatus.

3,781,511

METHOD OF WELDING EMPLOYING SQUARE WAVE CURRENT PULSES AND CAUSING THE MOLTEN METAL TO RESONATE

Henry V. Rygiol, 3146 Perrer Rd., Escondido, Calif.

Filed Mar. 23, 1972, Ser. No. 237,452
Int. Cl. B23k *9/10*
U.S. Cl. 219—137 **5 Claims**



The metal structure within a weld area may be altered to obtain desirable physical properties by applying an arc to the weld area and pulsing the current supplied to the arc in several different manners so that the electron flow resulting from the operation of the arc causes the molten metal in the weld area to resonate. Preferably the current used consists of repetitive, sequential current "units" of two different series of sequential welding pulses, the first of such "units" consisting of a series of pulses of a square wave form varying between first and second current levels and the second of such "units" consisting of a series of current pulses of substantially a square wave form varying between either the second or a third level and a fourth current level. Various metals and alloys which are difficult and/or substantially impossible to weld by established techniques can be welded utilizing a weld current consisting of such "units."

3,781,512

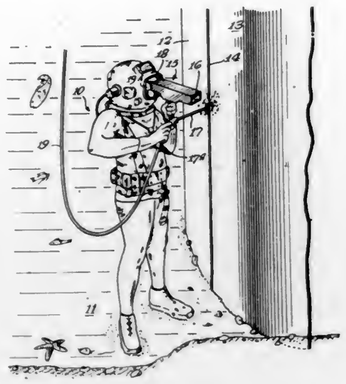
METHOD OF UNDERWATER WELDING USING VIEWING SCOPE

Conway E. Grubbs, Glen Ellyn, Ill., and Dale R. Anderson, Zachary, La., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

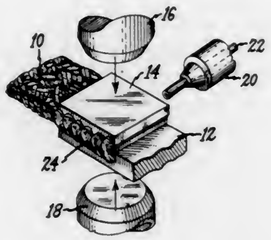
Filed June 6, 1972, Ser. No. 260,243
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 **20 Claims**

A method of underwater wet welding in water in which a transparent light-permeable viewing scope having a viewing end and an objective end is positioned in the water between the eyes of an underwater welder and a metal object to be welded, the viewing end of the viewing scope being positioned close to the eyes of the underwater welder, the objective end of the viewing scope being positioned spaced away from the object sufficiently far to provide clearance for a welding electrode therebetween, and a weld is deposited on the metal object by means of the electrode while the object and weld are in contact with the water and they are observed through the viewing scope by the welder. The method can be used to weld in turbid water in which the distance of human visability, when illuminated by daylight or artificial light, is less than needed by an underwater welder to directly view and weld an object without the viewing scope.

An underwater viewing scope, for viewing in water, having a transparent body with a viewing end and an opposing objective end by which light is transmitted through the body, and a light-absorbing covering on the body except for the two opposing ends.



3,781,513
FUSION BRAID WELD
Moreland P. Bennett, Hickory, N.C., assignor to General Electric Company
Filed Jan. 2, 1973, Ser. No. 320,114
Int. Cl. B23k 9/00
U.S. Cl. 219—137 5 Claims



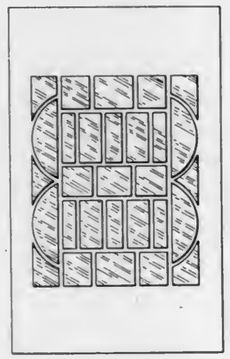
Means for joining braided copper leads or terminals to aluminum bus bars or tap straps. The means provides for clamping the braided copper member to the aluminum, preferably by means of a copper heat sink. Then the edges or overlapped areas of the copper and aluminum are fusion welded by a gas metal arc welding process with automatic aluminum wire feed. In a modified version a copper alloy wire is hand fed to the joint together with the aluminum filler wire from the welding gun.

3,781,514
ELECTRICALLY HEATED GLOVE WITH A FLEXIBLE LATTICE HEATING STRUCTURE
Mark W. Olson, Allendale, and Walter F. Silva, Riverdale, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.
Division of Ser. No. 117,723, Feb. 22, 1971, which is a division of Ser. No. 827,209, May 23, 1969, Pat. No. 3,635,623. This application Nov. 7, 1972, Ser. No. 304,351
Int. Cl. H05b 3/36
U.S. Cl. 219—211 1 Claim

An electrically heated glove having a flexible lattice structure of plastic material having an electrical heater wire embedded therein and extending continuously in adjacent lengths along the length of said lattice structure. The electrical heater wire having a plurality of heater wire loops extending from said lattice structure and interconnecting said adjacent lengths of said heater wire for the application of electrical current thereto.

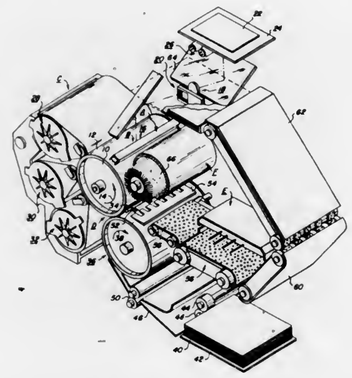


3,781,515
INTEGRATED HEATER ELEMENT ARRAY AND DRIVE MATRIX
Marvin L. Morris, Jr., Dallas; Hermon L. Pope, Jr., Houston, and Edward M. Ruggiero, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 848,564, Aug. 8, 1969, Pat. No. 3,631,459. This application Sept. 13, 1971, Ser. No. 180,054
Int. Cl. H05b 1/00, 3/00
U.S. Cl. 219—216 11 Claims



Thermal display including an air isolated integrated semiconductor circuit forming an array of semiconductor heater elements having different heights, widths and shapes joined by a metallic connecting pattern which extends out over the heating elements to interconnect selected ones of them and a PN junction isolated integrated semiconductor drive matrix for the heating element array positioned in the same plane as the heating element array. The PN junction isolated integrated semiconductor drive matrix and the semiconductor heating element array are concurrently formed in the same semiconductor substrate and the heating element array is air isolated to provide a high degree of electrical and thermal isolation for the heating element array while both are located in the same plane on a larger support. The thermally sensitive material on which a dynamic display is formed or on which a permanent display is printed is in direct contact with the monocrystalline semiconductor material of the heating element array and can be passed over the heating element array and the drive matrix.

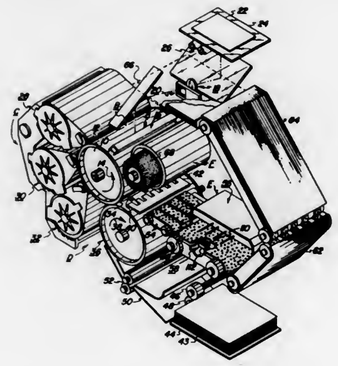
3,781,516
FUSER CONTROL SYSTEM
George N. Tsilibes; Frank V. D'Amico, and John G. Hamm, III, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Feb. 20, 1973, Ser. No. 334,167
Int. Cl. G03g 15/20
U.S. Cl. 219—216 12 Claims



A control system in which a first heat source and a second heat source, cooperating with one another, are regulated for maintaining a moving article at a preselected temperature.

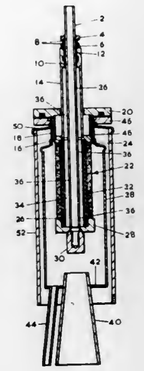
The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,781,517
FUSER THERMAL PROTECTOR
Dale William Skamra, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 19, 1973, Ser. No. 342,636
Int. Cl. G03g 15/20
U.S. Cl. 219—216 10 Claims



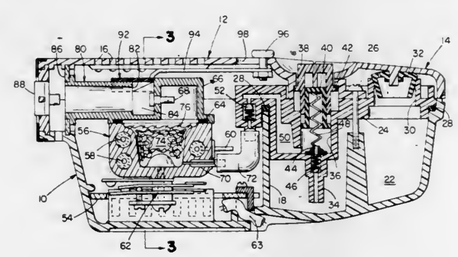
An apparatus arranged to cooperate with a fusing device for preventing the occurrence of an over-temperature condition therein.

3,781,518
VACUUM PUMPS
Basil Dixon Power; Roger Derek Oswald, and David Michael Tooth, all of Crawley, England, assignors to The British Oxygen Company Limited, London, England
Filed June 29, 1972, Ser. No. 267,413
Int. Cl. F22b 1/28
U.S. Cl. 219—271 5 Claims



An electrically heated vaporiser particularly for a vapour vacuum pump, comprising a porous electrical heating element through which the liquid to be vaporised is pumped and having means for retaining the mechanical integrity of the heating element despite thermal movements and for reducing heat losses.

3,781,519
HAIR STEAMER
James M. Martin, Chicago, and Michael D. Thomas, Elmhurst, both of Ill., assignors to The Gillette Company, Boston, Mass.
Filed June 12, 1972, Ser. No. 262,043
Int. Cl. F22b 1/28
U.S. Cl. 219—273 5 Claims

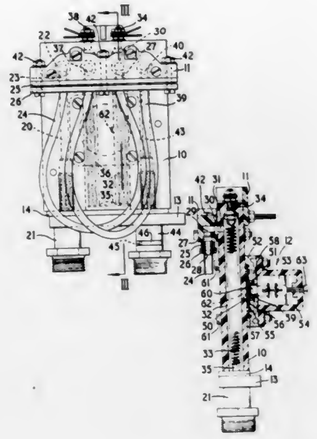


A hair steamer comprising a steam generating chamber having at least one restricted nozzle for delivering a jet of steam, a heater for preheating and maintaining the chamber at a temperature above the boiling point of water, a tank for holding a supply of water separate from the chamber, manually actuatable supply means for introducing a limited quantity of water into the chamber from the supply tank, and air inlet means mounted adjacent the outlet of the nozzle for introducing a controlled quantity of air into the steam jet. A choke is provided for adjusting the ratio of air to steam.

3,781,520
ELECTRIC INSTANTANEOUS WATER HEATER

George William Gardom, Sutton Coldfield, England, assignor to Gardom & Lock Limited, West Bromwich, Staffordshire, England

Filed Dec. 6, 1971, Ser. No. 205,232
Int. Cl. H05b 1/02; F24h 1/10
U.S. Cl. 219—309 23 Claims



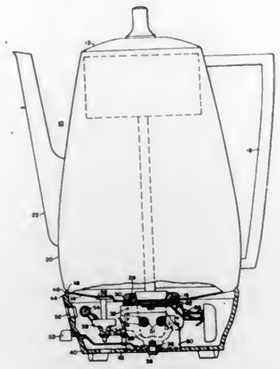
An instaneous water heater includes a main electrically insulating body having an inlet and an outlet. A flow duct means extends between the inlet and outlet and includes an inlet bore, an outlet bore, a heater bore means, a first flexible, electrically insulating tube extending between the inlet bore and the heater bore means and a second flexible, electrically insulating tube extending between the heater bore means and the outlet bore. The inlet bore, outlet bore and the heater bore means are formed in the main body while the first and second tubes are formed separately and independently of the main body and each other. A clamping plate connects the ends of the tubes with respect to inlet bore, outlet bore and heater bore means. The tubes together with the inlet and outlet boers define a length sufficient to provide a resistance path which minimizes leakage current flow from an electric heater disposed within the heater bore means. A flow responsive switch means controls current flow the electric heater. A thermostat may be provided in series with the flow responsive switch.

3,781,521
AUTOMATIC COFFEEMAKER WITH AUDIBLE SIGNAL MEANS

Paul J. Kircher, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1972, Ser. No. 218,791
Int. Cl. F27d 11/02
U.S. Cl. 219—442 3 Claims

Signal means to audibly indicate the termination of a cooking or brewing cycle in an automatic electric appliance and the beginning of a cycle wherein a warming heater is employed to maintain the cooked or brewed food-stuff heated. The signal means includes a snap-acting bimetal disposed adjacent the warming heater and a movable pin having one end adjacent one face of the bimetal and the other end disposed a short distance from a bell. Energization of the warming heater causes the bimetal to snap against the pin and drive it against

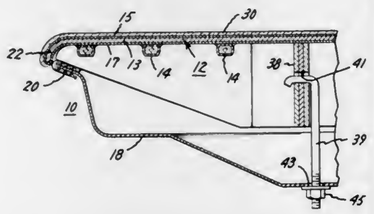


the bell providing an audible signal that the cooking cycle is terminated and the warming heater energized.

3,781,522
THERMOCHROMIC SURFACE HEATING APPARATUS

Marcus P. Borom, Schenectady, and Robert C. De Vries, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,421
Int. Cl. H05b 3/68
U.S. Cl. 219—462 7 Claims



A smooth surface heating apparatus is provided having a heat spreader plate of high thermal conductivity coated, at least on its upper surface, with a thermochromic glass ceramic material containing a predominant crystalline phase of lithium disilicate in a glassy matrix and having a coefficient of expansion in the range of 80–120×120×$^{-7}$ per °C. The thermochromic property is obtained by the presence of basic lead chromate in the glass-ceramic coating. An insulated electrical resistance heating element and a reinforcing member are attached to the underside of the heat spreader plate. A reflector pan is provided beneath the heating element to direct the heat in an upward direction.

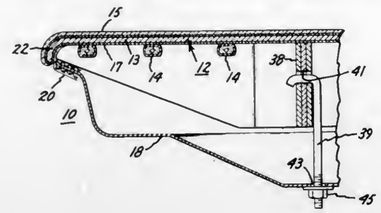
3,781,523
THERMOCHROMIC SURFACE HEATING APPARATUS

Marcus P. Borom, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,422
Int. Cl. H05b 3/68
U.S. Cl. 219—462 7 Claims

A smooth surface heating apparatus is provided having a heat spreader plate of high thermal conductivity coated, at least on its upper surface, with a thermochromic glass-ceramic material containing a predominant crystalline phase of lithium

disilicate in a glassy matrix and having a coefficient of expansion in the range of 80–120×107per °C. The thermochromic property is obtained by the addition of cadmium sulfide and selenium preferably with zinc oxide to the batch ingredients.

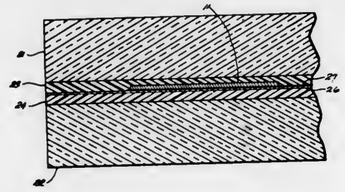


An insulated electrical resistance heating element and a reinforcing member are attached to the underside of the heat spreader plate. A reflector pan is provided beneath the heating element to direct the heat in an upward direction.

3,781,524
EDGE IMPROVEMENT FOR WINDOW WITH ELECTRICALLY CONDUCTIVE LAYER

Berton P. Levin, Santa Monica, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.

Filed July 3, 1972, Ser. No. 268,827
Int. Cl. H05b 3/06
U.S. Cl. 219—522 2 Claims



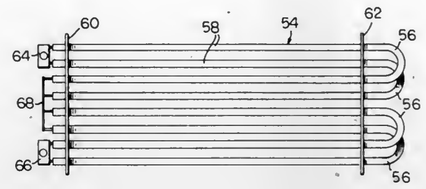
An electrically heatable window has a pair of outboard glass plys sandwiching a pair of transparent plastic interlayers which in turn sandwich a plastic ply or carrier film on which has been deposited an electrically conductive metal coating. Conductive bus bars contact edge portions of the conductive layer for applying a heating current. The conductive layer is applied to a large sheet of the carrier film which is subsequently cut to be co-extensive with the glass plys. The edge portions of the cut plastic ply have the conductive layer removed, preferably by abrasion, so that the edges of the plastic carrier film ply are bonded to the adjacent interlayer. This minimizes electrical hazards and protects the conductive layer from environmental attack.

3,781,525
METAL CLAD HAIRPIN SHAPED ELECTRIC INTEPLEAVED HEATING ELEMENTS

Stanley V. Joeckel, Wayne, N.J., assignor to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Division of Ser. No. 255,065, May 19, 1972, Pat. No. 3,738,256. This application Nov. 24, 1972, Ser. No. 309,226
Int. Cl. H05b 3/06
U.S. Cl. 219—532 3 Claims

A cooking device in which a frame which is open at the top has a substantially horizontal grill, or grate, disposed therein upon which articles, including articles of foodstuff, can be placed for heating and cooking. The grate is made up of metal clad electric heating elements shaped like hairpins and in overlapped relation. The entire grate is tiltable upwardly at one end and the frame includes detachable front and back corner pieces at the top overlying the ends of the grate. Beneath the grate is a drip pan and the frame is so constructed that, together with the drip pan, it defines flue passages ex-

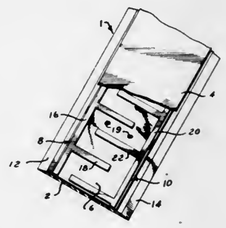


tending upwardly inside the walls of the frame and then inwardly over the top of the drip pan into the space beneath the grate. All electrical components are sealed in a compartment in the bottom of the frame and on which compartment the drip pan rests.

3,781,526
HEATING APPARATUS

John W. Damron, Dallas, Tex., assignor to Dana International Ltd., Dallas, Tex.

Filed Oct. 26, 1971, Ser. No. 191,989
Int. Cl. H05b 3/02
U.S. Cl. 219—538 9 Claims



Heating apparatus for use as an airplane wing de-icer comprising spaced sheets of impervious electrical insulator material bonded to opposite sides of a sheet of conductive paper having a finite internal resistance. Spaced primary conductors extend along opposite sides of the sheet of paper, each having spaced branch conductors extending transversely therefrom and each branch conductor extending from one primary conductor being positioned between branch conductors extending from another primary conductor.

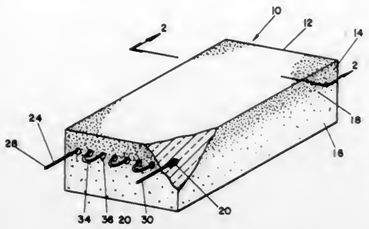
3,781,527
ELECTRICAL HEATER

Romuald W. Tymzcak, Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,618
Int. Cl. H05b 3/06
U.S. Cl. 219—540 13 Claims

An improved electrical heating unit useful as a surface cooking element and in a wide variety of other applications comprises a unitary fused silica body having a thermally conductive, normally upper layer consisting essentially of dense fused silica and, fused thereto, a thermally insulating, normally lower layer consisting essentially of closed cell cellular

fused silica, one or more channels at the interface of the dense silica and cellular silica layers, and one or more electrical re-

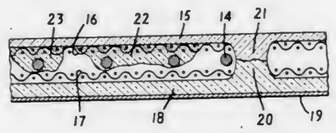


sistance heating elements disposed within said channels and preferably in contact with the dense silica layer.

3,781,528
HEAT RESISTANT, ELECTRICAL INSULATING HEATING UNIT

Nils Gustav Schrewelius, Hallstahammar, Sweden, assignor to Bulten-Kanthal Aktiebolag, Hallstahammar, Sweden

Filed May 30, 1972, Ser. No. 258,099
Int. Cl. H05b *3/02*
U.S. Cl. 219—546 **7 Claims**



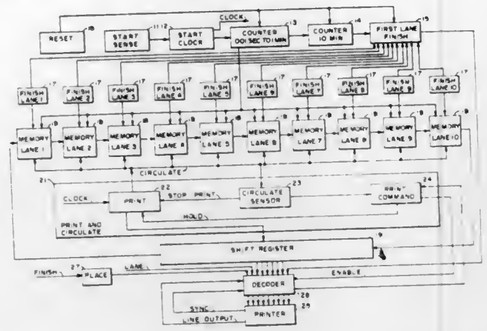
A heat resistant electrical insulating unit having a rigid body of a ceramic material and a layer of ceramic fiber web bound to the ceramic body into a single unit. The unit may have several layers of rigid ceramic and fiber web layers with the fiber web layers spaced from each other and having an electrical resistance element interposed between them, the outermost rigid bodies being joined together mechanically or being welded together in such a manner that the fiber web layers and the interposed resistance element are held clamped between the rigid ceramic bodies. A method is also disclosed for making heating elements wherein a resistance heating element and the insulating layer or layers are joined together into an essentially two-dimensional unit and are placed on a flat glass ceram body which has been heated to a welding temperature, and thereafter a second glass ceram body which has been heated up to body temperature is placed upon and pressed against the first-mentioned body in such a manner that the two bodies are welded together and enclose at least the edge portion of the said unit all around the same.

3,781,529
DIGITAL TIMING SYSTEM

Paul B. Abramson, 3042 Mountain Shadow Dr., Lakewood, Colo., and Robert G. McConnell, 5851 S. Sherman Way, Littleton, Colo.

Filed May 25, 1972, Ser. No. 256,808
Int. Cl. G04f *9/00*; **G06m** *3/06*
U.S. Cl. 235—92 GA **20 Claims**

In a digital timing system for simultaneously timing a plurality of events such as swimming races there is provided a signal generator for producing a plurality of distinct binary coded signals in a parallel form representing elapsed time data, each distinct binary coded signal representing a different time digit. Storage apparatus responsive to the end of each event is operative to store the coded signals in a serial form, one event at a time, and upon command present the time data signals in a parallel form one event at a time. Print-out apparatus including a decoder which monitors the parallel outputs from the storage apparatus and a printer responsive to said parallel outputs prints out the time data for each event

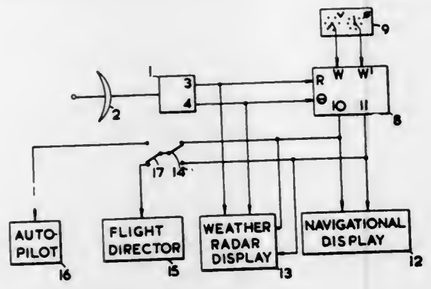


preferably in a permanent, visible form. A command circuit is operative to cause the storage apparatus to transfer the coded signals into storage in a serial form one event at a time, and recirculates the signals back into the storage apparatus. Event identification, place, and split times may be printed out upon actuation of the command circuit.

3,781,530
NAVIGATIONAL APPARATUS

Colin Morris Britland, Bagshot, and John Bernard Joseph Thorpe, Ash, both of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 3, 1972, Ser. No. 240,406
Int. Cl. G06f *15/50*
U.S. Cl. 235—150.26 **8 Claims**

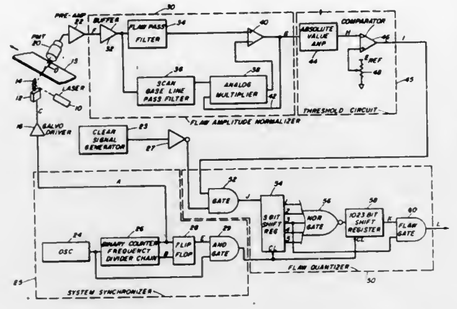


Navigational apparatus comprises a primary hazard sensor, for example a weather radar, for providing signals representing the distribution of hazards ahead of a moving vehicle, connected to a computer. The computer is programmed to compute at least one path substantially avoiding the hazards. An indicator may be connected to an output of the computer to display the paths computed in relation to the hazards. The vehicle guidance system may also be controlled by the computer output so that the vehicle follows one of the computed paths. The computer may be programmed to consider a number of possible paths through a given hazard distribution and to select advantageous paths from those considered for display together with an indication of the risk and economy of each selected path.

3,781,531
FLAW DETECTOR SYSTEM UTILIZING A LASER SCANNER

Cole H. Baker, Westport, Conn., assignor to Intec Corporation, S. Norwalk, Conn.

Filed June 23, 1972, Ser. No. 265,614
Int. Cl. G01n *21/32*
U.S. Cl. 235—151.3 **7 Claims**

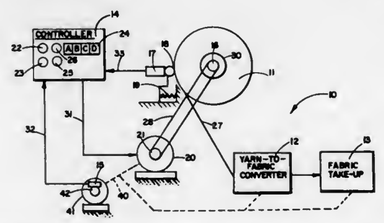


A laser beam is scanned successively across a surface of material being analyzed, and the intensity of the beam, either reflected or transmitted from the material, is detected by a photomultiplier tube. In addition to output amplitude, variations due to scanning across material flaws, other photomultiplier output variations also occur. Such baseline variations are due to relative angle changes that occur between the laser beam and the material surface and other system-associated errors. The same optical and/or electrical variations that produce these baseline signals also cause corresponding amplitude variations of detected flaw signals. A flaw amplitude normalizer circuit is coupled to the detector for automatically normalizing the flaw signal to remove these errors by providing high and low-pass filters to separate the flaw signal from the baseline scanning signal, and these signals are ratioed to develop a normalized flaw signal. A threshold circuit is coupled to the flaw amplitude normalizer circuit for producing flaw output signals when the normalized flaw signals from the detector exceed a predetermined level. Outputs from the threshold circuit are applied to a flaw quantizer circuit which, using "0–1" logic to indicate a flaw area and discriminate against the same indication on successive scans which occur at the same position in the scan as the initial flaw indication, thus provides a single flaw indication for the same flaw, although it may occur on successive scans.

3,781,532
WARP LETOFF CONTROL SYSTEM

Adrian K. Dorsman, Bellflower, and Clark F. Adams, Anaheim, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed May 22, 1972, Ser. No. 255,472
Int. Cl. G06m *1/272*; **B65h** *59/02*
U.S. Cl. 235—151.32 **20 Claims**

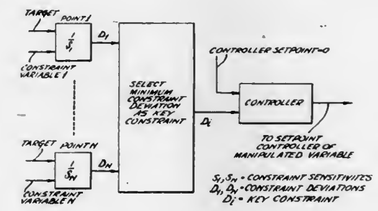


A control system using electronic components to detect and control the operation of a knitting machine. The control system operates to reliably control the length of yarn which is "let off" or removed from a warp (yarn supply) in accordance with the operation of the knitting machine.

3,781,533
CONSTRAINT CONTROL SYSTEM FOR OPTIMIZING PERFORMANCE OF PROCESS UNITS

Leonard A. Barnstone, Morristown; Robert E. Levy, Whippany; Stanley M. Morris, Morristown; Alfredo M. Lopez, Morristown; Henry A. Mosler, Morristown, and Robert J. Bartman, Mendham, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Apr. 7, 1972, Ser. No. 241,959
Int. Cl. G06f *15/46*; **G05d** *21/02*
U.S. Cl. 235—150.1 **4 Claims**

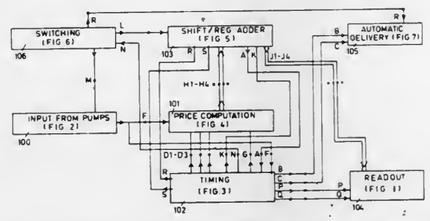


A control system which automatically optimizes the performance of a process unit by continuously scanning the important operating variables, measuring the deviation of these variables from a preselected target, identifying the instant limiting variable, calculating the change in a manipulated variable required to bring the most limiting variable to its target, adjusting the manipulated variable to make the calculated change, correcting operating conditions outside the control system to relieve the instant limit, and repeating the control process to identify a new limiting variable and to make changes needed to bring the new limiting variable to its target.

3,781,534
LIQUID DELIVERY SYSTEMS

James Frederick Bruce-Sanders, 23 Springfield St., Upper Mt. Gravatt, Brisbane, Australia

Filed May 25, 1972, Ser. No. 256,788
Claims priority, application Australia, May 26, 1971, 5002; May 27, 1971, 5013
Int. Cl. G06f *15/20, 15/46*; **B67d** *5/06*
U.S. Cl. 235—151.34 **7 Claims**

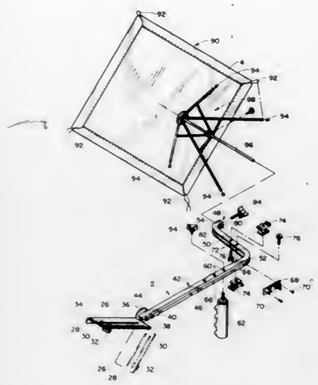


A liquid-delivery pump system includes a sensor providing a pulse for each fractional volume delivered, a pre-set digital circuit representing the price of said volume, means for passing signals representing said price to up-date a digital register each time said pulse is produced and a digital read-out for said register. A plurality of pumps may use a common register by time-division. Button-selected total value or total volume may be dispensed or the pump or pumps may be coin-operated.

3,781,535
PHOTOGRAPHIC REFLECTING DEVICE

Raymond George Larson, 1511 Cranbrook, Lawndale, Calif.

Filed Sept. 17, 1971, Ser. No. 181,298
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 6 Claims



A universal camera attachment for supporting a reflector member and in an exemplary embodiment a light source in a manner that permits the photographer to properly illuminate the subject matter without interfering with his manipulation of the camera and without hindering his freedom of movement. The salient attributes of the invention are obtained by permitting support of the reflector in a position upward and rearward of the camera with which the invention is utilized.

3,781,536
ILLUMINATED DIVER'S SLATE

Manley H. Naeseth, Panama City, and Herbert Larrimore, Lynn Haven, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 15, 1973, Ser. No. 323,676
Int. Cl. F21v 9/16
U.S. Cl. 240—2.25 10 Claims

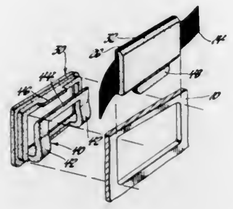


A reusable, illuminated diver's slate or writing tablet which utilizes a charge of chemiluminescent material. Light from the charge, preferably having wavelengths within a predetermined range, is directed through a light transmitting front wall, the surface of which is treated for writing. A mirrored rear wall increases efficiency of light use.

3,781,537
BEZEL ASSEMBLY

Charles W. Ramsey, Niles, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 31, 1972, Ser. No. 240,187
Int. Cl. B60q 3/04
U.S. Cl. 240—8.16 4 Claims

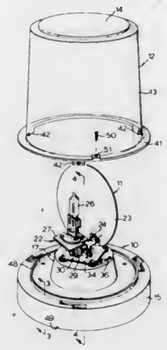


A bezel assembly for securing a fiber optic illuminated legend to an apertured panel includes a bezel insertable through the aperture from the front and carrying an arm which extends through the panel and a backup plate slidably insertable at the rear of the panel between the arm and the body of the bezel to lock the bezel in place. The backup plate carries an illuminable fiber optic ribbon and a legend bearing applique.

3,781,538
EMERGENCY WARNING LAMP

Peter E. Brudy, 111 Angus Dr., and John Smith, 505 Cummer Ave., Apt. 207, both of Willowdale, Ontario, Canada

Filed July 26, 1972, Ser. No. 275,230
Int. Cl. F21m 7/00
U.S. Cl. 240—49 12 Claims

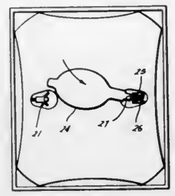


An emergency warning lamp comprising a base on which a motor is mounted with the shaft thereof extending vertically. A lamp and reflector assembly are mounted on the shaft. In addition, a brush assembly is mounted for rotation with the shaft. Electrical connection is made between the brush and the lamp, the brush engaging a contact plate on the base. Novel means are provided for holding a lens on the base such that water will not enter and adversely affect the operation of the lamp. Upon rotation of the motor, the lamp and reflector assembly are rotated.

3,781,539
LIGHT SUPPORT

Leon L. Landrum, Houston, and Robert L. Holder, Nacogdoches, both of Tex., assignors to Esquire, Inc., New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 199,232
Int. Cl. F21v 21/34
U.S. Cl. 240—52 R 9 Claims

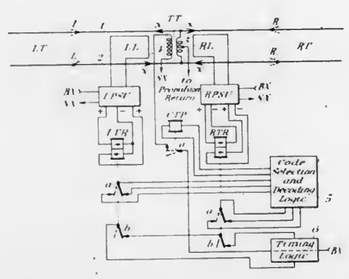


A light fixture in which the non-electrical end of a lamp is held by a socket having heat insulating and cushioning surfaces arranged in a generally conical pattern.

3,781,540
JOINTLESS CODED ALTERNATING CURRENT TRACK CIRCUITS

Crawford E. Staples, Edgewood, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Sept. 18, 1972, Ser. No. 289,971
Int. Cl. B61l 23/30
U.S. Cl. 246—34 CT 10 Claims

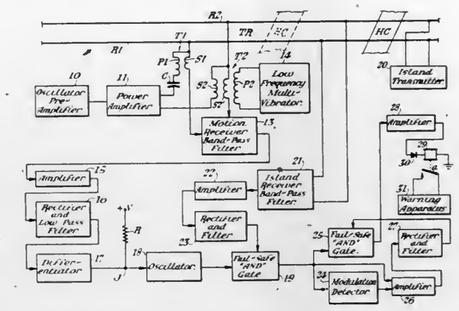


Coded alternating current at the same low frequency is supplied at each location to the rails through a track transformer and transmitted in each direction into the adjoining track sections. The transformer secondary connected across the rails divides the track into sections without insulated joints. At each location, a separate phase sensitive unit is inductively coupled to the rails of each adjoining section to receive energy from the coded track currents. Each phase sensitive unit is also energized from the local alternating current source with the phase relationship so selected that the unit responds only to track current from the distant end and not to the locally transmitted track current. Each phase sensitive unit operates a code following track relay in response to the received distant end coded track current energy and the relay operation is decoded to determine section occupancy and/or advance traffic conditions. A timing logic means controls repeated cycles of alternate reception and transmission of track current at each location to eliminate interference between the local and distant end track currents in each section as received by the phase sensitive unit.

3,781,541
FAIL-SAFE RAILROAD-HIGHWAY GRADE CROSSING PROTECTION SYSTEM

John O. G. Darrow, Murrysville, and Thomas C. Vaughn, Plum Borough, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Sept. 7, 1972, Ser. No. 286,872
Int. Cl. B61l 1/18
U.S. Cl. 246—128 14 Claims

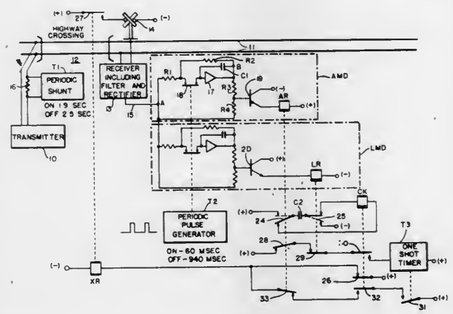


This disclosure relates to a fail-safe electronic system for protecting a railroad-highway grade crossing. The system includes a solid state transmitter for applying a constant current to the track and a solid-state receiver for obtaining a voltage signal from the track. A differentiating circuit senses any differential change between the track voltage and an opposing voltage in order to distinguish an approaching train from a receding train so as to appropriately control the warning apparatus. The integrity of the system is constantly monitored by modulating the track voltage signal so that the absence of the modulating signal activates the warning apparatus to ensure the highest degree of safety to pedestrians and motorists.

3,781,542
HIGHWAY CROSSING SIGNAL CONTROL SYSTEM FOR RAILROADS

Lyle Brockman, Churchville, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Oct. 16, 1972, Ser. No. 298,045
Int. Cl. B61l 1/02
U.S. Cl. 246—128 10 Claims



A highway crossing signal control system is provided for railroads having an alternating current transmitter adapted to be connected to the track rails adjacent one side of the highway crossing and having a receiver adapted to be connected to the track rails at the other side of the highway crossing. An approach motion detector is provided for detect-

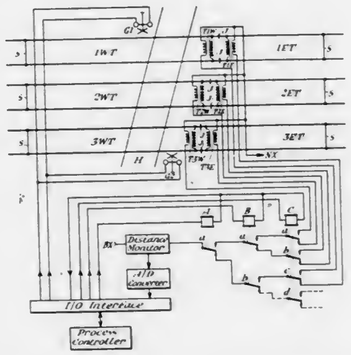
ing the approach of a railway vehicle to the crossing by sensing a decrease in the input potential to the receiver. Similarly, a leaving motion detector is provided for detecting the leaving of the area of the crossing by a railway vehicle in accordance with sensing an increase in the received potential across the track rails. These motion detectors are respectively used to activate and deactivate a crossing signal. Checking means is provided for normally checking the operability periodically of the motion detectors, and such checking means is operable when active to deactivate the highway crossing signal.

3,781,543

HIGHWAY CROSSING PROTECTION APPARATUS

Crawford E. Staples, Edgewood, and Donald E. Stark, Penn Hills Township, Allegheny County, all of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed May 8, 1972, Ser. No. 251,369
Int. Cl. B61l *1/06*
U.S. Cl. 246—130 **9 Claims**



Each approach detection track circuit in a multiple track stretch crossed by one or more highways is sequentially connected to a track energy source, including a distance monitor means, by a multiplexing means, shown as a bank of relays operated in repeated cycles by a central process controller. The distance monitor, as it is sequentially connected to each track circuit, provides a distance proportional signal to the central process controller for a train approaching along any track. The process controller registers the detection of the approaching train and determines its continued approach by successive distance measurements received from the same track circuit. When the train is determined to be a predetermined warning time or distance from the crossing, the process controller actuates the highway warning signals. Multiplexing the connections of the track circuits to the distance monitor allows the use of a single set of centralized highway crossing apparatus including the distance monitor and the process controller.

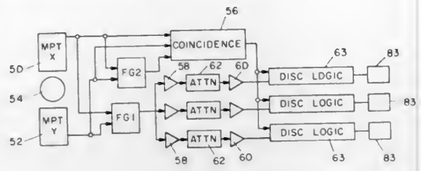
3,781,544

PROBABILITY BASED SELECTIVE PULSE HEIGHT DISCRIMINATION IN SCINTILLATION DETECTORS

Barton H. Laney, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 792,717, Jan. 21, 1969. This application Sept. 27, 1971, Ser. No. 184,065
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **9 Claims**

Pulse height discrimination in a coincidence counting scintillation detector on the basis of the probability of occurrence of a radioactive event having the pulse amplitudes produced, as opposed to the probability of occurrence of background noise having the same pulse amplitudes. The coincident pulses accepted are those which conform to a function that includes at least a major portion of pulse combinations having at least a prerequisite probability of occurrence of a radioactive event.



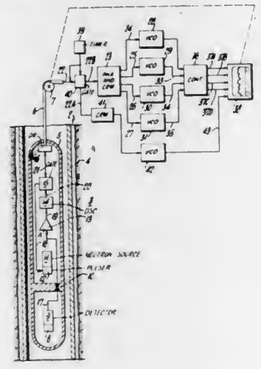
The determinative function is produced by a function generating means, and the values of the function vary with the coincident pulse amplitude sum.

3,781,545

WELL LOGGING COMPRISING DETECTING UNSTABLE RADIOACTIVE ISOTOPES OF ALUMINUM

Hans J. Paap, and Harley L. Tanner, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 26, 1971, Ser. No. 147,151
Int. Cl. G01v *5/00*
U.S. Cl. 250—83.3 R **15 Claims**



A radioactivity well logging system is provided for determining the activation reactions Si^{28} (n,p)Al^{28} and Al^{27}(n,γ) Al^{28} produced by bombardment of the earth formations with fast neutrons. The activation reaction data are then combined with conventional N-γ log data of the same earth formations to assist in distinguishing dry gas hydrocarbon bearing zones from limestone formations. All data necessary for the gas determination may be obtained in one logging run if a pulse neutron source is used. A continuous neutron source may be used in the gas determination method but may require at least two passes of the logging tool over the same depth earth formations.

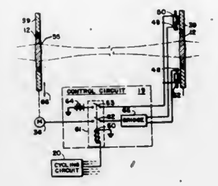
3,781,546

SELF ALIGNING BEAM WAVEGUIDE HAVING A SERIES OF LENSES AND MEANS FOR MAINTAINING SAID LENSES IN ALIGNMENT

Joseph Robert Christian, Colts Neck; Georg J. E. Goubau, Eatontown, and James W. Mink, Neptune, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 29, 1968, Ser. No. 771,539
Int. Cl. G01j *1/20*
U.S. Cl. 250—201 R **12 Claims**

A self-aligning beam waveguide having a series of guiding elements spaced along a path extending between an electromagnetic beam transmitter and receiver. Associated with each of the guiding elements are radiation detectors for detecting the relative displacement between the beam center and the aperture center of the associated element. A control circuit is connected between a detector located at one element and a realigning motor located at the immediately



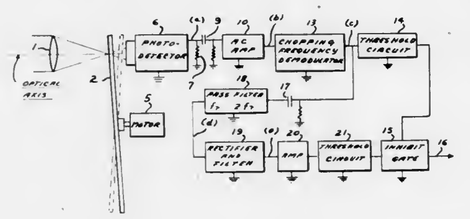
preceding element. The control circuit energizes the motor to cause the associated element to deflect the beam in such a direction as to reduce the amount of displacement between the beam center and the aperture center of the element associated with the detector. A cycling circuit energizes the control circuits one at a time and in succession.

3,781,547

OPTICAL RECEIVER WITH EXTENDED SOURCE DISCRIMINATION

Charles T. Thomas, Dallas, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 22, 1972, Ser. No. 308,888
Int. Cl. G01j *1/20*
U.S. Cl. 250—203 R **3 Claims**



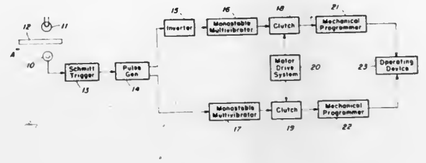
An optical receiver comprising a lens system for forming an image of a distant light source at its focal plane. The light on either side of the focal plane is intercepted by a reticle of alternate opaque and transparent strips of equal widths which move at constant speed and always in the same direction across the light while the reticle continuously oscillates back and forth along the optical axis between extreme positions one of which is in the focal plane of the lens. A photodetector converts the light transmitted by the reticle into a proportionate electrical signal. An inhibit gate located between the output of the photodetector and the receiver output circuit is made to respond to the presence of an amplitude modulation of the AC component of the photodetector output at either the oscillating frequency of the reticle or twice this frequency to prevent an output from the receiver when either of these modulations is present.

3,781,548

CONTROL SYSTEM

Robert E. Gerace, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 5, 1971, Ser. No. 131,114
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 R **12 Claims**



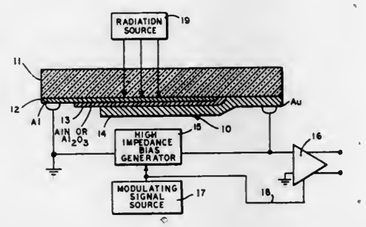
A control system for regulating the performance of predetermined sequences of operations by an operating device upon sheets of material having variable lengths is disclosed in accordance with the teachings of the present invention wherein photoelectric sensing means are utilized to sense the leading and trailing edges of a sheet of material upon which the device operates. Pulse generating means generates first and second pulses when the photoelectric sensing means senses the leading and trailing edges respectively, of a sheet of material. First and second switch means respond to the generated first and second pulses for initiating first and second predetermined sequences of operations respectively, to be performed by the operating device.

3,781,549

USE OF THIN FILM LIGHT DETECTOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; George W. Lewicki, Studio City, and Joseph Maserjian, La Crescenta, both of Calif.

Continuation of Ser. No. 88,435, Nov. 10, 1970, abandoned. This application May 31, 1972, Ser. No. 258,152
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 J **2 Claims**

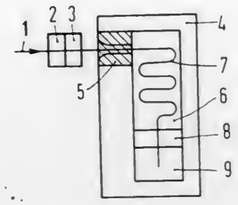


A photovoltaic cell structure having a trapezoidal barrier is disclosed. An aluminum, magnesium or tantalium base is vapor deposited on a quartz substrate to a thickness of about 40 to 60 A. An oxide or nitride film of the base metal is produced as an insulator by reaction in a glow discharge plasma to a thickness of less than 100 A (typically 30 to 50 A), and a metal, preferably, gold counter-electrode is vapor deposited on the insulating layer. A bias generator of high impedance is employed to set and shift or modulate the spectral response of the structure.

3,781,550
RECEIVER FOR LASER BEAMS

Guenter Zeidler, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 14, 1972, Ser. No. 262,531
Claims priority, application Germany, Aug. 12, 1971, P 21 40 500.0
Int. Cl. G02b 5/14; H01j 5/16, 39/12
U.S. Cl. 250—211 J **13 Claims**

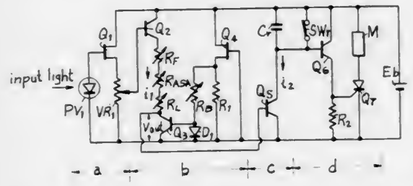


A receiver for receiving laser beams preferably from a laser transmitter of a distance measuring device characterized in that at least a semiconductor photo diode, an amplifying laser, and an optical coupling unit are integrally formed on a carrier member to minimize misalignment therebetween during handling and transporting of the receiver. Preferably, the active material such as neodymium has a high index of refraction and is surrounded by material of a low index of refraction to form a wave conductor which preferably has a serpentine configuration to conduct the received laser beam and amplify it prior to projecting it on a silicon or germanium photo diode. In one embodiment of the invention, the current supply unit for the photo diode, the unit for amplifying the output current of the photo diode, and the power supply unit for the laser are integrally formed on the carrier unit along with the photo diode, the amplifying laser and optical coupler.

3,781,551
ELECTRONIC SHUTTER-CONTROL CIRCUITS FOR CAMERAS

Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 9, 1972, Ser. No. 224,716
Claims priority, application Japan, Feb. 27, 1971, 46/10095
Int. Cl. H01j 39/12
U.S. Cl. 250—214 P **9 Claims**

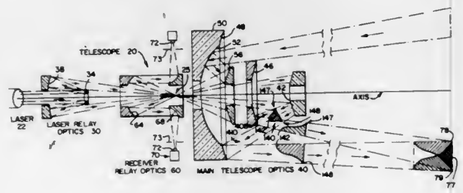


An electronic shutter-control circuit for a camera. The circuit has a constant voltage source section as well as a photosensitive circuit section. The latter section receives light from the object to be photographed and is electrically connected with the constant voltage source section of the circuit to provide from the latter an output voltage whose value is proportional to the logarithmic value of the intensity of light input from the object received by the photosensitive circuit section. The shutter-control circuit also includes a constant current source circuit section, and between the latter section and the constant voltage source circuit section there are connected, in series with the latter sections, a plurality of variable resistors which are in series with each other. With this circuitry, electrical quantities corresponding to object brightness, aperture at the diaphragm, and film speed are logarithmically compressed and a computation is carried out with these logarithmically compressed electrical quantities, to determine an exposure time which is then logarithmically expanded and used for controlling the shutter.

3,781,552
SELF-CALIBRATING MULTIPLE FIELD OF VIEW TELESCOPE FOR REMOTE ATMOSPHERIC ELECTROMAGNETIC PROBING AND DATA ACQUISITION

Kenneth A. Kadrmas, 7909 Westhaven Dr., Huntsville, Ala.

Filed Aug. 2, 1972, Ser. No. 277,437
Int. Cl. G01n 21/26
U.S. Cl. 250—206 **13 Claims**



The invention is a transmitting and receiving telescope for use in generalized electromagnetic radiation communication systems, including atmospheric probing systems. The telescope optics, electromagnetic radiation source laser and receiver are coaxially aligned along the telscope axis. The telescope can be constructed with one received field of view or with a plurality of received fields of view. The telescope mirrors have apertures along the telescope axis to allow alignment laser pulse or CW radiation to travel along the telescope axis without being reflected. The preferred electromagnetic radiation source is a laser which can operate in both TEM_{00} and TEM_{01} modes. The TEM_{00} mode is employed for alignment purposes since the energy of this mode is concentrated along the axis. The TEM_{01} mode is used for data acquisition because the energy of this mode is concentrated in a donut shaped region having its hole centered on the axis. Constant intensity illumination is produced in the viewed area during data acquisition by separating the donut into inner and outer annuli along the line of maximum intensity and imaging the two beams to provide 100 percent overlay at the range of interest.

A preferred use for this telescope is in atmospheric probing LIDAR systems for measurements of the motion and concentration of the atmospheric environment, particularly pollution measurements. This LIDAR system uses a real time data processing system employing 800 megabit analog to digital converters and a correlation system to transform the acquired data into useable form in real time.

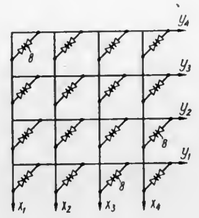
3,781,553
APPARATUS FOR ANALYZING AN IMAGE

Karina Fridrikhovna Berkovskaya, Prospekt M. Toreza, 18, kv. 120; Nina Vitalievna Lapteva, Karbysheva 6 Korpus 1, kv. 278, and Boris Georgievich Podlaskin, Prospekt Smirnova 15, kv. 34, all of Leningrad, U.S.S.R.

Filed Nov. 28, 1972, Ser. No. 310,076
Int. Cl. H01j 39/12
U.S. Cl. 250—553 **6 Claims**

The apparatus converts an image into a set of coefficients of Fourier series by systems of two-dimensional functions.

The apparatus includes means for optical reproduction of the image being analyzed, the light radiated by the means being masked in accordance with a law expressed as a set of two-dimensional functions. The radiated light is received by a matrix of photosensitive cells connected at the intersections of a system of orthogonal buses. During an anlysis, a voltage generator connected to the buses feeds thereto a voltage pattern to render the photo sensitive cells light-responsive and light-irresponsive in groups distributed in space over the area of the matrix in accordance with a successive one of the given



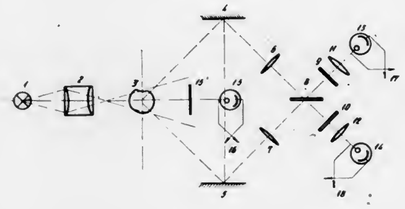
set of two-dimensional functions. Thus, the matrix performs at the same time both the masking and registration of the masked light flux.

The sum total of the absolute values of the electric currents through the photocells becomes proportional to the integrated light flux of the image field, and thus corresponds to a coefficient representative of the shape of the image.

3,781,554
METHOD AND APPARATUS FOR SORTING TOMATOES BY COLOUR

Gueorgui Petrov Krivoshiev; Dimiter Christov Kolev; Christo Yanakiev Tanev; Dimiter Kostadinov Erinkov; Gueorgui Slavov Petrov; Alexander Traykov Vassilev, and Petko Slavtchev Vatev, all of Plovdiv, Bulgaria, assignors to Nii Po Konservna Promishlenost, Plovdiv, Bulgaria

Filed Sept. 27, 1971, Ser. No. 183,917
Claims priority, application Bulgaria, Sept. 26, 1970, 15729
Int. Cl. G01j 3/34
U.S. Cl. 250—226 **2 Claims**

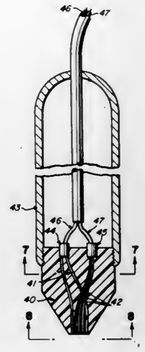


A method of and an apparatus for sorting tomatoes by color wherein a light beam is projected onto each tomato and transmitted light rays are detected on symmetrically opposite sides of the light beam at angles of 135° thereto, the detected rays are combined through a semitranslucent reflector and a ratio of wave lengths is developed which represents the internal coloration as well as surface flaws in the region of the tomato transluminated by the incident and transmitted beams. The tomatoes are sorted by electromagnetic actuators responding to this ratio.

3,781,555
ULTRA-HIGH MOLECULAR WEIGHT POLYOLEFIN OPTICAL READER TIP

Jack D. Keefe, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 2, 1973, Ser. No. 320,544
Int. Cl. H01j 39/12
U.S. Cl. 250—227 **11 Claims**

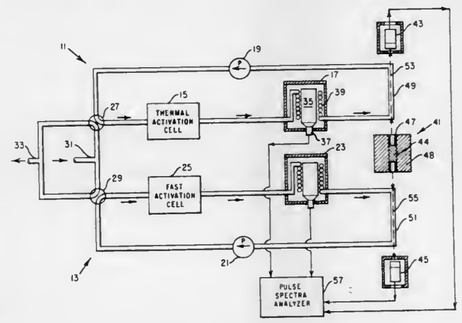


There is disclosed an optical reader for reading a record having a wear resistant pen tip made from ultra-high molecular weight polyolefin such as polyethylene of about 1×10^6 to about 6×10^6 M.W. The user can hold the reader in his one hand and scan a binary coded record. In one embodiment, the pen has an elongated housing for mounting a record illuminator, a lens for gathering light reflected or diffused from the record, a mask having an aperture, and a light receptor spaced from the aperture which receives light passing through the aperture. In another embodiment, the polyolefin tip has optical fibers molded therein for transmitting light from the record to a light sensing means. The housing carries a removable, replaceable, tip which is composed of ultra-high molecular weight polyolefin having a low coefficient of friction and a natural lubricity.

3,781,556
NEUTRON ACTIVATION ANALYSIS SYSTEM

Morris C. Taylor, and John R. Rhodes, both of Austin, Tex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 8, 1972, Ser. No. 287,310
Int. Cl. G01n 23/12
U.S. Cl. 250—302 **7 Claims**



A neutron activation analysis system for monitoring a generally fluid media, such as slurries, solutions, and fluidized

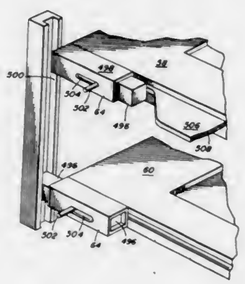
powders, includes two separate conduit loops for circulating fluid samples within the range of radiation sources and detectors. Associated with the first loop is a neutron source that emits a high flux of slow and thermal neutrons. The second loop employs a fast neutron source, the flux from which is substantially free of thermal neutrons. Adjacent to both loops are gamma counters for spectrographic determination of the fluid constituents. Other gamma sources and detectors are arranged across a portion of each loop for determining the fluid density.

3,781,557

RADIOGRAPHIC DISPLAY SYSTEM WITH CASSETTE LOCK

Vitaliano Carugati, Cologno Monzese-Milano; Sergio Colombo; Gianni Ferramola, both of Milan, and Sergio Ferrari, Cernusco Sul Naviglio Milano, all of Italy, assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 81,214, Oct. 16, 1970, Pat. No. 3,733,132.
This application Aug. 17, 1972, Ser. No. 281,568
Int. Cl. G01t *1/20*
U.S. Cl. 250—320 **5 Claims**



A nuclear imaging device comprising a plurality of scanning heads spaced apart in a predetermined configuration with the aid of a support member that permits the individual scanning heads to scan in parallel, antiparallel, and tomographic modes. The support member which is driven in both X and Y directions is mechanically connected with the stylus of a graphical X-Y plotter via a backlash linkage. Displays are provided wherein the color of the ink dot on printed paper or the intensity of the light projected on photographic film are related to the nuclear particle count in a preselectable manner.

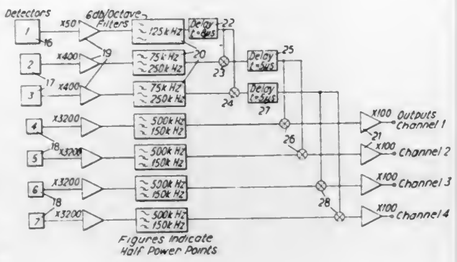
3,781,558

VIEWING SYSTEM USING A MULTIPLE ARRAY OF DIFFERENT-SIZED DETECTORS

John Robert Anderson, Hatfield, England, assignor to Hawker Siddeley Dynamics Limited, Hatfield, England

Filed June 26, 1972, Ser. No. 266,409
Claims priority, application Great Britain, June 24, 1971, 29,556/71
Int. Cl. G01j *1/02*
U.S. Cl. 250—332 **8 Claims**

In a viewing system for employment in conditions of low visibility, an image of the scene viewed is scanned by a multiple array of effectively different-sized detectors. The individual outputs of the detectors are pre-amplified and filtered and the filtered outputs of the several different-sized detectors viewing the same part of the image are combined on a single output signal channel feeding the display device. The pass bands of the filters are chosen so that the larger-sized detectors provide image detail of lower spatial frequencies and the smaller-sized detectors provide detail of higher spatial frequencies.

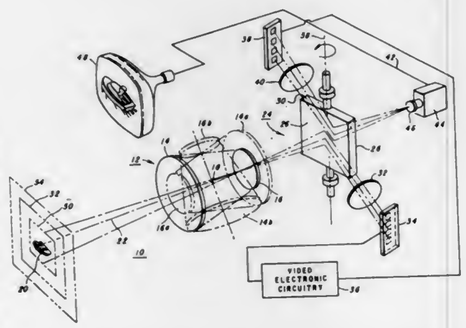


3,781,559

VARIABLE FIELD OF VIEW SCANNING SYSTEM

Erwin E. Cooper, and Howard V. Kennedy, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 19, 1972, Ser. No. 263,918
Int. Cl. G01j *1/00*
U.S. Cl. 250—334 **24 Claims**



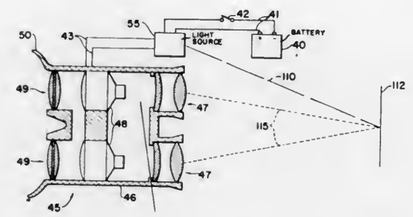
A system for transforming incoming radiant energy (e.g., in the infrared region) having different fields of view into a visible real time image. Two scanning mirror surfaces are supported on a common mounting element. An afocal optical section varies the field of view of the incoming radiant energy. The afocal section accepts incoming collimated radiant energy and produces exiting collimated energy having a different beam diameter thereby changing the field of view of the system without having to modify the basic scanning optics. The collimated radiant energy exiting from the afocal section is reflected from one of the scanning mirror surfaces onto a plurality of detectors. Video circuitry coupling the detectors with a plurality of emitters modulates the emitters to produce light therefrom to be reflected from the other of said mirror surfaces. The image thus scanned is focused on a vidicon thereby producing a video signal that is coupled to a television display which produces a visible image of the incoming radiant energy.

3,781,560

NIGHT VIEWING SYSTEM FOR READING WITHOUT LIGHT

Raymond J. DeBurgh, Palm Springs, Calif., and Harold L. Novick, Wheaton, Md., assignors to Raymond J. DeBurgh, Palm Springs, Calif.

Filed June 7, 1972, Ser. No. 260,420
Int. Cl. G01j *1/02*
U.S. Cl. 250—333 **9 Claims**



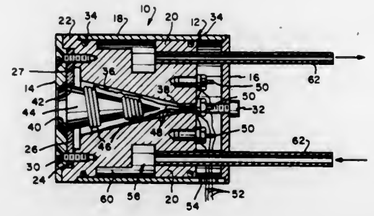
A night viewing system is provided for rendering visible proximate objects located in a totally darkened environment without the use of visible light, the system thus permitting one to read in bed at night without disturbing another person sleeping in the same room. The system comprises a nonvisible light source for irradiating the reading materials and binocular goggles for rendering visible the nonvisible light. The binocular goggles comprise a housing containing appropriate lens systems and a light frequency converter tube for converting the non-visible light into visible light. A strap attached to the goggles housing permits comfortable wearing by the user for relatively extended periods of time.

3,781,561

GRADIENT CONE THERMAL RADIATION SENSOR

Richard P. Clifford, Newport Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 29, 1971, Ser. No. 193,905
Int. Cl. G01t *1/16*
U.S. Cl. 250—352 **3 Claims**



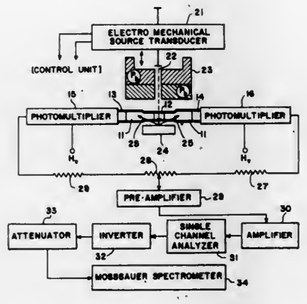
A conical cavity radiometer having a thin-walled thermal receptor cone secured about its open base end to a surrounding hollow heat sink which shields the cone against response to its ambient thermal environment and maintains the base end of the cone at an equilibrium temperature. Thermal radiation entering the open cone end creates a temperature differential between the cone ends proportional to the incident thermal radiation flux. This temperature differential is sensed by temperature sensors attached to the cone ends and is converted to an electrical signal which is an analog of the incident radiation flux. The radiometer is characterized by rapid attainment of thermal equilibrium, high sensitivity, and rapid response to changes in incident radiation flux.

3,781,562

MOSSBAUER SPECTROMETER RADIATION DETECTOR

Jag J. Singh, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 8, 1972, Ser. No. 313,381
Int. Cl. G01j *39/18*
U.S. Cl. 250—360 **6 Claims**



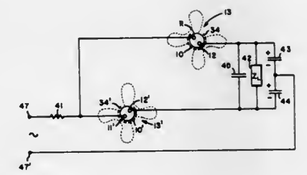
The invention is a versatile Mossbauer spectrometer with high efficiencies in both transmission and backscattering techniques. The heart of the invention is a detector which includes an NaI(Tl) crystal for detecting radiation caused by the Mossbauer effect. The crystal has a hole in its center to allow the collimated incident radiation to pass through and it is coupled through two quartz optical windows to two photomultipliers such that all of the scintillation radiation produced by the radiation detected by the crystal will flow into the two photomultipliers. When used in a transmission technique the sample or scatterer is placed between the incident radiation source and the detector; and when used in a backscattering technique the detector is placed between the incident radiation source and the sample or scatterer such that the incident radiation will pass through the hole in the crystal and strike the sample.

3,781,563

RADIATION DETECTOR

Leslie Richard Linner, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 156,741, June 25, 1971, abandoned.
This application Jan. 29, 1973, Ser. No. 327,535
Int. Cl. G01n *27/00*
U.S. Cl. 250—362 **5 Claims**

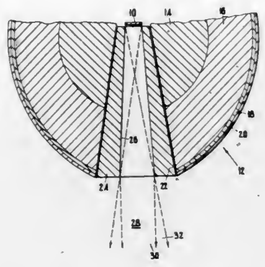


A radiation detector employs two internal ionization type radiation sensors in a circuit such that one sensor aids the other in detection of radiation while each limits the effects of a failure of the other sensor.

3,781,564
NEUTRON BEAM COLLIMATORS

Derek Anthony Lundberg, Hatfield, England, assignor to Elliott Brothers (London) Limited, Marconi House, New St. Chelmsford, England

Filed Feb. 28, 1973, Ser. No. 336,621
Int. Cl. H01j 1/52, 35/16
U.S. Cl. 250—505 15 Claims



A neutron beam collimator comprising a matrix of epoxy resin loaded with particles of tungsten for moderating the neutrons, and with particles of a hydrogenous material for further moderating and capturing the neutrons. A layer of lead is provided to attenuate gamma radiation produced during neutron capture. A slow-neutron absorbing material is intimately mixed with the tungsten to reduce collisions between slow neutrons and the tungsten atoms, thereby avoiding induced radioactivity in the tungsten.

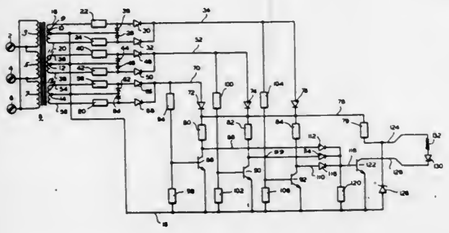
ERRATUM

For Class 250—341 see:
Patent No. 3,781,910

3,781,565
SYNCHRONIZING PULSE GENERATOR FOR COMMUNICATION NETWORK

William Byron Walton, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed July 3, 1972, Ser. No. 268,425
Int. Cl. H03k 3/64
U.S. Cl. 307—106 9 Claims

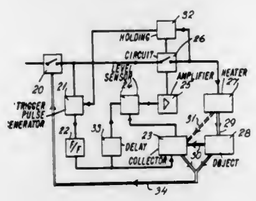


This is a pulse forming circuit for producing uniform height, uniform width, control pulses from a three-phase 60 cycle commercial power source. The power for this pulse forming circuit is obtained from a transformer having three separate output windings electrically spaced 120° from each other. Each of these output windings is center tapped to ground and provided with a carrier signal rejection network and a pair of diodes to form a full wave rectifier circuit for each phase of the three-phase signal. Each full wave rectified signal is applied to the base of a transistor to render it conductive except when the signal approaches zero, at which time the transistor is rendered non-conductive so that a voltage pulse is generated at the collector of the associated transistor. The voltage pulses thus produced at each of the three transistors are combined in a network to produce a signal that controls a fourth transistor to thereby produce a one millisecond pulse signal with a pulse repetition frequency of 360 cycles per second and an amplitude limited by a zener diode. The output of this pulse forming network may be used to energize a light emitting diode which in turn energizes a light sensitive element in a control circuit. One use of this circuit is to provide synchronous clock pulses in a transmit-receive communication network.

3,781,566
DETECTING THE PRESENCE OF A MEDIUM IN THE PATH OF A SOUND OR LIGHT WAVE

Karl Helge Meuller, Stockholm, Sweden, assignor to Helge Meuller AB, Stockholm, Sweden

Filed July 13, 1971, Ser. No. 162,251
Claims priority, application Sweden, July 16, 1970, 9868/70
Int. Cl. H01h 35/18
U.S. Cl. 307—116 7 Claims



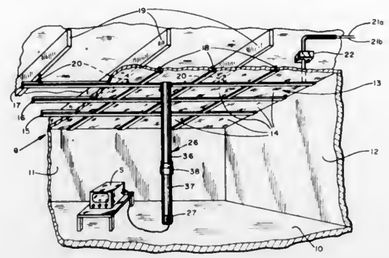
A method and system for detecting the presence on an object of media harmful to the efficient operation of the object. The system includes a measuring device having arranged therein a space for receiving the media to be detected, and wave transmitting means arranged at one end of the space and detector means responsive to waves transmitted by the wave transmitting means arranged at the opposite end of the space. The detector means is adapted to transmit a signal to actuator means co-operating with the object served by the system, to remove the harmful media from the object, said signal being dependent on the degree of damping to which the wave from the transmitter means is subjected by the media located in the media receiving space.

3,781,567
LOW VOLTAGE POWER DISTRIBUTION SYSTEM

William G. Papsco, 145 Willowbrook Dr., Portola Valley, Calif.

Filed Jan. 17, 1973, Ser. No. 324,550
Int. Cl. H02b 1/20
U.S. Cl. 307—147 7 Claims

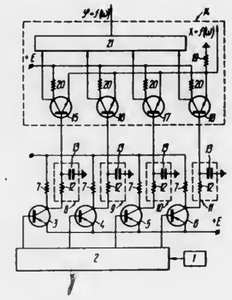
Low voltage power is distributed throughout a room by one or more exposed suspended ceiling runners, each comprising a pair of panel support members which are electrical conductors, in conjunction with a power take-off post releasably clampable to the runner at a selected location in the room. Electrical energy from a 110-volt power line, for example, is connected to the conductive members of the runner through a step-down transformer so that only low voltage power, say 24 volts, is carried by the runner. The post has a self-contained preferably potted step-up transformer to change the voltage back to 110 volts at a convenience outlet in the post. In a two-wire system one line is connected to ground and the runner and post clamp are non-symmetrically configured to insure proper interconnection of the ground and hot lines, respectively. The undersides of the runners are protectively covered by an insulator so that only the side edges are exposed to the connector clamp on the top of the post.



3,781,568
COHERENT ANALYZER OF FREQUENCY-PHASE SPECTRUM OF ELECTRIC SIGNALS

Boris Ivanovich Goroshkov, ulitsa Metallurgov, 13, korpus 2, kv. 20, and Nikolai Ivanovich Kovshov, ulitsa Utkina, 45, kv. 54, both of Moscow, U.S.S.R.

Filed July 15, 1971, Ser. No. 162,794
Int. Cl. H03d 13/00
U.S. Cl. 307—232 3 Claims

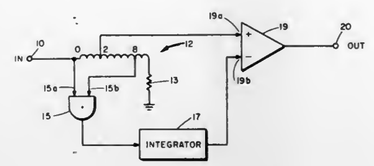


The coherent analyzer of phase-frequency spectrum of electric signals comprises an oscillator electrically connected to a first input of a first electronic gate whose second input is supplied with signals being investigated. The output of the first gate is connected to a first integrating network. The coherent analyzer is further provided with a phase distributor connected to the oscillator output and a group of gates, consisting of at least two gates, the first inputs of which are connected, together with the input of the first gate, to the outputs of the phase distributor. The second inputs of the gates of said group are supplied with electric signals being investigated, and the outputs of these gates are connected to integrating networks of a group of integrating networks whose number equals to the number of these gates connected to an amplitude analyzer. The amplitude analyzer is in turn connected to the output of the first integrating network and to the outputs of the integrating networks of said group, and is so designed that one of the outputs of the coherent analyzer only shows the maximum electrical signal among the signals arriving from all the integrating networks, and the other output shows a signal corresponding to the phase of the signal being investigated.

3,781,569
FAST TIME CONSTANT CIRCUIT MEANS USING TIME DISCRIMINATION TECHNIQUES

Erik Rosenbaum, Randallstown, and John Waldo Martin, Joppa, both of Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 23, 1972, Ser. No. 228,550
Int. Cl. H03k 5/20
U.S. Cl. 307—234 4 Claims

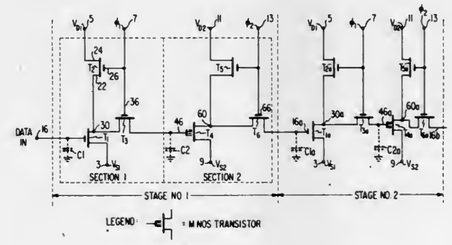


A fast time constant circuit includes a delay line which receives video radar returns. Two delay line time spaced taps are connected through an AND gate to an integrator, the output of which is applied to one input of a differential amplifier. An intermediate delay line tap is connected directly to the second differential amplifier input. The filtered video radar returns appear at the output of the differential amplifier.

3,781,570
STORAGE CIRCUIT USING MULTIPLE CONDITION STORAGE ELEMENTS

Edward Charles Ross, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,690
Int. Cl. G11c 11/40
U.S. Cl. 307—238 11 Claims



A storage circuit includes in each stage a metal-nitride-oxide-semiconductor (MNOS) transistor whose threshold voltage is electrically alterable. When the transistors are all at the same threshold level, data bits may be dynamically loaded and stored in the circuit. These bits thereafter may be statically stored by retaining the MNOS transistor of a stage at its original threshold level if the bit stored in that stage is of one binary value and by placing the MNOS transistor at its other threshold level if the bit stored is of the other binary value.

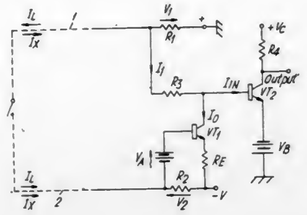
3,781,571
LOOP CURRENT DETECTOR

Michael Robert Lord, Basildon, England, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 10,365, Feb. 11, 1970, abandoned.
This application Dec. 6, 1971, Ser. No. 205,352
Int. Cl. H04m 3/18; H04 3/06
U.S. Cl. 307—235 R 6 Claims

A detector is provided for unidirectional currents flowing in a loop circuit. A dc amplifier coupled to a resistor in the loop provides an output signal proportional to the loop current. A

voltage drop across a second resistor in the loop is supplied to the input of a voltage threshold detector and to the output of



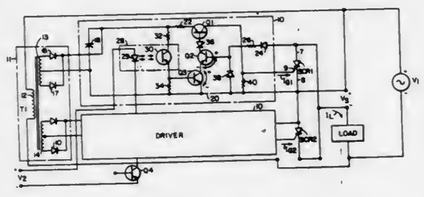
said amplifier. Means are provided to indicate when said input is less or greater than a reference voltage.

3,781,572

AC POWER CONTROL APPARATUS WITH DEMAND RESPONSIVE DRIVER CIRCUIT

Kenneth C. Shuey, Wapakoneta, and Donal E. Baker, Lima, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1972, Ser. No. 221,276
Int. Cl. H03k 17/72
U.S. Cl. 307—252 T **3 Claims**



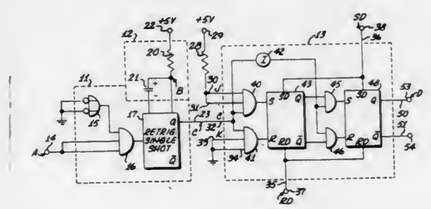
AC power control apparatus with reduced power dissipation is provided wherein a three terminal semiconductor switch, such as a thyristor, has a demand responsive gate driver circuit that includes means to sense the voltage across the main terminals of the switch and a means responsive thereto to form a conduction path to the gate terminal only during periods when the main terminal voltage reaches a threshold value.

3,781,573

SOLID-STATE LONG-PERIOD TIMER

Otto P. Weeden, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Sept. 5, 1972, Ser. No. 286,517
Int. Cl. H03k 17/26
U.S. Cl. 307—293 **10 Claims**



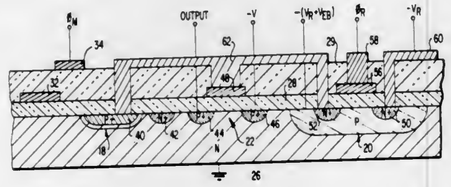
The solid-state circuit employs the combination of a retriggerable one-shot, a timing circuit and a master-slave flip-flop to build a basic timer. This timer can be used as a time-delay relay, a tone decoder, a pulse width detector or as a variety of other timing units which require accurate measurements of time durations.

3,781,574

COHERENT SAMPLED READOUT CIRCUIT AND SIGNAL PROCESSOR FOR A CHARGE COUPLED DEVICE ARRAY

Marvin H. White, Prince George; David H. McCann, Jr., Ellicott City; Ingham A. G. Mack, Laurel, and Franklyn C. Blaha, Glen Burnie, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 20, 1972, Ser. No. 299,480
Int. Cl. H01l 19/00
U.S. Cl. 307—304 **10 Claims**



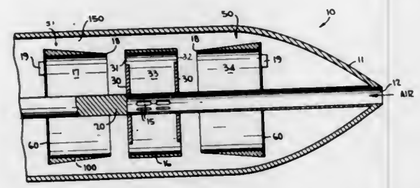
A coherent sampled CMOS readout circuit and signal processor coupled to a CCD shift register operated by a two-phase minority carrier transfer clock system. The invention comprises a multiplex MIS switch, a reverse biased collection diode, an N channel MOSFET reset switch, a P channel MOSFET electrometer amplifier, and a sample and hold circuit, the configuration having four distinct operational timing sub-intervals within a clock period wherein the charge is shifted from one shift register bit to another and finally to the output bit. This removes the Nyquist noise associated with the reset switch, suppresses switching transients and 1/f surface noise to thereby improve the signal to noise ratio, i.e., dynamic range, for a CCD array and readout system.

3,781,575

ELECTRICAL POWER FOR FUZE ACTIVATION

Carl J. Campagnuolo, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 24, 1967, Ser. No. 619,139
Int. Cl. H01v 7/00
U.S. Cl. 310—8.8 **7 Claims**



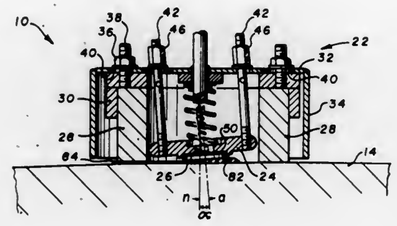
Ram air is passed into the cavities of opposed fluid oscillators. Each oscillator is defined on one end by a diaphragm and a piezoelectric crystal attached to said diaphragm. When the air in the cavity of the oscillator resonates, the diaphragm is vibrated at the resonant frequency of the oscillator causing the piezoelectric crystal to vibrate and produce an electric voltage. The power derived from the piezoelectric crystal may be used to power an electric fuze system within a projectile or missile.

3,781,576

HIGH TEMPERATURE ULTRASONIC TRANSDUCER

Herbert Arthur Runde, Windsor Locks, and Joseph Edward Kowles, Glastonbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sept. 8, 1972, Ser. No. 287,396
Int. Cl. H04r 17/00
U.S. Cl. 310—9.1 **12 Claims**



An ultrasonic transducer for use in a high temperature environment comprises a support frame supporting a crystal holder in turn supporting a piezoelectric crystal. Biasing means urge said crystal into non-rigid supported relationship with the crystal holder. The crystal surface facing the holder is electrically conductive and an electrically insulating material resistant to high temperatures is located between the crystal and the holder to maintain electrical isolation therebetween.

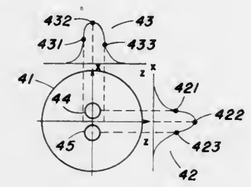
The crystal holder may be movable relative to the support frame to permit extending or withdrawing the crystal into or from an operative position and to allow the crystal orientation to be angularly varied relative to at least a part of the support frame.

3,781,577

PIEZOELECTRIC RESONATOR

Shunsuke Nonaka; Tasuku Yuuki, and Kouichi Hara, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Aug. 25, 1971, Ser. No. 174,894
Claims priority, application Japan, Aug. 28, 1970, 45/75403
Int. Cl. H04r 17/00
U.S. Cl. 310—9.7 **1 Claim**



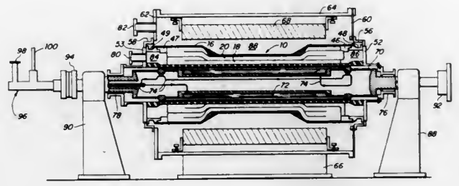
A piezoelectric resonator including a thickness shear piezoelectric element having an electrode on each face thereof, one electrode formed with two apertures spaced in the region of largest expansion and contraction on the geometrical axis in the shearing direction of the element where amplitude vibration is a maximum.

3,781,578

STATOR STRUCTURE FOR ELECTRICAL MACHINE

Joseph L. Smith, Jr., Concord; Philip Thullen, Dover, and James L. Kirtley, Jr., Brighton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 9, 1972, Ser. No. 279,034
Int. Cl. H02k 1/32
U.S. Cl. 310—52 **7 Claims**



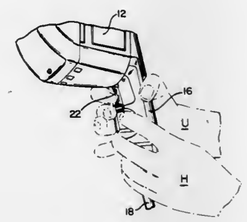
A stator structure for a cryogenic electrical machine including a non-conducting inner support shell; a stator winding unit carried by and fixed to the inner support shell and including a central part in which the stator winding conductors extend axially along the inner support shell, two end parts each having a transverse section in which the conductors extend transversely to their axial direction, an intermediate section in which the conductors extend between an end part and the central part, and an end connection section in which the conductors are interconnected in a predetermined pattern; and a non-conducting outer torque shell having transversely extending filaments surrounding and fixed to the stator winding.

3,781,579

PROTECTED LOCK MEANS FOR ELECTRICALLY-OPERATED, HAND-MANIPULATED TOOLS

Francis Joseph Rosenthal, Jr., Fork, and Lewis Hampton Rohr, Baltimore, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Jan. 3, 1973, Ser. No. 320,732
Int. Cl. H02k 11/00
U.S. Cl. 310—68 A **13 Claims**



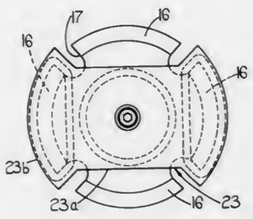
A portable, hand-held electrically powered tool activated, during operation, by a trigger-type, handle-mounted switch-operator in a convenient position lending to efficient operation of the tool and in which the tool switch has at least an "on" and "off" position. A selectively operable lock means for the switch operator is accessible to the user of the tool but is recessed or protected so that it must be intentionally operated to a "lock" position. The lock means is constructed so that momentary reapplication of manual pressure to the

switch-operator automatically de-activates the lock means and allows the electric motor to turn "off" upon release of pressure on the operator. The lock means is preferably, but not necessarily, located in a central position on the handle of the tool below the switch-operator. In addition, the switch-operator may have two or more "on" positions in which it may be locked.

3,781,580
INDUCTOR ALTERNATOR

Malcolm Williams, Solihull, and Charles Peter Cockshott, Coventry, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 28, 1972, Ser. No. 276,160
Claims priority, application Great Britain, July 31, 1971, 36,123/71
Int. Cl. H02k *19/20*
U.S. Cl. 310—168 **12 Claims**



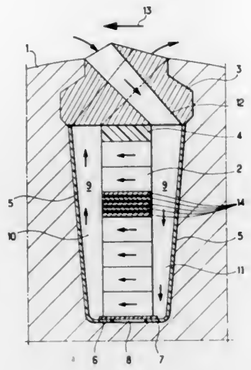
A transducer includes a stator formed of a magnetisable material and arranged to define at least one pair of adjacent pole pieces, and a rotor formed of a magnetisable material and arranged to define at least one pole piece. The rotor is movable angularly with respect to the stator from a first position, in which the one rotor pole piece is aligned with but spaced from one of the pair of stator pole pieces by a predetermined air gap, to a second position, in which the one rotor pole piece is aligned with but spaced from the other of the pair of stator pole pieces by a predetermined air gap. The transducer further includes an energising winding for connection to an a.c. source and magnetically coupled with the rotor, and an output winding surrounding one of the pair of stator pole pieces, whereby on energisation of the energising winding, angular movement of the rotor varies the relative flux densities in the pair of stator pole pieces, and hence the voltage induced in the output winding will be dependent upon the angular position of the rotor.

3,781,581
INTERNAL ARRANGEMENT OF ROTOR SLOTS OF ELECTRIC MACHINES

Christian Lehuen, Cravanche, and Roger Gillet, Belfort, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed Jan. 5, 1972, Ser. No. 215,574
Claims priority, application France, Jan. 13, 1971, 71.01066
Int. Cl. H02k *3/36*
U.S. Cl. 310—215 **6 Claims**

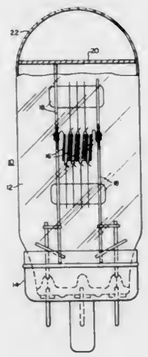
An internal arrangement of rotor slots for electrical machines, such as turboalternators, in which stacked conductors are carried by the slots and insulating cover caps of the slots have spacing members that protrude on the sides of the conductors to form ventilating channels between the conductors and the cover caps.



3,781,582
TRIPLE PURPOSE HEAT SHIELD, LIGHT COLLECTOR AND MOUNT SUPPORT FOR A TUNGSTEN-HALOGEN PROJECTION LAMP

Aristide R. De Caro, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 21, 1972, Ser. No. 265,024
Int. Cl. H01j *61/10, 1/92, 19/46*
U.S. Cl. 313—37 **5 Claims**

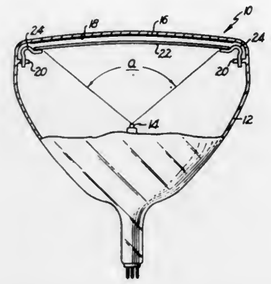


A multi-purpose member used in combination with a tungsten-halogen projection lamp, whereby the multi-purpose member reflects radiation back onto the filament of the projection lamp. The multi-purpose member also serves as a heat shield, a light shield, and a positioning and supporting means for the filament. This combination provides the accomplishment of the several functions at a lower cost than if the functions were provided separately, and also improves the efficiency of the lamp.

3,781,583
ARRANGEMENT FOR A SHADOW MASK IN A SLIM COLOR TELEVISION TUBE AND THERMOSTAT METAL FOR USE THEREIN

Jacob L. Ornstein, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 7, 1972, Ser. No. 278,335
Int. Cl. H01j *29/06*
U.S. Cl. 313—85 S **1 Claim**

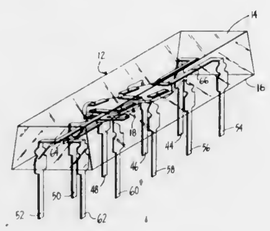


A support arrangement for the shadow mask in a color television tube of slim design is shown to include a plurality of support members formed of a low cost thermostat metal embodying only iron alloy materials, which thermostat metal displays high strength and corrosion resistance at elevated temperatures and displays low flexivity and stable thermal response properties, the thermostat metal having outer metal layers of approximately equal thickness formed of nickel-chromium-iron and nickel-iron alloys respectively and having an intermediate layer of a selected stainless steel comprising between 45 and 65 percent of the total thickness of the thermostat metal providing the thermostat metal with a flexivity in the range from 90 to 110 in the temperature range from room temperature up to about 350°F.

3,781,584
SOLID STATE ALPHANUMERIC INDICATOR AND LEAD FRAME

Richard F. Kingsbury, San Jose, Calif., assignor to Litronix, Inc., Cupertino, Calif.

Filed Mar. 13, 1972, Ser. No. 234,187
Int. Cl. H05b *33/06, 33/14*
U.S. Cl. 313—109.5 **3 Claims**

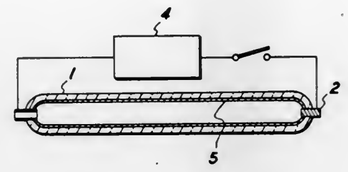


An alphanumeric indicator device in which the alphanumeric character is visible from one face of the device and the terminal pins for effecting electrical connection to the device extend from the opposite face of the device. A method for fabricating the device so as to eliminate the necessity for bending lead frame members after final assembly of the device. An improved lead frame for forming an alphanumeric indicator wherein the final configuration of the lead frame is established at the outset of the fabrication process.

3,781,585
LIGHT PRODUCING SYSTEM

Charles F. Gallo, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 837,881, June 30, 1969. This application Dec. 22, 1971, Ser. No. 210,931
Int. Cl. F21k *5/02*
U.S. Cl. 313—184 **5 Claims**

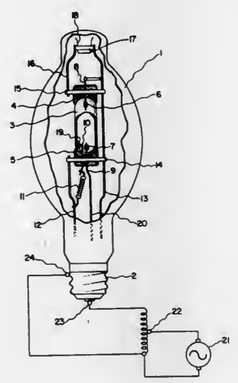


A method is provided whereby a high density of metallic atoms may be obtained in the plasma of a flash lamp by deposition of the desired metal substantially uniformly over the inside of an evacuated tube. Applying a pulse of current which vaporizes the metal produces the desired results.

3,781,586
LONG LIFETIME MERCURY-METAL HALIDE DISCHARGE LAMPS

Peter D. Johnson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,943
Int. Cl. H01j *61/18*
U.S. Cl. 313—174 **10 Claims**

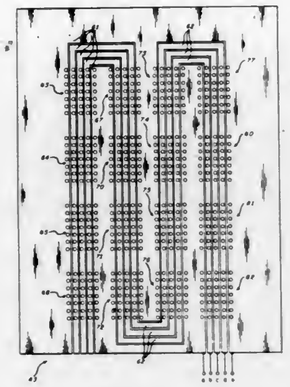


An improved mercury-metallic halide vapor arc discharge lamp in which sodium is present as a principal radiating specie and is added as the iodide to a mercury charge within a discharge envelope either solely or in the presence of other metallic iodides to produce a pleasing near-white emission, contains within the discharge envelope a sufficient quantity of elemental tin to prevent the existence of free iodine therein, thus achieving a greatly extended lifetime.

3,781,587
GAS DISCHARGE DISPLAY APPARATUS

Claude D. Lustig, Lexington, and Albert W. Baird, III, Burlington, both of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,067
Int. Cl. H01j 61/06
U.S. Cl. 313—217 15 Claims

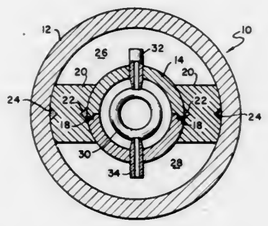


A gas discharge display panel including reservoir cells for providing ionizable gas and a plurality of gas discharge display memory cells. Included are a plurality of addressing electrodes each having a plurality of apertures therethrough, the electrodes being arranged in superposed configuration so that the apertures align to form gas conductive channels extending from the reservoir cells to the display memory cells. The addressing electrodes are adapted for connection to sources of selectable electrical potential whereby gas discharge columns are extended from the reservoir cells through selected channels thereby igniting gas discharges in selected display memory cells.

3,781,588
BACKWARD WAVE PREVENTION FOR A TWT HELIX

Lester M. Winslow, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1973, Ser. No. 326,218
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 3 Claims

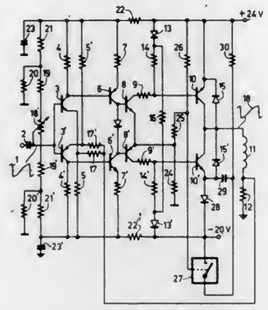


A method of preventing deleterious backward wave oscillations in a high powered traveling wave tube. A loss, introduced at selected frequencies, effects the backward oscillation prevention. This method inherently provides a high heat transfer capability since the loss may be introduced by the moving fluid that dissipates the heat generated in the fluid. The selection of a particular fluid and the dimensions of the hollow support ceramic fluid flow tubes result in selective loss in the range of 6–8 GHz in a TWT designed for operation between 2 and 4 GHz.

3,781,589
FIELD DEFLECTION CIRCUIT

Hans-Jurgen Brockmann, Halstenbek, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,832
Claims priority, application Germany, Nov. 28, 1970, P 20 58 631.6
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 8 Claims

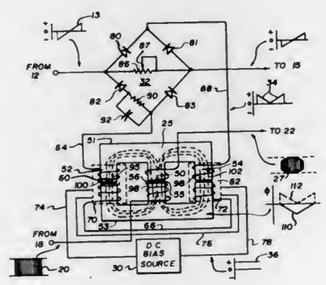


A field deflection circuit in which the deflection coil is connected to a direct voltage source during the flyback period so as to reverse the polarity of the deflection current. For this purpose the deflection coil is connected through a switch controllable connected to the direct voltage source, which switch is controlled by the difference between a voltage proportional to the steep-edged sawtooth input signal and a voltage proportional to the deflection current. This difference is considerable during the flyback period and is utilized for switching on the controllable switch; it becomes zero as soon as the deflection current has reached its required value at which the switch is switched off again. It is thus achieved that the polarity reversal is always terminated when the required value is reached, even when the direct voltage fluctuates and also when the inductive load is changed.

3,781,590
PINCUSHION DISTORTION CORRECTION CIRCUIT

Steven J. Chapman, Wilmette, Ill., assignor to Warwick Electronics, Inc., Chicago, Ill.

Filed June 12, 1972, Ser. No. 261,947
Int. Cl. H01j 29/70
U.S. Cl. 315—27 SR 9 Claims

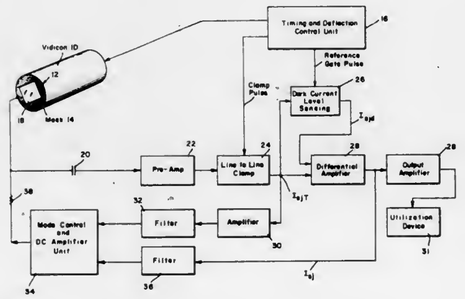


A saturable reactor in series with a horizontal deflection coil introduces a parabolic reactance variation which corrects for side pincushion distortion in a television cathode ray tube. A bridge rectifier circuit rectifies a sawtooth output from a vertical deflection circuit to produce a triangular waveform which is applied to one control winding of the saturable reactor. A remaining control winding is coupled to a DC bias source.

3,781,591
SYSTEM FOR CONTROLLING THE TARGET VOLTAGE OF IMAGE SENSORS

Walter H. Bockwoldt, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 31, 1972, Ser. No. 285,282
Int. Cl. H01j 29/52
U.S. Cl. 315—30 9 Claims

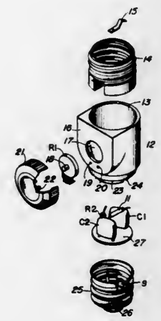


Herein is disclosed a system for automatically controlling the target voltage applied to the photoconductor of a television camera so as to provide improved performance over a wide range of photoconductor (target) luminance and temperature conditions. Means are provided for monitoring the dark current read from a masked portion of the photoconductor, and for subtracting the dark current from the total camera's output current to produce a signal, indicative to a substantial degree, of only signal current resulting from scene illumination. The signal current and the total current are processed within an electronic voltage control servo system such that during a first mode of operation (high target luminance and/or low target temperature) the vidicon target voltage is controlled to maintain a constant average signal current; and during a second mode of operation (low target luminance and/or high target temperature) the vidicon target voltage is controlled to maintain a preselected maximum average total current.

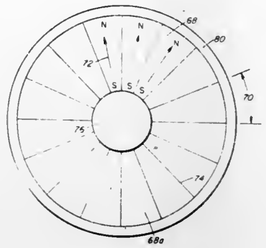
3,781,592
RADIAL MAGNETIZED MAGNET

William J. Harrold, Littleton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 8, 1972, Ser. No. 260,879
Int. Cl. H01j 1/00
U.S. Cl. 315—39.71 5 Claims



A permanent magnet package for electromagnetic devices, including traveling wave tubes, linear beam devices, klystrons, magnetrons, crossed field and backward wave amplifiers or oscillators and the like comprising a plurality of radially oriented linearly polarized members collectively providing a magnetic circuit. A soft iron return path between the assembled multi-segmented magnetized components completes the magnetic circuit. Magnetic materials, such as samarium-cobalt, platinum-cobalt, alnico and ferrite may be utilized.



3,781,593
FULL RANGE LIGHT DIMMER ADAPTOR

Edward T. Rodriguez, 70 Meacham Rd., Somerville, Mass.

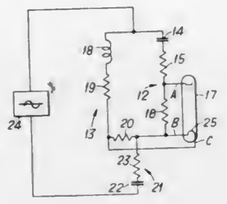
Filed Sept. 13, 1972, Ser. No. 288,503
Int. Cl. H01j 7/44
U.S. Cl. 315—58 2 Claims

A lamp dimmer adaptor is disclosed for insertion in a conventional lamp fixture to enable the illumination provided by an incandescent electric lamp to be controlled over a large range from dim to full intensity. The body of the adaptor has a socket for accepting the base of the electric lamp. Secured to the body is a hollow base formed by a metallic shell in which is housed a triac and all the other elements of the lamp dimmer circuitry with the exception of the variable resistor. The case of the triac is soldered to the shell to provide a thermal path for dissipation by the shell of heat generated in the triac. The body has a dependent collar which protrudes into the base and a recess in the collar receives the triac case whereby rotation of the base relative to the body is prevented. Above the base, the body has an external flat face which is substantially covered by a large hollow knob housing the variable resistor which controls the level of illumination.

3,781,594
LAMP CIRCUITS

Frank B. Roberts, Gateshead, England, assignor to Victor Products (Wallsend) Limited, Wallsend, Northumberland, England

Filed Nov. 9, 1972, Ser. No. 304,895
Claims priority, application Great Britain, Nov. 18, 1971, 53,633/71
Int. Cl. H05b 41/14
U.S. Cl. 315—98 5 Claims

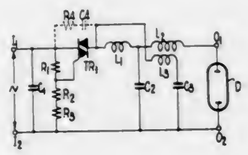


A circuit for operating a fluorescent lamp, particularly in hazardous conditions, comprises two parallel legs including inductive and capacitive reactances, respectively, and a third leg in series with the other legs and including a reactance which forms, with one of the parallel legs, a series circuit which is substantially tuned to the supply frequency. A heater of the lamp is connected across a relatively low value resistance in that parallel leg which forms part of the series tuned circuit, and the lamp electrodes are connected across a relatively high value resistance in the other parallel leg. The tuned circuit provides the necessary voltage for firing the lamp, the reduced impedance of the lamp when fired then damping the tuned circuit. The low resistance of the lamp heater normally shunts the resistance in the tuned circuit, but if the lamp is removed, or the heater becomes open-circuited, that resistance damps the tuned circuit. A second lamp heater may be energised from a transformer in one of the parallel legs.

3,781,595
ELECTRICAL DISCHARGE LAMP

Philip Rufus Samuels, London, England, assignor to The General Electric Company Limited, London, England

Filed May 28, 1971, Ser. No. 147,983
Int. Cl. H05b 39/00
U.S. Cl. 315—101 9 Claims

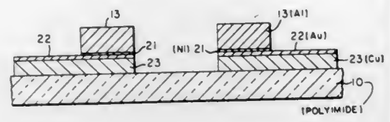


An operating circuit for an electrical discharge lamp comprises a ballast inductance, a semiconductor switching device and a capacitance connected in series between a pair of input terminals, a pair of output terminals across which said capacitance is connected, and a control network for triggering the switching device into conduction for a predetermined part of each of at least one set of alternate half cycles of an alternating current supply connected across the input terminals, to provide a voltage across the output terminals for both starting and running a discharge lamp.

3,781,596
SEMICONDUCTOR CHIP CARRIERS AND STRIPS THEREOF

Richard J. Galli, 2132-A Haven Rd., and Denis G. Kelemen, 6 Gumwood Dr., both of Wilmington, Del.

Continuation of Ser. No. 118,803, Feb. 25, 1971, abandoned.
This application July 7, 1972, Ser. No. 269,575
Int. Cl. H05k 3/32
U.S. Cl. 317—101 F 13 Claims

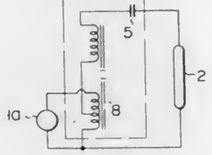


Carriers for packaging semiconductor devices. Strips of such carriers. The carriers comprise a flexible transparent film base, and have adherent thereto discretionary conductor patterns and bonding pads on the interior extremities of the conductor patterns.

3,781,597
LIGHTING DEVICE FOR A DISCHARGE LAMP

Osamu Nomura, Yokohama, and Kanichi Yajima, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 28, 1972, Ser. No. 310,131
Claims priority, application Japan, Aug. 25, 1972, 47/85030
Int. Cl. H05b 39/00
U.S. Cl. 315—105 1 Claim



In a lighting device for a discharge lamp including a ballast inserted between an AC power source and a discharge lamp the ratio Z_C/Z_L of the capacitive impedance Z_C to the inductive impedance Z_L of the ballast is in the range of 1.9–2.8; the ratio V_L/V_S of the nominal lamp voltage V_L of a discharge lamp to the unloaded voltage V_S of a power source is in the range of 0.7–1.1; and when V_L/V_S is in the range of 1.0–1.1, the ratio V_L/V_S is so determined as to satisfy the equation:

$$Z_C Z_L \geqq 9V_L/V_S - 7.1$$

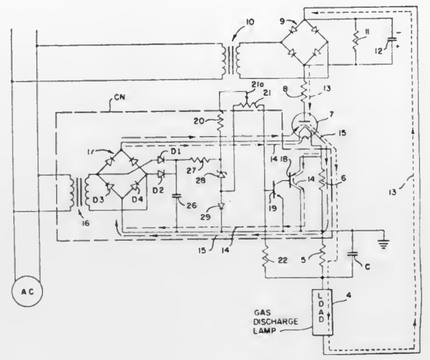
3,781,598
ELECTRIC CURRENT CONTROL APPARATUS

Don F. Widmayer, Bethesda, Md., assignor to Controlled Environment Systems, Inc., Rockville, Md.

Continuation of Ser. No. 818,375, April 22, 1969, Pat. No. 3,659,147. This application Nov. 30, 1971, Ser. No. 203,275The portion of the term of this patent subsequent to Mar. 25, 1989, has been disclaimed.
Int. Cl. H05b 39/04
U.S. Cl. 315—107 5 Claims

A current control system particularly useful but not limited to high voltage non-linear load devices wherein a vacuum

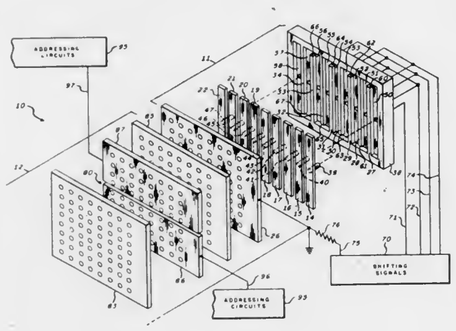
tube, connected in series relationship with the load device and a DC power source, is operated in a controlled electron emission mode. The current through the load may thus be controlled by controlling the current flowing from the anode to the cathode of the vacuum tube.



3,781,599
GAS DISCHARGE DISPLAY APPARATUS

Theodore H. Bonn, Newton Centre, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,584
Int. Cl. H05b 37/00
U.S. Cl. 315—169 TV 21 Claims

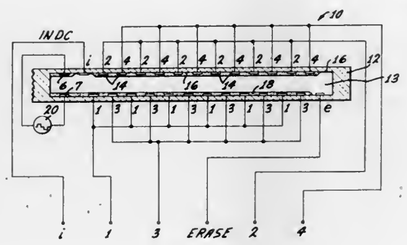


A gas discharge display panel comprises a gas discharge shifting register for propagating glow discharges from stage to stage thereof in response to shifting signals. The apparatus includes a plurality of gas discharge display cells and electrode means interposed between the shifting register and the display cells and having a plurality of gas conductive channels therethrough extending from the stages of the shifting register to the display cells. The electrode means is selectively connectible to a source of addressing potentials generated in timed relation with respect to the shifting signals whereby gas discharge columns are selectively extended in the channels from the glowing stages of the shifting register to the display cells thereby igniting gas discharges in selected display cells.

3,781,600
PLASMA CHARGE TRANSFER DEVICE

William Earl Coleman, and Clarence William Kessler, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed May 22, 1972, Ser. No. 255,547
Int. Cl. H05b 37/00
U.S. Cl. 315—169 TV 20 Claims



A plasma charge transfer device utilizable as a shift register memory and/or display utilizing ionizable gas contained in an enclosure with a plurality of individual transfer electrodes covered with a dielectric material aligned parallel on opposite internal walls of the enclosure, but offset one another, throughout its length. This plasma charge transfer device utilizes: an ionizable gas; an input electrode which can be either directly or capacitively coupled to the gas; capacitively coupling to the gas of oppositely offset transfer electrodes; and the wall voltage which results when charge is transferred as the result of a gaseous discharge occurring between two oppositely offset transfer electrodes -- the additive effect of this wall voltage to an applied voltage such that a gaseous discharge occurs between two transfer electrodes if charge was transferred to one of the electrodes during a previous discharge whereas a gaseous discharge will not occur with this same applied voltage between any two oppositely offset electrodes which do not have the proper charge trapped on the wall of at least one of the electrode pairs. Upon the proper application of command signals, a gaseous discharge can be successively transferred between subsequent oppositely offset transfer electrode pair, one electrode position at a time, or continuously shifted throughout the entire length of the plasma charge transfer device, or may be held stationary at any oppositely offset transfer electrode pair position within the device. When the plasma charge transfer device is used as a shift register memory, information to be retrieved at the register output may be optically or electronically recognized and erased.

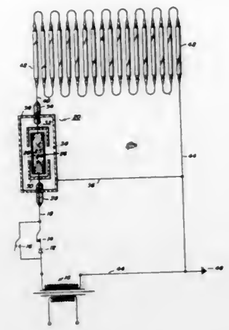
3,781,601
OPTICAL GENERATOR OF AN ELECTROSTATIC FIELD HAVING LONGITUDINAL OSCILLATION AT LIGHT FREQUENCIES FOR USE IN AN ELECTRICAL CIRCUIT

Pavel Imris, West Haven, Conn., assignor to Ecotrol Inc., Columbia, Md.

Continuation-in-part of Ser. No. 5,248, Jan. 23, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,034
Int. Cl. H01j 17/04; H05b 37/00
U.S. Cl. 315—227 8 Claims

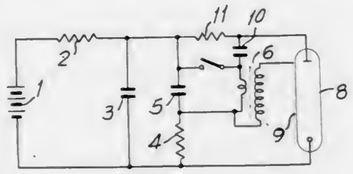
An optical generator of an electrostatic field at light frequencies for use in an electrical circuit, said generator having a pair of spaced apart electrodes in a gas-filled tube of

quartz glass or similar material with at least one condenser cap or plate adjacent one electrode and a dielectric-filled con-



tainer enclosing the tube, the generator substantially increasing the electrical efficiency of the electrical circuit.

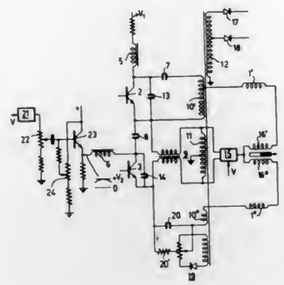
3,781,602
ELECTRONIC FLASH CIRCUITS
Kinya Tadokoro, Kawasaki, Japan, assignor to Kabushiki Kaisha Sunpak, Tokyo-to, Japan
Filed June 16, 1971, Ser. No. 153,520
Claims priority, application Japan, June 23, 1970, 45/62327
Int. Cl. H05b *41/32*
U.S. Cl. 315—241 P **4 Claims**



An electronic flash device for providing artificial illumination. A main capacitor is connected between the electrodes of a discharge tube to which there is also connected an ignition transformer for bringing the tube into a state of emission. A trigger switch and a trigger capacitor are connected with the transformer for actuating the latter. By way of the trigger switch an additional capacitor is connected in series with the main capacitor so that at its initial period of emission the inter-electrode voltage of the discharge tube is augmented by the discharge from the additional capacitor.

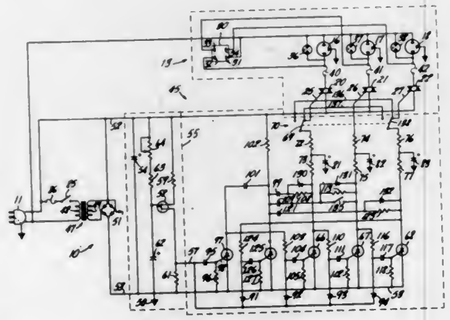
3,781,603
CIRCUIT ARRANGEMENT FOR GENERATING A MAINLY SAWTOOTH DEFLECTION CURRENT OF LINE FREQUENCY IN A PICTURE DISPLAY APPARATUS
Antonius Boekhorst, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed July 8, 1971, Ser. No. 160,658
Claims priority, application Netherlands, July 18, 1970, 7010690
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 GD **9 Claims**

A circuit arrangement for generating an S-corrected sawtooth deflection current of line frequency in a picture display apparatus, the amplitude of which current undergoes a more or less parabolic variation of field frequency for correcting the East-West distortion on the screen of a picture display tube. Two generators, which are substantially decoupled relative to each other, apply a direct voltage to one line deflection coil and the combination of a direct voltage and a field frequency voltage to the other coil. The S-correction is more East-West modulated than the deflection current itself, which is effected



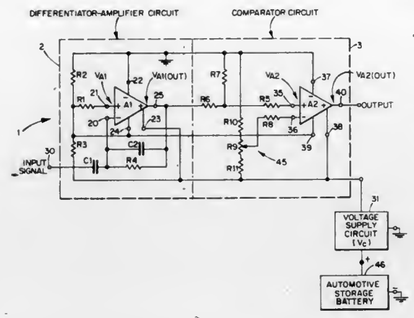
by incorporating a capacitor of finite capacitance in the second generator. The circuit arrangement includes a second capacitor of finite capacitance, either in the first generator or in series with the deflection coil.

3,781,604
LIGHT CONTROL CIRCUIT
John J. Scarpino, Garden City, N.Y., assignor to Hope-Tronics, Limited, Hempstead, N.Y.
Filed Apr. 13, 1972, Ser. No. 243,707
Int. Cl. H05b *41/34*
U.S. Cl. 315—312 **12 Claims**



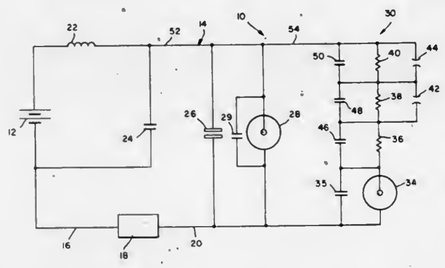
A two mode chase light control circuit. Three triacs energize three respective outputs to three lamp banks. Oscillator timed control circuitry sequentially triggers the triacs. Three triggering SCRs, each connected with a triac gate, conduct sequentially to fire the triacs. In the first mode each SCR conducts until a fourth quenching SCR connects commutating capacitors across the triggering SCRs. In the second mode, a switch bypasses a resistor between one commutating capacitor and a triggering SCR. This reduces the series resistance in a circuit interconnecting the triggering SCRs. The second and third triggering SCRs quench the first and second, diverting current to commutating capacitors. The quenching SCR quenches the third triggering SCR. To reverse the lighting sequence, a switch reverses the trigger connections to the first and the last triacs. Remote discharge lamps indicate the lighting mode, sequence, and timing. A commonly controlled slave triac package controls additional lamps from a separate source.

3,781,605
DC SIGNAL PROCESSING CIRCUIT
Lucian F. Emerson, Williamsport, Pa., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Filed Dec. 4, 1972, Ser. No. 311,928
Int. Cl. G01p *3/42*; **B60t** *8/12*
U.S. Cl. 317—5 **5 Claims**



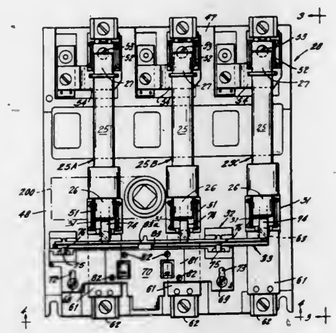
A dc signal processing circuit suitable for use in electronic control module for an automatic anti-skid braking system for vehicles such as automobiles. The processing circuit includes a differentiator-amplifier and comparator subcircuits. The differentiator subcircuit has applied an amplitude-varying dc "-voltage" in direct proportion to the rotational velocity of the rear wheels. Instantaneous increases and decreases in the voltage level of the dc "velocity" voltage signal are detected by the differentiator-amplifier subcircuit to produce positive-going and negative-going pulses, respectively, amplified, and inverted thereby. These signals are applied to the camparator subcircuit where the positive-going pulses are compared with a dc "deceleration" reference voltage level having a value corresponding to a predetermined value of wheel deceleration. If the amplitude of a positive-going pulse exceeds the value of the constant dc "deceleration" reference voltage level, an output pulse is produced by the comparator subcircuit to effect operation of the brake-control mechanism of the vehicle to release the brakes and allow the wheels to spin up.

3,781,606
CIRCUIT BREAKER AND METHOD
Willis F. Long, and Kenneth T. Lian, both of Thousand Oaks, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 11, 1972, Ser. No. 313,897
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 A **9 Claims**



Direct current is interrupted against a high voltage by opening an in-line switch and switching the current into an impedance-increasing section of the circuit breaker. The impedance-increasing section comprises an electronic switching device such as a crossed-field tube serially connected with at least two impedance-increasing resistors. There is a gap in parallel to each of these resistors, except one. As voltage builds up across an impedance-increasing resistor so that the total voltage drop will exceed the desired maximum, the gap breaks down to reduce voltage drop.

3,781,607
DEVICE FOR REMOVABLY MOUNTING ELECTRICAL COMPONENT
Bernard DiMarco, Bellefontaine, Ohio; Frank W. Kussy, Haverford, Pa., and Kenneth W. Swain, Hampton, N.H., assignors to I-T-E Imperial Corporation, Spring House, Pa., by said Di Marco and Kussy and Chase-Shawmont Company, Newbury port, Mass., by said Swain
Filed Aug. 28, 1972, Ser. No. 283,991
Int. Cl. H02h *7/08*
U.S. Cl. 317—13 R **6 Claims**



A motor controlling system, including a conventional multipole electromagnetic contactor and associated overload relay means, is provided with motor short-circuit protector means in the form of fast-acting fused protector means connected in series with the heaters of the overload relay means and the motor windings. Under overload conditions below locked rotor current, referred to as running overloads, the overload relay means opens the actuating circuit for the contactor holding coil, and under severe fault conditions the fused protector means becomes active to limit let-through energy to a level that will not damage either the motor, contactor, overload relay means, or wiring to the motor.

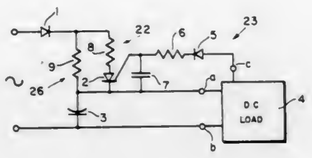
The overload relay means is chosen from a family of overload relays in which each relay is adapted to protect a motor drawing a different full load current and the fused protector means is chosen from a family of fused protectors in which each protector is adapted to coordinate with a plurality of different relays from said family of overload relays.

Actuation or melting of a fused protector unit causes an ejector pin thereof to operate a common trip bar which, in turn, opens a switch in the coil circuit. This trip bar is part of an anti-single phasing unit that is selectively positionable with respect to the clips which mount the fused protector units, thereby operating with fused protector units of different sizes. These clips are provided with integral formations which serve a blocking or non-interchangeability function, thereby preventing oversized fused protector units from being mounted to the clips.

3,781,608
FAST ACTING CIRCUITRY FOR DC OVERLOAD PROTECTION

Erich Geiger, Friesen, Germany, assignor to Loewe-Opta GmbH, Berlin, Germany

Filed Sept. 7, 1972, Ser. No. 287,092
Claims priority, application Germany, Sept. 8, 1971, P 21 45 538.9
Int. Cl. H02h *3/20*
U.S. Cl. 317—20 8 Claims

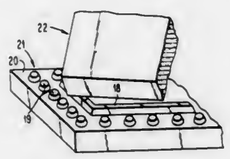


An improved overload protection circuit is associated with a DC load having a first output whose voltage level exhibits a significant decrease in the presence of a short circuit in the load. A thyristor connected in series with a rectifier and a relatively large filter capacitor in the load power supply is normally maintained conductive by coupling its control electrode to the normally high voltage at the first output of the load, such high voltage being stored across a relatively small capacitor in the coupling circuit. When the load is shorted, the small capacitor discharges rapidly to decrease the voltage at the control electrode of the thyristor below its conductive threshhold, whereby the thyristor shuts off at the conclusion of the then-current input AC half cycle. A high-resistance bypass for the thyristor defines an auxiliary current path during thyristor shut-down so that upon correction of the short circuit, the filter capacitor (and therefore the small capacitor in the coupling circuit) recharges to turn on the thyristor and thereby restore operating load current.

3,781,609
A SEMICONDUCTOR INTEGRATED CIRCUIT CHIP STRUCTURE PROTECTED AGAINST IMPACT DAMAGE FROM OTHER CHIPS DURING CHIP HANDLING

Theodore H. Baker; Majid Ghafghaichi, and Paul A. Totta, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,432
Int. Cl. H04l *19/00*
U.S. Cl. 317—101 A 7 Claims

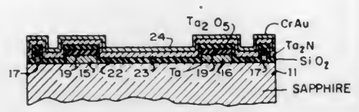


A semiconductor integrated circuit chip structure is provided in which one or more bumper projections extending from the active surface of the chip and spaced from the electrical contact projections on said surface functions to protect said active chip surface from impact damage caused by other chips which randomly contact the chip surface during handling procedures particularly when such handling procedures involve placing the chips in random contact with each other in a vibratory article feeding apparatus, such as a vibratory bowl.

3,781,610
THIN FILM CIRCUITS AND METHOD FOR MANUFACTURE

George E. Bodway, 23200 Mora Glen Dr., Los Altos, Calif.

Division of Ser. No. 56,610, July 20, 1970, abandoned. This application May 22, 1972, Ser. No. 255,890
Int. Cl. H02b *1/04*
U.S. Cl. 317—101 A 14 Claims

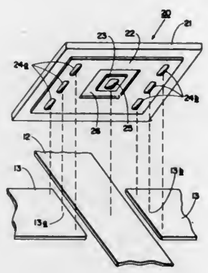


A thin film capacitor and resistor circuit is disclosed, each capacitor being formed by a structure including a metallic film on an insulating substrate, the metallic film having an oxidized surface formed by anodizing, an oxide layer on the oxidized surface of the metallic film, and a pair of spaced-apart conductor layers over the oxide layer, each resistor being formed by a resistive film on the substrate and a pair of spaced-apart conductor layers connecting with the ends of the resistive film. In the manufacture of the circuit, a predeposited substrate is produced that may be utilized by circuit designers in the subsequent fabrication of custom microcircuits. A heat treating technique is employed in trimming the resistors of the circuit.

3,781,611
MICROELECTRONIC COMPONENT ARRAY

Alberto Loro, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada

Filed Nov. 16, 1972, Ser. No. 307,148
Claims priority, application Canada, Oct. 16, 1972, 153965
Int. Cl. H01l *19/00*
U.S. Cl. 317—101 A 12 Claims

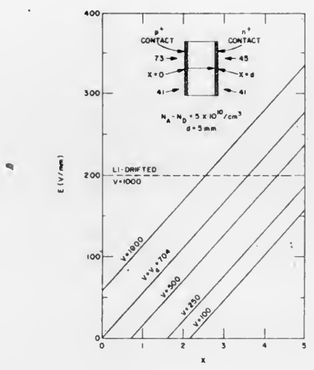


A microelectronic component array fabricated upon a substrate having deposited upon its surface a network of intersecting, electrically isolated continuous and discontinuous conductor strips. Chips, supporting devices in integrated-circuit form - for example, diodes, transistors, etc., - are located at various selected ones or all of the intersections, the metallization of such devices further serving to bridge discontinuous strip ends at such intersections.

3,781,612
METHOD OF IMPROVING HIGH-PURITY GERMANIUM RADIATION DETECTORS

Jorge Llacer, Brookhaven, and Hobart W. Kraner, Bellport, both of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Wasington, D.C.

Filed Mar. 28, 1972, Ser. No. 238,822
Int. Cl. H01l *15/00*
U.S. Cl. 317—234 R 9 Claims

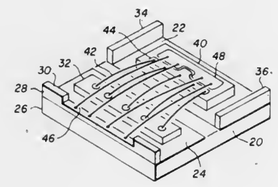


Method for improving the response characteristics of high-purity germanium radiation detectors by irradiation, annealing and etching the detectors.

3,781,613
RF TRANSISTOR CARRIER

Eugene A. Robinson, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Oct. 10, 1972, Ser. No. 296,387
Int. Cl. H01l *5/00*
U.S. Cl. 317—234 R 5 Claims



An RF bipolar transistor and carrier which reduces inductance of the common lead of the transistor thereby increasing operational bandwidth and transistor gain especially in VHF-UHF applications. The carrier includes bonding pads for receiving the transistor and a low ohmage resistor and whereby wire bonds connected to the emitter and base regions of the transistor may be interlaced.

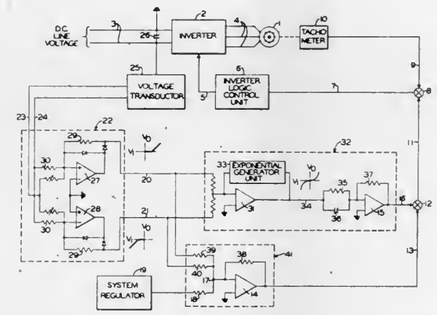
ERRATUM

For Class 317—101 see:
Patent No. 3,781,596

3,781,614
INDUCTION MOTOR CONTROL SYSTEM

Boris Mokrytzki, Murrysville, Pa., and Peter W. Hammond, Chagrin Falls, Ohio, assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed July 31, 1972, Ser. No. 276,540
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 9 Claims



This invention covers an auxiliary control system for automatically changing the operating point of an a. c. induction motor independent of normal control thereof in order to counteract voltage deviations either above or below a preselected range in which supply voltage to the input of a solid state inverter device controlling the motor must be maintained in order to prevent inadvertent system shutdown or damage. The motor operating point is moved toward a condition of motoring or regeneration, in accordance with the voltage deviation being of increasing or decreasing character, respectively, in order to adjust the level of power demanded by the motor and thereby counteract the voltage deviation until the inverter input voltage is restored to the desired level. The system is particularly useful in permitting the kinetic energy of a moving body, such as a railway vehicle, to provide regenerative voltage for maintaining inverter input voltage during periods of power interruption, such as occur in traversing line gaps.

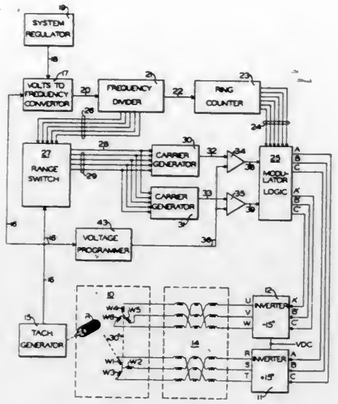
3,781,615
SYSTEM FOR PHASE SHIFTING INVERTERS TO OBTAIN A VARIABLE MODULATED WAVEFORM

Boris Mokrytzki, Murrysville, Pa., and Udo Meier, Luzern, Switzerland, assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Oct. 24, 1972, Ser. No. 299,932
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 11 Claims

A a. c. motor drive system for effecting fundamental voltage modulation by phase shifting inverters coupled in parallel, thereby providing a gradual voltage change between a minimum pulse width modulated waveform and an unmodulated waveform to overcome surges experienced in the transition therebetween. A voltage programmer produces a control signal predicated on vehicle speed so as to follow a preselected profile computed to control the degree of inverter

phase shift so that the phase shift modulated fundamental precisely matches the pulse width modulated fundamental at



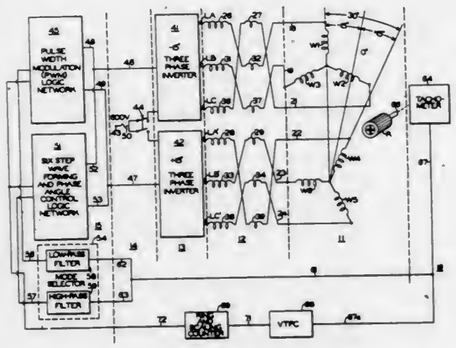
one extreme of the phase shift region of the voltage curve and precisely matches the unmodulated fundamental at the other extreme of the phase shift region.

3,781,616

INDUCTION MOTOR CONTROL SYSTEM

Boris Mokrytzki, Highland Heights, and Peter W. Hammond, Chagrin, both of Ohio, assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Oct. 13, 1971, Ser. No. 188,949
Int. Cl. H02p *1/30*
U.S. Cl. 318—230 **22 Claims**



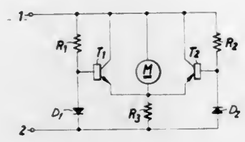
This disclosure relates to a control system for dynamically reenergizing a rotating induction motor. A pair of inverters supply power to the windings of the induction motor through an inductive reactor. A tachometer senses the rotational speed of the rotor of the induction motor and applies a signal to a programmed logic circuit for pulse width modulating the power of the inverters over a constant torque range and for step wave shaping the power of the inverters over a constant horsepower range. In the event of a interruption of power, the reapplied power to the induction motor is reduced and the frequency of the reapplied power is readjusted at or near the actual synchronous speed of the induction motor so that little, if any, current surges occur upon reenergizing of the induction motor.

3,781,617

REVERSING DRIVE WITH BRAKING FOR OPTICAL COMPONENTS

Otto Thomas, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co. Optische Werke, Kreuznach, Rhineland, Germany

Filed May 24, 1972, Ser. No. 256,279
Claims priority, application Germany, May 26, 1971, P 21 26 132.5
Int. Cl. H02p *3/12*
U.S. Cl. 318—261 **6 Claims**



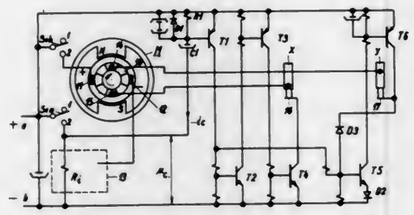
To displace a reciprocable component of an optical objective, a reversible d-c motor is energized with current of one or the other polarity. The rotor winding of this motor is shunted by oppositely poled diodes or transistors which are ineffectual in the presence of an external voltage but short-circuit the winding when the motor operates as a generator upon disconnection from the supply, thereby arresting the motor.

3,781,618

ELECTRIC DRIVING APPARATUS

Stanislaw Kruszynski, Lutry, Switzerland, assignor to Bolex International SA, Saint-Croix, Switzerland

Filed July 27, 1972, Ser. No. 275,804
Claims priority, application Switzerland, July 30, 1971, 11233/71
Int. Cl. H02k *13/00*
U.S. Cl. 318—265 **4 Claims**



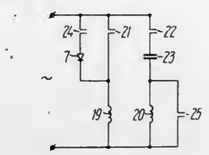
An electric motor drive having a rotor that is brought to a stop in a predetermined angular position whenever the mechanism ceases to move. The motor includes a segment type commutator as well as a slip ring and means of applying a blocking voltage to the slip ring to produce a rotor induced magnetic field of fixed orientation in relation to the rotor. Means are also provided to control application of stopping current only when the rotor is in a stable stopping position.

3,781,619

METHOD OF BREAKING ALTERNATING-CURRENT ELECTRIC MOTOR AND DEVICES EMPLOYING THIS METHOD

Mikhail Pavlovich Rashkovich, ulitsa Chkalova, 10, kv. 28; Alexandr Ljudvigovich Kon, ulitsa Sverdlova, 95, kv. 1; Nikolai Konstantinovich Shaparev, ulitsa Tereshkovoi, 14, kv. 42; Boris Isaakovich Shklovsky, ulitsa Pushkinskaya, 8, kv. 5, and Grigory Abramovich Leibovich, ulitsa Perekopskai Pobedy, 17, kv. 4, all of Odessa, U.S.S.R.

Filed May 17, 1972, Ser. No. 254,312
Int. Cl. H02p *3/20*
U.S. Cl. 318—211 **4 Claims**



A method of braking an alternating-current electric motor having power windings some of which are deenergized and shorted, while the others are fed with a half-wave rectified current inducing a rotational electromotive force in the shorted power windings.

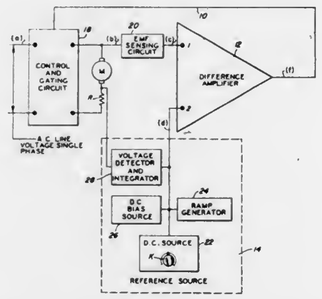
A device for effecting the method of braking an electric motor according to the invention incorporating a rectifier in the power circuit of the electric motor. Also included into the power circuit of the electric motor are the contacts of an operating starter, said contact being inserted between the motor terminals and the power supply mains. In this case the contact of the braking starter is connected in parallel to the power winding of the electric motor, while the contacts in series with the rectifier are connected parallel to the contacts of the operating starter in the power windings of the motor thus feeding the windings from the power mains through the rectified-current circuit in the process of braking.

3,781,620

FULL WAVE GOVERNOR CONTROL SYSTEM

Tibor E. Toth, Congers, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,202
Int. Cl. H02p *5/16*
U.S. Cl. 318—331 **8 Claims**



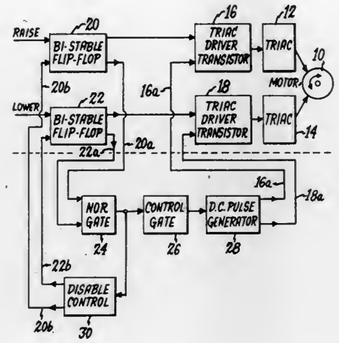
A full wave governor control system for a DC motor which regulates the motor speed in response to an error control signal derived by sensing the emf of the motor and comparing it to a reference signal which varies periodically from a first DC potential to a second and higher DC potential at a rate in synchronism with each half-cycle of applied alternating line voltage.

3,781,621

D.C. MOTOR BRAKING CIRCUIT ESPECIALLY FOR USE WITH VOLTAGE REGULATORS

Richard D. Blackburn, Dalton, Mass., assignor to General Electric Company

Filed June 21, 1972, Ser. No. 264,865
Int. Cl. H02p *3/24*
U.S. Cl. 318—373 **10 Claims**



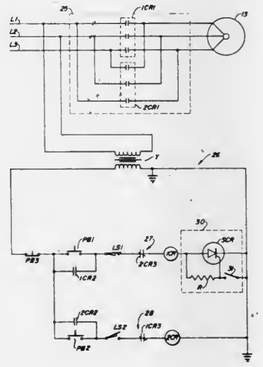
A D. C. motor braking circuit is disclosed particularly for use with voltage regulators. The circuit utilizes a bilateral transistor which is turned on by the action of the voltage regulator control device to energize a pulse transformer which will apply a D.C. braking current to the motor of the voltage regulator through diodes. To prevent control instability, a pair of transistors are provided which are turned on during the braking period to prevent the control circuit of the voltage regulator from operating.

3,781,622

ELECTRONIC INTERLOCK FOR DOOR OPERATOR

Floyd Acton; Paul E. Cochran, and William G. Moore, all of Columbus, Ohio, assignors to Kinnear Corporation, Columbus, Ohio

Filed Oct. 24, 1972, Ser. No. 300,173
Int. Cl. H02p *1/00*
U.S. Cl. 318—466 **6 Claims**



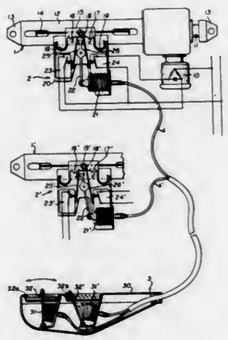
An electrical control circuit for a door operator is provided having an electronic interlock. Doors or closures of the type for which this electrical control circuit and interlock are in-

tended to be utilized are of a type known as a roll-up door having a plurality of hingedly interconnected slats or panels. This type of door may be opened through roll-up of the hinged slats. Closures of this type are often of a large physical size requiring electrically driven motors for operation. A control circuit is provided permitting selective operation of the electrical drive motor in the desired direction and mechanical locking means is usually provided to secure the closure in a closed provision relative to the opening. An interlock must be provided to prevent inadvertent operation when the mechanical lock is securing the closure in this closed position. The electrical control circuit of this invention incorporates an electronic interlock which prevents motor operation when the mechanical lock is engaged and prevents damage to the door operator and motor or permits operation with the mechanical lock disengaged.

3,781,623
ELECTRO-MECHANICAL LIFTING DEVICE

Gernot Neumann, Oerlinghausen, Germany, assignor to Firma-Hanning Elektro-Werke, Hanning, Bielefeld, Germany

Filed Sept. 19, 1972, Ser. No. 290,346
Claims priority, application Germany, Sept. 20, 1971, P 21 46 934.1
Int. Cl. H01h *35/24*
U.S. Cl. 318—481 **4 Claims**



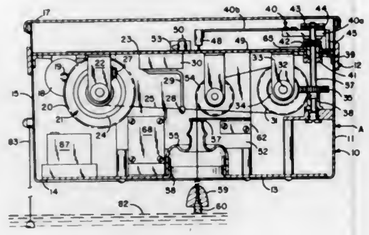
An electro-mechanical lifting device, in particular for bed adjustments, which comprises a driving motor including switching and control means. A pressure source is received in a manual switch. Pneumatic means for operation of the switching and control means are provided by means of the pressure source. A switching device is connected by a hose conduit with the pressure source. The volume of the pressure source is capable of being enlarged and of being reduced. The switching device has a pressure converter responding to pressure below atmospheric pressure and to pressure above atmospheric pressure, with two end positions. The pressure converter is in operative connection selectively with a switch means for left-run and a switch means for right-run of the driving motor.

3,781,624
LIQUID LEVEL INDICATOR AND FLOW MEASURING DEVICE

Reuben C. Tullis, San Diego, Calif., assignor to Manning Environmental Corp., Santa Cruz, Calif.

Continuation-in-part of Ser. No. 817,369, April 18, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,049
Int. Cl. G01f *23/10*; **H02p** *3/00*
U.S. Cl. 318—482 **7 Claims**

A portable device is provided for mounting above a conduit or trench adapted to contain a moving liquid, such as water, sewage, and the like, and to rapidly and effectively measure and record the depth of flow. Such measurement may relate only to liquid level depth or, alternatively, may be employed in accordance with Manning's Formula to provide a recorded indication of volume of flow. A weighted electrically conductive probe is automatically reeled out upon a cable from a measuring and recording device, so as to locate the upper level of

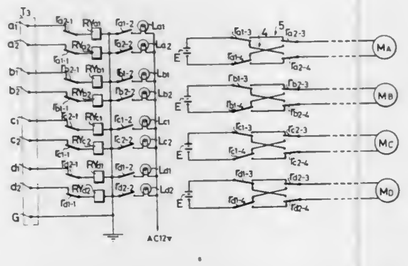


electrically conductive liquid flowing beneath the device, and upon command such probe also locates the invert of the conduit or bottom level of the liquid. A particular probe design is provided for location of the upper level of flowing liquid, particularly under circumstances wherein such level may rapidly vary and, furthermore, the invention is adapted to accommodate circumstances wherein no liquid is present in the conduit or trench above which same is mounted.

3,781,625
PLURAL MOTOR, PLURAL CONTROL STATION PLANETARIUM

Tohru Miyajima, Sakai; Yoshiharu Ichimoto, Izumi, and Arinori Saeki, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 8, 1971, Ser. No. 104,942
Claims priority, application Japan, Sept. 30, 1970, 45/86135
Int. Cl. H02p *7/20*
U.S. Cl. 318—547 **8 Claims**

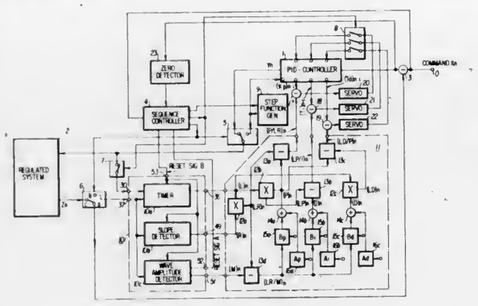


A planetarium includes a parent unit and distal units. The parent unit comprises a control console mounted on a operation unit for controlling motion mechanisms generally incorporated in the planetarium. The distal units are disposed on some of the seats for the spectators or students and enable them to control the motions of the planetarium through the parent unit. The controlling operations of the distal units are coordinated by electric circuits so as to eliminate interference therebetween. The control operations on the distal units are indicated on the parent unit.

3,781,626
OPTIMIZED P.I.D. CONTROLLER

Moritada Kubo, Tokyo, and Yukiharu Takahashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Company Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Dec. 30, 1971, Ser. No. 214,121
Claims priority, application Japan, Dec. 31, 1970, 45/123665
Int. Cl. G05b *13/00, 11/42*
U.S. Cl. 318—561 **3 Claims**

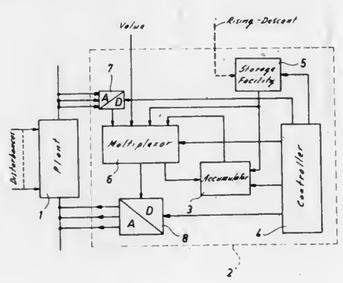


A system is disclosed for optimizing the operation of remote controlled devices or systems which are subject to changing response characteristics, due for example, to widely varying load conditions. The disclosed system includes a testing network for measuring the response of a remote controlled device or system to known inputs. A computing network is provided for generating control coefficients from the outputs of the testing network. The control coefficients generated by the computing network are used to modify the operation of a central control unit in response to the changing characteristics of the remote controlled device. When the remote controlled device returns to its normal, or no load, condition, the disclosed system also reverts to its normal operating parameters.

3,781,627
DIGITAL MULTIPLEX SERVO CONTROL

Hurst Binnig, Kleistweg 43, Delmenhorst; Jurgen Freyen, Hinter den Hofen 52, Kirchweyhe, and Dirk-Friedrich Middelmann, Hordestrasse 6, Schwerte, all of Germany

Filed June 26, 1972, Ser. No. 265,968
Claims priority, application Germany, July 14, 1971, P 21 35 045.8
Int. Cl. G05b *11/32*
U.S. Cl. 318—562 **4 Claims**

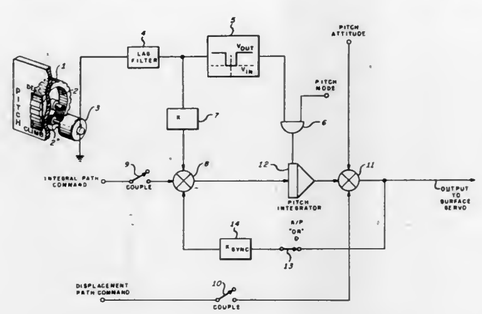


A digital controller with a single multiplexor handling inputting of controlled variables, commands and modifier signals, further handling the output-to-input data circulation of ALU-accumulator unit, and the output of actuator control signals.

3,781,628
AUTOPILOT PITCH ATTITUDE CONTROL

Paul A. Rauschelbach, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 61,964, Aug. 7, 1970, Pat. No. 3,688,175. This application Mar. 29, 1972, Ser. No. 239,122. The portion of the term of this patent subsequent to Aug. 29, 1989, has been disclaimed.
Int. Cl. B64c *13/18*; **G05d** *1/08*
U.S. Cl. 318—584 **10 Claims**



A manually operated pitch wheel, not requiring any centering, synchronizing, or detents, is used to adjust the pitch attitude of an aircraft under control of the pitch attitude channel of an automatic flight control system. This pitch wheel may also be used to command or adjust the aircraft vertical speed in the vertical speed mode of an automatic flight control system.

3,781,629
SYNCHRONOUS CONTROL SYSTEM ADAPTED FOR A NUMERICALLY CONTROLLED MACHINE

Yoshihiro Yashimoto, Tokyo; Hiroshi Usami, Kawasaki, and Toshiyoshi Okazaki, Tokyo, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan

Filed July 7, 1972, Ser. No. 269,842
Claims priority, application Japan, July 7, 1971, 46/49585
Int. Cl. G05d *23/275*
U.S. Cl. 318—632 **10 Claims**

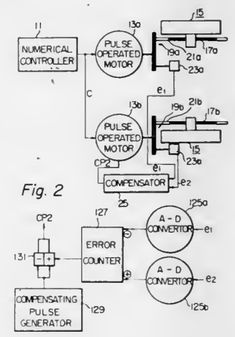


Fig. 2

Synchronous control system adapted for a numerically controlled machine having a gantry construction is arranged such that a movable part of the machine is given a feeding motion by a pair of feed systems driven by a pair of synchronously controlled pulse operated motors and detecting means separately detect manipulated feed quantities of said pair of feed systems provided for said movable part of the machine. As a function of the differential quantity of the manipulated feed quantities of both feed systems, a compensating means

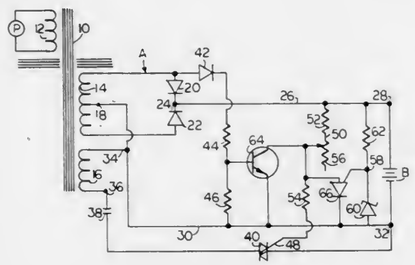
generates compensating pulses which are given to a selected one of the feed systems so that the differential quantity of the manipulated quantities becomes zero and both feed systems are synchronized with each other.

3,781,630

MEANS AND METHODS FOR FERRO-RESONANT FLOAT CHARGING CIRCUITS

Gray C. Ballman, 30 Portland Pl., St. Louis, Mo.

Filed July 10, 1972, Ser. No. 269,997
Int. Cl. H02j *7/04*
U.S. Cl. 320—21 **9 Claims**



The invention comprises a circuit in which a ferro-resonant transformer is used to control operation of a battery charger in which the voltage supplied to the charging circuit by a first secondary winding in the transformer is regulated by a second independent winding in said transformer so long as current flows in said secondary winding, and in which the current flowing in the secondary winding is controlled by the means of a triac inserted in a second independent circuit which includes the secondary winding and which is operative by means of electronic switching devices contained in the charging circuit which are responsive to the charge status of the battery being charged as determined by the terminal voltage of said battery.

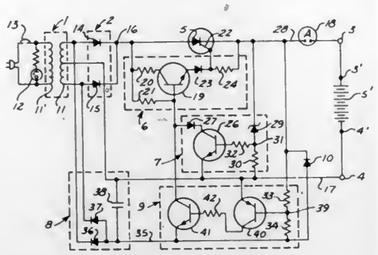
3,781,631

AUTOMATIC BATTERY CHARGER

Ronald C. Nelson, Sawyer, and Lawrence L. Grover, St. Joseph, both of Mich., assignors to Heath Company, Benton Harbor, Mich.

Filed Feb. 11, 1972, Ser. No. 225,457
Int. Cl. H02j *7/10*
U.S. Cl. 320—25 **2 Claims**

A completely automatic battery charger requiring no internal or external adjustments to automatically charge a battery of a predetermined voltage. Current from a power supply is conducted to a properly connected battery by an SCR which is gated on during each proper polarity pulse of the cycle by a gate circuit. The gate circuit is rendered conducting only when a battery of the proper terminal voltage is properly connected to the terminals of the battery charger. Disabling circuits prevent the gate circuit from triggering the SCR under all adverse conditions including reverse connecting a battery to the charger terminals, short circuiting the charger terminals together, or connecting an undervoltage or overvoltage battery to the charger terminals. An overcharge protection circuit disables the SCR gate circuit when the battery terminal voltage reaches a predetermined value. The gate circuit is effective to gate the SCR either fully on or not provide any gate signal at all. Hence, strong pulses are provided to the battery



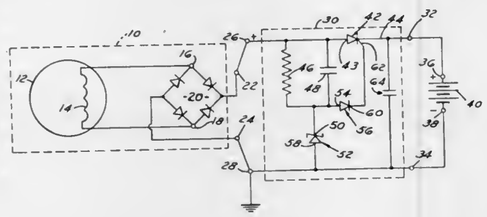
whenever the charger is charging, and correspondingly, no polarization of the battery occurs even when the charger is left connected to the battery for weeks or months.

3,781,632

SERIES TYPE SOLID STATE VOLTAGE REGULATOR WHICH PROVIDES CONSTANT VOLTAGE TO A STORAGE DEVICE

Ben J. Charboneau, West Branch, Mich., assignor to Sno-Start, Inc., West Branch, Mich.

Continuation of Ser. No. 201,637, Nov. 24, 1971, abandoned.
This application Feb. 23, 1973, Ser. No. 335,164
Int. Cl. H02j *7/10*
U.S. Cl. 320—39 **5 Claims**



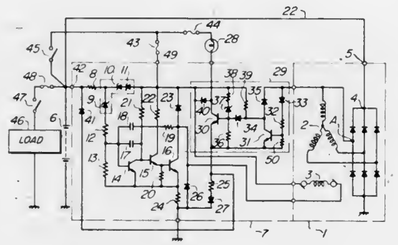
A solid state voltage regulator electrically connected between a current source and a battery having a series SCR through which charging current is conducted whenever the battery voltage drops to a certain level. The current source supplies an unregulated pulsating DC output as an input to the regulator. The anode terminal of the SCR is connected to the positive terminal of the current source, the gate terminal of the SCR to a zener diode and the cathode terminal of the SCR to the positive battery terminal. The parallel combination of a resistor and a capacitor is connected from the positive terminal of the current source to the cathode terminal of the zener diode to provide a delay in the voltage rise at the cathode of the zener diode. When the battery voltage is sufficiently low to develop the necessary gate-cathode voltage for firing the SCR, gate current is drawn through the resistor and capacitor in sufficient amount to guarantee firing of the SCR. A diode is also connected between the gate terminal of the SCR and the cathode terminal of the zener diode to prevent reverse current flow from the battery through the cathode-gate circuit of the SCR to the zener diode. A capacitor may also be electrically connected across the regulator output to provide regulated DC power without a battery.

3,781,633

VEHICLE-CARRIED STORAGE BATTERY CHARGING DEVICE

Katsutaro Iwaki, Chiryu; Kazumasa Mori, Kariya; Masaru Ishihama, and Yokio Kobayashi, both of Tokyo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Sept. 14, 1971, Ser. No. 180,291
Claims priority, application Japan, Sept. 19, 1970, 45/93496; Sept. 19, 1970, 45/93497; Dec. 25, 1970, 45/135297
Int. Cl. H02j *7/14, 7/24*
U.S. Cl. 320—48 **3 Claims**



A vehicle carried storage battery charging device has been provided which supplies D.C. electrical power through a rectifier circuit from an A.C. generator. A voltage regulator including a voltage detecting circuit controls the setting time of the generator in response to a voltage detecting circuit. A pilot lamp circuit receives a supply of current and is controlled by a first transistor which is in turn gated by a second transistor governed by the output of the generator. A second voltage detector circuit responsive to the battery voltage supplies the base current to the first transistor when the battery voltage exceeds a certain amount and a diode coupled between the first transistor and the lamp circuit supplies base current to the first transistor when the power source is disconnected from the battery, said base current through the first transistor causing same to become conductive to therby light up the pilot lamp circuit so as to indicate a malfunction.

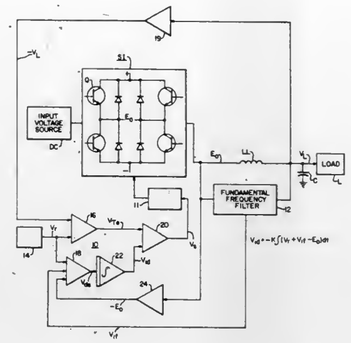
3,781,634

INTEGRATED ERROR VOLTAGE REGULATOR FOR STATIC SWITCHING CIRCUITS

Ralph D. Jessee, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 18, 1971, Ser. No. 154,304
Int. Cl. H02m *1/12*
U.S. Cl. 321—9 A **4 Claims**

The invention pertains to a technique for controlling the switching instants of static switching devices comprising power inverter and converter circuits. The unfiltered voltage output of the power conversion circuit is compared to a constant amplitude A.C. reference voltage waveform to obtain a signal indicative of the instantaneous deviation of the output of the power conversion system from the constant amplitude AC waveform. This signal is then integrated and applied through suitable drive circuit means to control the switching instants of the static switching devices comprising the power conversion system. The switching instant control established by the integrated signal functions to control the switching instants so as to minimize the deviation of the power conversion system output voltage from the constant AC reference voltage. The switching instant control provided by the integrated



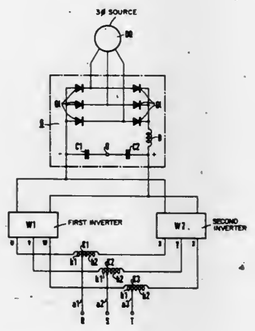
signal virtually eliminates low order harmonics present in the output voltage of the power conversion system.

3,781,635

CIRCUIT FOR CONVERTING DC VOLTAGE INTO THREE-PHASE VOLTAGE

Helmut Sauer, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 18, 1972, Ser. No. 218,792
Claims priority, application Germany, Jan. 25, 1971, P 21 03 230.4
Int. Cl. H02m *1/12, 7/00*
U.S. Cl. 321—9 R **1 Claim**

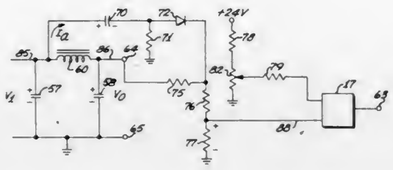


A circuit for converting DC voltage or a three-phase voltage of variable or constant frequency into a three-phase voltage of a constant other frequency utilizes an intermediate circuit frequency converter. The converter comprises two three-phase thyristor inverters, connected in parallel at the input side. The three-phase outputs of the one three-phase thyristor inverters are connected together via voltage divider chokes. The taps of the voltage divider chokes provide the three outputs of the converter.

3,781,636
LEAD NETWORK TO PREVENT VOLTAGE OVERSHOOT IN A SWITCHING REGULATOR

Luther L. Genuit, Scottsdale, and John R. Nowell, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 30, 1973, Ser. No. 356,025
Int. Cl. H02m 1/12
U.S. Cl. 321—9 R 4 Claims

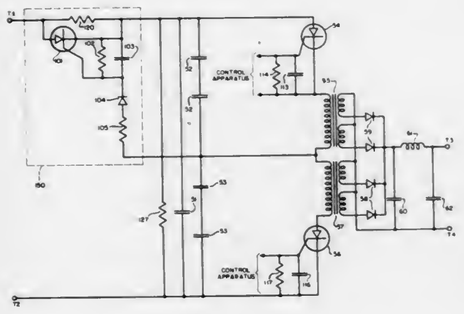


Voltage overshoot is prevented by coupling the voltage from the input lead of the filter circuit to an error amplifier. A capacitor, resistors and diode provide coupling while the voltage at the input lead of the filter circuit is increasing and prevent instability in the circuit. The voltage from the output lead of the filter circuit is also connected to the error amplifier to provide the normal control voltage.

3,781,637
INRUSH-CURRENT LIMITING DEVICE

Geoffrey Potter, Hopkinton, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1973, Ser. No. 320,038
Int. Cl. H02m 1/18
U.S. Cl. 321—11 25 Claims

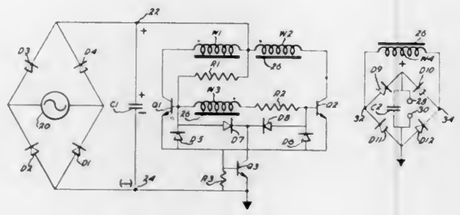


Apparatus, associated with an inverter circuit, for limiting inrush-current into a storage capacitor during an initial charging period, while minimizing the power dissipation of the limiting device during normal inverter operation. A resistive element provides a limiting device for the initial charging period of the storage capacitor. A silicon-controlled rectifier with associated apparatus, placed in a conducting state by the operation of the inverter circuit, provides an alternate low impedance path in parallel with the resistive element following the initial charging period.

3,781,638
POWER SUPPLY INCLUDING INVERTER HAVING MULTIPLE-WINDING TRANSFORMER AND CONTROL TRANSISTOR FOR CONTROLLING MAIN SWITCHING TRANSISTORS AND PROVIDING OVERCURRENT PROTECTION

Thomas E. Anderson, and John P. Walden, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 28, 1972, Ser. No. 267,262
Int. Cl. H02m 3/32
U.S. Cl. 321—14 9 Claims



A power supply includes a high frequency inverter comprising a pair of main switching transistors for alternately conducting current from a d.c. source through different winding halves of a multi-winding transformer. A starting resistor, connected between the source and the base of a selected one of the main transistors, initiates base-emitter current flow to make the transistor conductive. A control transistor turns the then conducting main transistor "off" in response to a predetermined current level through the conducting main transistor; the predetermined current level having been reached in response to the onset of magnetic saturation of the core of the transformer. Subsequently, a voltage induced in a third transformer winding initiates base-emitter current flow in the other main transistor thereby turning it "on". Also, the control transistor serves to turn either main switching transistor "off" when the current therethrough is excessive, (e.g., overload or short-circuit condition).

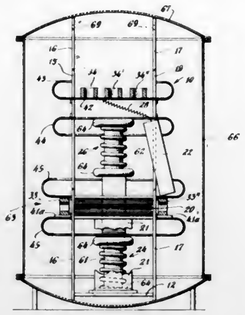
3,781,639
HIGH VOLTAGE ACCELERATOR POWER SUPPLY

Stanley G. Peschel, Brewster, N.Y., assignor to Hipotronics, Inc., Brewster, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,688
Int. Cl. H02m 7/10; H01j ; H01f
U.S. Cl. 321—15 4 Claims

A high voltage accelerator power supply for providing a substantial current flow at a high D.C. voltage level including a step-up transformer mounted on an upright insulating frame at an intermediate level approximately midway between bottom and top of the power supply with the transformer being horizontally positioned and corona rings encircling the upper and lower edges of its core. One capacitor is below the level of the transformer core and another is above that level in a voltage-doubling arrangement while the core is electrically connected to a junction intermediate the two capacitors to be at an intermediate voltage level. A modular, flexible snake-like electrical device containing a plurality of series-connected rectifier cartridges positioned end-to-end, or similar components, enclosed within a plastic sheath enables connection with substantially uniform voltage stress distribution between a low voltage and a high voltage terminal by conveniently arranging the device in a helical or snake-like path. An isolation

transformer system includes first and second widely separated cores one at ground potential and the other at the high D.C.

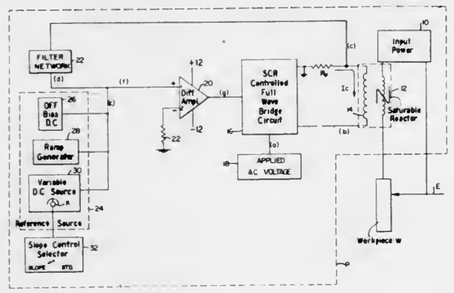


output voltage of the supply, with an endless loop coupling winding at intermediate D.C. level and encased in a heavy insulation covering wound a few turns on each core.

3,781,640
ARC WORKING POWER SUPPLY WITH SATURABLE REACTOR CURRENT CONTROL

Tibor Endre Toth, Florence, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,347
Int. Cl. H02m 1/08
U.S. Cl. 321—18 3 Claims



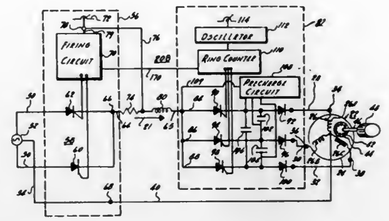
An arc working power supply wherein current is controlled by means of a saturable reactor and control circuit which monitors the current to the saturable reactor control winding comparing it to a reference for automatic adjustment. The control circuit includes a slope control for varying the rates of current rise and fall at the beginning and end of the operation.

3,781,641
ADJUSTABLE FREQUENCY POWER SUPPLY OF THE INVERTER TYPE

Charles E. Rettig, Brookfield, Wis., assignor to The Louis Allis Company, Milwaukee, Wis.

Division of Ser. No. 83,922, Oct. 26, 1970, abandoned. This application Jan. 8, 1973, Ser. No. 321,925
Int. Cl. H02m 7/00, 5/44
U.S. Cl. 321—21 5 Claims

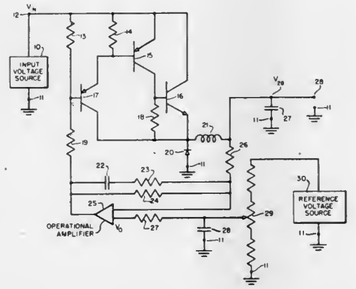
A power supply of the inverter type for controlling the operative condition of an alternating current load includes a power source, typically of the rectifier type, providing an output current. An inverter is connected to the power source and to the alternating current load for cyclically directing the output current of the power source to the load for controlling its operative condition. The power supply includes a means interconnecting, and coordinating, the operation of the power source and inverter for insuring that a current path exists in the power supply.



3,781,642
D.C.-D.C. POWER SUPPLY WITH STABILIZATION

David R. Dutton, North Billerica, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 6, 1972, Ser. No. 304,183
Int. Cl. H02m 7/52
U.S. Cl. 321—43 11 Claims



A d.c.-d.c. power supply in which electric current is delivered to an output terminal through an inductance. Current is delivered to the output terminal from a power source when electronic switching elements are in an "on" state and through a diode element when the electronic switching elements are in an "off" state. A feedback circuit compares the voltage at the output terminal with a reference voltage to establish the state of the electronic switching elements. Immediately after changing the state of the electronic switching elements, the feedback circuit is rendered temporarily insensitive to transient voltage spikes resulting from the change of state of the switching elements.

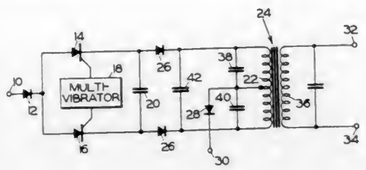
3,781,643
DC TO AC INVERTER

John F. King, 1882 Yolanda Ave., Springfield, Oreg.

Filed May 30, 1972, Ser. No. 257,822
Int. Cl. H02m 7/52
U.S. Cl. 321—45 C 4 Claims

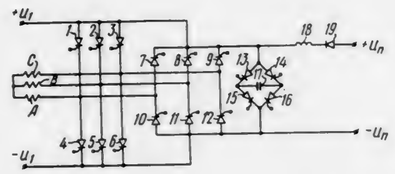
In a static DC to AC inverter, one terminal of a source of direct current is connected through a pair of gate-controlled rectifiers to the opposite ends of a transformer primary winding the center tap of which is connected to the other terminal of the direct current source. Commutating capacitance is con-

nected across the gate-controlled rectifiers, and tank or oscillation capacitance is connected across the transformer prima-



ry winding to form LC resonant tank circuits for converting the direct current pulses to alternating current.

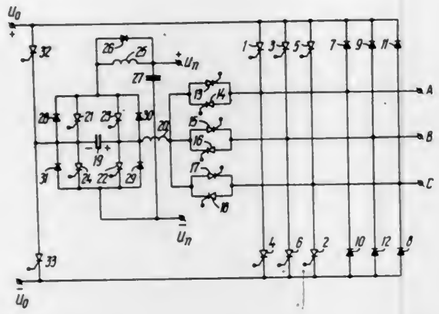
3,781,644
INDEPENDENTLY CONTROLLED INVERTER WITH UNIVERSAL COMMUTATING CIRCUIT
Vladimir Grigorievich Yatsuk, ulitsa Pervomaiskaya 8, kv. 57, Istra Moskovskoi oblasti, U.S.S.R.
Filed Mar. 23, 1973, Ser. No. 344,283
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 C **8 Claims**



An independently controlled inverter with a universal commutating circuit, comprising main thyristors in a three- phase bridge connection whose input is coupled to a d.c. supply source, and whose a.c. side is coupled to commutating thyristors also in a three-phase bridge connection, the d.c. side whereof is connected to an additional charge source and to additional thyristors in a single-phase bridge connection, the diagonal of the latter including a commutating capacitor, is characterized, according to the invention, by that the anode group of the additional thyristor single-phase bridge connection is coupled to the cathode group of the commutating thyristor three-phase bridge connection and, via a choke and a diode, to the positive terminal of the additional charge source, while the cathode group of said additional thyristor single-phase bridge connection is coupled to the anode group of said commutating thyristor three-phase bridge connection and to the negative terminal of the additional charge source.

3,781,645
INVERTER
Jury Ivanovich Grom, ulitsa 9 Gvardeiskoi divizii 58, kv. 40, and Vladimir Grigorievich Yatsuk, ulitsa Pervomaiskaya 8, kv. 57, both of Moskovskoi oblasti, U.S.S.R.
Filed May 1, 1973, Ser. No. 356,196
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 C **3 Claims**

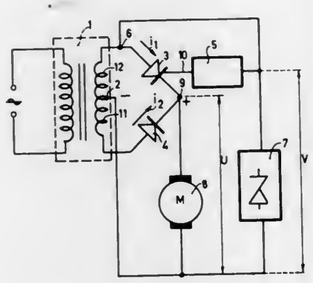
An inverter comprising main controlled rectifiers arranged in a 3-phase bridge configuration, shunted by reverse-conducting diodes and connected to a main D.C. source, a switching circuit comprising a switching capacitor and a switching choke coupled into a series string, auxiliary controlled rectifiers interconnected so that one end of said string is connected to three groups of said auxiliary rectifiers in mutual parallel opposition, each said group being coupled with one of the arms of the bridge built around the main controlled rectifiers, whereas the other end of said string is coupled to an arm of a bridge defined by other of said auxiliary rectifiers connected to the main D.C. source, and the switching capacitor is coupled into a diagonal of a symmetrical bridge defined by the rest of said auxiliary rectifiers connected to an additional D.C. source, according to the invention, characterized in that in the switching circuit a symmetrical bridge built around additional diodes is coupled by way of one diagonal to a diagonal of the symmetrical bridge defined by said auxiliary



controlled rectifiers, which diagonal includes the switching capacitor, whereas an additional capacitor or a control pulse-generating unit is connected to the other diagonal of said bridge, the output of said control pulse-generating unit being connected with the switching choke circuit.

Such an arrangement permits suppressing overvoltages across the switching capacitor and all the elements of the inverter circuitry.

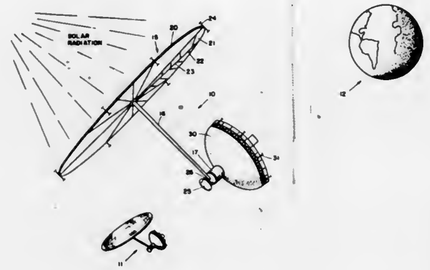
3,781,646
CURRENT SUPPLY COMPRISING AN ASYMMETRIC RECTIFIER ARRANGEMENT
Jacky Dheilly, Amiens, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 3, 1972, Ser. No. 294,680
Claims priority, application France, Dec. 6, 1971, 7143692
Int. Cl. H02m *7/20*
U.S. Cl. 321—47 **9 Claims**



Full-wave rectified current supply comprising a single thyristor the gate electrode of which is connected to an electronic control circuit, which supply is connected to a direct-current motor. Varying the conduction angle of the thyristor enables torques of different values to be obtained in order to achieve regulation of the speed of the motor.

Applications: direct-current motors, washing machines, etc.

3,781,647
METHOD AND APPARATUS FOR CONVERTING SOLAR RADIATION TO ELECTRICAL POWER
Peter E. Glaser, Lexington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.
Continuation-in-part of Ser. No. 838,896, July 3, 1969, abandoned. This application July 26, 1971, Ser. No. 165,893
Int. Cl. H02n
U.S. Cl. 322—2 **19 Claims**

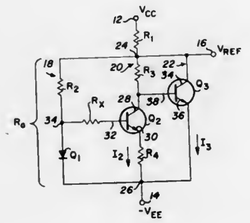


Solar radiation is collected and converted to microwave energy by means maintained in outer space on a satellite system. The microwave energy is then transmitted to earth and converted to electrical power for distribution.

ERRATUM

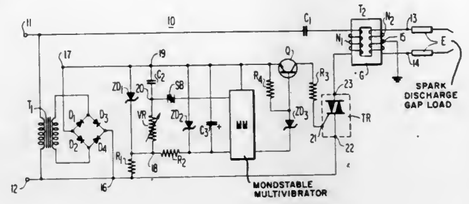
For Class 322—8 see:
Patent No. 3,781,651

3,781,648
TEMPERATURE COMPENSATED VOLTAGE REGULATOR HAVING BETA COMPENSATING MEANS
William K. Owens, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Jan. 10, 1973, Ser. No. 322,329
Int. Cl. G05f *1/58*
U.S. Cl. 323—4 **6 Claims**



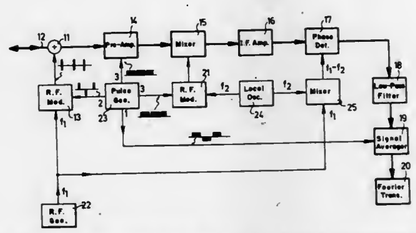
A temperature compensated voltage regulator circuit having a resistive impedance of a particular value disposed in the base circuit of the first of two cascaded transistor elements to provide compensation for possible beta (β) variations incurred as a result of process variables.

3,781,649
HIGH VOLTAGE PULSE GENERATING APPARATUS
Yoshio Ishida, Osaka, Japan, assignor to Diamond Electric Manufacturing Co. Ltd., Osaka, Japan
Filed July 31, 1972, Ser. No. 276,606
Int. Cl. G05f *3/04*
U.S. Cl. 323—19 **1 Claim**



A low level control voltage is produced by a first transformer connected to an alternating current power supply of commercial frequency through a rectifying device. A second transformer is connected through a capacitor and a bidirectional thyristor to the alternating current power supply. The high voltage pulse output of the second transformer is applied to the load such as fuel ignition spark gap, etc. When the control voltage from the first transformer periodically exceeds a predetermined voltage, a monostable-multivibrator is triggered, generating a pulse of a predetermined width. The pulse is applied to the base of a transistor having its collector connected to the gate of a bidirectional thyristor. Therefore, the bidirectional thyristor is turned on at a predetermined phase in every half cycle of the commercial frequency. A desired high voltage pulse is obtained at the secondary of the second transformer by the cooperative effects of a charging capacitor and the high voltage generated by series resonance of the charging capacitor and the primary winding of the transformer.

3,781,650
METHOD AND APPARATUS FOR REDUCING INTERFERENCE IN A SPIN RESONANCE SPECTROMETER BY SUBTRACTING INTERFEROGRAMS HAVING 180° PHASE SEPARATION
Toni Keller, Fallanden, Switzerland, assignor to Spectrospin A.G., Zurich-Fallanden, Switzerland
Filed May 9, 1972, Ser. No. 251,708
Claims priority, application Germany, May 28, 1971, P 21 26 743.6
Int. Cl. G01n *27/00*
U.S. Cl. 324—0.5 R **9 Claims**

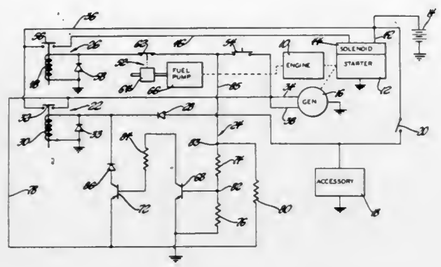


A method and apparatus are described for reducing interference in the receiver of a spin resonance spectrometer. The apparatus generates a first set of RF excitation pulses of one phase angle and a second set of RF pulses having a phase angle that is 180° different. The interferograms formed by one set of these pulses are then subtracted from those formed by the other in a signal averager.

3,781,651
PROTECTIVE CONTROL CIRCUIT FOR VEHICLE ELECTRICAL SYSTEMS

Rodney L. Heidel, Laporte, Ind., assignor to Meridian Industries, Inc., Southfield, Mich.

Filed Nov. 9, 1972, Ser. No. 305,198
Int. Cl. H02j *1/00*
U.S. Cl. 322—8 **13 Claims**

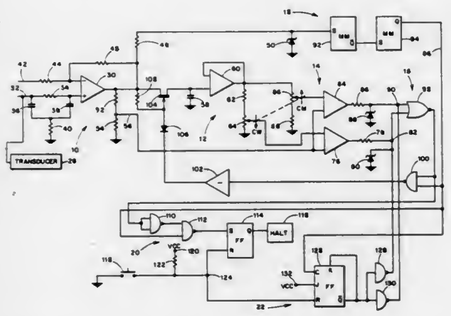


A protective control circuit is disclosed for vehicle electrical systems such as those used on trucks and military vehicles. Such electrical systems are provided with a reverse polarity relay for connecting the battery to the generator. When the accessory switch is closed to energize the reverse polarity relay a holding circuit is provided for the relay so that the battery remains connected with the generator even after the accessory switch is opened to shut down the engine. The continued connection of the battery with the generator serves to avoid transient overvoltages which would be damaging to electrical components connected in the system. When the engine and hence the generator stops spinning the battery is disconnected from the generator by disabling the holding circuit.

3,781,652
APPARATUS FOR ADAPTIVELY CHECKING DOCUMENT THICKNESS

George B. Weaver, Fridley, Minn., assignor to Honeywell Information Systems Inc., Waltham, Middlesex County, Mass.

Filed Dec. 20, 1971, Ser. No. 209,857
Int. Cl. G01n *27/00*
U.S. Cl. 328—1 **16 Claims**

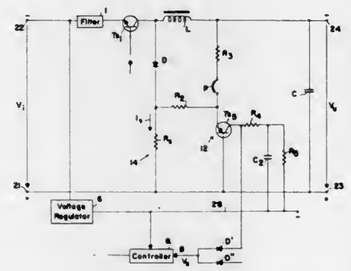


An apparatus for adaptively checking document thickness is provided, the apparatus having a transducer which senses a variation in the thickness of a document passing through a paper transport. Each new document thickness as indicated by the transducer is compared with a window established by the preceding document thickness. If the thickness of the current document meets prescribed limits as established by the preceding document, a memory element is updated to correspond to the thickness of the current document. Should the document thickness compare unfavorably with the window, an alarm signal is generated and the process halted without refreshing the memory element.

3,781,653
STABILIZED DIRECT-CURRENT CONVERTER RESPONSIVE TO OFF-PERIOD CURRENT

Roberto Marini, Milan, Italy, assignor to Societe Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Mar. 16, 1972, Ser. No. 235,150
Claims priority, application Italy, Mar. 18, 1971, 21945 A/71
Int. Cl. G05f *1/56*
U.S. Cl. 323—17 **9 Claims**

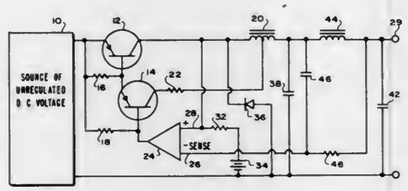


A stabilized d-c output is derived from a d-c input voltage through a stepdown circuit including a chopping transistor which is periodically blocked and unblocked by a pulse train from a trigger stage and, when conducting, charges a storage capacitor through a series inductance; with the chopping transistor cut off, the inductance continues the charging of the capacitor through a diode in series with a current sensor. The latter, together with a voltage sensor connected across the capacitor, controls the width of the pulses from the trigger stage to hold the voltage or current level substantially constant. An ancillary transistor is turned on by the trigger pulses to apply to the chopping transistor a reverse bias accelerating the sweep-out of its minority carriers.

3,781,654
SWITCHING VOLTAGE REGULATOR CIRCUIT

Kent W. Simcoe, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 26, 1972, Ser. No. 257,264
Int. Cl. G05f *1/56*
U.S. Cl. 323—17 **3 Claims**



A tapped inductor is utilized in a switching mode voltage regulator, which employs a pass transistor and an associated driver transistor connected in a modified Darlington configuration, for the purpose of allowing these transistors to saturate during switching, thereby substantially increasing the over-all

efficiency of the regulator. A filter circuit may be added at the output of the voltage regulator to significantly reduce ripple and to improve the response of the regulator to load transients.

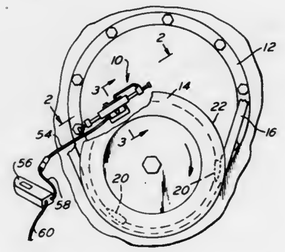
ERRATUM

For Class 324—.5 R see:
Patent No. 3,781,650

3,781,655
TIMING DEVICE

Gerard Lane, 2512 Birchwood Dr., New Port Richey, Fla.

Filed Mar. 2, 1972, Ser. No. 231,166
Int. Cl. F02p *17/00*
U.S. Cl. 324—16 R **4 Claims**

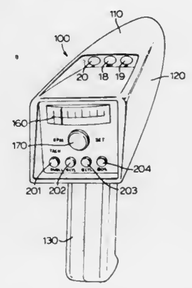


A timing device for use in connection with a fan belt pulley and a distributor in an automotive engine with the pulley being fitted with equally spaced contacts. The timing device includes a spring-loaded plunger, a pointer, and means to move the plunger and the pointer relative to a fixed plate having markings therein for the purpose of achieving an advance or retard position, the contacts of the pulley making mechanical and electrical contact with the spring-loaded plunger when said fan belt pulley rotates. The plunger is wired in a circuit to a spark plug wire on the distributor well with an indicator light being also in the circuit whereby the flashing of the light indicates that the timing of the engine is set in accordance with the pointer position.

3,781,656
STROBOSCOPE WITH VISUAL SPEED INDICATING SYSTEM EMPLOYING LIGHTS

Brian G. Glew, West Hill, Ontario, Canada, assignor to Carrier Technical Industries Ltd., Scarborough, Ontario, Canada

Filed May 21, 1973, Ser. No. 361,861
Int. Cl. F02p *17/00*
U.S. Cl. 324—16 R **8 Claims**

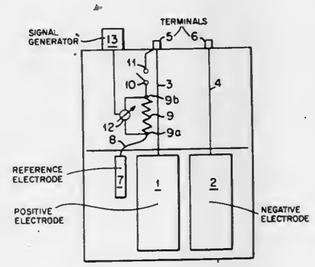


A stroboscope that may be used as a timing light is provided with a system for visually indicating to the user whether the engine being timed is running at, under or above the desired speed. The system includes three lights, one for indicating an on speed condition, the second an underspeed condition and the third an overspeed condition and a network for energizing an appropriate one of the lights depending upon and responsive to engine speed.

3,781,657
METHOD AND APPARATUS FOR DETERMINING AND INDICATING THE STATE OF CHARGE OF NICKEL CADMIUM BATTERIES

Welf Dennstedt, Kelkheim, Germany, assignor to Varta Aktiengesellschaft, Kelkheim, Germany

Filed Dec. 30, 1971, Ser. No. 214,030
Claims priority, application Germany, Jan. 2, 1971, P 21 00 011.3
Int. Cl. G01n *27/42*
U.S. Cl. 324—29.5 **7 Claims**

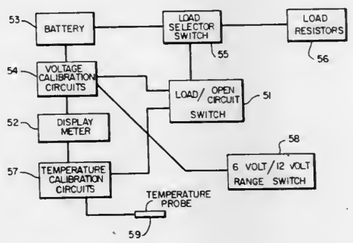


The invention proposes a method and apparatus for determining and indicating the state of charge of nickel-cadmium batteries. The method is based upon the degree of shift of the operating potential of the positive electrode in the negative direction when the electrode is under load. The shift in this potential is a measure of the extent of the discharge which has taken place and is thereby an indication of the state of charge.

3,781,658
METHOD AND APPARATUS FOR DETERMINING BATTERY PERFORMANCE AT ONE TEMPERATURE WHEN BATTERY IS AT ANOTHER TEMPERATURE

James B. Godshalk, Philadelphia, Pa., assignor to Fox Products Company, Philadelphia, Pa.

Filed Jan. 14, 1972, Ser. No. 217,760
Int. Cl. G01n *27/42*
U.S. Cl. 324—29.5 **17 Claims**



Both a method and apparatus are disclosed for testing lead-acid storage batteries to determine the cranking amperes which the battery can supply at a predetermined low temperature, typically 0°F., when the battery is in fact at a different temperature. The invention derives from the battery, after a short discharge at substantially its cranking ampere rating, an

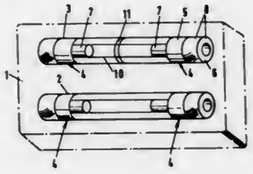
electrical quantity representative of the actual terminal voltage of the battery at the end of the discharge, and converts this electrical quantity into an observable indication representing the terminal voltage which the battery would exhibit if similarly tested at the predetermined low temperature. The invention is based on the discovery that the terminal voltage of a lead-acid storage battery under load changes predictably with changes in temperature of the battery.

3,781,659

CONDUCTIVITY MEASURING SYSTEM AND CONDUCTIVITY CELLS THEREFOR

Amiram Ur, 79 North End House, Fitzjames Ave., London, England

Filed Nov. 9, 1970, Ser. No. 87,810
Int. Cl. G01n *27/42*
U.S. Cl. 324—30 R **12 Claims**



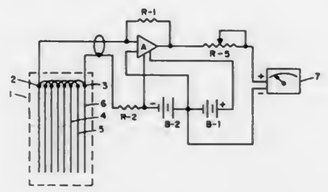
An electrical measuring cell has two electrodes each formed by a conductive film deposited on the wall of the cell and having three portions which respectively lie inside the cell, outside the cell and around the rim of the cell. The second film portion enables the electrode to be connected to exterior circuitry and the third portion provides an electrical lead between the first and second film portions. The cells may be tubular or thimble shaped. Manufacture of the electrodes on the tubular cells is by dipping their ends into a metal compound solution and then treating the ends to plate the metal out of the solution. Apparatus employing this method utilises a turntable to carry the tubes and which is indexed between stations at which the different stages in electrode formation are carried out.

3,781,660

CONDUCTIVITY METER FOR MEASURING DISTILLATE HYDROCARBON FUELS

William C. Ludt, Yonkers, and Eugene H. Lombardi, Port Chester, both of N.Y., assignors to Ethyl Corporation, Richmond, Va.

Filed May 11, 1972, Ser. No. 252,473
Int. Cl. G01r *27/22, 27/24*
U.S. Cl. 324—30 R **8 Claims**



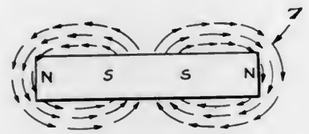
Disclosed herein is a conductivity meter adapted for use in measuring the conductivity of distillate hydrocarbon fuels, comprising a conductivity probe, a direct current power source (e.g., nickel cadmium battery), an amplifier, and an ammeter calibrated in units of conductivity (e.g., picomhos per meter). The conductivity probe comprises two series of closely spaced plates of high surface area. The amplifier is of the high gain high input impedance (FET) operational type. The amplifier and battery are contained in a thermally insulated housing having a self-contained heating unit and heat sink.

3,781,661

MAGNETIC MATERIAL AND METHOD OF PRODUCING SAME

Emmanuel M. Trikilis, 170 Maplewood Ave., Columbus, Ohio

Continuation of Ser. No. 733,163, May 29, 1968, abandoned, which is a division of Ser. No. 531,253, March 2, 1966, Pat. No. 3,418,613. This application Jan. 4, 1972, Ser. No. 215,385. The portion of the term of this patent subsequent to Dec. 13, 1983, has been disclaimed.
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 **10 Claims**



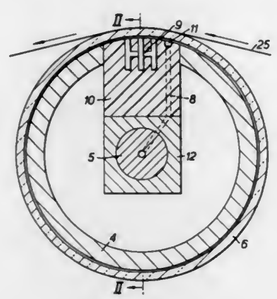
A pilferage prevention system is disclosed in which articles to be protected are provided with plural magnetic fields in different directions, each of which is detected such that neutralization of the plural fields for the purpose of preventing detection is precluded.

3,781,662

APPARATUS FOR DETERMINING THE PERMEABILITY OR STRESS IN A MOVING MAGNETIC STRIP IN TWO ORTHOGONAL DIRECTIONS

Norman Davis, London, England, assignor to The British Iron and Steel Research Association, London, England

Filed May 31, 1972, Ser. No. 258,340
Claims priority, application Great Britain, June 14, 1971, 27,820/71
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 ST **7 Claims**



A system for measuring electrical or magnetic properties of moving steel strip. The strip passes over a non-ferromagnetic sleeve which is mounted for rotation about a steel cylinder. The cylinder houses across its width a number of H-shaped ferrite cores mounted in the surface of the cylinder adjacent the pass line of the strip. A magnetic flux is induced between the arms of each ferrite core, this flux being influenced by the presence of the strip. The resulting flux is determined by search coils on the cores and gives a measure of the magnetic permeability of the strip at points across the width of the strip. The internal tensile stress in the steel strip which subsequently

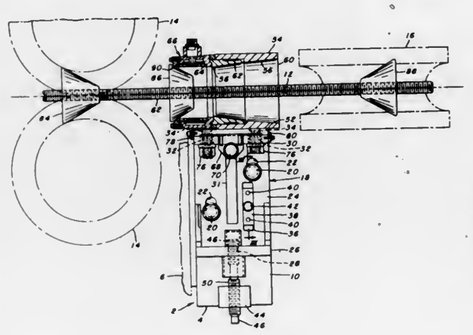
determines the shape of the strip is related to the magnetic permeability, and hence it is possible to determine internal tensile stress distributions across the width of the strip which may give rise to bad shape.

3,781,663

APPARATUS FOR ADJUSTABLY MOUNTING A TESTER TRANSDUCER RING AROUND THE PASS LINE OF A TUBULAR PRODUCT PROCESSING MILL

Eugene V. Abarotin, Franklin Twp., Westmoreland County, and Edward R. Bollinger, Jr., Delmont Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1973, Ser. No. 325,802
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **6 Claims**



Apparatus includes a frame adapted to be affixed to the side of a tube rolling mill housing for supporting a vertically adjustable slide member having a horizontally adjustable support plate slidably mounted on its upper end. The support plate has a cylindrical guide mounted thereon which surrounds the pass line of the mill. The exit end of the guide is rigidly connected and aligned with the entry end of the tester-transducer so that the two are moved together when either the slide member or the support member is moved. In use, to properly position the tester transducer, a screw shaft is passed through the guide and transducer and a first frusto conical plug is threaded along the shaft to a position adjacent the exit end of the transducer and second and third frusto conical plugs are threaded one on each end of the shaft between the forming rolls of the pairs adjacent opposite ends of the guide-transducer combination. The slide member and the support plate are then manipulated alternately until the center frusto conical plug fits in the exit end of the transducer and the other two plugs fit properly between the forming rolls of each pair. At this time the transducer will be properly positioned surrounding the centerline of the pass line of the mill. Then the slide member and support plate are fixed in position and the screw shaft and plugs are removed so that the mill can be operated.

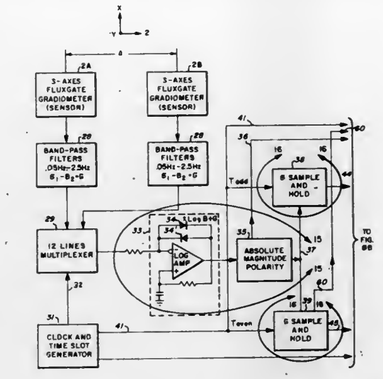
3,781,664

MAGNETIC DETECTION FOR AN ANTI-SHOPLIFTING SYSTEM UTILIZING COMBINED MAGNETOMETER AND GRADIOMETER SIGNALS

Louis H. Rorden, Menlo Park, Calif., assignor to Develco, Inc., Mountain View, Calif.

Filed Oct. 24, 1972, Ser. No. 299,695
Int. Cl. G01r *33/04*
U.S. Cl. 324—43 R **23 Claims**

A magnetic surveillance system useful for detecting unauthorized removal of magnetically marked objects through a surveillance region includes at least one and preferably two three axis fluxgate type magnetometer-gradiometer sensors proximate the region to be monitored such as at an exit. Both the magnetometer and gradiometer signals are processed by appropriate algorithms to derive outputs proportional to the magnetic moment of and range to a magnetic anomaly within the region under surveillance. Minimum and maximum threshold values are prescribed for the detected magnetic moment to provide a window encompassing the magnetic moment of the marker to be detected while excluding other magnetic moments which could lead to a false alarm. A range threshold is set to exclude indication of magnetic moments outside of the region under surveillance.

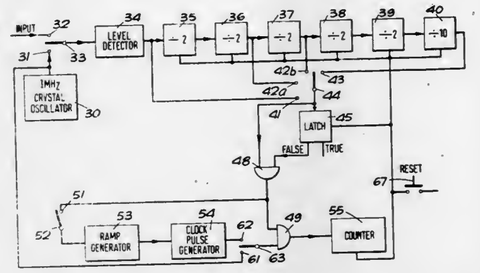


3,781,665

CABLE FAULT LOCATION INDICATOR

Philip Franklin Gale, Mold, Wales, assignor to The Electricity Council, London, England

Filed July 8, 1971, Ser. No. 160,754
Claims priority, application Great Britain, July 8, 1970, 33,239/70
Int. Cl. G01r *31/10*
U.S. Cl. 324—52 **12 Claims**

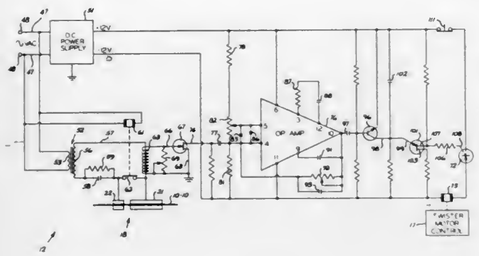


A method of, and apparatus for, locating a fault in an underground electrical power cable. The cable is excited to induce resonance between a fault and the end of the cable at which an indicator, comprising a sensor and processing circuitry, is attached. The time interval between successive waves or groups of waves, measured between the zero points of the waves, is used to gate a clock pulse generator into a counter having a visual display. The frequency of the clock pulse generator is arranged such that the reading on the counter is the distance from the indicator to the fault, expressed in metres, and the clock pulse generator is provided, with compensation for the frequency dependence of the velocity of propagation in the cable. Calibration of the indicator may be internal with respect to theoretical value for the velocity of propagation, or on-site, with respect to the actual velocity of propagation.

3,781,666
APPARATUS INCLUDING A PAIR OF DISSIMILAR SPACED ELECTRODES FOR DETECTING FAULTS IN INSULATED WIRES

Georg Christian Ernst Dornberger, Phoenix, Ariz., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,723
Int. Cl. G01r 31/16, 31/08
U.S. Cl. 324—54 6 Claims

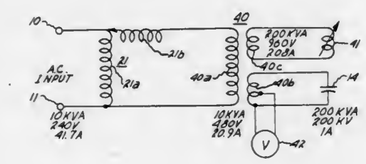


A twisted pair of insulated conductors is passed axially through a pair of longitudinally spaced, capacitive electrodes, each having a random distribution of conductive spheroids contained therein to center the wire within the electrodes, bring the electric field closer to the wires and obtain a uniform potential gradient therearound. The electrodes are tubular shaped, having equal diameters but unequal lengths and are held at a predetermined potential difference, for example, 2.5 kilovolts, by connecting them respectively to the opposite sides of a circuit arrangement including a high voltage transformer secondary winding in series with a resistor and a capacitor connected in parallel. During normal operation, the two electrodes, the wire insulation and the wires define a pair of parallel arms each consisting of two series-connected capacitors. As the twisted wire pair is passed through the electrodes, an insulation fault, for example, a bare wire, split insulation, void, short circuit between the wires, or runout of one or both wires, causes a breakdown of one or both capacitors. This abrupt change in capacitance generates a transient pulse in the circuit which may be detected, for example, by a sensing or pickup coil disposed around one of the circuit connecting wires, and may be amplified and utilized to stop the longitudinal advance of the twisted wire pair to permit the fault to be located and repaired.

3,781,667
HIGH VOLTAGE RESONANT TESTING CIRCUIT

Charles H. Tuttle, Medford, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,709
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 10 Claims

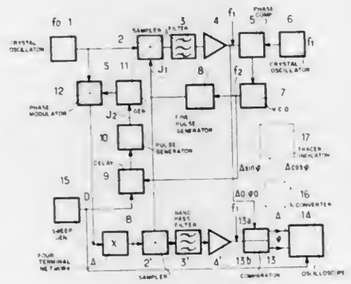


A transformer has two secondary windings, a high voltage secondary connected across a capacitive load being tested, and a low voltage secondary connected across a variable reactor which is tuned to resonance with the capacitive load. A voltage regulator in the transformer primary winding circuit is utilized to raise the voltage across the capacitive load to the test value after resonance has been achieved. The variable reactor can be replaced by a fixed reactor and a second voltage regulator.

3,781,668
PULSE-RESPONSE MEASURING APPARATUS

Charles Aillet, Lannion, France, assignor to Societe Lannionnaise D'Electronique, Lannion, France

Filed Apr. 19, 1972, Ser. No. 245,585
Claims priority, application France, Apr. 19, 1971, 7113775
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 12 Claims

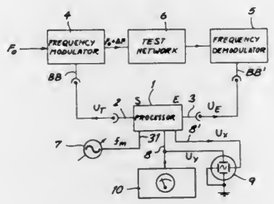


A curve-tracing measuring apparatus which makes it possible to analyze the transmission characteristics of a four terminal network which is excited by a high frequency wave modulated by a sequence of pulses wherein fine pulse samples at the output of the four terminal network are compared with samples taken of the modulated wave at the input of the four terminal network, whereby the time which passes between the beginning of the sequence of modulated pulses and the fine sampling pulses may be adjusted at will.

3,781,669
SYSTEM FOR MEASURING AMPLITUDE AND PHASE DISTORTION

Rudolf Dick, Eningen, Germany, assignor to Wandel u. Goltermann, Eningen, Germany

Filed Oct. 19, 1972, Ser. No. 298,829
Claims priority, application Germany, Oct. 19, 1971, P 21 51 981.3
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 8 Claims



In order to measure nonlinear phase and/or amplitude distortions in the output of a test network serving for the transmission of FM signals, such as a directive radio link, a relatively low sweep frequency f_A of large amplitude U_A and a relatively high test frequency f_M of small amplitude U_M are jointly fed into the baseband input of a frequency modulator working into or forming part of the test network. For complete exploration of the transmission band $F_0 \pm \Delta F_s$ of the network (F_0 being a central carrier frequency) with different values of the test frequency f_M, without encroaching on adjoining bands, the peak amplitude U_A of the sweep voltage u_A is so chosen in dependence upon the test frequency that the frequency swing ΔF due to this peak amplitude satisfies the relationship $f_M + \Delta F = \Delta F_s$. To this end, a basic voltage u_s of sweep frequency f_A is fed into an attenuator whose step-down ratio k is electronically controlled through feedback to produce the peak amplitude U_A of sweep voltage $u_A = k \cdot u_s$ according to the formula

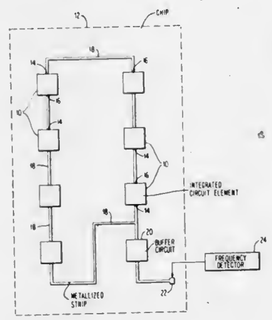
$$U_A = U_s \cdot (1 - f_M/\Delta F_s)$$

where U_s is the peak amplitude of the basic voltage u_s. Test frequency f_M may be derived, by means of a demodulator, from a source of higher frequency $f_M + f_z$ also working, at the opposite end of the test network, into a modulator receiving the demodulated network output to isolate from it a voltage of ancillary frequency f_z whose amplitude and phase are then detected as a measure of the distortions to be investigated.

3,781,670
AC PERFORMANCE TEST FOR LARGE SCALE INTEGRATED CIRCUIT CHIPS

Maurice T. McMahon, Jr., Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,122
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 5 Claims



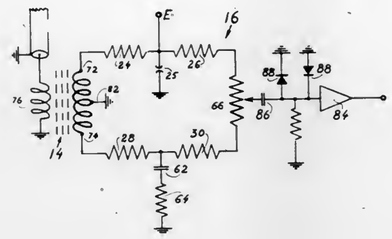
After the circuit elements are formed in a large scale integrated circuit chip, but before the chip is personalized by a final metallization step in which the circuit elements are electrically interconnected in desired final circuit configuration, all of the circuit elements are temporarily interconnected in a recirculating test loop by a preliminary metallization step. Operating power is then applied to the circuit elements, and the frequency of the resultant self-oscillation of the loop is observed as an indication of the AC performance of the chip. If the chip passes the AC performance test, the temporary recirculating loop connections are interrupted, and the circuit elements are personalized by the final metallization step.

3,781,671
IMPEDANCE MEASURING BRIDGE CIRCUIT

Fritz K. Preikschat, 16020 Lake Hills Blvd., Bellevue, Wash.

Filed Feb. 24, 1972, Ser. No. 229,133
Int. Cl. G01r 11/52, 27/26
U.S. Cl. 324—60 C 5 Claims

Apparatus for measuring the electrical impedance of a variety of materials including an electrode arrangement providing sample data to an impedance bridge, a frequency generator providing a test signal to the impedance bridge, the impedance bridge including a transformer having three separate windings, two of which are highly symmetrical to each other and all three of which have an impedance below 10,000 ohms, and four resistors having resistance values differing from the impedance of the transformer windings but comparable to the unknown impedance, two of the four resistors connected to each of the two symmetrical windings of the transformer. Output devices for displaying the electrical impedance are also disclosed. In one embodiment, a sample

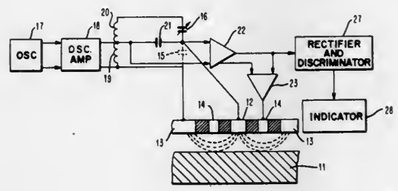


box useful in the measurement of the electrical impedance of bulk materials including novel means for mounting an electrode therein is disclosed. Also disclosed in another embodiment is apparatus useful for measuring the electrical impedance of thin sheet material including novel mechanical thermal compensation means.

3,781,672
CONTINUOUS CONDITION MEASURING SYSTEM

Frederick L. Maltby, Jenkintown, and Jonathan Kramer, Devon, both of Pa., assignors to Drexelbrook Controls, Inc., Glenside, Pa.

Filed May 10, 1971, Ser. No. 141,839
Int. Cl. G01n 27/22; G01f 23/26; G01g 11/04
U.S. Cl. 324—61 R 11 Claims

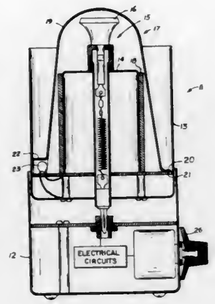


In a system which continuously measures the composition, position or size of materials, the probe has a guard shield which is effective for continuous measurement. The measurement system includes a zero adjusting impedance connected with the variable probe impedance as two adjacent arms of a balanceable bridge. A span impedance is connected between the junction of the adjacent arms and a low impedance AC source. The buffer amplifier has its input connected across the span impedance so that changes in the input impedance of the amplifier do not change the operating point of the system. A guard shield amplifier has its input connected to the output of the buffer amplifier. The guard shield amplifier maintains the guard shield at the same potential as the voltage on the probe electrode continuously for all points of operation, without significantly changing the voltage.

3,781,673
PACKING ADAPTER FOR TESTING MOIST CHOPPED MATERIALS IN A GRAIN MOISTURE TESTER

Roy E. Resh, Bettendorf, Iowa, assignor to Agridustrial Electronics, Inc., Bettendorf, Iowa

Filed Mar. 24, 1972, Ser. No. 237,663
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 5 Claims

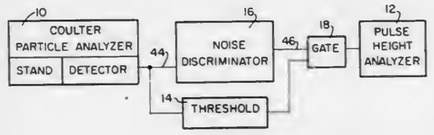


An insulating, frustum-shaped adapter is disposed around the inner cylindrical electrode of a grain moisture tester to provide a desirable, repetitive amount of packing of moist, chopped material and to provide during the testing of moist material with high dielectric constant, capacitance within the range obtained while testing grain.

3,781,674
NOISE DISCRIMINATING CIRCUITRY AND METHOD FOR ELECTRONIC PARTICLE STUDY APPARATUS

William A. Claps, Dade, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed July 22, 1971, Ser. No. 165,276
Int. Cl. G01n 27/08
U.S. Cl. 324—71 CP 17 Claims

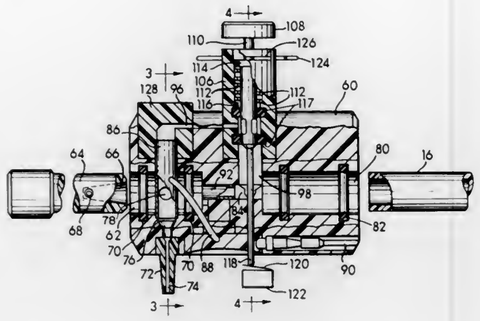


By discriminating against signal rise time, i.e., the duration of the leading edge of a signal, noise signals can be excluded from data transmisson wherein the data pulses normally have slower rise times, even though both noise and data pulses exceed low threshold settings. When the subject discrimination is employed in the environment of a Coulter particle analyzing apparatus, the minimum rise time of data pulses derived from monitored particles is a known value; therefore, all signals having faster rise time can be discriminated against. The discriminator can comprise a source of clock pulses and a simple binary counter by use of which the rise time of each signal is compared with a preset time or count value. All signals having a rise time greater than the preset value causes the discriminator to enable an output gate which passes the original signal to subsequent processing and analyzing circuits for particle analysis.

3,781,675
SELF PRIMING CONDUCTIVITY CELL

Henry R. Angel, Trumbull, Conn., assignor to General Science Corp., Bridgeport, Conn.

Filed Apr. 27, 1972, Ser. No. 247,991
Int. Cl. G01n 27/00
U.S. Cl. 324—71 CP 18 Claims

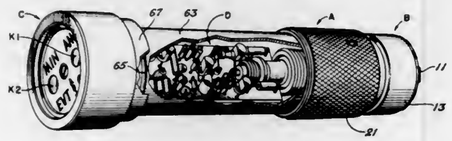


A conductivity cell for use in a system for counting particles suspended in a liquid and operative to reliably and accurately count such particles even in the presence of gas bubbles in the liquid sample. In a counting mode, the cell provides output pulses in response to the passage of particles through a metering aperture, and in a priming mode, the cell is operative to replace a previous liquid sample with a new liquid sample for analysis. During counting operation, gas bubbles which can be present during analysis are collected in a position physically removed from the metering aperture such that these bubbles cannot flow through the aperture during analysis to erroneously affect the particle count. During a priming operation, these bubbles are drawn along with sample fluid from the cell and new sample fluid is infused for a subsequent analytical run. Air is caused to flow through the aperture during a portion of the priming operation in a reverse direction to that of liquid flow during analysis to clear the aperture of any debris which may form during analysis.

3,781,676
CONTACT STRUCTURE FOR TEST PROBE

Robert A. Williams, Fort Worth, Tex., assignor to Williams Instruments, Inc., Fort Worth, Tex.

Division of Ser. No. 85,693, Oct. 30, 1970. This application July 7, 1971, Ser. No. 160,450
Int. Cl. G01r 1/06; H01r 13/62
U.S. Cl. 324—72.5 9 Claims

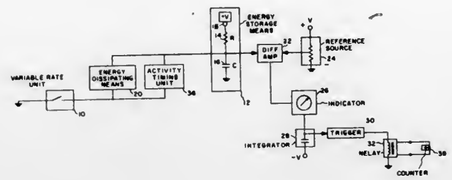


The specification discloses a test probe having a pair of concentric electrical contact means resiliently mounted at the end region of the body of the probe. The outer contact means is formed in part from a plurality of telescopic bellows, a plurality of which are supported to telescope beyond a forward wall structure. The other of the contact means forms an inner contact and extends through the outer contact.

3,781,677
VARIABLE RATE MEASURING DEVICE

Thomas E. Hagen, Saugerties, N.Y., assignor to Frederick S. Zipser, M.D., Red Hook, N.Y.

Filed Jan. 19, 1972, Ser. No. 218,973
Int. Cl. G01r 23/02; G04f 9/00
U.S. Cl. 324—78 R 11 Claims

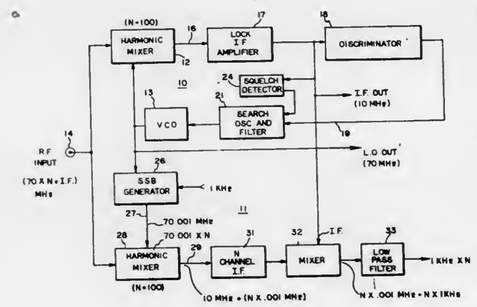


A variable rate measuring device is provided for accurately measuring the rate in which a series of input signals are provided. The device operates by means of an energy storage RC network which is repeatedly discharged by means of a constant current source energized by the variable rate signal. The net storage level is detected at an input of a differential amplifier, compared with the reference signal, and the difference indicated on a meter. Means are also provided for accumulating the varying rate signal over a period of time for providing a totalized count indicative thereof.

3,781,678
AUTOMATIC TRANSFER OSCILLATOR WITH IMPROVED FM TOLERANCE

Richard E. Voyles, Moraga, and William A. Giles, Concord, both of Calif., assignors to Systron Donner Corporation, Concord, Calif.

Filed Feb. 14, 1973, Ser. No. 332,354
Int. Cl. G01r 23/14
U.S. Cl. 324—79 D 5 Claims

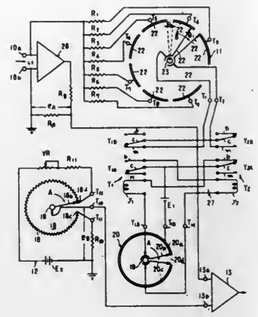


An automatic transfer oscillator for counting a radio frequency input signal with improved FM tolerance includes a frequency locked loop in combination with a circuit for deriving the harmonic number of the frequency locked loop. A counting circuit counts both the local oscillator and intermediate frequency of the frequency locked loop concurrently over a common time period to provide the final RF count.

3,781,679
LOGARITHMIC RECORDING SYSTEM

Takao Matsumoto, 60 Kuritaya, Kanagawa-ku, Yokohama, Japan

Filed Feb. 5, 1973, Ser. No. 329,445
Int. Cl. G01r 13/04, 15/10, 15/08
U.S. Cl. 324—115 3 Claims

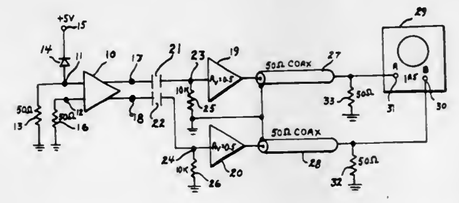


A range switching circuit is comprised of a DC amplifier to which is supplied an electric signal to be recorded, a plurality of resistances corresponding to respective digit places within an entire recording range, and a range switching device for selectively connecting the resistances to a feedback path to the DC amplifier. A logarithmic characteristic generating circuit includes a logarithmic potentiometer to produce an output in accordance with the change in the level of the input signal. The outputs from the range switching circuit and the logarithmic characteristic generating circuit are delivered to a comparison circuit, which then produces an output corresponding to the difference therebetween. A servomotor responsive to the output from the comparison circuit drives the aforesaid range switching device and logarithmic potentiometer. A rotary switch is also driven by the servomotor to actuate a relay circuit for controlling the operation of the range switching device, which operates a writing mechanism to record the electric signal.

3,781,680
DIFFERENTIAL METHOD OF PHOTOCURRENT MEASUREMENT

Robert A. Stehlin; Hilton W. Spence, and Walter T. Matzen, all of Richardson, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 16, 1971, Ser. No. 199,211
Int. Cl. G01r 1/30, 31/26
U.S. Cl. 324—123 R 2 Claims

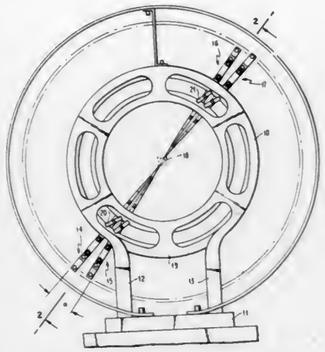


A differential amplifier circuit for measuring radiation induced photocurrents in small geometry semiconductor devices.

3,781,681
TEST PROBE APPARATUS

John W. Wagner, Hopewell Junction, and Paul M. Young, Pleasant Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,236
Int. Cl. G01r 31/02
U.S. Cl. 324—158 P 7 Claims

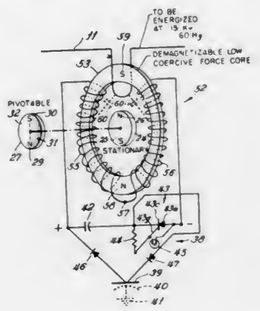


An array of test probes individually mounted to a test fixture is provided for contacting a substantially increased number of pads on high density circuit chips. The probes are mounted in side by side relationship in groups with each group of probes making contact with respective pads that are proximately positioned and, preferably, on the same radial line of a chip. Each probe has a contact blade carried by parallel springs of minimum gram load to assure uniform force deflection contact ratios and each blade-spring arrangement acts as the electrical conducting circuit for that probe of the array.

3,781,682
RESETTABLE FAULT INDICATING MEANS HAVING A RINGLIKE MAGNETIC CIRCUIT

Edmund O. Schweitzer, Jr., Northbrook, Ill., assignor to E. O. Schweitzer Manufacturing Co., Inc., Mundelein, Ill.

Division of Ser. No. 119,639, March 1, 1971, Pat. No. 3,702,966. This application Sept. 18, 1972, Ser. No. 290,215
Int. Cl. G01r 19/16, 31/02
U.S. Cl. 324—133 6 Claims



A capacitor is charged through a capacitive coupling to a high voltage alternating current electric power conductor and is discharged when the charge reaches a predetermined value to reset a fault indicator that previously had been operated by flow of fault current in the conductor. The magnetic circuit employs a demagnetizable low coercive force core in the form of a bifurcated yoke or a ring having magnetizing windings energized on discharge of the capacitor. A manually resettable fault indicator employing a demagnetizing winding on a low coercive force ring also is disclosed.

3,781,683
TEST CIRCUIT CONFIGURATION FOR INTEGRATED SEMICONDUCTOR CIRCUITS AND A TEST SYSTEM CONTAINING SAID CONFIGURATION

Larry E. Freed, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1971, Ser. No. 129,429
Int. Cl. G01r 31/22, 15/12
U.S. Cl. 324—158 F 6 Claims



A test circuit configuration for a monolithic integrated semiconductor circuit structure containing a plurality of substantially aligned test contact with which a corresponding plurality of contactors in a testing apparatus head are engaged to provide the input/output points required for the test. The contacts are connected to testing circuits containing active and passive devices in the monolithic semiconductor structure in such a manner that no two adjacent contacts are in the same testing circuit. In a particular configuration, each testing circuit contains only alternate aligned contacts.

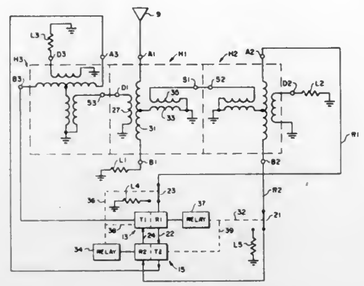
In wafer testing, the circuit configurations are disposed in the horizontal and vertical kerfs which in effect surround each chip, and a first test circuit configuration is repeated in the horizontal kerf while a second test circuit configuration is repeated in the vertical kerf.

3,781,684
SINGLE-ANTENNA REPEATER SYSTEM UTILIZING HYBRID TRANSFORMERS

Hans E. Inslerman, Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 24, 1970, Ser. No. 22,298
Int. Cl. H04b 7/14
U.S. Cl. 325—5 3 Claims

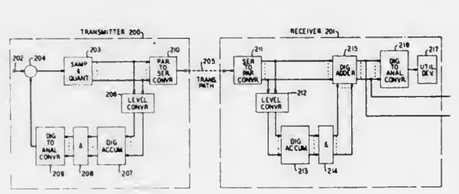
One embodiment of this repeater comprises a multicoupler comprising three hybrid transformers for coupling a pair of transceivers to a single antenna, which may be simultaneously used without interference for transmitting and receiving of different frequencies, to relay signals between stations which would otherwise be out of range of each other. A pair of the multicouplers may be interconnected with another hybrid transformer to couple four transceivers to a single antenna.



3,781,685
DIFFERENTIAL PULSE CODE COMMUNICATIONS SYSTEM HAVING DUAL QUANTIZATION SCHEMES

Yau Chau Ching, Morganville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 13, 1972, Ser. No. 306,018
Int. Cl. H04b 1/00, 7/00
U.S. Cl. 325—38 B 8 Claims



A differential pulse code communications system is disclosed in which a digital difference signal having a higher number of quantization levels is transmitted to a distant receiver wherein the received higher grade quality digital signal is degraded, for re-transmission, to a digital signal having a lesser number of quantization levels without introducing an additional quantization error component into the system. In the transmitter, the transmitted higher grade quality difference signals are degraded to the lower grade quality digital signals before being digitally accumulated for subtraction from the input signal. At the receiver, the higher grade quality transmitted difference signals are similarly degraded to the lower grade quality digital signals and digitally accumulated. The higher grade quality reconstruction of the input signal is obtained by summing the received higher grade quality difference signal plus the accumulated lower grade quality digital signals. The lower grade quality digital difference signal derived from the higher grade quality digital signal may be retransmitted to another distant location with a quantization error equivalent to the error introduced by quantizing the input signal to a difference signal having the fewer number of quantization levels.

3,781,686
DIFFERENTIAL PULSE CODE COMMUNICATIONS SYSTEM HAVING DUAL QUANTIZATION SCHEMES

Yau Chau Ching, Morganville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 13, 1972, Ser. No. 306,019
Int. Cl. H04b 1/00, 7/00
U.S. Cl. 325—38 B 9 Claims

A differential pulse code communications system is disclosed wherein the transmitter quantizes differential signals on two quantizing scales having different numbers of levels. The combined signal is transmitted to a receiver which may either utilize the higher quality signal or re-transmit either the lower and/or higher quality signal, without re-quantization and the error associated therewith, to yet another receiver; the quality of the signal re-transmitted being determined by the bandwidth of the re-transmission channel.

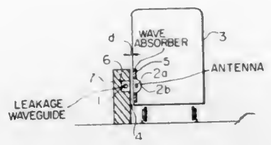
3,781,687
WIRELESS COMMUNICATION SYSTEM FOR RAILWAY VEHICLE INCLUDING AN OPEN TYPE TRANSMISSION LINE MOUNTED ON A RADIOWAVE ABSORBENT SUPPORT

Tsuneo Nakahara; Noritaka Kurauchi; Hiroshi Kitani; Kenji Takemura, and Masataka Kuroda, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Limited, Osaka, Japan

Filed Dec. 28, 1970, Ser. No. 101,669
Claims priority, application Japan, Dec. 28, 1969, 45/845
Int. Cl. H04b 1/10
U.S. Cl. 325—52 6 Claims

A communication system for eliminating interference in communications between a fixed station and a mobile vehicle. The fixed station includes a support base for supporting an open type transmission line, along the path of the mobile vehicle. The transmission line transmits radio waves from the fixed

station and receives radio waves from the mobile vehicle. The mobile vehicle includes an antenna positioned to transmit radio waves from said mobile vehicle and to receive radio waves from the fixed station. The support base is positioned relative to the transmission line and the antenna, such that



radio waves from the antenna not received by the transmission line and radio waves from the transmission line not received by the antenna and radio waves from other communication systems, are absorbed by the support base. The system may also include wave absorbing means positioned on the mobile vehicle to further reduce interference.

3,781,688

CIRCUIT FOR IMPROVING RF PULSE RECEPTION FREQUENCY RESOLUTION WITHOUT RISE-TIME DEGRADATION

David C. Rannells, Menlo Park, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 11, 1972, Ser. No. 242,960
Int. Cl. H03k *13/02*
U.S. Cl. 325—321 **13 Claims**

A filter circuit for detecting short pulses of radio frequency (RF) energy centered at a given center frequency and within a given narrow bandpass region. Received pulses of RF energy are upconverted in a frequency multiplier circuit to achieve resultant pulses at the same repetition rate and pulse width as the received pulses but having frequency spectrum components centered at a new center frequency of n times the given center frequency of the received pulses. These frequency spectrum components have the same absolute frequency and amplitude relationship to their new center frequency as the frequency spectrum components of the received pulses had to their given center frequency. The resultant pulses are then passed through a bandpass filter circuit having its bandpass region centered at the new center frequency and having a bandpass region wider than the width of the given narrow bandpass region. A detector circuit detects the passage of resultant pulses through the bandpass filter circuit. The multiplication of the received pulses by a factor of n allows the use of a bandpass filter circuit having a wider width than the given narrow bandpass region. This wider width bandpass filter allows the detection of relatively short pulses of RF energy.

ERRATUM

For Class 328—1 see:
Patent No. 3,781,652

ERRATUM

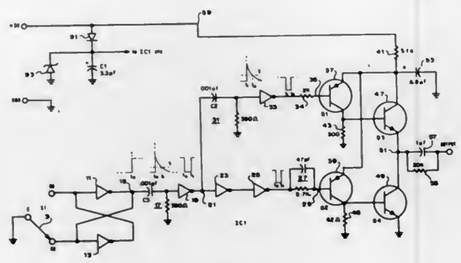
For Class 324—65 R see:
Patent No. 3,781,911

3,781,689

TRISTATE PULSE GENERATOR FOR PRODUCING CONSECUTIVE PAIR OF PULSES

Howard D. Marshall, Santa Clara; Gary B. Gordon; Jesse E. Pipkin, both of Cupertino, and Robin Adler, San Jose, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 17, 1972, Ser. No. 244,475
Int. Cl. H03k *1/00, 5/00*
U.S. Cl. 328—61 **2 Claims**



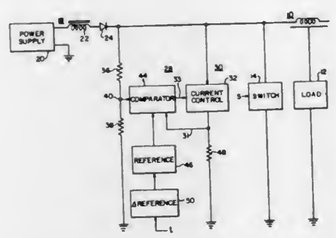
An improved manually-triggerable pulse generator has a high-impedance output in one operating state and alternate high-and-low-level logic states of low output impedance in remaining operating states for operation as a source of test pulses in digital circuitry.

3,781,690

IMPROVED PFN VOLTAGE REGULATOR

Charles A. Corson, Lutherville, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 30, 1971, Ser. No. 175,896
Int. Cl. H03k *1/02, 1/12*
U.S. Cl. 328—67 **6 Claims**



A pulse forming network (PFN) is charged to an initial voltage level above a desired operating level. The PFN is then slowly discharged by a controlled discharge path first to an intermeidate voltage level and thereafter, beginning at a set time before the main discharge into a load, it is further discharged to the desired operating level.

3,781,691

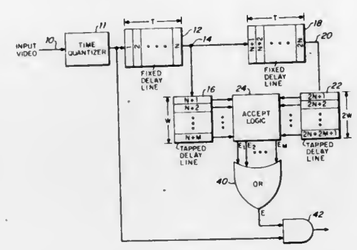
PULSE REPETITION FREQUENCY FILTER CIRCUIT

Weldon W. Bauman, Sunnyvale, and Edward Collins, IV, San Jose, both of Calif., assignors to Itek Corporation, Lexington, Mass.

Filed May 1, 1972, Ser. No. 248,909
Int. Cl. H03k *5/20*
U.S. Cl. 328—109 **20 Claims**

A pulse repetition frequency (PRF) filter circuit wherein the pulse repetition interval (PRI) between previously received pulses is utilized to gate a currently received pulse. In one embodiment the PRI between first and second received

pulses of a pulse train is utilized to gate a third and currently received pulse in that pulse train. The first pulse, after being delayed for a period of time equal to twice the pulse repetition time (PRT) of a pulse train having one highest PRF within the bandpass of the filter circuit, enables the sequential generation of a first series of n gating signals. The second pulse, after being delayed for a period of time equal to half the time delay of the first pulse, enables the sequential generation of a second series of $n/2$ gating signals. A series of AND gates are enabled



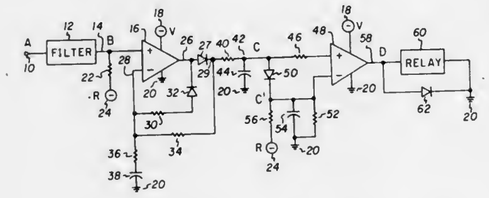
in sequence by the first and second series of gating signals, with each AND gate in the series being enabled in sequence by one gating signal of the second series of gating signals and any one of three gating signals of the first series of gating signals. The circuit is designed such that the simultaneous enabling of an AND gate by a gating signal from the first series and a gating signal from the second series defines the PRI between the first and second received pulses. This defined PRI is then utilized to generate a narrow gating window for a third pulse in the pulse train at the determined PRI after the second pulse.

3,781,692

SWITCHING CIRCUIT APPARATUS

Raymond P. Escoffier, Charlottesville, Va., assignor to Collins Radio Company, Dallas, Tex.

Filed Apr. 30, 1973, Ser. No. 355,603
Int. Cl. H03k *5/153*
U.S. Cl. 328—138 **4 Claims**



A circuit for detecting a burst of single frequency waveforms of a precise time duration from an input providing a wide frequency range of signals and providing an output of that time duration. A slope polarity detecting switch of simple design lies at the heart of the circuit.

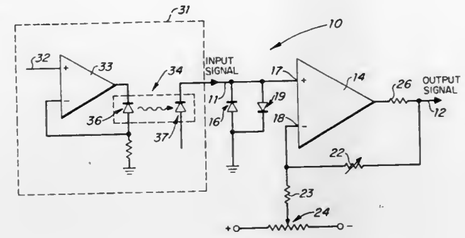
3,781,693

LOGARITHMIC AMPLIFICATION CIRCUIT

Peter W. Ford, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 29, 1972, Ser. No. 239,177
Int. Cl. H03k *17/03*; **G06g** *7/24*
U.S. Cl. 328—145 **10 Claims**

A circuit for generating an output signal that is a logarithmic function of an applied input signal. The circuit comprises an input signal source exhibiting the properties of an ideal constant current source, an amplifier coupled to said source, and a diode or other logarithmic element coupled across the source and between the source and the amplifier. The circuit is designed such that the amplifier will present a substantially infinite impedance to the diode and this property coupled with the substantially infinite impedance of the



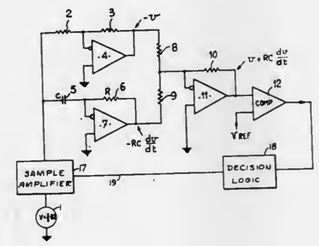
source will cause essentially all the input current to flow through the diode and be unaffected by any other components in the circuit. The voltage across the diode will thus be an accurate logarithmic function of the input current signal throughout a range up to six decades or more.

3,781,694

ELECTRONIC CIRCUIT FOR PREDETERMINING THE AMPLITUDE OF SAMPLES OF ANALOGUE SIGNALS

Georges Lefevre, Nantes, and Jean Paul Menard, St Crespin Sur Moine, both of France, assignors to Societe d'Etudes, Recherches et Constructions Electroniques (S.E.R.C.E.L.), Carquefou, France

Filed Oct. 28, 1971, Ser. No. 193,287
Claims priority, application France, Nov. 6, 1970, 7040039
Int. Cl. H03k *5/20*
U.S. Cl. 328—150 **3 Claims**



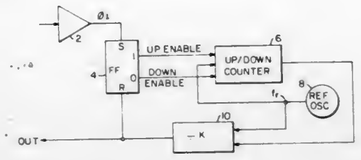
An electronic circuit has a transfer function of $1 + \tau p$, p being the Laplace variable, and τ a time constant at least equal to the time which separates a characteristic instant of the logical treatment of the samples from the instant of their being stored. This circuit is inserted upstream of the logical processing circuits, and downstream of the point where the samples are taken with a view to being stored.

The circuit has utility with sample amplifiers having automatic gain regulation.

3,781,695
DIGITAL PHASE-LOCKED-LOOP

Edward J. Jackson, Boulder, Colo., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 4, 1972, Ser. No. 250,128
Int. Cl. H03b 3/04
U.S. Cl. 328—155 8 Claims

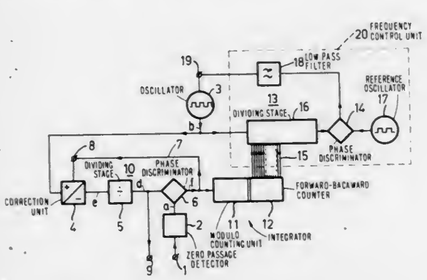


A digital phase-locked-loop circuit for shifting the phase of the output of a digital divider chain by an amount which is linearly related to the phase difference between the divider output and some other received signal having substantially the same frequency.

3,781,696
REGENERATOR FOR GENERATING A PULSE SERIES WHICH IS TO BE STABILIZED ON AN INCOMING IMPULSE SERIES

Lambertus Jacob Willem Van Loon, and Dirk Muilwijk, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,215
Claims priority, application Netherlands, Aug. 28, 1971, 7111888
Int. Cl. H03k 5/00
U.S. Cl. 328—164 2 Claims

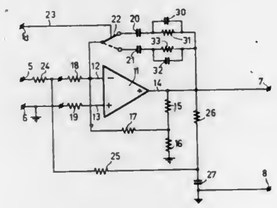


A regenerator for generating a pulse series which is to be stabilized on an incoming pulse series, comprising an input terminal for supplying the incoming pulse series, a pulse oscillator which is provided with a frequency control input and whose oscillation frequency amounts to approximately a multiple of the pulse repetition frequency of the incoming pulse series, a phase loop which comprises a correction unit, provided with a control input, a first dividing stage and a first phase discriminator, the input terminal being coupled, via a zero-passage detector, to a first input of the first phase discriminator so as to apply a control signal to this input, the oscillator being coupled, via the correction unit and the first dividing stage, to a second input of the first phase discriminator so as to supply a comparison signal to this input, an output of the first phase discriminator being coupled to the control input of the correction unit so as to apply to the control input, at the instants of occurrence of the control signal and in accordance with the sign of a phase difference existing between the control signal and a comparison signal, a correction pulse of a first or a second kind, respectively, under the control of which a pulse is suppressed or is added, respectively, to the pulse series originating from the oscillator, an integrator being connected to the output of the first phase discriminator, said integrator being coupled, via a frequency control unit, to the frequency control input of the oscillator, the frequency control unit comprising a second phase loop which is provided with a second phase discriminator, a second dividing stage with an adjustable dividend being connected between the oscillator and a first input of the second phase discriminator, a reference oscillator being connected to a second input of the phase discriminator, a low-pass filter being connected between the output of the second phase discriminator and the frequency control input of the oscillator, the integrator comprising a modulo counting unit, the counting position of which is driven in one direction by the correction pulses of the first kind and in the other direction by the correction pulses of the second kind, said modulo counting unit supplying a counting pulse of a first kind to the frequency control unit when it reaches an extreme position in the one direction, and a counting pulse of a second kind to the frequency control unit when it reaches an extreme position in the other direction, the integrator comprising a forward-backward counter which is connected to the modulo counting unit so as to increase or decrease the counting position of the counter in accordance with the kind of counting pulses applied thereto, the counter being connected to the second counting stage so as to adjust the dividend of the second dividing stage in accordance with the counting position of the counter.

3,781,697
FILTER FOR USE IN A CARRIER-WAVE MEASURING SYSTEM

Berend Theodorus Jan Bruinshorst, and Theodorus Jozef Van Kessel, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1972, Ser. No. 249,539
Claims priority, application Netherlands, May 13, 1971, 7106554
Int. Cl. H03k 5/00
U.S. Cl. 328—167 5 Claims



For servo systems and measuring systems which use a carrier wave for the measuring information an accurately adjustable bandwidth around the carrier frequency is obtainable by connecting switches synchronous with the carrier wave together with filter networks in the negative-feedback loop of an operational amplifier.

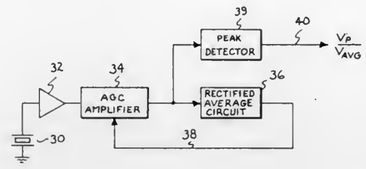
This enables small carrier measuring voltages to be amplified with a given bandwidth.

By providing an additional low-frequency negative-feedback loop across the filter the filter can be made insensitive to direct voltages and low frequencies with respect to the frequency band around the carrier wave.

3,781,698
VOLTAGE RATIO DISCRIMINATOR

Richard K. Davis, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed May 30, 1972, Ser. No. 257,917
Int. Cl. H03d 1/20
U.S. Cl. 329—178 7 Claims

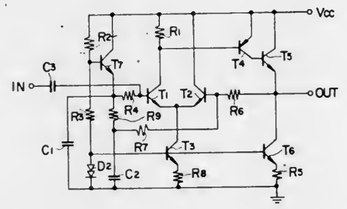


A circuit for providing an output which is the ratio of the peak input voltage divided by the average input voltage to the circuit. This circuit includes means to first provide for generating both the peak input and the rectified average or background input which provides an output which serves as a means to control the overall operation of the initial averaging means. There is further provided means to distinguish a peak value from the first mentioned average to provide the output specified.

3,781,699
DIFFERENTIAL AMPLIFIER CIRCUIT

Yoshio Sakamoto, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 27, 1972, Ser. No. 292,785
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 4 Claims

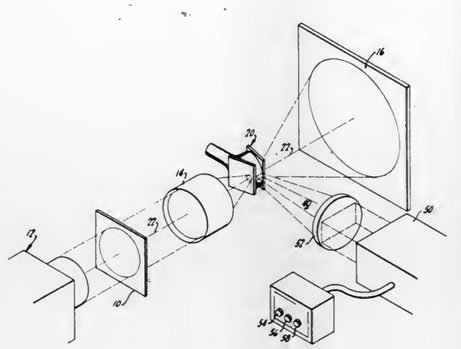


A differential amplifier circuit which comprises an emitter follower transistor adapted to operate at the same time the power supply is turned on, the output of said transistor being fed to the first input of the differential amplifier and servicing to charge a capacitor connected to the second input of said differential amplifier, whereby the rise of the output signal is made quick and the so-called pop signal normally produced in the amplifier is eliminated.

3,781,700
OPTICAL ELEMENT SYSTEM AND METHOD FOR AMPLIFYING IMAGE FORMING LIGHT RAYS

Theodor W. Hansch, and Frank L. Varsanyi, both of Palo Alto, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Feb. 11, 1971, Ser. No. 114,470
Int. Cl. H01s 3/10
U.S. Cl. 330—4.3 17 Claims

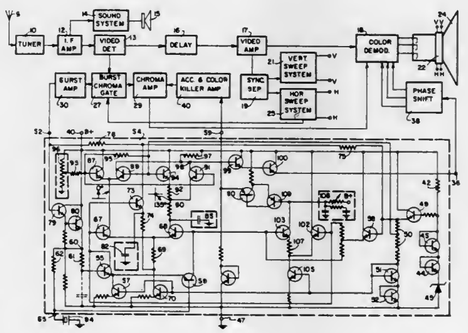


An optical element system and method for amplifying light rays such that a typical plane in object space can be transferred and amplified as an image on a screen and image space using an organic dye media disposed in the path of the amplifying rays and excited by light pulses of having predetermined characteristics. Uses suggest themselves in widely varying field of infrared, ultraviolet and visible optical instruments and computers and other devices.

3,781,701
SIGNAL PROCESSING CIRCUIT FOR A COLOR TELEVISION RECEIVER

Gildo Cecchin, Niles, and Francis H. Hilbert, River Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 880,320, Nov. 26, 1969, Pat. No. 3,604,845. This application Mar. 4, 1971, Ser. No. 120,927
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 3 Claims

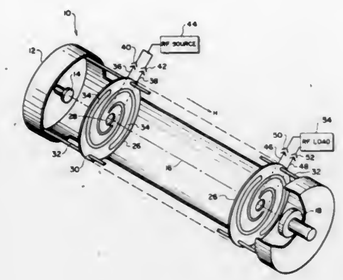


A color television receiver uses an integrated circuit to provide the subcarrier reference signals and ACC control voltage for the receiver. The circuit includes a first differential amplifier, unbalanced at the burst signal frequency, operated as the color reference oscillator to provide first and second differently phased output signals which are applied to a pair of differential steering gates. A phase-shift hue control of the color reference signal is obtained by adding selected outputs of the pair of differential steering gates. In addition, a differential amplifier is operated as a diodeless detector for deriving an ACC voltage from the oscillator output when burst signals are applied to the input of the oscillator.

3,781,702
TWT WITH STACKED SPIRAL-PAIRS SLOW-WAVE CIRCUIT

Louis J. Jasper, Jr., Neptune City, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 19, 1972, Ser. No. 290,287
Int. Cl. H03F 3/58
U.S. Cl. 330—43 3 Claims

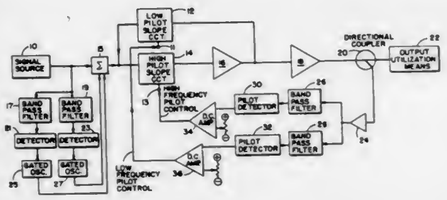


A traveling wave amplifier having a slow-wave circuit in the form of a stack of thin, flat elements with identical spiral pairs radiating from a common axis, the inner ends of the spirals of each pair being 180° apart and equidistant from the axis, and each element having a perforation for an electron beam between the inner end of its two spirals. RF that is coupled into the spirals of the element at one end of the stack is propagated by the spirals and radiated element-to-element and extracts energy from the electron beam. The RF, amplified, is taken from the spirals of the element at the other end of the stack.

3,781,703
ELECTRONIC AMPLIFIER WITH DUAL AUTOMATIC SLOPE CONTROL

George Otto Duty, Warminster, Pa., assignor to Jerrold Electronics Corporation, Philadelphia, Pa.

Filed Oct. 6, 1972, Ser. No. 295,564
Int. Cl. H03g 5/16
U.S. Cl. 330—52 1 Claim

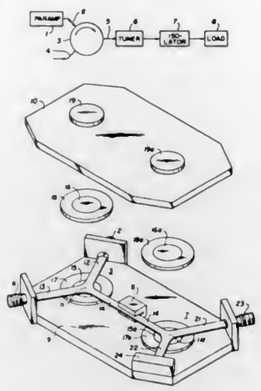


An amplifier is characterized by electronically variable slopes ("tilt") at the bounds of its signal amplification gain-frequency passband characteristic. Separate feedback circuitry is responsive to an associated one of two frequency-spaced pilot signals for suitably adjusting the response properties of the amplifier. The pilot signals may be specially generated, or may comprise components of the signal operated upon by the amplifier - such as one high band and one low band video carrier for a CATV television signal distribution application.

3,781,704
HIGH ISOLATION CIRCULATOR ARRANGEMENT FOR LOW NOISE REFLECTION TYPE AMPLIFIERS

Johannes Albertus De Gruyl, Commack, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 30, 1972, Ser. No. 239,653
Int. Cl. H03f 3/60
U.S. Cl. 330—53 3 Claims



A multi-junction cascade circulator includes an interjunction tuning device to enable operation of a reflection type amplifier with only one pass of input isolation, thereby minimizing degradation of signal to noise ratio due to input circuit losses while maintaining high isolation between the input and output of the amplifier independent of the load conditions.

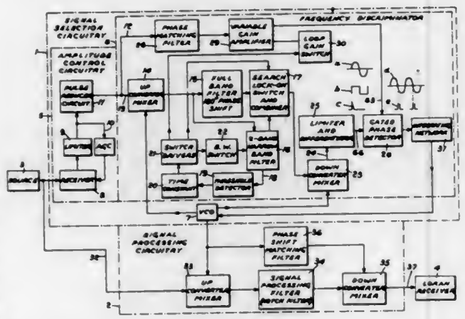
ERRATUM

For Class 330—51 see:
Patent No. 3,781,912

3,781,705
SELECTION AND PROCESSING SYSTEM FOR SIGNALS INCLUDING FREQUENCY DISCRIMINATOR

Milton Dishal, Upper Montclair, and Henri Baran, Parsippany, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Division of Ser. No. 763,225, Sept. 27, 1968, Pat. No. 3,732,500. This application June 14, 1971, Ser. No. 153,088
Int. Cl. H03b 3/04
U.S. Cl. 331—17 4 Claims



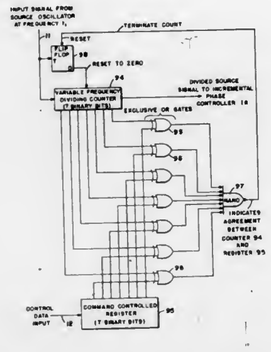
A signal selection and processing system for use with a broadband LORAN receiver in which the average of the strongest interfering signal having a predetermined duty cycle sets the AGC level and, via a special frequency discriminator, controls the frequency of a voltage controlled oscillator (VCO). The VCO output is used to shift the entire band of input frequencies so that said strongest signals fall into the attenuating notch of a notch filter while passing the other signals to the LORAN receiver.

In said discriminator, signals are transmitted through one channel in which a certain phase shift is produced and a second channel which also produces the same phase shift plus an additional phase shift which varies 180° over the band of interest. Gating pulses are derived from the phase shifted signals in the second channel and gate out different portions of the signals in the first channel so that the output pulses are of different amplitude and polarity, depending on the input frequency. These output pulses are applied to an integrating network arranged to maintain its charge in the absence of an input signal. The integrated voltage controls the VCO frequency. Frequency search and lock-on are accomplished by switching broadband and narrow band phase shifting filters and varying the gain in the first channel to maintain stability. Up-and-down frequency conversions in said second channel are effected by said VCO. In another embodiment a single frequency conversion for both channels is employed.

3,781,706
INCREMENTAL PHASE SHIFT FREQUENCY SYNTHESIZER

Eugene F. Osborne, Westminster, and Terrence L. McGovern, Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 4, 1972, Ser. No. 277,968
Int. Cl. H03b 27/00
U.S. Cl. 331—45 8 Claims

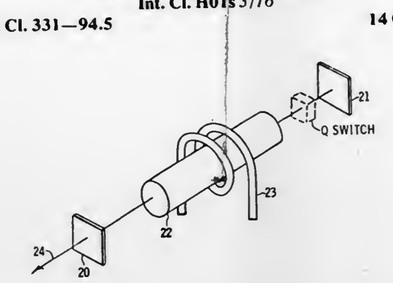


Apparatus for synthesizing an adjusted reference signal at a frequency that is controllable to a prescribed value performs the programmed addition (or subtraction) of sequential incrementation of phase shift to the reference signal output of an undisturbed oscillator that has a characteristic frequency of oscillation that is accurately predictable for a significant time period into the future. Purposes of the proposed apparatus include (a) the generation and maintaining of small offsets in the frequency of the adjusted output reference signal relative to the nominal or actual frequency of the oscillator, (b) the compensation for the time dependent predictable drift of the source oscillator to maintain the adjusted output signal at the desired frequency even though the source oscillator frequency changes, (c) the operation of precise time and frequency systems with complete coherency between the modulation representing timing and the RF carrier representing frequency, and (d) the ability to calibrate, adjust, and normalize the timing of a clock system operating from the adjusted reference signal both as to location of its epoch(s) and its scale relative to an accepted system primary standard of time.

3,781,707
CALCIUM CONTAINING SILICATE OXYAPATITE LASERS

Richard H. Hopkins; George W. Roland, both of Monroeville; Kenneth B. Steinbruegge, Murrysville, and William D. Partlow, Blackridge, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 859,673, Sept. 22, 1969. This application June 21, 1971, Ser. No. 155,097
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 14 Claims

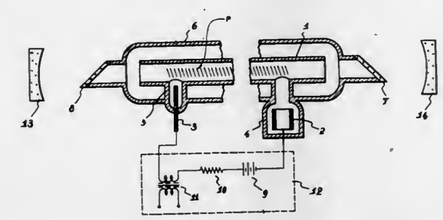


A composition of matter which can be used as a laser crystal in a laser generator and which can be doped with sensitizer ions has the empirical chemical formula $CaM_{1-x}(SiO_4)_3O:A_x$, where A represents a lasing ion selected from Nd, Er, and Ho, x has a value from 0.001 to 1 and M represents an ion selected from La, Gd and mixtures thereof.

3,781,708
D.C. DISCHARGE GAS LASER WITH NOVEL DISCHARGE TUBE

Noboru Henmi, 2-3, Midori-machi, and Hiromi Kumagai, 3-4-6 Nishikubo, both of Musashino-shi, Tokyo, Japan

Filed Aug. 25, 1971, Ser. No. 174,604
Claims priority, application Japan, Sept. 5, 1970, 45-78032
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 4 Claims



A gas laser comprises a capillary tube and an external tube in which a gaseous lasing medium, such as carbon dioxide gas, is enclosed. Plasma for laser action is generated in the capillary tube by a D.C. discharge between an anode and a cathode. The length of the capillary tube and its relation to the electrodes is such that the plasma area is in said tube.

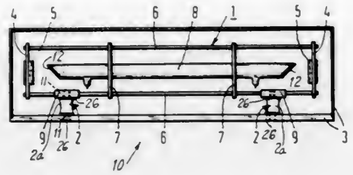
3,781,709
LASER ARRANGEMENT

Otmar Hintringer, Neubiberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of Ser. No. 68,179, Aug. 31, 1970, abandoned. This application Aug. 2, 1972, Ser. No. 277,161
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 5 Claims

A laser arrangement, and particularly a gas laser, has resonator means contained in a housing or enclosure and mounted therein by yieldable, vibration-dampening means in

a manner to mechanically isolate the resonator with respect to the housing so that shifting or expansion of the housing during a warm-up period will not disturb or effect the dimensioning or spacing of reflectors forming a portion of the resonator



means. Also, any misalignment of a gas laser tube relative to the resonator reflectors due to thermal expansion or otherwise is avoided by mounting the tube directly in the resonator and by not connecting the tube to the housing.

3,781,710

GAS LASER GENERATOR DEVICES

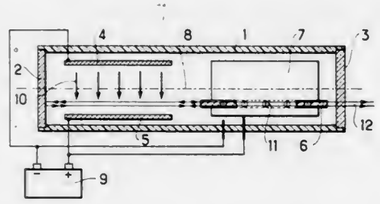
Guy Boudinet, Vitry, and Jean Rocca-Serra, Paris, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Sept. 22, 1972, Ser. No. 291,513

Claims priority, application France, Sept. 24, 1971, 7134404

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 **2 Claims**



A gas laser generator comprising two groups of electrodes for producing in two planes, substantially perpendicular electric discharges, the gain of each discharge being chosen so that the laser phenomenon takes place only on the intersecting straight line of the two discharge planes.

3,781,711

LASER DYE COMPOSITION

Karl H. Drexhage, and George A. Reynolds, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1972, Ser. No. 298,057

Int. Cl. H01s *3/20*

U.S. Cl. 331—94.5 **8 Claims**

This invention relates to the use of rigidized di- and tripehnyl methane dyes, as well as the aza derivatives thereof as lasing media in liquid dye lasers. Lasing media containing certain of these dyes have advantageously been found to lase in the red and near infrared region of the electromagnetic spectrum.

3,781,712

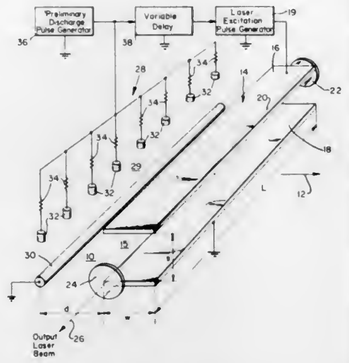
GAS LASER WITH DISCHARGE CONDITIONING USING ULTRAVIOLET PHOTONS GENERATED IN HIGH CURRENT DENSITY PRELIMINARY DISCHARGE

O'Dean P. Judd, Los Alamos, N. Mex., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 17, 1972, Ser. No. 298,218

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 **12 Claims**



Discharge excited gas laser arrangements are disclosed wherein a preliminary electrical discharge having a current density of at least about one ampere per cm^2 is established in a first region of the laser gas. This discharge produces a large number of ultraviolet photons which propagate through the gas and collide with neutral gas molecules to produce electronion pairs in the gas. After a given time delay of at least about one μsec. subsequent to the initiation of the preliminary discharge, a main electrical discharge is initiated in a second region of the gas spaced from and in photon communication with the first region to excite the gas to a lasing condition. As a result of the background distribution of electron-ion pairs generated by the ultraviolet photons radiated into the main discharge region at the time the main discharge is commenced, a highly uniform laser exciting discharge is achieved.

3,781,713

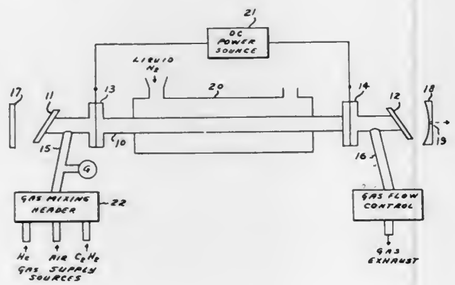
CARBON MONOXIDE LASER BY ACETYLENE OXIDATION

James D. Barry, and William E. Boney, both of Fairborn, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 7, 1972, Ser. No. 304,586

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 **6 Claims**



A direct current discharge gas laser charged with a mixture of helium-air-acetylene, through the chemical interaction in-

duced by the dc discharge providing CO, results in a more efficient carbon monoxide laser with laser emission on the P-branch vibrational-rotational transitions from v=3:2 to v=11:10 with J nominally from 11 to 14. The wavelength of laser emissions extend to below 5.0 microns.

3,781,714

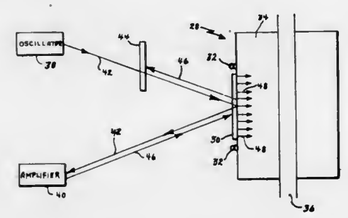
ISOLATOR FOR HIGH POWER LASER SYSTEM

Howard Schlossberg, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. [illegible],567, June 22, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,510

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 **5 Claims**



A high power laser system having a radiation source and an amplifier with an isolator located in such a position as to reflect radiation from said source to said amplifier. This isolator is made up of an isolator element in intimate contact with a reflector-heat sink and surrounded by a magnetic field. The arrangement of the isolator enables the radiation emanating from the source to be twice passed through the isolator element while affording maximum cooling of the element during operation of the system.

3,781,715

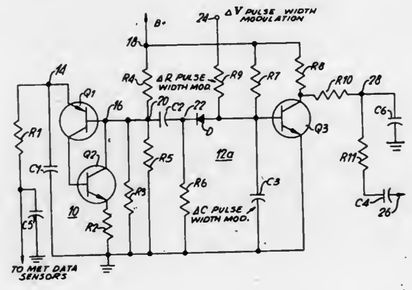
RADIOSONDE METEOROLOGICAL DATA OSCILLATOR AND PULSE STRETCHER

Martin C. Poppe, Jr., Stony Brook, N.Y., and Maurice Friedman, Philadelphia, Pa., assignors to Beukers Laboratories, Inc., Hauppauge, N.Y.

Filed Sept. 2, 1970, Ser. No. 68,990

Int. Cl. H03k *7/08*

U.S. Cl. 332—9 T **8 Claims**



A meteorological data signal generator comprises a variable frequency pulse oscillator having an output rate proportional to the level of a sensed meteorological parameter, e.g. temperature. A pulse stretcher is coupled to the output of the pulse oscillator to expand the pulse and lower the high frequency harmonic content of the output pulses. The extent of pulse stretching is variable, and if desired, may be controlled by a second sensed meteorological parameter, whereby a single output pulse train is modulated in response to two distinct parameters.

3,781,716

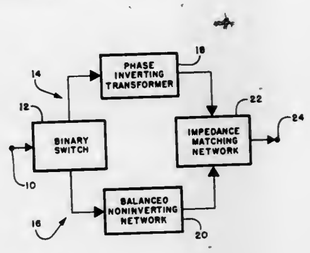
BIPHASE RADIO-FREQUENCY MODULATOR

Thomas E. Gerst, Albuquerque, and John G. Webb, Jr., Sandia Park, both of N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 27, 1972, Ser. No. 301,410

Int. Cl. H03k *7/00*

U.S. Cl. 332—9 R **6 Claims**



A biphase radio-frequency modulator which includes a pair of electrically balanced circuit branches, one branch having a phase inverting transmission line transformer with the other branch having a noninverting transmission line transformer connected therein, together with means for selectively directing radio-frequency signals in one or the other of the branches and means for coupling the inverted or noninverted signals from the branches to an output terminal.

3,781,717

PIEZOELECTRIC FILTER HAVING RESONATORS FORMED BETWEEN ADJACENT INTERFERENCE LOCATIONS

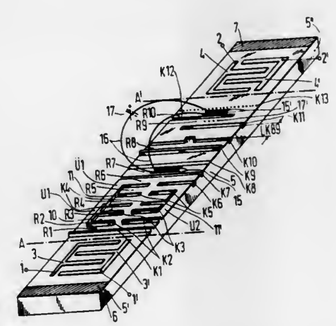
Friedrich Kuenemund, Muenchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 29, 1972, Ser. No. 267,424

Claims priority, application Germany, July 6, 1971, P 21 33 634.5; Nov. 26, 1971, P 21 58 858.9; Feb. 29, 1972, P 22 09 585.8

Int. Cl. H03h *7/46, 7/04, 9/26*

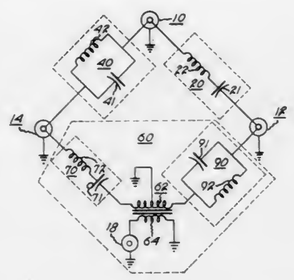
U.S. Cl. 333—6 **29 Claims**



An electromechanical device operating on the surface-wave principle as a transducer of a filter comprises a substrate carrying a plurality of electrodes. The substrate may include a piezoelectric material and have interference locations defin-

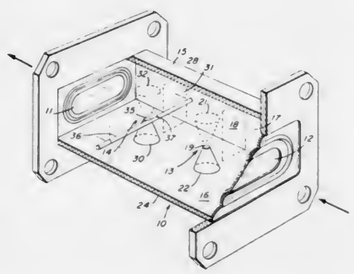
ing resonant circuits. The interference locations may include a broken line of laser produced spots, a protuberance or a groove extending perpendicular to the direction of wave propagation.

3,781,718
HYBRID BAND PASS-BAND STOP FILTER
Norman C. Gittinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jan. 2, 1973, Ser. No. 320,358
Int. Cl. H03h *7/04, 7/14*
U.S. Cl. 333—11 **15 Claims**



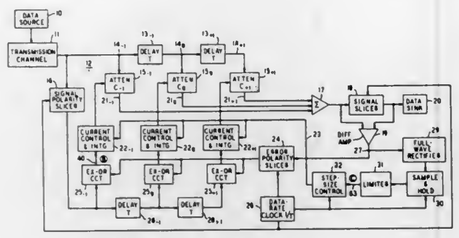
A hybrid filter having the characteristics of a hybrid coupler and band pass and band stop filters combined. The hybrid filter provides a band pass port and a band stop port to which a number of frequency filters are connected. A predetermined frequency range of a spectrum of frequencies applied to the hybrid filter is isolated and confined to the band pass port. The frequencies other than the band pass frequency range are transmitted to the band stop port. The hybrid filter provides a constant impedance at all frequencies by employing reactive elements of critical values. A high attenuation exists at all frequencies between the band pass and band stop ports.

3,781,719
PASSIVE TR TUBES
Earle Frederick Durkee, Danvers, Mass., assignor to Microwave Associates Inc., Burlington, Mass.
Filed Sept. 1, 1971, Ser. No. 176,982
Int. Cl. H01p *1/14*
U.S. Cl. 333—13 **10 Claims**



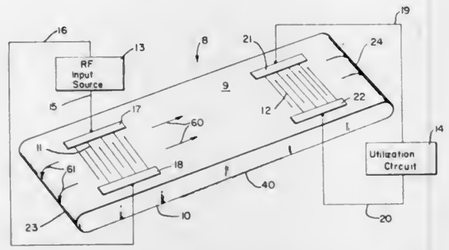
Passive TR tubes are disclosed using radioactive material to supply free electrons in the output cone-gap. The radioactive material is so located that it will not be damaged by the RF discharge in the gap, and can be included in the fabrication after the final brazing. Moreover, the electrical RF characteristics of the TR cell are maintained substantially or entirely without perturbation.

3,781,720
AUTOMATIC TAP-GAIN INCREMENTATION OF ADAPTIVE EQUALIZERS
Kurt Hugo Mueller, Kuesnacht, Switzerland, assignor to Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J.
Filed Jan. 4, 1973, Ser. No. 320,881
Int. Cl. H04b *3/04*
U.S. Cl. 333—18 **6 Claims**



An adaptive transversal equalizer for digital data transmission systems is improved to incorporate an automatic control for the magnitude of tap-gain incrementation adaptive to the absolute magnitude of the data error signal.

3,781,721
ACOUSTIC SURFACE WAVE DEVICE ELIMINATING SPURIOUS END REFLECTIONS
Gordon W. Judd, Yorba Linda, and Charles R. Stout, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Nov. 30, 1972, Ser. No. 311,007
Int. Cl. H03h *7/30, 9/32;* **H01v** *7/00*
U.S. Cl. 333—30 R **10 Claims**

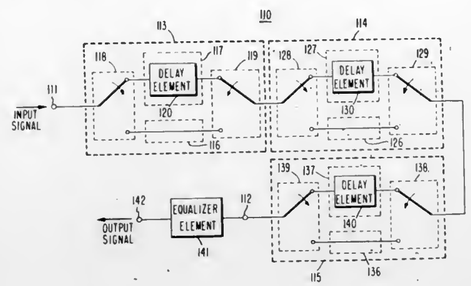


An acoustic surface wave device is disclosed wherein spurious response levels are considerably reduced. The ends of an elongated substrate capable of propagating acoustic surface waves are rounded to allow acoustic surface waves launched on the front broad face of the substrate to propagate around these ends to the reverse broad face of the substrate. A roughened area is provided on the reverse broad substrate face to dissipate the acoustic surface waves propagated thereto by scattering.

3,781,722
DIGITALLY VARIABLE DELAY TIME SYSTEM
Paul Bruce Pierson, Delran, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 12, 1973, Ser. No. 340,544
Int. Cl. H03h *7/22, 7/30*
U.S. Cl. 333—31 R **4 Claims**

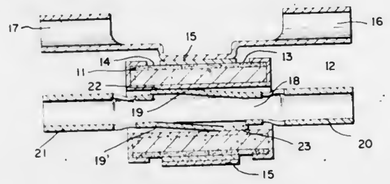
A system for providing a digitally variable delay time for electrical signals utilizes a connection of multiple delay line

sections each of which contributes to the overall system delay time. Each delay line section comprises first and second



selectable transmission lines having different electrical lengths and a different magnitude of attenuation per unit length.

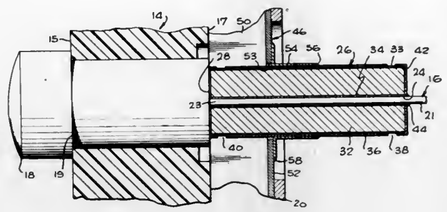
3,781,723
COATED FERRITE FILTERS HAVING STAMPED AND FORMED OUTER SLEEVES
Robert George Harwood, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 21, 1972, Ser. No. 219,817
Int. Cl. H01h *7/14*
U.S. Cl. 333—79 **8 Claims**



A lossy filter includes an extruded tube of ferrite with a layer of dielectric such as barium titanate deposited on the outside of the tube. A conductive sleeve is stamped out of sheet metal and die formed around the tube to form an outer sleeve which adds mechanical strength to the filter. Provision of the said outer sleeve permits the use of a high force center contact spring. This center contact spring has a contact section of substantially the same length as the tube. Spring contacts are pivoted from both ends of a contact section, one spring contact located on one side of the contact pin and the other on the other side of the contact pin. The free ends of both spring contacts are deflected when the pin is inserted in the tube to provide opposite high force contacts between the pin and the tube.

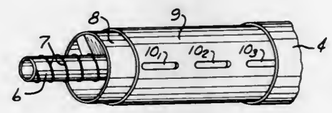
3,781,724
TERMINAL BLOCK
Leonard Moore, and Ronald L. Bodle, both of Northridge, Calif., assignors to Moore Industries Inc., Van Nuys, Calif.
Filed May 30, 1972, Ser. No. 257,779
Int. Cl. H01h *7/14*
U.S. Cl. 333—79 **18 Claims**

The invention is characterized by a terminal block formed in part from insulating material. The terminal block is designed to be attached to a housing surrounding electronic equipment which is affected by radio frequency signals. The terminal block is provided with connector pins which extend through the bores of tubular rf filters. These filters are designed to block the entry of rf signals to the interior of the housing and to short out the rf signals to a ground plane which is also a part of the terminal block. The ground plane is electrically connected to the housing and to the rf filters at a point



intermediate their ends. In addition, adjustment are provided to control the penetration of the pins and filters on the terminal block inside the housing.

3,781,725
LEAKY COAXIAL CABLE
Kenichi Yoshida, and Yoshio Miyamoto, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed May 4, 1972, Ser. No. 250,277
Int. Cl. H01q *13/22;* **H01p** *3/06*
U.S. Cl. 333—84 R **8 Claims**



The present invention provides a leaky coaxial cable for communication with moving vehicles which comprises an inner conductor with delaying properties for an electro-magnetic wave and an outer conductor having a slot arrangement made of an oblique slot arranged repeatedly in a constant period or made of a group of oblique slots arranged repeatedly in a constant period, with said slots of each group being arranged in a different period therein. When such a leaky coaxial cable is installed along a track for a moving vehicle and fed by a communication signal of a very low frequency band as around 30 MHz, the coupling level fluctuation between the leaky coaxial cable and the antenna of a mobile unit in accordance with the movement thereof is extremely reduced even over such low frequency band and furthermore the operable frequency band width is made broader.

3,781,726
WAVEGUIDE WINDOW ASSEMBLY
Richard M. Thompson, Anaheim, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Aug. 31, 1972, Ser. No. 287,187
Int. Cl. H01p *1/08*
U.S. Cl. 333—98 P **1 Claim**

A waveguide gas pressure window that in a single assembly provides a waveguide window and a pressure seal to gases used as a dielectric, while at the same time providing a low loss transfer of power through the window from a first waveguide section into a second waveguide section. The improved waveguide window includes a plate having the shape of the waveguide flange with a seal material positioned in a groove on both sides of the plate to contact the two waveguide flanges

between which the window is mounted. The flat plate has a common flanged opening formed on one side thereof in which a window structure is positioned on shoulders and firmly bonded in position with a suitable retaining material. The window structure is formed of a suitable dielectric material such as a teflon fiberglass plate having copper sheets deposited on both sides thereof with the copper etched or removed from the fiberglass to provide a window having the desired impedance matching characteristics. The window structure for a



selected waveguide size may have a common outside dimension for being positioned in the flat plate while allowing desired electrical and impedance changes to be provided during manufacture by selecting the dimensions of the surface from which copper is removed. The improved and simplified pressure window assembly in accordance with the invention provides complete electrical continuity, eliminates RF energy leakage and simplifies alignment of the adjacent waveguide sections.

3,781,727

ELECTROMAGNETIC SWITCHING DEVICE

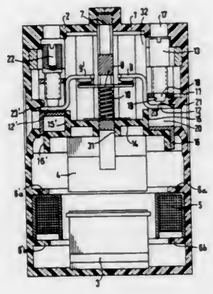
Fritz Pollmann, and Gerhard Wossner, both of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 27, 1971, Ser. No. 147,317

Claims priority, application Germany, June 3, 1970, P 20 27 137.8

Int. Cl. H01h *50/04*

U.S. Cl. 335—132 **3 Claims**



An electromagnetic switching device has a housing comprising two housing parts for accommodating contact and terminal parts and a magnetic system. A separate switching chamber is formed in the housing and has outer wall portions integrally formed with the housing parts to provide form-locking support for frame clamps of the device.

3,781,728

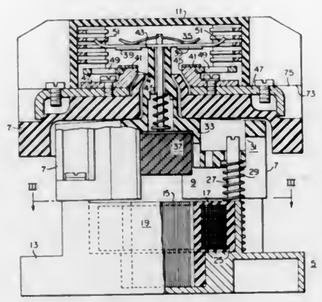
ELECTRIC CONTACTOR

Kurt A. Grunert; John J. Dauer, Jr., and Stephen S. Dobrosielski, all of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 6, 1972, Ser. No. 295,794

Int. Cl. H01h *50/02*

U.S. Cl. 335—132 **1 Claim**



An electric contactor characterized by improvements including a movable contact carrier structure having a one piece bridge between a pair of movable contacts, the outer ends of which bridge are curved outwardly away from the corresponding stationary contacts, a magnetic coil for actuating the movable contact carrier structure and being embedded in an aluminum die cast base which serves as a better heat sink for the coil, an interlock between the cover and housing of the contactor for preventing operation of the contactor when a cover is removed, and a guide pin for the crossbar of the movable contact carrier structure which guide pin comprises a screw insert for the screw by which the cover is attached to the housing.

3,781,729

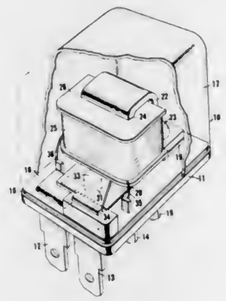
INVERTED LOW LOSS RELAY STRUCTURE

Rodney Hayden, Stacy Creek, Ontario, Canada, assignor to TRW Inc., Cleveland, Ohio

Filed Sept. 25, 1972, Ser. No. 291,867

Int. Cl. H01h *50/14*

U.S. Cl. 335—187 **4 Claims**



The following specification sets forth a structure defining an electrical relay of the direct current high amperage type adapted for automotive use and in which the relay contacts are so arranged relative to the terminals as to provide a short low resistance path.

3,781,730

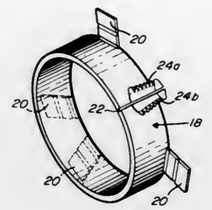
YOKE MOUNTING RING WITH DEFORMABLE FINGER MEMBERS

Edward A. Salners, Mount Prospect, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 29, 1972, Ser. No. 310,526

Int. Cl. H01f *7/00*

U.S. Cl. 335—210 **6 Claims**



A ring mounting device for receiving a deflection yoke and maintain the same in a fixed, selectively adjusted position on the neck of a cathode ray tube. The mounting ring includes a plurality of fingers extending therefrom for physical attachment to the bell portion of the cathode ray tube, such as by an adhesive tape or the like. The entire mounting ring is constructed in a one-piece molded configuration from a plastic, nonmetallic material so as to avoid static-charge build-up. Additionally, the associated finger members are deformable so as to accomodate the size requirements of substantially any cathode ray tube.

3,781,731

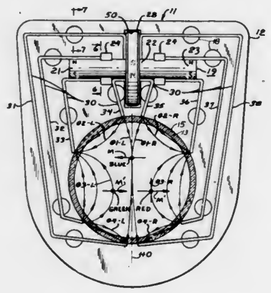
PURITY AND BLUE LATERAL ASSEMBLY FOR DELTA BEAM TYPE CATHODE RAY TUBE

Lawrence R. Poel, 6620 Mesa Grande, El Paso, Tex.

Filed Mar. 23, 1973, Ser. No. 344,222

Int. Cl. H01f

U.S. Cl. 335—212 **10 Claims**



A static magnetic assembly for delta beam type cathode ray tubes for providing proper convergence adjustment of the electron beams.

3,781,732

COIL ARRANGEMENT FOR ADJUSTING THE FOCUS AND/OR CORRECTING THE ABERRATION OF STREAMS OF CHARGED PARTICLES BY ELECTROMAGNETIC DEFLECTION, PARTICULARLY FOR SECTOR FIELD LENSES IN MASS SPECTROMETERS

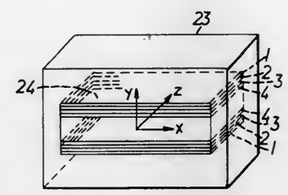
Hermann Wollnik, No. 129, Eichendorffring, Giessen, Germany

Filed Feb. 15, 1972, Ser. No. 226,479

Claims priority, application Germany, Feb. 18, 1971, P 21 07 770.3

Int. Cl. H01f *5/00*

U.S. Cl. 335—213 **17 Claims**



A coil arrangement for adjusting the focus and/or correcting the aberration of streams of charged particles by electromagnetic deflection, particularly for sector field lenses in mass spectrometers, comprises flat coils produced in accordance with conventional printed circuit technology. Part of the turns of each coil is shaped to produce a locally changing magnetic field normal to the stream of charged particles for differentially affecting the particle paths according to their position in this magnetic field.

3,781,733

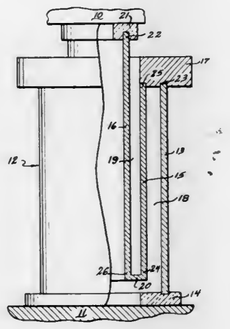
LOW HEAT CONDUCTANT TEMPERATURE STABILIZED STRUCTURAL SUPPORT

Joseph R. Heim, Batavia, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 21, 1972, Ser. No. 317,454

Int. Cl. H01f *7/22*

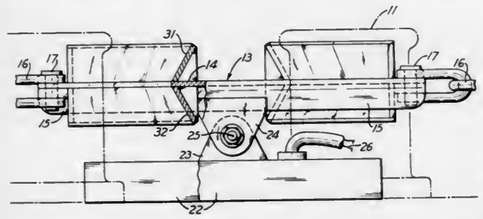
U.S. Cl. 335—216 **7 Claims**



A low heat conductant structural support has a series of concentric and spaced tubular columns to thermally insulate and support a load above a base. The outer tubular column is vertically mounted on and may be thermally insulated from the base while the supported load is supported on and may be thermally insulated from the upper rim of the inner column. Intermediate columns join the upper rim of the outer column to the lower rim of the inner column. The columns of the support can be composed of materials such that the over-all ther-

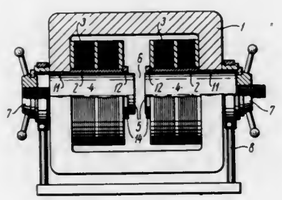
mal contraction of the intermediate columns is equal to the sum of the thermal contraction of the inner and outer columns so that, consequently, the over-all height of the support and correspondingly the distance between the supported load and the base is the same after the temperature has been decreased.

3,781,734
MAGNETIC DEVICE FOR CONNECTING HAULING LINES TO A BARGE
William E. Sabina, Sewickley, Pa., assignor to Heyl & Patterson, Inc., Pittsburgh, Pa.
Filed Jan. 24, 1973, Ser. No. 326,246
Int. Cl. H01f *7/20*
U.S. Cl. 335—289 **10 Claims**



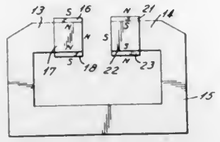
Connected to each end of a supporting member are means for connecting that member to barge hauling lines. Suspended below the supporting member are electromagnetic means positioned to rest on the deck of a barge for magnetically attaching the supporting member to it. The opposite ends of the supporting member may be provided with recesses for receiving the barge bitts to limit sliding of the magnetic means along the deck.

3,781,735
APPARATUS FOR ADJUSTING MAGNET CORES
Joerg Philipp Haas, Neureut, Germany, assignor to Bruker-Physik AG, Karlsruhe-Forchheim, Germany
Filed Aug. 28, 1972, Ser. No. 284,048
Claims priority, application Germany, Sept. 15, 1971, P 21 46 032.2
Int. Cl. H01f *3/00*
U.S. Cl. 335—298 **7 Claims**



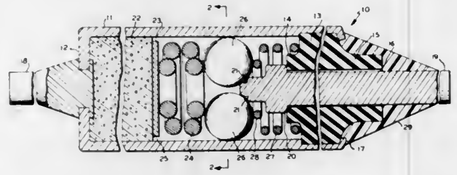
An improved magnet core mounting is described in which the magnet core is snugly mounted upon two support rings located in a guide tube near its ends. One of these rings is fixed to the guide tube and has a convex spherical surface bearing against the magnet core and the other is radially adjustable in the guide tube. The magnet core has sufficient play in the guide tube to permit the adjustable support ring to correct the position of its pole face; and the convex spherical surface of the fixed support ring cooperates in permitting this adjustment. The radially adjustable support ring is positioned by four screws set 90° apart about the circumference of the ring. Advantageously, two of these screws bear the weight of the magnet core while the other two bias springs against the core.

3,781,736
SHIELD FOR PERMANENT MAGNET STRUCTURE
Rollin J. Parker, Greenville, Mich., assignor to General Electric Company
Filed Oct. 26, 1972, Ser. No. 301,094
Int. Cl. H01f *7/02*
U.S. Cl. 335—304 **5 Claims**



A shield or guide to reduce leakage flux in the vicinity of the air gap of a permanent magnet is provided by positioning magnetic sleeves or plates in engagement with surfaces of the permanent magnet adjacent the air gap. The sleeves or plates are polarized at their surfaces which engage the permanent magnet. Each sleeve or plate has its surface which abuts the permanent magnet of the same polarity as the portion of the permanent magnet which it engages. The sleeves or plates may be flexible. Ferrites and cobalt-rare earths are satisfactory magnetic materials for the sleeves and plates.

3,781,737
THERMAL CIRCUIT PROTECTOR
Wesley D. Henry, Logansport, Ind., assignor to Essex International, Inc., Ft. Wayne, Ind.
Filed Feb. 20, 1973, Ser. No. 333,947
Int. Cl. H01h
U.S. Cl. 337—407 **3 Claims**

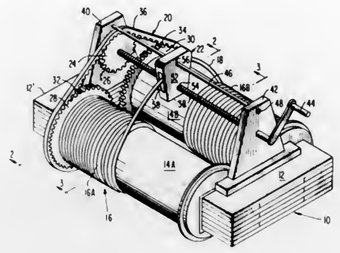


A thermal circuit protector for automatically opening a circuit when the ambient temperature becomes too high. The protector comprises a fusible pellet disposed inside a conductive case. A first conductor electrically contacts the case while a second conductor is electrically insulated from the case. Contact is made from the first conductor to the second by three electrically conductive balls which contact the case and the second conductor. A first spring maintains the electrical contact between the case, the balls and the second conductor. A second spring acts to break the contact between the case, the balls and the second conductor when the fusible pellet melts.

3,781,738
METHOD AND APPARATUS FOR TRANSFERRING MOVABLE COILS OF A VARIABLE INDUCTION DEVICE
Donald S. Rozelle, Owego, N.Y., assignor to Magnetech Industries, Inc., Newark Valley, N.J.
Filed Jan. 20, 1972, Ser. No. 219,397
Int. Cl. H01f *21/02*
U.S. Cl. 336—15 **13 Claims**

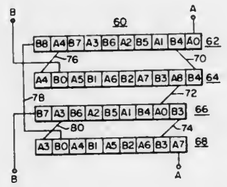
A method and apparatus for transferring the turns and windings of a movable coil between two drum portions, such as either from one drum to another or from one position on a drum to another postion thereon, in response to the rotation

of the drum portions. The coil includes an intermediate portion extending between the drum portions and resilient guide means is provided to guide the coil as it is transferred and to allow the intermediate portion to vary slightly in length during



the transfer of the coil so that the intermediate portion is not subject to excessive slack and stress. In addition, a drive means if provided to rotate the drum portions in synchronism when the drum portions comprise, for example, two independently mounted drums.

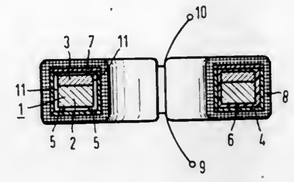
3,781,739
INTERLEAVED WINDING FOR ELECTRICAL INDUCTIVE APPARATUS
Lloyd E. Meyer, Greenville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 28, 1973, Ser. No. 345,813
Int. Cl. H01f *15/14*
U.S. Cl. 336—70 **4 Claims**



A transformer winding with coil disc sections having an odd number of conductor-turns per section. During construction, one section is wound with a pair of conductors to provide one less conductor-turn that is desired in that section. Another section is similarly wound with the same pair of conductors to provide one less conductor-turn than is desired. One of the conductors is then crossed-over to the previously wound section so that one conductor may be wound around each section for one additional turn. A splice joint in the previously wound section connects the conductor wound thereon to the proper conductor-turn.

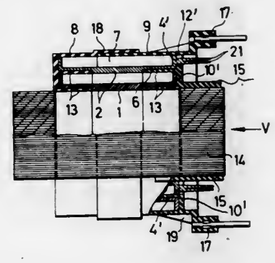
3,781,740
RADIO INTERFERENCE ELIMINATION CHOKE FOR SUPPRESSING IMPULSE LIKE INTERFERENCE VOLTAGES
Peter Kirmis; Heinz Wagner, and Hans-Peter Kaiserswerth, all of Regensburg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Nov. 24, 1971, Ser. No. 201,754
Claims priority, application Germany, Nov. 27, 1970, P 20 58 509.5
Int. Cl. H01f *27/24*
U.S. Cl. 336—96 **10 Claims**

A radio interference elimination choke employs a magnetic impedance core having at least two annular axially superposed partial cores housed in an insulating omnilaterally closed cup upon which at least one winding is provided for attenuation of impulse-like interference voltages and build-up interferences



in the low frequency range wherein at least one of the partial cores exhibits high losses in the frequency range of the build-up process.

3,781,741
TRANSFORMER ASSEMBLY
Norbert Weiner, Pernze 5275, Bergneustadt, Germany
Filed June 18, 1973, Ser. No. 370,871
Claims priority, application Germany, Feb. 6, 1973, P 23 05 700.3
Int. Cl. H01f *15/10, 27/30*
U.S. Cl. 336—192 **10 Claims**

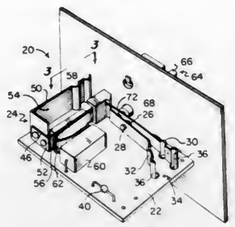


A transformer assembly having a plurality of annular shaped coil chambers and adapted to receive ferromagnetic laminations and coils has a pair of insulating caps each of which includes a plurality of integrally-formed annular ribs. The annular ribs are disposed concentrically on and perpendicular to the front wall of each of the caps so as to define a plurality of concentric hollow coil chambers. Each of the chambers has a substantially rectangular cross-section. A plurality of coil sleeves is provided each having a different cross section so as to correspond with each of the ribs. Each of the coil sleeves includes end flanges and a shoulder complementary with the respective rib. The front wall of at least one cap contains apertures as directed to the connecting flange side of the respective coil chamber. The connecting flange side bears overlapping teeth. Electrical connection means are disposed along the outside portion of each of the caps providing a means for electrical connection to the coil windings. The ribs are placed so as to seat along the shoulders of the sleeves thereby defining a plurality of closed coil chambers and included in a coil space devoid of any ribs.

3,781,742
THERMALLY ACTUATED SWITCH
Donald F. Dalziel, Sturtevant, and Charles H. Heide, Kenosha, both of Wis., assignors to Webster Electric Company, Inc., Racine, Wis.
Filed Dec. 3, 1971, Ser. No. 204,491
Int. Cl. H01h *71/16*
U.S. Cl. 337—77 **24 Claims**

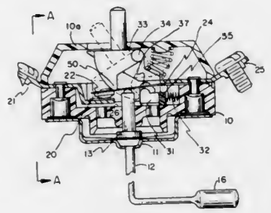
A thermally actuated, temperature compensated switch includes a bimetallic member and leaf spring members mounted

on one or more printed circuit boards. The bimetallic member and the leaf spring members include lateral extensions extending through and secured to a printed circuit board. Means are



provided for monitoring plural conditions in an electrical circuit and for changing the state of the thermally actuated switch upon the occurrence of a fault condition in the electrical circuit.

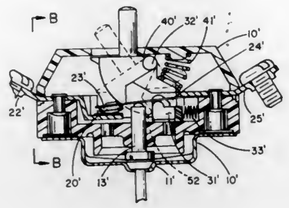
3,781,743
MANUAL RESET FOR A SWITCH DEVICE
Donald P. Kolbow, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 27, 1972, Ser. No. 266,796
Int. Cl. H01h *37/36, 71/58*
U.S. Cl. 337—118 **6 Claims**



A condition responsive switching device has a manual reset provision in which a pressure responsive actuator has a pin providing an output force to be applied against a moveable contact blade of a switch. A wedging member is spring biased between the base and the blade so that upon movement of the moveable blade to an open switch position, the wedging member is moved along adjacent to the blade to hold the blade and thus the contact in an open switch position. After the pressure responsive actuator returns to the normal position, a reset operation is accomplished by a pivoting reset driver which is operated upon pushing a reset button to slide the wedging member against its bias spring back to an initial position to allow the moveable blade to move to a closed switch position.

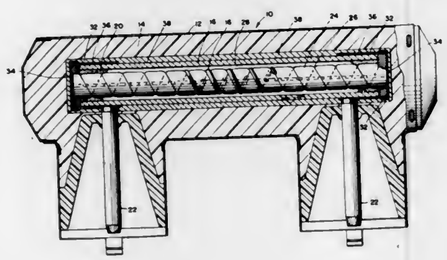
3,781,744
MANUAL RESET FOR A SWITCH DEVICE
Elwyn H. Olson, St. Paul, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed June 27, 1972, Ser. No. 266,797
Int. Cl. H01h *71/50, 61/01, 35/26*
U.S. Cl. 337—118 **5 Claims**

A condition responsive switching device has a manual reset provision in which a pressure responsive actuator has a pin for providing an output force to be applied against a movable blade of a switch contact. A movable member is spring biased between a base and the blade so that upon movement of the movable blade to an open switch position, the movable member is moved along with the blade to hold the blade and its contact in an open switch position. After the pressure responsive actuator returns to the normal position, a reset operation is accomplished by a pivoting reset driver which is



operated upon pushing a reset button to move the movable member against its biasing spring back to a position to allow the movable blade to move its contact to a switch closed position.

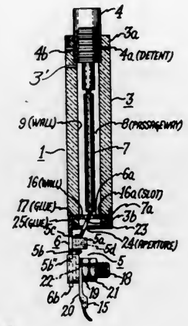
3,781,745
FUSED COUPLER ASSEMBLY
Ramanlal R. Vadnagara, Chicago, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.
Filed Sept. 10, 1969, Ser. No. 856,691
Int. Cl. H01h *85/02*
U.S. Cl. 337—199 **1 Claim**



A fused coupler assembly includes a submersible conductive housing used in underground distribution systems. The housing contains a dielectric filler in which a cylindrical resistor shield encompassing a fuse element is located. The cylindrical shield is formed of a tube coated with a resistance material so that a shield is formed of sufficiently low resistance to prevent corona from occurring between the tube and the fuse element. The coating shield also is of sufficiently high resistance to minimize line-to-ground leakage when the fuse element is blown during a fault condition.

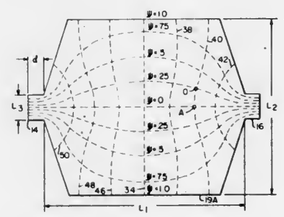
3,781,746
EXPULSION FUSE AND SUPPORT MEANS
Raymond Cuzzone, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.
Filed Aug. 4, 1972, Ser. No. 278,030
Int. Cl. H01h *85/02*
U.S. Cl. 337—204 **10 Claims**

An expulsion fuse that is adapted to be immersed in operating position in a fluid coolant of a transformer is provided with a support means to facilitate installation of the fuse in vibration-resistant relationship within the transformer. The support means includes a rigid angle support member having a coupling stud positioned on it for clamping a lead from the



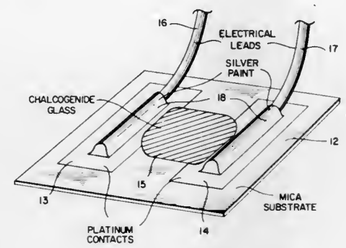
transformer primary winding in operating relationship to one terminal of the fuse. The fuse is also characterized by having a baffle means that restricts the flow of transformer coolant around the fusible link of the fuse when it is immersed in the coolant.

3,781,747
CURRENT LIMITING FUSE INCLUDING IMPROVED FUSE ELEMENT
Donald D. Blewitt, Pittsburgh, Pa., and David L. Ayers, West Lafayette, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 18, 1972, Ser. No. 254,598
Int. Cl. H01h *85/64*
U.S. Cl. 337—295 **5 Claims**



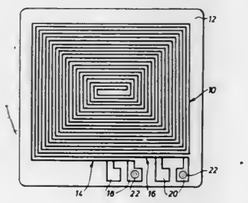
A current limiting fuse including an improved fuse element. The fuse element or link includes portions or regions of reduced cross-section which melt during overload to form a series of voltage arclets. The fusible material of the fuse element between notched regions of reduced cross-section is uniquely shaped to take advantage of electrical potential distribution within it, and the natural tendency of electrical current to flow from notch to notch in specified paths of least resistance. The fuse link has a predetermined geometric shape to accommodate the flow of current in an efficient manner and to eliminate those portions of the fuse link which conduct little or no electrical current during normal operation.

3,781,748
CHALCOGENIDE GLASS BOLOMETER
Stephen G. Bishop, Arlington, Va., and William J. Moore, University Park, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 28, 1971, Ser. No. 147,931
Int. Cl. H01c *7/08*
U.S. Cl. 338—15 **6 Claims**



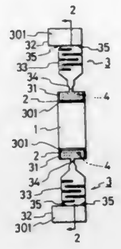
A chalcogenide glass bolometer for detection of electromagnetic radiation at wavelengths varying from infrared to microwave. The radiation absorbed by the glass increases its electrical conductivity, enabling measurement of the radiation. A method of fabricating the bolometer is also disclosed.

3,781,749
RESISTANCE THERMOMETER ELEMENT
Gerald Sidney Iles, and Gordon Leslie Selman, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England
Filed Nov. 13, 1972, Ser. No. 305,657
Claims priority, application Great Britain, Nov. 18, 1971, 53,655/71
Int. Cl. H01g *7/00*
U.S. Cl. 338—25 **26 Claims**



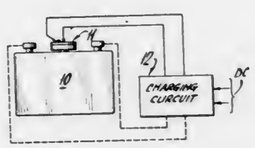
An electrically resistive element suitable for use as the temperature sensitive element of a resistance thermometer comprising a layer of vitreous material loaded with electrically conducting particles secured to an electrically non-conducting substrate. Preferably the particles are flakes or platelets of platinum. The element includes two tortiles or sinuous paths of the fused vitreous material in side by side relationship and interconnected at one end to form a non-inductive electrically conducting path and in the case of a multilayered structure, electrically interconnected layers of material are separated by intermediate layers of a dielectric material. A dispersion of the particles and powdered vitreous material in an organic medium is screen printed on the substrate and fired to fuse the vitreous material. The two paths may be printed on the substrate or may be cut by laser beam from a single layer printed on the substrate or intermediate layer. The substrate may form part of the surface of a body whose temperature is to be measured, may be a wafer of alumina, or in the case of a monolithic multilayered structure, a layer of the dielectric material from which the intermediate layers are formed.

3,781,750
GALVANO-MAGNETRO EFFECT DEVICE
Hisashi Takiguchi, Tokyo, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Mar. 22, 1973, Ser. No. 343,954
Int. Cl. H01c 7/16
U.S. Cl. 338—32 R 9 Claims



A galvano-magnetro effect device in which the lead frames respectively comprised of a member part meandering alternately in opposite directions which is positioned between the coupling end to be connected to the electrode and the connecting end to be connected are connected to the electrodes of the semiconductor elements.

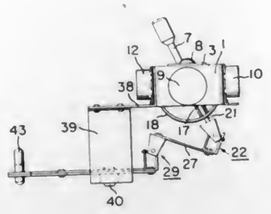
3,781,751
PRESSURE TRANSDUCER
Harold Sulger, Sr., East Northport, Long Island, N.Y., assignor to Dynamic Instrument Corp., Plainview, L.I., N.Y.
Filed May 18, 1972, Ser. No. 254,441
Int. Cl. H01c 13/00
U.S. Cl. 338—42 8 Claims



A battery pressure transducer for producing a change in resistance with changes in pressure which includes a diaphragm having one side subject to pressure and the other side carrying a conductive layer. An annular resistive element is placed in slightly spaced relationship to the conductive layer and has a center contact and an outer peripheral contact. As pressure deflects the diaphragm, the conductive layer shunts part of the resistance and, thus, decreases the resistance between the contacts by an amount proportional to the pressure.

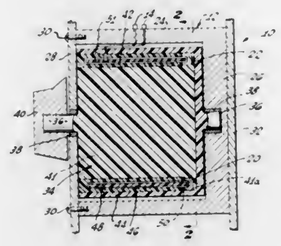
3,781,752
DEVICE FOR CONTROLLING SIMULTANEOUSLY A PLURALITY OF VARIABLE RESISTORS
Shunzo Oka, Hirakata-shi, Osaka, and Matsuo Nishioka, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan
Filed Sept. 15, 1972, Ser. No. 289,475
Claims priority, application Japan, Sept. 20, 1971, 46/85979; Oct. 12, 1971, 46/94278
Int. Cl. H01c 13/00
U.S. Cl. 338—128 4 Claims

A display device for displaying the interrelation among the controlled resistances of a plurality of variable resistors is provided for a device for controlling simultaneously a plurality of variable resistors by a single operating or control shaft. The



display device may clearly indicate the position of a point, for example, the lower end of the control shaft, which is displaced as the control shaft is shifted.

3,781,753
VARIABLE RESISTANCE CONTROL USING MERCURY CONTACT
James F. Lawrence, Jr., 13161 Barret Hill Cir., Santa Ana, Calif.
Filed Nov. 10, 1971, Ser. No. 197,414
Int. Cl. H01c 5/00
U.S. Cl. 338—151 11 Claims

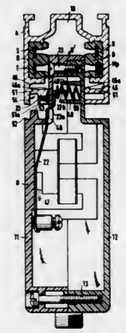


A variable electrical resistance device such as a potentiometer, rheostat or the like, containing spaced electrical resistive and conductive elements having terminals for connection to an external electrical circuit, and a contact of electrically conductive liquid, such as mercury, which spans the elements to provide a current path between the elements and is confined for relative movement along the elements to vary the electrical resistance between the terminals. In the disclosed embodiment, the resistive and conductive elements are carried by a rotor which is rotatable to effect movement of the elements past the mercury contact.

3,781,754
LIGHTING DEVICE
Heinz Seelbach, Kierspe, Germany, assignor to Firma Reininghaus & Co., Brockhauser Ebene, Ludenscheid, Germany
Filed Dec. 8, 1971, Ser. No. 205,967
Claims priority, application Germany, Dec. 8, 1970, P 20 60 262.4
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 4 Claims

A lighting device which comprises a carrier rail open on one side and to be secured to a securing face and including a con-

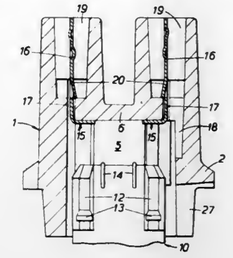
duit rail carrier. A connection box has a receiving channel. The carrier rail includes on both sides of the receiving channel holding tongues-receiving grooves as well as a plurality of electric conduit rails, each in a conduit rail carrier arranged in pairs in planes and mirror symmetrically to a longitudinal center plane extending from the insert side to the securing side of the carrier rail and disposed on top of each other, accessible from the inside, and forming a plurality of current circuits operating independently from each other. Three conduit rails constitute pole rails and one conduit rail constitutes a zero-conduit rail. The connection box is insertable with a set-off head part into the inner part of said carrier rail and carrying lighting members. The connection box is equipped with a plurality of spring tongues constituting holding- and contact-tongues disposed in planes on top of each other and by means of a switching member operable from the outside selectively into an engagement and contact position with a pole- and zero-conduit-rail and into an inoperative position, respectively, and with a grounding tongue cooperating with a special grounding rail. The carrier rail receives at its insert side of the connec-



tion-box within a side stay of the carrying rail the grounding rail projecting one-sided relative to the side-stay inwardly on parts of its cross-sectional width into the receiving channel of the connection box. A grounding contact on the side of the connection box cooperates with the grounding rail as a sliding contact. The sliding contact projects over parts of its total length on the side of the connection box pointing toward the grounding rail on the side of the carrier rail with a slide contact section laterally from the box, and biased in contact direction by a spring on the inside of the box outside of the sliding contact location. The receiving grooves on the side of the carrier rail for the holding tongues are formed with the formation of line-engagement faces for supporting the holding tongues as undercut and freely cut grooves, respectively. The carrier rail has on the insert side of the connection box, outside and on one side next to the receiving channel of the connection box a worked-in, continuously passing-through guide groove and accessible from the side of the carrier rail, and a guide ledge projection cooperates with the guide groove on the corresponding side of the connection box.

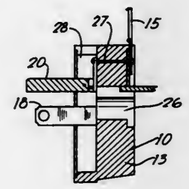
3,781,755
LAMP HOLDER
Sergio Pitacco, Turin, Italy, assignor to ITT Industries, Inc., New York, N.Y.
Filed July 19, 1972, Ser. No. 273,066
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 6 Claims

A lamp holder having a molded body of plastic material formed with a dead inner cavity having a shaped profile and suitable to fit with the profile of the glass base of the lamp. The cavity is provided on the bottom thereof with two openings for



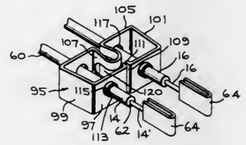
the passage of two contacts which are snap engaged with the body of the lamp holder, and a side slit is arranged to permit alternatingly a different type of contact acting as a ground.

3,781,756
CONSTRUCTION PLUG
Gus J. Kyranakis, Levittown, N.Y., assignor to Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Sept. 6, 1972, Ser. No. 286,736
Int. Cl. H01r 3/06
U.S. Cl. 339—14 RP 1 Claim



A male electrical plug for use in connecting the supply line of portable electrical tools and appliances to a female socket, said plug being equipped with a retractable ground prong which may be folded out of the way when the plug is mated to a female socket which does not have a female ground receptacle. The ground prong of the plug is mounted to a hinge by a rotatable pin, and is electrically connected to a short attachment wire so that in the retracted state, the ground connection of the line cord may be made by fastening said attachment wire to an external ground connection.

3,781,757
GROUNDING CLIP FOR PLUG-IN SURFACE HEATING UNIT
Emmett W. Barnes, Batavia, Ill., assignor to General Electric Company, Louisville, Ky.
Filed Dec. 4, 1972, Ser. No. 312,030
Int. Cl. H01r 15/06
U.S. Cl. 339—14 L 7 Claims



A plug-in electric surface heating unit for use in the cooktop of an electric range. The heating unit is a metal sheathed elec-

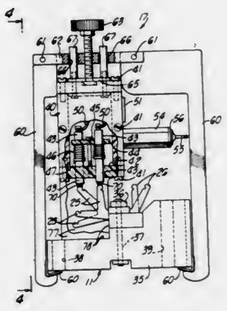
trical resistance heating element in spiral form with radial, outwardly directed terminal portions in close side-by-side relation. The invention relates to a four-sided grounding clip of spring material that is fastened to the sheath at the terminal portions of the heating element so as to make a reliable grounding connection with the grounding arms of a terminal block mounting bracket as well as permit relative movement between the terminal end portions due to thermal expansion and contraction.

3,781,758

GANG CONNECTOR AND PATCHING CABLE ASSEMBLY AND METHOD OF USING SAME

Karl R. Anderson, Pasadena, Calif., assignor to John T. Thompson, Los Angeles and George W. Gillemot, Santa Monica, Calif.

Filed Feb. 26, 1971, Ser. No. 175,281
Int. Cl. H01r *13/54*
U.S. Cl. 339—29 **4 Claims**



A gang connector and patching cable assembly and method for maintaining uninterrupted communication service between components of a central telephone office facility while certain permanent components therein are being serviced or replaced. The patching cable serves to bridge components and conductors undergoing repair, consolidation or replacement and includes flexible patching cabling equipped with detachably coupled gang connectors having provision for simultaneously connecting each end of a multiplicity of the patching cable conductors to individual terminals of remotely located terminal boards thereby providing temporary bypass connections in parallel with conductors of the permanent central station equipment while the latter are undergoing servicing. The gang connectors have various unique features including independently movable contactors provided with sets of sharp pointed pins fused to their outer ends.

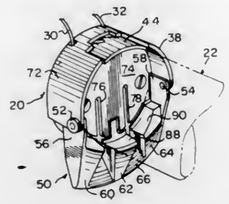
3,781,759

FLUORESCENT LAMP RECEPTACLE

Newton L. Shelly, Jr., Denton, Tex., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Aug. 14, 1972, Ser. No. 280,472
Int. Cl. H01r *13/62*
U.S. Cl. 339—54 **8 Claims**

A receptacle adapted to receive the end portions of fluorescent lamp units, and to support them in a mechanically as well as electrically snug relation in position of use. The unit includes a receptacle base portion, one or more slots disposed therein for receiving the pins extending axially from metal end cap portions of a conventional fluorescent lamp, resiliently positioned electrical terminals within the slots, means for positioning the end portion of the lamp against movement in all radial directions relative to the lamp axis, and axially movable locking means movable between at least one open position permitting movement of the lamp end cap portion into a desired position of registration within the receptacle, and at least one other position for partially surrounding the end portion of the lamp for locking the lamp against the positioning means. In use, the movable retainer is positioned axially beyond the end of a lamp end cap, and a lamp is inserted with the lamp pin aligned with the slot. The movable retainer is then urged axially inwardly with respect to the lamp to engage the end cap, to retain the lamp snugly in position of use. In preferred embodiments, the insertion of the lamp activates biasing means for biasing the locking means axially into the



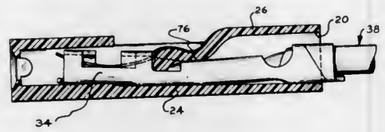
lamp-retaining position. Also, in a preferred embodiment, axial movement of the locking means in the direction axially away from the body of the lamp activates ejection means for positively urging the lamp in a radial direction with respect to the axis of the lamp outwardly of the receptacle. In use, the locking means, which snugly engages the end cap portion of the lamp may be held in position by a spring unit, by a detent associated with the receptacle or otherwise. Since the lamp is supported by the end cap, it is not adversely affected by vibration, particularly that present in buses, railborn vehicles, airplanes, and the like.

3,781,760

CONNECTOR BLOCK

Lloyd Mancini, and Howard T. Ysteboe, both of New Cumberland, Pa., assignors to E. I. du Pont De Nemours and Company, Wilmington, Del.

Filed Mar. 28, 1972, Ser. No. 238,889
Int. Cl. H01r *13/48*
U.S. Cl. 339—59 M **6 Claims**



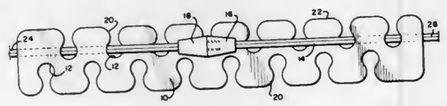
A terminal receiving snap latch type connector block having an improved flexible latch. Application of a force tending to pull the terminal from the block distorts the latch for improved terminal retention.

3,781,761

HARWOOD RETAINER

Channing E. Harwood, 145 Frederick St., Torrington, Conn.

Filed Mar. 27, 1972, Ser. No. 238,066
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 P **1 Claim**



A retainer for preventing accidental pulling apart of a plug and socket connecting the ends of electrical conductors com-

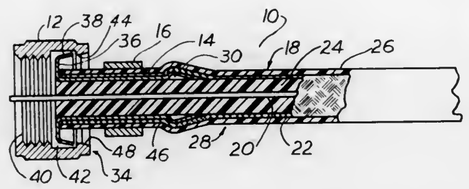
prising a strip of flexible material with spaced apertures and openings to the edge of the strip from each aperture.

3,781,762

CONNECTOR ASSEMBLY

Edward Clarke Quackenbush, Staatsburg, N.Y., assignor to Tidal Sales Corporation, Poughkeepsie, N.Y.

Filed June 26, 1972, Ser. No. 265,973
Int. Cl. H01r *13/30*
U.S. Cl. 339—89 C **1 Claim**



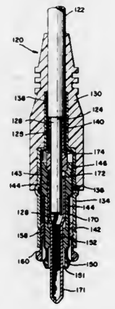
This disclosure relates to a connector assembly which utilizes a hollow coupling member or ring having an internally threaded portion at one end thereof and a cylindrical recess at the other end thereof which serves to hold one end of a tubular shaped member that is adapted to make connection to the outer conductor of a coaxial cable. The tubular shaped member not only functions to contact the outer conductor of a coaxial cable, but also serves to upset a portion of the outer conductor in order to grip the outer conductor and hold it securely connected to the coupling ring. Additionally, a ferrule is located about the dielectric casing and between the upset portion of the outer conductor and the coupling ring so as to more securely provide a firm gripping action between the tubular shaped member and the outer conductor of the coaxial cable.

3,781,763

PLUGBOARD SYSTEM

William Coover Feeser, New Cumberland; Cornelius William Bosland, Hershey; Joseph LaRue Lockard, Harrisburg, and Dale Brice Mummey, Camp Hill, all of Pa., assignors to AMP Domestic Inc., Harrisburg, Pa.

Continuation of Ser. No. 760,379, July 29, 1968, which is a division of Ser. No. 598,014, Nov. 30, 1966, Pat. No. 3,430,183. This application May 5, 1971, Ser. No. 140,411
Int. Cl. H01r *11/18, 13/54*
U.S. Cl. 339—91 P **12 Claims**



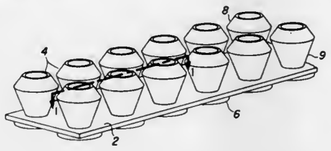
A plugboard system comprising opposed contact board means, one of which has receiver means for receiving and securing the other board means, moving it toward and then along the plane of the one board means for contact engagement. The board means are of apertured insulation, metal-coated to form shielding and grounding. One board means has a shielding grid which isolates the mated contact ends from each other and engages the coatings. Patchcord connectors form the contacts on one board means, and insulation-sleeve-mounted spring elements form the contacts in the other board means.

3,781,764

MOISTURE SEAL FOR ELECTRICAL CONNECTOR

Frederick W. Johnson, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Nov. 15, 1971, Ser. No. 198,920
Int. Cl. H01b *17/26;* **H01r** *7/02*
U.S. Cl. 339—94 **10 Claims**



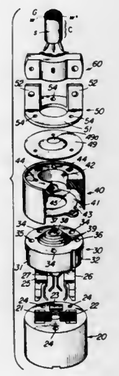
Disclosed is a printed circuit board interconnect system having moisture seal means for precluding the formation of a moisture film between electrical contacts. The seal means comprises a resilient seal strip having one or more integral hollow seals disposed on either side thereof, each hollow seal surrounding a male connecting pin of the system and being compressed between printed circuit boards that are electrically connected.

3,781,765

ELECTRICAL CONNECTORS WITH INTERNAL AND EXTERNAL STRAIN-RELIEF FOR CONDUCTOR WIRES

Harold E. Schleicher, West Hartford, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed Apr. 3, 1969, Ser. No. 813,216
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 R **3 Claims**



A dead-front connector has two means to grip the wires within the housing, plus a means to grip the whole cord outside the housing, and a seal to prevent bits of foreign matter from entering the housing. The outside means grips the cord as a whole and is made to conform to the shape of any standard size wire reducing to a minimum the crushing force and danger of short circuit. One internal gripping means is the connection between the conductor and its respective contact member. The other internal gripping means grips the insulation of each individual wire so that it is not possible to apply a

force to the terminal connection of any wire and contact by pulling from outside the housing. Pulling the wires out of engagement with their contact members with the attendant danger of causing a short circuit within the housing is thus prevented.

3,781,766

SHROUD FOR AN ELECTRICAL CONNECTOR BLOCK

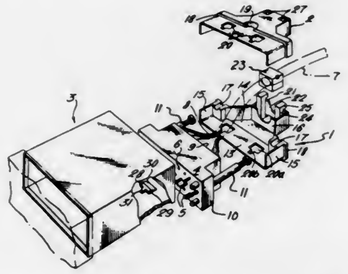
Vladimiro Teagno, and Luigi Campari, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 12, 1972, Ser. No. 252,807

Claims priority, application Italy, May 24, 1971, 24916 A/71

Int. Cl. H01r *13/58*

U.S. Cl. 339—107 **1 Claim**



A shroud for an electrical connector block comprising three elements of insulating material, two of the elements defining a generally hollow housing shell having a forward portion to receive an electrical connector block and a rearward cable clamping portion. Each of the two elements has its rearward portion latching means adapted to engage complementary latching means on the other element. The third element is hollow and has a rearward portion which receives the other two elements which define the hollow housing shell.

3,781,767

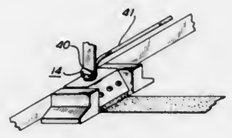
FOIL BLOCK DEVICE

Leo A. Guthart, Old Westbury, N.Y., assignor to Alarm Device Manufacturing Company, Syosset, L.I., N.Y.

Filed Dec. 28, 1970, Ser. No. 101,849

Int. Cl. H01r *11/26*

U.S. Cl. 339—125 R **4 Claims**



A foil block device, adapted to provide secure grip retention and protection of a foil strip in a terminal block, for interconnection with a security system.

3,781,768

LAMPHOLDER

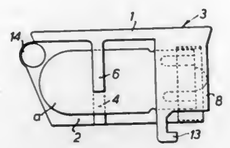
John Arthur Howe, Chilwell, England, assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 44,449, June 8, 1970. This application June 30, 1972, Ser. No. 267,763

Int. Cl. H01r *13/54*

U.S. Cl. 339—125 L **3 Claims**

A lampholder for capless or wedge base type lamps comprises a body of resilient or semi-resilient plastics shaped to provide a first recess for accommodating the glass envelope of a lamp and a second recess for accommodating the base



thereof, both said recesses opening on to one side of the holder to enable the lamp to be inserted by a lateral movement.

3,781,769

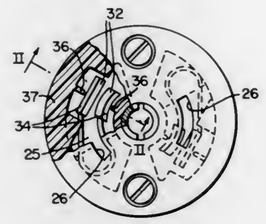
WIRING DEVICE SUCH AS FEMALE CONNECTOR WITH DEFORMABLE INSULATING HOUSING ELEMENT FOR MAINTAINING CONTACT ALIGNMENT

Roy A. Wiley, Huntington, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 15, 1972, Ser. No. 280,938

Int. Cl. H01r *13/50, 21/28*

U.S. Cl. 339—189 R **4 Claims**



In a wiring device of the female connector type, female contacts are provided in an interior chamber of an insulating housing for frictional engagement with an inserted blade of a male attachment plug; the housing chamber has fixed interior walls with at least one deformable projection extending therefrom for deformably bearing against the spring contact element when the latter is deflected by an inserted blade to maintain the alignment of the element in use.

3,781,770

CIRCUIT BOARD SOCKET

Lloyd Mancini, New Cumberland, Pa., assignor to E. I. du Pont De Nemours and Company, Wilmington, Del.

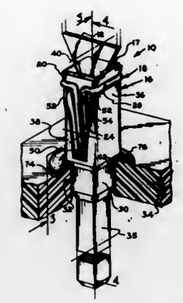
Filed Sept. 23, 1971, Ser. No. 182,953

Int. Cl. H01r *9/12, 11/22*

U.S. Cl. 339—259 R **29 Claims**

A circuit board disconnect socket having an elongate hollow body open at one end, a strap surrounding the open end and a pair of contact arms extending from the strap and into

the body. A reinforcing spring is wrapped around the strap and includes spring arms extending along the outside of the



contact arms. Insertion of a lead between the contact arms spreads the arms apart and stresses the spring.

3,781,771

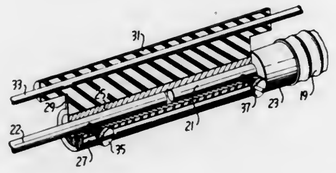
COAXIAL CABLE CONNECTOR

William L. Blake, Elkins Ave., P.O. Box 86, Reedsville, W. Va.

Filed Jan. 29, 1973, Ser. No. 327,854

Int. Cl. H02g *15/08*

U.S. Cl. 339—272 A **2 Claims**



A coaxial cable connector having a conductive sleeve for accepting the terminal ends of the center conductor of the cable and means for securing the conductors within the sleeve. A wire conductor is clamped between the terminal ends of the outer sheath of the cable. The sleeve and the wire conductor are encased in a dielectric material which maintains them in a spaced, substantially parallel relationship.

ERRATUM

For Class 339—37 see:
Patent No. 3,781,913

3,781,772

ULTRASONIC DETECTION APPARATUS

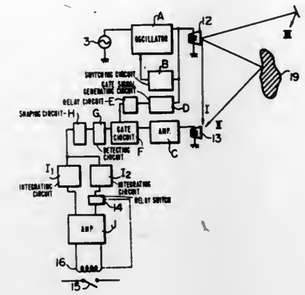
Hiromitsu Inoue, Kyoto; Shinsuke Okamoto, Nishinomiya; Hirokazu Mori, Osaka, and Hirosi Ohasi, Neyagawa, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 25, 1972, Ser. No. 229,372

Int. Cl. G01s *9/66*

U.S. Cl. 340—1 R **2 Claims**

An ultrasonic detection apparatus wherein a receiving transducer for receiving ultrasonic waves transmitted from a transmitting transducer is disposed relatively in proximity to the transmitting transducer. A gate circuit is provided between the receiving transducer and a relay circuit so that



only the wave reflected from an object to be detected and reached the receiving transducer will be selectively supplied to the relay circuit.

3,781,773

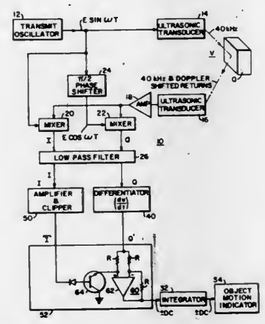
DIRECTION SENSITIVE DOPPLER PROCESSOR

Richard J. Ravas, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 1, 1972, Ser. No. 258,716

Int. Cl. G01s *9/66*; **G08b** *13/16*

U.S. Cl. 340—1 R **4 Claims**



The invention relates to an improvement in direction sensitive ultrasonic Doppler detecting devices wherein an ultrasonic transducer transmits a given freqency signal toward an object which in turn reflects the given signal and Doppler shifted signals based on the movement of the object. The reflected signals including the Doppler shifted signals are processed and evaluated to determine the characteristics of the object movement both as to direction and degree. The insertion of a differentiating circuit in the processing of the reflected signals minimizes false interpretation of the reflected signals caused by non-harmonic oscillatory movement of the object. Furthermore through the addition of a signal processing circuit utilizing a non-linear multiplier circuit for multiplying the instantaneous values of the components of the reflected signals in contrast to the linear multiplication of these signals, the loss of sensitivity of the Doppler detection device as a function of distance is represented as as in the case in the conventional coherent Doppler detection devices.

3,781,774

METHOD FOR DETERMINING THE DISTANCE TRAVELLED OVER BY VEHICLE WITH RESPECT TO A REFERENCE SURFACE, MAKING USE OF THE DOPPLER'S EFFECT AND DEVICE THEREFOR

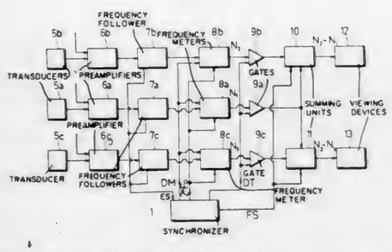
Robert Delignieres, Colombes, France, assignor to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil-Malmaison (Haute-de-Seine), France

Filed Aug. 4, 1971, Ser. No. 168,922

Claims priority, application France, Aug. 13, 1970, 7029970

Int. Cl. G01s 9/66

U.S. Cl. 340—3 D 22 Claims



The method according to this invention comprises transmitting from a ship, acoustic signals of a predetermined frequency along at least one inclined direction with respect to the water bottom surface, detecting the signals reflected from said surface at a receiving location, during steady intervals of time during which the transmission is interrupted, determining the difference between a counting time interval corresponding to a predetermined number of cycles of the transmitted signals and a counting time interval corresponding to the same number of cycles of the received signal, the mean recurrence period of the successive interruptions, calculated on a predetermined whole number of periods, lower than the total number of periods of a complete transmission stage, being maintained constant and consequently independent from the variations of the distance from the ship to the bottom surface, until the end of the transmission stage, and deducing therefrom the distance travelled over by the vehicle.

3,781,775

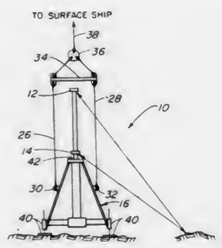
ROTATING STEREO SONAR MAPPING AND POSITIONING SYSTEM

Richard J. Malloy, Ojai, and Robert D. Hitchcock, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 1, 1972, Ser. No. 249,330

Int. Cl. G01s 9/66

U.S. Cl. 340—3 R 4 Claims



A stereo sonar system comprising a pair of pulsed sonar transducers mounted one above the other on a stationary bottom frame. The transducers are rotated as a unit but are spaced sufficiently to produce a three dimensional figure when stereo viewed.

3,781,776

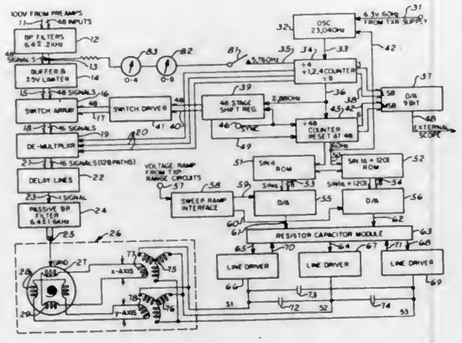
SOLID STATE HIGH SPEED SCANNING COMPENSATOR SWITCH FOR SONAR

Gerald D. Kuhn, Waldron; Kenneth A. Peterson; Eugene R. Roeschlein; Donald C. Weiss; Kenneth F. Weiss, and David L. Zeph, all of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 22, 1972, Ser. No. 255,827

Int. Cl. G01s 9/68, 3/80

U.S. Cl. 340—3 R 8 Claims



A solid state high speed scanning compensator switch having a clock frequency source controlling a multiplicity of semiconductor switches in a prescribed manner to scan the outputs of hydrophones of a sonar receiver system by selecting a group of 16 adjacent outputs and to switch same into beam-forming delay lines, then steering the received beam in a rapid manner and passing the summed analog signals through a bandpass filter and at the same time providing scan synchronizing three-phase signals for producing a spiral sweep to provide sonar range and direction of a target on a display in relation to the hydrophone receivers.

3,781,777

APPARATUS FOR PROVIDING AN INDICATION OF THE DEPTH OF OBJECTS IN WATER

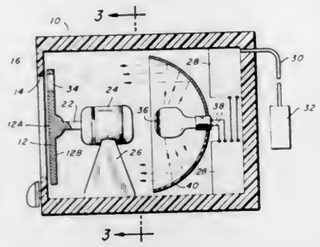
Darrell J. Lowrance, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Continuation of Ser. No. 137,421, April 26, 1971, abandoned.

This application Nov. 27, 1972, Ser. No. 309,685

Int. Cl. G01s 9/68, 9/70

U.S. Cl. 340—3 C 1 Claim



Apparatus for providing an indication of angular position in response to indicating signals including a disc rotated at a constant rate, the disc being opaque and having a light passing slot adjacent the periphery, a stationary circumferential scale positioned adjacent the periphery of the disc having indications thereon, and a light source positioned rearwardly of the disc and arranged to direct the light on the circumferential portion of the disc when energized by signals, a portion of the light passing through the slot in the disc.

3,781,778

MARINE STREAMER CABLE

Frederick C. Sawin, and William A. Whitfill, Jr., both of Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,330

Int. Cl. G01v 1/16

U.S. Cl. 340—7 R 12 Claims



In accordance with an illustrative embodiment of the present invention, a marine streamer cable of layered solid construction includes a cable core with a stress member and electrical conductors extending eccentrically within a tubular flotation body. Seismic transducer assemblies are provided at spaced points along the cable with each assembly including a rigid case construction that houses a disc-type hydrophone to the side of the core and within the circumferential outline of the flotation body.

3,781,779

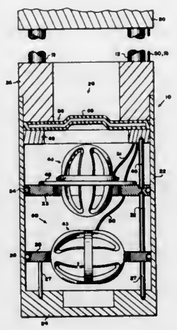
GAS IMPERMEABLE EXPANSION DIAPHRAGM

Charles V. Tallman, Rye Beach, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Dec. 10, 1971, Ser. No. 206,696

Int. Cl. H04b 13/00

U.S. Cl. 340—8 R 8 Claims



A hydrophone assembly for suspension below the surface of a body of water, the hydrophone assembly having a gas impervious diaphragm comprising a layer of elastomer material encapsulating a layer of metal for sealing a closed chamber which is filled with a gaseous evacuated liquid. The diaphragm compensates for changes in volume of the evacuated liquid which occurs with fluctuating temperatures and prevents any penetration of ambient air gases.

3,781,780

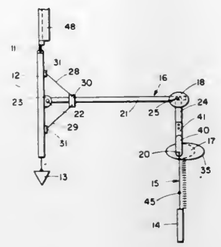
NEUTRALLY BUOYANT INSTRUMENT SUSPENSION

Willard Dow, Falmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 17, 1972, Ser. No. 272,707

Int. Cl. H04b 13/00

U.S. Cl. 340—8 S 12 Claims



A hydrophone stabilizing device in which the hydrophone is maintained in neutral buoyancy and in a stabilized attitude during low speed tow and while tethered is provided. The hydrophone is suspended about the center of buoyancy of a major flotation member and is maintained in a stabilized attitude by the linkage of supporting arms which are selectively pivotable in the plane of the tow line. A smaller float is positioned at the intersection of the immediate vertical supporting arm and an intermediate arm or boom connecting the supporting arm to a vertical strut to assure that the point of intersection of the arms is always above the hydrophone.

3,781,781

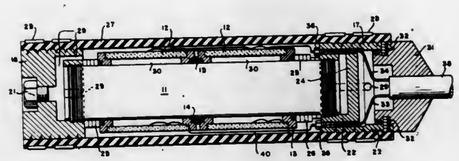
PIEZOELECTRIC TRANSDUCER

Ivor D. Groves, Jr., Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 21, 1972, Ser. No. 273,911

Int. Cl. H04b 13/00

U.S. Cl. 340—9 5 Claims

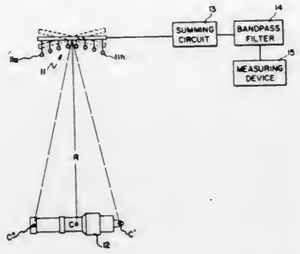


This disclosure relates to the novel construction of a single- or a multiple-element underwater sound transducer comprising one or more cylindrical, capped, piezoelectric ceramic elements (barium titanate, lead zirconate-titanate, or other material of similar properties) in a linear configuration. The structure results in acoustically decoupling each element from adjacent elements and from all of the supporting structure while retaining acoustic stability of the transducer over the broadest possible frequency range and with wide variation in temperature and hydrostatic pressure.

3,781,782
DIRECTIVE ACOUSTIC ARRAY FOR NOISE SOURCE LOCALIZATION

Paul F. Scott, Schenectady, N.Y.; Kenneth P. Radecki, Cincinnati, Ohio, and Robert B. Tatge, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,445
Int. Cl. G01s *3/80*
U.S. Cl. 340—16 R **18 Claims**

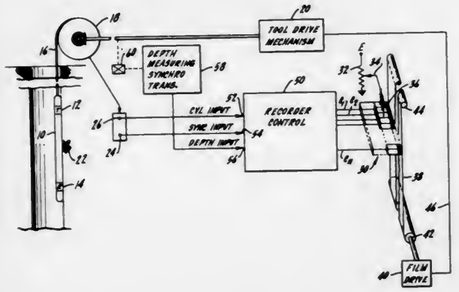


A highly directive, curved broadside array and method for its use to measure noise originating in a localized region of a complex extended noise source such as a jet engine. The array is mounted for scanning at a predetermined range distant from the source, and comprises a single row of microphones with a curvature conforming to the wavefronts of the spherical sound waves in the far field. The received signals are preferably summed, with shading if desired for increased side lobe suppresion, and bandpass filtered to extract broadband noise and pure tones. A technique for minimizing the number of microphones is given.

3,781,783
BOREHOLE LOGGING SYSTEM WITH IMPROVED DISPLAY AND RECORDING APPARATUS

Robert L. Tucker, Tulsa, Okla., assignor to Seismograph Service Corporation, Tulsa, Okla.

Filed Apr. 18, 1972, Ser. No. 245,110
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 DC **12 Claims**

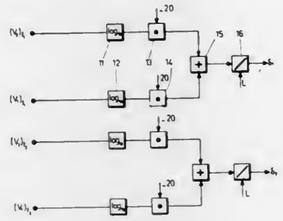


Improved borehole logging apparatus for use with a borehole tool obtaining a transmitter for periodically generating an acoustic signal at varying depths within a borehole and a receiver spaced from said transmitter for receiving the acoustic energy resulting from the generator acoustic signal. Signals respectively representing the acoustic energy generated by the transmitter, the acoustic energy detected by the receiver and the depth of the downhole tool are transmitted to an improved indicating and recording device which includes a series of light sources closely spaced in a linear array and sequentially illuminated by the received signals during the interval between successive transmitted signals so as to impress a linear trace across a recording medium which provides first and second dimensions of information corresponding respectively to the magnitude of the received acoustic energy and the arrival time of the acoustic energy with respect to the time of transmission of the corresponding acoustic signal. A third dimension of information results from the provision of means for advancing the recording medium perpendicular to the linear light source array as the depth of the downhole tool changes. A digital logic circuit controls the sequencing of the light sources and provides for the impression of vertical timing lines and horizontal depth lines on the medium by selective control of the signals applied to the respective light sources during each illumination sequence.

3,781,784
METHOD AND DEVICES FOR DETERMINING CHARACTERISTICS OF GEOLOGICAL FORMATIONS BY TRANSMISSION OF ACOUSTIC SIGNALS

Robert Desbrandes, Sevres, France, assignor to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil-Malmaison, France

Filed July 5, 1972, Ser. No. 269,051
Int. Cl. G01v *1/40*
U.S. Cl. 340—15.5 AC **7 Claims**



A method wherein the attenuation of an acoustic wave between two receivers is expressed in the form

$$\delta = \delta_o + Af^{1/3} + Bf + Cf^2 + N_1 f^{\beta_1} + N_2 f^{\beta_2} + \ldots + N_i f^{\beta_i + 2}$$

and wherein there is determined at least one of the coefficients δ_o (geometrical attenuation), A (attenuation due to the movements of the fluids through the pores of the geological formations), B (attenuation due to the friction between solids), C (attenuation due to the friction between fluids), N_1, $N_2 \ldots N_i$ (attenuations which are functions of the frequency of the transmitted acoustic signals).

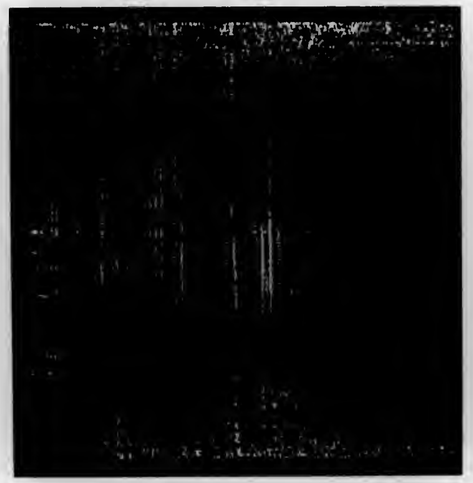
This determination is effected by measuring different values of δ, corresponding to the transmission of different acoustic signals having different frequencies, the number of measurements performed at each level in the borehole being at least equal to the number of the above-defined coefficients to be determined.

3,781,785
COLOR SONAGRAMS AND METHODS FOR THEIR PRODUCTION

Alfred H. Balch, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jan. 26, 1970, Ser. No. 5,830
Int. Cl. G01v *1/34*
U.S. Cl. 340—15.5 DS **17 Claims**

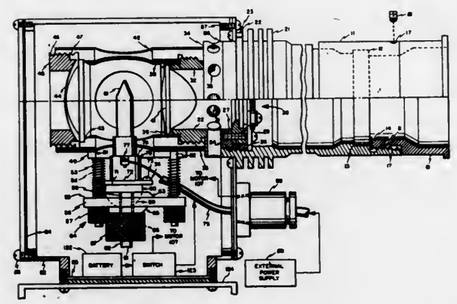
Seismographic signals are separated by filters into their low-, medium-, and high-frequency component signals and the envelope of each is generated and displayed in a different color, e.g., red, green, and blue, respectively. The displays are superimposed, and combined with the seismic trace so as to show both frequency content and time varying amplitude simultaneously.



3,781,786
CODED TRACK MARKER LIGHT

Herbert Larrimore, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 5, 1972, Ser. No. 286,375
Int. Cl. G08g *3/00*
U.S. Cl. 340—2 **15 Claims**

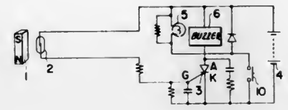


A track marker light is disclosed as having a housing and barrel containing a light source, an optical system for projecting the radiant energy from said light source as a beam along a predetermined course to be traversed by a ship. A unique relatively rotating reticle and optical filter system is mounted in front of said light source and within said optical system to encodingly turn on and off the light beam being projected from said barrel, so as to enable a navigator having decoding knowledge thereof to navigate said ship along a fine line transition zone at the center of said radiant energy beam.

3,781,787
TIRE PRESSURE DETECTING APPARATUS

Uichiro Suglyama, 21-10, Zenpukuji-1-chome, Suginami-ku, Tokyo, Japan

Filed June 13, 1972, Ser. No. 262,260
Claims priority, application Japan, June 17, 1971, 46/43587
Int. Cl. B60c *23/02*
U.S. Cl. 340—58 **10 Claims**

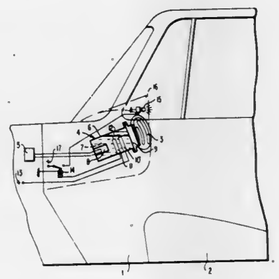


The detecting apparatus includes a rotatable bar-type permanent magnet mechanically independent of, but operatively associated with, a magnet position sensing member such as a reed switch or a coil wound on a magnetic core. When the magnet has one predetermined position, the position sensing device gates a thyristor to trigger an alarm which may be an audio alarm, a visual alarm, or both. The magnet is secured to the outer end of a shaft mounted in a casing which, in turn, is mounted through a wheel rim, and the inner portion of the shaft has a latching configuration. An externally accessible flexible shaft may be manually pressed to swing the magnet to a position in which it does not operate the magnetic sensing device and, in this position, the latching means on the shaft is engaged by one end of a spring biased rod. The other end of the spring biased rod is associated with a diaphragm subjected to the pressure of the air within the tire and the wheel rim so that, when the air pressure drops, the spring biased rod is retracted to release the shaft. A spring then rotates the shaft to swing the magnet into a position in which it is operative on the reed switch or the winding wound on the magnetic core. The flexible shaft for setting the magnet to the latching position may be operated by air pressure responsive to inflation of the tire.

3,781,788
VEHICLE LIQUID LEVEL MONITOR FOR PASSENGER PROTECTION INSTALLATIONS

Gerhard Schiesterl, Stuttgart, and Hans-Ulrich Kuhn, Hohenacker, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Mar. 24, 1972, Ser. No. 237,720
Claims priority, application Germany, Mar. 25, 1971, P 21 14 535.7
Int. Cl. B60r *21/00*
U.S. Cl. 340—59 **16 Claims**



A passenger protection installation for vehicles, especially for motor vehicles, which includes at least one air bag that is adapted to be inflated when the vehicle exceeds a predeter-

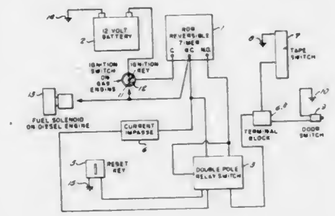
mined deceleration value, by means of a pressure gas that is developed from a liquefied gas within a pressure gas producer; the pressure gas producer includes a tank for the liquefied gas whereby at least one electrode is provided in the tank which, in relation to a predetermined minimum level of the liquefied gas in the tank, is electrically conductive with respect to the conductive liquefied gas only above this level and at least in its area directly adjacent thereto; when the tank is filled above its minimum level, the electrode is conductively connected by way of the liquefied gas with a connecting element, such as a second electrode, which in turn is connected with a shifting element that closes a further circuit containing an indicating device and/or a control device when the first circuit is interrupted.

3,781,789

ANTI-HIJACKING AND THEFT CONTROL SYSTEMS FOR MOTOR VEHICLES

Vincent J. Caleskie, Duxbury, Mass.; Paul T. Hughes, Dallas, Tex., and Robert Wayne Johnson, Minneapolis, Minn., assignors to Protection Devices, Inc., Dallas, Tex.

Filed July 7, 1972, Ser. No. 269,519
Int. Cl. B60r *25/04*
U.S. Cl. 340—64 **10 Claims**



An anti-hijacking and theft control system for use on motor vehicles including both gasoline engine and diesel engine types. A manually set non-reversible timer when set acts through a relay to disconnect the ignition or fuel solenoid when either a running board tape switch, a door switch, or other suitable switch are activated, and the motor vehicle will not run until the timer has completed its cycle. When the timer has completed its cycle, the motor vehicle returns to normal operation, and the system is inoperative. The system remains inoperative unless a reset is activated or the ignition key is turned off.

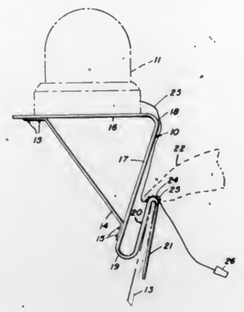
3,781,790

SIGNAL LIGHT FOR EMERGENCY VEHICLE

Peter G. Dawson, 22 Lakeview Ave., Lakewood, N.Y.

Filed Jan. 28, 1972, Ser. No. 221,512
Int. Cl. B60q *1/52*
U.S. Cl. 340—97 **1 Claim**

A signal light for an emergency vehicle. The light is supported on a horizontal part of a bracket which clamps onto the window of the vehicle. The bracket is made of a flat piece of resilient material, such as steel or relatively rigid plastic. It has a horizontal platform that supports the light and the material from the platform is bent downwardly and then bent back on itself upwardly then downwardly forming a space to receive the auto glass. A brace supports the platform to the vertically extending part of the bracket. Thus the bracket can be slipped over the window glass of an automobile when the window is



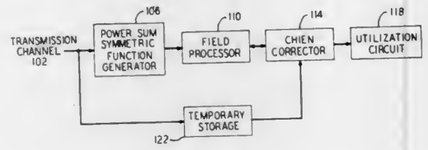
lowered. The window can then be raised and the bracket will be held snugly against the window and the window frame.

3,781,791

METHOD AND APPARATUS FOR DECODING BCH CODES

Daniel David Sullivan, Howell Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 13, 1971, Ser. No. 206,997
Int. Cl. H04l *1/10*; **H03k** *13/34*; **G08c** *25/04*
U.S. Cl. 340—146.1 AL **5 Claims**



Apparatus is disclosed for performing Berlekamp's algorithm to effect the decoding of binary BCH codes. In particular, in accordance with the present invention, Berlekamp's algorithm is restated such that two variables are advantageously combined and a simplified circuit disclosed for performing the iterations specified by the restated algorithm.

3,781,792

ERROR DETECTION IN COMMUNICATION SYSTEM BY REPETITION OF DATA

Michael S. Birkin, Derby, England, assignor to British Railways Board, London, England

Filed Jan. 3, 1972, Ser. No. 214,889
Int. Cl. G06f *11/00*; **G08c** *25/00*
U.S. Cl. 340—146.1 BA **6 Claims**

This invention relates to a communication system in which information is transmitted in the form of a continuously repeated digital sequence referred to as a 'message.' Each message is initially entered into a first register including a shift register whose outputs are energized in accordance with the digital sequence in the message, and each connected to one input of a bistable device. On reception of a second message in the sequence, the first message is passed to a second register, after an appropriate time delay, and the corresponding outputs of the second register are each connected to the second input of the corresponding bistable devices. Only if each message in the sequence is identical and both registers are

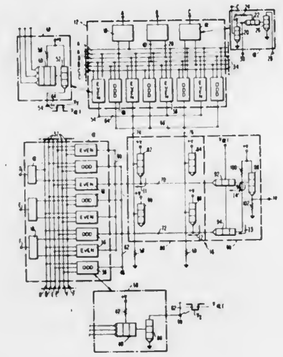
operating correctly will the bistables receive input pulses from each of the registers alternately to give what is effectively an alternating voltage output.

3,781,793

MONOLITHIC ARRAY ERROR DETECTION SYSTEM

Robert A. Henle, Port Chester; Irving T. Ho, Poughkeepsie; Teh-Sen Jen, and Gerald A. Maley, both of Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 101,629, Dec. 28, 1970, abandoned. This application Apr. 10, 1972, Ser. No. 242,318
Int. Cl. G06f *11/10*; **H03k** *13/34*
U.S. Cl. 340—146.1 AG **10 Claims**



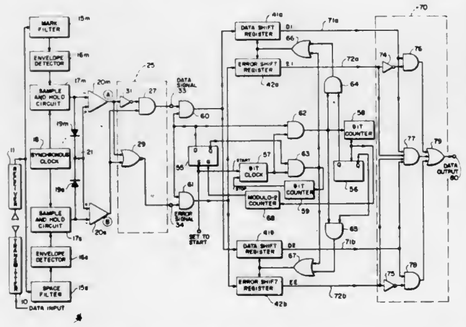
An error detection system of n inputs is adaptable for fabrication in large scale integrated circuit form. An integrated circuit logic array provides a parity check in response to digital signals received via X and Y decoders. Reduction in the number of array cells and the X and Y driving decoder circuits is obtained by interconnecting even parity subgroups and odd parity subgroups of lines from the X and Y decoders to provide even master parity lines and odd master parity lines. A logic array having less than 2^n operative cells compares the signals on the master lines and generates an error parity signal.

3,781,794

DATA DIVERSITY COMBINING TECHNIQUE

Derek S. Morris, Allenhurst, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 18, 1972, Ser. No. 245,056
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 R **8 Claims**



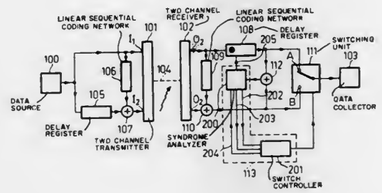
A data diversity combining technique for a system for data transmission of blocks of data each made up of a combination of M distinct and mutually exclusive types of signal elements occurring at a fixed rate, characterized in that an error indication signal is produced during any data signaling element interval during which the detection circuitry is incapable owing to noise, fading or other signal perturbation, to determine which of the M types of signal elements is present during the signaling element interval. The same data block is transmitted two or more times with each transmitted data block being stored separately, and the signaling elements and accompanying error signals from the various data blocks is combined in a logic circuit to form a new data block consisting of selected signaling elements. Each element is selected from those received during each transmission as the ones with no indicated error; if all have indicated errors an arbitrary choice is made so that any one of the M types of signal elements is selected whenever error signals are associated with all blocks of data.

3,781,795

ERROR-CORRECTING DATA TRANSMISSION SYSTEM

Leo Eduard Zegers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1972, Ser. No. 253,429
Claims priority, application Netherlands, May 18, 1971, 7106776
Int. Cl. G06f *11/08*
U.S. Cl. 340—146.1 BE **3 Claims**



An error-correcting data transmission system in which two versions of the same data are transmitted from a transmitter station to a receiver station via two channels having a mutual time difference, and in which a coded version of the non-delayed data is added to the delayed data before transmission as well as after reception. At the receiver side a syndrome signal is calculated by adding, after a corresponding delay, the non-delayed data to the delayed data. The syndrome signal is applied to a syndrome analyzer which makes a distinction between simple error patterns in the first channel, simple error patterns in the second channel, and error bursts. An error correction circuit is provided for correcting simple error patterns in the first channel. Error bursts are corrected by connecting the data collector alternately to the first and the second channel.

3,781,796

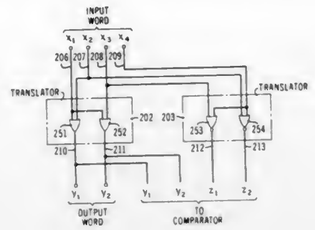
ERROR DETECTING TRANSLATOR

Nicholas Kimbrough Smith, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 16, 1972, Ser. No. 297,670
Int. Cl. G06f *11/00*; **H03k** *13/32*
U.S. Cl. 340—146.1 AB **3 Claims**

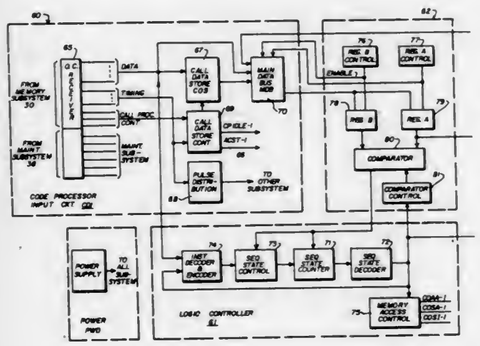
A signal translation circuit arrangement comprises two translators that operate according to different rules of action. The translators respond to each valid input signal representation by forming identical corresponding output signal

representations and the translators respond to each invalid input signal representation by forming nonidentical output



signal representations. Invalid input signal representations and circuit malfunctions are detected by comparing the output signals generated by the translators.

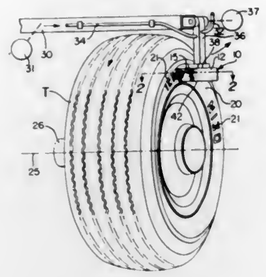
3,781,797
CODE PROCESSOR OUTPUT BUFFER VERIFY CHECK
William Jinbo, Skokie, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Jan. 2, 1973, Ser. No. 320,360
Int. Cl. G06f *11/00*; **G08c** *25/00*
U.S. Cl. 340—146.1 R **4 Claims**



An arrangement for verifying the content of an output buffer in a system including a first register which, during an initial memory word search, is used to compare with a second register to find a proper translation memory word. During the verify mode, the first register, via a verify bus, takes data loaded to the output buffer and compares the content with the data in the second register.

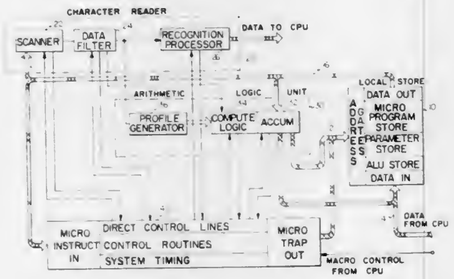
3,781,798
MECHANICAL READING OF TIRE IDENTIFICATION SYMBOLS
William L. Hinks, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 20, 1971, Ser. No. 209,610
Int. Cl. G06k *7/04*
U.S. Cl. 340—146.3 R **11 Claims**

Method and apparatus for mechanically reading alpha numeric symbols in the identification code of a pneumatic tire. The apparatus includes a plurality of closely spaced individually movable fingers urged by air pressure toward the surface of a tire on which such symbols are placed. Upon relative movement between the tire surface and the fingers, the individual fingers are deflected by the local topography of the symbols. The deflections are transduced by linear differential transformers connected individually to the fingers and produce deviation signals which can be communicated to conventional character recognition equipment for indication, display, or recording.



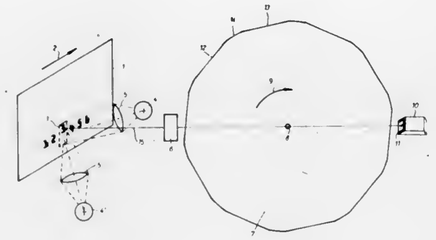
The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawing and the following detailed description.

3,781,799
CONTROL SYSTEM EMPLOYING MICROPROGRAM DISCRETE LOGIC CONTROL ROUTINES
Thomas Scott Robinson, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 3, 1972, Ser. No. 215,046
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 MA **9 Claims**



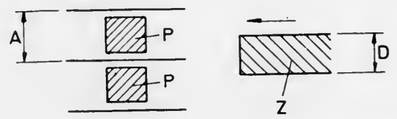
An improved control system including discrete logic control routines for high speed simultaneous control of many sequencing gates. The discrete logic control routines are sequentially selected by micro-orders from microporgrams. Each microprogram contains a sequence of microinstructions to select discrete logic control routines in a most efficient sequence in order to perform a different operation such as reading an A font character or reading a hand printer character. The selection between different microprograms is accomplished by macroinstructions from a controlling computer.

3,781,800
DEVICE FOR CHARACTER RECOGNITION
Bernhard Cramer, Pforzheim; Herbert Domig, Niefern; Theodor Von Keller, Rutesheim, and Rudolf Schmeykal, Pforzheim, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed June 20, 1972, Ser. No. 264,667
Claims priority, application Germany, July 19, 1971, P 21 36 044.1
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 F **3 Claims**



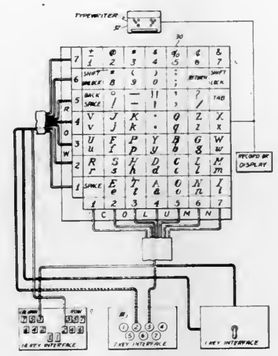
A transparent polygonal disk with parallel side surfaces has an axis of rotation which is parallel to the record medium. The recognition logic is provided by glass fibers which are positioned on the side of the disk from which the light emerges. Each character element of the image contains a plurality of fibers.

3,781,801
PROCESS FOR OPTICAL RECOGNITION OF CHARACTERS
Max Anderegg, Egg, Switzerland, assignor to Turlabor AG., Zumikon, Switzerland
Filed Nov. 10, 1971, Ser. No. 197,333
Claims priority, application Switzerland, Nov. 13, 1970, 16832/70
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 MA **1 Claim**



A character is optically scanned by being moved in a direction perpendicular to an alignment of photosensitive elements such as photodiodes. The photodiodes, to which sampling pulses are applied produce successive scanning pulses so that the character can be considered as divided into a matrix grid. The information within the matrix grid is grouped into several displaced grids, each displaced grid representing information produced at corresponding offset locations in a cell of the original grid. The information of each of the displaced grids is separately compared bit by bit with reference characters to ascertain conformity to the greatest degree to establish identity of the character which has been scanned.

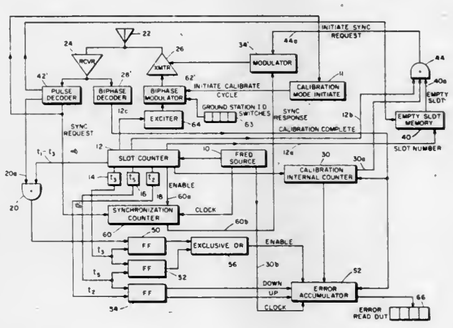
3,781,802
METHOD OF COMMUNICATION AND/OR TESTING OF THE HANDICAPPED
Haig Kafafian, 4201 Cathedral Ave., N.W., Washington, D.C.
Filed Mar. 27, 1972, Ser. No. 238,319
Int. Cl. B41j *5/10*
U.S. Cl. 340—147 R **16 Claims**



Three different classes of interface means are connectable to a dual-input matrix or converter, which in turn will operate a device for purposes of communication and/or indicate student capabilities.

A unique combination of designators is established for every function in a multiplicity of functions. A device is provided to print, display or perform the function. A matrix or other means transmits signals to the printing or displaying device commensurate with the unique combination of designators selected. Three classes of interfaces are selectively connected to the matrix, one having two sets of input switching means of seven keys each, another having one set of seven keys, and a third having a single input transducer. By use of the same unique designators with each class of interface, an individual will be able to print or display the very same function, regardless of the class of interface used.

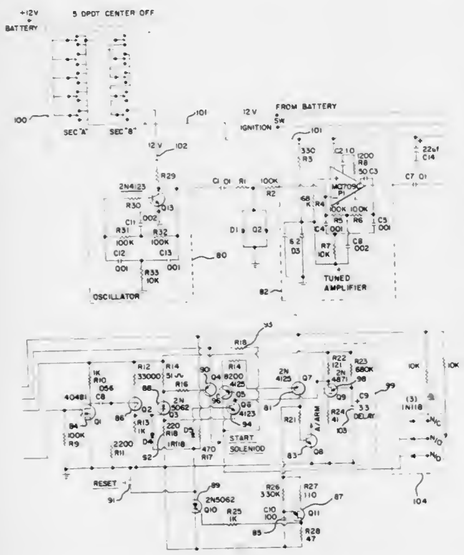
3,781,803
COLLISION AVOIDANCE SYSTEM GROUND STATION SYNCHRONIZATION
Wayne G. Shear; Brendan J. Spratt, both of Pompano Beach, and Benton J. McClure, Lighthouse Point, all of Fla., assignors to The Bendix Corporation, Southfield, Mich.
Filed Apr. 10, 1972, Ser. No. 242,631
Int. Cl. H04l *7/08*
U.S. Cl. 340—147 SY **4 Claims**



A collision avoidance system ground station has its clock phase synchronized with a master clock through the use of a

line-of-sight radio link. Multiple two-way synchronization rangings are exchanged between the ground station and the master clock. A digital counter at the ground station obtains the average deviation of the ground station clock with respect to the master clock and applies this average deviation to calibrate or synchronize the ground station clock with the master clock. Subsequently, further multiple two-way synchronization rangings are exchanged between the ground station clock and the master clock. A digital counter at the master clock now obtains the average deviation of the master clock with respect to the ground station clock as a check of the validity of the ground station clock calibration.

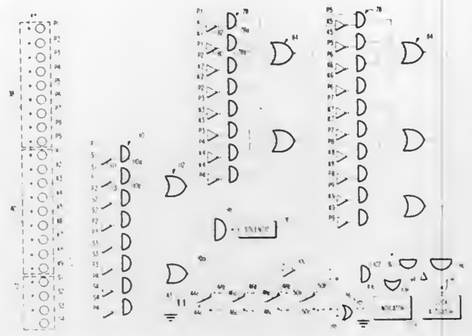
3,781,804
ALARM SYSTEM
Milton Ronald Lederer, Jr., P.O. Box 63, Lititz, Pa.
Continuation-in-part of Ser. No. 122,614, March 1, 1971, abandoned. This application June 5, 1972, Ser. No. 259,655
Int. Cl. G05b *1/00*; **H01h** *47/00*
U.S. Cl. 340—147 MD **10 Claims**



The disclosure relates to an alarm system wherein a key operated settable switch bank is provided as a part of a circuit which includes a circuit capable of operating in two conditions, one condition indicating that all of a plurality of switches have been properly positioned, the other condition indicating that all of the switches have not been properly positioned. Operation of the key closes a switch which provides an output after a predetermined time delay. If the switches are all properly positioned during the delay period, a power output is provided. If the switches are not all properly set during the predetermined time delay period, an alarm signal is provided.

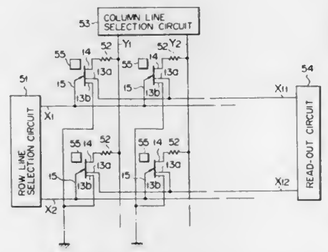
3,781,805
KEY CARD OPERATED SECURITY AND ACCOUNTABILITY SYSTEM
Charles R. O'Neal, Jr., 10043 52nd St., Tampa, Fla.
Filed Nov. 12, 1971, Ser. No. 198,333
Int. Cl. G06k *7/06*; **H04q** *9/00*
U.S. Cl. 340—149 R **11 Claims**

A logic controlled security and accountability system. An area to be secured is locked by an electrically actuated lock. A coded program card is inserted into the lock control apparatus and programs it to respond only to a predetermined code. When an authorized person desires access, he inserts into the lock control apparatus a key card coded with that predetermined code to cause an actuating signal to be applied to the lock. The program and key cards can be made of an inexpensive material and coded individually for each successive guest,



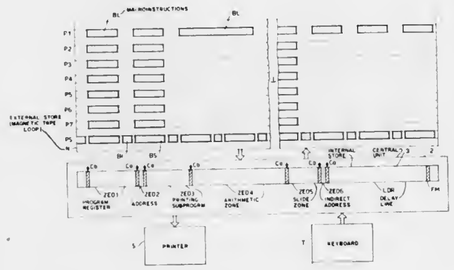
and so if the system is installed in a hotel, for example, no loss is experienced and security is not jeopardized should a guest fail to return his key card when he checks out. Additionally, in a hotel or similar facility utilizing the system in conjunction with a computerized billing system, once a guest has inserted his program card into the lock control apparatus associated with his room, his key card can be used in shops within the hotel to charge purchases to the account of his room.

3,781,806
SEMICONDUCTOR SWITCHING ELEMENT AND A SEMICONDUCTOR SWITCHING INVOLVING THE SAME
Yoshihiko Mizushima, and Isoneta Sudo, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Division of Ser. No. 885,388, Dec. 15, 1969, Pat. No. 3,657,616. This application Jan. 24, 1972, Ser. No. 220,534
Int. Cl. H01j *39/12*; **H01l** *11/14*; **H04q** *9/00*
U.S. Cl. 340—166 R **13 Claims**



A semiconductor switching element and a semiconductor switching device involving the same which comprise at least one collector region diffused in a semiconductor substrate from its surface, containing a high concentration of impurities having the same type of conductivity as said substrate and displaying a higher degree of said conductivity than said substrate and formed into a fully narrow area, a base region diffused at a space of approximately 50 microns max. from said collector region, as measured from the same surface of said semiconductor substrate as that on which there is formed said collector region, in a manner to make the edge of said base region facing said collector region sufficiently longer than that of said collector region and containing a high concentration of impurities having the same type of conductivity as said semiconductor substrate and displaying a higher degree of said conductivity than said semiconductor substrate and at least one emitter region diffused from the same surface of said semiconductor substrate as that through which the aforesaid two regions are diffused and having an opposite type of conductivity to said semiconductor substrate.

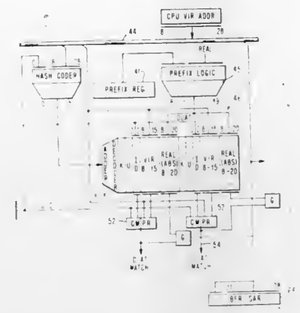
3,781,807
STORED PROGRAM ELECTRONIC COMPUTER USING MACROINSTRUCTIONS
Fabrizio Saltini, Modena, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy
Filed Dec. 31, 1969, Ser. No. 889,570
Claims priority, application Italy, Jan. 20, 1969, 50206 A/69
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 **2 Claims**



A computer for executing a program made up of a series of macroinstructions each including a plurality of instructions grouped in a fixed order and haVing a serial operational memory the computer, comprising means for interpreting the instructions of a macroinstruction stored in a predetermined portion of the operational memory. Furthermore the computer comprises means responsive to the interpretatation by said interpreting means of a predetermined instruction in the macroinstruction stored in said predetermined portion of the operational memory for causing the interpreting means to commence interpreting the information stored in a selected portion of said memory as a series of macroinstructions. Additional means are connected to the operational memory for executing the series of macro-instructions serially in response to the determined instruction.

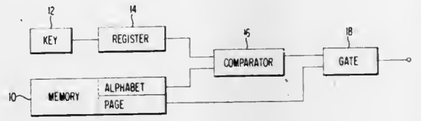
3,781,808
VIRTUAL MEMORY SYSTEM
Thomas P. Ahearn, Poughkeepsie; Robert S. Capowski, Verbank; Neal T. Christensen, Poughkeepsie; Patrick M. Gannon, Poughkeepsie; Arlin E. Lee, Poughkeepsie, and John S. Liptay, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 17, 1972, Ser. No. 298,190
Int. Cl. G06f *13/00*; **G11c** *9/00*
U.S. Cl. 340—172.5 **4 Claims**

This specification describes a virtual memory system in which a set of conversion tables is used to translate an arbitrarily assigned programming designation called a virtual address into an actual main memory location called a real address. To avoid the necessity of translating the same addresses over and over again, a table called the Directory Look Aside Table (DLAT) retains current virtual to real address translations for use where particular virtual addresses are requested more than once. Each translation retained by the DLAT is identified by an identifier (ID) that signifies the set of tables used in that translation. This identifier is compared with an identifier generated for the currently requested virtual address. If these identifiers match and the virtual address



retained in the DLAT matches the currently requested virtual address, the translation stored in the DLAT may be used. If the identifiers or virtual address don't match, a new translation must be performed using the set of conversion tables associated with the currently requested address.

3,781,809
RETRIEVAL METHOD IN READING DICTIONARIES
Makoto Murakoshi; Shingo Ooue; Hiroyuki Ueda; Masakazu Hashiue, and Hirotoshi Endo, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 26, 1970, Ser. No. 66,952
Claims priority, application Japan, Aug. 27, 1969, 44/67796
Int. Cl. G06f *15/02*, *15/40*
U.S. Cl. 340—172.5 **2 Claims**

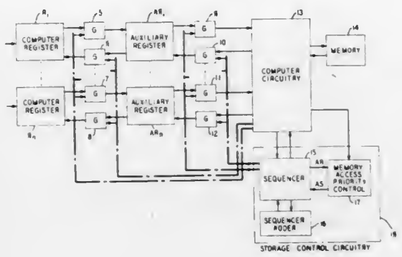


A method for retrieving words from a dictionary in which one word representative of each page of the dictionary is stored in a memory. A desired word is compared with the stored words and as a result of the comparison the page on which the desired word is printed is displayed on an optical display device. The representative word may be the last word on a page, an imaginary word between the last word on the page and the first word on the next page, or any other word which is representative of a page.

3,781,810
SCHEME FOR SAVING AND RESTORING REGISTER CONTENTS IN A DATA PROCESSOR
Randall William Downing, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Apr. 26, 1972, Ser. No. 247,727
Int. Cl. G06f *9/12*
U.S. Cl. 340—172.5 **4 Claims**

A program controlled computer which comprises independent control circuitry for exchanging data between registers of the computer and the computer memory independently of the

execution of program. This arrangement saves computer time as it facilitates the storing and retrieving of data which must be saved during nesting and unnesting of program transfers. For each register that contains data which is to be saved upon the occurrence of a program interrupt, there is provided an auxiliary register and program controlled gates for exchanging data between the computer register and its corresponding auxiliary register. In the illustrative embodiment the computer is arranged to execute "save" and "restore" instructions which serve respectively to transfer the contents of a computer re-



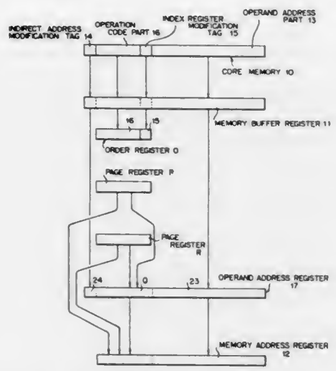
gister to its auxiliary register and to transfer the contents of an auxiliary register to its associated computer register. The independent control circuitry monitors the busy and idle states of the computer memory and upon occurrence of periods of time in which the computer is not utilizing the computer memory, the independent control circuitry exchanges data between the auxiliary registers and the computer memory. Data is exchanged between the computer registers and their associated auxiliary registers simultaneously. However, data is exchanged between the auxiliary registers and the computer memory on a word-by-word serial basis.

3,781,811

MEMORY PROTECTIVE SYSTEMS FOR COMPUTERS

Akio Yakata, Kawasaki, and Tsuneo Kinoshita, Ohme, both of Japan, assignors to Tokyo Shibauna Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 759,146, Sept. 11, 1968, abandoned. This application Apr. 14, 1971, Ser. No. 133,983
Claims priority, application Japan, Sept. 14, 1967, 42/58968
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **8 Claims**



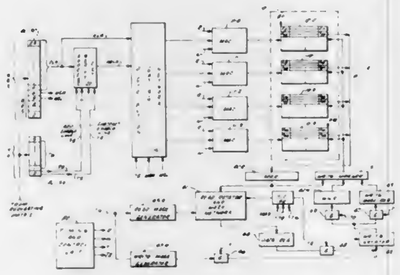
In a memory protective system for computers operable under master and slave modes which has a first register (denoted as a P register) storing information conducive to the determinatisn of an execution address of said master mode and a second register (denoted as a R register) storing information conducive to the determination of an execution address of said slave mode, the improvement comprising means for switching said second register to said first register when an information for changing the contents of said memory appears under said slave mode.

3,781,812

ADDRESSING SYSTEM RESPONSIVE TO A TRANSFER VECTOR FOR ACCESSING A MEMORY

Charles E. Wymore, and Clayton P. Dahlberg, both of Santa Barbara, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 28, 1971, Ser. No. 157,307
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5 **11 Claims**



A memory comprising a plurality of bit storing containers each having upper and lower boundaries is partitioned into a plurality of modules. The containers in each module are arranged in a plurality of locations. Fields of data bits can be stored partly in one module and partly in another module and can thereby extend across the boundary between modules. Each module is coupled to its own access control means. During a memory access, each access control means receives an absolute address signal, responds thereto to select a location in its associated module; all the containers in the selected location are accessed; and data bits are transferred between a data register and a selected group of the accessed containers. The absolute addresses are derived from a bit boundary address and a transfer vector. The bit boundary address comprises a field of encoded signals which field has a length sufficiently long to specify an arbitrary boundary in the memory. A subfield of the bit boundary address is selectively modified by address modifying circuitry so as to produce the absolute addresses. The transfer vector comprises a transfer sign field and a transfer width field. The transfer sign field indicates which side of a specified boundary has the containers involved in the data transfer. The transfer width field indicates the number of bit containers involved in the data transfer. Circuitry coupling the memory to the data register provides rotation and masking so that the contents of accessed containers which are not involved in the data transfer do not affect the data transfer or change as a result thereof.

3,781,813

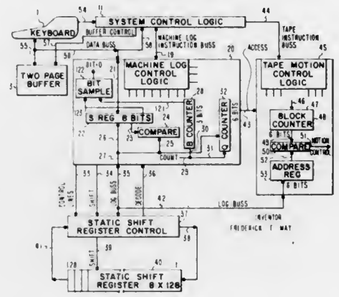
MACHINE LOG SYSTEM

Frederick T. May, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,346
Int. Cl. G06f *3/12*
U.S. Cl. 340—172.5 **7 Claims**

A typewriter is electronically connected to a multi-page buffer which is a dynamic electronic shift register. System control logic is provided to allow the operator to type codes

corresponding to characters as well as certain control codes into the buffer for later print-out. In addition, the system control logic is operable to allow the operator to insert characters into and delete characters from the buffer for editing and correction purposes. The multi-page buffer is also in electronic association with a tape cassette such that the operator, by depressing a page store button, can store the contents of the buffer onto the tape of the tape cassette or read pages from the tape into the buffer. Means are provided for automatically keeping track of the location of the pages of the various jobs. Thus, a machine log is utilized which is recorded at the beginning of the cassette tape which includes the location on



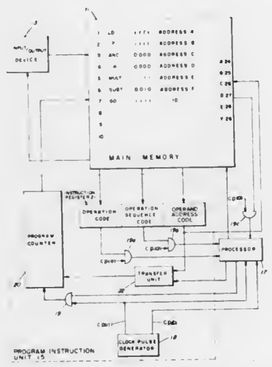
tape of each of the pages of a particular job and the next available block which can be utilized for storing a page. Upon depressing the store button to store a page, the machine log is queried and a decision is made to either store the page on an existing block allocated for this job, in which case a command is given to the tape to access that block, or it may be determined that a new block is required for this page. In this case the address of the next available block is determined and is inserted in the machine log static shift register (SSR) and the cassette is automatically driven to that block. At the beginning of a recording operation the machine log stored on the tape is loaded into an electronic static shift register (SSR) under control of the system control logic.

3,781,814

METHOD AND APPARATUS FOR APPLYING SOURCE LANGUAGE STATEMENTS TO A DIGITAL COMPUTER

Alan J. Deerfield, Newtonville, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 7, 1971, Ser. No. 187,242
Int. Cl. G06f *9/06*
U.S. Cl. 340—172.5 **2 Claims**



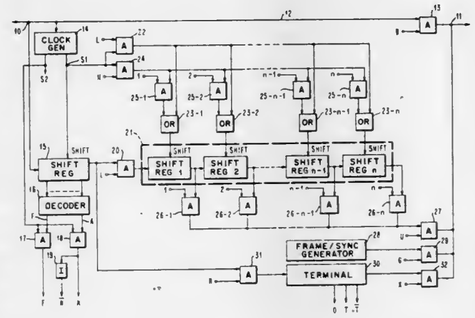
A method of operating a general purpose computer which uses instruction words, each containing, in addition to an operation code and an operand address code, an operation sequence code and an improved processor adapted to the contemplated method is shown. The operation sequence code in each instruction word is read out of memory as a program counter is sequenced so that the processor may be caused to defer the operation called for by the instruction word until such operation may properly be executed. In addition, the processor may be controlled so that deferral may be effected whenever the hierarchal precedence of an operation to be performed dictates that the next following operation in a sequence be performed first.

3,781,815

TERMINAL INTERFACE FOR A SERIAL LOOP COMMUNICATIONS SYSTEM HAVING STORE AND FORWARD CAPABILITY

Paul E. Boudreau; Roy C. Dixon, both of Raleigh; Robert A. Donnan, Chapel Hill, all of N.C., and Eual A. Moss, Fort Wayne, Ind., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 15, 1972, Ser. No. 226,443
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **5 Claims**



A serial loop data communications system having store and forward capability at each terminal interface on the loop and in which data signal entities, each of which includes a plurality of data bits, addressed to subsequent terminals on the loop are stored in successive locations in a serial storage device when received if a terminal associated with the interface is transmitting. At the termination of data transmission by the associated terminal, the previously stored data signal entities are forwarded from the data entity storage position occupied by the oldest received entity and subsequently received entities are advanced to successive entity storage positions until data signal entities for subsequent terminals on the loop are no longer received, at which time advancement of the date signal entities is terminated and the data signal entities then remaining in storage, are forwarded from the successive entity storage locations in the serial storage in the order of receipt.

3,781,816

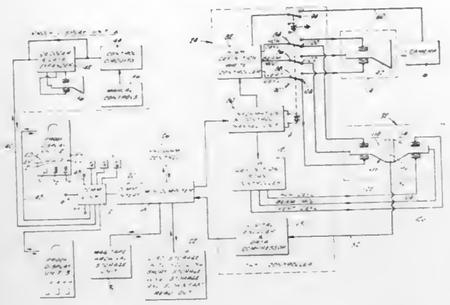
AUTOMATIC PUBLICATIONS SYSTEMS AND METHOD

Aaron H. Coleman, Levittown, Pa., and Hugh W. Stewart, Princeton, N.J., assignors to CPS Associates, Inc., Croydon, Pa.

Filed Apr. 10, 1972, Ser. No. 242,409
Int. Cl. G06f *3/14*; **G06k** *15/00*
U.S. Cl. 340—172.5 **23 Claims**

An electronic photo-typesetting system employing a central computer-controlled electronic photo-typesetter and a plurality of remote publications-data input terminals. Final page proof is supplied substantially instantaneously to any

requesting remote terminal by means of a scan converter at the central station, which supplies a proof-display device at



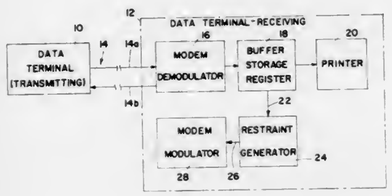
the requesting terminal with electrical signals of relatively narrow bandwidth representing a lower-definition proof grade image of the final composed page.

3,781,817

RESTRAINT SIGNAL GENERATOR AND OSCILLATOR

Richard D. Fretwell; James W. Azbell, both of Columbus, and Edwin E. Mason, Harrisburg, all of Ohio, assignors to Design Elements, Inc., Columbus, Ohio

Filed Apr. 20, 1972, Ser. No. 245,769
Int. Cl. G06f *5/06*
U.S. Cl. 340—172.5 **7 Claims**



A circuit for use with a data terminal, including a data modulator and a buffer, for generating a signal which restrains the transmission of incoming data when the buffer is full. The generator has a square wave oscillator comprising a high gain differential comparator with a resistive feedback network connected to its non-inverting input and a series pair of resistors connected between its output and its inverting input. A capacitance is connected between the common node of the series pair and a dc supply. The oscillator is inhibited by a dc signal applied through a diode to the comparator's inverting input when the buffer is not full but is effectively freed to oscillate when the buffer is full to apply a modulating restraint signal input to the modem's modulator.

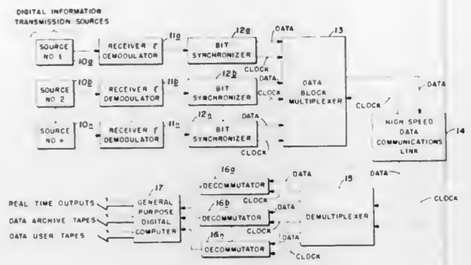
3,781,818

DATA BLOCK MULTIPLEXING SYSTEM

Carroll T. Pardoe, Woodbine; Alvar G. Carlton, Silver Spring, and Robert L. Appel, Rockville, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed May 8, 1972, Ser. No. 250,901
Int. Cl. H04j *3/16*
U.S. Cl. 340—172.5 **40 Claims**

A time-division multiplexing system capable of combining the asynchronous data bit streams from a plurality of independent input data sources and outputting the data as a single, higher rate bit stream is disclosed. The data from each input source is temporarily stored at its own clock rate until a block of data comprising a predetermined number of bits becomes available for a particular input source. When this occurs, the data is outputted, as a block, with a source identifying code



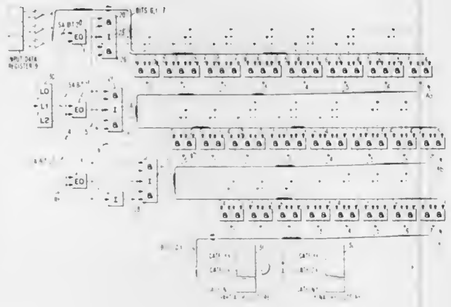
label appended to permit proper demultiplexing at the reception station. During periods when no input channel has sufficient data to be processed, the multiplexing system switches to an operating condition wherein useful overhead data; e.g., coding check bits or low priority data, are outputted.

3,781,819

SHIFT UNIT FOR VARIABLE DATA WIDTHS

Hellmuth R. Geng, Schoenaich; Johann Hajdu, Boeblingen, and Petar Skuin, Magstadt, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1972, Ser. No. 253,084
Claims priority, application Germany, Oct. 8, 1971, P 21 50 291.0
Int. Cl. G06f *5/00*
U.S. Cl. 340—172.5 **10 Claims**



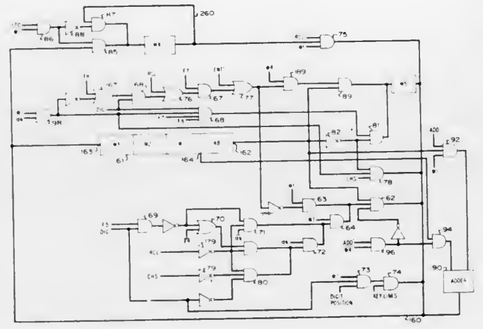
A circuit arrangement is provided for controlling a known logical switching network for shifting data of variable widths, wherein the shift amount by which the data bits applied to the input are to be shifted is switched from the true value to the complement value and vice versa by means of a control signal influenced by control commands, and wherein the partial results thus produced are logically combined to form a further partial result or the final result.

3,781,820

PORTABLE ELECTRONIC CALCULATOR

David S. Cochran, Palo Alto, and Thomas E. Osborne, San Francisco, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 30, 1972, Ser. No. 257,606
Int. Cl. G06f *3/02*
U.S. Cl. 340—172.5 **14 Claims**



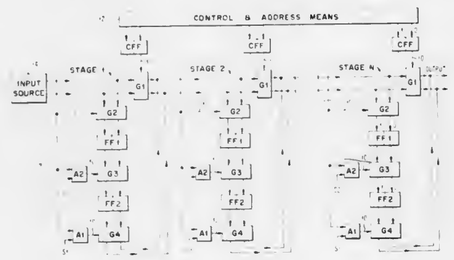
An electronic calculator is provided with an enter key, a change sign and a store key. The enter key causes a stack memory to be pushed down, duplicating information from a keyboard register into a first memory register. The first data key actuated after the enter key causes the keyboard register to be cleared before the new data is entered into that register. The change sign key operates in conjunction with a keyboard register of the main stack memory to change the sign of a number contained therein. If this key is actuated subsequent to the performance of a function and data is entered after the key is actuated, then the sign of the new entry will be changed rather than the sign of the previous contents of the keyboard register. The store key causes information in the keyboard register to be duplicated into an auxiliary memory. The first data key actuated after the store key causes the keyboard register to be cleared before the new data is entered.

3,781,821

SELECTIVE SHIFT REGISTER

Robert Ingersoll Roth, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 2, 1972, Ser. No. 258,963
Int. Cl. G11c *19/00*
U.S. Cl. 340—172.5 **7 Claims**



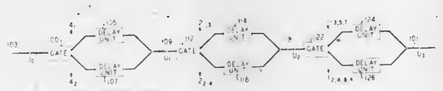
Information is shifted from any one or a number of stages in a shift register to any other one or other stages of a shift register by use of gating circuits connected to each stage operated by a control circuit. The gating circuits connected to each stage of the register are operative to either inhibit storage of input information therein and transfer of stored information by stage disconnect while allowing immediate passage of such information to the next succeeding stage by immediate transfer connect, or to allow storage of input information therein and transfer of stored information by stage connect while inhibiting immediate passage of such information to the next succeeding stage by immediate transfer disconnect.

3,781,822

DATA RATE-CHANGING AND REORDERING CIRCUITS

Syed Vickar Ahamed, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 9, 1972, Ser. No. 279,020
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5 **7 Claims**



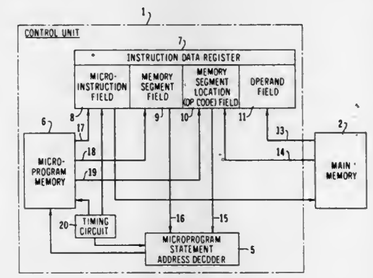
An input sequence of signals is processed by a cascaded plurality of stages, each stage including a plurality of unequal delay transmission paths, and means for directing selected portions of the input sequence through respective paths. By controlling the selection process at each stage, and by choosing suitable delay intervals, the rate of the input sequence may be increased or decreased by an integer factor and may be reversed in order. By combining various component circuits a fractional rate change may be effected.

3,781,823

COMPUTER CONTROL UNIT CAPABLE OF DYNAMICALLY REINTERPRETING INSTRUCTIONS

Daniel John Senese, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 28, 1972, Ser. No. 276,116
Int. Cl. G06f *1/00*
U.S. Cl. 340—172.5 **5 Claims**



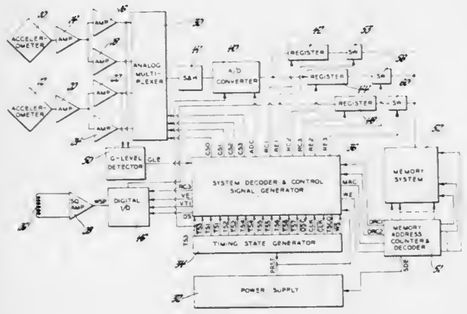
A microprogrammed computer is disclosed in which two sets of microprograms, each set containing a microprogram to execute each program instruction, are stored in microprogram memory. A selected program instruction is provided which, when executed, changes the set of microprograms from which particular microprograms are selected to execute subsequent program instructions. Insofar as the microprograms comprising the newly selected set of microprograms differ, in general, from the corresponding microprograms comprising the previ-

ously selected set, the execution characteristics of subsequent program instructions executed by microprograms in the newly selected set are changed.

3,781,824
SOLID STATE CRASH RECORDER

Frank P. Caiati, Bloomfield Hills, and David C. Wight, Romeo, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 249,918, May 3, 1972. This application Nov. 20, 1972, Ser. No. 308,005
Int. Cl. G11c *19/00*
U.S. Cl. 340—172.5 **3 Claims**



A solid state crash recorder in which various vehicle conditions such as acceleration and speed are continually monitored and converted into digital form with the magnitude of the conditions monitored being cyclically stored in a plurality of registers. Upon the sensing of a crash, the contents of a portion of the registers corresponding to certain vehicle conditions, such as speed and low level acceleration, are maintained so as to provide information relating to precrash conditions while information relating to other conditions, such as high acceleration, are continually fed to the remaining registers with the output thereof being routed, when a crash is sensed, to a memory circuit. In this manner, pre and post crash information relating to those conditions are memorized. Subsequently, the contents of the registers containing only precrash information are routed to the memory circuit which memorizes the precrash conditions represented thereby. When the contents of all the registers have been memorized in the memory circuit, the power supplied to the system is disabled so as to prevent further inputs to the crash recorder.

3,781,825
PROGRAMMABLE FIXED DATA MEMORY UTILIZING SCHOTTKY DIODES

Ulf Burker, and Sigurd Koch, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

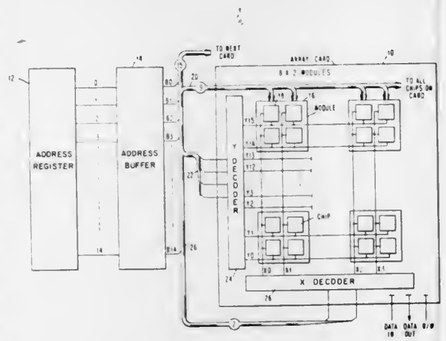
Filed May 10, 1971, Ser. No. 141,725
Claims priority, application Germany, May 12, 1970, P 20 23 219.3
Int. Cl. G11c *7/00, 11/34, 17/00*
U.S. Cl. 340—173 SP **9 Claims**

A memory element comprises two series-connected and series-opposed Schottky diodes. A middle electrode is provided between the Schottky diodes. To effect programming, the Schottky diode which is operated at reverse voltage is short-circuited to the middle electrode through the formation of a breakthrough channel.

3,781,826
MONOLITHIC MEMORY UTILIZING DEFECTIVE STORAGE CELLS

William Francis Beausoleil, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 76,917, Sept. 30, 1970. This application Nov. 15, 1971, Ser. No. 198,869
Int. Cl. G11c *11/40, 15/00*
U.S. Cl. 340—173 R **8 Claims**

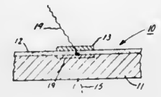


A monolithic computer memory constructed of monolithic chips which contain defective bit cells. During the production process, the chips are sorted into groups in accordance with the chip sector or quadrant which contains one or more defective cells. The chips are then mounted on modules and the modules are placed on memory cards, with all of the chips having a defect in a given chip sector being mounted in a corresponding card sector. The cards, each of which is produced in a substantially identical manner, are then assembled into a complete memory. The valid cells are logically arranged in contiguous address locations by transformation logic which converts the address before it is presented to the memory bit cards. Addresses presented to the logic are re-ordered such that all addresses that, untranslated, would have selected a defective area of a chip, after being translated select a non-defective area of a chip.

3,781,827
DEVICE FOR STORING INFORMATION AND PROVIDING AN ELECTRIC READOUT

William E. Engeler, Scotia, and Marvin Garfinkel, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 792,569, Jan. 21, 1969. This application Nov. 24, 1971, Ser. No. 201,855
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 CA **8 Claims**

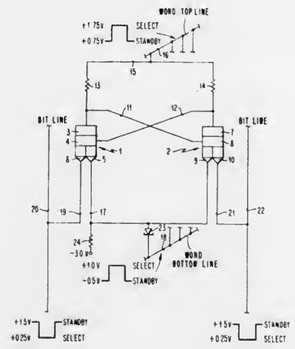


An information storing method and a storing device using a conductor-insulator-semiconductor (CIS) structure as the storage element is disclosed within. The CIS structure is initially charged to a predetermined voltage, forming a depletion region within the semiconductor beneath the conductor. Minority carriers are controllably generated within the semiconductor in proportional response to an information-bearing signal such as a specific amount of electromagnetic radiation flux. The generated minority carriers move to and are stored at the surface of the semiconductor beneath the conductor due to the electric field existing in the depletion region, thus changing the predetermined voltage. The change in voltage which may be determined in a measure of the number of generated minority carriers and, therefore, is a measure of the integrated electromagnetic radiation flux and constitutes the stored information.

3,781,828
THREE-DIMENSIONALLY ADDRESSED MEMORY

Steven Platt, Underhill, Vt., and Jehoshua N. Pomeranz, Suffern, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1972, Ser. No. 250,225
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **19 Claims**

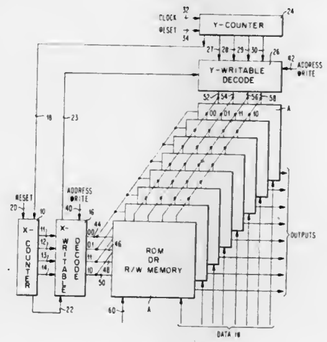


An array of memory cells is provided with each cell having a word top line, a word bottom line and a pair of bit lines connected thereto. Either a standby voltage or a select voltage is applied to each of the lines, whereby any cell of the array may be selected by applying a select voltage to the two word lines and one or both bit lines connected to the cell. In one of the disclosed embodiments, the cells are arranged in columns and in groups of rows. Each of a plurality of word top drive lines is connected to all of the rows of the cells of a respective group to select any group of rows, each of a plurality of word bottom drive lines is connected to a respective row of cells in each of the groups to select one row of the selected group, and a plurality of pairs of bit lines are provided with each pair connected to the cells of a respective column to select one column and thereby one cell of the selected row. Each cell preferably comprises a cross-coupled pair of transistors each having a collector and first and second emitters. The word top lines are connected to the collector load impedances, the word bottom lines are connected to the first emitters, and the bit lines are connected to the second emitters.

3,781,829
TEST PATTERN GENERATOR

Shanker Singh, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 16, 1972, Ser. No. 263,500
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 R **9 Claims**

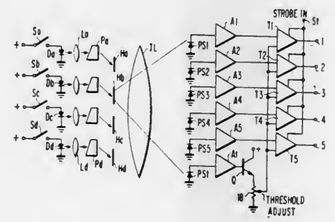


A test pattern generator comprising a memory means for storing n test pattern numbers. The memory means is responsive to a selectively alterable address means for generating a plurality of distinct test pattern sequence of numbers from the n stored test pattern numbers.

3,781,830
HOLOGRAPHIC MEMORY WITH LIGHT INTENSITY COMPENSATION MEANS

David Herman Raphael Vilkomerson, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 23, 1972, Ser. No. 265,555
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 LM **1 Claim**



A holographic memory is disclosed in which any one hologram in an array of holograms is illuminated by a reference

beam from a respective light-emitting diode in an array of light emitting diodes. An array of photosensors is arranged to receive the "1" and "0" binary optical information signals from whichever hologram may be illuminated. Each hologram includes a recording of an extra threshold-setting bit, and an extra threshold-setting-bit photosensor is included to establish an electrical threshold distinguishing between "1" and "0" information signals despite variations in light emission from different light-emitting diodes and holograms.

3,781,831

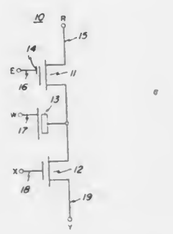
READ ONLY MEMORY UTILIZING FLOATING GATE TRANSISTORS AND METHOD OF PROGRAMMING

Constantine A. Neugebauer, and Joseph L. Mundy, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 30, 1972, Ser. No. 267,968

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **8 Claims**



A read only memory cell comprising a floating gate field effect transistor as the storage element is disclosed. Low operating voltages are used by including metal-oxide-semiconductor (MOS) varactors in the cell, enabling one to selectively induce avalanche injection for storing charge at selected bit sites.

3,781,832

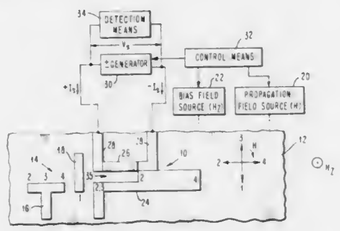
MAGNETORESISTIVE SENSING OF MAGNETIC BUBBLE DOMAINS USING EXPANSION

George S. Almasi, Katonah; Robert J. Hendel, Peekskill, and George E. Keefe, Montrose, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,914

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 EB **9 Claims**



An improved magnetoresistive sensing device for detection of cylindrical magnetic domains (bubble domains) in which the domains are expanded before being sensed. The sensing element is magnetically soft material, such as permalloy, located in flux-coupling proximity to bubble domains which exist in a magnetic sheet. Current through the sensing element aids in the bubble domain expansion and does not impede bubble domain motion even though it is of large magnitude. Due to the expansion, a greater output signal is achieved. The structure also is useful in providing bubble domain annihilation after sensing. This eliminates the usual time delay in moving the domain to an annihilator circuit for destruction and also eliminates the need for a separate annihilator circuit.

3,781,833

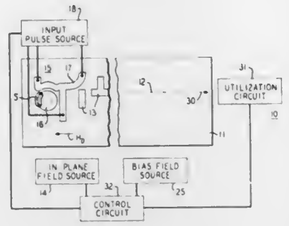
SINGLE WALL MAGNETIC DOMAIN GENERATOR

Joseph Edward Geusic, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 29, 1972, Ser. No. 284,576

Int. Cl. G11c *19/00, 11/14*

U.S. Cl. 340—174 TF **9 Claims**



Improved operating margins are exhibited by a conductor driven, single wall, magnetic domain generator because of the geometry of the conductor and its disposition with respect to the magnetically soft elements which define the generator and the propagation circuitry.

3,781,834

REDUCTION CROSS-TALK IN DOUBLE GAP HEAD

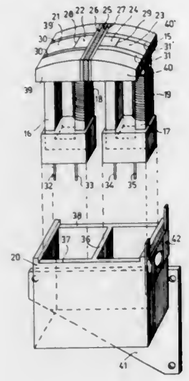
Johannes Van Ginkel, and Teunis Robert Van Heelsbergen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,123

Claims priority, application Netherlands, Aug. 21, 1971, 7111554

Int. Cl. G11b *5/28*

U.S. Cl. 340—174.1 F **4 Claims**



A double gap magnetic head comprising at least one writing head and at least one reading head arranged behind the writing head in the direction of travel of the tape for writing and immediately thereafter reading information, in particular

digital information, in which, to reduce the cross-talk, the writing winding is provided on one limb of the writing head and the reading winding is provided on one limb of the reading head asymmetrically relative to the central member separating the writing head and the reading head.

3,781,835

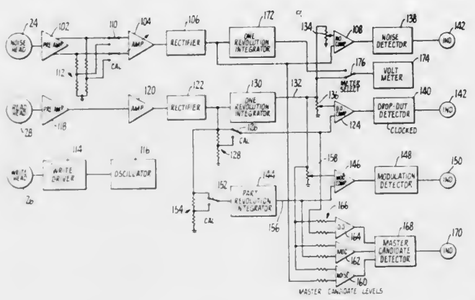
METHOD OF CERTIFYING MAGNETIC RECORDING DISC

C. Norman Dion, and Dennis T. Maruyama, both of San Jose, Calif., assignors to Memorex Corporation, South Clara, Calif.

Division of Ser. No. 229,709, Feb. 28, 1972. This application Feb. 16, 1973, Ser. No. 333,202

Int. Cl. G11b *5/44*

U.S. Cl. 340—174.1 B **2 Claims**



A certifier for computer disc memories in which a voice coil motor drives cam loaded read-write flying heads radially across a disc restrained by a control cam so that the heads follow a single continuous spiral path over the disc. Three read-write heads examine the disc at a test location on the spiral after D.C. erasure to read for extra bits, write data and read for missing bits. Error comparisons are made against a one revolution integration of the output of the data read head. A modulation test compares the one revolution integration of data head output to a part revolution integration of the data head output.

3,781,836

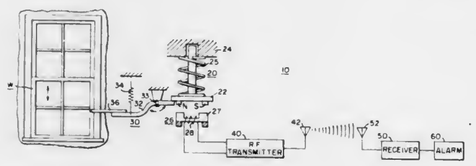
SELF-POWERED WIRELESS INTRUSION ALARM SYSTEM

Andrew P. Kruper, Pittsburgh, Pa.; John R. Reeves, Orange, Conn., and Leonard C. Vercellotti, Verona, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 14, 1972, Ser. No. 271,879

Int. Cl. G08b *5/22*

U.S. Cl. 340—224 **2 Claims**



The invention pertains to an alarm system including a magnetic pulse generator for producing an output pulse in response to a change in magnetic flux in response to an intrusion of a designated area, a radio transmitter circuit responding to the pulse from the magnetic pulse generator by transmitting a signal to a remote receiver circuit which in turn generates a pulse for actuating an intrusion alarm circuit.

3,781,837

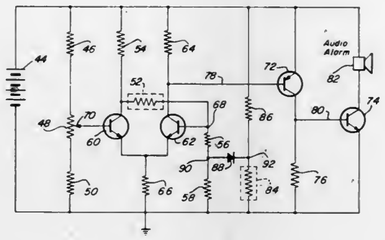
AMBIENT COMPENSATED TEMPERATURE RESPONSIVE DEVICE

Thomas W. Anderson, and Robert L. Caroon, both of Albuquerque, N. Mex., assignors to Jac, Inc., Clovis, N. Mex.

Filed July 8, 1971, Ser. No. 160,612

Int. Cl. A61b *6/10*

U.S. Cl. 340—233 **10 Claims**



A temperature responsive device is provided for use with cattle, and similar livestock, to furnish signals when the measured body temperature of the animal exceeds predetermined limits which are indicative of infection or disease within the animal. A small electronic package is conveniently fastened about the animal's neck and is connected to a thermistor sensing element implanted in one of the outer ear canals of the animal. The electronic package is provided with a temperature compensated amplifier and includes means compensating for changes in body temperature due to changes in ambient temperature, such that false signals will not be generated by the device. When the amplifier output reaches a predetermined threshold level, a signal device, such as an audio alarm, is energized to indicate that the animal should receive immediate diagnosis or treatment.

3,781,838

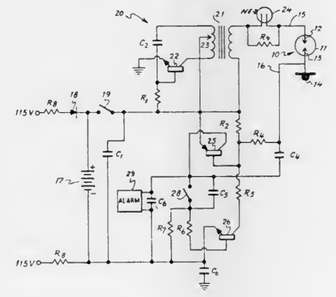
PRODUCTS OF COMBUSTION DETECTOR

Charles A. Primmer, Bozeman, Mont., assignor to Development Technology, Inc., Bozeman, Mont.

Continuation-in-part of Ser. No. 80,909, Oct. 15, 1970, abandoned. This application Mar. 16, 1972, Ser. No. 235,334

Int. Cl. G08b *21/00*

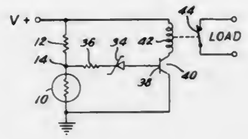
U.S. Cl. 340—237 S **16 Claims**



A products of combustion detector is provided wherein a spark-gap is exposed to the ambient atmosphere and a varying

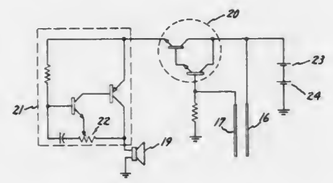
potential is applied thereto of a peak magnitude less than that required to initiate a discharge thereacross. Products of combustion in the ambient atmosphere initiate periodic arcs and a circuit is provided for giving an output signal only when a predetermined number of arcs have occurred within a given period of time.

3,781,839
FLUID FLOW SENSING DEVICE
Clifford A. Bodge, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 811,869, April 1, 1969, abandoned. This application Jan. 7, 1972, Ser. No. 216,299
Int. Cl. G08b *21/00*
U.S. Cl. 340—239 R **10 Claims**



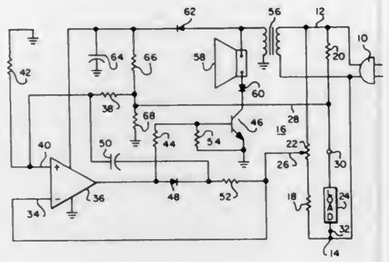
The disclosed device includes a thermistor sensor particularly adapted for disposition in thermal communication with a fluid medium utilized for effecting cooling of equipment. The thermistor sensor senses variations in the heat transfer characteristics of the medium, and is coupled to a power supply through a resistor, which cooperates with the thermistor sensor to define a voltage divider, including a junction. A voltage responsive means is coupled to the junction and is rendered operable in response to the establishment of an increased voltage level at the junction, when the heat transfer properties of the medium decreases. The voltage responsive means provides an electrical signal for energizing a switch means so as to render a load circuit inoperable in response to a decrease in the heat exchange properties of the fluid medium. Alternatively, the electrical signal may be utilized for operating an indicator to provide an indication of a decrease in the heat exchange properties of the fluid medium.

3,781,840
INSTRUMENT FOR GUIDING THE BLIND IN FILLING OPEN-TOP VESSELS
Richard W. Roberts, Schenectady, and George Jernakoff, Loudonville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed June 2, 1972, Ser. No. 259,158
Int. Cl. G08b *21/00*
U.S. Cl. 340—245 **1 Claim**



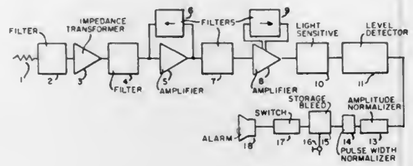
Arrival of liquid at the fill level of a drinking vessel or other open-top domestic container is signaled by audio or tactile means of an instrument including a battery and an amplifying switch in an instrument housing and a pair of electrodes which extend through the housing and serve additionally as hanger means for supporting the instrument in operating position on the vessel with the free lower ends of the electrodes exposed to contact liquid at the fill level so that the switch is actuated and a signal is generated when the filling operation is to be terminated.

3,781,841
LOAD RESISTANCE CHANGE ALARM
James S. Hughes, Jr., Bellmawr, N.J., assignor to Trident Engineering Co., Bellmawr, N.J.
Filed May 4, 1972, Ser. No. 250,206
Int. Cl. G08b *21/00, 23/00*
U.S. Cl. 340—251 **10 Claims**



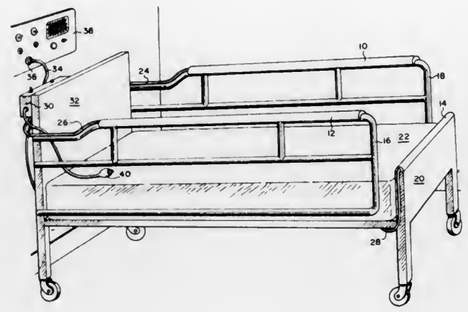
A load resistance change alarm in which the magnitude and frequency of an audio signal are increased in proportion to an increase or decrease in resistance of the load. The load is connected in one branch of a bridge circuit. Any imbalance across the bridge circuit caused by a change in the load resistance is applied to an amplifier having a feedback circuit. The oscillations of the amplifier circuit turn on an electronic switch which allows unilateral current flow through the speaker. The current applied to the speaker is supplied through a step down transformer from the same power supply supplying current to the load.

3,781,842
INTRUSION DETECTING APPARATUS AND METHOD
James P. Campman, Silver Spring, Md., assignor to Vidar Laboratories Inc., Kensington, Md.
Filed Apr. 27, 1972, Ser. No. 248,211
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 B **8 Claims**



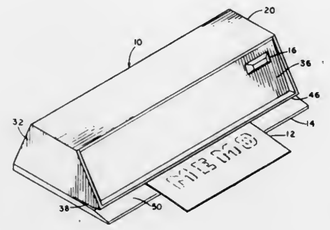
An apparatus and a method for detecting motion in a given space, operable to produce an image of said space upon a retina of photoconductive cells, which produce alternating changes in conductivity of the cells and alternating changes in voltage at the output of said cells in response to changes in the image of said space and wherein the alternating voltage changes are processed to select those signals which are attributable to the motion of an intruder in said space, to selectively amplify them, to discard those voltages of low amplitude below a predetermined level, to convert the voltage changes above the predetermined amplitude level into pulses of uniform amplitude and width, to produce a voltage dependent on the pulse rate of said pulses above a predetermined pulse rate for triggering an alarm signal for indicating intrusion.

3,781,843
BED GUARD SYSTEM
William L. Harrison, Hollis; Ronald G. Purington, Hudson, and Donald L. Anderson, Nashua, all of N.H., assignors to Sanders Associates, Nashua, N.H.
Filed Apr. 15, 1971, Ser. No. 134,247
Int. Cl. G08b *7/04;* **H01h** *35/32, 35/34*
U.S. Cl. 340—279 **13 Claims**



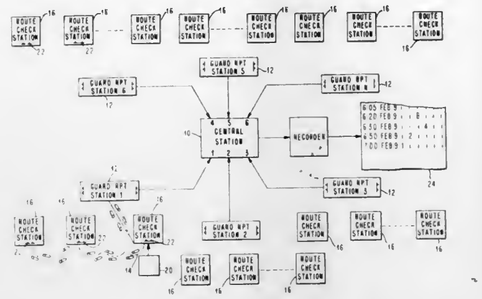
Apparatus is provided for alerting nurses that a patient is attempting to leave his bed, comprising members having a fluid filled passageway therein which can be attached to the top of the side rails and footboard of a bed. The members are coupled via lines to transducers which activate an alarm when a predetermined volume of fluid is displaced.

3,781,844
WRITTEN MESSAGE RECEIVING AND SIGNALING HOLDER
Dennis J. Lowery, 130 Santa Fe Dr., and Robert E. Merchant, 1421 N. 23rd, both of Grand Junction, Colo.
Filed Apr. 24, 1972, Ser. No. 246,713
Int. Cl. G08b *21/00*
U.S. Cl. 340—281 **10 Claims**



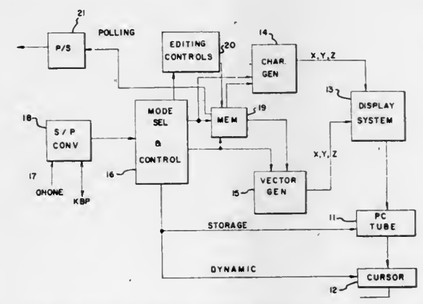
A written message receiving and signaling holder is placed on a horizontal structure or secured to a vertical structure in a dwelling to receive an inserted end of a written message, and to be responsive to such insertion creating a signal, such as a flashing red light, to be observed by a person who is to receive the message. Inside the holder an actuating and pivoting lever at one of its ends moves to accommodate the thickness of the paper and at the other end moves to close an electric circuit, inclusive of batteries and a flashing or blinking light observable through a jeweled red lens.

3,781,845
CENTRALIZED SECURITY SYSTEM EMPLOYING A MAGNETIC CHECKING DEVICE
Joseph M. Ellul, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 29, 1972, Ser. No. 267,292
Int. Cl. G08b *25/00*
U.S. Cl. 340—306 **8 Claims**



A replacement for the watchman's clock and key system employed by security guards to verify that security tours are properly made. In this new system, the guard carries a card with magnetizable rods in it instead of the watchman's clock. He then proceeds to a number of checking stations along the route of his security tour where, instead of the key which is inserted into the watchman's clock, there are a number of boxes into which the magnetizable card is inserted. These boxes contain magnets which may or may not effect the magnetization of the bars in the card. When the tour is completed the guard inserts the card into a reporting station where the magnetic card is checked. If the security tour has been made properly the right rods will be magnetized in a particular manner by the magnets in the boxes and the checking station will send a signal to a central recording station to indicate completion of a properly executed tour. If the tour was not properly made and the proper bars magnetized, no such signal is sent to the recording station and the guard is told so. The guard must then report into the central location or repeat the round.

3,781,846
PROJECTION STORAGE-DISPLAY SYSTEM HAVING DYNAMIC GRAPHIC CAPABILITY
William E. Eichelberger, and Lawrence H. Wood, both of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.
Filed July 15, 1971, Ser. No. 162,971
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **5 Claims**



A visual display system includes a projection type display device. This includes a stored image photochromic type

device and a dynamic cathode ray device. The stored image tube is normally used for the display of alpha numerics and vectors in response to digital inputs. The dynamic cathode ray device is normally used to produce a cursor on the display. Dynamic refresh memory for the dynamic cathode ray tube gives this device the capability of selectively erasing, editing and inserting graphic information on the display.

3,781,847

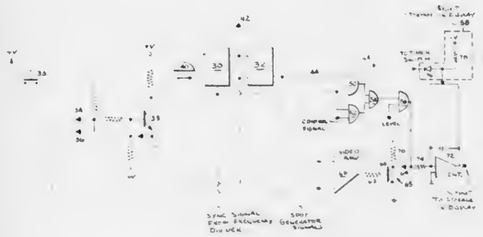
SELECTIVE INFORMATION RETRIEVAL SYSTEMS

Francois J. G. Van Den Bosch, 11 Hillcrest Rd., Cedar Grove, N.J.

Continuation of Ser. No. 820,595, April 30, 1969, abandoned. This application Nov. 12, 1971, Ser. No. 198,458

Int. Cl. G06f 3/14

U.S. Cl. 340—324 AD **5 Claims**



A delay network for providing a signal to the sweep generating circuits of a video tube to present thereon a line for every 2½ lines of the line frequency is driven from selected signals within a frequency divider network which also provides a desired frame frequency output signal. A delay gating circuit is provided to control the storage or display of selected information on the video tube.

3,781,848

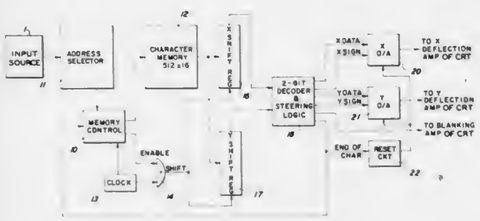
DISPLAY SYSTEM

Jerome A. Rosenthal, Brighton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1971, Ser. No. 212,934

Int. Cl. G06f 3/14

U.S. Cl. 340—324 A **4 Claims**



Apparatus for generating characters or symbols by deflecting the electron beam of a cathode ray tube with signals derived from a read only character memory. The character memory provides an output under the influence of memory control. This output is loaded into registers and then fed as a bit stream to a decoder. The decoder interprets the bit stream and sends X and Y increments and control signals to digital to analog converters which generate strokes to form the desired characters on the screen of the cathode ray tube.

3,781,849

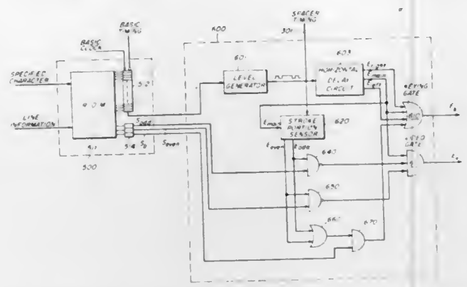
METHOD AND APPARATUS FOR GENERATING SELF CONTRASTING CHARACTER IMAGES

Stanley N. Baron, Stamford, Conn., and Stephen Kreinik, Monsey, N.Y., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,428

Int. Cl. G06f 3/14

U.S. Cl. 340—324 AD **19 Claims**



A subsystem of an apparatus that receives character-representative signals and generates video control signals and keying control signals that are suitable for controlling a scanned display to present contrasting character images. A stroke generator means, responsive to the character-representative signals, generates a stroke of a character to be displayed. The stroke consists of a plurality of time sequential bits corresponding to a sequence of display events and a plurality of code bits that distinguish between contrasting portions of the sequence of display events. A decoding means is responsive to the time sequential bits and the code bits and generates keying control signals and video control signals that are suitable for controlling a scanned display to present contrasted images of characters to be displayed. In a preferred embodiment of the invention, the code bits are representative of the keying and video portions of the sequence of display events. The coding means produces signals that disable the generation of video signal during selected stroke portions, the code bits being determinative of which portions of the display event are to be disabled.

3,781,850

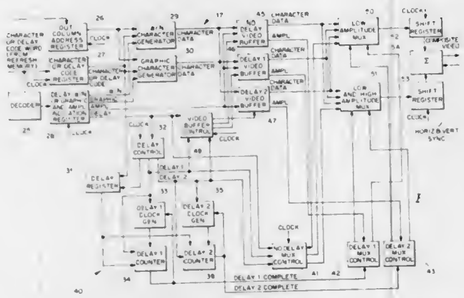
TELEVISION TYPE DISPLAY SYSTEM FOR DISPLAYING INFORMATION IN THE FORM OF CURVES OR GRAPHS

Francis A. Gicca, Bedford; Francis C. Passavant, West Newton, and Allen J. Worters, Newton Highlands, all of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 21, 1972, Ser. No. 264,970

Int. Cl. G06f 3/14

U.S. Cl. 340—324 AD **8 Claims**



Television type display system for displaying information in the form of curves or graphs. Code words designating characters are read out of a random access memory and the characters are displayed at fixed normal locations on the display surface of the display device. The normal location of a character on the display surface is determined by the position of the character code word in the memory. Delay code words designating amounts of delay may be associated with characters by being stored in the position in the memory preceding a character code word. The delay code word is employed to hold the character data for each scanline in a buffer for a period of time determined by the delay code word before releasing the data into the video stream. Thus, display of the character is delayed causing it to appear in a location on the display surface shifted from its normal location. A plurality of characters may be displayed in this manner to produce a curve. The system may also be utilized to display data in bar-graph format.

3,781,851

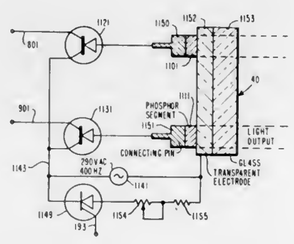
PULSE ANALYZING TESTER

Arthur Duane Alexander, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 88,298, Nov. 11, 1970. This application June 22, 1972, Ser. No. 266,515

Int. Cl. G06g 7/04

U.S. Cl. 340—324 M **3 Claims**



A digital display device includes an upper and lower row of electroluminescent display elements each controlled by a silicon controlled rectifier gated by the output of a stage of a data buffer for applying an alternating potential to each display element; a blanking control circuit for controlling the amplitude of the alternating potential applied to the display elements; an image control switch for selectively operating the display device to be unblanked, to be blanked or to be automatically blanked except when input lines are energized; and a display time extension circuit for allowing a display device to be operational for a period of time after the input lines are de-energized.

3,781,852

CALCULATOR DISPLAY CIRCUIT

Edward A. White, Fort Wayne, Ind., and James H. Bunting, Acton, Mass., assignors to Bowmar Instrument Corporation, Fort Wayne, Ind.

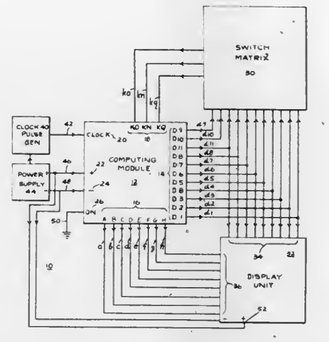
Division of Ser. No. 256,286, May 24, 1972. This application Nov. 21, 1972, Ser. No. 308,473

Int. Cl. G06f 3/14

U.S. Cl. 340—324 R **11 Claims**

A display circuit for use in electronic calculator which includes a computing circuit for receiving and manipulating digital datum, the computing circuit including first means for repetitively generating a plurality of input signals individually in sequence and second means for repetitively generating a plurality of sequentially occurring groups of output signals with individual ones of the input and output signals occurring simultaneously, a plurality of input terminals, keyboard means for coupling the input terminals to receive selected ones of the input signals, means for generating a repeating clock pulse signal, and a power supply.

The display circuit comprises a plurality of luminescing display devices each of which includes a common element and a plurality of segment elements individually coupled to the common element and disposed in a geometric array corresponding to selected alpha-numeric characters. A plurality of digit driver amplifiers are coupled to the computing circuit to receive predetermined ones of the input signals and electrically in series with the predetermined ones of the common elements, and a plurality of segment driver amplifiers are coupled



to the computing circuit to receive predetermined ones of the signals of said groups of output signals and connected electrically in series with all of the paralleled similar segment elements of all of said display devices. The digit driver amplifiers and segment driver amplifiers are rendered simultaneously and momentarily operative in response to the simultaneous reception of the input signals and groups of output signals with essentially all of the electrical energy passing through the segment and digit driver amplifiers, respectively, also passing through the display devices. The display devices are rendered individually, momentarily, and sequentially luminescent thereby.

3,781,853

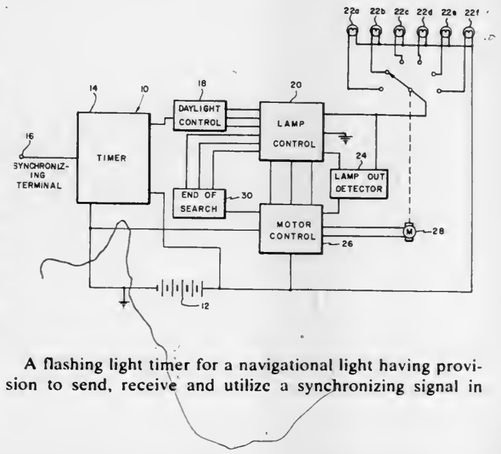
NAVIGATIONAL LIGHT SYSTEM

Thomas A. Jacobs, Houston, Tex., assignor to Tideland Signal Corporation, Houston, Tex.

Filed Dec. 23, 1971, Ser. No. 211,605

Int. Cl. G08g 3/00

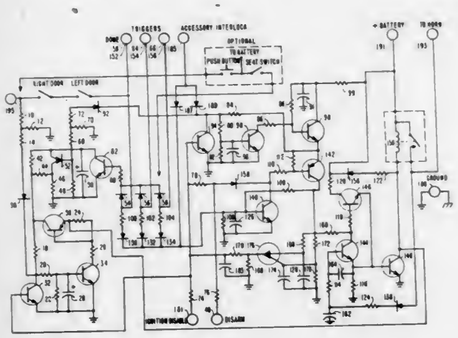
U.S. Cl. 340—29 **6 Claims**



A flashing light timer for a navigational light having provision to send, receive and utilize a synchronizing signal in

which a plurality of lights have their timers connected together so as to flash simultaneously, but will still operate in the event any one of the navigational lights fail. A coded timer for controlling the flashing code of a navigational light having a plurality of time constant circuits connected to a counter for readily changing the flashing code of a light. A navigational light having a logical circuit for sensing a burned out lamp without requiring a resistive element. A lamp changing circuit that allows the new lamp to be placed accurately into operative position. And a circuit for switching off power from the navigational light during the lamp changing process for preventing sparking of the electrical contacts.

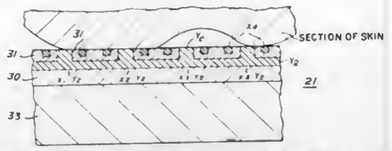
3,781,854
AUTO ALARM ARMING SYSTEM
Peter Kaufman, Santa Barbara; F. Thomas Colsen, Goleta, and Robert L. Townsend, Montecito, all of Calif., assignors to Educated Vehicle Systems, Inc., Santa Barbara City, Calif.
Filed Feb. 14, 1972, Ser. No. 225,792
Int. Cl. B60r *25/10*
U.S. Cl. 340—64 **9 Claims**



An alarm system comprises an armable circuit, an arming circuit adapted to pulse said armable circuit into its armed or "on" position and including a timer to activate said arming circuit after the passage of a fixed time period, a timer initiator for starting the timer into its timing mode, reset means to return and hold said timer in its initial or zero position only within said fixed time period to allow for a fixed or limited time for the reopening of doors and/or trunk without setting off the alarm, said armable circuit when in the armed mode being triggered by at least one automotive courtesy or dome light switch, hood switch, trunk switch and/or pressure sensitive seat belt interlock switch to complete the circuit allowing current to flow through said circuit to the automotive lights, horn, or other audible alarm device, a disarming circuit closed by the use of the door/ignition key to cause a momentary current to pulse said armable circuit into the disarmed mode.

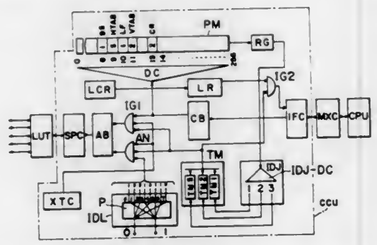
3,781,855
FINGERPRINT IDENTIFICATION SYSTEM AND METHOD
Donald E. Killen, Dallas, Tex., assignor to Identification Systems, Inc., Dallas, Tex.
Filed Mar. 13, 1970, Ser. No. 19,327
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 E **27 Claims**

The specification discloses a matrix sensing device for sensing the pattern of the skin of a finger for comparison with measurements previously obtained and stored in a storage device for identification purposes. The matrix sensing device comprises a plurality of electrical conductance sensing means located in rows and columns in a planar surface for contacting the skin of a finger. Selection mean is provided for sequentially selecting each sensing means row by row for sequentially measuring the electrical conductance of the skin at a plurality of points in an orderly fashion. Initially, in a first cycle, the conductance is sequentially measured and an average value



obtained. Subsequently, in a second cycle, each measurement obtained is compared to the average value. From the resulting measurements there is derived a signal image of the pattern of the skin of the finger for use for identification purposes.

3,781,856
TERMINAL COMMUNICATION CONTROL SYSTEM AND METHOD
Tetsuya Aizawa, Kawasaki; Taketoyo Sawada, Sagamihara; Yoshihiko Tauchi, Yokohama; Tsutomu Kawamata, Tokyo, and Hiroshi Saya, Yokohama, all of Japan, assignors to Nippon Telephone & Telephone Public Corporation, Tokyo and Fujitsu Limited, Kawasaki, Japan
Filed Dec. 22, 1971, Ser. No. 210,640
Claims priority, application Japan, Dec. 26, 1970, 45/118994
U.S. Cl. 340—172.5 **14 Claims**

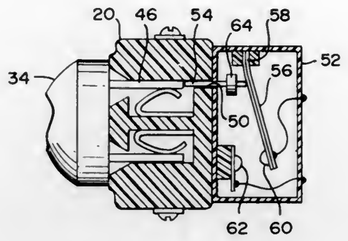


In a data processing system, a communication control system for terminal equipment, such as a typewriter, receives and processes control codes for that terminal equipment for controlling the operation thereof and, particularly, automatically inserts idle codes immediately after certain control codes such as for controlling line feed, tabulation, and carriage return operations. Control codes received by the control system from a central processing unit are collated with character classification information stored in a memory of the control system for detecting and identifying the predetermined control codes. For each such identified control code, a signal-inserting circuit is actuated for inserting an idle code of prescribed length immediately thereafter and thus prior to the next successive control code, to afford sufficient time for proper operation of the terminal equipment. Through use of the invention, programming requirements of the central processing unit are greatly simplified and the length of data required to be transmitted is minimized.

3,781,857
CONDITION RESPONSIVE RECEPTACLES
Joseph L. Stendig, 2500 Riverside Dr., and Claude A. Davis, 568 Riney Forest Rd., both of Danville, Va.
Filed Feb. 18, 1972, Ser. No. 227,402
Int. Cl. G08b *19/00*
U.S. Cl. 340—420 **9 Claims**

Power receptacles having an exterior appearance of that of a conventional receptacle and including a switching device

responsive both to insertion and/or removal of a plug and to an external condition such as heat or electrical current. An



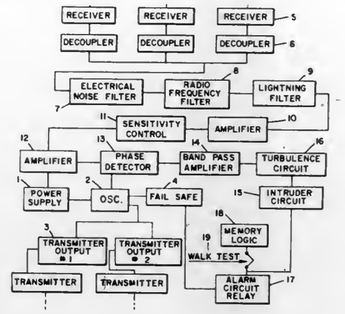
alarm device may be mounted on the receptacle for cooperation with the switching device to signal the occurrence of predetermined conditions sensed by the switching device.

3,781,858
FLUID LEVEL MONITORING SYSTEM
John R. Lewis, Framingham, Mass., assignor to Harnessed Energies, Inc., Newton, Mass.
Filed Nov. 26, 1971, Ser. No. 202,353
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 A **9 Claims**

A fluid level indicator wherein a float in a float chamber is responsive to the level of fluid in a vessel with which it communicates. The float carries a magnet which actuates a reed switch when the level of fluid in the float chamber reaches a predetermined level. A monitor connected to the reed switch indicates when the switch is actuated. A plunger disposed in the indicator when depressed moves the float, i.e., magnet, to actuate the reed switch regardless of the level of fluid in the float chamber whereby the monitoring system may be validated.

3,781,859
CONTROLLED WAVE PATTERN ULTRASONIC BURGLAR ALARM
Albert L. Hermans, c/o Seabroad Electric, 2255 Bancroft Ave., San Leandro, Calif.
Filed Apr. 19, 1972, Ser. No. 245,535
Int. Cl. G08b *13/16*
U.S. Cl. 340—258 A **8 Claims**

A burglar alarm employs ultrasonic sound to protect a plurality of rooms. Each protected room contains a transmitter which emits an ultrasonic signal in a controlled wave pattern. The signal is received, filtered, and detected to determine if a doppler shift in the ultrasonic signal of a particular amplitude



and frequency characteristic of human movement is present. If so, an alarm is given.

3,781,860
METHOD AND APPARATUS FOR INHIBITING ARTICLE THEFT
Edward N. Freyling, Jr., Scottsdale, Ariz., assignor to Walter A. Williamson, Scottsdale, Ariz.
Filed Feb. 14, 1972, Ser. No. 226,098
Int. Cl. G08b *13/24*; **H04b** *7/00*
U.S. Cl. 340—280 **19 Claims**

A system for detecting article theft wherein different frequency signals are transmitted at the access paths and a receiver associated with the article is responsive to the transmitted signals to actuate a timing device. At the end of an interval, a tear gas cartridge or similar device is fired. The receiver is inhibited from operation by the receipt of a third frequency signal to prevent false triggering.

3,781,861
ALARM LOCK
Charles F. Adler, Jr., 3153 N. Hudson Ave., Chicago, Ill., and Marshall L. Silver, 814 Michigan Ave., Evanston, Ill.
Filed Apr. 4, 1972, Ser. No. 241,005
Int. Cl. G08b *21/00*
U.S. Cl. 340—280 **6 Claims**

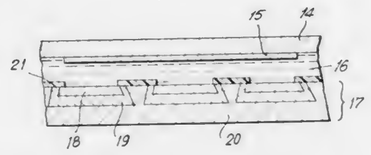
An alarm and locking device is provided wherein a housing containing an electrical alarm circuit is constructed for attachment to the body of an easily movable object, such as a bicycle. An object restraining and switch activating component is provided to enable the movable object to be connected to a fixed object when the component is locked into position with the housing. Any cutting or interruption of the connection made by the object restraining and switch activating component operates a switch in the electrical alarm circuit

thereby allowing current to pass to and activate a warning signal. Once the warning signal is activated rejoining the



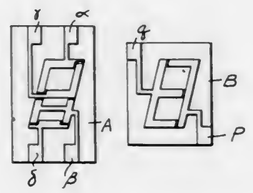
severed connection of the object restraining and switch activating component will not deactivate it.

3,781,862
DISPLAY DEVICE FOR ELECTRONIC CALCULATOR
Katsumi Yamamura, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed July 27, 1971, Ser. No. 166,383
Claims priority, application Japan, July 27, 1970, 45/65034
Int. Cl. G09f *9/30*
U.S. Cl. 340—336 **8 Claims**



A display device for an electronic calculator including a liquid crystal cell having a common electrode and a segmented electrode, the segments of said segmented electrode being adapted for selective separate actuation to produce the desired display in said liquid crystal cell. Diode means is coupled to each segment of said segmented electrode through the cathode thereof. Condenser means may also be coupled intermediate each of said segments of said segmented electrode and said common electrode.

3,781,863
DIGITAL DISPLAY DEVICE
Kinji Fujita, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikasha, Tokyo, Japan
Filed Dec. 20, 1971, Ser. No. 209,986
Claims priority, application Japan, Dec. 23, 1970, 45/116254
Int. Cl. G08b *5/36*
U.S. Cl. 340—336 **6 Claims**



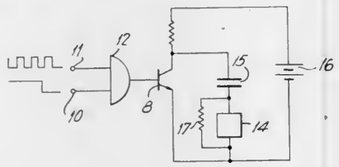
In an improved digital display device relying on the phenomenon of dispersion of incident light by nematic crystals across which an electric field is imposed, an arrangement of transparent conductive segments in groups on opposing parallel plates makes it possible to reduce the number of leads necessary for displaying any digit from zero to nine from the conventional eight leads to six leads. The impressed voltage necessary for causing the nematic liquid crystals to disperse light is applied in pulses to different segments in each group in succession, the pulses being supplied at a sufficiently high frequency so that each pulsed segment appears to be continuously actuated.

3,781,864
DRIVING ARRANGEMENT FOR LIQUID CRYSTAL DISPLAYS
Kinji Fujita, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Feb. 25, 1972, Ser. No. 232,462
Claims priority, application Japan, Feb. 25, 1971, 46/8976
Int. Cl. G08b *5/36*
U.S. Cl. 340—336 **12 Claims**



An arrangement for driving liquid crystal displays wherein an alternating driving voltage is applied to the display segments through a driving circuit formed from complementary field effect transistors. The output signal associated with each display segment and the inverse thereof are alternately applied to the segmented electrode in response to an alternating control signal, the inverse of said control signal being applied to the common electrode of the display.

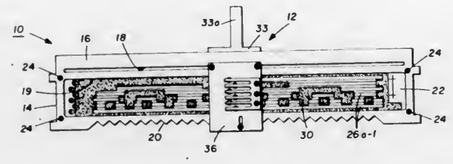
3,781,865
DISPLAY DEVICE FOR ELECTRONIC DESK CALCULATOR
Yoshio Yamazaki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Continuation-in-part of Ser. No. 44,839, June 9, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,294
Claims priority, application Japan, June 21, 1969, 44/48679
Int. Cl. G08b *5/36*
U.S. Cl. 340—336 **8 Claims**



A display device for an electronic desk calcuator incorporating liquid crystals of the nematic phase which cause light

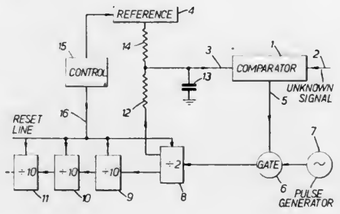
scattering when AC or DC voltages are applied thereto. Driving circuits are provided for applying an AC driving voltage to a display incorporating said liquid crystals.

3,781,866
BINARY ENCODING SWITCH
Jack S. Kilby, 7723 Midbury, Dallas, Tex.
Filed June 18, 1971, Ser. No. 154,494
Int. Cl. G08c *9/08*
U.S. Cl. 340—347 P **8 Claims**



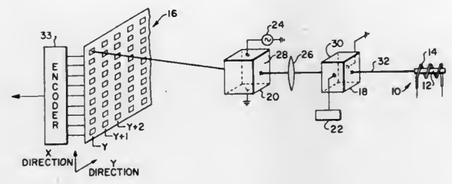
A binary encoding switch is described having a slide which is manually movable along a linear path adjacent a printed circuit board. The printed circuit board has five tracks comprised of conductive and non-conductive segments and a sixth track that is continuously conductive. The slide houses six conductive balls, each of which is biased into engagement with one of the tracks by a separate conductive leaf spring. A guide way is associated with the printed circuit board for guiding the slide along the linear path. A set of detents is also associated with the printed circuit board and a detent pin is carried by the slide. The detent pin is manually disengaged by the same operating tab used to move the slide longitudinally of the track. Electrical energy is continuously provided to the balls by way of the continuously conductive track and the leaf springs. Thus, the balls and tracks form individual switches which are open or closed in accordance with the conductive and non-conductive segments of the tracks. A diode associated with each of the five segmented tracks permits the conductive state of the respective ball and track switch to be used for binary coding purposes.

3,781,867
DIGITAL CONTROL APPARATUS
Leonard William Ellen, Northwood, and Gordon Thomas Davies, Wallasey, both of England, assignors to Her Majesty's Postmaster General, London, England
Continuation of Ser. No. 785,689, Dec. 20, 1968, abandoned. This application July 19, 1971, Ser. No. 164,000
Claims priority, application Great Britain, Jan. 8, 1968, 44771/68
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **5 Claims**



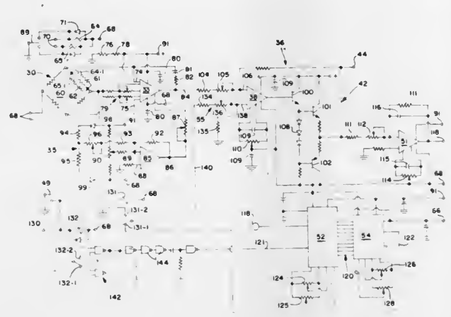
Digital display apparatus having a source of electric pulses feeding a counter has an extra binary counting stage interposed between the source and the counter. The setting of the extra stage at the end of a counting period is used to vary very slightly the number of pulses received by the counter during a succeeding counting period.

3,781,868
ANALOG-TO-DIGITAL CONVERTER
Charles J. Huber, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 812,645, April 2, 1969, abandoned.
This application Sept. 29, 1971, Ser. No. 184,674
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **5 Claims**



Apparatus is disclosed for the conversion of an analog signal to its sampled digital form. The conversion is accomplished by deflecting a collimated beam of light with an electro-optic device driven by the analog signal. A plurality of light activated elements or phototransistors are positioned in the path of beam after it passes through the electro-optic device. The light activated elements are arranged in a predetermined pattern such that as the level of the analog signal varies and thus the deflection of the beam varies, different ones of the elements are correspondingly activated. Means including electrical circuit apparatus is connected to the elements for providing a digital output representative of the analog signal.

3,781,869
TRANSDUCER AMPLIFIER WITH AUTOMATIC BALANCE
Dennis J. Sudnick, and Robert L. Shutts, both of Elyria, Ohio, assignors to Inservco, Inc., La Grange, Ohio
Filed Mar. 20, 1972, Ser. No. 236,056
Int. Cl. H03k *13/02*; **G01n** *21/20*
U.S. Cl. 340—347 CC **17 Claims**



An amplifier for strain gages and other transducers in quarter, half or full bridge configurations provides an analog output suited for measurement, control or display purposes. The amplifier includes temperature compensation and automatic zero balance, the former realized from the voltage-temperature characteristic of a silicon PN junction used to affect the offset of an integrated circuit amplifier stage. The signal

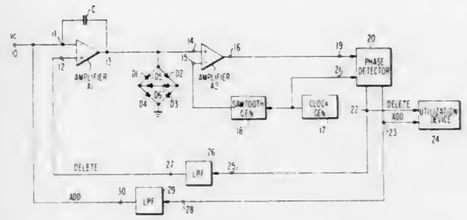
for zero balance is derived from the amplifier output, sampled and retained in an analog to digital converter and reconverted to analog form for application to a stage of the amplifier in opposition to the measurement signal, resetting for zero balance being under manual control.

3,781,870

VOLTAGE TO PULSE WIDTH CONVERTER

George Athan Cutsogeorge, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,861
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **8 Claims**



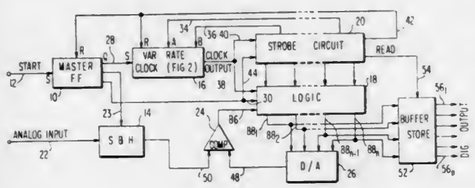
A circuit for converting an input voltage, the polarity and magnitude of which may vary, into two sets of pulses, one for each polarity of input voltage. The width of each pulse is related to the magnitude of the input voltage. The circuit includes a feedback arrangement to enhance the accuracy of the circuit.

3,781,871

ANALOG TO DIGITAL CONVERTER

John Mattern, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 13, 1972, Ser. No. 262,436
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **10 Claims**



A successive approximation analog to digital converter having a variable rate clock for increasing the conversion speed. The frequency of the clock is varied to accommodate the actual settling time required for each digital output bit, such that the frequency of the clock is made to speed up as the converter operates to first generate the most significant bit and then successively generate intermediate bits up to the least significant bit.

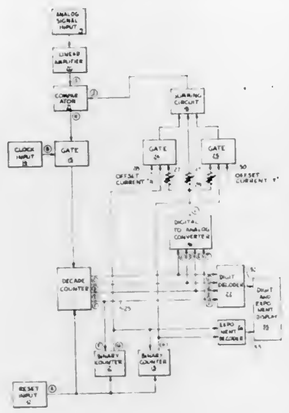
3,781,872

ANALOG-TO-DIGITAL CONVERSION FOR PROCESSING WIDE-RANGE AND NON-LINEAR INPUT SIGNALS

George J. Frye, and Arnold M. Frisch, both of Portland, Oreg., assignors to Elektros, Inc., Tigard, Oreg.

Filed Sept. 11, 1972, Ser. No. 287,627
Int. Cl. H03r *13/00*
U.S. Cl. 340—347 AD **18 Claims**

An analog-to-digital converter for processing non-linear input signals which may vary over several orders of magnitude. In order to speed up signal processing time, the digital output signals of the converter are limited to a representation of a single significant digit and an exponent, indicative of the order of magnitude of the digit. The converter is of the range-stepping sequential comparison type in which the input analog signal is compared with a staircase waveform signal of predetermined incremental amplitude stepped by a decade counter. A series of binary counters triggered sequentially at



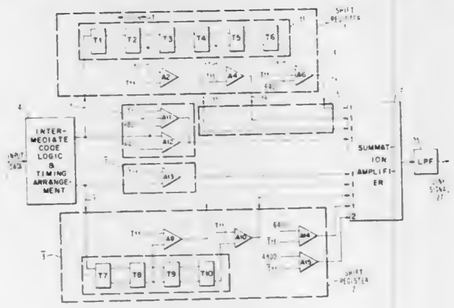
the completion of each decade by the decade counter control associated gates which, through the use of respective summing resistors and DC offset signal levels, adjust the amplitude of steps within the respective decades so that the digitized output of the converter may be fitted to a straightline approximation of a non-linear function in a manner which compensates for both the non-linearity and order of magnitude of the input signal to be converted.

3,781,873

DIGITAL DATA TRANSMISSION SYSTEM USING MULTILEVEL ENCODING WITH VARIABLE DIPULSE SPACING

Henri Jean Nussbaumer, La Gaude, France, assignor to International Business Machine Corporation, Armonk, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,223
Claims priority, application France, Dec. 30, 1969, 6945782
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **4 Claims**



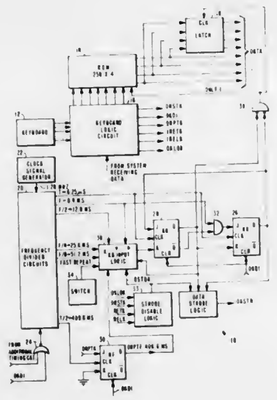
A digital data communication system in which N successive data elements generated within T seconds are encoded for transmission such that each data element is represented by a pulse and at some predetermined time later by the inverse of that pulse. The magnitude of the pulse and its later occurring inverse is governed according to the encoding rule of the particular multilevel (partial response) code actually used. In order to reduce the interference between inverse pulses and the original pulses of subsequently encoded data elements, the first pulse of each of the N successive data elements is encoded during corresponding successive ones of the N out of the next N+1 occuring intervals of duration T/N seconds, the N+1 interval being unused. The second and inverse pulse of each pair, starting with the first pair, is transmitted respectively N(T/N), (N−1) (T/N), (N−2) (T/N), —T/N seconds after the first pulse. This results in all of the inverse pulses interfering only during the N+1 intervals.

3,781,874

KEYBOARD ENTRY SYSTEM

Alan K. Jennings, Anaheim, Calif., assignor to Pertec Corporation, Los Angeles, Calif.

Filed Apr. 3, 1972, Ser. No. 240,728
Int. Cl. G06f *3/02*
U.S. Cl. 340—365 S **12 Claims**



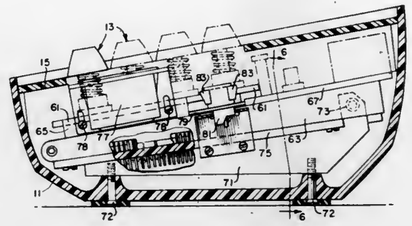
A keyboard entry system includes a keyboard, a read only memory (ROM) addressed by activation of a key on the keyboard and a digital timing circuit. The timing circuit includes a pair of flip flops which are sequenced through successive mutually exclusive states to control the output of encoded signals to an information receiving device in response to key activation. These sequenced states provide timing for three basic functions. First, the memory must be addressed for a sufficiently long period of time to permit dissipation of switch bounce so that possibly erroneous memory locations will not be addressed at the time information stored in the ROM is transferred. Second, a relatively short strobe pulse is generated for transferring keyed information to the system; and third, the sequencing of the flip flops is blocked to permit control of subsequent repeating of the sequence. In addition, advantage is taken of commercially available ROM configurations by addressing the ROM in a manner effectively doubling the word length by halving the number of words. The blocking function is terminated when there is a new key activation or, in the event an automatic repeat key is depressed, at the conclusion of first and subsequent periods of continuous key depression. The first period is relatively long to prevent unwanted automatic repeat and the subsequent periods may be chosen to provide automatic repeat at either 10 or 20 cycles per second.

3,781,875

MECHANICAL ARRANGEMENT OF THE TELEVISION GENERATOR

William L. King, Wheaton, Md., assignor to Datavision, Inc., Rockville, Md.

Filed Oct. 4, 1971, Ser. No. 186,262
Int. Cl. G08b *5/36*
U.S. Cl. 340—365 R **10 Claims**



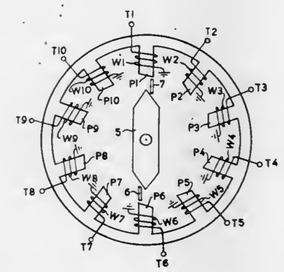
A television character generator is provided with a housing and keyboard arrangement in which the video signal generating circuitry is located directly beneath the keyboard. The keyboard, which is a mercury switch operated encoding keyboard, and video signal generating circuitry are mounted on a folding frame which can be unfolded to provide ready access to the keyboard and circuitry.

3,781,876

ROTARY ELECTROMAGNETIC INDICATOR

Richard C. McComb, Newington, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Continuation-in-part of Ser. No. 814,620, April 9, 1969, abandoned. This application Oct. 12, 1971, Ser. No. 188,294
Int. Cl. G09f *11/10*
U.S. Cl. 340—378 MW **1 Claim**



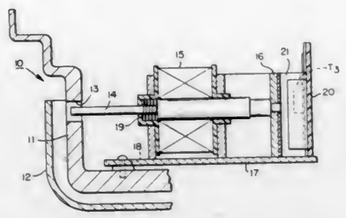
A non-blinking rotary electromagnetic indicator having an annular stator with equiangularly spaced radially inwardly extending salient poles with windings disposed thereon and a rotor with a permanent magnet rotatable into alignment with the salient poles in accordance with the operation of the stator windings and a symbol bearing drum encircling the stator. A rotor vane of ferromagnetic material is provided next to each pole of the rotor magnet angularly offset from the magnetic axis of the permanent magnet and extending outwardly of the permanent magnet pole to provide a turning force on the rotor when it is to be rotated to a 180° opposite position.

3,781,877

ASTABLE MULTIVIBRATOR D.C. BELL

Charles Berns, Brookfield, Conn., assignor to Edwards Company, Inc., Norwalk, Conn.

Continuation of Ser. No. 53,752, July 10, 1970, abandoned.
This application Apr. 14, 1972, Ser. No. 244,312
Int. Cl. G10k 1/065
U.S. Cl. 340—396 3 Claims



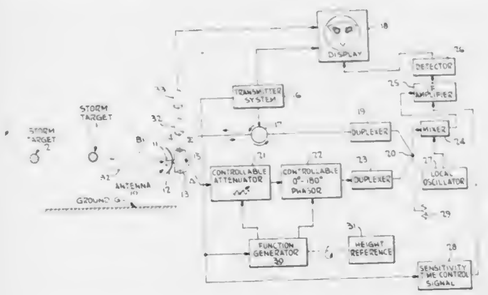
A direct current bell is provided having a reciprocating bell striker driven by an astable multivibrator having first and second timing capacitors of different values for providing a 40 percent duty cycle at the natural frequency of the bell striker. A means is provided for protecting the transistors of the multivibrator from excessive reverse bias potentials generated by the timing capacitors.

3,781,878

MEANS FOR SUPPRESSING GROUND CLUTTER IN AIRBORNE RADAR

George M. Kirkpatrick, 202 David Dr., Syracuse, N.Y.

Filed July 29, 1971, Ser. No. 167,134
Int. Cl. G01s 9/02
U.S. Cl. 343—5 W 4 Claims



Method and means for detecting both long and short range weather targets in the presence of ground clutter in which a receive antenna beam is steered from a first generally elevated beam position to a second generally horizontal beam position in accordance with a beam steering program.

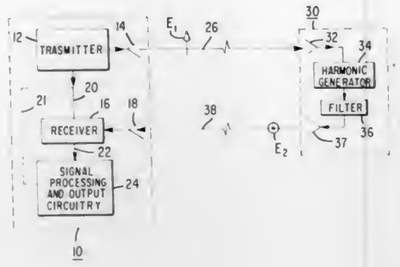
3,781,879

HARMONIC RADAR DETECTING AND RANGING SYSTEM FOR AUTOMOTIVE VEHICLES

Harold Staras, and Joshua Shefer, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed June 30, 1972, Ser. No. 267,947
Int. Cl. G01s 9/02
U.S. Cl. 343—5 R 11 Claims

In a vehicular harmonic radar detecting and ranging system, a transmitter transmits a highly directional and polarized beam of electromagnetic energy, preferably in the microwave spectrum, toward a passive target. The passive target reradiates a beam of energy, which is harmonically related to and polarized orthogonal to the transmitted beam, directionally back toward the transmitter. A receiver by being



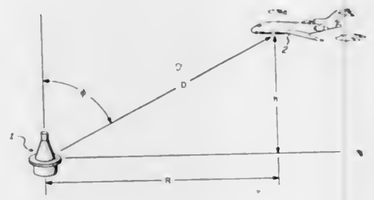
selectively responsive the the harmonically related and orthogonally polarized reradiated beam, is immune to blinding which would otherwise be caused by the transmitted signals of other radar equipped vehicles and to the clutter caused by extraneous targets.

3,781,880

AREA NAVIGATION SYSTEM

Robert S. Jacobson, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,013
Int. Cl. G01s 9/02
U.S. Cl. 343—6 R 2 Claims



An apparatus permitting area navigation employs radio distance measuring equipment transmissions and omni-range radio transmissions from a guidance transmitter system for craft-borne employment of magnetic azimuth and actual ground range of the craft with respect to the guidance transmitter location.

3,781,881

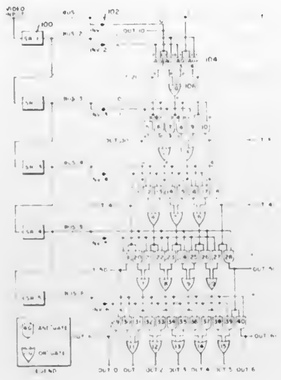
BEACON TARGET SELECTOR AND EVALUATOR

John M. Hovey, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 21, 1972, Ser. No. 273,912
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 R 5 Claims

An IFF target evaluator comprising signal-storage means consisting of a plurality of series-connected shift registers each of whose outputs are also connected to a different level of a Pascal-triangle configuration of AND and OR gates used as a decoding means. The outputs of the decoding means show

whether a series of consecutive pulse positions contain enough pulses to indicate a target; how many consecutive "ones" have



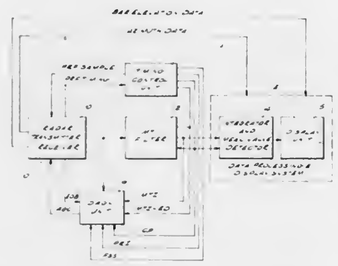
been received from a predetermined number of range sweeps; and how many consecutive "zeros" have been received.

3,781,882

ADAPTIVE DIGITAL AUTOMATIC GAIN CONTROL FOR MTI RADAR SYSTEMS

Dieter E. Holberg, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 30, 1970, Ser. No. 76,850
Int. Cl. G01s 9/02, 9/42
U.S. Cl. 343—7 A 8 Claims



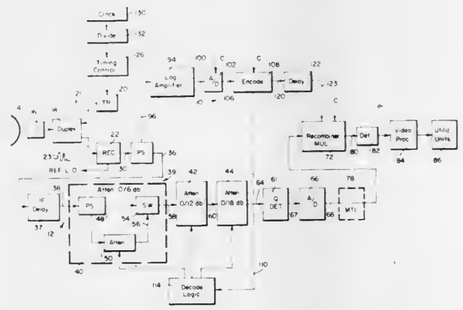
An adaptive digital automatic gain control (DAGC) system is disclosed for pulsed radar moving target indicator (MTI) systems to reduce the input dynamic range requirements of a data processing and display system by dividing each range sweep into a number of range elements of one or more range bins, comparing the signal level in each range element to a selected reference level, and providing a digital error signal indicating whether or not the video signal is greater than the reference signal. The radar video signal is processed by an MTI filter, the output of which is compared with a selected reference level to similarly provide digital error signals for AGC control based on not only the raw radar video signal, but also the MTI video signal. These digital error signals are integrated separately for each range element, thereby developing for each range element an AGC signal in digital form based on the past history in the raw radar video signal and the MTI video signal over a continuous succession of range sweeps. After conversion into analog form, these digital AGC signals developed for all range bins of a given sweep are filtered by a low pass filter to provide an analog AGC signal which is smooth over approximately 16 range bins. A noise AGC signal is similarly developed and combined with the radar video and MTI video AGC, but at a much slower rate of one sample per azimuth scan.

3,781,883

DYNAMIC RANGE CONTROL SYSTEM HAVING AMPLITUDE RESTORATION

David D. Effinger, La Habra; Norol T. Evans, San Pedro, and Vaughn H. Estrick, Fullerton, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 10, 1972, Ser. No. 233,833
Int. Cl. G01s 9/04
U.S. Cl. 343—7 A 10 Claims



An automatic dynamic range control system that eliminates the effect of dynamic range limitations in the main radar channel and restores the signal amplitude prior to detection. A separate auxiliary measurement channel is provided in parallel with the main IF channel having a logarithmic amplifier or sequential detector with sufficient dynamic range to meet the signal informational requirements. During each range bin period, the IF signal in the auxiliary channel is quantized in amplitude above the predetermined dynamic range of the main channel within selected ranges of input signal level to form coded signals. The quantized levels are then utilized substantially in real time for attenuating the signal in the main IF channel to maintain that signal within the dynamic range limits of the channel. After the main channel signal is processed and passed through an analog to digital converter, the coded signal for each corresponding range bin is utilized to recombine a component to the attenuated signal so that the radar signal has its original amplitude modulations restored. Thus, the system allows reliable radar detection while at the same time overcoming the limitations of limited gain characteristics.

3,781,884

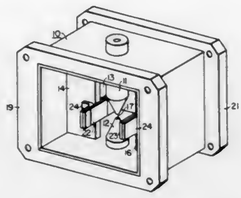
FUZE HAVING A HIGH RESISTANCE TO COUNTERMEASURES

Billy M. Horton, 9712 Rensington Pky., Kensington, Md.

Filed Apr. 23, 1958, Ser. No. 730,759
Int. Cl. G01s 9/24
U.S. Cl. 343—7 PF 13 Claims

2. A noise-modulated radio proximity fuze comprising in combination: a transmitter radiating energy towards a target, a source of white noise having a gaussian probability distribution of amplitudes with a mean amplitude of zero and a predetermined peak-to-peak noise voltage, a linear frequency shaping network connected to said source to frequency-shape said noise to a predetermined frequency spectrum, means connecting said network to said transmitter so that the frequency-shaped noise linearly frequency modulates said transmitter, means for receiving the energy reflected from the

target, mixer means to which the received energy and a sample of the transmitted energy are fed, said mixer means producing a signal which is the instantaneous difference-frequency between transmitted and received energy and in which the frequency spectrum of the mixer output signal is dependent upon target distance amplifier means connected to the output of said mixer means for amplifying the mixer output signal, discriminator means connected to the output of



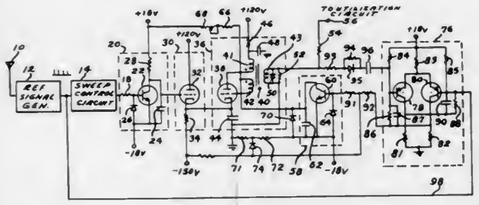
said amplifier, for producing an output signal which is a distance correlation of the frequency spectrum of the mixer output signal firing circuit means connected to the output of said discriminator means, said firing circuit means producing a firing pulse when the output of said discriminator means corresponds to a predetermined firing distance, and detonation means connected to the output of said firing circuit means so as to provide detonation when said firing circuit produces a firing pulse.

3,781,885

MOVING RANGE GATE GENERATING SYSTEM FOR RADAR APPARATUS

Lloyd J. Hassencahl, Chatsworth, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 13, 1965, Ser. No. 425,357
Int. Cl. G01s 7/28
U.S. Cl. 343—7.3 **1 Claim**



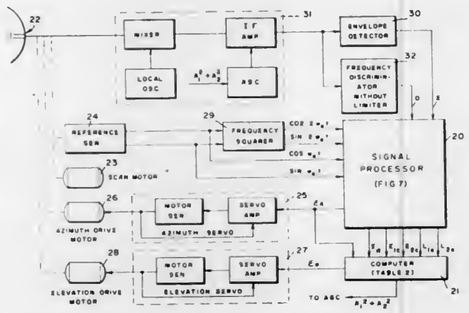
1. In a radar system for searching and tracking objects in space, a voltage comparator circuit comprising: a source of serially generated time base pulses having a predetermined pulse repetition frequency, bias means coupled to said pulse source and controlled by said pulses for deriving a control voltage extended over a predetermined duration, a first sawtooth generator biased by said control voltage to produce for said predetermined duration a sawtooth voltage encompassing a period greater in length than a plurality of periods of said pulse repetition frequency, a second sawtooth generator, multivibrator means normally having a first quiescent state and one output level and being switchable to a second state and another output level by each of said pulses, said second sawtooth generator being controlled by said multivibrator means, an input connection between said source and said multivibrator means whereby in response to the switching of said multivibrator means from said first to said second state said second sawtooth generator produces a second sawtooth voltage, a comparator having first and second input electrodes and an output electrode and characteristics of producing an output pulse on said output electrode each time the signals simultaneously applied to said input electrodes agree in amplitude, cathode follower means for applying said first sawtooth voltage to the first input electrode of said comparator, circuit means for applying said second sawtooth voltage to the second input electrode of said comparator, means connected between said output electrode and said multivibrator means for restoring the initial quiescent state of said multivibrator means upon the occurrence of said output pulses, whereby said second sawtooth voltage undergoes termination upon each reversal of said multivibrator means from said second state to said first quiescent state, the improvement lying in gradually increasing the delay between each of said output pulses and the related one of said time base pulses which spatially precedes it.

3,781,886

MULTIPLE-TARGET RESOLUTION IN THE MAIN BEAM OF A CONICAL SCAN RADAR

Gerald W. Lank, and Gerald E. Pollon, both of Claremont, Calif., assignors to Technology Service Corporation, Santa Monica, Calif.

Filed May 22, 1972, Ser. No. 255,520
Int. Cl. G01s 9/02
U.S. Cl. 343—7.4 **10 Claims**



A method is disclosed for target ray resolution in coherent, conically scanned radar when a target image is present. An envelope detector and frequency discriminator operate on the IF signal. The fundamental and second harmonic components of the conical scan out of the discriminator are used in a computer along with the DC, fundamental, and second harmonic of the envelope out of the detector to solve five equations in five unknowns. That yields the elevation angles to the target and its image. The larger of the two angles is selected as the elevation angle to the target. The first harmonic and the DC component of the envelope are employed to produce an estimate of the target azimuth angle.

3,781,887

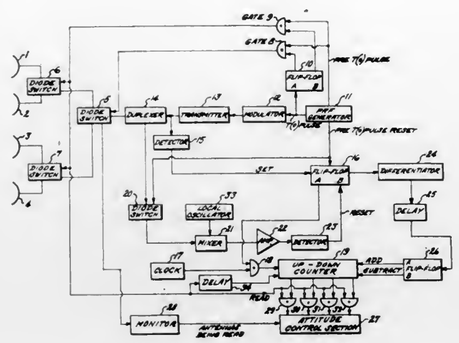
SATELLITE INSPECTION RADAR

Alfred F. Gaheen, Glen Burnie, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 14, 1967, Ser. No. 646,797
Int. Cl. G01s 9/06
U.S. Cl. 343—13 R **3 Claims**

A radar system allowing an inspecting satellite to approach another satellite within a number of feet without contact therebetween. The radar system utilizes a pair of wide-beam antennas located along the roll and pitch axes of the inspect-

ing satellite. A short pulse radar associated therewith is used to obtain range to the closest point and a comparison is made



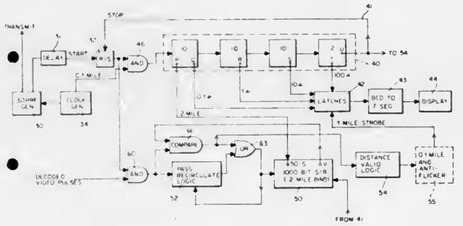
between the range measurements of each antenna in a pair. Thus a type of "sampled comparison" system is provided at a PRF/4 rate.

3,781,888

DIGITAL DISTANCE RANGING SYSTEM

John W. Ball, Fort Washington, Pa., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Oct. 30, 1972, Ser. No. 301,838
Int. Cl. G01s 9/06
U.S. Cl. 343—13 R **17 Claims**



A digital distance ranging system, particularly adapted for use in aircraft, wherein incoming pulses are converted into signals representing discrete distance ranges. During the first search cycle (epic) of a distance search, all received pulses are distance-classified within a discrete range and remembered, and during each successive epic the received pulses are distance-compared with the remembered ranges and only repeated ranges are remembered for further comparison. When only one such remembered range remains, it is identified and displayed as the valid range.

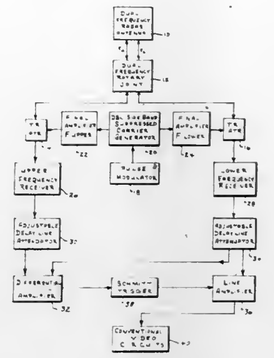
3,781,889

RADAR SIDE LOBE ECHO ELIMINATOR

John K. Mitchell, 35 Mayfair Dr., Westwood, Mass.

Filed Mar. 21, 1972, Ser. No. 236,628
Int. Cl. G01s 9/06
U.S. Cl. 343—17.1 R **4 Claims**

An apparatus for eliminating radar side lobe echos in returning radar signals. A single antenna is utilized to simultaneously receive radar pulse echos at two different frequencies. The two frequencies have main antenna beams which are



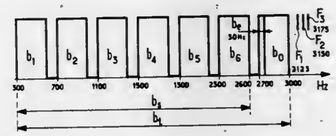
equal in width but their respective side lobes do not provide coincidence.

3,781,890

RADIO TRANSMITTER RECEIVER INCLUDING LEVEL AND ANTENNA DIRECTION CONTROL CIRCUITRY

Marcel Louis Boyer, Chatillon, France, assignor to C.I.T.-Compagnie Industrielle des Telecommunication, Paris, France

Filed Nov. 20, 1970, Ser. No. 91,370
Claims priority, application France, Nov. 20, 1969, 6939969
Int. Cl. G01s 1/04
U.S. Cl. 343—100 CS **18 Claims**



The invention concerns the field of point-to-point communications in a network of stations equipped for selective calling. It concerns a coding system partially of the numerical types, partially of the analogical type, combined with a device for enabling maximum output at the transmission level. The main applications are in mobile communications, in particular, between airplanes.

3,781,891

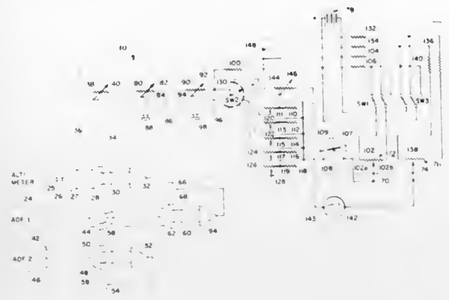
AIRCRAFT GLIDE SLOPE INSTRUMENTATION SYSTEM

Robert R. Moose, 208 S. Henderson, Caddo, Okla.

Filed Apr. 17, 1972, Ser. No. 244,830
Int. Cl. G01s 1/16
U.S. Cl. 343—108 R **14 Claims**

An aircraft glide slope instrumentation system for use with an altimeter means equipped aircraft and a landing strip, the instrumentation system comprising a pair of ground-based transmitter beacons spaced a fixed distance apart, a first direction-finding receiver carried by the aircraft for receiving the output of one of the transmitter beacons and determining the azimuth bearing thereof, a second direction-finding receiver carried by the aircraft for receiving the output of the other transmittter beacon and determining the azimuth bearing thereof, distance computer means carried by the aircraft and operably connected to the two receivers for determining the horizontal distance between the aircraft and the landing

strip based on the difference in relative bearing of the two transmitter beacons, altitude computing means carried by the aircraft and operably connected to the distance computer means for determining the desired landing approach altitude of the aircraft at any time during the approach thereof and



glide slope display means operably connected to the altitude computing means and the aircraft altimeter means for displaying the difference between the desired landing approach altitude and the true altitude of the aircraft with respect to the landing strip.

3,781,892

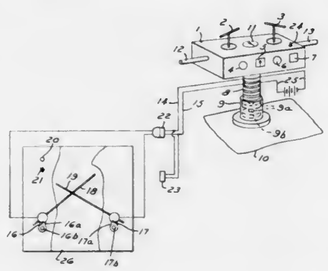
POSITION PLOTTER

George M. Holley, Jr., 510 Sheldon Rd., Grosse Pointe Shores, Mich.

Continuation-in-part of Ser. No. 889,080, Dec. 30, 1969, Pat. No. 3,623,102. This application Nov. 16, 1971, Ser. No. 199,241. The portion of the term of this patent subsequent to Nov. 23, 1988, has been disclaimed.

Int. Cl. G01s *5/08*

U.S. Cl. 343—112 PT **4 Claims**



A position plotter having a pair of bearing indicators disposed in relation to a navigation chart to show at their intersection the position of a vessel on the chart are enslaved to a pair of radio direction finders mounted on a rotatable azimuth table whereby the indicators and chart are independent of the vessel's heading when the table is rotated to a predetermined azimuth setting.

3,781,893

ANTENNA FOR WEATHER BALLOON

John M. Beukers, 8 Old Wood Rd., and Martin C. Poppe, 46 Pembrook Dr., both of Stoneybrook, N.Y.

Continuation-in-part of Ser. No. 873,590, Nov. 3, 1969, abandoned. This application Jan. 31, 1972, Ser. No. 222,199

Int. Cl. H01q *1/28*

U.S. Cl. 343—702 **3 Claims**

Meteorological sensing equipment is carried in an airborne vehicle. Also contained in that vehicle is a navigation receiver which receives tracking signals from a remote station and retransmits those signals, thereby to locate the position of the airborne vehicle. The present invention provides an improved antenna construction for use with the navigation receiver, that



antenna comprising a first signal-receiving conductor and a second conductor arranged with respect to the first conductor in a manner defining an artificial ground plane across which the received tracking signal is produced.

3,781,894

BALLOON CARRIED DIRECTIONAL ANTENNA

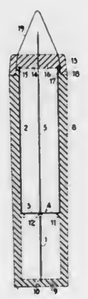
Cesar Ancona, Paris, and Jean Choquer, Gif-sur-Yvette, both of France, assignors to Centre National D'Etudes Spatiales (Cnes), Paris, France

Continuation-in-part of Ser. No. 793,082, Jan. 22, 1969, abandoned. This application Sept. 9, 1971, Ser. No. 178,910

Claims priority, application France, Jan. 22, 1968, 68136819; Aug. 3, 1971, 7128369

Int. Cl. H01q *1/28*

U.S. Cl. 343—706 **17 Claims**



Directional antenna comprising a cylindrical skirt and a base perpendicular to the skirt axis, and a unipole extending from the base along the axis and out of the skirt. Electrically insulated fixing means extending through an aperture in the base fix the unipole to the base. A coaxial feeder line extends through the skirt and has its inner conductor extending through the insulated fixing means and connected to the unipole through the aperture and its outer conductor connected to the skirt. The unipole has a length of $\leq 0.25\ \lambda$, the skirt has a length of 0.35 λ–0.65 λ and a diameter of 0.05–0.2 λ, whereby the antenna has a radiation pattern which lies substantially entirely on the side of the plane of the skirt base opposed to the unipole.

3,781,895

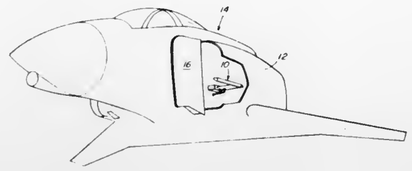
COMBINED PITOT TUBE AND ANTENNA

George J. Monser, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 22, 1972, Ser. No. 309,312

Int. Cl. H01q *1/28*

U.S. Cl. 343—708 **2 Claims**



An antenna structure for use on a jet aircraft in the VHF band is shown. The particular structure illustrated is also the housing for a Pitot tube mounted on the aircraft. Such housing is electrically insulated from the fuselage of the aircraft and capacitively coupled to a coaxial transmission line so that it may become an active antenna element without affecting the aerodynamic characteristics of the aircraft.

3,781,896

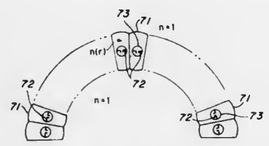
ENGULFED SUPERDIRECTIVE ARRAYS

William J. Toulis, 3920 Leland St., San Diego, Calif.

Filed Nov. 12, 1969, Ser. No. 875,691

Int. Cl. H01q *19/06*

U.S. Cl. 343—754 **6 Claims**



An array of elements which provides improved directivity characteristics when engulfed in a low-velocity refractive medium having an effective array length in the direction of propagation not exceeding any of the corresponding transverse dimensions of the engulfment.

3,781,897

WIDE-ANGLE PLANAR-BEAM ANTENNA ADAPTED FOR CONVENTIONAL OR DOPPLER SCAN USING LATERALLY FLARED REFLECTOR

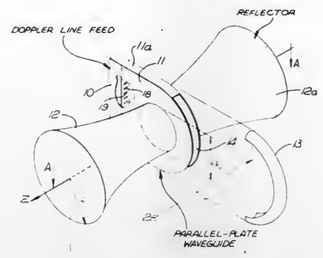
Gregory G. Charlton, Calabasas, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 314,141

Int. Cl. H01q *19/10*

U.S. Cl. 343—836 **5 Claims**

An antenna including a conductive reflector formed as a surface of revolution about a horizontal axis by rotation of a double-ended hyperbolic curve. The reflector is illuminated from an ancillary reflector in cooperation with a parallel-plate wave guide planar-beam generating arrangement. A conventional or Doppler-scan array provides the excitation for the so-called parallel-plate wave converter. The radiated beam shape



tends to hold its focus and, therefore, its elevation coordinate width over a wide range of azimuth angles.

3,781,898

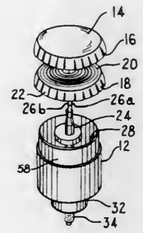
SPIRAL ANTENNA WITH DIELECTRIC COVER

Albert L. Holloway, 2211 Camino A Las Cerras, Menlo Park, Calif.

Filed July 3, 1972, Ser. No. 268,823

Int. Cl. H01q *1/36*

U.S. Cl. 343—872 **15 Claims**



A radar antenna and method of constructing the same, the antenna having a cup-like support base, a printed antenna circuit on a thin flexible dielectric blank, and an impervious cover, the antenna being constructed by stretching the dielectric blank across the open end of the support using a jig having means to engage a plurality of radially projecting tabs on the dielectric blank and drawing the tabs down against the side of the support to which they are secured before being severed from the jig, and covering the dielectric blank with the impervious cover to hermetically seal the printed antenna circuit from adverse environmental conditions.

3,781,899

FLEXIBLE HELICAL SPRING ANTENNA

John J. Lockwood, Scottsdale, Ariz., assignor to GTE Sylvania Incorporated, Stamford, Conn.

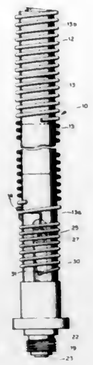
Filed Jan. 17, 1973, Ser. No. 324,329

Int. Cl. H01q *1/36*

U.S. Cl. 343—880 **6 Claims**

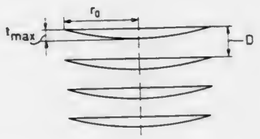
A flexible helical spring antenna including a helical spring member with a plurality of cylindrically shaped insulating spacers disposed centrally of the spring member to form a cen-

tral core. The spring member is stretched so as to be under tension. When the antenna is bent, the force of tension in the



spring member acting on the spacers tends to return the antenna to its normally assumed configuration.

3,781,900
LUNEBERG LENS
Keith Lewis Fuller, and Anthony John Lambell, both of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 23, 1972, Ser. No. 282,894
Int. Cl. H01q *15/08*
U.S. Cl. 343—911 L **5 Claims**

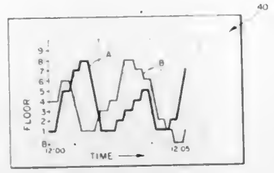


In a coaxial assembly of parallel, circular elements of substantially the same maximum radius, the thickness and effective dielectric constant of each element at each radius from zero to the maximum, and the spacing of the elements, are such that the assembly acts as a cylindrical Luneberg lens. Suitably, each element has the same dimensions and is of the same dielectric material, and the elements are regularly spaced.

The varying thickness of each element enables the assembly of spaced elements to satisfy a desired relation between equivalent dielectric constant and radius. The lens is suitable for high-power applications.

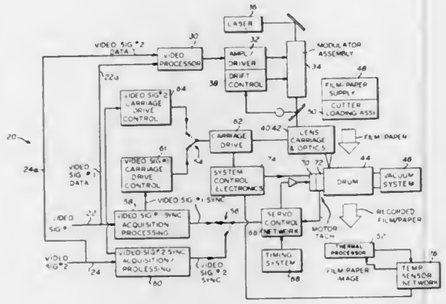
3,781,901
METHOD FOR EVALUATING ELEVATOR PERFORMANCE
Evans Lewis Morrison, 510 Narberth Ave., Merion, Pa.
Filed Mar. 14, 1972, Ser. No. 234,630
Int. Cl. G01d *9/12*
U.S. Cl. 346—1 **3 Claims**

A process for evaluating elevator performance wherein a continuous signal, corresponding to the position of the elevator, is produced and recorded in the form of a visual graphic indication of the position of the elevator with time. An apparatus for continuously indicating and recording the position of an elevator with time, said apparatus comprising signal means connected to a part of the elevator operating assembly and adapted to provide a continuous signal corresponding to



the position of the elevator, and recording means for producing a suitable graphic indication of the elevator position with time.

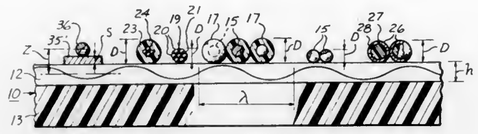
3,781,902
RECORDER/PROCESSOR APPARATUS
Ivan H. Shim, Fairfield, and John J. Stelben, Greenwich, both of Conn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Sept. 7, 1971, Ser. No. 177,985
Int. Cl. G01d
U.S. Cl. 346—24 **25 Claims**



An apparatus for recording a data input on, and thermally processing, a thermally processible storage medium in which a light source, such as a modulated laser beam whose intensity is modulated in response to the incoming data input, such as a video signal, is caused to generate a raster in conformance with incoming timing/control signals so as to expose a latent image of the input information on the storage medium. A rotating drum in conjunction with an incrementally driven lens carriage associated with the laser optical system provides the raster generation. The drum is automatically loaded with the storage medium from a supply means and automatically unloaded to a thermal processor upon completion of recording. The latent image is processed by the controlled application of heat so as to produce an actual displayable image corresponding to the data input at the output of the apparatus.

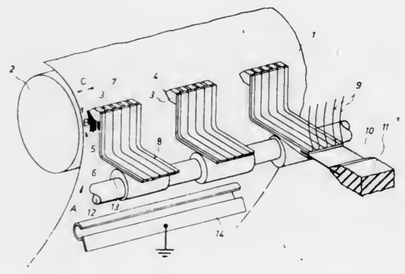
3,781,903
MAGNETIC IMAGING METHODS AND MEDIA
Frederick J. Jeffers, and John H. Rolker, both of Altadena, Calif., assignors to Bell & Howell Company, Chicago, Ill.
Filed Nov. 8, 1971, Ser. No. 196,317
Int. Cl. G03g *19/00*
U.S. Cl. 346—74 MP **46 Claims**

A magnetic imaging method provides a magnetic record of an input image by causing selected portions of a sheet of magnetic recording material to be magnetized substantially to a predetermined depth with alternating magnetic fields having a



predetermined wavelength that is correlated to the depth of magnetization and to the diameter of magnetic toner particles employed in the printout of the magnetic record.

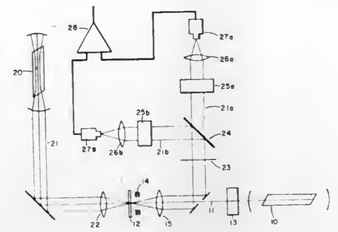
3,781,904
APPARATUS FOR PRODUCING RASTER DOT IMAGES
Fritz Firnig; Hubertus Bettin, and Gunter Lorenzen, all of Braunschweig, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany
Filed Feb. 2, 1972, Ser. No. 222,961
Claims priority, application Germany, May 12, 1971, P 21 23 558.5
Int. Cl. G01d *15/08*
U.S. Cl. 346—74 SB **7 Claims**



An apparatus for producing images with raster dots on a recording carrier. The recording carrier has a coating which can be modified by writing electrodes to which an electrical voltage can be applied. A transporting member is used to move the recording carrier relative to the writing electrodes. An oscillator imparts an oscillating movement to the writing electrodes, each writing electrode sweeping over a respective area corresponding in size to a raster dot.

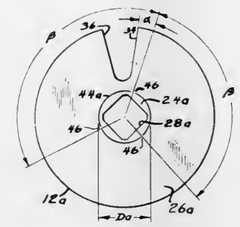
3,781,905
OPTICAL MASS MEMORY
Enrique Bernal G., and Di Chen, both of Minetonka, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 22, 1972, Ser. No. 291,448
Int. Cl. G11b *5/02*
U.S. Cl. 346—74 MT **11 Claims**

An optical mass memory of the Curie point writing type which utilizes a pulsed laser to write on low temperature phase manganese bismuth film. The duration of the laser pulses is less than 10 nanoseconds. Greatly reduced readout signal



level variation due to crystallographic phase change is achieved.

3,781,906
MULTIPLE DAY RECORDING CHART PACK
Murray C. Carney, Springfield, Ill., assignor to Sangamo Electric Company, Springfield, Ill.
Filed June 28, 1971, Ser. No. 157,589
Int. Cl. G01d *15/32*
U.S. Cl. 346—137 **15 Claims**

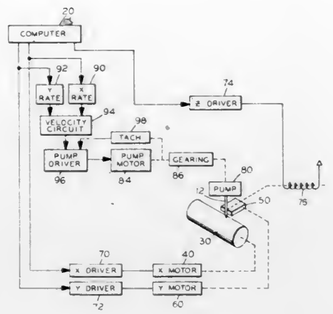


A multiple day chart pack for use with tachographs and the like which includes a plurality of stacked charts each of which has an inner disc portion detachably secured to an outer portion through breakable ties. The ties of each chart in the pack are positioned to require equal tie severing torque between successive charts. The tie circle of each chart in the pack is greater than the diameter of the tie circle of the next preceding chart to preclude restraint or interference with movement of a chart axially over the inner disc portions of the next preceding charts after recording thereon.

3,781,907
APPARATUS FOR EXPRESSING WRITING FLUID FROM A PLOTTING PEN
Heinz Joseph Gerber, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.
Filed Jan. 17, 1972, Ser. No. 218,143
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 **10 Claims**

In a plotting device in which a plotting pen and a recording medium move relative to one another while the pen produces a line trace on the medium, a fluid pump is connected to the plotting pen and forcibly expresses writing fluid from the pen at a rate proportional to the rate of relative movement between the pen and the recording medium. In one such plotting device, a recording medium such as a strip of plotting paper, is transported between two supply rolls by means of a motor-driven plotting drum. The plotting pen is transported

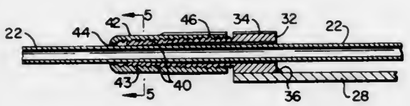
laterally of the strip of plotting paper and over the plotting drum by means of a motor-driven carriage. The motors of the plotting drum and the carriage receive plotting commands from a digital computer and a velocity signal circuit in the plotting device derives a velocity signal proportional to the relative movement generated by the motors. The velocity signal is utilized to control the speed of the fluid pump which is specially constructed to have a linear speed versus flow rate characteristic.



3,781,908
ADJUSTABLE CHUCK ASSEMBLY FOR CAPILLARY PEN SYSTEM

Aubrey R. Tullos, 1510 Haywood St., Odessa, Tex.

Filed May 15, 1972, Ser. No. 253,009
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 **7 Claims**



The disclosure includes an incrementally adjustable chuck assembly mount for an inking pen on the end of a recorder arm of a recorder apparatus. The mounting provides an infinite number of possible settings for the pen while permitting easy replacement with another pen.

3,781,909
REDUCED ITERATION IN COMPUTER COLOR MATCHING

Edwin Ira Stearns, Westfield, N.J., assignor to American Cyanamid Company, Stamford, Conn.

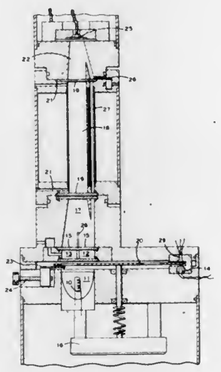
Filed Mar. 15, 1971, Ser. No. 124,478
Int. Cl. G06f
U.S. Cl. 235—150 **2 Claims**

Digital computer color matching of a plurality of colorants to a target color involves usually repeated iterations in computing the final match. Excessive number of iterations results when the computation first shows that a certain amount of color must be added to the formula and in the next iteration a certain amount subtracted. There is described an improved method and programmed computer for reducing iterations under such circumstances by programming the computer so that whenever an iteration has a different sign in the calculation than the immediately preceding iteration, i.e., first add then subtract or vice versa; the second quantity is reduced to a fraction, for example 1/2. and this amount is used in the next iteration.

3,781,910
INFRARED ABSORPTION ANALYSIS METHOD AND APPARATUS FOR DETERMINING GAS CONCENTRATION

Pierre Herrmann, Fontenay-aux-Roses, France, assignor to Compteurs Schlumberger, Montrouge, France

Filed Sept. 22, 1972, Ser. No. 291,379
Claims priority, application France, Sept. 28, 1971, 7134767
Int. Cl. G01n *21/34*
U.S. Cl. 250—341 **3 Claims**

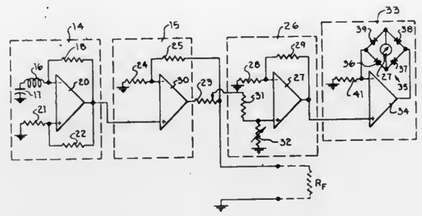


There is disclosed a dual beam gas analyzer and the mode of operation thereof for measuring small concentrations of a gas of interest in the presence of another gas having absorption bands overlapping those of the gas of interest. This is encountered in the determination of the concentration of CO_2, CO, CH_4, C_2H_2, NH_3 or SO_2 in the presence of CH_4, CO_2, CO_2, CO_2 or CH_4 respectively. The dual beam gas analyzer comprises a source of infrared rays providing an infrared beam which is directed into one end of an analysis chamber through an optical commutator. The optical commutator directs alternately and periodically the infrared beam to a comparison filter transparent to the infrared beam and to a gaseous filter absorbing completely the energies of the absorption bands of the gas to be measured. The output signals of a non-selective radiation detector disposed at the other end of the analysis chamber are applied to electronic circuits which provide a signal representative of the difference between the energies of the two successive beams passing through the analysis chamber. A movable shutter permits one to modify the energy of the beam corresponding to the comparison filter and is adjusted to eliminate the influence of the other gas on the determination of the concentration of the gas of interest. According to one embodiment an auxiliary tube is placed along the path of the beam passing through the gaseous filter to increase the precision of the gas analyzer in cases where the concentrations to be measured are in the range of a few tens ppm.

3,781,911
APPARATUS FOR MONITORING THICKNESS OF EVAPORATED FILM

James J. Davidson, West Lafayette, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1973, Ser. No. 343,772
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 R **3 Claims**



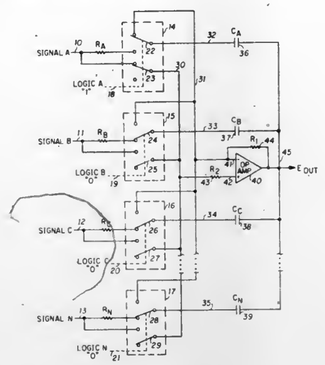
An apparatus for monitoring the thickness of a film as it is evaporated onto a substrate having a signal applicator for maintaining a voltage across the film. An oscillator is used to provide a constant voltage to the signal applicator and the resulting current through the film is measured across a series resistor by a differential amplifier. The output from the differential amplifier is connected to a detector and visual indicator.

3,781,912
N-WAY ANALOG SIGNAL FADER

James H. McCollum, Jr., Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Dec. 29, 1972, Ser. No. 319,959
Int. Cl. H03f *3/00*
U.S. Cl. 330—51 **4 Claims**

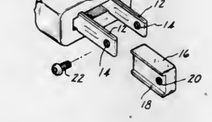
A DC analog signal fader employing a single operational amplifier permits fading onto a common output the level of a selected one of a plurality of input signals. A newly selected signal is faded from the level of a next previously selected input and in a manner which does not introduce lag or step level changes at the output.



3,781,913
ELECTRICAL SAFETY BLOCK

Frank A. Liburdi, 4629 Burssens, Warren, Mich.

Filed June 8, 1972, Ser. No. 260,908
Int. Cl. H01r *13/52*
U.S. Cl. 339—37 **3 Claims**

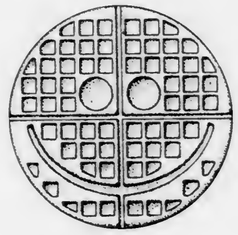


A device adapted for attachment to one of the male prongs of an electrical plug to prevent insertion of the plug into an electrical receptacle.

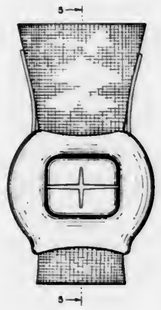
DESIGNS

DECEMBER 25, 1973

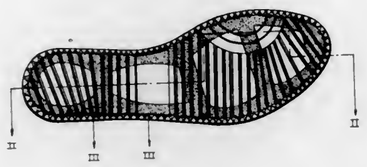
229,642
WAFFLE OR THE LIKE
Richard L. Dorsa, 20450 Montalvo Lane, Saratoga, Calif. 95070
Filed Mar. 31, 1972, Ser. No. 240,338
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—18



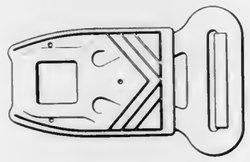
229,643
KNEE GUARD
Daniel Bednarczuk, 37—04 Parsons Blvd., Flushing, N.Y. 11354, and Arnold T. Milton, 7 Olmsted Road, Scarsdale, N.Y. 10583
Filed June 10, 1971, Ser. No. 152,018
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27



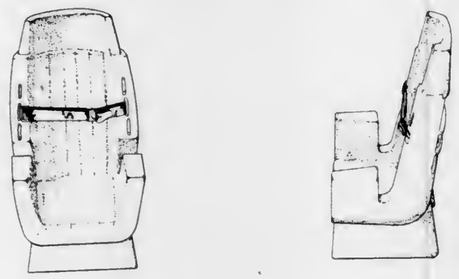
229,644
SHOE SOLE
Helge Persson, Ekstubbevagen 6, S–260 40 Viken, Sweden
Filed Jan. 14, 1972, Ser. No. 218,047
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



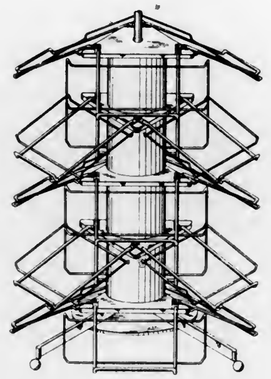
229,645
BUCKLE FOR SAFETY BELTS
Gote Eskil Yngve Holmberg, P.O. Box 2010, S–330 20, Anderstorp, Sweden
Filed Aug. 24, 1971, Ser. No. 174,583
Claims priority, application Sweden Feb. 8, 1971
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—408



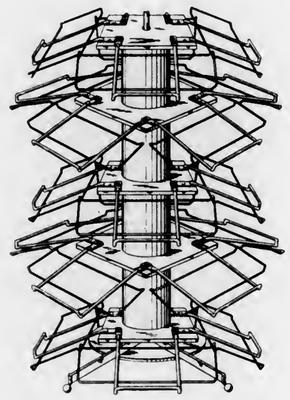
229,646
CHILD'S CAR SEAT
Lawrence Blazey, Bay Village, David Silverstrom, Lyndhurst, and Elmer Rocker, Shaker Heights, Ohio, assignors to Century Products, Inc., Cleveland, Ohio
Filed Feb. 7, 1972, Ser. No. 224,403
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9



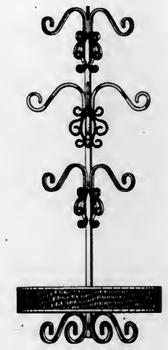
229,647
DISPLAY STAND FOR FLAT ARTICLES
Fred Howard, New York, and David O'Neill, Long Island City, N.Y., assignors to Howard Displays, Inc., New York, N.Y.
Filed June 28, 1972, Ser. No. 266,994
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24



229,648
DISPLAY STAND
Fred Howard, New York, and David O'Neill, Long Island City, N.Y., assignors to Howard Displays, Inc., New York, N.Y.
Filed June 28, 1972, Ser. No. 266,993
Int. Cl. D20—*02*
Term of patent 14 years
U.S. Cl. D6—24



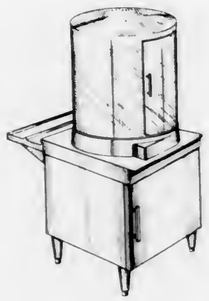
229,649
DISPLAY RACK
Richard R. Garcia, Laredo, Tex., assignor to Miracle Candle Company, Laredo, Tex.
Filed July 17, 1972, Ser. No. 272,374
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—25



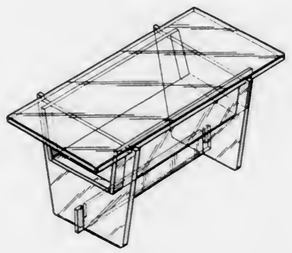
229,650
STAND FOR HOUSEHOLD PAPER ROLLS
Arne Nils Christian Sonnergaard, Lidingo, Sweden, assignor to AB Automatic, Stockholm, Sweden
Filed Apr. 13, 1972, Ser. No. 243,922
Claims priority, application Canada Feb. 24, 1972
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—97



229,651
MODULAR DISPLAY UNIT
Louis J. Corini, Philadelphia, Pa., assignor to Melbro Corporation, Philadelphia, Pa.
Filed Apr. 13, 1972, Ser. No. 243,923
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—171



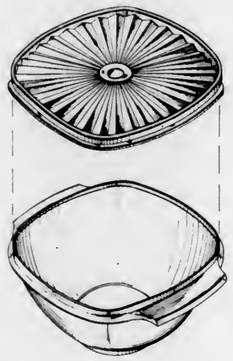
229,652
TABLE
Barton E. Brooke, Jr., % Allied Industries, 524 Washington St., Chagrin Falls, Ohio 44022
Filed Mar. 24, 1972, Ser. No. 238,010
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—175



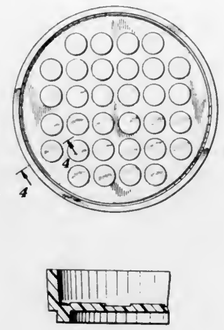
229,653
APPLIANCE COVER
Ruth F. Hendrickson, 638 Continental Road, Hatboro, Pa. 19040
Filed Sept. 27, 1971, Ser. No. 184,320
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—269



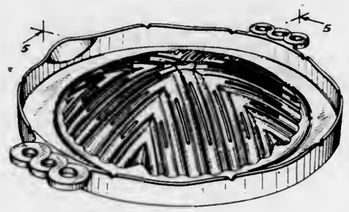
229,654
COMBINED SERVING BOWL AND CLOSURE OR THE LIKE
Jack V. Croyle, Woonsocket, and Harold P. Ashton, Providence, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed July 22, 1971, Ser. No. 165,433
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—18



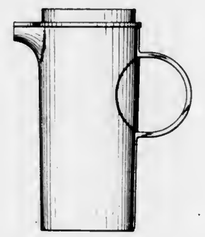
229,655
COASTER
Gunnar Cyren, Gavle, Sweden, assignor to Dansk Designs Ltd., Mount Kisco, N.Y.
Filed Nov. 1, 1972, Ser. No. 302,968
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—45



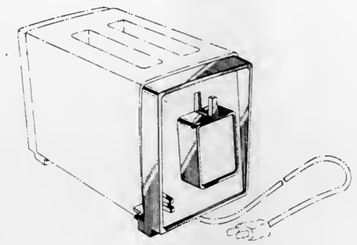
229,656
ROASTER
Humberto A. Garcia, Calle 80 7–67, Bogota, Columbia
Filed Mar. 1, 1972, Ser. No. 231,057
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—64



229,657
PITCHER
Gunnar Cyren, Gavle, Sweden, assignor to Dansk Designs Ltd., Mount Kisco, N.Y.
Filed Nov. 1, 1972, Ser. No. 302,972
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—65



229,658
TOASTER END PANEL WITH CORD STORAGE
Berton R. Oxel, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed June 23, 1972, Ser. No. 265,824
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—93



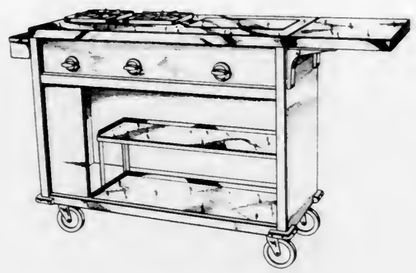
229,659
FISH CLEANING TOOL
Leo R. Murnan, 4404 Woolworth St., Omaha, Nebr. 68105
Filed Mar. 24, 1972, Ser. No. 238,019
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—106



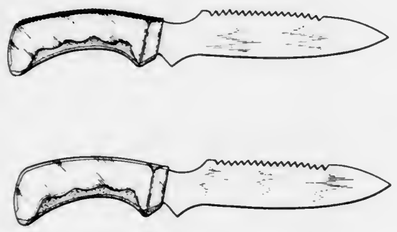
229,660
BARBECUE COOKER
William A. Gammon, 3339 N. Meridian St., Indianapolis, Ind. 46208
Filed Aug. 26, 1971, Ser. No. 175,418
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107



229,661
MOBILE COOKING CART
Theodore C. Lambertson, 1369 Rollins Road, Burlingame, Calif. 94010
Filed Oct. 13, 1971, Ser. No. 189,068
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—108



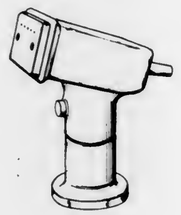
229,662
KNIFE
Harry Friedman, Franklin Lakes, N.J., assignor to Jet-Aer Corporation, Paterson, N.J.
Filed Sept. 7, 1972, Ser. No. 286,982
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—150



229,663
WHEELED DUAL-ACCESS CLOTHES HAMPER
Robert Y. Morita, 1268 Lyman Place, Los Angeles, Calif. 90029
Filed Dec. 6, 1972, Ser. No. 312,604
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D7—163



229,664
PORTABLE STEAMER
Franz Alban Stutzer, Muhlheim am Main, Germany, assignor to Rowenta-Werke G.m.b.H., Offenbach am Main, Germany
Filed Feb. 23, 1972, Ser. No. 228,788
Claims priority, application Germany Aug. 30, 1971
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—164



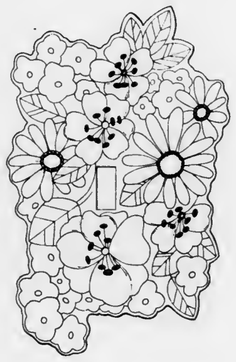
229,665
PROTECTIVE LATCH COVER
Paul C. Wilmot, 505 E. Heaton Lake Road, Elkhart, Ind. 46514
Filed Aug. 9, 1972, Ser. No. 279,009
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—137



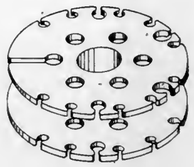
229,666
APPLIANCE HANDLE
Paul F. Frawley, Georgetown, Ontario, Canada, assignor to John Inglis Co. Limited, Toronto, Ontario, Canada
Filed July 21, 1972, Ser. No. 273,821
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—169



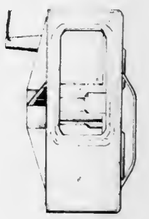
229,667
WALL PLATE
Paul E. Rochford, East Greenwich, R.I., and Frances Neuwirth, New York, N.Y., assignors to General Electric Company
Filed June 23, 1972, Ser. No. 265,687
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D8—182



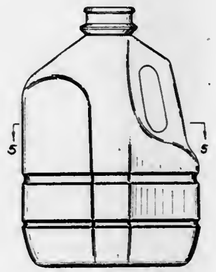
229,668
REEL FOR HOLDING ELECTRIC WIRE
Edgar Boone, 15 Walt Whitman Road, Huntington Station, N.Y. 11746
Filed Sept. 22, 1972, Ser. No. 291,197
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



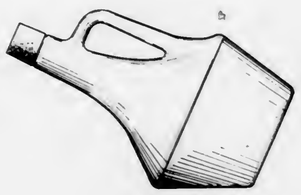
229,669
PORTABLE WIRE REELS
Frank J. Boyce, Windsor, N.Y., assignor to Stow Manufacturing Company, Binghamton, N.Y.
Filed Dec. 22, 1972, Ser. No. 317,734
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—222



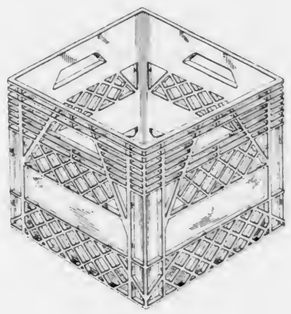
229,670
JUG
Richard L. Platte, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.
Original design application May 17, 1971, Ser. No. 144,381, now Patent No. 227,078, dated June 5, 1973. Divided and this application Oct. 27, 1972, Ser. No. 301,608
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



229,671
BOTTLE
James G. Nelson, Fullerton, Calif., assignor to Gold Seal Vineyards, Inc., New York, N.Y.
Filed June 19, 1972, Ser. No. 264,210
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—47



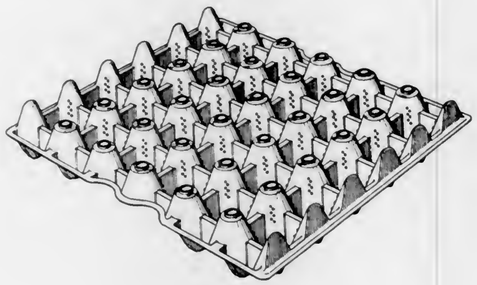
229,672
BOTTLE CRATE
John D. Van Geem, 3931 Parkside Ave., Erie, Pa. 16508
Filed Sept. 16, 1971, Ser. No. 181,286
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—177



229,673
LEAD BOX
William E. Danjczek, Easton, Pa., assignor to Koh-I-Noor Rapidograph, Inc., Bloomsburg, N.J.
Filed July 28, 1971, Ser. No. 167,089
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—184



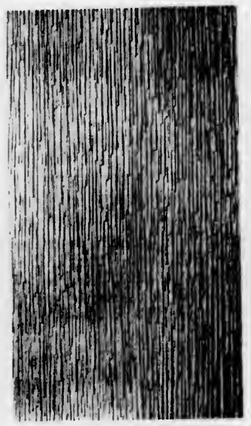
229,674
EGG TRAY OR THE LIKE
Donald J. Quigg, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 10, 1971, Ser. No. 152,002
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—190



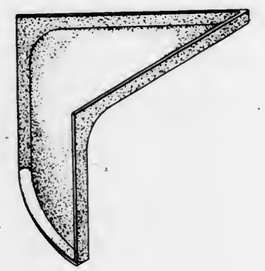
229,675
POURING SPOUT FOR A PAINT CAN OR THE LIKE
Frank Kuncz, Jr., 2453 Roberta St., Largo, Fla. 33540
Filed Apr. 21, 1972, Ser. No. 251,605
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—290



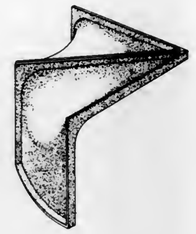
229,676
DECORATIVE PANEL OR SIMILAR ARTICLE
Robert George Koch, Turnersville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed June 7, 1971, Ser. No. 150,491
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



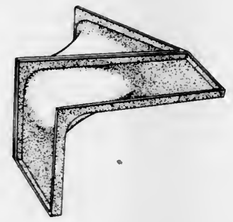
229,677
ARCHITECTURAL UNIT
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,195
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



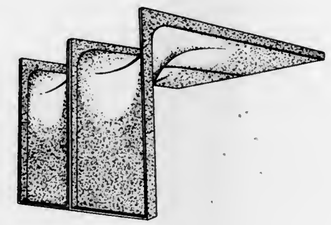
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ARCHITECTURAL UNIT
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,196
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



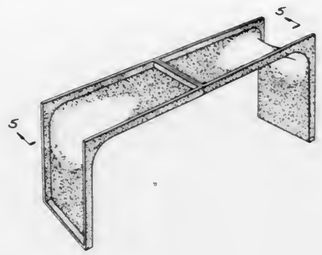
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ARCHITECTURAL UNIT
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,197
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



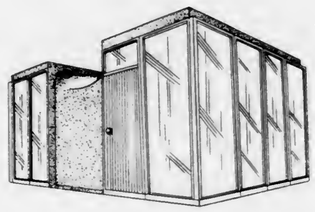
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ARCHITECTURAL UNIT
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,202
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



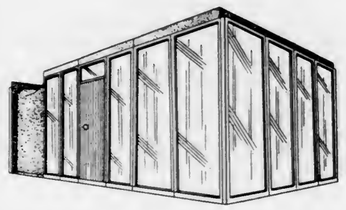
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ARCHITECTURAL UNIT
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,203
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



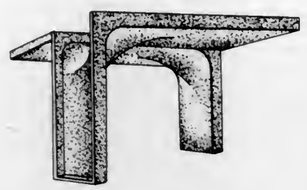
229,682
HOUSE
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,204
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



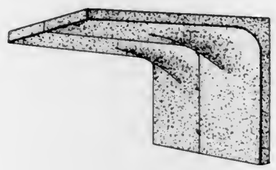
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HOUSE
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,205
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



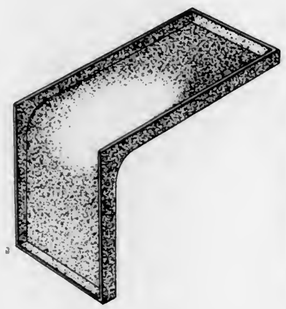
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ARCHITECTURAL UNIT
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,206
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



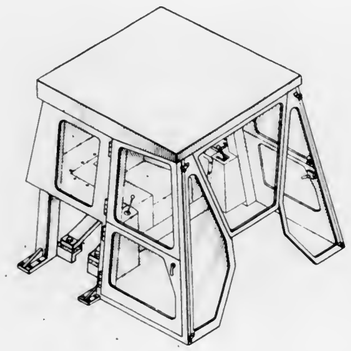
229,685
HOUSING MODULE
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,207
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R

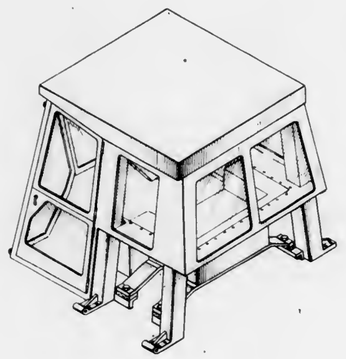


229,686
ARCHITECTURAL UNIT
Mark L. Hildebrand, Altadena, Calif.
(157 Bowers Hill Road, Oxford, Conn. 06483)
Filed Sept. 1, 1971, Ser. No. 177,216
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J

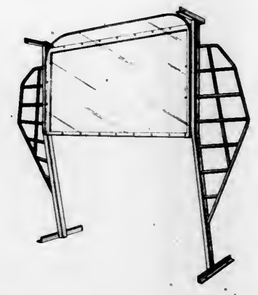


229,687
TRACTOR CAB
John H. Babbitt, Jr., and Ronald G. Boyer, Peoria, Arthur E. Olt, Jr., Perkin, Paul E. Schuck, Canton, and Sheldon L. Stark, Eureka, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 2, 1972, Ser. No. 294,233
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—27 B





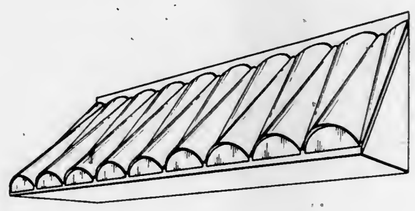
229,688
SECURITY PARTITION FOR POLICE VEHICLES
Karl G. Feth, 4258 Elm Park Drive, St. Louis County, Mo. 63128
Filed Oct. 26, 1970, Ser. No. 25,675
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



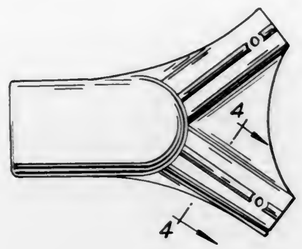
229,689
CELL CULTURE VESSEL OR THE LIKE
Robert Dragotta, Vineland, N.J., assignor to Bio-Research Glass, Inc., Vineland, N.J.
Filed Jan. 12, 1973, Ser. No. 323,128
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—1 R



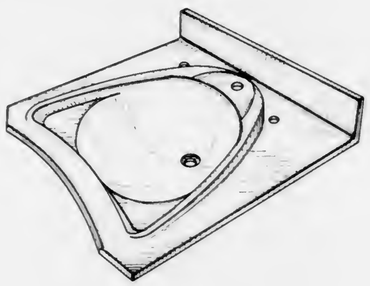
229,690
STOREFRONT AWNING
Winston F. Bott, 1915 N. Lexington Blvd., Corpus Christi, Tex. 78409
Filed May 11, 1972, Ser. No. 252,523
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D21—6 B



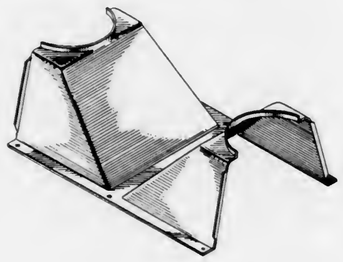
229,691
FISHING NET YOKE
James D. Maxwell, 11001 SE. 19th, Vancouver, Wash. 98664
Filed Apr. 12, 1971, Ser. No. 133,458
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



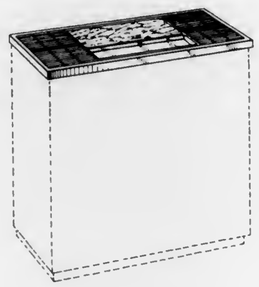
229,692
LAVATORY
Richard J. Ganger, Los Angeles, Calif., assignor to Gruber Systems, Inc., North Hollywood, Calif.
Filed Nov. 18, 1971, Ser. No. 196,873
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



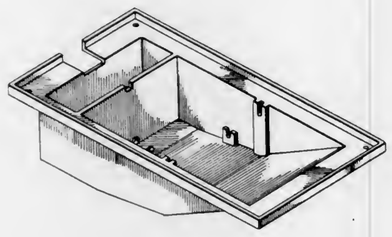
229,693
AIR SCOOP COVER FOR A HUMIDIFIER UNIT
William B. Morrow, Winston-Salem, N.C., assignor to Aqua-Mist Incorporated, Winston-Salem, N.C.
Filed May 1, 1972, Ser. No. 249,487
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146



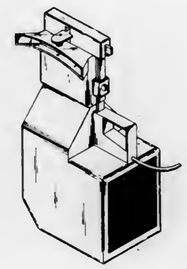
229,694
TOP PANEL FOR ELECTRIC HUMIDIFIER
Jack B. Schmitt, Los Angeles, Calif., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 5, 1972, Ser. No. 270,801
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146



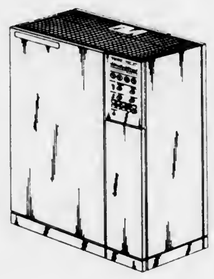
229,695
HUMIDIFIER UNIT RECEPTACLE FOR ATTACHMENT TO HEATING SYSTEM AIR CONVEYING DUCT AND THE LIKE
William B. Morrow, Winston-Salem, N.C., assignor to Aqua-Mist Incorporated, Winston-Salem, N.C.
Filed May 1, 1972, Ser. No. 249,489
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146



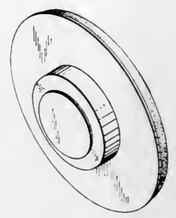
229,696
TOILET STOOL AIR DEODORIZER
Robert L. Stevenson, 7320 W. 87th St., Overland Park, Kans. 66212
Filed Aug. 2, 1972, Ser. No. 277,902
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



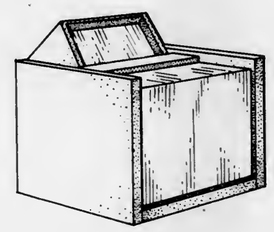
229,697
CABINET FOR DATA PROCESSING EQUIPMENT
Myron F. Davis and Walter Furlani, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 26, 1970, Ser. No. 25,659
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



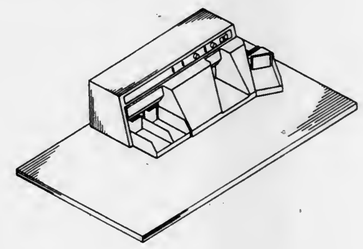
229,698
SEPARABLE MAGNETIC HOLDER FOR SHEET-LIKE MATERIAL
Erich Kretzer, Neunkirchen, Germany, assignor to Walter Hebel Hammanditgesellschaft, Kirchen, Sieg, Germany
Filed June 21, 1971, Ser. No. 155,369
Claims priority, application Germany Dec. 19, 1970
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D26—1 M



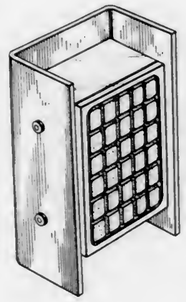
229,699
FLIP-TOP INSTRUMENT CABINET
Allen B. Hehs, Mayfield Heights, Ohio, assignor to Bud Radio Incorporated, Willoughby, Ohio
Filed May 12, 1971, Ser. No. 142,848
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D26—5 C



229,700
DATA RECORDER
Thomas L. Richardson, Horsham, Bruno Kersten, Springfield, and Charles T. Johnson, Philadelphia, Pa., assignors to Decision Data Computer Corporation, Warminster, Pa.
Filed Sept. 27, 1971, Ser. No. 184,331
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



229,701
SPEAKER ENCLOSURE
Robert W. Becker, Naperville, and Melvin H. Boldt, Glenview, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Apr. 27, 1973, Ser. No. 354,963
Term of patent 7 years
Int. Cl. D14—*01*; D31
U.S. Cl. D26—14 G



229,702
MINIATURE SHRINE OR THE LIKE
John T. Torlone, 37 Orchard St., Englewood, Ohio 45322
Continuation of design application Ser. No. 22,081, Mar. 27, 1971. This application June 1, 1971, Ser. No. 144,703
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



229,703
PUPPET
Russell B. Odell, Elgin, Ill., assignor to David C. Cook Publishing Company, Elgin, Ill.
Filed Sept. 11, 1972, Ser. No. 287,613
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

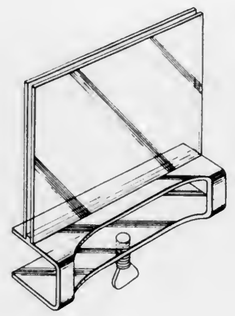


229,704
PUPPET
Russell B. Odell, Elgin, Ill., assignor to David C. Cook Publishing Company, Elgin, Ill.
Filed Sept. 11, 1972, Ser. No. 288,139
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

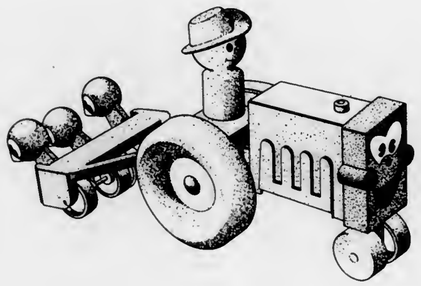
229,705
PUPPET
Russell B. Odell, Elgin, Ill., assignor to David C. Cook Publishing Company, Elgin, Ill.
Filed Sept. 11, 1972, Ser. No. 288,145
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



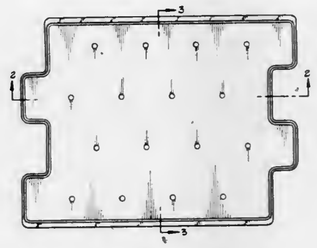
229,706
CARD GAME SCORE HOLDER FOR ATTACHMENT TO TABLE CORNER
Scott Lewis, 37 Shore Road, Ogunquit, Maine 03907
Filed Aug. 13, 1971, Ser. No. 171,788
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—13 A



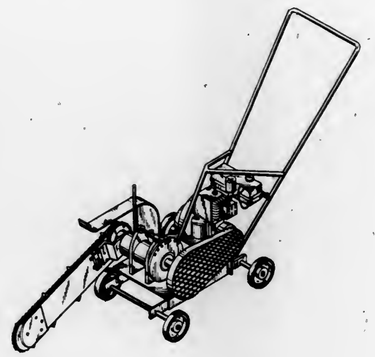
229,707
COMBINED TOY TRACTOR AND PLOW
Gerald W. Schmidt, Woodland Hills, and Anson Sims, Redondo Beach, Calif., assignors to California R & D Center, Pacific Palisades, Calif.
Filed Mar. 2, 1972, Ser. No. 231,441
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



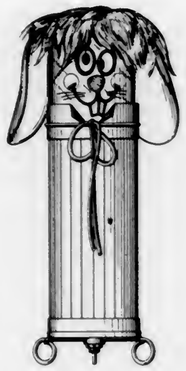
229,708
TRAY FOR PREPARING SEED PROPAGATION
Charles Dugan-Chapman, London, England, assignor to Steward Plastics Limited, Croydon, Surrey, England
Filed Sept. 17, 1971, Ser. No. 181,649
Claims priority, application Great Britain July 20, 1971
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D35—3 A



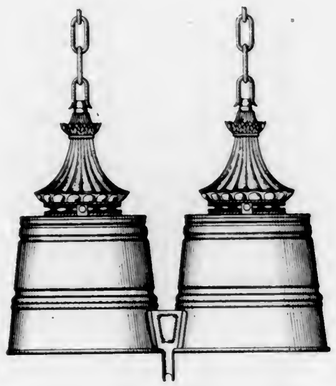
229,709
NARROW SLIT DITCHER
Walter P. Winsett, Memphis, Tenn., assignor to Marion H. Winsett and William E. Ford, both of Houston, Tex., fractional part interest to each
Filed June 2, 1971, Ser. No. 149,406
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D39—1 B



229,710
LAMP
Samuel M. Pambello, 316 Bloomfield Ave., Hoboken, N.J. 07030
Filed Sept. 15, 1971, Ser. No. 180,952
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 B



229,711
LAMP FIXTURE
Richard B. Poff, 743 N. Main St., Auburn, Ind. 46706
Filed Dec. 13, 1971, Ser. No. 207,727
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R



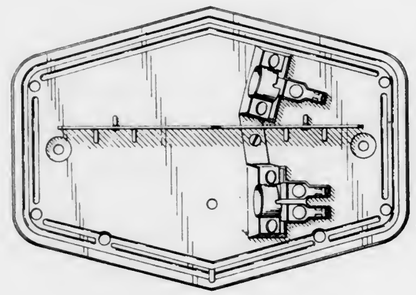
229,712
CIGARETTE LIGHTER
Jerome P. Vogel, Woodland Hills, Calif., assignor to Lindy Pen Company, Incorporated
Filed Sept. 5, 1972, Ser. No. 286,619
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



229,713
LUMINAIRE
Vearl S. Wince, South Newark, Ohio, and Mitchell Bobrick, Los Angeles, Calif., assignors to Holophane Company, Inc., New York, N.Y.
Continuation-in-part of abandoned design application Ser. No. 19,358, Oct. 1, 1969. This application June 22, 1970, Ser. No. 24,258
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



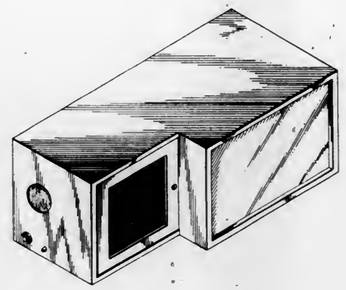
229,714
BODY FOR MULTI-PURPOSE RECREATIONAL VEHICLE LIGHT
George A. Knapp, Dewitt, Edward J. Nitsch, Camillus, Fred F. Stube, Syracuse, and Ernest R. Steltzer, Lysander, N.Y., assignors to R. E. Dietz Company, Syracuse, N.Y.
Filed Mar. 10, 1972, Ser. No. 233,854
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 C



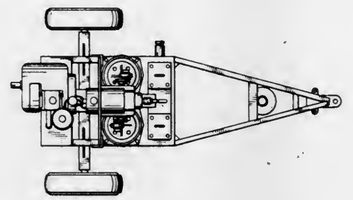
229,715
ADJUSTABLE DIAL ANGLE METER
Frank A. Nowak, 3550 Flower St., Santa Maria, Calif. 93454
Filed June 29, 1972, Ser. No. 267,430
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



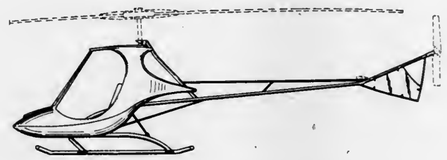
229,716
REAR PROJECTION VIEWER
Carl S. Shirley, Alexandria, Va., assignor to General Educational Technology Corporation, Alexandria, Va.
Filed Nov. 6, 1972, Ser. No. 303,763
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N



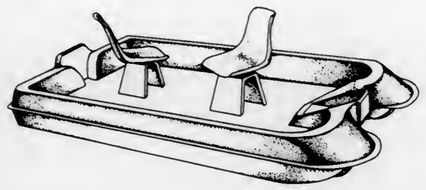
229,717
MOBILE DOUBLE DIAPHRAGM PUMP OR THE LIKE
James A. Mixon, 4063 Salisbury Road, Jacksonville, Fla. 32216
Filed July 13, 1971, Ser. No. 162,319
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 A



229,718
HELICOPTER FUSELAGE
Buford J. Schramm, 14805 S. Interstate 10, Tempe, Ariz. 85281
Filed Oct. 15, 1971, Ser. No. 189,802
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1 J



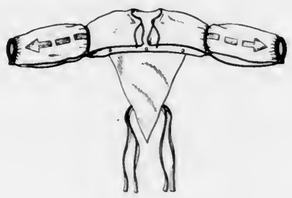
229,719
TWIN HULL BOAT
Richard B. Hull, % Midland Fiberglass Company, Box 5714, Midland, Tex. 79701
Filed Feb. 28, 1972, Ser. No. 230,208
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1 Q



229,720
SENSOR HOUSING FOR AN ALARM SYSTEM
Lloyd R. Bound, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 23, 1972, Ser. No. 237,598
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 A



229,721
SIGNALING GARMENT
Sylvia Anita Hatton, 6246 N. 15th St., Philadelphia, Pa. 19141
Filed Dec. 18, 1972, Ser. No. 316,074
Term of patent 14 years
Int. Cl. D29—*02*; D2—*02*
U.S. Cl. D72—1 E



229,722
COMBINED STYLUS AND INK RESERVOIR
Mickey L. Felton, Hamilton County, Ind., assignor to Esterline Corporation, New York, N.Y.
Filed Sept. 9, 1971, Ser. No. 179,259
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B



229,723
BABY BOTTLE
Gary S. Grimes, Twin Lakes, Ohio, assignor to Questor Corporation, Toledo, Ohio
Filed Dec. 27, 1971, Ser. No. 212,864
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—8 A

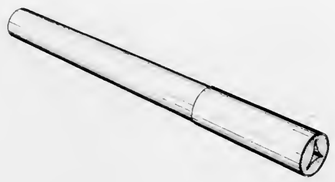




229,724
SURGICAL CLAMP OR SIMILAR ARTICLE
Richard E. Ericson, Keene, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Sept. 2, 1971, Ser. No. 177,531
Term of patent 14 years
Int. Cl. D24
U.S. Cl. D83—12 R



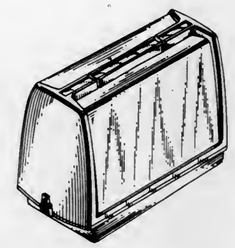
229,725
FILTERED CIGARETTE
Richard M. Berger, Richmond, Va., assignor to American Filtrona Corporation, Richmond, Va.
Filed June 21, 1971, Ser. No. 155,371
Term of patent 14 years
Int. Cl. D27—*01*
U.S. Cl. D85—6 C



229,726
PIPE OR SIMILAR DEVICE
Richard J. Finn, 1870 Winding Brook Way, Scotch Plains, N.J. 07076
Filed Dec. 2, 1971, Ser. No. 204,399
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 A



229,727
SEWING MACHINE CARRYING CASE OR SIMILAR ARTICLE
Donald M. Genaro, Haworth, N.J., assignor to The Singer Company, New York, N.Y.
Filed Apr. 9, 1971, Ser. No. 132,925
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



229,728
CANE
Morton I. Thomas, Monroe, N.Y. (125 South St., Passaic, N.J. 07055)
Filed Nov. 23, 1971, Ser. No. 201,631
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D88—4



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF DECEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O, Inc.: *See—*
McGill, Robert W.; and Painter, P. Eric, 3,780,628.

A-T-O Inc., mesne: *See—*
Rosenfeld, Howard; and Wetzler, Justin J., 3,780,543.

AB Hagglund & Soner: *See—*
Edlund, Sven Bertil Gosta; and Sodersten, Bo Frans Ake, 3,780,990.

AB Ljungmans Verkstader: *See—*
Eklund, Hans Eric, 3,780,776.

AB UVA: *See—*
Gluchowicz, Gerszon, 3,781,069.

Abarotin, Eugene V.; and Bollinger, Edward R., Jr., to United States Steel Corporation. Apparatus for adjustably mounting a tester transducer ring around the pass line of a tubular product processing mill. 3,781,663, Cl. 324-37.000.

Abbott Laboratories: *See—*
Banford, John Alexander, 3,780,737.
Flouret, George Rogelio, 3,781,272.

Abex Corporation: *See—*
Wilcox, Jack W., 3,781,145.

Abler, Norman C.; and Hardt, David R., to Faustel Incorporated. Doctor blade assembly. 3,780,670, Cl. 101-363.000.

Abramson, Paul B.; and McConnell, Robert G. Digital timing system. 3,781,529, Cl. 235-92.0ga.

ACF Industries, Incorporated: *See—*
Kemp, Willard E., 3,780,982.
Lindberg, Allen W., 3,780,711.

ACI Operations Pty. Limited: *See—*
Corderoy, Henry Morgan, 3,780,492.

Acre, Thomas R.; Gimbel, Frederick M.; and Ramacheandran, Sundaresan, to Allegheny Ludlum Industries, Inc. Method and apparatus for determining the depth of submerged lances and the like. 3,780,581, Cl. 73-302.000.

Action, Floyd; Cochran, Paul E.; and Moore, William G., to Kinnear Corporation. Electronic interlock for door operator. 3,781,622, Cl. 318-466.000.

Adachi, Kazutaka: *See—*
Nishijima, Yoshiaki; and Adachi, Kazutaka, 3,781,174.

Adams, Clark F.: *See—*
Dorsman, Adrian K.; and Adams, Clark F., 3,781,532.

Adams Company, The: *See—*
Hoffmann, Thomas C., 3,780,790.

Adler, Charles F., Jr.; and Silver, Marshall L. Alarm lock. 3,781,861, Cl. 340-280.000.

Adler, Robin: *See—*
Marshall, Howard D.; Gordon, Gary B.; Pipkin, Jesse E.; and Adler, Robin, 3,781,689.

Adwest Engineering Limited: *See—*
Millard, Barry John, 3,780,412.

Aebi, Hans: *See—*
Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, 3,781,356.
Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, 3,781,357.

AFA Corporation of Florida, The: *See—*
Powers, Richard T., 3,780,951.

Aftergot, Siegfried, to General Electric Company. Liquid crystal device for generating reticles in optical equipment. 3,781,080, Cl. 350-10.000.

Agence Nationale de Valorisation de la Recherche (Anvar): *See—*
Juillet, Francois; Teichner, Stanislas; and Formenti, Marc, 3,781,194.

Aglietti, Giancarlo: *See—*
Ferlazzo, Natale; Antonelli, Giambattista; and Aglietti, Giancarlo, 3,781,224.

Agridustrial Electronics, Inc.: *See—*
Resh, Roy E., 3,781,673.

Ahamed, Syed Vickar, to Bell Telephone Laboratories, Incorporated. Data rate-changing and reordering circuits. 3,781,822, Cl. 340-172.500.

Ahearn, Thomas P.; Capowski, Robert S.; Christensen, Neal T.; Gannon, Patrick M.; Lee, Arlin E.; and Liptay, John S., to International Business Machines Corporation. Virtual memory system. 3,781,808, Cl. 340-172.00s.

Ahonen, George Harvey, to Combustion Engineering, Inc. No-weld refractory covering for water cooled pipes. 3,781,167, Cl. 432-234.000.

Aicheles Associates, Inc.: *See—*
Marshall, John J., 3,780,832.

Aikawa, Satoru: *See—*
Okuda, Minoru; Aikawa, Satoru; Kaidzu, Hiromu; and Tajima, Eiichi, 3,781,396.

Aillet, Claude, to Societe Lannionnaise d'Electronique. Pulse-response measuring apparatus. 3,781,668, Cl. 324-57.00r.

Air Industrie, mesne: *See—*
Muhlrad, Wolf, 3,780,497.

Air Preheater Company, Inc., The: *See—*
Hazzard, Noel D.; and Anderson, William M., 3,780,676.

Air Preheater Company, The: *See—*
Liu, Han, 3,780,674.

Airco, Inc., mesne: *See—*
Lofredo, Antony; and Biava, Domenick R., 3,780,534.

Airfix Industries, Limited: *See—*
Turner, Leslie Ashton Steele, 3,780,559.

Aizawa, Tatsuo: *See—*
Ueda, Yasuo; Kamezawa, Yasutoki; Aizawa, Tatsuo; and Ikeda, Toshimitu, 3,781,208.

Aizawa, Tetsuya; Sawada, Taketoyo; Tauchi, Yoshihiko; Kawamata, Tsutomu; and Saya, Hiroshi, to Nippon Telephone & Telephone Public Corporation and Fujitsu Limited. Terminal communication control system and method. 3,781,856, Cl. 340-172.500.

Ajero, Fortunato S. Liquid proportional measuring device. 3,780,582, Cl. 73-320.000.

Ajrulaht, Mamut. Chime battery clock with adjusting wheel for adjusting the movement thereof. 3,780,517, Cl. 58-7.000.

Akatsu, Mitsuihiro: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Akatsu, Mitsuihiro; Maruyama, Isamo; and Izumi, Takahiro, 3,781,299.

Akers, Ronald R.: *See—*
Wolf, Charles B.; and Akers, Ronald R., 3,781,449.

Akin, Cavit, to Standard Oil Company. Process for texturizing microbial cells by alkali-acid treatment. 3,781,264, Cl. 260-112.00r.

Aktiebolaget Astra Sodertalje: *See—*
Carlsson, Lars Anders Fritz; Helgstrand, John Erik; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik, 3,781,280.

Aktieselskabet Niro Atomizer: *See—*
Hansen, Ove Emil, 3,780,445.

Alagy, Jacob; and Busson, Christian, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for manufacturing terephthalic acid by oxidation of paraxylene. 3,781,344, Cl. 260-524.00r.

Alarm Device Manufacturing Company: *See—*
Guthart, Leo A., 3,781,767.

Alderson, John M. Compressed air spear projecting device. 3,780,720, Cl. 124-11.00a.

Alexander, Arthur Duane, to International Business Machines Corporation. Digital display device. 3,781,851, Cl. 340-324.00m.

Allan, Robert William; Haigh, Curzon John; and Hamdorf, John, to Electrolytic Zinc Company of Australasia, Limited. Method of removing dissolved ferric iron from iron-bearing solutions. 3,781,405, Cl. 423-142.000.

Allegheny Ludlum Industries, Inc.: *See—*
Acre, Thomas R.; Gimbel, Frederick M.; and Ramacheandran, Sundaresan, 3,780,581.

Allen, Edward James, to Dickinson, W. H., Engineering Limited. Feeding of tobacco and other materials. 3,780,886, Cl. 214-17.0ca.

Allen, Joseph C.: *See—*
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., 3,780,808.

Allen, Robert A.; and Bement, Elmore L., to United States of America, Air Force, mesne. Signaling device. 3,780,655, Cl. 102-31.000.

Allen-Bradley Company: *See—*
Reichert, Gilbert A.; and Moehrle, Earl R., 3,781,499.

Allied Chemical Corporation: *See—*
Anello, Louis G.; Sweeney, Richard F.; and Litt, Morton H., 3,781,370.
Marshall, Robert Moore; and Dardoufas, Kimon Constantine 3,781,202.
Stephenson, Robert L.; and Loomba, Yogendra S., 3,781,497.

Allis, Louis, Company, The: *See—*
Rettig, Charles E., 3,781,641.

Allis-Chalmers Corporation: *See—*
Matthews, Ralph W.; and Schott, Robert E., 3,780,762.

Allison, Rudolph L.; and Lindstrand, Gary L., to MTL Incorporated. Method for sealing balloons and the like. 3,780,419, Cl. 29-451.000.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Nilsson, Jan, 3,780,554.

Almasi, George S.; Hendel, Robert J.; and Keefe, George E., to International Business Machines Corporation. Magnetoresistive sensing of magnetic bubble domains using expansion. 3,781,832, Cl. 340-174.0eb.

Alsco Anaconda, Inc., mesne: *See—*
Kort, Walter A.; and Brand, Eugene L., 3,780,473.

Aluminum Company of America: *See—*
Hurst, Alvin L., 3,780,418.
Kondis, Thomas J.; and Rolles, Rolf, 3,781,177.

Alvino, William M.; and Koryak, William R., to Westinghouse Electric Corporation. Use of a polysiloxane to eliminate surface flaws in imide and amide-imide polymer films. 3,781,237, Cl. 260-29.1sb.

Amagi, Yasuo: *See—*
Nakao, Masaaki; Shiiki, Zenya; and Amagi, Yasuo, 3,781,170.

AMBAC Industries, Incorporated: *See—*
Taylor, Marvin, 3,780,444.

Ambrose, William J.; and McErlane, James E., to Du Pont de Nemours, E. I., and Company. Apparatus and method for fluid handling and sampling. 3,780,984, Cl. 251-282.000.

American Can Company: *See—*
Hole, Henry Sylvester; and Pillnik, Burton Frank, 3,780,902.

American Cyanamid Company: *See—*
Bollyky, Laszlo Joseph, 3,781,329.
Lutz, Albert William, 3,781,324.
Partridge, Ruth; and Weiss, Martin Joseph, 3,781,429.
Ramsey, Wallace Burton; and De Lapp, Darwin Fiske, 3,781,349.
Shimoda, Keitaro; Kuratani, Keijiro; and Sugiura, Akira, 3,781,391.
Stearns, Edwin Ira, 3,781,909.

American Express Investment Management Corporation: *See—*
Rice, Philip J., Jr., 3,781,474.

American Home Products Corporation: *See—*
Wolf, Milton; Sellstedt, John H.; and Rosen, Harry, 3,781,300.

American Linen Supply Co.: *See—*
Rosenfeld, Howard; and Wetzler, Justin J., 3,780,543.

American Metal Climax, Inc.: *See—*
Biebuyck, Lawrence F., 3,780,472.

American Newspaper Publishers Association: *See—*
Hart, Charles H.; and Cashaw, George R., 3,781,006.

American Optical Corporation: *See—*
Maier, Howard A., 3,780,614.

American Totalisator Company, Inc.: *See—*
Woodie, Paul E., 3,780,939.

American Velcro, Inc.: *See—*
Erb, George H., 3,781,398.

Amerola Products Corporation, mesne: *See—*
Merola, Anthony, 3,780,923.

Ames, Ward A., to Tridan Tool & Machine, Inc. Feed device for forming apparatus. 3,780,561, Cl. 72-417.000.

Amestoy, Lavern John: *See—*
Hicks, Tommie Earl; and Amestoy, Lavern John, 3,780,871.

Amir, Yoel: *See—*
Kamil, Zvi; Amir, Yoel; and Talmon, Omri, 3,781,498.

AMP Domestic, Inc.: *See—*
Feeser, William Coover; Bosland, Cornelius William; Lockard, Joseph Larue; and Mummey, Dale Brice, 3,781,763.

AMP Incorporated: *See—*
Harwood, Robert George, 3,781,723.
Lynch, James Edward, 3,780,433.
Reynolds, Charles Edward, 3,780,417.
Teagno, Vladimiro; and Campari, Luigi, 3,781,766.

Ampex Corporation: *See—*
Bousky, Samuel, 3,781,464.

Anastasov, Ivan Krestev, to Glavna Directzia KBUMDP pri SGNS. Mechanical coded trick lock. 3,780,548, Cl. 70-352.000.

Ancellin, Marcel, to Societa FFSA. Fibrous substance compression apparatus. 3,780,646, Cl. 100-155.000.

Anchor Hocking Corporation: *See—*
Dickenson, Richard W., 3,780,831.

Ancona, Cesar; and Choquer, Jean, to Centre National d'Etudes Spatiales (CNES). Balloon carried directional antenna. 3,781,894, Cl. 343-706.000.

Anderegg, Max, to Turlabor AG. Process for optical recognition of characters. 3,781,801, Cl. 340-146.3ma.

Anderson, Dale R.: *See—*
Grubbs, Conway E.; and Anderson, Dale R., 3,781,512.

Anderson, Donald L.: *See—*
Harrison, William L.; Purington, Ronald G.; and Anderson, Donald L., 3,781,843.

Anderson Electric Corporation: *See—*
Peek, Vernon E., 3,781,459.

Anderson, Elvin L.; and Graboyes, Harold. Intermediates for preparing acridines. 3,781,358, Cl. 260-566.00b.

Anderson, Harvey B. Firing mechanism for percussion lock firearms. 3,780,464, Cl. 42-69.00r.

Anderson, John Robert, to Hawker Siddeley Dynamics Limited. Viewing system using a multiple array of different-sized detectors. 3,781,558, Cl. 250-332.000.

Anderson, Karl R., to Thompson, John T. and Gillimot, George W. Gang connector and patching cable assembly and method of using same. 3,781,758, Cl. 339-29.000.

Anderson, Lowell W.; and Stephenson, Michael J., to United States of America, Atomic Energy Commission. Production of sintered porous metal fluoride pellets. 3,781,392, Cl. 264-65.000.

Anderson, Thomas E.; and Walden, John P., to General Electric Company. Power supply including inverter having multiple-winding transformer and control transistor for controlling main switching transistors and providing overcurrent protection. 3,781,638, Cl 321-14.000.

Anderson, Thomas W.; and Caroon, Robert L., to Jac, Inc. Ambient compensated temperature responsive device. 3,781,837, Cl. 340-233.000.

Anderson, William M.: *See—*
Hazzard, Noel D.; and Anderson, William M., 3,780,676.

Andrejewski, Bernard R.: *See—*
Larsen, Eric R.; Andrejewski, Bernard R.; and Edamura, Fred Y., 3,781,369.

Andrew Corporation: *See—*
Johnson, Ernest H., 3,780,556.

Andrews, Barry Stewart; Fitzgerald, Desmond Elwyn; and Lewis, Ian Edward, to Conzinc Riotinto of Australia, Limited. Feeding ores or concentrates to smelting furnaces. 3,781,001, Cl. 266-41.000.

Anello, Louis G.; Sweeney, Richard F.; and Litt, Morton H., to Allied Chemical Corporation. Novel fluorinated alochols. 3,781,370, Cl. 260-615.00f.

Angel, Henry R., to General Science Corp. Self priming conductivity cell. 3,781,675, Cl. 324-71.0cp.

Angsten, Robert J., to General Motors Corporation. Rotary combustion engine. 3,780,708, Cl. 123-8.170.

Antonelli, Giambattista: *See—*
Ferlazzo, Natale; Antonelli, Giambattista; and Aglietti, Giancarlo, 3,781,224.

Aoki, Katsuo; Yatani, Kozo; Kometani, Eishi; and Izuhara, Seiji, to Takeda Chemical Industries, Ltd. Method for preventing coloring of vitamin C. 3,781,423, Cl. 424-175.000.

APL Corporation: *See—*
Fishman, Aaron Harry; and Parmett, George, 3,780,536.

Appel, Robert L.: *See—*
Pardoe, Carroll T.; Carlton, Alvar G.; and Appel, Robert L., 3,781,818.

Argus Chemical Corporation mesne: *See—*
Smith, Kenneth Burton; and Gladstone, Shaul, 3,780,566.

Arias, Lionel J. De Paula: *See—*
Long, William P.; Sawyer, Walter M.; and Arias, Lionel J. De Paula, 3,780,584.

Arkhangelsky, Georgy Alexandrovich: *See—*
Kudinov, Vladimir Mikhailovich; Bushtedt, Jury Petrovich; Dudko, Daniil Andreevich; Arkhangelsky, Georgy Alexandrovich; Pogoretsky, Georgy Ivanovich; Volgin, Leonid Alexandrovich; Kotov, Viktor Anatolievich; Surnin, Boris Anatolievich; and Degtyarev, Mikhal Vasilievich, 3,780,927.

Arn. Kiekert Sohne: *See—*
Watermann, Hans-Dieter, 3,781,045.

Arnold, Anthony Francis, to RCA Corporation. Multilayer heat sink. 3,780,795, Cl. 165-80.000.

Aronoff, Leonard S. Illuminated displays and illuminaries. 3,780,463, Cl. 40-130.00k.

Aronovich, Khaim-Mordkhe: *See—*
Shilov, Alexandr E.; Dyachkovsky, Fridrikh S.; Chirkov, Nikolai Mikhailovich; Matkovsky, Petr E.; Aronovich, Khaim-Mordkhe; Beikhold, Alina A.; and Russian, Ljudmila, 3,781,220.

Arretz, Emmanuel: *See—*
Pfister, Alain; Arretz, Emmanuel; and Donche, Alain, 3,781,366.

Arrington, Thomas L.; and Dyer, Norman D., to Dresser Industries, Inc. Earth boring machine with tandem thrust cylinders. 3,780,816, Cl. 173-152.000.

Arrow-Hart, Inc.: *See—*
Schleicher, Harold E., 3,781,765.

Artzer, Charles W.: *See—*
Doyle, William F.; and Artzer, Charles W., 3,780,673.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Chono, Masazumi; Nakajima, Hitoshi; Taguchi, Masayoshi; and Matsuo, Noriaki, 3,781,336.
Kobayashi, Hidehiko; Sasaguri, Kiichiro; and Shiga, Masaaki, 3,781,399.
Kominami, Naoya; Iwaisako, Toshiyuki; and Ohki, Kusuo, 3,781,221.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Mori, Chiharu, 3,781,119.
Mori, Chiharu, 3,781,551.
Nakajima, Tohru, 3,780,630.

Asahi-Dow Limited: *See—*
Izawa, Shinichi; Toyama, Kunio; Harada, Kazuhiko; and Sugawara, Yoshiaki, 3,781,382.

Asai, Osamu: *See—*
Hanazono, Masanobu; and Asai, Osamu, 3,781,476.

Ashida, Sakichi: *See—*
Kumada, Akio; Onishi, Yoshihiro; Ogawa, Horohumi; Ashida, Sakichi; and Nonogaki, Saburo, 3,781,086.

Ashton, John Congreve, to Baker, Benjamin, (Lye) Limited. Horseshoes. 3,780,810, Cl. 168-4.000.

Aspinwall, Robert H., to General Motors Corporation. Cooled airfoil. 3,781,129, Cl. 416-97.000.

Athey, Roy L., to United Aircraft Corporation. Forging die lubrication. 3,780,553, Cl. 72-41.000.

Atkins, Ronald T.: *See—*
Sellman, Paul V.; Dingman, S. Lawrence; and Atkins, Ronald T., 3,780,578.

Atlantic Richfield Company: *See—*
Friedman, Bernard S.; and Nason, Steven B., 3,781,342.
Johnson, Marvin F. L.; and Graff, Stuart L., 3,781,219.
Kasberg, Alvin H., 3,781,189.
Knowles, Charles R.; and Ruckel, Douglas J., 3,781,456.
Perkins, Thomas K., 3,780,749.
Perkins, Thomas K., 3,780,750.
Styring, Ralph E., Jr., 3,780,751.

Atlas Copco Aktiebolag: *See—*
Romell, Gunnar Vigg Riss, 3,780,621.

Auerbach, Hayward B.: *See—*
Fitzpatrick, William E.; Berger, Leonard; and Auerbach, Hayward B., 3,780,908.

Automatic Bar Feed Ltd.: *See—*
Eichenhofer, Josef, 3,780,924.

Automation Industries, Inc.: *See—*
Collins, Jack T., 3,780,570.

Automobiles Peugeot: *See—*
Quesnel, Marcel; and Guerin, Jean, 3,781,044.
Rivere, Jean-Pierre, 3,780,587.

Avco Corporation, mesne: *See—*
Maryatt, Michael B.; and McCoy, James M., 3,781,486.
Swain, William W.; and Hathaway, Richard A., 3,781,487.

Avis, John M., to Kochring Company, mesne. Trash separator for crop pick-up harvester. 3,780,511, Cl. 56-364.000.

Ayers, David L.: *See—*
Blewitt, Donald D.; and Ayers, David L., 3,781,747.

Ayers, Robert C., Jr.; Bayless, Jack H.; Graham, John W.; Lloyd, James R.; Loth, William D.; and Williams, Robert E., to Esso Production Research Company. Method and apparatus for controlling wells. 3,780,809, Cl. 166-314.000.

Azbell, James W.: *See—*
Fretwell, Richard D.; Azbell, James W.; and Mason, Edwin E., 3,781,817.

Baas, Gerardus; and Bloemenoal, Frans Victor Willem Ten, to U.S. Philips Corporation. Method of establishing relatively insulated connections between conductor ends and an insulating substrate. 3,780,432, Cl. 29-625.000.

Babbitt, Richard W.; and LoCicero, Joseph, to United States of America, Army. Substrate holder for arc plasma deposition. 3,780,696, Cl. 118-49.500.

Babcock & Wilcox Company, The: *See—*
Pacault, Pierre Henri; and Kagans, Marc, 3,780,786.
Rudd, Alexander H.; Kidwell, John H.; and Murray, Thomas J., 3,781,162.

Bachel, Francis D.; and Voves, Robert A., to E-Z Tow, Inc. Tow bar for towing disabled snowmobiles. 3,781,038, Cl. 280-493.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Beutel, Peter; and Koenig, Karl-Heinz, 3,781,389.
Fuchs, Hugo; and Hilt, Albrecht, 3,781,304.
Gulbins, Erich; Hauss, Alfred; Kieferle, Friedrich; and Kovacs, Jenoe, 3,781,243.
Himmele, Walter; Fliege, Werner; and Forchlich, Helmut, 3,781,337.
Stange, Karl; Jenne, Helmut; and Koenig, Ulrich, 3,781,186.

Baes, Charles F., Jr.; Bamberger, Carlos E.; and Ross, Robert G., to United States of America, Atomic Energy Commission. Recovery of protactinium from molten fluoride nuclear fuel compositions. 3,781,403, Cl. 423-5.000.

Bagley, John M.; and Keays, John L., to Ellett Copper and Brass Company Ltd. Experimental research pulp digester assembly. 3,781,188, Cl. 162-233.000.

Bail, John W., to Narco Scientific Industries, Inc. Digital distance ranging system. 3,781,888, Cl. 343-13.00r.

Baird, Albert W., III: *See—*
Lustig, Claude D.; and Baird, Albert W., III, 3,781,587.

Baker, Benjamin, (Lye) Limited: *See—*
Ashton, John Congreve, 3,780,810.

Baker, Cole H., to Intec Corporation. Flaw detector system utilizing a laser scanner. 3,781,531, Cl. 235-151.300.

Baker, Don R.: *See—*
Mihailoviski, Alexander; and Baker, Don R., 3,781,326.

Baker, Don R.; and Teach, Eugene G., to Stauffer Chemical Company. Bromoacetanilides useful as biocides. 3,781,442, Cl. 424-324.000.

Baker, Donald E.: *See—*
Shuey, Kenneth C.; and Baker, Donald E., 3,781,572.

Baker, Elizabeth, F.: *See—*
Baker, Richard E.; and Baker, Elizabeth, F., 3,781,007.

Baker, Leroy D., to Diamond International Corporation. Package capping apparatus. 3,780,493, Cl. 53-287.000.

Baker, Richard E.; and Baker, Elizabeth, F. Sectional, folding, combination dumbell-bar bell. 3,781,007, Cl. 272-84.000.

Baker, Thoedore H.; Ghafghaichi, Majid; and Totta, Paul A., to International Business Machines Corporation. Semiconductor integrated circuit chip structure protected against impact damage from other chips during chip handling. 3,781,609, Cl. 317-101.00a.

Balch, Alfred H., to Marathon Oil Company. Color sonagrams and method for their production. 3,781,785, Cl. 340-15.5ds.

Balducci, Agostino: *See—*
Corbellini, Margherita; and Balducci, Agostino, 3,781,318.

Baldwin, Douglas S.; Benton, Kenneth E.; and Jacques, Vincent L., to International Business Machines Corporation. Cassette player. 3,781,017, Cl. 274-4.00e.

Baldwin, Mart G.; and Reed, Samuel F., Jr., to Rohm & Haas Company. Propellant composition with a hydroxy-terminated copolymer-binder-catalyst of butadiene and acrylate. 3,781,178, Cl. 149-19.900.

Bali, Joseph. Ticket accepting machines in particular for public transit system. 3,780,844, Cl. 194-4.000.

Ball Corporation: *See—*
Lind, Archie L.; and Cobb, Mack R., 3,780,551.

Ballman, Gray C. Means and methods for ferro-resonant float charging circuits. 3,781,630, Cl. 320-21.000.

Balthazar, Real J.; and Halberg, Richard A., to Sargent Industries, Inc. Method of making a pipe with refined grain structure. 3,780,555, Cl. 72-69.000.

Balwe, Thomas; and Sabel, Johann, to Wacker-Chemie G.m.b.H. Process for the suspension polymerization of vinyl chloride. 3,781,255, Cl. 260-87.100.

Bamberger, Carlos E.: *See—*
Baes, Charles F., Jr.; Bamberger, Carlos E.; and Ross, Robert G., 3,781,403.

Bando Chemical Industries, Ltd.: *See—*
Takamatsu, Hideaki; Murashima, Noboru; and Nishihira, Koichi, 3,781,185.

Bandukwalla, Phiroze, to General Motors Corporation. Centrifugal compressor diffuser. 3,781,128, Cl. 415-211.000.

Banford, John Alexander, to Abbott Laboratories. Method of treating bovine mastitis by means of an erythromycin solution. 3,780,737, Cl. 128-260.000.

Baran, Henri: *See—*
Dishal, Milton; and Baran, Henri, 3,781,705.

Bard, C. R., Inc.: *See—*
Rosano, Joseph G., Jr.; and Vaillancourt, Vincent L., 3,780,857.

Barito, Robert W.: *See—*
Smith, William E.; Orlando, Charles M.; and Barito, Robert W., 3,781,229.

Barlow, Gordon A., to Glass, Marvin, & Associates. Game wit race figure movement determined by projectile progerting skill. 3,781,011, Cl. 273-86.00g.

Barnard, Mark Cary Sedgwick; and Butler, Lawrence. Thermal regenerators. 3,780,791, Cl. 165-9.000.

Barnard, Ronald K., to National Distillers and Chemical Corporation. Digital integrating flowmeter. 3,780,579, Cl. 73-229.00r.

Barnes, Emmett W., to General Electric Company. Grounding clip for plug-in surface heating unit. 3,781,757, Cl. 339-14.001.

Baron, Stanley N.; and Kreinik, Stephen, to Columbia Broadcasting System, Inc. Method and apparatus for generating self contrasting character images. 3,781,849, Cl. 340-324.0ad.

Barron, Charles Dwain; Geczy, Bela; and Wilms, Carl Alfred, to Jackson, Bryon, Inc. Power tong positioning apparatus. 3,780,815, Cl. 173-43.000.

Barry, James D.; and Boney, William E., to United States of America, Air Force. Carbon monoxide laser by acetylene oxidation. 3,781,713, Cl. 331-94.500.

Barten, Piet Gerard Joseph; and Ferguson, Eric Tapley, to U.S. Philips Corporation. Exposure device for manufacturing a display screen of a colour television display tube. 3,780,629, Cl. 95-1.00r.

Bartman, Robert V.: *See—*
Harnstone, Leonard A.; Levy, Robert E.; Morris, Stanley M.; Lopez, Alfredo M.; Mosler, Henry A.; and Bartman, Robert V., 3,781,533.

Bartoszevicz, Joseph G.; Murphy, George H., Jr.; and Schmidt, Frederick W., to Fansteel Inc. Threading tool. 3,780,409, Cl. 29-97.000.

Bass, Merlyn Duane: *See—*
Pettengill, Donald Herbert; and Bass, Merlyn Duane, 3,780,505.

Bassham, Kenneth John; and Feast, Alan Arthur John, to International Synthetic Rubber Company. Method of treating a polymer latex. 3,781,236, Cl. 260-23.70m.

Batchelor, Anthony C.: *See—*
Cragg, William D.; Bradshaw, Leslie E. B.; Batchelor, Anthony C.; and Carter, Ronald D., 3,781,492.

Bates, Kenneth Clayton. Rotary apparatus having two rotors engaging rotary dividers in a housings. 3,781,146, Cl. 418-6.000.

Batsch, Helmut; Jahnel, Benno; Weinz, Ernst August; Berger, Wolfgang; and Dickopp, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Diamond stylus for disc records. 3,781,020, Cl. 274-38.000.

Bauer, Evgeny Teodorovich: *See—*
Dolgov, Anatoly Vladimirovich; Konovalov, Leonid Vladimirovich; Perkis, Leib Benyaminovich; Deev, Stanislav Lvovich; Dyakov, Vitaly Evgenievich; Semenov, Alexandr Efimovich; Bauer, Evgeny Teodorovich; and Suturin, Serafim Nikolaevich, 3,780,864.

Bauman, Weldon W.; and Collins, Edward, IV, to Itek Corporation. Pulse repetition frequency filter circuit. 3,781,691, Cl. 328-109.000.

Bay, Eduard. Casserole. 3,780,642, Cl. 99-347.000.

Bayer Aktiengesellschaft: *See—*
Feltgen, Karl-Heinz; and Espanion, Gunther, 3,781,393.
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,781,386.
Kuhle, Engelbert; Klauke, Erich; Behrenz, Wolfgang; and Frohberger, Paul Ernst, 3,781,331.
Muller, Erwin; Wirth, Wolf-Dieter; Blahak, Johannes; and Rohr, Harry, 3,781,233.
Pampus, Gottfried; Schon, Nikolaus; Witte, Josef; and Marwede, Gunter, 3,781,257.
Pawellek, Dieter; and Wedemeyer, Karlfried, 3,781,297.
Schubert, Hans-Werner; and Hoffmeister, Friedrich, 3,781,431.
Wagner, Klaus; Euc, Ludwig; and Klauke, Erich, 3,781,323.
Zecher, Wilfried; and Merten, Rudolf, 3,781,246.

Bayless, Jack H.: *See—*
Ayers, Robert C., Jr.; Bayless, Jack H.; Graham, John W.; Lloyd, James R.; Loth, William D.; and Williams, Robert E., 3,780,809.

Beach-Buoy, Inc.: *See—*
Brill, Edward F., 3,780,686.

Beamon, Howard L.: *See—*
Hanes, James Gordon, Jr.; King, James Frank; Lathery, Willie M.; Beamon, Howard L.; and Newlen, Kenneth W., 3,780,679.

Beasley, Hazel A.: *See—*
Thomas, Dalton A., 3,780,840.

Beatrice Foods Co., mesne: *See—*
Linder, Henry, 3,781,082.

Beausoleil, William Francis, to International Business Machines Corporation. Monolithic memory utilizing defective storage cells. 3,781,826, Cl. 340-173.00r.

Bebbington, Alan: *See—*
Ford-Moore, Arthur Henry; and Bebbington, Alan, 3,781,387.

Beche & Grohs GmbH: *See—*
Zimmer, Kurt; and Schneider, Wilhelm, 3,780,560.

Bechtold, Edwin W., to Itek Corporation. Aspheric lens surface. 3;781,097, Cl. 351-167.000.

Beckman, Jesse Wasson Wilson. Sawmill. 3,780,611, Cl. 83-751.000.

Behrenz, Wolfgang: *See—*
Kuhle, Engelbert; Klauke, Erich; Behrenz, Wolfgang; and Froh-berger, Paul Ernst, 3,781,331.

Beighbour, Frank: *See—*
Penn, Alan William; and Beighbour, Frank, 3,781,176.

Beikhold, Alina A.: *See—*
Shilov, Alexandr E.; Dyachkovsky, Fridrikh S.; Chirkov, Nikolai Mikhailovich; Matkovsky, Petr E.; Aronovich, Khaim-Mordkhe; Beikhold, Alina A.; and Russian, Ljudmila, 3,781,220.

Bell & Howell Company: *See—*
Byers, Robert A., 3,781,488.
Jeffers, Frederick J.; and Rolker, John H., 3,781,903.

Bell Telephone Laboratories, Incorporated: *See—*
Ahamed, Syed Vickar, 3,781,822.
Blahut, Donald Edgar; and Froehlich, Fritz Edgar, 3,781,478.
Ching, Yau Chau, 3,781,685.
Ching, Yau Chau, 3,781,686.
Deisch, Cecil Winston, 3,781,483.
Downing, Randall William, 3,781,810.
Geusic, Joseph Edward, 3,781,833.
Mueller, Kurt Hugo, 3,781,720.
Senese, Daniel John, 3,781,823.
Smith, Nicholas Kimbrough, 3,781,796.
Sullivan, Daniel David, 3,781,791.

Bellmer, Frederich Otto, to Fedders Corporation. Seal sleeve for oil separator. 3,781,138, Cl. 417-368.000.

Beloit Corporation: *See—*
Melead, James J.; and Wentworth, William P., 3,780,697.

Belov, Vladimir Alexandrovich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.

Bement, Elmore L.: *See—*
Allen, Robert A.; and Bement, Elmore L., 3,780,655.

Bendix Corporation, The: *See—*
Gardner, Delbert J., 3,780,620.
Rosenbaum, Erik; and Martin, John Waldo, 3,781,569.
Shear, Wayne G.; Spratt, Brendan J.; and McClure, Benton J., 3,781,803.
Tuss, John J., 3,780,595.

Bendix Westinghouse, Limited: *See—*
Merrilees, James Drummond, 3,780,592.

Benisek, Edward F., to Wallace-Murry Corporation. Turbocharger compressor with dual inlet and collector chambers. 3,781,126, Cl. 415-143.000.

Bennett, Lowell L.: *See—*
Lohr, Raymond J.; Smith, James; and Bennett, Lowell L., 3,780,665.

Bennett, Moreland P., to General Electric Company. Fusion braid weld. 3,781,513, Cl. 219-137.000.

Benschop, Gerardus Cornelis Marie: *See—*
Friebel, Hendrikus Johannes Christianos; Jonker, Simon; and Benschop, Gerardus Cornelis Marie, 3,780,429.

Benson, Jack M.: *See—*
Swoboda, Maxmillian Augustus, 3,781,479.

Benton, Kenneth E.: *See—*
Baldwin, Douglas S.; Benton, Kenneth E.; and Jacques, Vincent L., 3,781,017.

Benton, Kenneth E.; and Jacques, Vincent L., to International Business Machines Corporation. Cassette player. 3,781,016, Cl. 274-4.00c.

Benwilco Inc.: *See—*
Williams, Benjamin F., 3,780,709.

Berger, Leonard: *See—*
Fitzpatrick, William E.; Berger, Leonard; and Auerbach, Hayward B., 3,780,908.

Berger, Wolfgang: *See—*
Batsch, Helmut; Jahnel, Benno; Weinz, Ernst August; Berger, Wolfgang; and Dickopp, Gerhard, 3,781,020.

Beriger, Ernst; and Pinter, Ladislaus, to Ciba-Geigy AG. Phosphoric acid esters and pesticidal preparations containing them. 3,781,426, Cl. 424-212.000.

Beriger, Ernst, to Ciba-Geigy AG. Phosphoric acid esters, and their use as insecticides. 3,781,427, Cl. 424-217.000.

Berkoff, Charles E.; Sutton, Blaine M.; and Walz, Donald T., to Smithkline Corporation. Methods of producing anit-arthritic activity using 3-substituted phenyl-2-thio-1,3-thiazane-2,4-dione. 3,781,434, Cl. 424-246.000.

Berkovskaya, Karina Fridrikhovna; Lapteva, Nina Vitalievna; and Podlaskin, Boris Georgievich. Apparatus for analyzing an image. 3,781,553, Cl. 250-553.000.

Bernard, Albert: *See—*
Tagarie, Frederic Louis Joseph; Bernard, Albert; and Saint-Aubin, Georges Gilbert, 3,780,617.

Bernatowicz, Daniel T.: *See—*
Forestieri, Americo F.; Broder, Jacob D.; and Bernatowicz, Daniel T., 3,780,424.

Berner, Ole, to Dameca A/S. Valve, preferably for anaesthetic plants of the closed type. 3,780,760, Cl. 137-516.250.

Berns, Charles, to Edwards Company, Inc. Stable multivibrator D.C. bell. 3,781,877, Cl. 340-396.000.

Bernstein, Sidney: *See—*
Wood, Harrison F.; and Bernstein, Sidney, 3,781,192.

Bertran & Hargraves, Inc.: *See—*
Hargraves, William J., 3,780,997.

Bertus, Brent J.: *See—*
Walker, Darrell W.; Farha, Floyd E., Jr.; and Bertus, Brent J., 3,781,223.

Bespak Industries Limited: *See—*
Warren, William Edward, 3,780,913.

Beta Engineering & Development Ltd.: *See—*
Kamil, Zvi; Amir, Yoel; and Talmon, Omri, 3,781,498.

Bethlehem Steel Corporation: *See—*
Sundy, George J., 3,780,788.

Bettin, Hubertus: *See—*
Firnig, Fritz; Bettin, Hubertus; and Lorenzen, Gunter, 3,781,904.

Beukers, John M.; and Poppe, Martin. Antenna for weather balloon. 3,781,893, Cl. 343-702.000.

Beukers Laboratories, Inc.: *See—*
Poppe, Martin C., Jr.; and Friedman, Maurice, 3,781,715.

Beutel, Peter; and Koenig, Karl-Heinz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for the production of substituted thionophosphoryl chlorides. 3,781,389, Cl. 260-986.000.

Biava, Domenick R.: *See—*
Lofredo, Antony; and Biava, Domenick R., 3,780,534.

Bichel, Darwin Carl; and Malcolm, Robert La Verne, to Deere & Company. Crop feeding conveyor for a harvester. 3,780,851, Cl. 198-175.000.

Biebuyck, Lawrence F., to American Metal Climax, Inc. Door structure. 3,780,472, Cl. 49-501.000.

Billarani, Patrick; Goubeau, Robert; and Langlois, Jacques, to Velcro France. Partitions covered with a facing a fabric. 3,780,479, Cl. 52-222.000.

Billingsly, Lloyd E.: *See—*
White, William E., Jr.; and Billingsly, Lloyd E., 3,780,421.

Binnig, Horst; Freyen, Jurgen; and Middleman, Dirk-Friedrich. Digital multiplex control servo. 3,781,627, Cl. 318-562.000.

Biondi, Emanuele; and Biondi, Leonardo. Method and apparatus for making the human voice audible and comprehensible to severely deaf persons. 3,781,491, Cl. 179-107.00r.

Biondi, Leonardo: *See—*
Biondi, Emanuele; and Biondi, Leonardo, 3,781,491.

Birchall, James Derek; Cassidy, John Edward; and Smith, Frank, to Imperial Chemical Industries, Limited. Fluorocarbon polymer composition containing an adhesion promoter. 3,781,239, Cl. 260-30.60r.

Birkin, Michael S., to British Railways Board. Error detection in communication system by repetition of data. 3,781,792, Cl. 340-146.1ba.

Bishop, Stephen G.; and Moore, William J., to United States of America, Navy. Chalcogenide glass bolometer. 3,781,748, Cl. 338-15.000.

Black and Decker Manufacturing Company, The: *See—*
Rosenthal, Francis Joseph, Jr.; and Rohr, Lewis Hampton, 3,781,579.

Black, James A.; and Farwell, Harry Russell. Screen printer ink supply with quick coupling and level sensing. 3,780,651, Cl. 101-115.000.

Black, James A.; and Farwell, Harry Russell. Screen printer with screen infeed means. 3,780,652, Cl. 101-124.000.

Blackburn, Richard D., to General Electric Company. D.C. motor braking circuit especially for use with voltage regulators. 3,781,621, Cl. 318-373.000.

Blackburn, Tom L.: *See—*
Wisotzky, Otto G.; Blackburn, Tom L.; and Urbach, Roy J. G., 3,781,482.

Blackstone, Robert Clifford, to Du Pont de Nemours, E. I., and Company. Removal of 1,2-diaminocyclohexane impurity from crude hexamethylenediamine. 3,781,362, Cl. 260-583.00n.

Blackwell, Sam M., to McFarlan, A. I., Company Incorporated. Air conditioning system and method. 3,780,941, Cl. 236-49.000.

Blaha, Franklyn C.: *See—*
White, Marvin H.; McCann, David H., Jr.; Mack, Ingham A. G.; and Blaha, Franklyn C., 3,781,574.

Blahak, Johannes: *See—*
Muller, Erwin; Wirth, Wolf-Dieter; Blahak, Johannes; and Rohr, Harry, 3,781,233.

Blahut, Donald Edgar; and Froehlich, Fritz Edgar, to Bell Telephone Laboratories, Incorporated. Multiplex communication system. 3,781,478, Cl. 179-15.0al.

Blair Engineering, Inc.: *See—*
Blair, William G., 3,780,531.

Blair, William G., to Blair Engineering, Inc. Hydroturbine. 3,780,531, Cl. 60-40.000.

Blake, William L. Coaxial cable connector. 3,781,771, Cl. 339-272.00a.

Blewitt, Donald D.; and Ayers, David L., to Westinghouse Electric Corporation. Current limiting fuse including improved fuse elements. 3,781,747, Cl. 337-295.000.

Bloemendaal, John F.; and Stockdale, Willis L., to Eastman Kodak Company. Cartridge stripper. 3,780,922, Cl. 226-92.000.

Bloemenoal, Frans Victor Willem Ten: *See—*
Baas, Gerardus; and Bloemenoal, Frans Victor Willem Ten, 3,780,432.

Blohm & Voss AG: *See—*
Krakow, Heinz, 3,781,509.

Bloomer, Milton D.: *See—*
Ketchum, Marshall D.; and Bloomer, Milton D., 3,781,506.

Blues, Ernest Thomson: *See—*
Bryce-Smith, Derek; and Blues, Ernest Thomson, 3,781,317.

Boardman Company, The: *See—*
Frye, James A.; Morton, Ralph B.; and Vogler, Charles W., 3,780,675.

Bobkov, Alexandr Vasilievich: *See—*
Odkopaev, Boris Ivanovich; Bobkov, Alexandr Vasilievich; and Chervyakova, Ljudmila Dmitievna, 3,780,450.

Bockwoldt, Walter H., to Hughes Aircraft Company. System for controlling the target voltage of image sensors. 3,781,591, Cl. 315-3.00c.

Boden, Ogden W. Hat or cap constructed for air circulation therethrough. 3,780,382, Cl. 2-182.600.

Bodge, Clifford A., to Texas Instruments, Incorporated. Fluid flow sensing device. 3,781,839, Cl. 340-239.00r.

Bodle, Ronald L.: *See—*
Moore, Leonard; and Bodle, Ronald L., 3,781,724.

Bodway, George E. Thin film circuits and method for manufacture. 3,781,610, Cl. 317-101.00a.

Bodycomb, Alistair Kenyon, to Domtar Limited. Paper plug removal from drilled reams. 3,781,124, Cl. 408-61.000.

Boehland, Robert R., Jr., to Feather Hill Industries, Inc. Bird feeder. 3,780,703, Cl. 119-53.000.

Boehringer Mannheim Gesellschaft mit beschrankter Haftung: *See—*
Kampe, Wolfgang; Fauland, Erich; Thiel, Max; Dietmann, Karl; and Juhran, Wolfgang, 3,781,273.
Witt, Ernst-Christian; Stach, Kurt; Thiel, Max; Schmidt, Felix Helmut; and Stork, Harald, 3,781,328.

Boekhorst, Antonius, to U.S. Philips Corporation. Circuit arrangement for generating a mainly sawtooth deflection current of line frequency in a picture display apparatus. 3,781,603, Cl. 315-276.00d.

Boger, Henry W.: *See—*
Borg, Karl Stanley; and Boger, Henry W., 3,780,767.

Bohemia Lumber Company, Incorporated: *See—*
Trocino, Frank S., 3,781,187.

Bohn, Gerhard: *See—*
Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, 3,780,668.

Bohn, Manfred, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Therapeutic solution of iron and liposoluble vitamins. 3,781,422, Cl. 424-147.000.

Bolex International SA: *See—*
Heiniger, Wilfred; and Lepinay, Gerard, 3,781,098.
Kruszynski, Stanislaw, 3,781,618.

Bollag, Werner; Rigassi, Norbert; and Schwieter, Ulrich, to Hoffmann-La Roche Inc. Polyene compounds. 3,781,314, Cl. 260-410.900.

Bollinger, Edward R., Jr.: *See—*
Abarotin, Eugene V.; and Bollinger, Edward R., Jr., 3,781,663.

Bollyky, Laszlo Joseph, to American Cyanamid Company. Electronegatively substituted carboxyphenyl oxalates as superior chemiluminescent materials. 3,781,329, Cl. 260-479.00s.

Boney, William E.: *See—*
Barry, James D.; and Boney, William E., 3,781,713.

Bonn, Theodore H., to Sperry Rand Corporation. Gas discharge display apparatus. 3,781,599, Cl. 315-169.0tv.

Booth, John F.: *See—*
McLeod, John W.; Gray, Laverne E.; and Booth, John F., 3,780,855.

Boots Pure Drug Company Limited: *See—*
Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, 3,781,355.

Bordowsky, Karl Heinz: *See—*
Dach, Hansjorg; Bordowsky, Karl Heinz; and Bucksch, Manfred, 3,780,601.

Borg, Karl Stanley; and Boger, Henry W., to Masoneilan International, Inc. Control valve trim having high resistance vortex chamber passages. 3,780,767, Cl. 137-625.300.

Borg-Warner Corporation: *See—*
Norbeck, Dean K.; and Kimpel, Francis A., 3,780,532.

Borghetti, Giuseppe, to Telemeccanica Elettrica Officine Meccaniche Reunite S.p.A. Single pole electric switch with contacts convertible from normally open to normally closed and vice versa. 3,781,501, Cl. 200-166.0bc.

Bormann, Dieter; and Worm, Manfred, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for preparing cephem-4-carboxylic acid esters. 3,781,283, Cl. 260-243.00c.

Borom, Marcus P.; and De Vries, Robert C., to General Electric Company. Thermochromic surface heating apparatus. 3,781,522, Cl. 219-462.000.

Borom, Marcus P., to General Electric Company. Thermochromic surface heating apparatus. 3,781,523, Cl. 219-462.000.

Bosland, Cornelius William: *See—*
Feeser, William Coover; Bosland, Cornelius William; Lockard, Joseph Larue; and Mummey, Dale Brice, 3,781,763.

Botnick, Irlin: *See—*
Botnick, Irlin; and Golrick, Philip D. (said Golrick assor to said), 3,781,034.

Botnick, Irlin; and Golrick, Philip D., said Golrick assor to said Botnick, Irlin. Vehicle safety harness rigging. 3,781,034, Cl. 280-150.0sb.

Botsch, Bertram, to Machinenfabrik H. Geiger. Aerating and agitating device. 3,780,998, Cl. 261-91.000.

Bott, Lawrence L., to Nalco Chemical Company. Inverted mixed latex for water flooding. 3,780,806, Cl. 166-275.000.

Bottoms, Garrell C., to Continental Oil Company. Rotary distributor means and method. 3,780,887, Cl. 214-17.0cb.

Boudinet, Guy; and Rocca-Serra, Jean, to Compagnie General d'Electricite. Gas laser generator devices. 3,781,710, Cl. 331-94.500.

Boudreau, Paul E.; Dixon, Roy C.; Donnan, Robert A.; and Moss, Eual A., to International Business Machines Corporation. Terminal interface for a serial loop communications system having store and forward capability. 3,781,815, Cl. 340-172.500.

Bousky, Samuel, to Ampex Corporation. Light scanning apparatus and method for converting display information into storable video data. 3,781,464, Cl. 178-5.400.

Bovee, Boyd L. Ski stopping structure. 3,781,026, Cl. 280-11.13b.

Bowen, James G.: *See—*
Smith, Allan L.; and Bowen, James G., 3,780,946.

Bowmar/Ali, Inc.: *See—*
Feeney, James Henry, 3,780,430.
Feeney, James Henry, 3,780,431.

Bowmor Instrument Corporation: *See—*
White, Edward A.; and Bunting, James H., 3,781,852.

Boyd, James C. Safety retainer for collared chisels in chipping hammers. 3,781,023, Cl. 279-19.600.

Boyden, Robert E., to O'Reilly, Thomas B. Power driven typewriter with single type head. 3,780,845, Cl. 197-18.000.

Boyer, Marcel Louis, to C.I.T.-Compagne Industrielle des Telecommunication. Radio transmitter receiver including level and antenna direction control circuitry. 3,781,890, Cl. 343-100.0cs.

Boyles, Robert L., to General Electric Company. Digital display indicator. 3,780,524, Cl. 58-125.00c.

BP Chemicals International Limited: *See—*
Davis, Paul Trevor; Glover, Terence George; and Jones, John Robert, 3,781,195.

Brac, Charles, Jr.: *See—*
Finestone, Arnold B.; Westphal, Richard C.; and Brac, Charles, Jr., 3,781,383.

Bradshaw, Leslie E. B.: *See—*
Cragg, William D.; Bradshaw, Leslie E. B.; Batchelor, Anthony C.; and Carter, Ronald D., 3,781,492.

Braid, Milton, to Mobil Oil Corporation. Lubricant compositions. 3,781,206, Cl. 252-51.50r.

Brand, Abraham, to General Instrument Corporation. Method and apparatus for aligning magnetic heads in a magnetic disc recorder. 3,781,489, Cl. 179-100.20r.

Brand, Eugene L.: *See—*
Kort, Walter A.; and Brand, Eugene L., 3,780,473.

Brandenburg, Klaus, to U.S. Philips Corporation. Thermodynamic reciprocating machine with controlled fuel/air supply. 3,780,528, Cl. 60-39.270.

Branick Manufacturing Company: *See—*
Castoe, John H., 3,780,988.

Branscome, Kenneth M.: *See—*
Goode, George E.; Morgan, Barrie O.; and Branscome, Kenneth M., 3,781,472.
Goode, George E.; and Branscome, Kenneth M., 3,781,473.

Braun, Dieter, to Fortuna-Werke Maschinenfabrik Aktiengesellschaft. Shoe treatment. 3,780,390, Cl. 12-1.00r.

Braverman, Milton, to Medi-Dise, Inc. Medicinal dispensing device. 3,780,856, Cl. 206-56.0ab.

Brennan, William B. Paint accomodating modules adapted for use with spray guns. 3,780,950, Cl. 239-306.000.

Brenneisen, Paul: *See—*
Spaun, Ruediger; Rochat, Alain Claude; Gallay, Jean-Jacques; and Brenneisen, Paul, 3,781,290.

Bridgestone Liquefied Gas Company, Ltd.: *See—*
Yamamoto, Katsuro, 3,780,900.

Brilando, Frank P., to Schwinn Bicycle Company. Speedometer driver for bicycle quick-release hubs. 3,781,036, Cl. 280-289.000.

Brill, Edward F., to Beach-Buoy, Inc. Float. 3,780,686, Cl. 114-.50f.

Bristol-Myers Company: *See—*
Kawaguchi, Hiroshi; Naito, Takayuki; and Nakagawa, Susumu, 3,781,268.

British Iron and Steel Research Association, The: *See—*
Davis, Norman, 3,781,662.

British Oxygen Company Limited, The: *See—*
Power, Basil Dixon; Oswald, Roger Derek; and Tooth, David Michael, 3,781,518.

British Railways Board: *See—*

Birkin, Michael S., 3,781,792.
Britland, Colin Morris; and Thorpe, John Bernard Joseph, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Navigational apparatus. 3,781,530, Cl. 235-150.260.
Brockman, Lyle, to General Signal Corporation. Highway crossing signal control system for railroads. 3,781,542, Cl. 246-128.000.
Brockmann, Hans-Jurgen, to U.S. Philips Corporation. Field deflection circuit. 3,781,589, Cl. 315-27.0td.
Broder, Jacob D.: *See—*
Forestieri, Americo F.; Broder, Jacob D.; and Bernatowicz, Daniel T., 3,780,424.
Brodersen, John C. Mounting apparatus for gas containers. 3,780,972, Cl. 248-313.000.
Bronson, Orville P.; and Crabtree, Bruce L., Sr. Secondary lip for scrapers. 3,780,456, Cl. 37-125.000.
Brooks, Frank W., to General Motors Corporation. Bushing assembly. 3,781,068, Cl. 308-4.00r.
Brother Kogyo Kabushiki Kaisha: *See—*
Sasaki, Toshio, 3,780,681.
Brown, Alvin E., to Saratoga Systems, Inc. Ultrasonic fluid speed of sound and flow meter apparatus and method. 3,780,577, Cl. 73-194.00a.
Brown, Cicero C. Pipe handling system for use in well drilling. 3,780,883, Cl. 214-2.500.
Brown, Francis Barton; and Budrys, Vitolis, to Kobe, Inc. Well pumping system with parallel jet pumps. 3,781,134, Cl. 417-176.000.
Brown, Gordon P., to Eastman Kodak Company. Strip cutting and mounting apparatus. 3,780,608, Cl. 83-375.000.
Brown, Kenneth Robson, to Ferranti Limited. Information storage apparatus. 3,781,466, Cl. 178-6.800.
Bruce-Sanders, James Frederick. Liquid delivery systems. 3,781,534, Cl. 235-151.340.
Brudy, Peter E.; and Smith, John. Emergency warning lamp. 3,781,538, Cl. 240-49.000.
Bruinshorst, Berend Theodorus Jan; and Van Kessel, Theodorus Jozef, to U.S. Philips Corporation. Filter for use in a carrier-wave measuring system. 3,781,697, Cl. 328-167.000.
Bruker-Physik AG: *See—*
Haas, Joerg Philipp, 3,781,735.
Brunswick Corporation: *See—*
Hungerford, Daniel Comstock, 3,780,688.
Bryce-Smith, Derek; and Blues, Ernest Thomson. Silver ketenide and preparation thereof. 3,781,317, Cl. 260-430.000.
Bryson, Millard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., to Gulf Research & Development Company. Process for cracking hydrocarbons containing hydrodesulfurized residual oil. 3,781,197, Cl. 208-120.000.
Bryzinsky, Frank M.: *See—*
Grazen, Frank S.; Buike, Melvin E.; and Bryzinsky, Frank M., 3,781,241.
Buchwald, Robert M. Vehicle height adjusting suspension arrangement. 3,781,033, Cl. 280-124.00r.
Buckman, Wayne T.: *See—*
Miller, Blaine Monroe, Jr.; Buckman, Wayne T.; and Warner, Ellis R., Jr., 3,780,956.
Bucksch, Manfred: *See—*
Dach, Hansjorg; Bordowsky, Karl Heinz; and Bucksch, Manfred, 3,780,601.
Buddendeck, Gerald A.; Hubler, Lawrence C.; Heiler, Paul S.; and Koch, Gilbert E., to Xerox Corporation. Conveying system for electrostatographic printing machines. 3,781,004, Cl. 271-10.000.
Budmiger, Hermann: *See—*
Hanggi, Peter; and Budmiger, Hermann, 3,781,402.
Budrys, Vitolis: *See—*
Brown, Francis Barton; and Budrys, Vitolis, 3,781,134.
Buike, Melvin E.: *See—*
Grazen, Frank S.; Buike, Melvin E.; and Bryzinsky, Frank M., 3,781,241.
Bulin, Shelly A., to Case, J. I., Company. Method of making blower housing assembly. 3,780,411, Cl. 29-156.40r.
Bulten-Kanthal Aktiebolag: *See—*
Schrewelius, Nils Gustav, 3,781,528.
Bunting, James H.: *See—*
White, Edward A.; and Bunting, James H., 3,781,852.
Bunzel, Eckard; Spessert, Robert; Rieskamp, Karl; and Hildebrand, Willi, to Ofu Ofenbau-Union GmbH. Industrial furnace. 3,781,166, Cl. 432-126.000.
Burgdorf, Marten, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method for making hollow bevel gears with integral hollow shaft. 3,780,413, Cl. 29-159.200.
Burger Eisenwerke AG: *See—*
Durth, Wilfried, 3,780,721.
Burghartz, Ernst Albrecht; and Fuss, Hans Guenter. Contruction for the ventilation and air conditioning of rooms of existing buildings. 3,780,638, Cl. 98-31.000.
Burker, Ulf; and Koch, Sigurd, to Siemens Aktiengesellschaft. Programmable fixed data memory utilizing Schottky diodes. 3,781,825, Cl. 340-173.0sp.
Burkle, Erwin; and Loebe, Felix, to Krauss-Maffel Aktiengesellschaft. Feeding attachment for machine processing foamable plastic materials. 3,780,995, Cl. 259-193.000.
Burns, Eugene A.; and Jones, Robert J., to TRW Inc. Pyrolytic polymerization catalyst. 3,781,247, Cl. 260-78.40d.
Burroughs Corporation: *See—*
Wymore, Charles E.; and Dahlberg, Clayton P., 3,781,812.
Burth, Willi. Supply and take-up system for film and the like. 3,780,959, Cl. 242-55.180.
Busch, Norbert: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,781,432.
Busch, Peter: *See—*
Story, Paul R.; and Busch, Peter, 3,781,303.
Bush, Ian E., to United States of America, Health, Education and Welfare. Mixer-separator for automated analytical chemistry system. 3,780,936, Cl. 233-20.00r.
Bushtedt, Jury Petrovich: *See—*
Kudinov, Vladimir Mikhailovich; Bushtedt, Jury Petrovich; Dudko, Daniil Andreevich; Arkhangelsky, Georgy Alexandrovich; Pogoretsky, Georgy Ivanovich; Volgin, Leonid Alexandrovich; Kotov, Viktor Anatolievich; Surnin, Boris Anatolievich; and Degtyarev, Mikhal Vasiievich, 3,780,927.
Busson, Christian: *See—*
Alagy, Jacob; and Busson, Christian, 3,781,344.
Butler, Lawrence: *See—*
Barnard, Mark Cary Sedgwick; and Butler, Lawrence, 3,780,791.
Byers, Robert A., to Bell & Howell Company. Playback system with frequency equalization by cascaded circuits performing in accordance with partial fraction expansions of factorial equalizing function terms. 3,781,488, Cl. 179-100.20k.
C & W Sewing Machine: *See—*
Shuffield, Jack E., 3,780,680.
Cahoy, Roger P.; and Sanjean, John, to Gulf Research & Development Company. Carbamyloxybenzylidenemalononitrile insecticides. 3,781,446, Cl. 424-300.000.
Caiati, Frank P.; and Wight, David C., to General Motors Corporation. Solid state crash recorder. 3,781,824, Cl. 340-172.500.
Cairns, James; and Walton, Nicholas, to Garlock, Inc. Composite bearings. 3,781,205, Cl. 252-12.600.
Caleskie, Vincent J.; Hughes, Paul T.; and Johnson, Robert Wayne, to Protection Devices, Inc. Anti-hijacking and theft control systems for motor vehicles. 3,781,789, Cl. 340-64.000.
Caliri, Charles T.: *See—*
Uhtenwoldt, Herbert R.; Crossman, Richard E.; and Caliri, Charles T., 3,781,070.
Callahan, William H.; and Horvath, Stephen I., to Lektro-Vend Corporation. Vending machine. 3,780,909, Cl. 221-85.000.
Cameron Iron Works, Inc.: *See—*
Pennington, John V., 3,780,756.
Campagnuolo, Carl J., to United States of America, Army. Electrical power for fuze activation. 3,781,575, Cl. 310-8.800.
Campari, Luigi: *See—*
Teagno, Vladimiro; and Campari, Luigi, 3,781,766.
Campbell, Matthew Teasdale, to Fork Lift Truck Patentees Establishment. Load handling vehicle. 3,780,895, Cl. 214-770.000.
Campman, James P., to Vidar Laboratories Inc. Intrusion detecting apparatus and method. 3,781,842, Cl. 340-258.00b.
Candor, James T. Flexible skirt construction for a vacuum cleaning nozzle and the like. 3,780,398, Cl. 15-415.000.
Canfield, Richard; and Nafziger, Nelson. Milk processing system. 3,780,644, Cl. 99-455.000.
Cantrell, Ronald G., to Houdaille Industries, Inc. Rigidly attached resilient buckling column bumper support systems. 3,781,049, Cl. 293-99.000.
Capowski, Robert S.: *See—*
Ahearn, Thomas P.; Capowski, Robert S.; Christensen, Neal T.; Gannon, Patrick M.; Lee, Arlin E.; and Liptay, John S., 3,781,808.
Caputo, Anthony J.: *See—*
Napier, John M.; and Caputo, Anthony J., 3,781,173.
Carborundum Company, The: *See—*
Tymczak, Romuald W., 3,781,527.
Carlsson, Lars Anders Fritz; Helgstrand, John Erik; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik, to Aktiebolaget Astra Sodertalje. Fluoro-pyridine derivatives and therapeutically acceptable salts thereof. 3,781,280, Cl. 260-240.00j.
Carlton, Alvar G.: *See—*
Pardoe, Carroll T.; Carlton, Alvar G.; and Appel, Robert L., 3,781,818.
Carmichael, Charles J.; and Franklin, Albert G. Method for separating oil from a mixture of oil and waste water from an offshore rig. 3,781,201, Cl. 210-27.000.
Carnanhan, Robert D.; and Youtsey, Karl J., to Universal Oil Products Company. Coupling arrangement for providing uniform velocity distribution for gas flow between pipes of different diameter. 3,780,772, Cl. 138-37.000.
Carney, Murray C., to Sangamo Electric Company. Multiple day recording chart pack. 3,781,906, Cl. 346-137.000.
Caroon, Robert L.: *See—*
Anderson, Thomas W.; and Caroon, Robert L., 3,781,837.
Carriere Technical Industries, Ltd.: *See—*
Glew, Brian G., 3,781,656.
Carroll, Ronnie D., to Pfizer Inc. Dioxo-thiozolidinyl derivatives of 6-aminopenicillanic acid. 3,781,277, Cl. 260-239.100.
Carrotte, Frederick Henry: *See—*
Maidens, John Eric; Hartley, Kenneth Alison; and Carrotte, Frederick Henry, 3,780,540.
Carter, Hugh: *See—*
Thomas, Dalton A., 3,780,840.
Carter, Ronald D.: *See—*

Cragg, William D.; Bradshaw, Leslie E. B.; Batchelor, Anthony C.; and Carter, Ronald D., 3,781,492.
Carugati, Vitaliano: *See—*
Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, 3,781,557.
Case, J. I., Company: *See—*
Bulin, Shelly A., 3,780,411.
Davis, Charles J.; and Glass, Billy M., 3,780,813.
Engstrom, William A., 3,781,137.
Casella Farbwere Mainkur Aktiengesellschaft: *See—*
Engelhardt, Friedrich; and Ribka, Joachim, 3,781,254.
Cashaw, George R.: *See—*
Hart, Charles H.; and Cashaw, George R., 3,781,006.
Cassidy, John Edward: *See—*
Birchall, James Derek; Cassidy, John Edward; and Smith, Frank, 3,781,239.
Castoe, John H., to Branick Manufacturing Company. Bushing repairing method and tool. 3,780,988, Cl. 254-100.000.
Caterpillar Tractor Company: *See—*
Frey, Dennis W., 3,780,822.
C.A.V. Limited: *See—*
Fenne, Ivor, 3,780,716.
Cayton, Thomas C., Jr., to Motorola, Inc. Tape head indexing and shifting apparatus. 3,781,018, Cl. 274-4.00a.
Cecchin, Gildo; and Hilbert, Francis H., to Motorola, Inc. Signal processing circuit for a color television receiver. 3,781,701, Cl. 330-30.00d.
Celanese Canada Limited: *See—*
Sykora, Josef, 3,780,962.
Celanese Corporation: *See—*
Prinz, Roy H.; and Kerr, Bob C., 3,781,365.
Cellu Products Company: *See—*
Doll, Martin, 3,781,183.
Cement Enamel Development, Inc.: *See—*
DeLange, Cornelis J., 3,780,482.
Centre de Rechercher Metallurgigues Brussells: *See—*
Courard, Camille Alphonse, 3,781,002.
Centre Europeen de Recherches Mauvernay: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,781,432.
Centre National d'Etudes Spatiales (CNES): *See—*
Ancona, Cesar; and Choquer, Jean, 3,781,894.
Ceroke, Clarence J.: *See—*
Mankowsky, Vincent J.; and Ceroke, Clarence J., 3,781,160.
Cerwenka, Peter: *See—*
Holzgruber, Wolfgang; Machner, Peter; Schneihofer, Adolf; Kleinhagauer, Otmar; and Cerwenka, Peter, 3,781,448.
Chabardes, Pierre; and Querou, Yvon, to Rhone-Poulenc S.A. Ruthenium catalyzed process for the alkylation of ketones. 3,781,307, Cl. 260-347.800.
Champion International Corporation: *See—*
Hanson, Wallace E., 3,780,931.
Vassiliades, Anthony E.; and Nauman, Edward F., 3,781,230.
Chandler Evans, Inc.: *See—*
Kampe, Robert F.; and White, Albert H., 3,780,771.
Chandler, Jasper S., to Eastman Kodak Company. Modular structure for viewing apparatus. 3,781,102, Cl. 353-26.000.
Chang, Yun Feng: *See—*
Lahana, Santokh S.; and Chang, Yun Feng, 3,781,380.
Chapman, Frederic Frank, to Hawker Siddeley Canada Ltd. Sawing and chipping machine. 3,780,778, Cl. 144-39.000.
Chapman, Leonard A., to Eagle Machine Company, Limited. Tobacco harvester. 3,780,507, Cl. 56-27.500.
Chapman, Steven J., to Warwick Electronics, Inc. Pincushion distortion correction circuit. 3,781,590, Cl. 315-27.0sr.
Charboneau, Ben J., to Sno-Start, Inc. Series type solid state voltage regulator which provides constant voltage to a storage device. 3,781,632, Cl. 320-39.000.
Charlton, Gregory G., to International Telephone and Telegraph Corporation. Wide-angle planar-beam antenna adapted for conventional or doppler scan using laterally flared reflector. 3,781,897, Cl. 343-836.000.
Chase-Shawmut Company, The: *See—*
DiMarco, Bernard; Kussy, Frank W.; and Swain, Kenneth W. (said Swain assor. to), 3,781,607.
Cheeseman, James H., to Graphic Controls Corporation. One piece marker body with hermetically sealed removable cap. 3,781,122, Cl. 401-202.000.
Chemische Fabrik Kalk GmbH: *See—*
Jenkner, Herbert; and Konigstein, Otto, 3,781,388.
Chemische Werke Albert: *See—*
Gajer, Richard; Skurnia, Uwe; and Richter, Mandred, 3,781,397.
Chemische Werke Huls Aktiengesellschaft: *See—*
Wolpers, Jurgen, 3,781,250.
Chen, Allen S. Surgical valve assembly for urinary bladder irrigation and drainage. 3,780,736, Cl. 128-231.000.
Chernykh, Viktor Vasilievich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.
Chervyakova, Ljudmila Dmitievna: *See—*
Odkopaev, Boris Ivanovich; Bobkov, Alexandr Vasilievich; and Chervyakova, Ljudmila Dmitievna, 3,780,450.
Chicago Bridge & Iron Company: *See—*
Grubbs, Conway E.; and Anderson, Dale R., 3,781,512.
Paasschens, Cornelis W. M.; and Nelson, Victor J., 3,781,000.
Ching, Yau Chau, to Bell Telephone Laboratories, Incorporated. Differential pulse code communications system having dual quantization schemes. 3,781,685, Cl. 325-38.00b.
Ching, Yau Chau, to Bell Telephone Laboratories, Incorporated. Differential pulse code communications system having dual quantization schemes. 3,781,686, Cl. 325-38.00b.
Chino, Yasuyoshi: *See—*
Sato, Ryozi; and Chino, Yasuyoshi, 3,781,332.
Chirkov, Nikolai Mikhailovich: *See—*
Shilov, Alexandr E.; Dyachkovsky, Fridrikh S.; Chirkov, Nikolai Mikhailovich; Matkovsky, Petr E.; Aronovich, Khaim-Mordkhe; Beikhold, Alina A.; and Russian, Ljudmila, 3,781,220.
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, to Hoffmann-La Roche Inc. Allyl ethers. 3,781,309, Cl. 260-348.00r.
Chomet, Marc; and Ellison, Donald E., to Sanders Associates Inc. Television surveillance system. 3,781,468, Cl. 178-6.800.
Chono, Masazumi; Nakajima, Hitoshi; Taguchi, Masayoshi; and Matsuo, Noriaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for producing methacrylic acid and its esters. 3,781,336, Cl. 260-486.00d.
Choquer, Jean: *See—*
Ancona, Cesar; and Choquer, Jean, 3,781,894.
Christensen, Neal T.: *See—*
Ahearn, Thomas P.; Capowski, Robert S.; Christensen, Neal T.; Gannon, Patrick M.; Lee, Arlin E.; and Liptay, John S., 3,781,808.
Christian, Joseph Robert; Goubau, Georg J. E.; and Mink, James W., to United States of America, Army. Self aligning beam waveguide having a series of lenses and means for maintaining said lenses in alignment. 3,781,546, Cl. 250-201.00r.
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., to Texaco Inc. Secondary recovery method. 3,780,808, Cl. 166-275.000.
Chrysler Corporation: *See—*
Pace, John G., 3,780,712.
Ciba-Geigy AG: *See—*
Beriger, Ernst; and Pinter, Ladislaus, 3,781,426.
Beriger, Ernst, 3,781,427.
Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, 3,781,356.
Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, 3,781,357.
Hennart, Claude; Moldovanyi, Laszlo; and Roth, Willy, 3,781,428.
Nikles, Erwin; Dittrich, Volker; and Pinter, Ladislaus, 3,781,301.
Nikles, Erwin, 3,781,330.
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,781,278.
Ciba-Geigy Corporation: *See—*
Jaques, Roland; and Rossi, Alberto, 3,781,267.
Rosen, Melvin Harris, 3,781,293.
Spaun, Ruediger; Rochat, Alain Claude; Gallay, Jean-Jacques; and Brenneisen, Paul, 3,781,290.
Suryanarayana, Yelagondahally S.; and Reid, Luther J., Jr., 3,781,287.
Wehrli, Hansuli; and Jeger, Oskar, 3,781,271.
Cicotta, John R.: *See—*
Fay, Robert J.; and Cicotta, John R., 3,781,089.
Cincinnati Gilbert Machine Tool Co.: *See—*
Lilienthal, Alfred J.; Johnson, Theodore F.; Petri, William E., Jr.; and Gilbert, Charles E., Jr., 3,780,423.
Cincinnati Mialcron-Haeld Corp.: *See—*
Uhtenwoldt, Herbert R.; Crossman, Richard E.; and Caliri, Charles T., 3,781,070.
C.I.T.-Compagne Industrielle des Telecommunication: *See—*
Boyer, Marcel Louis, 3,781,890.
Citizen Watch Co., Ltd.: *See—*
Kato, Yoshiaki; and Mabuchi, Hiroshi, 3,780,518.
Yoshida, Makoto, 3,780,522.
Claps, William A., to Coulter Electronics, Corporation. Noise discriminating circuitry and method for electronic particle study apparatus. 3,781,674, Cl. 324-71.0cp.
Clark Equipment Company: *See—*
Walton, William Byron, 3,781,565.
Clark, Robert P.; and Freifeld, Milton, to GAF Corporation. Thickened acid compositions and methods for making same. 3,781,203, Cl. 252-8.55c.
Clark, Samuel A., Jr., to United States of America, Army. Protective metal cap for plastic fuze radomes. 3,780,661, Cl. 102-70.02p.
Clarkin, Edward J.; and Conlee, George D., to Nooter Corporation. Corner construction for reinforcing rib on tank made from tbin sheet metal. 3,780,903, Cl. 220-71.000.
Clavin, Edward A.; and Wheeler, Lionel H., to CRC-Crose International, Inc. Pipe bending die. 3,780,591; Cl. 72-465.000.
Clemens, David H.; and Kunin, Robert, to Rohm & Haas Company. Removal of sulfur troxide and acid mist from gaseous streams. 3,780,500, Cl. 55-73.000.
Clifford, Richard P., to TRW Inc. Gradient cone thermal radiation sensor. 3,781,561, Cl. 250-352.000.
Clinitex, Inc.: *See—*
De Guillebon, Henri F., 3,780,979.
Cobb, Mack R.: *See—*

Lind, Archie L.; and Cobb, Mack R., 3,780,551.
Cochran, David S.; and Osborne, Thomas E., to Hewlett-Packard Company. Portable electronic calculator. 3,781,820, Cl. 340-172.500.
Cochran, Paul E.: *See—*
Action, Floyd; Cochran, Paul E.; and Moore, William G., 3,781,622.
Cockshott, Charles Peter: *See—*
Williams, Malcolm; and Cockshott, Charles Peter, 3,781,580.
Coded Signatures, Inc.: *See—*
Mayer, George L., Jr.; and Dobbins, David L., 3,781,109.
Colburn, Walter E.; Trowern, Howard M., Jr.; and Kerfoot, Franklin W., Jr., to Parke, Davis & Company. System for remote control of package-dispensing station. 3,780,907, Cl. 221-2.000.
Cole, Clyde C. Beam arrangement for handling heavy elongate objects by power machinery. 3,781,054, Cl. 294-81.00r.
Cole, Edward N., to General Motors Corporation. Stratified charge rotary combustion engine. 3,780,707, Cl. 123-8.130.
Cole, Raymond C., to International Playtex Corporation. Breast cup construction. 3,780,741, Cl. 128-516.000.
Coleman, Aaron H.; and Stewart, Hugh W., to CPS Associates, Inc. Automatic publications systems and method. 3,781,816, Cl. 340-172.500.
Coleman Company, Inc., The: *See—*
Gladden, David J., 3,781,140.
Coleman, Richard J.; Foster, David J.; Loper, Edward J., Jr.; and Sundeen, Arthur R., to General Motors Corporation. Magnetic fluid hydrodynamic bearing. 3,780,593, Cl. 74-5.00r.
Coleman, William Earl; and Kessler, Clarence William, to National Cash Register Company, The. Plasma charge transfer device. 3,781,600, Cl. 315-169.0tv.
Colgate-Palmolive Company: *See—*
McDonnell, Robert William; and Win, Maung Hla, 3,781,228.
Collins, Edward, IV: *See—*
Bauman, Weldon W.; and Collins, Edward, IV, 3,781,691.
Collins, Jack T., to Automation Industries, Inc. Ultrasonic inspection device. 3,780,570, Cl. 73-67.50r.
Collins, Jerry H., to Esso Research and Engineering Company. Use of 4-chloro-3,5-dinitrobenzenesulfonamide as a fungicide. 3,781,441, Cl. 424-321.000.
Collins Radio Company: *See—*
Escoffier, Raymond P., 3,781,692.
Johnson, Frederick W., 3,781,764.
McCollum, James H., Jr., 3,781,912.
Robinson, Eugene A., 3,781,613.
Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, to Raytheon Company. Radiographic display system with cassette lock. 3,781,557, Cl. 250-326.000.
Colsen, F. Thomas: *See—*
Kaufman, Peter; Colsen, F. Thomas; and Townsend, Robert L., 3,781,854.
Colt's Inc.: *See—*
Zaid, Melvin, 3,780,657.
Columbia Broadcasting System, Inc.: *See—*
Baron, Stanley N.; and Kreinik, Stephen, 3,781,849.
Sharp, Paul H., 3,781,475.
Combustion Engineering, Inc.: *See—*
Ahonen, George Harvey, 3,781,167.
Runde, Herbert Arthur; and Kowles, Joseph Edward, 3,781,576.
Schuss, Jack Ascher, 3,781,161.
Compagnie Francaise de Raffinage: *See—*
Weisang, Joseph Edouard; Szabo, Georges; and Maurin, Jean, 3,781,222.
Compagnie General d'Electricite: *See—*
Boudinet, Guy; and Rocca-Serra, Jean, 3,781,710.
Compteurs Schlumberger: *See—*
Herrmann, Pierre, 3,781,910.
Conlee, George D.: *See—*
Clarkin, Edward J.; and Conlee, George D., 3,780,903.
Conn, James F.: *See—*
Kichline, Thomas P.; and Conn, James F., 3,781,334.
Conner, William V.; and Proctor, Stephen G., to United States of America, Atomic Energy Commission. American recovery from reduction residues. 3,781,404, Cl. 423-11.000.
Conrad Precision Industries: *See—*
Pregel, Alexander; and Goldman, William A., 3,780,462.
Consolidation Coal Company: *See—*
May, Francis A., 3,781,458.
Constructions Mecaniques F. Laroche & Fils: *See—*
Morel, Andre, 3,780,399.
Consyne Corporation: *See—*
Wildman, Alexander J., 3,780,437.
Container Corporation: *See—*
Gardner, Jeffrey M., 3,780,934.
Starr, Anthony J., 3,780,930.
Container Corporation of America: *See—*
Friel, James J., 3,780,881.
Continental Can Company: *See—*
Katzenmeyer, James H., 3,780,906.
Continental Can Company, Inc.: *See—*
Tamm, Richard F., 3,781,207.
Continental Oil Company: *See—*
Bottoms, Garrell C., 3,780,887.
Fales, Howard S., 3,780,447.
Laufer, Robert J., 3,781,367.
McGuire, Stephen E., 3,781,340.
Contrans Gesellschaft fur Containerwerkela m.b.H.: *See—*
Lohse, Hans-Heinrich, 3,781,139.
Contri, Bruno: *See—*
Nolan, Frank D., 3,781,451.
Control Data Corporation: *See—*
Marsh, Robert W.; and Mooers, Alden J., 3,781,114.
Controlled Environment Systems, Inc.: *See—*
Widmayer, Don F., 3,781,598.
Conzinc Riotinto of Australia, Limited. *See—*
Andrews, Barry Stewart; Fitzgerald, Desmond Elwyn; and Lewis, Ian Edward, 3,781,001.
Cooper, Erwin E.; and Kennedy, Howard V., to Texas Instruments, Incorporated. Variable field of view scanning system. 3,781,559, Cl. 250-334.000.
Coordes, John E., to United States of America, Army. Land vehicle. 3,780,819, Cl. 180-14.00a.
Copes, Joseph P.: *See—*
Randall, David I.; and Copes, Joseph P., 3,781,359.
Corbellini, Margherita; and Balducci, Agostino, to Snam Progetti S.p.A. Novel diamidodialanes and process for the preparation thereof. 3,781,318, Cl. 260-448.00r.
Cordelle, Claude: *See—*
Maringer, Robert; and Cordelle, Claude, 3,781,157.
Corderoy, Henry Morgan, to ACI Operations Pty. Limited. Apparatus for packing bottles, jars or like into cases. 3,780,492, Cl. 53-247.000.
Corning Glass Works: *See—*
Domicone, Joseph J.; and Kozlowski, Theodore R., 3,781,184.
Eichelberger, William E.; and Wood, Lawrence H., 3,781,846.
Cornwell Company, Inc.: *See—*
Trueblood, Robert Arthur, 3,781,074.
Corson, Charles A., to Westinghouse Electric Corporation. PFN voltage regulator. 3,781,690, Cl. 328-67.000.
Couchoud, Paul; and Rochina, Vincent, to Societe Rhodiaceta. Process for producing elastic filaments and bristles. 3,781,400, Cl. 264-210.00f.
Coulter Chemistry, Inc., mesne: *See—*
Jones, Alan Richardson, 3,781,116.
Coulter Electronics, Corporation: *See—*
Claps, William A., 3,781,674.
Courard, Camille Alphonse, to Centre de Rechercher Metallurgigues Brussells. Dual coaxial tuyeres. 3,781,002, Cl. 266-41.000.
Courbon, Jean. Method of making skew elements of prestressed concrete. 3,781,401, Cl. 264-228.000.
Courtaulds Limited: *See—*
Maidens, John Eric; Hartley, Kenneth Alison; and Carrotte, Frederick Henry, 3,780,540.
Coyne, Roy J.: *See—*
Lombardi, Louis J.; Coyne, Roy J.; and Green, Charles E., 3,781,275.
CPS Associates, Inc.: *See—*
Coleman, Aaron H.; and Stewart, Hugh W., 3,781,816.
Crabtree, Bruce L., Sr.: *See—*
Bronson, Orville P.; and Crabtree, Bruce L., Sr., 3,780,456.
Craft, Roger L.; and Gaarder, Gilbert W., to Gray Manufacturing Company, Inc. Low profile jack for fork lift trucks. 3,780,987, Cl. 254-8.00r.
Cragg, William D.; Bradshaw, Leslie E. B.; Batchelor, Anthony C.; and Carter, Ronald D., to International Standard Electric Corporation. Headset. 3,781,492, Cl. 179-156.00a.
Cragoe, Edward J., Jr., to Merck & Co., Inc. Diuretic formulations. 3,781,430, Cl. 424-246.000.
Cramer, Bernhard; Domig, Herbert; Von Keller, Theodor; and Schmeykal, Rudolf, to International Standard Electric Corporation. Device for character recognition. 3,781,800, Cl. 340-146.30f.
Crawford, John T., to Towmotor Corporation. Lift truck fork retaining pins. 3,780,896, Cl. 214-731.000.
CRC-Crose International, Inc.: *See—*
Clavin, Edward A.; and Wheeler, Lionel H., 3,780,591.
Crooks, Stanley R.: *See—*
Westergren, George A.; Fish, Warren H.; Crooks, Stanley R.; and Koland, David G., 3,781,460.
Crossman, Richard E.: *See—*
Uhtenwoldt, Herbert R.; Crossman, Richard E.; and Caliri, Charles T., 3,781,070.
Crounse, Nathan N.; and Desai, Kantilal B., to Sterling Drug Inc. Stilbene optical brighteners. 3,781,279, Cl. 260-240.0ca.
Crouse, Clifford F.: *See—*
Frazier, John Earl; and Crouse, Clifford F., 3,780,889.
Crouter, John A.; and Havas, Richard J. Dose syringe. 3,780,735, Cl. 128-223.000.
Crouzet: *See—*
Derre, Andre; Robert, Pierre; and Vuillemin, Claude, 3,780,858.
Cummins-Allison Corporation, mesne: *See—*
Jones, John E.; and Knutson, Orville T., 3,780,938.
Cupler, John A., II: *See—*
Cupler, John A., II; and Stone, Wayne B., Jr. (said Stone assor. to said), 3,780,406.
Cupler, John A., II; and Stone, Wayne B., Jr., said Stone assor. to said Cupler, John A., II. Machining center employing cam operated tool changer. 3,780,406, Cl. 29-26.00a.
Curtis, Flora K. Watch bracelet. 3,780,918, Cl. 224-4.00h.
Curtiss, Robert H.; Holzman, Richard; and Lazarow, Seldan A., to Nortec Computer Devices Inc. High speed print hammer with dynamic damper means. 3,780,648, Cl. 101-93.00c.

Curtiss, Walter W., Jr., to Goodyear Tire & Rubber Company, The. Triangulated carcass tire. 3,780,783, Cl. 152-356.000.
Cutler-Hammer, Inc.: *See—*
De Gruyl, Johannes Albertus, 3,781,704.
Cuzzone, Raymond, to General Electric Company. Expulsion fuse and support means. 3,781,746, Cl. 337-204.000.
Cvijanovic, Alex; and Firnkas, Sepp, to Tac House, Inc. Building construction and method of same. 3,780,480, Cl. 52-227.000.
Dach, Hansjorg; Bordowsky, Karl Heinz; and Bucksch, Manfred, to ZF-Borg Warner GmbH Industriegebit. Planet carrier for planetary-gear transmission. 3,780,601, Cl. 74-762.000.
Dahlberg, Clayton P.: *See—*
Wymore, Charles E.; and Dahlberg, Clayton P., 3,781,812.
Daikin Kogyo Co., Ltd.: *See—*
Kometani, Yutaka; Koizumi, Shun; Suzuki, Takeshi; Nakajima, Takeaki; and Okuno, Chuzo, 3,781,258.
Daimler-Benz Aktiengesellschaft: *See—*
Schiesterl, Gerhard; and Kuhn, Hans-Ulrich, 3,781,788.
Dainippon Ink and Chemicals, Incorporated: *See—*
Nemoto, Yuhei; and Takahashi, Shiro, 3,781,214.
Dalton, John, Jr., to Keystone Lighting Corporation. Hanger for lighting fixtures. 3,780,973, Cl. 248-342.000.
Dalziel, Donald F.; and Heide, Charles H., to Webster Electric Company, Inc. Thermally actuated switch. 3,781,742, Cl. 337-77.000.
Dam Fine Products Corporation: *See—*
Hinkle, Joseph D., 3,781,046.
Dameca A/S: *See—*
Berner, Ole, 3,780,760.
D'Amico, Frank V.: *See—*
Tsilibes, George N.; D'Amico, Frank V.; and Hamm, John G., III, 3,781,516.
D'Amico, John Joseph, to Monsanto Company. Cyanoisothiazolyl bis(dithio-carbamates). 3,781,285, Cl. 260-247.100.
Damron, John W., to Dana International Ltd. Heating apparatus. 3,781,526, Cl. 219-538.000.
Dana International Ltd.: *See—*
Damron, John W., 3,781,526.
D'Angelo, Nicola. Reciprocating saw chuck. 3,781,025, Cl. 279-83.000.
Daniel, Curtis M. Jack stick connector. 3,780,774, Cl. 139-87.000.
Dardoufas, Kimon Constantine: *See—*
Marshall, Robert Moore; and Dardoufas, Kimon Constantine, 3,781,202.
Darmon, Michel, to I.N.R.S. Ground level control system for lifting apparatus with universal type controller for switch assemblies. 3,781,493, Cl. 200-6.00a.
Darredeau, Bernard, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method of cooling a gaseous mixture and installation therefor. 3,780,535, Cl. 62-40.000.
Darrow, John O. G.; and Vaughn, Thomas C., to Westinghouse Air Brake Company. Fail-safe railroad-highway grade crossing protection system. 3,781,541, Cl. 246-128.000.
Dashew, Stephen S., to La Mesa Industries, Inc. Concrete form liner. 3,780,977, Cl. 249-15.000.
Datavision, Inc.: *See—*
King, William L., 3,781,875.
Datotek, Inc.: *See—*
Goode, George E.; Morgan, Barrie O.; and Branscome, Kenneth M., 3,781,472.
Dauer, Horst; and Hildebrandt, Peter, to Messer Griesheim G.m.b.H., mesne. Apparatus for plasma welding. 3,781,508, Cl. 219-121.00p.
Dauer, John J., Jr.: *See—*
Grunert, Kurt A.; Dauer, John J., Jr.; and Dobrosielski, Stephen S., 3,781,728.
Davidson, James J., to United States of America, Navy. Apparatus for monitoring thickness of evaporated film. 3,781,911, Cl. 324-65.00r.
Davies, Gordon Thomas: *See—*
Ellen, Leonard William; and Davies, Gordon Thomas, 3,781,867.
Davies, John R., to Oliver Machinery Company. Defecting saw. 3,780,777, Cl. 144-3.00n.
Davis, Benjamin; Pearce, Derek Roger; and Phillipps, Gordon Hanley, to Glaxo Laboratories, Limited. Steroid anaesthetics. 3,781,435, Cl. 424-239.000.
Davis, Charles J.; and Glass, Billy M., to Case, J. I., Company. Reel lift and support for bulldozer. 3,780,813, Cl. 172-438.000.
Davis, Claude A.: *See—*
Stendig, Joseph L.; and Davis, Claude A., 3,781,857.
Davis, Norman, to British Iron and Steel Research Association, The. Apparatus for determining the permeability or stress in a moving magnetic strip in two orthogonal directions. 3,781,662, Cl. 324-34.0st.
Davis, Paul H., to Dukane Corporation. Ultrasonic rigid horn assembly. 3,780,926, Cl. 228-1.000.
Davis, Paul Trevor; Glover, Terence George; and Jones, John Robert, to BP Chemicals International Limited. Process for the production of gaseous olefins from petroleum distillate feedstocks. 3,781,195, Cl. 208-57.000.
Davis, Richard K., to General Electric Company. Voltage ratio discriminator. 3,781,698, Cl. 329-178.000.
Davis, Ronald I., to Sun Research and Development Co. Preparation of 2-pyrrolidinone. 3,781,298, Cl. 260-326.5fn.
Davis, William A., to General Motors Corporation. Removable vehicle body closure with dual use installation. 3,781,059, Cl. 296-137.013.
Dawson, Peter G. Signal light for emergency vehicle. 3,781,790, Cl. 340-97.000.
De Burgh, Raymond J.; and Novick, Harold L., to DeBurgh, Raymond J. Night viewing system for reading without light. 3,781,560, Cl. 250-333.000.
De Caro, Artitide R., to Westinghouse Electric Corporation. Triple purpose heat shield, light collector and mount support for a tungsten-halogen projection lamp. 3,781,582, Cl. 313-37.000.
De Filipps, Fred A., to Fifth Third Bank, The, mesne. Collapsible saddle rack. 3,780,971, Cl. 248-309.000.
De Gruyl, Johannes Albertus, to Cutler-Hammer, Inc. High isolation circulator arrangement for low noise reflection type amplifiers. 3,781,704, Cl. 330-53.000.
De Guillebon, Henri F., to Clinitex, Inc. Adjustable fundus illumination. 3,780,979, Cl. 351-16.000.
De Lapp, Darwin Fiske: *See—*
Ramsey, Wallace Burton; and De Lapp, Darwin Fiske, 3,781,349.
De Longueville, Jacques Charles; Perfetti, Jacques Felix Charles; and Kessler, Ernst Jakob, to Etat Francais represente par le Ministre d'Etat Charge de la Defense National, Undersized-caliber projectile with detachable sabot. 3,780,658, Cl. 102-52.000.
De Vivy, Dominque Le Febve, to Sulzer Brothers Limited. Method of controlling the feed of forced circulation steam generators. 3,780,705, Cl. 122-451.00r.
De Vries, Robert C.: *See—*
Borom, Marcus P.; and De Vries, Robert C., 3,781,522.
De Vries, Robert Wopke, to Wolverine Brass Works; a division of Wolverine Industries, Inc. Non-metallic cartridge valve. 3,780,758, Cl. 137-454.600.
Dean, Robert: *See—*
Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Dean, Robert, 3,781,381.
DeAngelis, Willie G., to PPG Industries, Inc. Handling glass-plastic assemblies. 3,781,003, Cl. 269-40.000.
Deaton, David W., to Deaton Medical Company. Method and apparatus of medical suction. 3,780,738, Cl. 128-277.000.
Deaton Medical Company: *See—*
Deaton, David W., 3,780,738.
DeBoer, Jan; and Vaes, Petrus Jozephus Johannes, to U.S. Philips Corporation. Hair-clipping cutter system. 3,780,434, Cl. 30-34.000.
DeBurgh, Raymond J.: *See—*
De Burgh, Raymond J.; and Novick, Harold L., 3,781,560.
Deep Oil Technology Inc.: *See—*
Horton, Edward E., 3,780,685.
Deere & Company: *See—*
Bichel, Darwin Carl; and Malcolm, Robert La Verne, 3,780,851.
Pettengill, Donald Herbert; and Bass, Merlyn Duane, 3,780,505.
Ransford, Neil Edward; Gilbert, Leland Glen; and Hunger, Richard Herman (said Ransford and said Gilbert, assors. to said), 3,781,056.
Schneider, Kenneth Roger, 3,780,839.
Deerfield, Alan J., to Raytheon Company. Method and apparatus for applying source language statements to a digital computer. 3,781,814, Cl. 340-172.500.
Deering Milliken Research Corporation: *See—*
Short, Joe T., 3,780,678.
Deev, Stanislav Lvovich: *See—*
Dolgov, Anatoly Vladimirovich; Konovalov, Leonid Vladimirovich; Perkis, Leib Benyaminovich; Deev, Stanislav Lvovich; Dyakov, Vitaly Evgenievich; Semenov, Alexandr Efimovich; Bauer, Evgeny Teodorovich; and Suturin, Serafim Nikolaevich, 3,780,864.
Degtyarev, Mikhail Vasilievich: *See—*
Kudinov, Vladimir Mikhailovich; Bushtedt, Jury Petrovich; Dudko, Daniil Andreevich; Arkhangelsky, Georgy Alexandrovich; Pogoretsky, Georgy Ivanovich; Volgin, Leonid Alexandrovich; Kotov, Viktor Anatolievich; Surnin, Boris Anatolievich; and Degtyarev, Mikhail Vasilievich, 3,780,927.
Deisch, Cecil Winston, to Bell Telephone Laboratories, Incorporated. Line feed and isolation transformer with integral loop supervision. 3,781,483, Cl. 179-18.00f.
DeLange, Cornelis J., to Cement Enamel Development, Inc. Prefabricated structural unit and method. 3,780,482, Cl. 52-309.000.
Deli, Jack M.; and Hehmiz, Ramiz Y., to International Harvester Company. Track pin and bushing seal assembly. 3,781,066, Cl. 305-11.000.
Delignieres, Robert, to Institut Francais du Petrole des Carburants et Lubrifiants. Method for determining the distance travelled over by vehicle with respect to a reference surface, making use of the doppler's effect and device therefor. 3,781,774, Cl. 34-3.00d.
Demarco, Thomas M.: *See—*
Dupre, George T.; and Demarco, Thomas M., 3,780,502.
Deniega, Jose Castillo; and Tellerman, Edward M., to Wesco Industries Corporation, mesne. Yarn feeding and storage device for textile producing machine. 3,780,958, Cl. 242-47.120.
Denki Onkyo Co., Ltd.: *See—*
Takiguchi, Hisashi, 3,781,750.
Dennstedt, Welf, to Varta Aktiengesellschaft. Method and apparatus for determining and indicating the state of charge of nickel cadmium batteries. 3,781,657, Cl. 324-29.500.
Derre, Andre; Robert, Pierre; and Vuillemin, Claude, to Crouzet. Device for automatically presenting documents on a reading table. 3,780,858, Cl. 209-73.000.
Desai, Kantilal B.: *See—*
Crounse, Nathan N.; and Desai, Kantilal B., 3,781,279.

Desbrandes, Robert, to Institut Francois du Petrole des Carburants et Lubrifiants. Method and devices for determining characteristics of geological formations by transmission of acoustic signals. 3,781,784, Cl. 340-15.500.
Design Center, Inc., mesne: *See—*
Menkel, Gary G., 3,780,898.
Design Elements, Inc.: *See—*
Fretwell, Richard D.; Azbell, James W.; and Mason, Edwin E., 3,781,817.
Detotek, Inc.: *See—*
Goode, George E.; and Branscome, Kenneth M., 3,781,473.
Deubel, Reinhold; Diery, Helmut; Klinner, Wolfgang; List, Karl-Hermann; and Uhrig, Heinz, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Dispersing and stabilizing agents for dyestuffs. 3,781,169, Cl. 8-34.000.
Deubner, Rolf: *See—*
Stadie, Werner; Sperling, Kurt; Deubner, Rolf; and Pattberg, Werner, 3,780,747.
Develco, Inc.: *See—*
Rorden, Louis H., 3,781,664.
Development Technology, Inc.: *See—*
Primmer, Charles A., 3,781,838.
Dewitt, William J.: *See—*
Tuvell, Melvin E.; and Dewitt, William J., 3,781,339.
Dheilly, Jacky, to U.S. Philips Corporation. Current supply comprising an asymmetric rectifier arrangement. 3,781,646, Cl. 321-47.000.
Di Chen, Enrique Bernal G., to Honeywell Inc. Optical mass memory. 3,781,905, Cl. 346-74.0mt.
Diagnostic Data, Inc.: *See—*
Huber, Wolfgang, 3,781,414.
Diamond Electric Manufacturing Co., Ltd.: *See—*
Ishida, Yoshio, 3,781,649.
Diamond International Corporation: *See—*
Baker, Leroy D., 3,780,493.
Dick, Rudolf, to Wandel u. Goltermann. System for measuring amplitude and phase distortion. 3,781,669, Cl. 324-57.00r.
Dickenson, Richard W.; deceased (by Dickenson, Winifred), to Anchor Hocking Corporation. Mast stabilizer for lift trucks. 3,780,831, Cl. 187-9.000.
Dickenson, Winifred: *See—*
Dickenson, Richard W., 3,780,831.
Dickinson, W. H., Engineering Limited: *See—*
Allen, Edward James, 3,780,886.
Dickopp, Gerhard: *See—*
Batsch, Helmut; Jahnel, Benno; Weinz, Ernst August; Berger, Wolfgang; and Dickopp, Gerhard, 3,781,020.
Didycz, William J.; and Seabury, Almon D., to United States Steel Corporation. High service temperature pressure sensitive device. 3,780,793, Cl. 165-47.000.
Diery, Helmut: *See—*
Deubel, Reinhold; Diery, Helmut; Klinner, Wolfgang; List, Karl-Hermann; and Uhrig, Heinz, 3,781,169.
Dietch, Leonard; and Lerner, Martin L., to Zenith Radio Corporation. Cathode ray tube reclamation process. 3,781,076, Cl. 316-2.000.
Dietmann, Karl: *See—*
Kampe, Wolfgang; Fauland, Erich; Thiel, Max; Dietmann, Karl; and Juhran, Wolfgang, 3,781,273.
Dietz, Erich; Ribka, Joachim; and Steckelberg, Willi, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Water-insoluble phenyl azo naphthylamido-benzimidazolone dyestuff. 3,781,266, Cl. 260-157.000.
Dietze, Wolfgang: *See—*
Reuschel, Konrad; Dietze, Wolfgang; Muhlbauer, Alfred; and Sandmann, Herbert, 3,781,209.
Dillow, Dorris Leon. Fuel vaporizer for internal combustion engines. 3,780,714, Cl. 123-122.0aa.
DiMarco, Bernard; Kussy, Frank W.; and Swain, Kenneth W., said DiMarco and said Kussy assors. to I-T-E Imperial Corporation and said Swain assor. to Chase-Shawmut Company, The. Device for removably mounting electrical component. 3,781,607, Cl. 317-13.00r.
Dingman, S. Lawrence: *See—*
Sellman, Paul V.; Dingman, S. Lawrence; and Atkins, Ronald T., 3,780,578.
Dion, C. Norman; and Maruyama, Dennis T., to Memory Corporation. Method of certifying magnetic recording disc. 3,781,835, Cl. 340-174.10b.
Dipietro, Matthew, to Eastman Kodak Company. Slide tray. 3,781,103, Cl. 353-111.000.
Dishal, Milton; and Baran, Henri, to International Telephone and Telegraph Corporation. Selection and processing system for signals including frequency discriminator. 3,781,705, Cl. 331-17.000.
Dittrich, Volker: *See—*
Nikles, Erwin; Dittrich, Volker; and Pinter, Ladislaus, 3,781,301.
Dixon, Roy C.: *See—*
Boudreau, Paul E.; Dixon, Roy C.; Donnan, Robert A.; and Moss, Eual A., 3,781,815.
Dlufosinski, Theodore: *See—*
Farmer, David K.; and Dlufosinski, Theodore, 3,781,062.
Dobbins, David L.: *See—*
Mayer, George L., Jr.; and Dobbins, David L., 3,781,109.
Dobrosielski, Stephen S.: *See—*
Grunert, Kurt A.; Dauer, John J., Jr.; and Dobrosielski, Stephen S., 3,781,728.
Dodson, Merritt E.; Marsh, Richard L.; and Masters, Frank C., to Goodyear Tire & Rubber Company, The. Belt track structure. 3,781,067, Cl. 305-35.0eb.
Doerffer, Jerzy; and Milenuszkin, Walenty. Gear for braking and auxiliary steering ships on braking them. 3,780,683, Cl. 114-145.00r.
Dohany, Julius Eugene, to Pennwalt Corporation. Method of preparing consistently high-quality vinylidene fluoride polymer. 3,781,265, Cl. 260-92.10r.
Dolgov, Anatoly Vladimirovich; Konovalov, Leonid Vladimirovich; Perkis, Leib Benyaminovich; Deev, Stanislav Lvovich; Dyakov, Vitaly Evgenievich; Semenov, Alexandr Efimovich; Bauer, Evgeny Teodorovich; and Suturin, Serafim Nikolaevich. Method and apparatus o refine melts from solid impurities. 3,780,864, Cl. 210-152.000.
Doll, Martin, to Cellu Products Company. Net-like thermoplastic material and products. 3,781,183, Cl. 161-109.000.
Domicone, Joseph J.; and Kozlowski, Theodore R., to Corning Glass Works. Safe bi-modal windshields. 3,781,184, Cl. 161-165.000.
Domig, Herbert: *See—*
Cramer, Bernhard; Domig, Herbert; Von Keller, Theodor; and Schmeykal, Rudolf, 3,781,800.
Dominion Luggage Co., Limited: *See—*
Slan, Jack, 3,780,838.
Domtar Limited: *See—*
Bodycomb, Alistair Kenyon, 3,781,124.
Donche, Alain: *See—*
Pfister, Alain; Arretz, Emmanuel; and Donche, Alain, 3,781,366.
Donjon, Jacques; and Marie, Gerard Joseph Marcel, to U.S. Philips Corporation. Optic relay for scanning by means of a light beam. 3,781,469, Cl. 178-7.03d.
Donnan, Robert A.: *See—*
Boudreau, Paul E.; Dixon, Roy C.; Donnan, Robert A.; and Moss, Eual A., 3,781,815.
Donofrio, David J. Oral thermometer. 3,780,586, Cl. 73-374.000.
Dooley, Philip G.; and Lambiris, Sotiris, to United Aircraft Corporation. Combustion chamber. 3,780,530, Cl. 60-39.690.
Dornberger, Georg Christian Ernst, to Western Electric Company, Incorporated. Apparatus including a pair of dissimilar spaced electrodes for detecting faults in insulated wires. 3,781,666, Cl. 324-54.000.
Dorr, Karl-Heinz; Grimm, Hugo; and Kola, Rolf, to Metallgesellschaft Aktiengesellschaft. System for the liquid-phase removal of a component from the gas stream especially the absorption of sulfur trioxide in sulfuric acid. 3,780,499, Cl. 55-32.000.
Dorr-Oliver Incorporated: *See—*
Miles, Harry Victor, II, 3,780,868.
Schall, Robert A., 3,781,141.
Dorsman, Adrian K.; and Adams, Clark F., to North American Rockwell Corporation. Warp letoff control system. 3,781,532, Cl. 235-151.320.
Dow Chemical Company, The: *See—*
Herrell, Arthur D., 3,780,488.
Larsen, Eric R.; Andrejewski, Bernard R.; and Edamura, Fred Y., 3,781,369.
Dow, Willard, to United States of America, Navy. Neutrally buoyant instrument suspension. 3,781,780, Cl. 340-8.00s.
Downing, Randall William, to Bell Telephone Laboratories, Incorporated. Scheme for saving and restoring register contents in a data processor. 3,781,810, Cl. 340-172.500.
Dowty Hydraulic Units Limited: *See—*
Weaver, Cedric David; and Toogood, Graham John, 3,781,149.
Doyle, William F.; and Artzer, Charles W. Resilient Shock-absorbing bulkhead. 3,780,673, Cl. 105-376.000.
Drabek, Jozef: *See—*
Martin, Henry; and Drabek, Jozef, 3,781,425.
Draiswerke GmbH., Firma: *See—*
Wilhelm Karl-Heinz, 3,780,957.
Drake, Noel Francis. Shaping of hollow metal articles. 3,780,410, Cl. 29-155.00r.
Drawert, Manfred; and Griebsch, Eugen, to Schering AG. Flexible polyamide hot melt adhesive made from ethylene diamine and an acid component containing a polymer fatty acid and heptadicone dicarboxyl acid. 3,781,234, Cl. 260-18.00n.
Dreher, Manfrid, to Dreher, Manfrid, Dr.-Ing., KG. Tumbler with drum transfer apparatus. 3,780,475, Cl. 51-164.000.
Dreher, Manfrid, Dr.-Ing., KG: *See—*
Dreher, Manfrid, 3,780,475.
Dresser Industries, Inc.: *See—*
Arrington, Thomas L.; and Dyer, Norman D., 3,780,816.
Dressler, Ulrich: *See—*
Klupsch, Paul; Paul, Rudolf; and Dressler, Ulrich, 3,780,636.
Drexelbrook Controls, Inc.: *See—*
Maltby, Frederick L.; and Kramer, Jonathan, 3,781,672.
Drexhage, Karl H.; and Reynolds, George A., to Eastman Kodak Company. Laser dye composition. 3,781,711, Cl. 331-94.500.
Drumheller, Kirk. Child proof latches. 3,780,547, Cl. 70-78.000.
Druzynski, Conrad J.: *See—*
Kahwati, Ghassan N.; Gade, John N.; Mac Kay, James D.; and Druzynski, Conrad J., 3,780,961.
Du Pont de Nemours, E. I., and Company: *See—*
Ambrose, William J.; and McErlane, James E., 3,780,984.
Blackstone, Robert Clifford, 3,781,362.
Hartzler, Harris Dale, 3,781,281.
Hermes, Mathew Edward, 3,781,251.
Irwin, Carl F., 3,781,320.

Kosak, John Richard, 3,781,354.
Manacini, Lloyd; and Ysteboe, Howard T., 3,781,760.
Mancini, Lloyd, 3,781,770.
Noddin, Kenneth W.; and Simmons, Walter J., 3,780,752.
Dubuisson, Bernafd Louis Yves, 50% to Societe Francaise d'Optique et de Mecanique S.F.O.Mo. Stereoscopic plotting apparatus 355/022.000. 3,781,104, Cl. .
Dudko, Daniil Andreevich: *See—*
Kudinov, Vladimir Mikhailovich; Bushtedt, Jury Petrovich; Dudko, Daniil Andreevich; Arkhangelsky, Georgy Alexandrovich; Pogoretsky, Georgy Ivanovich; Volgin, Leonid Alexandrovich; Kotov, Viktor Anatolievich; Surnin, Boris Anatolievich; and Degtyarev, Mikhal Vasiievich, 3,780,927.
Dudley, Harvey H.: *See—*
Williams, Francis A.; and Dudley, Harvey H., 3,781,099.
Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, to Ciba-Geigy AG. Bromophenylformamidines. 3,781,356, Cl. 260-564.00r.
Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, to Ciba-Geigy AG. Alkylphenyl- and chlorophenoxyphenyl-formamidines. 3,781,357, Cl. 260-564.00r.
Dukane Corporation: *See—*
Davis, Paul H., 3,780,926.
Dunhill Lighters Limited: *See—*
Ovens, Christopher William, 3,781,163.
Dunlop Holdings Limited: *See—*
Thomson, Richard N.; and Walker, Michael F., 3,781,021.
Dunlop Limited: *See—*
Harrison, Reginald, 3,780,671.
Reus, Walter, 3,780,573.
Dunn, Robert R. Swimming pool cover. 3,780,385, Cl. 4-172.120.
Dupre, George T.; and Demarco, Thomas M., to National Foundry Equipment Company, Inc. Collector apparatus. 3,780,502, Cl. 55-337.000.
Durkee, Earle Frederick, to Microwave Associates, Inc. Passive TR tubes. 3,781,719, Cl. 333-13.000.
Durso, Thomas. Method and apparatus for producing an annular skinless sausage product. 3,781,447, Cl. 426-513.000.
Durth, Wilfried, to Burger Eisenwerke AG. Circulating-air oven with filter. 3,780,721, Cl. 126-21.00a.
Dutton, David R., to Honeywell Information Systems, Inc. D.C.-D.C. power supply with stabilization. 3,781,642, Cl. 321-43.000.
Duty, George Otto, to Jerrold Electronics Corporation. Electronic amplifier with dual automatic slope control. 3,781,703, Cl. 330-52.000.
Dyachkovsky, Fridrikh S.: *See—*
Shilov, Alexandr E.; Dyachkovsky, Fridrikh S.; Chirkov, Nikolai Mikhailovich; Matkovsky, Petr E.; Aronovich, Khaim-Mordkhe; Beikhold, Alina A.; and Russian, Ljudmila, 3,781,220.
Dyakov, Vitaly Evgenievich: *See—*
Dolgov, Anatoly Vladimirovich; Konovalov, Leonid Vladimirovich; Perkis, Leib Benyaminovich; Deev, Stanislav Lvovich; Dyakov, Vitaly Evgenievich; Semenov, Alexandr Efimovich; Bauer, Evgeny Teodorovich; and Suturin, Serafim Nikolaevich, 3,780,864.
Dyer, Norman D.: *See—*
Arrington, Thomas L.; and Dyer, Norman D., 3,780,816.
Dynamic Instrument Corporation: *See—*
Sulger, Harold, Sr., 3,781,751.
E-Z Tow, Inc.: *See—*
Bachel, Francis D.; and Voves, Robert A., 3,781,038.
Eagle Industries, Inc.: *See—*
Morrow, Dennis W., 3,780,878.
Eagle Machine Company, Limited: *See—*
Chapman, Leonard A., 3,780,507.
Eastern Company, The: *See—*
Wilbur, Robert L., 3,780,694.
Eastman Kodak Company: *See—*
Bloemendaal, John F.; and Stockdale, Willis L., 3,780,922.
Brown, Gordon P., 3,780,608.
Chandler, Jasper S., 3,781,102.
Dipietro, Matthew, 3,781,103.
Drexhage, Karl H.; and Reynolds, George A., 3,781,711.
Fay, Robert J.; and Cicotta, John R., 3,781,089.
Horn, Robert F., 3,780,637.
Jenkins, Gerald L.; Jungjohann, Vernon H.; and Marvin, Edgar S., 3,781,100.
Kahwati, Ghassan N.; Gade, John N.; Mac Kay, James D.; and Druzynski, Conrad J., 3,780,961.
Kamp, Leonard F.; and Stoncham, Jeffrey R., 3,780,632.
La Fleur, Bob A.; and O'Brien, Robert J., 3,780,700.
Leenhoots, Donald D., 3,780,391.
Michatek, Chester W., 3,780,633.
Williams, Francis A.; and Dudley, Harvey H., 3,781,099.
Ebner, Ludwig: *See—*
Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, 3,781,356.
Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, 3,781,357.
Ecodyne Corporation, mesne: *See—*
Ovard, John C., 3,780,567.
Ecotrol, Inc.: *See—*
Imris, Pavel, 3,781,601.
Edamura, Fred Y.: *See—*
Larsen, Eric R.; Andrejewski, Bernard R.; and Edamura, Fred Y., 3,781,369.
Edlund, Sven Bertil Gosta; and Sodersten, Bo Frans Ake, to AB Hagglund & Soner. Brake controlling device. 3,780,990, Cl. 254-173.000.
Edson Enterprises, Inc.: *See—*
Tremarco, Paul, 3,781,494.
Educated Vehicle Systems, Inc.: *See—*
Kaufman, Peter; Colsen, F. Thomas; and Townsend, Robert L., 3,781,854.
Edwards Company, Inc.: *See—*
Berns, Charles, 3,781,877.
Edwards, Thomas Philip: *See—*
Locke, Walter Frederick; Watson, Arthur; and Edwards, Thomas Philip, 3,781,039.
Effinger, David D.; Evans, Norol T.; and Estrick, Vaughn H., to Hughes Aircraft Company. Dynamic range control system having amplitude restoration. 3,781,883, Cl. 343-7.00a.
Egan Machinery Company: *See—*
Irving, Edgar W., Jr., 3,780,801.
Eichelberger, William E.; and Wood, Lawrence H., to Corning Glass Works. Projection storage-display system having dynamic graphic capability. 3,781,846, Cl. 340-324.00a.
Eichenhofer, Josef, to Automatic Bar Feed Ltd. Automatic bar feeder attachment for multiple spindle screw machines. 3,780,924, Cl. 226-155.000.
Eigenmann, Ludwig. Light reflecting system. 3,781,083, Cl. 350-105.000.
Ek, Leif V.; Wallin, Per L.; and Tibbling, Thure P. M., to Pharmacia Fine Chemicals AB. Method for the separation of substance mixtures by chromatography and a column means adapted to be used for the method. 3,780,866, Cl. 210-198.00c.
Ekedal, Palmer J. Power drawn collapsible trailer. 3,781,030, Cl. 280-36.00c.
Eklund, Hans Eric, to AB Ljungmans Verkstader. Safety mechanism for automatic nozzles. 3,780,776, Cl. 141-207.000.
Elco Industries, Inc.: *See—*
Lindstrom, Bert A., 3,780,389.
Electricity Council, The: *See—*
Gale, Philip Franklin, 3,781,665.
Electrolytic Zinc Company of Australasia, Limited: *See—*
Allan, Robert William; Haigh, Curzon John; and Hamdorf, John, 3,781,405.
Elektros, Inc.: *See—*
Frye, George J.; and Frisch, Arnold M., 3,781,872.
Elkins, Bobby L., to Lear Siegler, Inc. Shelf divider. 3,780,876, Cl. 211-184.000.
Ellen, Leonard William; and Davies, Gordon Thomas, to Postmaster General, Her Majesty's. Digital control apparatus. 3,781,867, Cl. 340-347.0ad.
Ellett Copper and Brass Company Ltd.: *See—*
Bagley, John M.; and Keays, John L., 3,781,188.
Ellinger, Karl-Georg; and Schumacher, Henning, to Sterwin A.G. Carbon disulfide disinfectant for coccidia oocysts and worm eggs. 3,781,416, Cl. 424-44.000.
Elliott Brothers (London) Limited: *See—*
Lundberg, Derek Anthony, 3,781,564.
Ellison, Donald E.: *See—*
Chomet, Marc; and Ellison, Donald E., 3,781,468.
Ellman, Julius; and Lerner, George. Magnetic game construction. 3,781,015, Cl. 273-153.00r.
Ellul, Joseph M., to International Business Machines Corporation. Centralized security system employing a magnetic checking device. 3,781,845, Cl. 340-306.000.
Emerson, Lucian F., to GTE Laboratories, Incorporated. DC signal processing circuit. 3,781,605, Cl. 317-5.000.
Emhart Corporation: *See—*
Surko, Walter E., Jr., 3,781,047.
Endo, Hirotoshi: *See—*
Murakoshi, Makoto; Ooue, Shingo; Ueda, Hiroyuki; Hashiue, Masakazu; and Endo, Hirotoshi, 3,781,809.
Endo Laboratories, Inc., mesne: *See—*
Rubin, Alan A., 3,781,437.
Engeler, William E.; and Garfinkel, Marvin, to General Electric Company. Device for storing information and providing an electric readout. 3,781,827, Cl. 340-173.0ca.
Engelhardt, Alvin, to Technicon Instruments Corporation. Self-locating sample receptacle having integral identification label. 3,781,120, Cl. 356-244.000.
Engelhardt, Friedrich; and Ribka, Joachim, to Casella Farbwere Mainkur Aktiengesellschaft. Process for the production of polymers in the presence of a redox catalyst system. 3,781,254, Cl. 260-85.50r.
Engle, Stewart E.: *See—*
Faessler, Adelmar; and Engle, Stewart E., 3,780,847.
Engstrom, William A., to Case, J. I., Company. Mounting and drive for a hydraulic pump on an engine. 3,781,137, Cl. 417-360.000.
Epoch Company, Ltd.: *See—*
Matsumoto, Teruo, 3,781,010.
Era Incorporated: *See—*
Ort, Jay E., 3,780,471.
Erb, George H., to American Velcro, Inc. Hook fastener element and method of manufacture. 3,781,398, Cl. 264-146.000.
Erinkov, Dimiter Kostadinov: *See—*
Krivoshiev, Cueorgui Petrov; Kolev, Dimiter Christov; Tanev, Christo Yanakiev; Erinkov, Dimiter Kostadinov; Petrov, Gueorgui Slavov; Vassilev, Alexander Traykov; and Vatev, Petko Slavtchev, 3,781,554.
Ernstoff, Michael N.; Fehr, Eric R.; Hoffman, William C.; and Winner, Richard N., to Hughes Aircraft Company. Field sequential color television systems. 3,781,465, Cl. 178-5.4bd.

Erpenbach, Heinz: *See—*
Sennewald, Kurt; Erpenbach, Heinz; Handte, Heinz; Kohl, Georg; and Lork, Winfried, 3,781,193.
Escoffier, Raymond P., to Collins Radio Company. Switching circuit apparatus. 3,781,692, Cl. 328-138.000.
Esmond, William G. Artificial body member. 3,780,870, Cl. 210-321.000.
Espanion, Gunther: *See—*
Feltgen, Karl-Heinz; and Espanion, Gunther, 3,781,393.
Espinoza, Charles. Motor rotated and timed cue chalker. 3,781,008, Cl. 273-19.000.
Esquire, Inc.: *See—*
Landrum, Leon L.; and Holder, Robert L., 3,781,539.
Essex International, Inc.: *See—*
Henry, Wesley D., 3,781,737.
Esso Production Research Company: *See—*
Ayers, Robert C., Jr.; Bayless, Jack H.; Graham, John W.; Lloyd, James R.; Loth, William D.; and Williams, Robert E., 3,780,809.
Graham, John W.; and Rickey, Wynn P., 3,780,807.
Esso Research and Engineering Company: *See—*
Collins, Jerry H., 3,781,441.
Harnstone, Leonard A.; Levy, Robert E.; Morris, Stanley M.; Lopez, Alfredo M.; Mosler, Henry A.; and Bartman, Robert V., 3,781,533.
Moss, Gerald; and Rosborough, Dennis F., 3,781,445.
Rosenfeld, Daniel D.; and Gorbaty, Martin L., 3,781,288.
Estlick, Raymond J., to Raytheon Company. Joint having force converting means. 3,781,042, Cl. 285-339.000.
Estrick, Vaughn H.: *See—*
Effinger, David D.; Evans, Norol T.; and Estrick, Vaughn H., 3,781,883.
Etablissements Hutchinson Compagnie Nationale du Caoutchouc: *See—*
Thomas, Andre G.; and Fetissoff, Basile, 3,780,388.
Etat Francais represente Par Le Ministre Charge de la Defense Nationale Delegation: *See—*
Tagarie, Frederic Louis Joseph; Bernard, Albert; and Saint-Aubin, Georges Gilbert, 3,780,617.
Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale: *See—*
De Longueville, Jacques Charles; Perfetti, Jacques Felix Charles; and Kessler, Ernst Jakob, 3,780,658.
Ethyl Corporation: *See—*
Ludt, William C.; and Lombardi, Eugene H., 3,781,660.
Plonsker, Larry; Perilstein, Warren L.; and Malec, Robert E., 3,781,363.
Tuvell, Melvin E.; and Dewitt, William J., 3,781,339.
Etoo, Yukihiro: *See—*
Nambu, Shyuya; and Etoo, Yukihiro, 3,780,718.
Eue, Ludwig: *See—*
Wagner, Klaus; Eue, Ludwig; and Klauke, Erich, 3,781,323.
Evans, Arthur J.; and Morin, Joseph C., to Whitlock, Inc. Proportioning hopper for granular materials. 3,780,991, Cl. 259-18.000.
Evans, Norol T.: *See—*
Effinger, David D.; Evans, Norol T.; and Estrick, Vaughn H., 3,781,883.
Evans Products Company: *See—*
Fuller, Oliver C., 3,780,672.
Evers, Ernst T.; and Morgan, Robert L., to United States of America, Army. Homing missile. 3,780,967, Cl. 244-3.160.
Ezzell, Bobby R.; Fluck, Eugene R.; and Haefele, Louis R., to Reynolds, R. J., Tobacco Company. Hypocholesterolemic compounds. 3,781,444, Cl. 424-331.000.
Factory Mutual Research Corporation: *See—*
Yao, Cheng, 3,780,811.
Faessler, Adelmar; and Engle, Stewart E., to Sybron Corporation. Rotary filling machine. 3,780,847, Cl. 198-25.000.
Fairchild Camera and Instrument Corporation: *See—*
Owens, William K., 3,781,648.
Fales, Howard S., to Continental Oil Company. Rotary dryer. 3,780,447, Cl. 34-136.000.
Fansteel Inc.: *See—*
Bartoszevicz, Joseph G.; Murphy, George H., Jr.; and Schmidt, Frederick W., 3,780,409.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Bohn, Manfred, 3,781,422.
Bormann, Dieter; and Worm, Manfred, 3,781,283.
Deubel, Reinhold; Diery, Helmut; Klinner, Wolfgang; List, Karl-Hermann; and Uhrig, Heinz, 3,781,169.
Dietz, Erich; Rinka, Joachim; and Steckelberg, Willi, 3,781,266.
Fuchs, Otto; Spietschka, Ernst; Hohn, Jurgen; and Troster, Helmut, 3,781,302.
Haede, Werner; Stache, Ulrich; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,781,269.
Meininger, Fritz; and Fuchs, Hermann, 3,781,168.
Meininger, Fritz; and Springer, Hartmut, 3,781,310.
Farha, Bahia Rashid: *See—*
Farha, Bahia Rashid; and Lee, Lloyd (said Lee assor. to said), 3,780,435.
Farha, Bahia Rashid; and Lee, Lloyd, said Lee assor. to said Farha, Bahia Rashid. Cutting device. 3,780,435, Cl. 30-113.001.
Farha, Floyd E., Jr.: *See—*
Walker, Darrell W.; Farha, Floyd E., Jr.; and Bertus, Brent J., 3,781,223.
Farmer, David K.; and Dlufosinski, Theodore, to Seng Company, The. Positive latch for movable back of a seating device. 3,781,062, Cl. 297-379.000.
Farmer, John, to Ward Foods, Inc. Screw press assembly. 3,780,645, Cl. 100-117.000.
Farrington Business Machines Corporation: *See—*
Geiger, Franklin O.; and Young, James L., 3,780,669.
Farwell, Harry Russell: *See—*
Black, James A.; and Farwell, Harry Russell, 3,780,651.
Black, James A.; and Farwell, Harry Russell, 3,780,652.
Fauland, Erich: *See—*
Kampe, Wolfgang; Fauland, Erich; Thiel, Max; Dietmann, Karl; and Juhran, Wolfgang, 3,781,273.
Faust, Eberhard: *See—*
Walz, Jorgen; and Faust, Eberhard, 3,781,061.
Faustel Incorporated: *See—*
Abler, Norman C.; and Hardt, David R., 3,780,670.
Fay, Robert J.; and Cicotta, John R., to Eastman Kodak Company. Neutral density filter element with reduced surface reflection. 3,781,089, Cl. 350-164.000.
Feast, Alan Arthur John: *See—*
Bassham, Kenneth John; and Feast, Alan Arthur John, 3,781,236.
Feather Hill Industries, Inc.: *See—*
Boehland, Robert R., Jr., 3,780,703.
Fedders Corporation: *See—*
Bellmer, Frederich Otto, 3,781,138.
Stanford, Charles O., 3,780,904.
Feder, Charles: *See—*
Santos, Adrian Y.; and Feder, Charles, 3,781,462.
Feeney, James Henry, to Bowmar/Ali, Inc. Process for mounting electro-luminescent displays. 3,780,430, Cl. 29-626.000.
Feeney, James Henry, to Bowmar/Ali, Inc. Process for producing computer circuits utilizing printed circuit boards. 3,780,431, Cl. 29-626.000.
Feeser, William Coover; Bosland, Cornelius William; Lockard, Joseph Larue; and Mummey, Dale Brice, to AMP Domestic, Inc. Plugboard system. 3,781,763, Cl. 339-91.00p.
Fehr, Eric R.: *See—*
Ernstoff, Michael N.; Fehr, Eric R.; Hoffman, William C.; and Winner, Richard N., 3,781,465.
Feltgen, Karl-Heinz; and Espanion, Gunther, to Bayer Aktiengesellschaft. Process for the continuous production of a random-filament fleece. 3,781,393, Cl. 264-89.000.
Fenne, Ivor, to C.A.V. Limited. Fuel injection systems. 3,780,716, Cl. 123-139.0as.
Fenton, Donald M., to Union Oil Company of California. Preparation of alpha-hydroxyamides. 3,781,351, Cl. 260-559.00r.
Fenton, Donald M., to Union Oil Company of California. Saturation of unsaturated aldehydes. 3,781,364, Cl. 260-601.00r.
Ferguson, Eric Tapley: *See—*
Barten, Piet Gerard Joseph; and Ferguson, Eric Tapley, 3,780,629.
Ferguson, Eric Tapley, to U.S. Philips Corporation. Arrangement for rendering the structure of an optical image substantially invisible. 3,781,091, Cl. 350-167.000.
Ferguson, William C.: *See—*
Overture, James E., 3,780,828.
Ferlazzo, Natale; Antonelli, Giambattista; and Aglietti, Giancarlo, to Societa Italiana Resine S.p.A. Method of activating a catalyst. 3,781,224, Cl. 252-447.000.
Fernandez-Colmeiro S.A.: *See—*
Gonzalez, Jose Angel Fernandez-Colmeiro, 3,780,964.
Ferramola, Gianni: *See—*
Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, 3,781,557.
Ferranti Limited: *See—*
Brown, Kenneth Robson, 3,781,466.
Ferrari, Sergio: *See—*
Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, 3,781,557.
Fetissoff, Basile: *See—*
Thomas, Andre G.; and Fetissoff, Basile, 3,780,388.
Fiat Societa per Azioni: *See—*
Valpreda, Luigi, 3,781,063.
Fidos, Henryk: *See—*
Schreiner, Horst; and Fidos, Henryk, 3,780,698.
Fifth Third Bank, The, mesne: *See—*
De Filipps, Fred A., 3,780,971.
Finestone, Arnold B.; Westphal, Richard C.; and Brac, Charles, Jr., to Foster Grant Co., Inc. Impact vinyl aromatic polymers and their preparation. 3,781,383, Cl. 260-876.000.
Finestone, Arnold B.; Milgrom, Jack; and Slovenkai, Stephen V., to Foster Grant Co., Inc. Polymerization of ABS resins in the presence of unsaturated alpha-methylstyrene dimers. 3,781,384, Cl. 260-879.000.
Fingerle, Karl; and Haag, Jurgen, to Fortuna-Werke Maschinenfabrik Aktiengesellschaft. Guiding device, especially for splitting and beveling machines. 3,780,605, Cl. 83-4.000.
Firestone Tire & Rubber Company, The: *See—*
Halasa, Adel F., 3,781,260.
Halasa, Adel F., 3,781,261.
Halasa, Adel F.; and Stayer, Mark L., 3,781,262.
Halasa, Adel F.; and Mitchell, George B., 3,781,263.

Firnig, Fritz; Bettin, Hubertus; and Lorenzen, Gunter, to Olympia Werke AG. Apparatus for producing raster dot images. 3,781,904, Cl. 346.74.0sb.
Firnkas, Sepp: *See—*
Cvijanovic, Alex; and Firnkas, Sepp, 3,780,480.
Fischer, Elias, to Stepan Chemical Company. Flotation of copper sulfide ores. 3,780,860, Cl. 209-167.000.
Fish, Warren H.: *See—*
Westergren, George A.; Fish, Warren H.; Crooks, Stanley R.; and Koland, David G., 3,781,460.
Fishman, Aaron Harry; and Parmett, George, to APL Corporation. Ice cream maker. 3,780,536, Cl. 62-342.000.
Fitzgerald, Desmond Elwyn: *See—*
Andrews, Barry Stewart; Fitzgerald, Desmond Elwyn; and Lewis, Ian Edward, 3,781,001.
Fitzpatrick, William E.; Berger, Leonard; and Auerbach, Hayward B., to International Playtex Corporation. Bulk package for individual dispensing of substantially wet sheets from stacks. 3,780,908, Cl. 221-48.000.
Fliege, Werner: *See—*
Himmele, Walter; Fliege, Werner; and Forehlich, Helmut, 3,781,337.
Flitz, John L., to General Motors Corporation. Early fuel evaporation intake manifold. 3,780,715, Cl. 123-122.0ab.
Flouret, George Rogelio, to Abbott Laboratories. Tripeptide. 3,781,272, Cl. 260-112.500.
Flow Technology Corporation: *See—*
Zweig, Leon A., 3,781,142.
Flower, Robert J., to General Motors Corporation. Regenerator strongback design. 3,780,800, Cl. 165-166.000.
Fluck, Eugene R.: *See—*
Ezzell, Bobby R.; Fluck, Eugene R.; and Haefele, Louis R., 3,781,444.
Fluid Controls, Inc.: *See—*
Swatty, Eugene E., 3,780,765.
FMC Corporation: *See—*
Gibbons, Loren Kenneth, 3,781,438.
Munday, Theodore F.; and Radimer, Kenneth J., 3,781,409.
Reimers, James L., 3,780,647.
Fokin, Evgeny Pavlovich: *See—*
Sokolsky, Dmitry Vladimirovich; Zakumbaeva, Gaukhar Daulenovna; Zhubanov, Kair Akhmetovich; Mazin, Evgeny Petrovich; Scheolov, Nikolai Illarionovich; Fokin, Evgeny Pavlovich; and Livanov, Vladimir Arkadievich, 3,781,227.
Ford Motor Company: *See—*
Lahana, Santokh S.; and Chang, Yun Feng, 3,781,380.
Theodore, Ares N.; and Labana, Santokh S., 3,781,379.
Ford, Peter W., to Itek Corporation. Logarithmic amplification circuit. 3,781,693, Cl. 328-145.000.
Ford-Moore, Arthur Henry; and Bebbington, Alan, to United Kingdom of Great Britain and Northern Ireland, Minister of Supply in Her Majesty's Government of the. Preparation of O-alkyl S-dialkylphosphonothiolates. 3,781,387, Cl. 260-979.000.
Fordertechnische Forschungsgesellschaft mbH: *See—*
Lassig, Harry; and Grosshauser, Anton, 3,780,893.
Fordyce, Homer E., to Marley Company, The. Ribbed fan airflow stack for water cooling tower. 3,780,999, Cl. 261-109.000.
Forehlich, Helmut: *See—*
Himmele, Walter; Fliege, Werner; and Forehlich, Helmut, 3,781,337.
Forestieri, Americo F.; Broder, Jacob D.; and Bernatowicz, Daniel T., to United States of America, National Aeronautics and Space Administration. Method of making silicon solar cell array. 3,780,424, Cl. 29-572.000.
Fork Lift Truck Patentees Establishment: *See—*
Campbell, Matthew Teasdale, 3,780,895.
Formenti, Marc: *See—*
Juillet, Francois; Teichner, Stanislas; and Formenti, Marc, 3,781,194.
Forster, Horst: *See—*
Hackstein, Karl-Gerhard; Kadner, Martin; and Forster, Horst, 3,781,216.
Fortuna-Werke Maschinenfabrik Aktiengesellschaft: *See—*
Braun, Dieter, 3,780,390.
Fingerle, Karl; and Haag, Jurgen, 3,780,605.
Fossan, Kare Ragnvald, to Nitro Nobel AB. Method for the isolation of tetranitromethane from a solution of nitric acid with comparatively low contents of. 3,781,374, Cl. 260-644.000.
Foster, David J.: *See—*
Coleman, Richard J.; Foster, David J.; Loper, Edward J., Jr.; and Sundeen, Arthur R., 3,780,593.
Foster Grant Co., Inc.: *See—*
Finestone, Arnold B.; Westphal, Richard C.; and Brac, Charles, Jr., 3,781,383.
Finestone, Arnold B.; Milgrom, Jack; and Slovenkai, Stephen V., 3,781,384.
Foster Wheeler Corporation: *See—*
Long, William P.; Sawyer, Walter M.; and Arias, Lionel J. De Paula, 3,780,584.
Fouks, Philip H.; and Wriggins, Donald H. Mechanical fastener for frame of bed. 3,780,386, Cl. 5-296.000.
Fox Products Company: *See—*
Godshalk, James B., 3,781,658.
F.P.T. Industries Limited: *See—*
Locke, Walter Frederick; Watson, Arthur; and Edwards, Thomas Philip, 3,781,039.
France Neckwear Co. Inc.: *See—*
Najarian, John, 3,780,381.
Frank, Edmund, to Packard Instrument Company, Inc. Method of transferring sample vials to and from vial-carrying trays. 3,780,892, Cl. 214-152.000.
Frank, Mathilda C. Drainage bag assembly with flow control for body fluids. 3,780,739, Cl. 128-283.000.
Frankel, Donald P., to La Mere Industries, Inc. Incinerator and ignition system combination. 3,780,677, Cl. 110-8.00c.
Franklin, Albert G.: *See—*
Carmichael, Charles J.; and Franklin, Albert G., 3,781,201.
Fratelli Roda S.A.: *See—*
Roda, Emilio, 3,780,627.
Frazier, John Earl; and Crouse, Clifford F., to Frazier-Simplex Inc. Glass batch feeder. 3,780,889, Cl. 214-33.000.
Frazier-Simplex Inc.: *See—*
Frazier, John Earl; and Crouse, Clifford F., 3,780,889.
Freed, Larry E., to International Business Machines Corporation. Test circuit configuration for integrated semiconductor circuits and a test system containing said configuration. 3,781,683, Cl. 324-158.00f.
Freeman, Wayne E., to General Motors Corporation. Wrapper for a sheet metal article. 3,780,933, Cl. 229-40.000.
Freifeld, Milton: *See—*
Clark, Robert P.; and Freifeld, Milton, 3,781,203.
Fresard, Marcel, to Mefina S.A. Sewing machine case. 3,781,075, Cl. 312-208.000.
Fretwell, Richard D.; Azbell, James W.; and Mason, Edwin E., to Design Elements, Inc. Restraint signal generator and oscillator. 3,781,817, Cl. 340-172.500.
Frey, Dennis W., to Caterpillar Tractor Company. Vehicular parking brake control with lockable release mechanism. 3,780,822, Cl. 180-114.000.
Freyen, Jurgen: *See—*
Binnig, Horst; Freyen, Jurgen; and Middleman, Dirk-Friedrich, 3,781,627.
Freyling, Edward N., Jr., to Williamson, Walter A., mesne. Method and apparatus for inhibiting article theft. 3,781,860, Cl. 340-280.000.
Friebel, Hendrikus Johannes Christianos; Jonker, Simon; and Benschop, Gerardus Cornelis Marie, to U.S. Philips Corporation. Method for manufacturing a base for the envelope of an electric component. 3,780,429, Cl. 29-624.000.
Fried, Krupp Gesellschaft mit beschrankter Haftung: *See—*
Hirschfelder, Horst-Dieter, 3,780,963.
Friedman, Bernard S.; and Nason, Steven B., to Atlantic Richfield Company. Production of tertiary alkyl substituted ortho-toluic acids and esters thereof. 3,781,342, Cl. 260-515.00r.
Friedman, Jerome. Master template for engraving. 3,781,182, Cl. 161-5.000.
Friedman, Maurice: *See—*
Poppe, Martin C., Jr.; and Friedman, Maurice, 3,781,715.
Friel, James J., to Container Corporation of America. Mobile structure for handling flat articles. 3,780,881, Cl. 214.1.0qe.
Frimberger, Herbert H., to Polymer Machinery Corporation. Automatic hopper loader. 3,780,446, Cl. 34-57.00r.
Frisch, Arnold M.: *See—*
Frye, George J.; and Frisch, Arnold M., 3,781,872.
Fritsch, Werner: *See—*
Haede, Werner; Stache, Ulrich; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,781,269.
Froehlich, Fritz Edgar: *See—*
Blahut, Donald Edgar; and Froehlich, Fritz Edgar, 3,781,478.
Frohberger, Paul Ernst: *See—*
Kuhle, Engelbert; Klauke, Erich; Behrenz, Wolfgang; and Frohberger, Paul Ernst, 3,781,331.
Fromson, Robert E.: *See—*
Staskiewicz, Fred C.; and Fromson, Robert E., 3,780,552.
Frosst, Charles E., & Co.: *See—*
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,781,284.
Frost, Wade W., to Oxford Industries, Inc. Method of making a shirt front assembly. 3,780,682, Cl. 112-262.000.
Fruit, Jerry L., to Mensor Corporation. Precision pressure manometer. 3,780,589, Cl. 73-418.000.
Fruth, Jonathan N., to General Motors Corporation. Compound air register of one piece construction. 3,780,640, Cl. 98-110.000.
Frye, George J.; and Frisch, Arnold M., to Elektros, Inc. Analog-to-digital conversion for processing wide-range and non-linear input signals. 3,781,872, Cl. 340-347.0ad.
Frye, James A.; Morton, Ralph B.; and Vogler, Charles W., to Boardman Company, The. Plasma arc refuse disintegrator. 3,780,675, Cl. 110-8.00e.
Fuchs, Hermann: *See—*
Meininger, Fritz; and Fuchs, Hermann, 3,781,168.
Fuchs, Hugo; and Hilt, Albrecht, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of trioxane. 3,781,304, Cl. 260-340.000.
Fuchs, Otto; Spietschka, Ernst; Hohn, Jurgen; and Troster, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Benzoxanthene and benzothio-xanthene dyestuffs. 3,781,302, Cl. 260-328.000.
Fuji Photo Film Co., Ltd.: *See—*
Kaneko, Keiji; and Yoshida, Toshio, 3,781,101.

Murakoshi, Makoto; Ooue, Shingo; Ueda, Hiroyuki; Hashiue, Masakazu; and Endo, Hirotoshi, 3,781,809.

Fujimura, Hiroshi: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kashiwa, Norio; Tokuzumi, Tadaichi; Horota, Yutaka; and Fujimura, Hiroshi, 3,781,253.

Fujita, Kinji, to Kabushiki Kaisha Suwa Seikosha. Digital display device. 3,781,863, Cl. 340-336.000.

Fujita, Kinji, to Kabushiki Kaisha Suwa Seikosha. Driving arrangement for liquid crystal displays. 3,781,864, Cl. 340-336.000.

Fujita, Yutaka; Toda, Toshiki; and Shimada, Tsuneo, to Teijin Limited. Process for preparation of omega-hydroxy saturated aliphatic monocarboxylic acids. 3,781,350, Cl. 260-535.00r.

Fujitsu Limited: *See—*
Aizawa, Tetsuya; Sawada, Taketoyo; Tauchi, Yoshihiko; Kawamata, Tsutomu; and Saya, Hiroshi, 3,781,856.
Yoshihiro, Yoshimoto; Usami, Hiroshi; and Okazaki, Toshiyoshi, 3,781,629.

Fujiwara, Katsuji. Ball valve. 3,780,986, Cl. 251-315.000.

Fujiyama, Yoshiyuki: *See—*
Nakano, Ryunosuke; and Fujiyama, Yoshiyuki, 3,780,914.

Fukuhara, Akira, to Hitachi, Ltd. Reversible phase modulating element. 3,781,084, Cl. 350-150.000.

Fuller, Keith Lewis; and Lambell, Anthony John, to U.S. Philips Corporation. Luneberg lens. 3,781,900, Cl. 343-911.001.

Fuller, Oliver C., to Evans Products Company. Hopper shock-absorbing toggle operating mechanism. 3,780,672, Cl. 105-253.000.

Fuller, Ray W.; and Molloy, Bryan B., to Lilly, Eli, and Company. Phenethanolamine N-methyl transferase inhibiting benzylamines. 3,781,443, Cl. 424-330.000.

Funakoshi, Wataru: *See—*
Shima, Takeo; Orsaki, Takanori; Oka, Isao; and Funakoshi, Wataru, 3,781,375.

Funk, Forrest E.; Oda, Richard T.; Luria, Norman G.; and Margherone, Edward G., to General Electric Company. Electrical penetration assembly. 3,781,453, Cl. 174-11.00r.

Fuss, Hans Guenter: *See—*
Burghartz, Ernst Albrecht; and Fuss, Hans Guenter, 3,780,638.

G-T-O Inc.: *See—*
Henderson, Raymond G.; and Hess, Ervin A., 3,780,545.

Gaarder, Gilbert W.: *See—*
Craft, Roger L.; and Gaarder, Gilbert W., 3,780,987.

Gade, John N.: *See—*
Kahwati, Ghassan N.; Gade, John N.; Mac Kay, James D.; and Druzynski, Conrad J., 3,780,961.

Gaetke, Hubert J. Device for directing food waste into garbage disposal inlet. 3,780,393, Cl. 15-105.000.

GAF Corporation: *See—*
Clark, Robert P.; and Freifeld, Milton, 3,781,203.
Randall, David I.; and Copes, Joseph P., 3,781,359.

Gagnon, Leo Raymond. Apparatus for aiding blind bowlers. 3,781,009, Cl. 273-54.00b.

Gaheen, Alfred F., to United States of America, Air Force. Satellite inspection radar. 3,781,887, Cl. 343-13.00r.

Gajer, Richard; Skurnia, Uwe; and Richter, Mandred, to Chemische Werke Albert. Continuous production of preformed molding materials. 3,781,397, Cl. 264-142.000.

Galantay, Eugene E., to Sandoz-Wander, Inc. Piperazinyl-substituted-tricyclic compounds as tranquillizers. 3,781,433, Cl. 424-250.000.

Gale, Philip Franklin, to Electricity Council, The. Cable fault location indicator. 3,781,665, Cl. 324-52.000.

Gallay, Jean-Jacques: *See—*
Spaun, Ruediger; Rochat, Alain Claude; Gallay, Jean-Jacques; and Brenneisen, Paul, 3,781,290.

Galli, Remo: *See—*
Minisci, Francesco; Galli, Remo; and Quilico, Adolfo, 3,781,286.

Galli, Richard J.; and Keleman, Denis G. Semiconductor chip carriers and strips thereof. 3,781,596, Cl. 317-101.00f.

Gallo, Charles F., to Xerox Corporation. Light producing system. 3,781,585, Cl. 313-184.000.

Gambell, James W.: *See—*
Roth, James F.; Gambell, James W.; and Penquite, Charles R., 3,781,406.

Gannon, Patrick M.: *See—*
Ahearn, Thomas P.; Capowski, Robert S.; Christensen, Neal T.; Gannon, Patrick M.; Lee, Arlin E.; and Liptay, John S., 3,781,808.

Ganser, Alfred: *See—*
Ganser, Herman; and Ganser, Alfred, 3,781,024.

Ganser, Herman; and Ganser, Alfred. Portable drilling apparatus including a mechanical, recirculating cooling system. 3,781,024, Cl. 279-20.000.

Garbrecht, William L. Cephalosporin process and product. 3,781,282, Cl. 260-243.00c.

Gardner, Delbert J., to Bendix Corporation, The. Pressure differential assist for a servomotor. 3,780,620, Cl. 91-6.000.

Gardner, Jeffrey M., to Container Corporation. Container with load carrying feature. 3,780,934, Cl. 229-52.00b.

Gardom & Lock Limited: *See—*
Gardom, George William, 3,781,520.

Gardom, George William, to Gardom & Lock Limited. Electric instantaneous water heater. 3,781,520, Cl. 219-309.000.

Garfinkel, Marvin: *See—*
Engeler, William E.; and Garfinkel, Marvin, 3,781,827.

Garlock, Inc.: *See—*
Cairns, James; and Walton, Nicholas, 3,781,205.

Garnett, Robert E., to Richard Manufacturing Company. Universal shoulder immobilizing support. 3,780,729, Cl. 128-94.000.

Gaston County Dyeing Machine Company: *See—*
Turner, James Keith; and Riley, James Robert, 3,780,544.

Gavin, Thomas M. Pressure reducing air gun. 3,780,949, Cl. 239-291.000.

Gaylord, Norman G., to Gaylord Research Institute, Inc. Graft copolymers having branches which are alternating copolymers, and processes therefor. 3,781,232, Cl. 260-17.4gc.

Gaylord Research Institute, Inc.: *See—*
Gaylord, Norman G., 3,781,232.

Gebelius, Sven Runo Vilhelm. Convectors. 3,780,797, Cl. 165-55.000.

Gebr. Bohler & Co. AG: *See—*
Holzgruber, Wolfgang; Machner, Peter; Schneihofer, Adolf; Kleinhagauer, Otmar; and Cerwenka, Peter, 3,781,448.

Geczy, Bela: *See—*
Barron, Charles Dwain; Geczy, Bela; and Wilms, Carl Alfred, 3,780,815.

Geiger, Erich, to Loewe Opta GmbH. Fast acting circuitry for DC overload protection. 3,781,608, Cl. 317-20.000.

Geiger, Franklin O.; and Young, James L., to Farrington Business Machines Corporation. Imprinter having independently mounted, preloaded print rollers. 3,780,669, Cl. 101-269.000.

Geist, Robert Joseph, to Union Carbide Corporation. Nozzle shut-off and flow control valve. 3,780,764, Cl. 137-613.000.

Gelak, Richard: *See—*
Jacoby, Joseph M.; and Gelak, Richard, 3,780,458.

Genbauffe, Francis S., to Robertshaw Controls Company. Control system and control device therefor or the like. 3,780,940, Cl. 236-15.00a.

Genbauffs, Francis S., to Robertshaw Controls Company. Burner construction. 3,780,954, Cl. 239-560.000.

General Electric Company: *See—*
Aftergot, Siegfried, 3,781,080.
Anderson, Thomas E.; and Walden, John P., 3,781,638.
Barnes, Emmett W., 3,781,757.
Bennett, Moreland P., 3,781,513.
Blackburn, Richard D., 3,781,621.
Borom, Marcus P.; and De Vries, Robert C., 3,781,522.
Borom, Marcus P., 3,781,523.
Boyles, Robert L., 3,780,524.
Cuzzone, Raymond, 3,781,746.
Davis, Richard K., 3,781,698.
Engeler, William E.; and Garfinkel, Marvin, 3,781,827.
Funk, Forrest E.; Oda, Richard T.; Luria, Norman G.; and Margherone, Edward G., 3,781,453.
Gittinger, Norman C., 3,781,718.
Gowdy, Harold W., 3,780,457.
Harnden, John D., Jr.; and Kornrumpf, William P., 3,781,503.
Harnden, John D., Jr., 3,781,504.
Johnson, Peter D., 3,781,586.
Kantor, Simon W.; and Juliano, Peter C., 3,781,378.
Ketchum, Marshall D.; and Bloomer, Milton D., 3,781,506.
Neugebauer, Constantine A.; and Mundy, Joseph L., 3,781,831.
Parker, Rollin J., 3,781,736.
Roberts, Richard W.; and Jernakoff, George, 3,781,840.
Rocha, Henry A. F., 3,780,572.
Schumacher, Walter C.; and Graves, Ralph L., 3,781,502.
Scott, Paul F.; Radecki, Kenneth P.; and Tatge, Robert B., 3,781,782.
Smith, William E.; Orlando, Charles M.; and Barito, Robert W., 3,781,229.
Steigerwald, Robert L., 3,781,505.
Trott, Gene F.; and Smith, William E., 3,781,235.
Tuttle, Charles H., 3,781,667.
Ward, William J., III; and Salemme, Robert M., 3,780,496.

General Electric Company Limited, The: *See—*
Samuels, Philip Rufus, 3,781,595.

General Instrument Corporation: *See—*
Brand, Abraham, 3,781,489.

General Marine, Inc.: *See—*
Jordan, Richard J., 3,780,757.

General Motors Corporation: *See—*
Angsten, Robert J., 3,780,708.
Aspinwall, Robert H., 3,781,129.
Bandukwalla, Phiroze, 3,781,128.
Brooks, Frank W., 3,781,068.
Caiati, Frank P.; and Wight, David C., 3,781,824.
Cole, Edward N., 3,780,707.
Coleman, Richard J.; Foster, David J.; Loper, Edward J., Jr.; and Sundeen, Arthur R., 3,780,593.
Davis, William A., 3,781,059.
Flitz, John L., 3,780,715.
Flower, Robert J., 3,780,800.
Freeman, Wayne E., 3,780,933.
Fruth, Jonathan N., 3,780,640.
Hawkins, Jerry F., 3,780,565.
Herman, Stanley W., 3,780,422.
Jacobs, James W., 3,781,144.
Johnson, Douglas, 3,780,529.
Julian, Clarence L., 3,780,713.
Lottridge, Neil M.; and Momsen, Marc F., 3,780,834.
Ramsey, Charles W., 3,781,537.

Schaefer, Ernest D., 3,780,599.
Sipe, Therell L., 3,780,476.
White, Robert L., 3,780,597.

General Science Corp.: *See—*
Angel, Henry R., 3,781,675.

General Signal Corporation: *See—*
Brockman, Lyle, 3,781,542.

Geng, Hellmuth R.; Hajdu, Johann; and Skuin, Petar, to International Business Machines Corporation. Shift unit for variable data widths. 3,781,819, Cl. 340-172.500.

Genuit, Luther L.; and Nowell, John R., to Honeywell Information Systems, Inc. Lead network to prevent voltage overshoot in a switching regulator. 3,781,636, Cl. 321-9.00r.

George, Wilberdan Victor: *See—*
Groner, Warren; and George, Wilberdan Victor, 3,781,112.

Gerace, Robert E., to Xerox Corporation. Control system. 3,781,548, Cl. 250-206.00r.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz Joseph, 3,780,607.

Gerber, Heinz Joseph, to Gerber Garment Technology, Inc. Method and apparatus for cutting sheet material. 3,780,607, Cl. 83-49.000.

Gerber, Heinz Joseph, to Gerber Scientific Instrument Company, The. Apparatus for expressing writing fluid from a plotting pen. 3,781,907, Cl. 346-140.000.

Gerber Scientific Instrument Company, The: *See—*
Gerber, Heinz Joseph, 3,781,907.

Gerico, Inc.: *See—*
Hansson, Margaret S., 3,780,919.

Gerst, Thomas E.; and Webb, John G., Jr., to United States of America, Atomic Energy Commission. Biphase radio-frequency modulator. 3,781,716, Cl. 332-9.00r.

Gertsch, Ernst; and Gertsch, Ulrich. Safety ski binding. 3,781,028, Cl. 280-11.350.

Gertsch, Ulrich: *See—*
Gertsch, Ernst; and Gertsch, Ulrich, 3,781,028.

Geusic, Joseph Edward, to Bell Telephone Laboratories, Incorporated. Single wall magnetic domain generator. 3,781,833, Cl. 340-174.0tf.

Ghafghaichi, Majid: *See—*
Baker, Theodore H.; Ghafghaichi, Majid; and Totta, Paul A., 3,781,609.

Gibbons, Loren Kenneth, to FMC Corporation. Arylisoxazoles as nematicides. 3,781,438, Cl. 424-272.000.

Gibson, James William; and Gibson, James William, Jr. Match holder. 3,781,051, Cl. 294-1.00r.

Gibson, James William, Jr.: *See—*
Gibson, James William; and Gibson, James William, Jr., 3,781,051.

Gicca, Francis A.; Passavant, Francis C.; and Worters, Allen J., to GTE Sylvania Incorporated. Television type display system for displaying information in the form of curves or graphs. 3,781,850, Cl. 340-324.0ad.

Giebel, Joseph L.; and Temple, Ernest E., to Mine Safety Appliances Company. Self-cocking explosively actuated cable cutter. 3,780,689, Cl. 114-221.00a.

Gilbert, Charles E., Jr.: *See—*
Lilienthal, Alfred J.; Johnson, Theodore F.; Petri, William E., Jr.; and Gilbert, Charles E., Jr., 3,780,423.

Gilbert Flexi-Van Corporation: *See—*
Levitt, Semond, 3,780,877.

Gilbert, Leland Glen: *See—*
Ransford, Neil Edward; Gilbert, Leland Glen; and Hunger, Richard Herman, 3,781,056.

Gilbert, Lynford W.: *See—*
Rushing, Frank C.; and Gilbert, Lynford W., 3,781,095.

Giles, William A.: *See—*
Voyles, Richard E.; and Giles, William A., 3,781,678.

Gillemot, George K.: *See—*
Thompson, John T.; and Gillemot, George K., 3,781,461.

Gillet, Roger: *See—*
Lehuen, Christian; and Gillet, Roger, 3,781,581.

Gillette Company, The: *See—*
Martin, James M.; and Thomas, Michael D., 3,781,519.

Gillimot, George W.: *See—*
Anderson, Karl R., 3,781,758.

Gimbel, Frederick M.: *See—*
Acre, Thomas R.; Gimbel, Frederick M.; and Ramacheandran, Sundaresan, 3,780,581.

Girling Limited: *See—*
Harrison, Anthony William, 3,780,835.
Newstead, Charles, 3,780,836.
Taft, Philip Augustus, 3,781,064.

Gitlitz, Melvin H., to M & T Chemicals Inc. Tri-2-norbornyltin compounds. 3,781,316, Cl. 260-429.700.

Gittinger, Norman C., to General Electric Company. Hybrid band pass-band stop filter. 3,781,718, Cl. 333-11.000.

Giurgea, Corneliu Edmond, to UCB, Societe Anonyme. Therapeutic compositions. 3,781,436, Cl. 424-258.000.

Givaudan Corporation: *See—*
Kappeler, Heinrich; and Wild, Jost, 3,781,333.
Polinski, Leon M.; and Sonn, Milton M., 3,781,372.

Gladden, David J., to Coleman Company, Inc., The. Synchronous reciprocating electrodynamic compressor system. 3,781,140, Cl. 417-326.000.

Gladstone, Shaul: *See—*
Smith, Kenneth Burton; and Gladstone, Shaul, 3,780,566.

Glaser, Peter E., to Little, Arthur D., Inc. Method and apparatus for converting solar radiation to electrical power. 3,781,647, Cl. 322-2.000.

Glass, Billy M.: *See—*
Davis, Charles J.; and Glass, Billy M., 3,780,813.

Glass, Marvin, & Associates: *See—*
Barlow, Gordon A., 3,781,011.

Glavna Directzia KBUMDP pri SGNS: *See—*
Anastasov, Ivan Krestev, 3,780,548.

Glaxo Laboratories, Limited: *See—*
Davis, Benjamin; Pearce, Derek Roger; and Phillipps, Gordon Hanley, 3,781,435.
Phillipps, Gordon Hanley; and Turnbull, John Peter, 3,781,312.

Glenn, Francis: *See—*
Schack, Warren R.; and Glenn, Francis, 3,780,490.

Glew, Brian G., to Carriere Technical Industries, Ltd. Stroboscope with visual speed indicating system employing lights. 3,781,656, Cl. 324-16.00r.

Glover, Terence George: *See—*
Davis, Paul Trevor; Glover, Terence George; and Jones, John Robert, 3,781,195.

Glover, Warren E., to McKee, Arthur G., & Company. Furnace charging apparatus. 3,780,890, Cl. 214-36.000.

Gluchowicz, Gerszon, to AB UVA. Hudrostatic bearing. 3,781,069, Cl. 308-5.00r.

Gobron, Georges; and Pipon, Robert, to Melle-Benzons. Continuous process for conducting liquid phase chemical reactions. 3,781,373, Cl. 260-635.00c.

Godshalk, James B., to Fox Products Company. Method and apparatus for determining battery performance at one temperature when battery is at another temperature. 3,781,658, Cl. 324-29.500.

Godwin, Ernest. Heel enlarger. 3,780,454, Cl. 36-58.006.

Goldberg, Paul R., to Smith Kline Instruments, Inc. Fetal heartbeat monitoring system with plural transducers in one plane and at different angles thereto. 3,780,725, Cl. 128-2.05t.

Goldman, Lewis S.; Jeannotte, Dexter A.; and Krall, Bodgan, to International Business Machines Corporation. Quantitative test method for measuring solder-flux surface tension interaction. 3,780,568, Cl. 73-64.400.

Goldman, William A.: *See—*
Pregel, Alexander; and Goldman, William A., 3,780,462.

Golrick, Philip D.: *See—*
Botnick, Irlin; and Golrick, Philip D., 3,781,034.

Gonzalez, Jose Angel Fernandez-Colmeiro, to Fernandez-Colmeiro S.A. Dispenser housing for wire and the like. 3,780,964, Cl. 242-129.000.

Goode, George E.; Morgan, Barrie O.; and Branscome, Kenneth M., to Datotek, Inc. Digital data ciphering technique. 3,781,472, Cl. 178-22.000.

Goode, George E.; and Branscome, Kenneth M., to Detotek, Inc. Random digital code generator. 3,781,473, Cl. 178-22.000.

Goodyear Tire & Rubber Company, The: *See—*
Curtiss, Walter W., Jr., 3,780,783.
Dodson, Merritt E.; Marsh, Richard L.; and Masters, Frank C., 3,781,067.
Hinks, William L., 3,781,798.

Gorbaty, Martin L.: *See—*
Rosenfeld, Daniel D.; and Gorbaty, Martin L., 3,781,288.

Gordon, Gary B.: *See—*
Marshall, Howard D.; Gordon, Gary B.; Pipkin, Jesse E.; and Adler, Robin, 3,781,689.

Goroshkov, Boris Ivanovich; and Kovshov, Nikolai Ivanovich. Coherent analyzer of frequency-phase spectrum of electric signals. 3,781,568, Cl. 307-232.000.

Goubau, Georg J. E.: *See—*
Christian, Joseph Robert; Goubau, Georg J. E.; and Mink, James W., 3,781,546.

Goubeau, Robert: *See—*
Billarani, Patrick; Goubeau, Robert; and Langlois, Jacques, 3,780,479.

Gough, Geoffrey: *See—*
Maguire, Mary Helen; Gough, Geoffrey; and Michal, Frank, 3,781,274.

Goulton Industries, Inc.: *See—*
Shelly, Newton L., Jr., 3,781,759.

Gowdy, Harold W., to General Electric Company. Steam iron. 3,780,457, Cl. 38-77.081.

Grabijas, Sophie Mary. Adjustable mirror stand. 3,781,093, Cl. 350-288.000.

Graboyes, Harold: *See—*
Anderson, Elvin L.; and Graboyes, Harold, 3,781,358.

Grace, W. R., & Co.: *See—*
Waldrop, Thomas E.; and Reid, Philip L., 3,780,489.

Graco Inc.: *See—*
Lumby, Donovan H.; and Sofie, Walter F., 3,780,818.

Graff, Stuart L.: *See—*
Johnson, Marvin F. L.; and Graff, Stuart L., 3,781,219.

Graham, Dennis P.: *See—*
Schwab, Delmar G.; and Graham, Dennis P., 3,780,820.

Graham, John W.: *See—*
Ayers, Robert C., Jr.; Bayless, Jack H.; Graham, John W.; Lloyd, James R.; Loth, William D.; and Williams, Robert E., 3,780,809.

Graham, John W. Tensiometer assembly for substitution type analystical balances. 3,780,569, Cl. 73-64.400.

Graham, John W.; and Rickey, Wynn P., to Esso Production Research Company. Gravel;packing method and composition. 3,780,807, Cl. 166-278.000.

Graham, Michael M., to Heyman Laboratory, The. Sedimentation measuring device. 3,781,118, Cl. 356-201.000.

Grainger, Robert B.: *See—*
Marco, Gino J.; and Grainger, Robert B., 3,781,440.

Granja, Louis Albert: *See—*
McGovern, Harold Joseph, Jr.; and Granja, Louis Albert, 3,780,843.

Graphic Controls Corporation: *See—*
Cheeseman, James H., 3,781,122.

Graves, Ralph L.: *See—*
Schumacher, Walter C.; and Graves, Ralph L., 3,781,502.

Gray, Laverne E.: *See—*
McLeod, John W.; Gray, Laverne E.; and Booth, John F., 3,780,855.

Gray Manufacturing Company, Inc.: *See—*
Craft, Roger L.; and Gaarder, Gilbert W., 3,780,987.

Gray Tool Company: *See—*
Phipps, Willis M.; Holbert, Marvin L., Jr.; and McGee, John K., 3,780,802.

Grazen, Frank S.; Buike, Melvin E.; and Bryzinsky, Frank M., to Hooker Chemical Corporation. Friction particle for brake lining. 3,781,241, Cl. 260-38.000.

Greco, Carl C.; Mirviss, Stanley B.; and Martell, Arthur E., to Stauffer Chemical Company. Complex mixtures of N-benzyl-dihydronicotinic acid dimers and metal salts thereof and derivatives thereof. 3,781,296, Cl. 260-295.50r.

Green, Charles E.: *See—*
Lombardi, Louis J.; Coyne, Roy J.; and Green, Charles E., 3,781,275.

Green, Dale E. Ski carrier. 3,780,920, Cl. 224-49.000.

Green, William G. Viscous oil recovery system. 3,780,805, Cl. 166-266.000.

Gresho, William Milan, to Western Electric Company, Incorporated. Methods and compound gauge devices for measuring the axial curvature of a tube. 3,780,442, Cl. 33-178.00c.

Griebsch, Eugen: *See—*
Drawert, Manfred; and Griebsch, Eugen, 3,781,234.

Griest, Raymond H., to United States of America, Air Force. Liquid cooled mirror structure. 3,781,094, Cl. 350-310.000.

Grimm, Hugo: *See—*
Dorr, Karl-Heinz; Grimm, Hugo; and Kola, Rolf, 3,780,499.

Grinchenko, Nikolai Grigorievich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.

Grom, Jury Ivanovich; and Yatsuk, Vladimir Grigorievich. Inverter. 3,781,645, Cl. 321-45.00c.

Groner, Warren; and George, Wilberdan Victor, to Technicon Instruments Corporation. Method and apparatus for analysis of leukocytes using light scattered by each leukocyte at absorbing and non-absorbing wavelength. 3,781,112, Cl. 356-39.000.

Gross, Richard A., to Mark Systems, Inc. Stabilized light beam projection system. 3,781,121, Cl. 356-247.000.

Grosshauser, Anton: *See—*
Lassig, Harry; and Grosshauser, Anton, 3,780,893.

Grover, Lawrence L.: *See—*
Nelson, Ronald C.; and Grover, Lawrence L., 3,781,631.

Groves, Ivor D., Jr., to United States of America, Navy. Piezoelectric transducer. 3,781,781, Cl. 340-9.000.

Grubbs, Conway E.; and Anderson, Dale R., to Chicago Bridge & Iron Company. Method of underwater welding using viewing scope. 3,781,512, Cl. 219-137.000.

Grunert, Kurt A., to Westinghouse Electric Corporation. Gas cooled electrical contactor. 3,781,500, Cl. 200-166.00k.

Grunert, Kurt A.; Dauer, John J., Jr.; and Dobrosielski, Stephen S., to Westinghouse Electric Corporation. Electric contactor. 3,781,728, Cl. 335-132.000.

GTE Automatic Electirc Laboratories, Incorporated: *See—*
Macrander, Max S., 3,781,484.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Jinbo, William, 3,781,797.
Reimer, William A., 3,780,401.
Reimer, William A., 3,780,798.
Wisotzky, Otto G.; Blackburn, Tom L.; and Urbach, Roy J. G., 3,781,482.
Woodward, John W., 3,781,485.

GTE Laboratories, Incorporated: *See—*
Emerson, Lucian F., 3,781,605.

GTE Sylvania Incorporated: *See—*
Gicca, Francis A.; Passavant, Francis C.; and Worters, Allen J., 3,781,850.
Lockwood, John J., 3,781,899.

Gueldner, Richard C.: *See—*
Wawzonek, Stanley; and Gueldner, Richard C., 3,781,319.

Guerin, Jean: *See—*
Quesnel, Marcel; and Guerin, Jean, 3,781,044.

Guglielmetti, Leonardo: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,781,278.

Guillory, Jack P.: *See—*
Mathis, Ronald D.; and Guillory, Jack P., 3,781,242.

Gulbins, Erich; Hauss, Alfred; Kieferle, Friedrich; and Kovacs, Jenoe, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Polymerization of vinyl and vinylidene compounds. 3,781,243, Cl. 260-87.50c.

Gulf Research & Development Company: *See—*
Bryson, Millard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., 3,781,197.
Cahoy, Roger P.; and Sanjean, John, 3,781,446.

Guthart, Leo A., to Alarm Device Manufacturing Company. Foil block device. 3,781,767, Cl. 339-125.00r.

Gutsogeorge, George Athan, to RCA Corporation. Voltage to pulse width converter. 3,781,870, Cl. 340-347.0ad.

Guy, Richard J. Log splitting device adapted to utilize powered piston on tractor. 3,780,779, Cl. 144-193.00a.

Guzynin, Ivan Georgievich: *See—*
Levina, Tatyana Abramovna; Serkh, Mikhail Borisovich; and Guzynin, Ivan Georgievich, 3,780,564.

H. N. Industries Inc.: *See—*
Zirlis, Joseph V., 3,780,867.

Haag, Jurgen: *See—*
Fingerle, Karl; and Haag, Jurgen, 3,780,605.

Haas, Joerg Philipp, to Bruker-Physik AG. Apparatus for adjusting magnet cores. 3,781,735, Cl. 335-298.000.

Hackstein, Karl-Gerhard; Kadner, Martin; and Forster, Horst, to NUKEM, Nuklear-Chemie und- Metallurgie Gesellschaft mit beschrankter Haftung. Process for the production of oxide and carbide containing nuclear fuel particles for high temperature reactors. 3781,216, Cl. 252-301.10r.

Hadnot, Leroy. Device for holding fishing rods. 3,780,466, Cl. 43-17.000.

Haede, Werner; Stache, Ulrich; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 2,3-Alkylidene-rhamnopyranosides and process for preparing them. 3,781,269, Cl. 260-210.500.

Haefele, Louis R.: *See—*
Ezzell, Bobby R.; Fluck, Eugene R.; and Haefele, Louis R., 3,781,444.

Hagen, Thomas E., to Zipser, Frederick S., M.D. Variable rate measuring device. 3,781,677, Cl. 324-78.00r.

Hagmann, Foster M. Multiple pipe joint seal. 3,781,043, Cl. 285-363.000.

Hahn & Clay: *See—*
Pechachek, Raymond E., 3,780,901.

Haigh, Curzon John: *See—*
Allan, Robert William; Haigh, Curzon John; and Hamdorf, John, 3,781,405.

Haike, Fred Louis, to Hoffmann-La Roche Inc. Heartbeat rate monitoring. 3,780,726, Cl. 128-2.05t.

Hajdu, Johann: *See—*
Geng, Hellmuth R.; Hajdu, Johann; and Skuin, Petar, 3,781,819.

Halasa, Adel F., to Firestone Tire & Rubber Company, The. Process for metalation. 3,781,260, Cl. 260-94.70a.

Halasa, Adel F., to Firestone Tire & Rubber Company, The. Metalating rubber polymers. 3,781,261, Cl. 260-94.700.

Halasa, Adel F.; and Stayer, Mark L., to Firestone Tire & Rubber Company, The. Process for metalation. 3,781,262, Cl. 260-94.70a.

Halasa, Adel F.; and Mitchell, George B., to Firestone Tire & Rubber Company, The. Process for metalation. 3,781,263, Cl. 260-94.70a.

Halberg, Richard A.: *See—*
Balthazar, Real J.; and Halberg, Richard A., 3,780,555.

Hall, Lewis D., to Veeco Instruments, Inc. Sputter ion pumps. 3,781,133, Cl. 417-49.000.

Halsey Harbester & Supply Co., Inc.: *See—*
Tompkins, Neil R., 3,780,510.

Hamada, Satoshi: *See—*
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.

Hamdorf, John: *See—*
Allan, Robert William; Haigh, Curzon John; and Hamdorf, John, 3,781,405.

Hamm, John G., III: *See—*
Tsilibes, George N.; D'Amico, Frank V.; and Hamm, John G., III, 3,781,516.

Hammond, Peter W.: *See—*
Mokrytzki, Boris; and Hammond, Peter W., 3,781,614.

Hanazono, Masanobu; and Asai, Osamu, to Hitachi, Ltd. Magnetic head having a combination core formed from a pretreated magnetic layer. 3,781,476, Cl. 179-100.20c.

Hancovsky, John P., to Hi-Ho Products, Inc. Sectional creative toy. 3,780,469, Cl. 46-25.000.

Handte, Heinz: *See—*
Sennewald, Kurt; Erpenbach, Heinz; Handte, Heinz; Kohl, Georg; and Lork, Winfried, 3,781,193.

Hanes, James Gordon, Jr.; King, James Frank; Lathery, Willie M.; Beamon, Howard L.; and Newlen, Kenneth W. Apparatus for producing endless bands. 3,780,679, Cl. 112-121.270.

Hanggi, Peter; and Budmiger, Hermann. Process including the bristles for the production of brushes or a part thereof. 3,781,402, Cl. 264-243.000.

Hanning Elektro-Werke, Robert Hanning, Firma: *See—*
Neumann, Gernot, 3,781,623.

Hansch, Theodor W.; and Varsanyi, Frank L., to Leland Stanford Junior University, The Board of Trustees of the. Optical element system and method for amplifying image forming light rays. 3,781,700, Cl. 330-4.300.

Hansen, Ove Emil, to Aktieselskabet Niro Atomizer. Cleansing device for powder processing apparatuses. 3,780,445, Cl. 34-57.00d.

Hanson, Wallace E., to Champion International Corporation. Compartmented display container. 3,780,931, Cl. 229-27.000.

Hansson, Margaret S., to Gerico, Inc. Infant carrier. 3,780,919, Cl. 224-6.000.

Hara, Kouichi: *See—*
Nonaka, Shunsuke; Yuuki, Tasuku; and Hara, Kouichi, 3,781,577.

Hara, Tadao: *See—*
Katsumi, Mamoru; Sato, Toshio; and Hara, Tadao, 3,781,204.

Harada, Kazuhiko: *See—*
Izawa, Shinichi; Toyama, Kunio; Harada, Kazuhiko; and Sugawara, Yoshiaki, 3,781,382.

Harbeck, Martin B.; and Lagerstrom, Robert C., to Singer Company, The. Wet/dry suction cleaner. 3,780,397, Cl. 15-413.000.

Hardt, David R.: *See—*
Abler, Norman C.; and Hardt, David R., 3,780,670.

Hardy, William C.; and Lichte, Henry P., Jr., to Sun Oil Company (Delaware). Downhole control valve for catalytic wellbore heaters. 3,780,803, Cl. 166-59.000.

Hargraves, William J., to Bertran & Hargraves, Inc. Aerobic sewage treatment. 3,780,997, Cl. 261-77.000.

Harnden, John D., Jr.; and Kornrumpf, William P., to General Electric Company. Solid state induction cooking appliances and circuits. 3,781,503, Cl. 219-10.490.

Harnden, John D., Jr., to General Electric Company. Induction cooking appliance including temperature sensing of inductively heated cooking vessel by radiation detection means. 3,781,504, Cl. 219-10.490.

Harnessed Energies, Inc.: *See—*
Lewis, John R., 3,781,858.

Harnstone, Leonard A.; Levy, Robert E.; Morris, Stanley M.; Lopez, Alfredo M.; Mosler, Henry A.; and Bartman, Robert V., to Esso Research and Engineering Company. Constraint control system for optimizing performance of process units. 3,781,533, Cl. 235-150100.

Harp, Harry J., to Union Carbide Corporation. Method and apparatus for producing a gang of separably interconnected elongate articles. 3,780,921, Cl. 225-2.000.

Harries, Gwyn: *See—*
Harrison, Paul Stanley; and Harries, Gwyn, 3,781,180.

Harris, Leroy S., to K-G Industries, Inc. Apparatus for agglomerating particulate material. 3,781,151, Cl. 425-145.000.

Harrison, Anthony William, to Girling Limited. Disc brakes for vehicles. 3,780,835, Cl. 188-74.000.

Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, to Boots Pure Drug Company Limited. Pesticidal compounds and compositions. 3,781,355, Cl. 260-564.00r.

Harrison, Paul Stanley; and Harries, Gwyn, to Imperial Chemical Industries of Australia and New Zealand Limited. Ammonium nitrate-fuel oil composition containing ammonium nitrate prills of different porosity, hardness, and density. 3,781,180, Cl. 149-21.00.

Harrison, Reginald, to Dunlop Limited. Elastomerically spring railway truck bolster. 3,780,671, Cl. 105-197.00a.

Harrison, William L.; Purington, Ronald G.; and Anderson, Donald L., to Sanders Associates. Bed guard system. 3,781,843, Cl. 340-279.000.

Harrold, William J., to Raytheon Company. Radial magnetized magnet. 3,781,592, Cl. 315-39.710.

Hart, Charles H.; and Cashaw, George R., to American Newspaper Publishers Association and Research Institute, Incorporated. Method for separating plural sheets. 3,781,006, Cl. 271-18.00r.

Hartley, Kenneth Alison: *See—*
Maidens, John Eric; Hartley, Kenneth Alison; and Carrotte, Frederick Henry, 3,780,540.

Hartzler, Harris Dale, to Du Pont de Nemours, E. I., and Company. 2-Arylidene-1,3-dithioles and preparation thereof from acetylenes, carbon disulfide, and aromatic aldehydes in the presence of aliphatic phosphines. 3,781,281, Cl. 260-240.00f.

Harwood, Channing E. Harwood retainer. 3,781,761, Cl. 339-75.00p.

Harwood, Robert George, to AMP Incorporated. Coated ferrite filters having stamped and formed outer sleeves. 3,781,723, Cl. 333-79.000.

Haseloff, Fritz. Lawn mower. 3,780,504, Cl. 56-13.600.

Hashiue, Masakazu: *See—*
Murakoshi, Makoto; Ooue, Shingo; Ueda, Hiroyuki; Hashiue, Masakazu; and Endo, Hirotoshi, 3,781,809.

Hassencahl, Lloyd J., to United States of America, Air Force. Moving range gate generating system for radar apparatus. 3,781,885, Cl. 343-7.300.

Hastings Manufacturing Company: *See—*
Quinlan, William J.; and Hover, Lawrence L., 3,780,394.
Quinlan, William J.; and Hover, Lawrence L., 3,780,395.

Hathaway, Richard A.: *See—*
Swain, William W.; and Hathaway, Richard A., 3,781,487.

Haugen, Sverre R. Closure for multiple passage conduit. 3,780,773, Cl. 138-89.000.

Hauss, Alfred: *See—*
Gulbins, Erich; Hauss, Alfred; Kieferle, Friedrich; and Kovacs, Jenoe, 3,781,243.

Havas, Richard J.: *See—*
Crouter, John A.; and Havas, Richard J., 3,780,735.

Hawker Siddeley Canada Ltd.: *See—*
Chapman, Frederic Frank, 3,780,778.

Hawker Siddeley Dynamics Limited: *See—*
Anderson, John Robert, 3,781,558.

Hawkins, Jerry F., to General Motors Corporation. Fluid vaporization tester. 3,780,565, Cl. 73-17.00a.

Hawthorne, John Q.; and Schlosberg, Samuel B., to United States Steel Corporation. Process for preparing formamide in the presence of oxygen. 3,781,352, Cl. 260-561.00r.

Hayden, Rodney, to TRW Inc. Inverted low loss relay structure. 3,781,729, Cl. 335-187.000.

Haydo, Andrew G., to Westinghouse Air Brake Company. Single cylinder truck-mounted brake. 3,780,837, Cl. 188-195.000.

Hayes, Thomas H., to V.C.A. Corporation. Combination vanity tray and mirror. 3,780,746, Cl. 132-83.00r.

Haynes, Jerry L., to Veeder Industries Inc. Material feed rate control system. 3,780,541, Cl. 66-125.00r.

Hazzard, Noel D.; and Anderson, William M., to Air Preheater Company, Inc., The. Metallic recovery system. 3,780,676, Cl. 110-8.00a.

Heath Company: *See—*
Nelson, Ronald C.; and Grover, Lawrence L., 3,781,631.

Hehmiz, Ramiz Y.: *See—*
Deli, Jack M.; and Hehmiz, Ramiz Y., 3,781,066.

Heide, Charles H.: *See—*
Dalziel, Donald F.; and Heide, Charles H., 3,781,742.

Heidel, Rodney L., to Meridian Industries, Inc. Protective control circuit for vehicle electrical systems. 3,781,651, Cl. 322-8.000.

Heiler, Paul S.: *See—*
Buddendeck, Gerald A.; Hubler, Lawrence C.; Heiler, Paul S.; and Koch, Gilbert E., 3,781,004.

Heim, Joseph R., to United States of America, Atomic Energy Commission. Low heat conductant temperature stabilized structural support. 3,781,733, Cl. 335-216.000.

Heiniger, Wilfred; and Lepinay, Gerard, to Bolex International SA. Control apparatus for varying focal length of cinematographic zoom lens. 3,781,098, Cl. 352-140.000.

Heinrich Koppers Gesellschaft mit beschrankter Haftung: *See—*
Hoffman, Erwin, 3,780,888.

Heitmann, Knut: *See—*
Leitz, Ludwig; Heitmann, Knut; and Schneider, Eckart, 3,781,110.

Helgerud, Robert J.; and Simon, Ernest M., to K-P Manufacturing Co., Inc. Cartridge-type grease guns. 3,780,830, Cl. 184-105.00a.

Helgstrand, John Erik: *See—*
Carlsson, Lars Anders Fritz; Helgstrand, John Erik; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik, 3,781,280.

Helm, Joan K., to Textron, Inc. Aqueous chain extension of NCO prepolymer with tertiary amino polyol using nonionic surfactant, and aqueous dispersion produced. 3,781,238, Cl. 260-29.2tr.

Hendel, Robert J.: *See—*
Almasi, George S.; Hendel, Robert J.; and Keefe, George E., 3,781,832.

Henderson, Raymond G.; and Hess, Ervin A., to G-T-O Inc. Washing machine and door structure therefor. 3,780,545, Cl. 68-210.000.

Henle, Robert A.; Ho, Irving T.; Jen, Teh-Sen; and Maley, Gerald A., to International Business Machines Corporation. Monolithic array error detection system. 3,781,793, Cl. 340-146.1ag.

Henmi, Nobor; and Kumagai, Hiromi. D.C. discharge gas laser with novel discharge tube. 3,781,708, Cl. 331-94.500.

Hennart, Claude; Moldovanyi, Laszlo; and Roth, Willy, to Ciba-Geigy AG. Hydrophobic insecticidal compositions. 3,781,428, Cl. 424-219.000.

Henrick, Clive A.; and Siddall, John B. Halohydrin thiol dienoates. 3,781,322, Cl. 260-455.00r.

Henry, Wesley D., to Essex International, Inc. Thermal circuit protector. 3,781,737, Cl. 335-407.000.

Herb, Eugen, to Trumpf & Co., Firma. Setting device for the stroke position of a reciprocating tool. 3,780,814, Cl. 173-2.000.

Herbert, Denys; and Martens, Ernst, to Spiroll Corporation Ltd. Device for forming shear keyways on sides of extruded slabs and the like. 3,781,154, Cl. 425-329.000.

Herman, Stanley W., to General Motors Corporation. Friction welder and friction welding methods. 3,780,422, Cl. 29-470.003.

Hermans, Albert L. Controlled wave pattern ultrasonic burglar alarm. 3,781,859, Cl. 340-258.00a.

Hermes, Mathew Edward, to Du Pont de Nemours, E. I., and Company. Alkoxy silyl alkyl compounds and polymers thereof. 3,781,251, Cl. 260-80.710.

Herolzer, Ralph H., to Vanguard Industries Inc. 90° Stackable and nestable tray. 3,780,905, Cl. 220-97.00d.

Herrell, Arthur D., to Dow Chemical Company, The. Closure for film packages and method of making same. 3,780,488, Cl. 53-38.000.

Herrmann, Pierre, to Compteurs Schlumberger. Infrared absorption analysis method and apparatus for determining gas concentration. 3,781,910, Cl. 250-341.000.

Herzog, Hershel L.: *See—*
Shapiro, Elliot L.; Teutsch, George J.; and Herzog, Hershel L., 3,781,276.

Hesener, Walter. Question and answer educational game with an answer control device. 3,780,453, Cl. 35-48.00r.

Hess, Ervin A.: *See—*
Henderson, Raymond G.; and Hess, Ervin A., 3,780,545.

Hester, Jackson B., Jr., to Upjohn Company, The. 7-Chloro-1-methyl-5-phenyl-s-triazolo-(4,3-a) quinolines. 3,781,289, Cl. 260-288.00r.

Hewlett-Packard Company: *See—*
Cochran, David S.; and Osborne, Thomas E., 3,781,820.
Marshall, Howard D.; Gordon, Gary B.; Pipkin, Jesse E.; and Adler, Robin, 3,781,689.
Simcoe, Kent W., 3,781,654.
Heyl & Patterson, Inc.: *See—*
Sabina, William E., 3,781,734.
Heyman Laboratory, The: *See—*
Graham, Michael M., 3,781,118.
Hi-Ho Products, Inc.: *See—*
Hancovsky, John P., 3,780,469.
Hicks, Manuel Grant. Fluorocarbon and oxygen-providing compound treatment of waste waters. 3,781,200, Cl. 210-21.000.
Hicks, Tommie Earl; and Amestoy, Lavern John. Disposable liner for coffee filter basket. 3,780,871, Cl. 210-471.000.
Hieronymus, Hans: *See—*
Miericke, Jurgen; Hieronymus, Hans; and Pawlitschek, Franz, 3,780,667.
Hilbert, Francis H.: *See—*
Cecchin, Gildo; and Hilbert, Francis H., 3,781,701.
Hildebrand, Willi: *See—*
Bunzel, Eckard; Spessert, Robert; Rieskamp, Karl; and Hildebrand, Willi, 3,781,166.
Hildebrandt, Peter: *See—*
Dauer, Horst; and Hildebrandt, Peter, 3,781,508.
Hildebrandt, Ullrich, to Linde Aktiengesellschaft. Low-temperature conductor arrangement. 3,781,455, Cl. 174-15.00c.
Hill, Marion E.: *See—*
Ross, Leonard O.; and Hill, Marion E., 3,781,335.
Hilt, Albrecht: *See—*
Fuchs, Hugo; and Hilt, Albrecht, 3,781,304.
Himmele, Walter; Fliege, Werner; and Forehlich, Helmut, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Eliminating carbon dioxide from formyl-oxyalkynes. 3,781,337, Cl. 260-491.000.
Hims, Inc.: *See—*
Millington, Robert G., 3,781,052.
Hinkle, Joseph D., to Dam Fine Products Corporation. Refrigerator door shock absorber. 3,781,046, Cl. 292-264.000.
Hinks, William L., to Goodyear Tire & Rubber Company, The. Mechanical reading of tire identification symbols. 3,781,798, Cl. 340-146.30r.
Hinsperger, Cornelius Andre. Fastener for flexible sheet material. 3,780,400, Cl. 24-16.0ph.
Hintringer, Otmar, to Siemens Aktiengesellschaft. Laser arrangement. 3,781,709, Cl. 331-94.500.
Hipotronics, Inc.: *See—*
Peschel, Stanley G., 3,781,639.
Hirohashi, Toshiyuki: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Akatsu, Mitsuihiro; Maruyama, Isamo; and Izumi, Takahiro, 3,781,299.
Hirs, Gene, to Hydromation Filter Company. Granular filter medium. 3,780,861, Cl. 210-80.000.
Hirschfelder, Horst-Dieter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Wire-looping apparatus. 3,780,963, Cl. 242-82.000.
Hitachi, Ltd.: *See—*
Fukuhara, Akira, 3,781,084.
Hanazono, Masanobu; and Asai, Osamu, 3,781,476.
Kumada, Akio; Onishi, Yoshihiro; Ogawa, Horohumi; Ashida, Sakichi; and Nonogaki, Suburo, 3,781,086.
Ono, Yuichi; Saida, Hiroji; Nomura, Masayoshi; and Naraoka, Kyyotake, 3,780,426.
Sakamoto, Yoshio, 3,781,699.
Hitachi Shipbuilding and Engineering Co., Ltd.: *See—*
Nishijima, Yoshiaki; and Adachi, Kazutaka, 3,781,174.
Hitchcock, Robert D.: *See—*
Malloy, Richard J.; and Hitchcock, Robert D., 3,781,775.
Ho, Irving T.: *See—*
Henle, Robert A.; Ho, Irving T.; Jen, Teh-Sen; and Maley, Gerald A., 3,781,793.
Hobart Manufacturing Company, The, mesne: *See—*
Miller, Blaine Monroe, Jr.; Buckman, Wayne T.; and Warner, Ellis R., Jr., 3,780,956.
Hoehl, Bernhard; and Kummerer, Karl-Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Apparatus and method for arranging flat articles on a trough conveyor. 3,780,849, Cl. 198-30.000.
Hoerner-Waldorf Corporation: *See—*
McLaren, Edwin C.; and Lund, Raymond, 3,780,932.
Hoffberger, Charles C., II; and Rivlin, Charles A. Television screen light shield. 3,781,471, Cl. 178-7.820.
Hoffecker, James L. Metal working brush assembly. 3,780,407, Cl. 29-90.000.
Hoffman, Erwin, to Heinrich Koppers Gesellschaft mit beschrankter Haftung. Material transfer aparatus for a rotary drum. 3,780,888, Cl. 214-18.00k.
Hoffman, William C.: *See—*
Ernstoff, Michael N.; Fehr, Eric R.; Hoffman, William C.; and Winner, Richard N., 3,781,465.
Hoffmann, Thomas C., to Adams Company, The. Foundry flask. 3,780,790, Cl. 164-392.000.
Hoffmann-La Roche Inc.: *See—*
Bollag, Werner; Rigassi, Norbert; and Schwieter, Ulrich, 3,781,314.
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,781,309.
Haike, Fred Louis, 3,780,726.
King, Eugene, 3,780,727.
Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, 3,781,353.
Hoffmeister, Friedrich: *See—*
Schubert, Hans-Werner; and Hoffmeister, Friedrich, 3,781,431.
Hohlein, Herman. Valve unit for controlling double acting fluid operating cylinders. 3,780,623, Cl. 91-459.000.
Hohn, Jurgen: *See—*
Fuchs, Otto; Spietschka, Ernst; Hohn, Jurgen; and Troster, Helmut, 3,781,302.
Holberg, Dieter E., to Hughes Aircraft Company. Adaptive digital automatic gain control for MTI radar systems. 3,781,882, Cl. 343-7.00a.
Holbert, Marvin L., Jr.: *See—*
Phipps, Willis M.; Holbert, Marvin L., Jr.; and McGee, John K., 3,780,802.
Hole, Henry Sylvester; and Pillnik, Burton Frank, to American Can Company. Container end closure. 3,780,902, Cl. 220-54.000.
Holder, Robert L.: *See—*
Landrum, Leon L.; and Holder, Robert L., 3,781,539.
Hole, William L. Method for preparing pineapple. 3,780,641, Cl. 426-482.000.
Holley, George M., Jr. Position plotter. 3,781,892, Cl. 343-112.0pt.
Holley, John D.; and Peppin, Richard A., to Mannix Construction, Inc. Machine for inserting ties beneath a railroad track. 3,780,664, Cl. 104-9.000.
Hollier, Joseph H., Jr., to Sutco, Inc. Device for thinning cellulosic strips. 3,780,626, Cl. 93-1.00g.
Holloway, Albert L. Spiral antenna with dielectric cover. 3,781,898, Cl. 343-872.000.
Holmberg, Bengt Roland: *See—*
Petersson, Ralf Krister Ebbe; and Holmberg, Bengt Roland, 3,781,035.
Holmes, Fred M.: *See—*
Holmes, James C.; and Holmes, Fred M., 3,780,894.
Holmes, James C.; and Holmes, Fred M. Trailer. 3,780,894, Cl. 214-505.000.
Holzgruber, Wolfgang; Machner, Peter; Schneihofer, Adolf; Kleinhagauer, Otmar; and Cerwenka, Peter, to Gebr. Bohler & Co. AG. Electric slag refining process and apparatus. 3,781,448, Cl. 13-12.000.
Holzman, Richard: *See—*
Curtiss, Robert H.; Holzman, Richard; and Lazarow, Seldan A., 3,780,648.
Honeywell Inc.: *See—*
Di Chen, Enrique Bernal G., 3,781,905.
Kolbow, Donald P., 3,781,743.
Linner, Leslie Richard, 3,781,563.
Olson, Elwyn H., 3,781,744.
Posingies, Walter M., 3,780,769.
Whitehead, Robert C., Jr.; and Honeywell Lester R., Jr., 3,780,588.
Honeywell Information Systems, Inc.: *See—*
Dutton, David R., 3,781,642.
Genuit, Luther L.; and Nowell, John R., 3,781,636.
Potter, Geoffrey, 3,781,637.
Weaver, George B., 3,781,652.
Weeden, Otto P., Jr., 3,781,573.
Honeywell Lester R., Jr.: *See—*
Whitehead, Robert C., Jr.; and Honeywell Lester R., Jr., 3,780,588.
Honshu Paper Company Limited: *See—*
Matsumura, Hisashi; Samejima, Tadanori; Orito, Hiroshi; and Ochiari, Hisashi, 3,781,150.
Hooker Chemical Corporation: *See—*
Grazen, Frank S.; Buike, Melvin E.; and Bryzinsky, Frank M., 3,781,241.
Hope-Tronus, Limited: *See—*
Scarpino, John J., 3,781,604.
Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., to Westinghouse Electric Corporation. Calcium containing silicate oxyapatite lasers. 3,781,707, Cl. 331-94.500.
Horak, Vladimir; and Vretener, John. Automatic tank plug valve. 3,780,981, Cl. 251-144.000.
Horn, John J., to Tektronix, Inc. Phase control system for signal conditioning circuits. 3,781,470, Cl. 178-7.30r.
Horn, Robert F., to Eastman Kodak Company. Photographic material processing apparatus. 3,780,637, Cl. 95-93.000.
Horota, Yutaka: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kashiwa, Norio; Tokuzumi, Tadaichi; Horota, Yutaka; and Fujimura, Hiroshi, 3,781,253.
Horres, Eugene S. Eye contact lens manipulator. 3,781,050, Cl. 294-1.0cd.
Horton, Billy M. Fuze having a high resistance to countermeasures. 3,781,884, Cl. 343-7.0pf.
Horton, Edward E., to Deep Oil Technology Inc. Tension leg offshore marine apparatus. 3,780,685, Cl. 114-.50d.
Horvath, Stephen I.: *See—*
Callahan, William H.; and Horvath, Stephen I., 3,780,909.
Horwinski, Elwood R.: *See—*
Lasko, John A.; and Horwinski, Elwood R., 3,781,040.
Hosaka, Shuntaro: *See—*

Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.
Houdaille Industries, Inc.: *See—*
Cantrell, Ronald G., 3,781,049.
Houghton, Norman F., to Philco-Ford Corporation. Method for forming articles from plastic sheet material. 3,781,394, Cl. 264-89.000.
Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Warner, Inc. Substituted methano dibenzazocines and dibenzazonines. 3,781,270, Cl. 260-239.0db.
Hover, Lawrence L.: *See—*
Quinlan, William J.; and Hover, Lawrence L., 3,780,394.
Quinlan, William J.; and Hover, Lawrence L., 3,780,395.
Hovey, John M., to United States of America, Navy. Beacon target selector and evaluator. 3,781,881, Cl. 343-6.50r.
Howe, John Arthur, to TRW Inc. Lampholder. 3,781,768, Cl. 339-125.000.
Hoyt, Ronald F.: *See—*
Outlaw, Ronald A.; Stell, Richard E.; and Hoyt, Ronald F., 3,780,563.
Hsieh, Henry L., to Phillips Petroleum Company. Polymerization of acenaphthylene and indene. 3,781,259, Cl. 260-93.50c.
Huang, David H., to United States of America, Air Force. Composite wall for a regeneratively cooled thrust chamber of a liquid propellant rocket engine. 3,780,533, Cl. 60-260.000.
Huang, David H., to United States of America, Air Force. Tension brazed face injector. 3,780,952, Cl. 239-424.500.
Hubbell, Franklin R., III, to Tenneco In. Gas silencing structure. 3,780,826, Cl. 181-36.00b.
Huber, Charles J., to Westinghouse Electric Corporation. Analog-to-digital converter. 3,781,868, Cl. 340-347.00p.
Huber, Wolfgang, to Diagnostic Data, Inc. Orgotein-polystyrene latex diagnostic for rheumatoid factor. 3,781,414, Cl. 424-12.000.
Hubert, Lucien: *See—*
Michaud, Treffle; Hubert, Lucien; and Poulin, Gerard, 3,780,823.
Hubler, Lawrence C.: *See—*
Buddendeck, Gerald A.; Hubler, Lawrence C.; Heiler, Paul S.; and Koch, Gilbert E., 3,781,004.
Hudson, Paul S.: *See—*
Wu, Yu-Lin; and Hudson, Paul S., 3,781,341.
Hug, Hans A.; and Jone, Paul W., to Identicon Corporation, mesne. Aligned scanning mirror. 3,781,079, Cl. 350-7.000.
Hughes Aircraft Company: *See—*
Bockwoldt, Walter H., 3,781,591.
Effinger, David D.; Evans, Norol T.; and Estrick, Vaughn H., 3,781,883.
Ernstoff, Michael N.; Fehr, Eric R.; Hoffman, William C.; and Winner, Richard N., 3,781,465.
Holberg, Dieter E., 3,781,882.
Judd, Gordon W.; and Stout, Charles R., 3,781,721.
Judd, O'Dean P., 3,781,712.
Long, Willis F.; and Lian, Kenneth T., 3,781,606.
Thompson, Richard M., 3,781,726.
Hughes, James S., Jr., to Trident Engineering Co. Load resistance change alarm. 3,781,841, Cl. 340-251.000.
Hughes, Nathaniel, to United States of America, Army. Fluid ionization. 3,780,945, Cl. 239-102.000.
Hughes, Paul T.: *See—*
Caleskie, Vincent J.; Hughes, Paul T.; and Johnson, Robert Wayne, 3,781,789.
Hunger, Richard Herman: *See—*
Ransford, Neil Edward; Gilbert, Leland Glen; and Hunger, Richard Herman, 3,781,056.
Hungerford, Daniel Comstock, to Brunswick Corporation. Anchor having improved fluke crown coupling. 3,780,688, Cl. 114-208.000.
Hurley, Thomas J.; and Robinson, Martin A., to Olin Corporation. Preparation of aromatic isocyanates. 3,781,321, Cl. 260-453.0pc.
Hurst, Alvin L., to Aluminum Company of America. Method of fabricating composite multi-metallic billets useful for metal working operations. 3,780,418, Cl. 29-420.000.
Hurt, John M., Jr. Index card filing system. 3,780,460, Cl. 40-78.000.
Huskins, Chester W.; and Thomas, Albert J., Jr. Composite propellants with a difunctional ballistic modifier-curing agent. 3,781,179, Cl. 149-19.200.
Hydromation Filter Company: *See—*
Hirs, Gene, 3,780,861.
Hydrotech Services, Inc.: *See—*
White, William E., Jr.; and Billingsly, Lloyd E., 3,780,421.
Hyster Company: *See—*
Schwab, Delmar G.; and Graham, Dennis P., 3,780,820.
I-T-E Imperial Corporation: *See—*
DiMarco, Bernard; Kussy, Frank W.; and Swain, Kenneth W. (said DiMarco and said Kussy assors. to), 3,781,607.
Ichimoto, Yoshiharu: *See—*
Miyajima, Tohru; Ichimoto, Yoshiharu; and Saeki, Arinori, 3,781,625.
Ideal Aerosmith, Inc., mesne: *See—*
Taylor, James L., 3,780,440.
Identicon Corporation, mesne: *See—*
Hug, Hans A.; and Jone, Paul W., 3,781,079.
Identification Systems, Inc.: *See—*
Killen, Donald E., 3,781,855.
Ikazaki, Koh: *See—*
Izawa, Nobuharu; Toyoshima, Hiroshi; and Ikazaki, Koh, 3,780,405.
Ikeda, Toshimitu: *See—*
Ueda, Yasuo; Kamezawa, Yasutoki; Aizawa, Tatsuo; and Ikeda, Toshimitu, 3,781,208.
Iles, Gerald Sidney; and Selman, Gordon Leslie, to Johnson, Matthey & Co., Limited. Resistance thermometer element. 3,781,749, Cl. 338-25.000.
Image Analysing Computers Limited: *See—*
Soames, Michael Richard, 3,781,467.
Imperial Chemical Industries, Limited: *See—*
Birchall, James Derek; Cassidy, John Edward; and Smith, Frank, 3,781,239.
Waters, Graham Thomas, 3,780,515.
Imperial Chemical Industries of Australia and New Zealand Limited: *See—*
Harrison, Paul Stanley; and Harries, Gwyn, 3,781,180.
Imris, Pavel, to Ecotrol, Inc. Optical generator of an electrostatic field having longitudinal oscillation at light frequencies for use in an electrical circuit. 3,781,601, Cl. 315-227.000.
Inaba, Shigeho: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Akatsu, Mitsuihiro; Maruyama, Isamo; and Izumi, Takahiro, 3,781,299.
Industrial Science & Technology, Agency of: *See—*
Takamatsu, Hideaki; Murashima, Noboru; and Nishihira, Koichi, 3,781,185.
Industrial Science and Technology, Agency of: *See—*
Suzuki, Horoshi; and Tsutsui, Yoshiro, 3,781,218.
Inoue, Hiromitsu; Okamoto, Shinsuke; Mori, Hirokazu; and Ohasi, Hirosi, to Matsushita Electric Works, Ltd. Ultrasonic detection apparatus. 3,781,772, Cl. 340-1.00r.
Inoue, Kiyoshi. Servosystem for electrical machining processes. 3,781,507, Cl. 219-69.00g.
I.N.R.S.: *See—*
Darmon, Michel, 3,781,493.
Inservco, Inc.: *See—*
Sudnick, Dennis J.; and Shutts, Robert L., 3,781,869.
Inslerman, Hans E., to United States of America, Army. Single-antenna repeater system utilizing hybrid transformers. 3,781,684, Cl. 325-5.000.
Institut Francais du Petrole, des Carburants et Lubrifiants: *See—*
Alagy, Jacob; and Busson, Christian, 3,781,344.
Delignieres, Robert, 3,781,774.
Institut Francois du Petrole des Carburants et Lubrifiants: *See—*
Desbrandes, Robert, 3,781,784.
Intec Corporation: *See—*
Baker, Cole H., 3,781,531.
International Business Machines Corporation: *See—*
Ahearn, Thomas P.; Capowski, Robert S.; Christensen, Neal T.; Gannon, Patrick M.; Lee, Arlin E.; and Liptay, John S., 3,781,808.
Alexander, Arthur Duane, 3,781,851.
Almasi, George S.; Hendel, Robert J.; and Keefe, George E., 3,781,832.
Baker, Thoedore H.; Ghafghaichi, Majid; and Totta, Paul A., 3,781,609.
Baldwin, Douglas S.; Benton, Kenneth E.; and Jacques, Vincent L., 3,781,017.
Beausoleil, William Francis, 3,781,826.
Benton, Kenneth E.; and Jacques, Vincent L., 3,781,016.
Boudreau, Paul E.; Dixon, Roy C.; Donnan, Robert A.; and Moss, Eual A., 3,781,815.
Ellul, Joseph M., 3,781,845.
Freed, Larry E., 3,781,683.
Geng, Hellmuth R.; Hajdu, Johann; and Skuin, Petar, 3,781,819.
Goldman, Lewis S.; Jeannotte, Dexter A.; and Krall, Bodgan, 3,780,568.
Henle, Robert A.; Ho, Irving T.; Jen, Teh-Sen; and Maley, Gerald A., 3,781,793.
Kolpek, Robert A.; and Rahenkamp, Robert A., 3,780,846.
May, Frederick T., 3,781,813.
McMahon, Maurice T., Jr., 3,781,670.
Meier, Johann Hans, 3,780,650.
Nussbaumer, Henri Jean, 3,781,873.
Phillips, William B., 3,781,490.
Platt, Steven; and Pomeranz, Jehoshua N., 3,781,828.
Robinson, Thomas Scott, 3,781,799.
Roth, Robert Ingersoll, 3,781,821.
Singh, Shanker, 3,781,829.
Wagner, John W.; and Young, Paul M., 3,781,681.
International Harvester Company: *See—*
Deli, Jack M.; and Hehmiz, Ramiz Y., 3,781,066.
Tashiro, Donald K., 3,780,506.
Tashiro, Donald K., 3,780,508.
Zajkowski, Arthur J., 3,781,037.
Ziolko, Walter; and Stoeck, Paul F., 3,781,058.
International Minerals & Chemical Corporation: *See—*
Johanningmeier, Charles E., 3,780,495.
International Playtex Corporation: *See—*
Cole, Raymond C., 3,780,741.
Fitzpatrick, William E.; Berger, Leonard; and Auerbach, Hayward B., 3,780,908.
International Standard Electric Corporation: *See—*

Cragg, William D.; Bradshaw, Leslie E. B.; Batchelor, Anthony C.; and Carter, Ronald D., 3,781,492.
Cramer, Bernhard; Domig, Herbert; Von Keller, Theodor; and Schmeykal, Rudolf, 3,781,800.
Lord, Michael Robert, 3,781,571.

International Synthetic Rubber Company: *See—*
Bassham, Kenneth John; and Feast, Alan Arthur John, 3,781,236.

International Telephone and Telegraph Corporation: *See—*
Charlton, Gregory G., 3,781,897.
Dishal, Milton; and Baran, Henri, 3,781,705.

Iowa University of Iowa, State of: *See—*
Wawzonek, Stanley; and Gueldner, Richard C., 3,781,319.

Iqbal, Abul F. M.: *See—*
Sulzbach, Reinhard A.; and Iqbal, Abul F. M., 3,781,291.

Irving, Edgar W., Jr., to Egan Machinery Company. Material feeding apparatus. 3,780,801, Cl. 165-120.000.

Irwin, Carl F., to Du Pont de Nemours, E. I., and Company. Process for manufacture of organic isocyanates. 3,781,320, Cl. 260-453.0ph.

Isaev, Alexei Ilich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.

Ishida, Yoshio, to Diamond Electric Manufacturing Co., Ltd. High voltage pulse generating apparatus. 3,781,649, Cl. 323-19.000.

Ishihama, Masaru: *See—*
Iwaki, Katsutaro; Mori, Kazumasa; Ishihama, Masaru; and Kobayashi, Yukio, 3,781,633.

Itabashi, Yoshio; Saito, Susumu; and Seki, Masao, to Kanebo, Ltd. Titanium hydride catalyzed polyester polycondensation. 3,781,245, Cl. 260-75.00r.

Italfarmaco S.p.A.: *See—*
Zoni, Giorgio, 3,781,439.

Itek Corporation: *See—*
Bauman, Weldon W.; and Collins, Edward, IV, 3,781,691.
Bechtold, Edwin W., 3,781,097.
Ford, Peter W., 3,781,693.
Rannells, David C., 3,781,688.

Ito, Isao: *See—*
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.

ITT Industries, Inc.: *See—*
Pitacco, Sergio, 3,781,755.

Iwaisako, Toshiyuki: *See—*
Kominami, Naoya; Iwaisako, Toshiyuki; and Ohki, Kusuo, 3,781,221.

Iwaki, Katsutaro; Mori, Kazumasa; Ishihama, Masaru; and Kobayashi, Yukio, to Nippondenso Co., Ltd. Vehicle-carried storage battery charging device. 3,781,633, Cl. 320-48.000.

Izawa, Nobuharu; Toyoshima, Hiroshi; and Ikazaki, Koh, to Teijin Limited. Apparatus for supplying crimped synthetic filament tow to conveyor for heat treatment. 3,780,405, Cl. 28-1.600.

Izawa, Shinichi; Toyama, Kunio; Harada, Kazuhiko; and Sugawara, Yoshiaki, to Asahi-Dow Limited. Thermoplastic resin mixture and process for producing the same. 3,781,382, Cl. 260-874.000.

Izuhara, Seiji: *See—*
Aoki, Katsuo; Yatani, Kozo; Kometani, Eishi; and Izuhara, Seiji, 3,781,423.

Izumi, Takahiro: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Akatsu, Mitsuihiro; Maruyama, Isamo; and Izumi, Takahiro, 3,781,299.

Izumi, Zenji: *See—*
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.

Jablansky, Louis, to United States of America, Navy. In-line explosion arrester. 3,780,753, Cl. 137-68.000.

Jac, Inc.: *See—*
Anderson, Thomas W.; and Caroon, Robert L., 3,781,837.

Jackson, Bryon, Inc.: *See—*
Barron, Charles Dwain; Geczy, Bela; and Wilms, Carl Alfred, 3,780,815.

Jackson, Edward J., to Westinghouse Electric Corporation. Digital phase-locked-loop. 3,781,695, Cl. 328-155.000.

Jackson, William D., said Jackson and Bell assors. of 10% each to Rankin, R. Ray. Method for mounting and preserving animals without evisceration. 3,780,452, Cl. 35-20.000.

Jacobs, James W., to General Motors Corporation. Cam operated compressor. 3,781,144, Cl. 417-525.000.

Jacobs, Thomas A., to Tideland Signal Corporation. Navigational light system. 3,781,853, Cl. 340-29.000.

Jacobsen Manufacturing Company: *See—*
Woelffer, Neill C., 3,780,509.

Jacobson, Oscar D. Combination centrifugal and viscous shear rotary pump. 3,781,136, Cl. 417-353.000.

Jacobson, Robert S., to Sperry Rand Corporation. Area navigation system. 3,781,880, Cl. 343-6.00r.

Jacoby, Ian H.: *See—*
Lukacs, Michel J.; and Jacoby, Ian H., 3,780,935.

Jacoby, Joseph M.: *See—*
Jacoby, Joseph M.; and Gelak, Richard (said Gelak assor. to said), 3,780,458.

Jacoby, Joseph M.; and Gelak, Richard, said Gelak assor. to said Jacoby, Joseph M. Portable visual-aid or display device. 3,780,458, Cl. 40-31.000.

Jacques, Vincent L.: *See—*
Baldwin, Douglas S.; Benton, Kenneth E.; and Jacques, Vincent L., 3,781,017.
Benton, Kenneth E.; and Jacques, Vincent L., 3,781,016.

Jahnel, Benno: *See—*
Batsch, Helmut; Jahnel, Benno; Weinz, Ernst August; Berger, Wolfgang; and Dickopp, Gerhard, 3,781,020.

Jancis, Elmar H., to Uniroyal, Inc. Polymeric phenolic phosphorous acid ester amides. 3,781,385, Cl. 260-930.000.

Janssen, Edward W.; and Kyle, Robert C., to Minnesota Mining and Manufacturing Company. Physically reinforced hydrophilic foam and method of preparing same. 3,781,231, Cl. 260-2.5be.

Jaques, Roland; and Rossi, Alberto, to Ciba-Geigy Corporation. O-esters of monosacchairdes having ether groupings. 3,781,267, Cl. 260-210.00r.

Jasper, Louis J., Jr., to United States of America, Army. TWT with stacked spiral-pairs slow-wave circuit. 3,781,702, Cl. 330-43.000.

Jeannotte, Dexter A.: *See—*
Goldman, Lewis S.; Jeannotte, Dexter A.; and Krall, Bodgan, 3,780,568.

Jeffers, Frederick J.; and Rolker, John H., to Bell & Howell Company. Magnetic imaging methods and media. 3,781,903, Cl. 346-74.0mp.

Jeger, Oskar: *See—*
Wehrli, Hansuli; and Jeger, Oskar, 3,781,271.

Jen, Teh-Sen: *See—*
Henle, Robert A.; Ho, Irving T.; Jen, Teh-Sen; and Maley, Gerald A., 3,781,793.

Jenkins, Gerald L.; Jungjohann, Vernon H.; and Marvin, Edgar S., to Eastman Kodak Company. Motion picture camera drive mechanism. 3,781,100, Cl. 352-180.000.

Jenkins, Robert; Mead, Carver A.; and McCaldin, James, to Monsanto Company, mesne. Ohmic contact to zinc sulfide devices. 3,780,427, Cl. 29-590.000.

Jenkner, Herbert, and Konigstein, Otto, to Chemische Fabrik Kalk GmbH. Phosphates. 3,781,388, Cl. 260-953.000.

Jenne, Helmut: *See—*
Stange, Karl; Jenne, Helmut; and Koenig, Ulrich, 3,781,186.

Jennings, Alan K., to Pertec Corporation, mesne. Keyboard entry system. 3,781,874, Cl. 340-365.00s.

Jennings, George L.; and Nichols, Parks M., to Uniroyal, Inc. Tire with belt between bias carcass plies. 3,780,782, Cl. 152-356.000.

Jensen, Hans A.; and Layman, Melvin M., to Mayer, Oscar, & Co., Inc. Method of packaging. 3,780,486, Cl. 53-14.000.

Jentsch, Alfred C., Jr.; Taylor, Edward I., Jr.; and Shukoff, Walter, to USM Corporation of Flemington, N.J. Hot log shear. 3,780,606, Cl. 83-23.000.

Jernakoff, George: *See—*
Roberts, Richard W.; and Jernakoff, George, 3,781,840.

Jerrold Electronics Corporation: *See—*
Duty, George Otto, 3,781,703.

Jessee, Ralph D., to Westinghouse Electric Corporation. Integrated error voltage regulator for static switching circuits. 3,781,634, Cl. 321-9.00a.

Jinbo, William, to GTE Automatic Electric Laboratories, Incorporated. Code processor output buffer verify check. 3,781,797, Cl. 340-146.10r.

Jobst, Raymond C.: *See—*
Perry, William A.; and Jobst, Raymond C., 3,780,880.

Joeckel, Stanley V., to Lincoln Manufacturing Company, Inc. Metal clad hairpin shaped electric interleaved heating elements. 3,781,525, Cl. 219-532.000.

Johannesson, Nils Olof, to Telefonaktiebolaget L M Ericsson. Picture telephone system at which the video signal is adapted to the character of the picture. 3,781,477, Cl. 179-2.0tv.

Johanningmeier, Charles E., to International Minerals & Chemical Corporation. Method and apparatus for controlling dust. 3,780,495, Cl. 55-1.000.

John, Erwin Roy, to Neuro-Data, Inc. Sensation-cognition computer employing "t" test calculations. 3,780,724, Cl. 128-2.10b.

Johns Hopkins University, The: *See—*
Pardoe, Carroll T.; Carlton, Alvar G.; and Appel, Robert L., 3,781,818.

Johnson, Douglas, to General Motors Corporation. Combustion apparatus. 3,780,529, Cl. 60-39.360.

Johnson, Ernest H., to Andrew Corporation. Tube corrugating apparatus and method. 3,780,556, Cl. 72-78.000.

Johnson, Frederick W., to Collin's Radio Company. Moisture seal for electrical connector. 3,781,764, Cl. 339-94.000.

Johnson, Marvin F. L.; and Graff, Stuart L., to Atlantic Richfield Company. Halide addition and distribution in the reactivation of platinum-rhenium catalysts. 3,781,219, Cl. 252-415.000.

Johnson, Matthey & Co., Limited: *See—*
Iles, Gerald Sidney; and Selman, Gordon Leslie, 3,781,749.

Johnson, Peter D., to General Electric Company. Long lifetime mercury-metal halide discharge lamps. 3,781,586, Cl. 313-174.000.

Johnson, Robert C.: *See—*
Neel, Robert M.; and Johnson, Robert C., 3,780,744.

Johnson, Robert Wayne: *See—*
Caleskie, Vincent J.; Hughes, Paul T.; and Johnson, Robert Wayne, 3,781,789.

Johnson, Theodore F.: *See—*
Lilienthal, Alfred J.; Johnson, Theodore F.; Petri, William E., Jr.; and Gilbert, Charles E., Jr., 3,780,423.

Jolly, Jean: *See—*
Warnant, Julien; and Jolly, Jean, 3,781,311.

Jolly, Michael D.: *See—*
Peyton, Keith S.; and Jolly, Michael D., 3,780,615.

Jone, Paul W.: *See—*
Hug, Hans A.; and Jone, Paul W., 3,781,079.

Jones, Alan Richardson, to Coulter Chemistry, Inc., mesne. Colorimeter with automatic cuvette. 3,781,116, Cl. 356-180.000.

Jones, Cecil R., to Transfer Systems Incorporated. Nuclear control rod having embedded filaments. 3,781,191, Cl. 176-86.00r.

Jones, John E.; and Knutson, Orville T., to Cummins-Allison Corporation, mesne. Method and apparatus for recording data by perforating record media. 3,780,938, Cl. 234-1.000.

Jones, John Leslie, Sr. Timing sensor switch with oscillating coil spring and metal mass contact. 3,781,496, Cl. 200-61.45r.

Jones, John Robert: *See—*
Davis, Paul Trevor; Glover, Terence George; and Jones, John Robert, 3,781,195.

Jones, Robert J.: *See—*
Burns, Eugene A.; and Jones, Robert J., 3,781,247.

Jones, Robert Keith, to Kenway Engineering, Incorporated. Article transfer device. 3,780,884, Cl. 214-8.50d.

Jones, Vincent. Trailing arm suspension system. 3,781,032, Cl. 280-124.00a.

Jonker, Simon: *See—*
Friebel, Hendrikus Johannes Christianos; Jonker, Simon; and Benschop, Gerardus Cornelis Marie, 3,780,429.

Jordan, Richard J., to General Marine, Inc. Waste disposal system and method. 3,780,757, Cl. 127-205.000.

Jorn, Raoul: *See—*
Jorn, Raoul; and Reichardt, Peter, 3,781,073.

Jorn, Raoul; and Reichardt, Peter, to Jorn, Raoul. Bearing. 3,781,073, Cl. 308-238.000.

Joslyn Mfg. and Supply Co.: *See—*
Vadnagara, Ramanlal R., 3,781,745.

Joyco, Inc.: *See—*
Kampaman, Joy M., 3,780,379.

Judd, Gordon W.; and Stout, Charles R., to Hughes Aircraft Company. Acoustic surface wave device eliminating spurious end reflections. 3,781,721, Cl. 333-30.00r.

Judd, O'Dean P., to Hughes Aircraft Company. Gas laser with discharge conditioning using ultraviolet photons generated in high current density preliminary discharge. 3,781,712, Cl. 331-94.500.

Juhran, Wolfgang: *See—*
Kampe, Wolfgang; Fauland, Erich; Thiel, Max; Dietmann, Karl; and Juhran, Wolfgang, 3,781,273.

Juillet, Francois; Teichner, Stanislas; and Formenti, Marc, to Agence Nationale de Valorisation de la Recherche (Anvar). Process for the photocatalytic oxidation of hydrocarbons into aldehydes and ketones. 3,781,194, Cl. 204-162.00r.

Julia, Marc, to Rhone-Poulenc S.A. Sulfone intermediates for the synthesis of vitamin A. 3,781,313, Cl. 260-402.000.

Julian, Clarence L., to General Motors Corporation. Vacuum-operated spark advance device. 3,780,713, Cl. 123-117.00a.

Juliano, Peter C.: *See—*
Kantor, Simon W.; and Juliano, Peter C., 3,781,378.

Jungjohann, Vernon H.: *See—*
Jenkins, Gerald L.; Jungjohann, Vernon H.; and Marvin, Edgar S., 3,781,100.

K-G Industries, Inc.: *See—*
Harris, Leroy S., 3,781,151.

K-P Manufacturing Co., Inc.: *See—*
Helgerud, Robert J.; and Simon, Ernest M., 3,780,830.

Kabel- und Metallwerke Gutchoffnungshutte Aktiengesellschaft: *See—*
Burgdorf, Marten, 3,780,413.

Kabushiki Kaisha Hattori Tokeiten: *See—*
Oishi, Masaaki; Takahashi, Yoshinaga; and Yoshizawa, Keiichi, 3,780,649.

Kabushiki Kaisha Meidensha: *See—*
Watanabe, Kazuo; Kito, Yastami; Nazaki, Choji; Kono, Kiichi; Tsuzuki, Kanemitsu; and Motobayashi, Kozo, 3,780,513.

Kabushiki Kaisha Sunpak: *See—*
Tadokoro, Kinya, 3,781,602.

Kabushiki Kaisha Suwa Seikosha: *See—*
Fujita, Kinji, 3,781,863.
Fujita, Kinji, 3,781,864.
Kurita, Masahiro; and Ota, Tomio, 3,780,521.
Nagaski, Jin, 3,781,087.
Naito, Okito, 3,780,523.
Tokunaga, Ikuo, 3,780,519.
Tsuruishi, Yuki, 3,780,520.
Yamamura, Katsumi, 3,781,862.
Yamazaki, Yoshio, 3,781,865.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Watanabe, Kazuo; Kito, Yastami; Nazaki, Choji; Kono, Kiichi; Tsuzuki, Kanemitsu; and Motobayashi, Kozo, 3,780,513.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Watanabe, Kazuo; Kito, Yastami; Nazaki, Choji; Kono, Kiichi; Tsuzuki, Kanemitsu; and Motobayashi, Kozo, 3,780,513.

Kadner, Martin: *See—*
Hackstein, Karl-Gerhard; Kadner, Martin; and Forster, Horst, 3,781,216.

Kadrmas, Kenneth A. Self-calibrating multiple field of view telescope for remote atmospheric electromagnetic probing and data acquisition. 3,781,552, Cl. 250-206.000.

Kafafian, Haig. Method of communication and/or testing of the handicapped. 3,781,802, Cl. 340-147.00r.

Kagans, Marc: *See—*
Pacault, Pierre Henri; and Kagans, Marc, 3,780,786.

Kahwati, Ghassan N.; Gade, John N.; Mac Kay, James D.; and Druzynski, Conrad J., to Eastman Kodak Company. Controls for spooling apparatus. 3,780,961, Cl. 242-67.30r.

Kaidzu, Hiromu: *See—*
Okuda, Minoru; Aikawa, Satoru; Kaidzu, Hiromu; and Tajima, Eiichi, 3,781,396.

Kaiserswerth, Hans-Peter: *See—*
Kirmis, Peter; Wagner, Heinz; and Kaiserswerth, Hans-Peter, 3,781,740.

Kalmar Verstaids AB: *See—*
Petersson, Ralf Krister Ebbe; and Holmberg, Bengt Roland, 3,781,035.

Kamezawa, Yasutoki: *See—*
Ueda, Yasuo; Kamezawa, Yasutoki; Aizawa, Tatsuo; and Ikeda, Toshimitu, 3,781,208.

Kamijo, Tatsuo; and Nagakura, Densuke, to Mitsubishi Kakoki Kaisha. Inert gas system for a tanker. 3,781,407, Cl. 423-242.000.

Kamil, Zvi; Amir, Yoel; and Talmon, Omri, to Beta Engineering & Development Ltd. Liquid level detector. 3,781,498, Cl. 200-84.00c.

Kamp, Leonard F.; and Stoneham, Jeffrey R., to Eastman Kodak Company. Daylight mode compensating mechanism. 3,780,632, Cl. 95-11.001.

Kampaman, Joy M., to Joyco, Inc. Protective cap for infants. 3,780,379, Cl. 2-15.000.

Kampe, Robert F.; and White, Albert H., to Chandler Evans, Inc. Fluidic displacement transducer. 3,780,771, Cl. 137-829.000.

Kampe, Wolfgang; Fauland, Erich; Thiel, Max; Dietmann, Karl; and Juhran, Wolfgang, to Boehringer Mannheim Gesellschaft mit beschrankter Haftung. N(6)-benzyl-adenosine compounds and therapeutic compositions. 3,781,273, Cl. 260-211.50r.

Kanebo, Ltd.: *See—*
Itabashi, Yoshio; Saito, Susumu; and Seki, Masao, 3,781,245.

Kaneko, Keiji; and Yoshida, Toshio, to Fuji Photo Film Co., Ltd. Cinematographic camera. 3,781,101, Cl. 352-221.000.

Kantor, Simon W.; and Juliano, Peter C., to General Electric Company. High temperature membrane materials. 3,781,378, Cl. 260-824.00r.

Kao Soap Co., Ltd.: *See—*
Katsumi, Mamoru; Sato, Toshio; and Hara, Tadao, 3,781,204.

Kappeler, Heinrich; and Wild, Jost, to Givaudan Corporation. Beta, beta-dimethyl acrylates. 3,781,333, Cl. 210-486.00r.

Kappus, Helmut: *See—*
Rodermund, Gerd; and Kappus, Helmut, 3,780,514.

Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, to Merck & Co., Inc. Product, process and composition. 3,781,415, Cl. 424-308.000.

Karin Limited: *See—*
Takabayashi, Teruo, 3,780,402.

Kasberg, Alvin H., to Atlantic Richfield Company. Spent nuclear fuel shipping casks. 3,781,189, Cl. 176-28.000.

Kashiwa, Norio: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kashiwa, Norio; Tokuzumi, Tadaichi; Horota, Yutaka; and Fujimura, Hiroshi, 3,781,253.

Kataoka, Toshiki: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kashiwa, Norio; Tokuzumi, Tadaichi; Horota, Yutaka; and Fujimura, Hiroshi, 3,781,253.

Katayama, Nobuaki: *See—*
Takahashi, Seihachi; Katayama, Nobuaki; and Morino, Hideki, 3,780,596.

Katchka, Jay R., to Robertshaw Controls Company. Dual lever mechanism. 3,780,600, Cl. 74-519.000.

Kato, Tadashi: *See—*
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.

Kato, Yoshiaki; and Mabuchi, Hiroshi, to Citizen Watch Co., Ltd. Motion converter. 3,780,518, Cl. 58-23.00d.

Katona, William F., to Monogram Industries, Inc. Retractable recirculating toilet system module. 3,780,383, Cl. 4-10.000.

Katsumi, Mamoru; Sato, Toshio; and Hara, Tadao, to Kao Soap Co., Ltd. Textile treating composition. 3,781,204, Cl. 252-8.750.

Katzenmeyer, James H., to Continental Can Company. Cup carrier. 3,780,906, Cl. 220-113.000.

Kaufman, Peter; Colsen, F. Thomas; and Townsend, Robert L., to Educated Vehicle Systems, Inc. Auto alarm arming system. 3,781,854, Cl. 340-64.000.

Kauzlarich, James Joseph, to Research Corporation. Flastohydrodynamic bearing assembly. 3,781,071, Cl. 308-9.000.

Kawada Kogyo Kabushiki Kaisha: *See—*
Ohta, Masachika; and Wakameda, Toshio, 3,780,420.

Kawaguchi, Hiroshi; Naito, Takayuki; and Nakagawa, Susumu, to Bristol-Myers Company. Antibiotic derivatives of kanamycin. 3,781,268, Cl. 260-210.0ab.

Kawamata, Tsutomu: *See—*
Aizawa, Tetsuya; Sawada, Taketoyo; Tauchi, Yoshihiko; Kawamata, Tsutomu; and Saya, Hiroshi, 3,781,856.

Keays, John L.: *See—*
Bagley, John M.; and Keays, John L., 3,781,188.
Keefe, George E.: *See—*
Almasi, George S.; Hendel, Robert J.; and Keefe, George E., 3,781,832.
Keefe, Jack D., to Monarch Marking Systems, Inc. Ultra-high molecular weight polyolefin optical reader tip. 3,781,555, Cl. 250-227.00r.
Keich, John D.; and Laliberte, George A., to United States of America, Navy. Releasable coupling. 3,781,055, Cl. 294-83.00a.
Keleman, Denis G.: *See—*
Galli, Richard J.; and Keleman, Denis G., 3,781,596.
Kellel, Allen, to Wemac Company. Remotely controlled ventilation valve. 3,780,980, Cl. 251-138.000.
Keller, Toni, to Spectrospin A.G. Method and apparatus for reducing interference in a spin resonance spectrometer by subtracting interferograms having 180° phase separation. 3,781,650, Cl. 324-.50r.
Keller, Wolfgang; Kersting, Arno; and Reuschel, Konrad, to Siemens Aktiengesellschaft. Apparatus for precipitating a layer of semiconductor material from a gaseous compound of the semiconductor material. 3,781,152, Cl. 425-174.80r.
Kelly, Robert C., to Upjohn Company, The. Bicyclic lactone diformate. 3,781,306, Cl. 260-343.300.
Kemp, Willard E., to ACF Industries, Incorporated. Control ports for gate valve structure. 3,780,982, Cl. 251-210.000.
Kennametal Inc.: *See—*
McCreery, James F., 3,780,408.
Kennedy, Howard V.: *See—*
Cooper, Erwin E.; and Kennedy, Howard V., 3,781,559.
Kenway Engineering, Incorporated: *See—*
Jones, Robert Keith, 3,780,884.
Kerfoot, Franklin W., Jr.: *See—*
Colburn, Walter E.; Trowern, Howard M., Jr.; and Kerfoot, Franklin W., Jr., 3,780,907.
Kerr, Bob C.: *See—*
Prinz, Roy H.; and Kerr, Bob C., 3,781,365.
Kerr-McGee Chemical Corporation: *See—*
Rhees, Raymond C., 3,781,412.
Kersting, Arno: *See—*
Keller, Wolfgang; Kersting, Arno; and Reuschel, Konrad, 3,781,152.
Kersting, Raymond J., to Wagner Electric Corporation. Control valve. 3,781,065, Cl. 303-71.000.
Kessler, Clarence William: *See—*
Coleman, William Earl; and Kessler, Clarence William, 3,781,600.
Kessler, Ernst Jakob: *See—*
De Longueville, Jacques Charles; Perfetti, Jacques Felix Charles; and Kessler, Ernst Jakob, 3,780,658.
Ketchum, Marshall D.; and Bloomer, Milton D., to General Electric Company. Non-contacting temperature measurement of inductively heated utensil and other objects. 3,781,506, Cl. 219-10.490.
Keystone Lighting Corporation: *See—*
Dalton, John, Jr., 3,780,973.
Kichline, Thomas P.; and Conn, James F., to Monsanto Company. Alkyl lactoyl fumarates, miliates and salts thereof. 3,781,334, Cl. 260-484.00a.
Kidde, Walter, & Company, Inc.: *See—*
Smith, Irwin M., 3,780,503.
Kidwell, John H.: *See—*
Rudd, Alexander H.; Kidwell, John H.; and Murray, Thomas J., 3,781,162.
Kieferle, Friedrich: *See—*
Gulbins, Erich; Hauss, Alfred; Kieferle, Friedrich; and Kovacs, Jenoe, 3,781,243.
Kikuchi, Junjiro, to Sankyo Kozaku Kogyo Kabushiki Kaisha. Automatic continuous record/playback means for tape cassette loading tape recorder. 3,781,019, Cl. 274-4.00e.
Kilby, Jack S. Binary encoding switch. 3,781,866, Cl. 340-347.00p.
Killen, Donald E., to Identification Systems, Inc. Fingerprint identification system and method. 3,781,855, Cl. 340-146.30e.
Kimbrell, William C., to Phillips Petroleum Company. Process for forming yarn of improved properties. 3,780,516, Cl. 57-157.0ts.
Kime, Roger A. Filament coating apparatus. 3,780,699, Cl. 118-420.000.
Kimpel, Francis A.: *See—*
Norbeck, Dean K.; and Kimpel, Francis A., 3,780,532.
King, Eugene, to Hoffmann-La Roche Inc. Cardiac pacer monitoring means with rate and pulse discrimination. 3,780,727, Cl. 128-2.06r.
King, James Frank: *See—*
Hanes, James Gordon, Jr.; King, James Frank; Lathery, Willie M.; Beamon, Howard L.; and Newlen, Kenneth W., 3,780,679.
King, John F. DC to AC inverter. 3,781,643, Cl. 321-45.00c.
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Kingsbury, Richard F., to Litronix, Inc. Solid state alphanumeric indicator and lead frame. 3,781,584, Cl. 313-109.500.
Kinley, John C. Device for expanding a tubing liner. 3,780,562, Cl. 72-479.000.
Kinnear Corporation: *See—*
Action, Floyd; Cochran, Paul E.; and Moore, William G., 3,781,622.
Kinney, Gordon: *See—*
Pett, Edgar A.; and Kinney, Gordon, 3,781,172.
Kinoshita, Tsuneo: *See—*
Yakata, Akio; and Kinoshita, Tsuneo, 3,781,811.
Kinsey, Lewis R. Storage battery with exchangeable elements. 3,781,175, Cl. 136-7.000.
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Kirkpatrick, George M. Means for suppressing ground clutter in airborne radar. 3,781,878, Cl. 343-5.00w.
Kirmis, Peter; Wagner, Heinz; and Kaiserswerth, Hans-Peter, to Siemens Aktiengesellschaft. Radio interference elimination choke for suppressing impulse like interference voltages. 3,781,740, Cl. 336-96.000.
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Smith, Joseph L., Jr.; Thullen, Philip; and Kirtley, James L., Jr., 3,781,578.
Kish, Leslie G.: *See—*
Rahaim, Thomas J.; and Kish, Leslie G., 3,781,125.
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, to Bayer Aktiengesellschaft. O-(methylcyclohexyl)-s-methyl-s-phenyl-phosphorodithiolates. 3,781,386, Cl. 260-958.000.
Kitagawa, Hideji: *See—*
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.
Kitai, Kiyoshi, to Seiko Koki Kabushiki Kaisha. Setting means for indicating apparatus. 3,780,525, Cl. 58-125.00c.
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Nakahara, Tsuneo; Kurauchi, Noritaka; Kitani, Hiroshi; Takemura, Kenji; and Kuroda, Masataka, 3,781,687.
Kito, Yastami: *See—*
Watanabe, Kazuo; Kito, Yastami; Nazaki, Choji; Kono, Kiichi; Tsuzuki, Kanemitsu; and Motobayashi, Kozo, 3,780,513.
Klauke, Erich: *See—*
Kuhle, Engelbert; Klauke, Erich; Behrenz, Wolfgang; and Frohberger, Paul Ernst, 3,781,331.
Wagner, Klaus; Eue, Ludwig; and Klauke, Erich, 3,781,323.
Kleindienst & Co.: *See—*
Von Kulmer, Olrich, 3,780,448.
Kleinhagauer, Otmar: *See—*
Holzgruber, Wolfgang; Machner, Peter; Schneihofer, Adolf; Kleinhagauer, Otmar; and Cerwenka, Peter, 3,781,448.
Kline, Charles M., to Sperry Rand Corporation. Agitating extensions for the central mixing auger of a grinder-mixer. 3,780,993, Cl. 259-97.000.
Klinner, Wolfgang: *See—*
Deubel, Reinhold; Diery, Helmut; Klinner, Wolfgang; List, Karl-Hermann; and Uhrig, Heinz, 3,781,169.
Klupsch, Paul; Paul, Rudolf; and Dressler, Ulrich. Devices for operating a spring and pressure controlled preselection diaphragm in photographic lens mounts. 3,780,636, Cl. 95-64.00r.
KMS Industries, Inc.: *See—*
Thomas, Carlton E., 3,781,113.
Knapsack Aktiengesellschaft: *See—*
Sennewald, Kurt; Erpenbach, Heinz; Handte, Heinz; Kohl, Georg; and Lork, Winfried, 3,781,193.
Kneller, Klaus; and Schaeffer, Gerard, to Schweizerische Industrie-Gesellschaft. Method of and means for adjusting the flow of plastic material in an extruder cylinder. 3,780,994, Cl. 259-191.000.
Knowles, Charles R.; and Ruckel, Douglas J., to Atlantic Richfield Company. Pressure sealed cable packoff and method for making and using same. 3,781,456, Cl. 174-23.00r.
Knutson, Orville T.: *See—*
Jones, John E.; and Knutson, Orville T., 3,780,938.
Kobayashi, Hidehiko; Sasaguri, Kiichiro; and Shiga, Masaaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for producing a composite fiber. 3,781,399, Cl. 264-171.000.
Kobayashi, Yukio: *See—*
Iwaki, Katsutaro; Mori, Kazumasa; Ishihama, Masaru; and Kobayashi, Yukio, 3,781,633.
Kobe, Inc.: *See—*
Brown, Francis Barton; and Budrys, Vitolis, 3,781,134.
Koch, Gilbert E.: *See—*
Buddendeck, Gerald A.; Hubler, Lawrence C.; Heiler, Paul S.; and Koch, Gilbert E., 3,781,004.
Koch, Sigurd: *See—*
Burker, Ulf; and Koch, Sigurd, 3,781,825.
Koehring Company, mesne: *See—*
Avis, John M., 3,780,511.
Koenders, Henricus A. A.: *See—*
Sadee, Constant P. M.; Van Koppen, Christianus W. J.; and Koenders, Henricus A. A., 3,781,256.
Koenig, Karl-Heinz: *See—*
Beutel, Peter; and Koenig, Karl-Heinz, 3,781,389.
Koenig, Ulrich: *See—*
Stange, Karl; Jenne, Helmut; and Koenig, Ulrich, 3,781,186.
Kohl, Georg: *See—*
Sennewald, Kurt; Erpenbach, Heinz; Handte, Heinz; Kohl, Georg; and Lork, Winfried, 3,781,193.
Kohler, Robert D.: *See—*
Scherf, Gerald F.; and Kohler, Robert D., 3,780,859.
Kohn, Edward M.: *See—*
Wynkoop, Raymond; and Kohn, Edward M., 3,781,198.
Koizumi, Shun: *See—*

Kometani, Yutaka; Koizumi, Shun; Suzuki, Takeshi; Nakajima, Takeaki; and Okuno, Chuzo, 3,781,258.
Kola, Rolf: *See—*
Dorr, Karl-Heinz; Grimm, Hugo; and Kola, Rolf, 3,780,499.
Kolaian, Jack H.: *See—*
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., 3,780,808.
Koland, David G.: *See—*
Westergren, George A.; Fish, Warren H.; Crooks, Stanley R.; and Koland, David G., 3,781,460.
Kolbow, Donald P., to Honeywell Inc. Manual reset for a switch device. 3,781,743, Cl. 337-118.000.
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Krivoshiev, Cueorgui Petrov; Kolev, Dimiter Christov; Tanev, Christo Yanakiev; Erinkov, Dimiter Kostadinov; Petrov, Gueorgui Slavov; Vassilev, Alexander Traykov; and Vatev, Petko Slavtchev, 3,781,554.
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Kometani, Eishi: *See—*
Aoki, Katsuo; Yatani, Kozo; Kometani, Eishi; and Izuhara, Seiji, 3,781,423.
Kometani, Yutaka; Koizumi, Shun; Suzuki, Takeshi; Nakajima, Takeaki; and Okuno, Chuzo, to Daikin Kogyo Co., Ltd. Polytetrafluoro-ethylene powder and method of preparation thereof. 3,781,258, Cl. 260-92.100.
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Kominato, Yutaka: *See—*
Kominato, Kiyoshi; and Kominato, Yutaka, 3,781,348.
Kon, Alexandr Ljudvigovich: *See—*
Rashkovich, Mikhail Pavlovich; Kon, Alexandr Ljudvigovich; Shaparev, Nikolai Konstantinovich; Shklovsky, Boris Isaakovich; and Leibovich, Grigory Abramovich, 3,781,619.
Kondis, Thomas J.; and Rolles, Rolf, to Aluminum Company of America. Irostearic acid coated, non-dusting aluminum particles. 3,781,177, Cl. 149-6.000.
Konicek, Michael G.: *See—*
Opferkuch, Robert E., Jr.; and Konicek, Michael G., 3,781,413.
Konig, Gerhard: *See—*
Schwarz, Arnulf; Konig, Gerhard; Pieloth, Manfred; and Lang, Dietmar, 3,780,770.
Konigstein, Otto: *See—*
Jenkner, Herbert; and Konigstein, Otto, 3,781,388.
Kono, Kiichi: *See—*
Watanabe, Kazuo; Kito, Yastami; Nazaki, Choji; Kono, Kiichi; Tsuzuki, Kanemitsu; and Motobayashi, Kozo, 3,780,513.
Konovalov, Leonid Vladimirovich: *See—*
Dolgov, Anatoly Vladimirovich; Konovalov, Leonid Vladimirovich; Perkis, Leib Benyaminovich; Deev, Stanislav Lvovich; Dyakov, Vitaly Evgenievich; Semenov, Alexandr Efimovich; Bauer, Evgeny Teodorovich; and Suturin, Serafim Nikolaevich, 3,780,864.
Kornrumpf, William P.: *See—*
Harnden, John D., Jr.; and Kornrumpf, William P., 3,781,503.
Kort, Walter A.; and Brand, Eugene L., to Alsco Anaconda, Inc., mesne. Thermal barrier window. 3,780,473, Cl. 49-62.000.
Koryak, William R.: *See—*
Alvino, William M.; and Koryak, William R., 3,781,237.
Kosak, John Richard, to Du Pont de Nemours, E. I., and Company. Process for purification of N-acetyl-P-aminophenol. 3,781,354, Cl. 260-562.00b.
Kotov, Viktor Anatolievich: *See—*
Kudinov, Vladimir Mikhailovich; Bushtedt, Jury Petrovich; Dudko, Daniil Andreevich; Arkhangelsky, Georgy Alexandrovich; Pogoretsky, Georgy Ivanovich; Volgin, Leonid Alexandrovich; Kotov, Viktor Anatolievich; Surnin, Boris Anatolievich; and Degtyarev, Mikhal Vasilievich, 3,780,927.
Kovacs, Jenoe: *See—*
Gulbins, Erich; Hauss, Alfred; Kieferle, Friedrich; and Kovacs, Jenoe, 3,781,243.
Kovshov, Nikolai Ivanovich: *See—*
Goroshkov, Boris Ivanovich; and Kovshov, Nikolai Ivanovich, 3,781,568.
Kowles, Joseph Edward: *See—*
Runde, Herbert Arthur; and Kowles, Joseph Edward, 3,781,576.
Kozik, Adolf Efimovich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.
Kozlowski, Theodore R.: *See—*
Domicone, Joseph J.; and Kozlowski, Theodore R., 3,781,184.
Krakow, Heinz, to Blohm & Voss AG. Method and device for welding aligned sheet metal plates together for forming a band for making spiral seam tubes. 3,781,509, Cl. 219-125.000.
Krall, Bodgan: *See—*
Goldman, Lewis S.; Jeannotte, Dexter A.; and Krall, Bodgan, 3,780,568.
Kramer, Jonathan: *See—*
Maltby, Frederick L.; and Kramer, Jonathan, 3,781,672.
Kraner, Hobart W.: *See—*
Llacer, Jorge; and Kraner, Hobart W., 3,781,612.
Krause, Erich: *See—*
Schieber, Hans; and Krause, Erich, 3,780,542.
Krauss-Maffei A.G.: *See—*
Lidl, Rolf, 3,781,159.
Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, 3,780,668.
Krauss-Maffei Aktiengesellschaft: *See—*
Burkle, Erwin; and Loebe, Felix, 3,780,995.
Krawczyk, Charles C.: *See—*
Shaffer, William E.; and Krawczyk, Charles C., 3,781,481.
Kreinik, Stephen: *See—*
Baron, Stanley N.; and Kreinik, Stephen, 3,781,849.
Krivoshiev, Cueorgui Petrov; Kolev, Dimiter Christov; Tanev, Christo Yanakiev; Erinkov, Dimiter Kostadinov; Petrov, Gueorgui Slavov; Vassilev, Alexander Traykov; and Vatev, Petko Slavtchev, to Nii Po Konservna Promishlenost. Method and apparatus for sortin tomatoes by colour. 3,781,554, Cl. 250-226.000.
Kroehler Mfg. Co.: *See—*
Pentzien, Frederick R., 3,781,060.
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Kudryavtsev, Ivan Vasilievich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.
Kuenemund, Friedrich, to Siemens Aktiengesellschaft. Piezoelectric filter having resonators formed between adjacent interference locations. 3,781,717, Cl. 333-6.000.
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Kuhn, Gerald D.; Peterson, Kenneth A.; Roeschlein, Eugene R.; Weiss, Donald C.; Weiss, Kenneth F.; and Zeph, David L., to United States of America, Navy. Solid state high speed scanning compensator switch for sonar. 3,781,776, Cl. 340-3.00r.
Kuhn, Hans-Ulrich: *See—*
Schiesterl, Gerhard; and Kuhn, Hans-Ulrich, 3,781,788.
Kuhn, Robert R. Type casting matrix and spacing. 3,780,853, Cl. 499-63.000.
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Kumagai, Hiromi: *See—*
Henmi, Nobor; and Kumagai, Hiromi, 3,781,708.
Kumaoka, Hiromu. Apparatus for automatically sprinkling liquids. 3,780,948, Cl. 239-236.000.
Kume, Toyohiko: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,781,386.
Kummerer, Karl-Heinz: *See—*
Hoehl, Bernhard; and Kummerer, Karl-Heinz, 3,780,849.
Kunert, Paul, to Siemens Aktiengesellschaft. Method and device for measuring the concentricity of the laminated stator stack of an electric machine. 3,780,441, Cl. 33-174.00q.
Kunin, Robert: *See—*
Clemens, David H.; and Kunin, Robert, 3,780,500.
Kurahashi, Yoshio: *See—*

Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,781,386.

Kuratani, Keijiro: *See—*
Shimoda, Keitaro; Kuratani, Keijiro; and Sugiura, Akira, 3,781,391.

Kurauchi, Noritaka: *See—*
Nakahara, Tsuneo; Kurauchi, Noritaka; Kitani, Hiroshi; Takemura, Kenji; and Kuroda, Masataka, 3,781,687.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakao, Masaaki; Shiiki, Zenya; and Amagi, Yasuo, 3,781,170.

Kuriger, William L.: *See—*
United States of America, National Aeronautics and Space Administration, 3,781,111.

Kurita, Masahiro; and Ota, Tomio, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 3,780,521, Cl. 58-28.00a.

Kuroda, Masataka: *See—*
Nakahara, Tsuneo; Kurauchi, Noritaka; Kitani, Hiroshi; Takemura, Kenji; and Kuroda, Masataka, 3,781,687.

Kurosaki, Mitsugi: *See—*
Oguma, Masaaki; and Kurosaki, Mitsugi, 3,781,048.

Kussy, Frank W.: *See—*
DiMarco, Bernard; Kussy, Frank W.; and Swain, Kenneth W., 3,781,607.

Kusunoki, Yasuo; Okazaki, Hiroshi; Sato, Yoshinori; and Sano, Eiichi, to Yawata Chemical Industry Co., Ltd. Synthesis of pyridine bases from olefins. 3,781,292, Cl. 260-290.00p.

Kyle, Robert C.: *See—*
Janssen, Edward W.; and Kyle, Robert C., 3,781,231.

Kyranakis, Gus J., 10% to Lee, Raymond, Organization, Inc., The. Construction plug. 3,781,756, Cl. 339-14.0rp.

La Fleur, Bob A.; and O'Brien, Robert J., to Eastman Kodak Company. Template for thin layer chromatography samples. 3,780,700, Cl. 118-503.000.

La Mere Industries, Inc.: *See—*
Frankel, Donald P., 3,780,677.

La Mesa Industries, Inc.: *See—*
Dashew, Stephen S., 3,780,977.

Labana, Santokh S.: *See—*
Theodore, Ares N.; and Labana, Santokh S., 3,781,379.

Labana, Santokh S.; and Chang, Yun Feng, to Ford Motor Company. Powder coating compositions containing glycidyl ester copolymers, carboxy terminated polymeric crosslinking agents, and flow control agents. 3,781,380, Cl. 260-836.000.

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Lagerstrom, Robert C.: *See—*
Harbeck, Martin B.; and Lagerstrom, Robert C., 3,780,397.

Lahr, Jack L.: *See—*
Swoboda, Maxmillian Augustus, 3,781,479.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Darredeau, Bernard, 3,780,535.

Laliberte, George A.: *See—*
Keich, John D.; and Laliberte, George A., 3,781,055.

Lambell, Anthony John: *See—*
Fuller, Keith Lewis; and Lambell, Anthony John, 3,781,900.

Lambert, Milton. Method and apparatus for generating fire-fighting foam. 3,780,812, Cl. 169-15.000.

Lambiris, Sotiris: *See—*
Dooley, Philip G.; and Lambiris, Sotiris, 3,780,530.

Landrum, Leon L.; and Holder, Robert L., to Esquire, Inc. Light support. 3,781,539, Cl. 240-52.00r.

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Laney, Barton H., to Searle, G. D., & Co. Probability based selective pulse height discrimination in scintillation detectors. 3,781,544, Cl. 250-362.000.

Lang, Dietmar: *See—*
Schwarz, Arnulf; Konig, Gerhard; Pieloth, Manfred; and Lang, Dietmar, 3,780,770.

Langlois, Jacques: *See—*
Billarani, Patrick; Goubeau, Robert; and Langlois, Jacques, 3,780,479.

Langstroth, Theodore A., to Sterling Drug Inc. Process for comminuting fluorescent whitening agents and compositions obtained thereby. 3,781,215, Cl. 252-301.30w.

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Berkovskaya, Karina Fridrikhovna; Lapteva, Nina Vitalievna; and Podlaskin, Boris Georgievich, 3,781,553.

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Naeseth, Manley H.; and Larrimore, Herbert, 3,781,536.

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Lasko, John A.; and Horwinski, Elwood R. Pipe joint seal. 3,781,040, Cl. 285-110.000.

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Hanes, James Gordon, Jr.; King, James Frank; Lathery, Willie M.; Beamon, Howard L.; and Newlen, Kenneth W., 3,780,679.

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Latinen, George A, 3,781,132.

Laufer, Robert J., to Continental Oil Company. Preparation of 4-mercaptophenols. 3,781,367, Cl. 260-609.00d.

Lawrence, James F., Jr. Variable resistance control using mercury contact. 3,781,753, Cl. 338-151.000.

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Layman, Melvin M.: *See—*
Jensen, Hans A.; and Layman, Melvin M., 3,780,486.

Lazarow, Seldan A.: *See—*
Curtiss, Robert H.; Holzman, Richard; and Lazarow, Seldan A., 3,780,648.

Lear Siegler, Inc.: *See—*
Elkins, Bobby L., 3,780,876.

Lederer, Milton Ronald, Jr. Alarm system. 3,781,804, Cl. 340-147.0md.

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Ahearn, Thomas P.; Capowski, Robert S.; Christensen, Neal T.; Gannon, Patrick M.; Lee, Arlin E.; and Liptay, John S., 3,781,808.

Lee, Lloyd: *See—*
Farha, Bahia Rashid; and Lee, Lloyd, 3,780,435.

Lee, Raymond, Organization, Inc.: *See—*
Skaggs, Richard, 3,780,414.

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Kyranakis, Gus J., 3,781,756.

Leenhoots, Donald D., to Eastman Kodak Company. Apparatus for cleaning a residual image from a photosensitive member. 3,780,391, Cl. 15-1.500.

Lefevre, Georges; and Menard, Jean Paul, to Societe d'Etudes Recherches et Constructions Electroniques (S.E.R.C.E.L.). Electronic circuit for predetermining the amplitude of samples of analogue signals. 3,781,694, Cl. 328-150.000.

Leghorn, George R. Continuous centrifugal tube casting apparatus using a liquid mold. 3,781,158, Cl. 425-435.000.

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Leibinsoh, Saul. Non-gravitational infusion set. 3,780,732, Cl. 128-214.00f.

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Rashkovich, Mikhail Pavlovich; Kon, Alexandr Ljudvigovich; Shaparev, Nikolai Konstantinovich; Shklovsky, Boris Isaakovich; and Leibovich, Grigory Abramovich, 3,781,619.

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Leitz, Ernst, G.m.b.H.: *See—*
Leitz, Ludwig; Heitmann, Knut; and Schneider, Eckart, 3,781,110.

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Callahan, William H.; and Horvath, Stephen I., 3,780,909.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Hansch, Theodor W.; and Varsanyi, Frank L., 3,781,700.

Lepinay, Gerard: *See—*
Heiniger, Wilfred; and Lepinay, Gerard, 3,781,098.

Lerner, George: *See—*
Ellman, Julius; and Lerner, George, 3,781,015.

Lerner, Martin L.: *See—*
Dietch, Leonard; and Lerner, Martin L., 3,781,076.

Lester, David, to Quatek, Inc. Micro-organism control composition and dust cloth therewith. 3,780,392, Cl. 15-104.930.

Levin, Berton P., to Sierracin Corporation, The. Edge improvement for window with electrically conductive layer. 3,781,524, Cl. 219-522.000.

Levina, Tatyana Abramovna; Serkh, Mikhail Borisovich; and Guzynin, Ivan Georgievich. Flue gas dew point temperature transducer. 3,780,564, Cl. 73-17.00a.

Levitt, Semond, to Gilbert Flexi-Van Corporation. Freight container transfer mechanism. 3,780,877, Cl. 212-8.00b.

Levy, Robert E.: *See—*
Harnstone, Leonard A.; Levy, Robert E.; Morris, Stanley M.; Lopez, Alfredo M.; Mosler, Henry A.; and Bartman, Robert V., 3,781,533.

Lewicki, George W.: *See—*
United States of America, National Aeronautics and Space Administration, 3,781,549.

Lewis, Geoffrey Arthur, to Lucas, Joseph, (Industries) Limited. Control apparatus for a gas turbine engine. 3,780,527, Cl. 60-39.16r.

Lewis, Ian Edward: *See—*
Andrews, Barry Stewart; Fitzgerald, Desmond Elwyn; and Lewis, Ian Edward, 3,781,001.

Lewis, John R., to Harnessed Energies, Inc. Fluid level monitoring system. 3,781,858, Cl. 340-244.00a.

Lian, Kenneth T.: *See—*
Long, Willis F.; and Lian, Kenneth T., 3,781,606.

Liburdi, Frank A. Electrical safety block. 3,781,913, Cl. 389-37.000.

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Batsch, Helmut; Jahnel, Benno; Weinz, Ernst August; Berger, Wolfgang; and Dickopp, Gerhard, 3,781,020.
Hoehl, Bernhard; and Kummerer, Karl-Heinz, 3,780,849.

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Hardy, William C.; and Lichte, Henry P., Jr., 3,780,803.

Lidl, Rolf, to Krauss-Maffei A.G. Counterbalanced mount for separable mold. 3,781,159, Cl. 425-450.000.

Liechti, Peter: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,781,278.

Light, Douglas J. N., to Pollution Control Systems (International) Limited. Liquid filter. 3,780,863, Cl. 210-97.000.

Lilienthal, Alfred J.; Johnson, Theodore F.; Petri, William E., Jr.; and Gilbert, Charles E., Jr., to Cincinnati Gilbert Machine Tool Co. Tool changer. 3,780,423, Cl. 29-568.000.

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Fuller, Ray W.; and Molloy, Bryan B., 3,781,443.

Lin, Ping-Wha. Air pollution control. 3,781,408, Cl. 423-244.000.

Lincoln, Frank H., Jr., to Upjohn Company, The. 15-Methoxy-$PGF_2\alpha$. 3,781,325, Cl. 260-468.00d.

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Joeckel, Stanley V., 3,781,525.

Lind, Archie L.; and Cobb, Mack R., to Ball Corporation. Apparatus and method of forming an article displaying a self-maintaining and self-monitoring quality feature. 3,780,551, Cl. 72-4.000.

Lindberg, Allen W., to ACF Industries, Incorporated. Electronic fuel injection system. 3,780,711, Cl. 123-32.0ea.

Linde Aktiengesellschaft: *See—*
Hildebrandt, Ullrich, 3,781,455.

Linder, Henry, to Beatrice Foods Co., mesne. Reflector mount for spoked wheel. 3,781,082, Cl. 350-99.000.

Lindner, Ernst: *See—*
Haede, Werner; Stache, Ulrich; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,781,269.

Lindstrand, Gary L.: *See—*
Allison, Rudolph L.; and Lindstrand, Gary L., 3,780,419.

Lindstrom, Bert A., to Elco Industries, Inc. Method of manufacturing a self-drilling and self-tapping fastener. 3,780,389, Cl. 10-10.00r.

Link, Gustav A. Automatic timing of watering control systems. 3,780,766, Cl. 137-624.200.

Linner, Leslie Richard, to Honeywell Inc. Radiation detector. 3,781,563, Cl. 250-362.000.

Linz, Georg, and Sommer, Lothar. Ball-point pens. 3,781,123, Cl. 401-216.000.

Liptay, John S.: *See—*
Ahearn, Thomas P.; Capowski, Robert S.; Christensen, Neal T.; Gannon, Patrick M.; Lee, Arlin E.; and Liptay, John S., 3,781,808.

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Deubel, Reinhold; Diery, Helmut; Klinner, Wolfgang; List, Karl-Hermann; and Uhrig, Heinz, 3,781,169.

Litronix, Inc.: *See—*
Kingsbury, Richard F., 3,781,584.

Litt, Morton H.: *See—*
Anello, Louis G.; Sweeney, Richard F.; and Litt, Morton H., 3,781,370.

Little, Arthur D., Inc.: *See—*
Glaser, Peter E., 3,781,647.

Liu, Han, to Air Preheater Company, The. Liquid incinerator. 3,780,674, Cl. 110-8.00r.

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Sokolsky, Dmitry Vladimirovich; Zakumbaeva, Gaukhar Daulenovna; Zhubanov, Kair Akhmetovich; Mazin, Evgeny Petrovich; Scheolov, Nikolai Illarionovich; Fokin, Evgeny Pavlovich; and Livanov, Vladimir Arkadievich, 3,781,227.

Llacer, Jorge; and Kraner, Hobart W., to United States of America, Atomic Energy Commission. Method of improving high-purity germanium radiation detectors. 3,781,612, Cl. 317-234.00r.

Lloyd, James R.: *See—*
Ayers, Robert C., Jr.; Bayless, Jack H.; Graham, John W.; Lloyd, James R.; Loth, William D.; and Williams, Robert E., 3,780,809.

Lobowitz, Hyman R., to TRW Inc. Polyamide-imides and precursors thereof. 3,781,249, Cl. 260-78.0tf.

LoCicero, Joseph: *See—*
Babbitt, Richard W.; and LoCicero, Joseph, 3,780,696.

Lockard, Joseph Larue: *See—*
Feeser, William Coover; Bosland, Cornelius William; Lockard, Joseph Larue; and Mummey, Dale Brice, 3,781,763.

Locke, Walter Frederick; Watson, Arthur; and Edwards, Thomas Philip, to F.P.T. Industries Limited. Couplings. 3,781,039, Cl. 285-1.000.

Lockwood Corporation: *See—*
Ririe, Max H.; Roland, Murray C.; and Olson, Rich, 3,780,947.

Lockwood, John J., to GTE Sylvania Incorporated. Flexible helical spring antenna. 3,781,899, Cl. 343-880.000.

Loebe, Felix: *See—*
Burkle, Erwin; and Loebe, Felix, 3,780,995.

Loeck, Lawrence R. Fishing device. 3,780,467, Cl. 43-48.087.

Loewe Opta GmbH: *See—*
Geiger, Erich, 3,781,608.

Lofredo, Antony; and Biava, Domenick R., to Airco, Inc., mesne. Liquefaction of natural gas with product used as absorber purge. 3,780,534, Cl. 62-28.000.

Lohoff, Virgil Allan, to Memorex Corporation. Magnetic coating composition. 3,781,210, Cl. 252-62.540.

Lohoff, Virgil Allan, to Memorex Corporation. Magnetic coating composition. 3,781,211, Cl. 252-62.540.

Lohr, Raymond J.; Smith, James; and Bennett, Lowell L., to Marx, Louis, & Co., Inc., mesne. Roller coaster. 3,780,665, Cl. 104-69.000.

Lohse, Hans-Heinrich, to Contrans Gesellschaft fur Containerwerkela m.b.H. Energy supply unit for freight containers. 3,781,139, Cl. 417-313.000.

Lombardi, Eugene H.: *See—*
Ludt, William C.; and Lombardi, Eugene H., 3,781,660.

Lombardi, Louis J.; Coyne, Roy J.; and Green, Charles E. Electrical substrates. 3,781,275, Cl. 260-227.000.

Lombardino, Joseph G., to Pfizer Inc. Certain dibenzo(b,f)thiepin(4,5-d) imidazoles. 3,781,294, Cl. 260-294.80a.

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McLeod, John W.; Gray, Laverne E.; and Booth, John F., 3,780,855.

Long, William P.; Sawyer, Walter M.; and Arias, Lionel J. De Paula, to Foster Wheeler Corporation. Erosion resistent sensing device. 3,780,584, Cl. 73-349.000.

Long, Willis F.; and Lian, Kenneth T., to Hughes Aircraft Company. Circuit breaker and method. 3,781,606, Cl. 317-11.00a.

Longenecker, Ernst A. Trailer hitch lock. 3,780,546, Cl. 70-58.000.

Loomba, Yogendra S.: *See—*
Stephenson, Robert L.; and Loomba, Yogendra S., 3,781,497.

Loop A Line, Inc.: *See—*
McSahee, Welbourne D., 3,780,690.

Loper, Edward J., Jr.: *See—*
Coleman, Richard J.; Foster, David J.; Loper, Edward J., Jr.; and Sundeen, Arthur R., 3,780,593.

Lopez, Alfredo M.: *See—*
Harnstone, Leonard A.; Levy, Robert E.; Morris, Stanley M.; Lopez, Alfredo M.; Mosler, Henry A.; and Bartman, Robert V., 3,781,533.

Lord, Michael Robert, to International Standard Electric Corporation. Loop current detector. 3,781,571, Cl. 307-235.00r.

Lorenzen, Gunter: *See—*
Firnig, Fritz; Bettin, Hubertus; and Lorenzen, Gunter, 3,781,904.

Lork, Winfried: *See—*
Sennewald, Kurt; Erpenbach, Heinz; Handte, Heinz; Kohl, Georg; and Lork, Winfried, 3,781,193.

Loro, Alberto, to Microsystems International Limited. Microelectronic component array. 3,781,611, Cl. 317-101.00a.

Loth, William D.: *See—*
Ayers, Robert C., Jr.; Bayless, Jack H.; Graham, John W.; Lloyd, James R.; Loth, William D.; and Williams, Robert E., 3,780,809.

Lottridge, Neil M.; and Momsen, Marc F., to General Motors Corporation. Disc brake assembly. 3,780,834, Cl. 188-18.00a.

Lowery, Dennis J.; and Merchant, Robert E. Written message receiving and signaling holder. 3,781,844, Cl. 340-281.000.

Lowrance, Darrell J., to Lowrance Electronics, Inc. Apparatus for providing an indication of the depth of objects in water. 3,781,777, Cl. 340-3.00c.

Lowrance Electronics, Inc.: *See—*
Lowrance, Darrell J., 3,781,777.

Lubowitz, Hyman R., to TRW Inc. Polyimide molding powders. 3,781,240, Cl. 260-37.0nt.

Lucas, Joseph, (Industries) Limited: *See—*
Lewis, Geoffrey Arthur, 3,780,527.
Thornley, Derek, 3,780,602.
Williams, Malcolm; and Cockshott, Charles Peter, 3,781,580.

Ludt, William C.; and Lombardi, Eugene H., to Ethyl Corporation. Conducting meter for measuring distillate hydrocarbon fuels. 3,781,660, Cl. 324-30.00r.

Ludwig Industries: *See—*
Ludwig, William F., Jr., 3,780,613.

Ludwig, William F., Jr., to Ludwig Industries. Bass drum suspension. 3,780,613, Cl. 84-421.000.

Lukach, Jury Efimovich; Senatos, Vladimir Alexeevich; and Petukhov, Arkady Demyanovich. Disk extruder for processing polymeric materials. 3,781,153, Cl. 425-207.000.

Lukacs & Jacoby Associates: *See—*
Lukacs, Michel J.; and Jacoby, Ian H., 3,780,935.

Lukacs, Michel J.; and Jacoby, Ian H., to Lukacs & Jacoby Associates. Serum separating method. 3,780,935, Cl. 233-1.00a.

Lumby, Donovan H.; and Sofie, Walter F., to Graco Inc. Force transmitting apparatus with a single load cell. 3,780,818, Cl. 177-256.000.

Lund, Raymond: *See—*
McLaren, Edwin C.; and Lund, Raymond, 3,780,932.

Lundberg, Derek Anthony, to Elliott Brothers (London) Limited. Neutron beam collimators. 3,781,564, Cl. 250-505.000.

Luria, Norman G.: *See—*
Funk, Forrest E.; Oda, Richard T.; Luria, Norman G.; and Margherone, Edward G., 3,781,453.

Lustig, Claude D.; and Baird, Albert W., III, to Sperry Rand Corporation. Gas discharge display apparatus. 3,781,587, Cl. 313-217.000.

Lutz, Albert William, to American Cyanamid Company. Certain 6-trifluoromethylcytosines and thiocytosines, their synthesis, and their use in the synthesis of uracils and thiouracils. 3,781,324, Cl. 260-465.00d.

Ly, Manuel G.: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,781,415.

Lynch, James Edward, to AMP Incorporated. Method of making an electrical connection using a coined post with solder stripe. 3,780,433, Cl. 29-628.000.

Lysle, Gordon, to Lysle, Gordon, Incorporated. Optical apparatus for producing and/or using photoconductive film having a specular surface selectively deformed in image areas thereof. 3,781,106, Cl. 355-9.000.

Lysle, Gordon, Incorporated: *See—*
Lysle, Gordon, 3,781,106.

M & T Chemicals Inc.: *See—*
Gitlitz, Melvin H., 3,781,316.

Mabuchi, Hiroshi: *See—*
Kato, Yoshiaki; and Mabuchi, Hiroshi, 3,780,518.

Mac Kay, James D.: *See—*
Kahwati, Ghassan N.; Gade, John N.; Mac Kay, James D.; and Druzynski, Conrad J., 3,780,961.

Maccaferri, Gino. Additive composition for the combustion air in internal combustion engines. 3,781,171, Cl. 44-1.00r.

Machinenfabrik H. Geiger: *See—*
Botsch, Bertram, 3,780,998.

Machner, Peter: *See—*
Holzgruber, Wolfgang; Machner, Peter; Schneihofer, Adolf; Kleinhagauer, Otmar; and Cerwenka, Peter, 3,781,448.

Mack, Ingham A. G.: *See—*
White, Marvin H.; McCann, David H., Jr.; Mack, Ingham A. G.; and Blaha, Franklyn C., 3,781,574.

Macrander, Max S., to GTE Automatic Electirc Laboratories, Incorporated. Path selection technique for electronic switching network. 3,781,484, Cl. 179-18.0gf.

Madgy, Milton H. Orthopedic foot appliance. 3,780,742, Cl. 128-588.000.

Maeder, Erwin: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,781,278.

Maffett, William C. Fishing tackle box. 3,780,468, Cl. 43-54.05r.

Magnetech Industries, Inc.: *See—*
Rozelle, Donald S., 3,781,738.

Magnoni, Franco: *See—*
Siclari, Francesco; Magnoni, Franco; and Morandi, Battista, 3,781,213.

Maguire, Mary Helen; Gough, Geoffrey; and Michal, Frank, to University of Sydney, The. 2-Methylthioadenosine-5'-monophosphate. 3,781,274, Cl. 260-211.50r.

Maidens, John Eric; Hartley, Kenneth Alison; and Carrotte, Frederick Henry, to Courtaulds Limited. Patterning devices for knitting machines. 3,780,540, Cl. 66-50.00b.

Maier, Howard A., to American Optical Corporation. Multiple bullet and cartridge mount for forensic microscope. 3,780,614, Cl. 86-1.00r.

Malcolm, Robert La Verne. *See—*
Bichel, Darwin Carl; and Malcolm, Robert La Verne, 3,780,851.

Malec, Jerry P. Airless spray gun. 3,780,953, Cl. 239-526.000.

Malec, Robert E.: *See—*
Plonsker, Larry; Perilstein, Warren L.; and Malec, Robert E., 3,781,363.

Maley, Gerald A.: *See—*
Henle, Robert A.; Ho, Irving T.; Jen, Teh-Sen; and Maley, Gerald A., 3,781,793.

Mallinckrodt Chemical Works: *See—*
Wiegert, Philip E., 3,781,338.

Mallory, H. Dean, to United States of America, Navy. High energy slurry explosives. 3,780,576, Cl. 73-167.000.

Malloy, Richard J.; and Hitchcock, Robert D., to United States of America, Navy. Rotating stereo sonar mapping and positioning system. 3,781,775, Cl. 340-3.00r.

Malott, Bernard: *See—*
Webb, George; and Malott, Bernard, 3,780,660.

Maltby, Frederick L.; and Kramer, Jonathan, to Drexelbrook Controls, Inc. Continuous condition measuring system. 3,781,672, Cl. 324-61.00r.

Manacini, Lloyd; and Ysteboe, Howard T., to Du Pont de Nemours, E. I., and Company. Connector block. 3,781,760, Cl. 339-59.00m.

Mancini, Lloyd, to Du Pont de Nemours, E. I., and Company. Circuit board socket. 3,781,770, Cl. 339-259.00r.

Mankowsky, Vincent J.; and Ceroke, Clarence J., to U.S. Industries, Inc. Prefill valve for molding machines. 3,781,160, Cl. 425-450.000.

Mann, John Brien, to Metropolitan Tool and Products Limited. Cable reeling drums. 3,780,538, Cl. 64-30.00c.

Manning Environmental Corporation, mesne: *See—*
Tullis, Reuben C., 3,781,624.

Manning, Harold E., to Petro-Tex Chemical Corporation. Dehydrogenation process and catalyst. 3,781,376, Cl. 260-683.300.

Mannix Construction, Inc.: *See—*
Holley, John D.; and Peppin, Richard A., 3,780,664.

Manor, Richard C.; and Osowski, Henry W. Simulated dentition. 3,780,439, Cl. 32-71.000.

Manuel, Larry N. Camper tie down arrangement. 3,781,057, Cl. 296-23.0mc.

Marathon Oil Company: *See—*
Balch, Alfred H., 3,781,785.

Marco, Gino J.; and Grainger, Robert B., to Monsanto Company. Animal feed compositions and methods. 3,781,440, Cl. 424-300.000.

Margherone, Edward G.: *See—*
Funk, Forrest E.; Oda, Richard T.; Luria, Norman G.; and Margherone, Edward G., 3,781,453.

Marie, Gerard Joseph Marcel: *See—*
Donjon, Jacques; and Marie, Gerard Joseph Marcel, 3,781,469.

Maringer, Robert; and Cordelle, Claude, to Villeroy & Boch S.A. Mold mounting for making ceramic bathroom pieces. 3,781,157, Cl. 425-435.000.

Marini, Roberto, to Societe Italiana Telecommunicazioni Siemens S.p.A. Stabilized direct-current converter responsive to off-period current. 3,781,653, Cl. 323-17.000.

Mark Systems, Inc.: *See—*
Gross, Richard A., 3,781,121.

Marley Company, The: *See—*
Fordyce, Homer E., 3,780,999.

Marsh, Richard L.: *See—*
Dodson, Merritt E.; Marsh, Richard L.; and Masters, Frank C., 3,781,067.

Marsh, Robert W.; and Mooers, Alden J., to Control Data Corporation. Position indicating system for indicating deangular position of a continuously rotating member utilizing counter means. 3,781,114, Cl. 356-152.000.

Marshall, Howard D.; Gordon, Gary B.; Pipkin, Jesse E.; and Adler, Robin, to Hewlett-Packard Company. Tristate pulse generator for producing consecutive pair of pulses. 3,781,689, Cl. 328-61.000.

Marshall, John J., to Aicheles Associates, Inc. Trailer brake control system. 3,780,832, Cl. 188-3.00r.

Marshall, Robert Moore; and Dardoufas, Kimon Constantine, to Allied Chemical Corporation. Spin finish for polyamide yarn processed at high temperature. 3,781,202, Cl. 252-8.700.

Martell, Arthur E.: *See—*
Greco, Carl C.; Mirviss, Stanley B.; and Martell, Arthur E., 3,781,296.

Martens, Ernst: *See—*
Herbert, Denys; and Martens, Ernst, 3,781,154.

Martin, Henry; and Drabek, Jozef. Control of insects, nematodes and acarinae with phosphonyl-carbamyloxy-phosphonates. 3,781,425, Cl. 424-204.000.

Martin, James M.; and Thomas, Michael D., to Gillette Company, The. Hair steamer. 3,781,519, Cl. 219-273.000.

Martin, John Waldo: *See—*
Rosenbaum, Erik; and Martin, John Waldo, 3,781,569.

Martinez-Manzor, Manuel. Catheter. 3,780,733, Cl. 128-215.000.

Martonair Limited: *See—*
Webb, Frank Alan, 3,780,624.

Maruyama, Dennis T.: *See—*
Dion, C. Norman; and Maruyama, Dennis T., 3,781,835.

Maruyama, Isamo: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Akatsu, Mitsuhiro; Maruyama, Isamo; and Izumi, Takahiro, 3,781,299.

Marvin, Edgar S.: *See—*
Jenkins, Gerald L.; Jungjohann, Vernon H.; and Marvin, Edgar S., 3,781,100.

Marwede, Gunter: *See—*
Pampus, Gottfried; Schon, Nikolaus; Witte, Josef; and Marwede, Gunter, 3,781,257.

Marx, Louis, & Co., Inc., mesne: *See—*
Lohr, Raymond J.; Smith, James; and Bennett, Lowell L., 3,780,665.

Maryatt, Michael B.; and McCoy, James M., to Avco Corporation, mesne. Magnetic head transducer. 3,781,486, Cl. 179-100.20c.

Maserjian, Joseph: *See—*
United States of America, National Aeronautics and Space Administration, 3,781,549.

Mason, Edwin E.: *See—*
Fretwell, Richard D.; Azbell, James W.; and Mason, Edwin E., 3,781,817.

Masoneilan International, Inc.: *See—*
Borg, Karl Stanley; and Boger, Henry W., 3,780,767.

Massachusetts Institute of Technology: *See—*
Smith, Joseph L., Jr.; Thullen, Philip; and Kirtley, James L., Jr., 3,781,578.

Masters, Frank C.: *See—*
Dodson, Merritt E.; Marsh, Richard L.; and Masters, Frank C., 3,781,067.

Mastic Corporation: *See—*
Mattes, Lee Herbert, 3,780,483.

Mathis, Ronald D.; and Guillory, Jack P., to Phillips Petroleum Company. Light stabilized polypropylene containing a hindered phenol a phosphite and a benzotriazole. 3,781,242, Cl. 260-45.70p.

Matkovsky, Petr E.: *See—*
Shilov, Alexandr E.; Dyachkovsky, Fridrikh S.; Chirkov, Nikolai Mikhailovich; Matkovsky, Petr E.; Aronovich, Khaim-Mordkhe; Beikhold, Alina A.; and Russian, Ljudmila, 3,781,220.

Matson, Robert P. Structural panel. 3,780,485, Cl. 52-665.000.

Matsuda, Tsutomu; and Takagi, Makoto, to Nippon Air Brake Co., Ltd., The. Automatic speed control means for a marine engine. 3,780,755, Cl. 137-110.000.

Matsumoto, Takao. Logarithmic recording system. 3,781,679, Cl. 324-115.000.

Matsumoto, Teruo, to Epoch Company, Ltd. Basketball game amusement device. 3,781,010, Cl. 273-85.00c.

Matsumura, Hisashi; Samejima, Tadanori; Orito, Hiroshi; and Ochiari, Hisashi, to Honshu Paper Company Limited. Apparatus for producing multilayer fibrous structures. 3,781,150, Cl. 425-80.000.

Matsuo, Noriaki: *See—*
Chono, Masazumi; Nakajima, Hitoshi; Taguchi, Masayoshi; and Matsuo, Noriaki, 3,781,336.

Matsushita Electric Industrial Co., Ltd.: *See—*
Nakajima, Takatsugu, 3,781,450.
Oka, Shunzo; and Nishioka, Matsuo, 3,781,752.
Tonari, Hirohiko, 3,780,594.
Tsukamoto, Masahide; and Ohtsuka, Tetsuro, 3,781,088.

Matsushita Electric Works, Ltd.: *See—*
Inoue, Hiromitsu; Okamoto, Shinsuke; Mori, Hirokazu; and Ohasi, Hirosi, 3,781,772.

Matsushita Graphic Communication Systems, Inc.: *See—*
Nakano, Ryunosuke; and Fujiyama, Yoshiyuki, 3,780,914.

Mattern, John, to Westinghouse Electric Corporation. Analog to digital converter. 3,781,871, Cl. 340-347.0ad.

Mattes, Lee Herbert, to Mastic Corporation. Building siding unit with interlocking backing board and outer panel. 3,780,483, Cl. 52-550.000.

Matthews, Ralph W.; and Schott, Robert E., to Allis-Chalmers Corporation. Hydraulic valve. 3,780,762, Cl. 137-596.000.

Matzen, Walter T.: *See—*
Steblin, Robert A.; Spence, Hilton W.; and Matzen, Walter T., 3,781,680.

Maue, Marilyn J. Timepiece including a color cylinder and another time indicator displayed on a different plane. 3,780,526, Cl. 58-126.00r.

Maurin, Jean: *See—*
Weisang, Joseph Edouard; Szabo, Georges; and Maurin, Jean, 3,781,222.

Mauritz, Frank A. Spring clip. 3,780,403, Cl. 24-261.00d.

Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, to Centre Europeen de Recherches Mauvernay. Coronaro-dilating and antianoxemic medicines. 3,781,432, Cl. 424-250.000.

May, Francis A., to Consolidation Coal Company. Insulated cable splice and method for making the same. 3,781,458, Cl. 174-84.00c.

May, Frederick T., to International Business Machines Corporation. Machine log system. 3,781,813, Cl. 340-172.500.

Mayer, George L., Jr.; and Dobbins, David L., to Coded Signatures, Inc. Data encoding and decoding apparatus and method. 3,781,109, Cl. 355-52.000.

Mayer, Oscar, & Co., Inc.: *See—*
Jensen, Hans A.; and Layman, Melvin M., 3,780,486.

Mazin, Evgeny Petrovich: *See—*
Sokolsky, Dmitry Vladimirovich; Zakumbaeva, Gaukhar Daulenovna; Zhubanov, Kair Akhmetovich; Mazin, Evgeny Petrovich; Scheolov, Nikolai Illarionovich; Fokin, Evgeny Pavlovich; and Livanov, Vladimir Arkadievich, 3,781,227.

Mazzone, Charles P. Process and apparatus for texturizing yarn. 3,780,404, Cl. 28-1.300.

McCaffery, Dennis. Anti-spill container. 3,781,164, Cl. 431-291.000.

McCaldin, James: *See—*
Jenkins, Robert; Mead, Carver A.; and McCaldin, James, 3,780,427.

McCann, David H., Jr.: *See—*
White, Marvin H.; McCann, David H., Jr.; Mack, Ingham A. G.; and Blaha, Franklyn C., 3,781,574.

McCarthy, Charles: *See—*
Nishi, Hiroshi H.; and McCarthy, Charles, 3,780,992.

McCarthy, John Felix: *See—*
Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, 3,781,355.

McClure, Benton J.: *See—*
Shear, Wayne G.; Spratt, Brendan J.; and McClure, Benton J., 3,781,803.

McCollum, James H., Jr., to Collins Radio Company. N-way analog signal fader. 3,781,912, Cl. 330-51.000.

McComb, Richard C., to Veeder Industries Inc. Rotary electromagnetic indicator. 3,781,876, Cl. 340-378.0mw.

McConnell, Robert G.: *See—*
Abramson, Paul B.; and McConnell, Robert G., 3,781,529.

McCoy, James M.: *See—*
Maryatt, Michael B.; and McCoy, James M., 3,781,486.

McCreery, James F., to Kennametal Inc., Cutting Tool. 3,780,408, Cl. 29-96.000.

McDonald, James C., Jr. Ship hull construction. 3,780,687, Cl. 114-41.000.

McDonnell, Robert William; and Win, Maung Hla, to Colgate-Palmolive Company. Laundry product containing enzyme. 3,781,228, Cl. 252-539.000.

McErlane, James E.: *See—*
Ambrose, William J.; and McErlane, James E., 3,780,984.

McFarlan, A. I., Company Incorporated: *See—*
Blackwell, Sam M., 3,780,941.

McGee, John K.: *See—*
Phipps, Willis M.; Holbert, Marvin L., Jr.; and McGee, John K., 3,780,802.

McGill, Robert W.; and Painter, P. Eric, to A-T-O, Inc. Film shaping apparatus. 3,780,628, Cl. 93-82.000.

McGovern, Harold Joseph, Jr.; and Granja, Louis Albert, to United Brands Company. Variable-length conveyor. 3,780,843, Cl. 193-35.0tc.

McGovern, Terrence L.: *See—*
Osborne, Eugene F.; and McGovern, Terrence L., 3,781,706.

McGuire, Stephen E., to Continental Oil Company. Alkyl phthalic acid compounds. 3,781,340, Cl. 260-515.00p.

McKee, Arthur G., & Company: *See—*
Glover, Warren E., 3,780,890.

McKerreghan, Michael H., to Texas Instruments, Incorporated. Glass dual-in-line header. 3,781,457, Cl. 174-52.00s.

McKinney, Joel D.: *See—*
Bryson, Millard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., 3,781,197.

McLaren, Edwin C.; and Lund, Raymond, to Hoerner-Waldorf Corporation. One piece reclosable carton. 3,780,932, Cl. 229-37.00r.

McLeod, John W.; Gray, Laverne E.; and Booth, John F., to Lone Star Container Corporation. Winding board. 3,780,855, Cl. 206-50.000.

McMahon, Maurice T., Jr., to International Business Machines Corporation. AC performance test for large scale integrated circuit chips. 3,781,670, Cl. 324-57.00r.

McMurtry, David Roberts, to Rolls-Royce Limited. Variable pitch rotary blading. 3,781,131, Cl. 416-155.000.

McSahee, Welbourne D., to Loop A Line, Inc. Line-post couplings and marine mooring-towing devices. 3,780,690, Cl. 114-218.000.

McSwiggin, James L., to Proctor & Gamble Company, The. Sliding pallet article sorter. 3,780,850, Cl. 198-31.0ac.

Mead, Carver A.: *See—*
Jenkins, Robert; Mead, Carver A.; and McCaldin, James, 3,780,427.

Mead Corporation, The: *See—*
Werner, Charles E., 3,780,396.

Meagher, Thomas, to Xerox Corporation. Constant current biasing transfer system. 3,781,105, Cl. 355-3.000.

Medi-Dise, Inc.: *See—*
Braverman, Milton, 3,780,856.

Mefina S.A.: *See—*
Fresard, Marcel, 3,781,075.

Meier, Johann Hans, to International Business Machines Corporation. Print hammer with moving coil. 3,780,650, Cl. 101-93.00c.

Meier, Udo: *See—*
Mokrytzki, Boris; and Meier, Udo, 3,781,615.

Meininger, Fritz; and Fuchs, Hermann, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for preparing navy-blue and grey 1:2 chromium and cobalt complex azodyestuff mixtures for natural and synthetic polyamide and polyurethae fibres. 3,781,168, Cl. 8-26.000.

Meininger, Fritz; and Springer, Hartmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Water-soluble anthraquinone dyestuffs. 3,781,310, Cl. 260-374.000.

Melead, James J.; and Wentworth, William P., to Beloit Corporation. Reversible coater. 3,780,697, Cl. 118-65.000.

Melle-Benzons: *See—*
Gobron, Georges; and Pipon, Robert, 3,781,373.

Memorex Corporation: *See—*
Lohoff, Virgil Allan, 3,781,210.
Lohoff, Virgil Allan, 3,781,211.

Memory Corporation: *See—*
Dion, C. Norman; and Maruyama, Dennis T., 3,781,835.

Menard, Jean Paul: *See—*
Lefevre, Georges; and Menard, Jean Paul, 3,781,694.

Menger, Keith J., to Sheller-Globe Corporation. Remote control mirror. 3,780,598, Cl. 74-501.00m.

Menkel, Gary G., to Design Center, Inc., mesne. Screw cap closure. 3,780,898, Cl. 215-43.00r.

Mensor Corporation: *See—*
Fruit, Jerry L., 3,780,589.

Merchant, Robert E.: *See—*
Lowery, Dennis J.; and Merchant, Robert E., 3,781,844.

Merck & Co., Inc.: *See—*
Cragoe, Edward J., Jr., 3,781,430.
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,781,415.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Welters, Reiner; and Russmann, Horst, 3,781,417.

Meridian Industries, Inc.: *See—*
Heidel, Rodney L., 3,781,651.

Merola, Anthony, to Amerola Products Corporation, mesne. Gripping device. 3,780,923, Cl. 226-151.000.

Merrilees, James Drummond, to Bendix Westinghouse, Limited. Wheel balancing apparatus. 3,780,592, Cl. 73-457.000.

Merten, Rudolf: *See—*
Zecher, Wilfried; and Merten, Rudolf, 3,781,246.

Mesing, Arthur E., to United Aircraft Corporation. Vortex oil-water separator system providing clean water. 3,780,862, Cl. 210-84.000.

Messer Griesheim G.m.b.H., mesnc: *See—*
Dauer, Horst; and Hildebrandt, Peter, 3,781,508.

Messier, Albert J. Concrete form assembly having expandable inner core. 3,780,976, Cl. 249-14.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Dorr, Karl-Heinz; Grimm, Hugo; and Kola, Rolf, 3,780,499.

Metropolitan Tool and Products Limited: *See—*
Mann, John Brien, 3,780,538.
Meuller, Helge, AB: *See—*
Meuller, Karl Helge, 3,781,566.
Meuller, Karl Helge, to Meuller, Helge, AB. Detecting the presence of a medium in the path of a sound or light wave. 3,781,566, Cl. 307-116.000.
Meyer, Hans Rudolf: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,781,278.
Meyer, Lloyd E., to Westinghouse Electric Corporation. Interleaved winding for electrical inductive apparatus. 3,781,739, Cl. 336-70.000.
Michal, Frank: *See—*
Maguire, Mary Helen; Gough, Geoffrey; and Michal, Frank, 3,781,274.
Michatek, Chester W., to Eastman Kodak Company. Film cartridge. 3,780,633, Cl. 95-19.000.
Michaud, Treffle; Hubert, Lucien; and Poulin, Gerard, to Universite de Sherbrooke. Ground effect dolly. 3,780,823, Cl. 180-121.000.
Micromedic Systems, Inc.: *See—*
Sanz, Manuel Claude, 3,780,912.
Microsystems International Limited: *See—*
Loro, Alberto, 3,781,311.
Microwave Associates, Inc.: *See—*
Durkee, Earle Frederick, 3,781,719.
Middleman, Dirk-Friedrich: *See—*
Binnig, Horst; Freyen, Jurgen; and Middleman, Dirk-Friedrich, 3,781,627.
Miericke, Jurgen; Hieronymus, Hans; and Pawlitschek, Franz, to Siemens Aktiengesellschaft. Electro-magnetic system for the guided suspension of a moving vehicle. 3,780,667, Cl. 104-148.0ms.
Mihailoviski, Alexander; and Baker, Don R. Phosphorylated thiourea compositions. 3,781,326, Cl. 260-470.000.
Milenuszkin, Walenty: *See—*
Doerffer, Jerzy; and Milenuszkin, Walenty, 3,780,683.
Miles, Harry Victor, II, to Dorr-Oliver Incorporated. Pressure filter having depending tubular filter elements. 3,780,868, Cl. 210-333.000.
Milgrom, Jack: *See—*
Finestone, Arnold B.; Milgrom, Jack; and Slovenkai, Stephen V., 3,781,384.
Millard, Barry John, to Adwest Engineering Limited. Method of producing cylindrical components. 3,780,412, Cl. 29-157.10r.
Miller, Allan F.: *See—*
Whipple, Roger B.; and Miller, Allan F., 3,780,842.
Miller, Blaine Monroe, Jr.; Buckman, Wayne T.; and Warner, Ellis R., Jr., to Hobart Manufacturing Company, The, mesne. Liquid level control for pulping apparatus. 3,780,956, Cl. 241-34.000.
Miller, David P., to United Aircraft Corporation. Vortex oil-water separator system providing clean water. 3,780,865, Cl. 210-195.000.
Miller, Herman, Inc.: *See—*
Propst, Robert L., 3,780,387.
Miller, Leonidas C. Well pressure measuring and recording device. 3,780,574, Cl. 73-151.000.
Millington, Robert G., to Hims, Inc. Safety apparatus. 3,781,052, Cl. 294-25.000.
Milo, William C., to United States of America, Army. Cryogen temperature indicator. 3,780,585, Cl. 73-362.0sc.
Mine Safety Appliances Company: *See—*
Giebel, Joseph L.; and Temple, Ernest E., 3,780,689.
Minisci, Francesco; Galli, Remo; and Quilico, Adolfo, to Montecatini Edison S.p.A. Process for the preparation of amides of nitrogen heterocyclic compounds. 3,781,286, Cl. 260-250.00r.
Mink, James W.: *See—*
Christian, Joseph Robert; Goubau, Georg J. E.; and Mink, James W., 3,781,546.
Minnesota Mining and Manufacturing Company: *See—*
Janssen, Edward W.; and Kyle, Robert C., 3,781,231.
Minolta Camera Kabushiki Kaisha: *See—*
Miyajima, Tohru; Ichimoto, Yoshiharu; and Saeki, Arinori, 3,781,625.
Ogawa, Masaya; and Seino, Kuniki, 3,781,108.
Sumita, Haruki, 3,781,090.
Miram, Horst; and Sehner, Karl Heinz, to Windmoller & Holscher. Multicolour printing press comprising a backing cylinder containing heating chambers. 3,780,796, Cl. 165-39.000.
Mirviss, Stanley B.: *See—*
Greco, Carl C.; Mirviss, Stanley B.; and Martell, Arthur E., 3,781,296.
Mishcon, Lester, to Singer Company, The. Needle actuating camming for circular knitting machines. 3,780,539, Cl. 66-42.000.
Mita Industrial Company Limited: *See—*
Ueda, Yasuo; Kamezawa, Yasutoki; Aizawa, Tatsuo; and Ikeda, Toshimitu, 3,781,208.
Mitchell, George B.: *See—*
Halasa, Adel F.; and Mitchell, George B., 3,781,263.
Mitchell, John K. Radar side lobe echo eliminator. 3,781,889, Cl. 343-17.10r.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Kitamura, Tetsuo; and Tamai, Akira, 3,780,619.
Mitsubishi Kakoki Kaisha: *See—*
Kamijo, Tatsuo; and Nagakura, Densuke, 3,781,407.
Mitsui Petrochemical Industries, Ltd.: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kashiwa, Norio; Tokuzumi, Tadaichi; Horota, Yutaka; and Fujimura, Hiroshi, 3,781,253.
Miyajima, Tohru; Ichimoto, Yoshiharu; and Saeki, Arinori, to Minolta Camera Kabushiki Kaisha. Plural motor, plural control station planetarium. 3,781,625, Cl. 318-547.000.
Miyamoto, Yoshio: *See—*
Yoshida, Kenichi; and Miyamoto, Yoshio, 3,781,725.
Mizushima, Yoshihiko; and Sudo, Tsuneta, to Nippon Telegraph and Telephone Public Corporation. Semiconductor switching element and a semiconductor switching involving the same. 3,781,806, Cl. 340-166.00r.
Mobil Oil Corporation: *See—*
Braid, Milton, 3,781,206.
Schwartz, Albert B., 3,781,225.
Schwartz, Albert B., 3,781,226.
Modglin, Donald D. Apparatus for exhibiting display panels. 3,780,459, Cl. 40-36.000.
Moehrle, Earl R.: *See—*
Reichert, Gilbert A.; and Moehrle, Earl R., 3,781,499.
Moeller & Neumann G.m.b.H.: *See—*
Wagner, Ruprecht, 3,780,882.
Mokrytzki, Boris; and Hammond, Peter W., to Westinghouse Air Brake Company. Induction motor control system. 3,781,614, Cl. 318-227.000.
Mokrytzki, Boris; and Meier, Udo, to Westinghouse Air Brake Company. System for phase shifting inverters to obtain a variable modulated waveform. 3,781,615, Cl. 318-227.000.
Mokrytzki, Boris, to Westinghouse Air Brake Company. Induction motor control system. 3,781,616, Cl. 318-230.000.
Moldovanyi, Laszlo: *See—*
Hennart, Claude; Moldovanyi, Laszlo; and Roth, Willy, 3,781,428.
Moleyre, Jacques: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,781,432.
Molloy, Bryan B.: *See—*
Fuller, Ray W.; and Molloy, Bryan B., 3,781,443.
Momsen, Marc F.: *See—*
Lottridge, Neil M.; and Momsen, Marc F., 3,780,834.
Monarch Marking Systems, Inc.: *See—*
Keefe, Jack D., 3,781,555.
Monitor Systems Corporation: *See—*
Rader, Edwin R.; and Ripley, Clarence A., Jr., 3,781,115.
Monogram Industries, Inc.: *See—*
Katona, William F., 3,780,383.
Monsanto Company: *See—*
D'Amico, John Joseph, 3,781,285.
Kichline, Thomas P.; and Conn, James F., 3,781,334.
Latinen, George A, 3,781,132.
Marco, Gino J.; and Grainger, Robert B., 3,781,440.
Roth, James F.; Gambell, James W.; and Penquite, Charles R., 3,781,406.
Monsanto Company, mesne: *See—*
Jenkins, Robert; Mead, Carver A.; and McCaldin, James, 3,780,427.
Monsanto Research Corporation: *See—*
Opferkuch, Robert E., Jr.; and Konicek, Michael G., 3,781,413.
Monser, George J., to Raytheon Company. Combined pitot tube and antenna. 3,781,895, Cl. 343-708.000.
Montecatini Edison S.p.A.: *See—*
Minisci, Francesco; Galli, Remo; and Quilico, Adolfo, 3,781,286.
Mooers, Alden J.: *See—*
Marsh, Robert W.; and Mooers, Alden J., 3,781,114.
Moore Industries Inc.: *See—*
Moore, Leonard; and Bodle, Ronald L., 3,781,724.
Moore, Leon E. Automatic concrete forming machine for producing high density products. 3,781,156, Cl. 425-424.000.
Moore, Leonard; and Bodle, Ronald L., to Moore Industries Inc. Terminal block. 3,781,724, Cl. 333-79.000.
Moore, William G.: *See—*
Action, Floyd; Cochran, Paul E.; and Moore, William G., 3,781,622.
Moore, William J.: *See—*
Bishop, Stephen G.; and Moore, William J., 3,781,748.
Moose, Robert R. Aircraft glide slope instrumentation system. 3,781,891, Cl. 343-108.00r.
Morandi, Battista: *See—*
Siclari, Francesco; Magnoni, Franco; and Morandi, Battista, 3,781,213.
Morel, Andre, to Constructions Mecaniques F. Laroche & Fils. Fiber opening machine. 3,780,399, Cl. 19-97.000.
Morgan, Barrie O.: *See—*
Goode, George E.; Morgan, Barrie O.; and Branscome, Kenneth M., 3,781,472.
Morgan, John A.: *See—*
Whitson, Bobbie L.; and Morgan, John A., 3,780,761.
Morgan, Robert L.: *See—*
Evers, Ernst T.; and Morgan, Robert L., 3,780,967.
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kashiwa, Norio; Tokuzumi, Tadaichi; Horota, Yutaka; and Fujimura, Hiroshi, to Mitsui Petrochemical Industries, Ltd. Process for the preparation of ethylene polymer or copolymer. 3,781,253, Cl. 260-85.30r.

Mori, Chiharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Dual light-measurement and compensation circuitry for cameras. 3,781,119, Cl. 356i222.000.
Mori, Chiharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electronic shutter-control circuits for cameras. 3,781,551, Cl. 250-214.00p.
Mori, Hirokazu: *See—*
Inoue, Hiromitsu; Okamoto, Shinsuke; Mori, Hirokazu; and Ohasi, Hirosi, 3,781,772.
Mori, Kazumasa: *See—*
Iwaki, Katsutaro; Mori, Kazumasa; Ishihama, Masaru; and Kobayashi, Yukio, 3,781,633.
Morin, Joseph C.: *See—*
Evans, Arthur J.; and Morin, Joseph C., 3,780,991.
Morino, Hideki: *See—*
Takahashi, Seihachi; Katayama, Nobuaki; and Morino, Hideki, 3,780,596.
Morris, Derek S., to United States of America, Army. Data diversity combining technique. 3,781,794, Cl. 340-146.10r.
Morris, Marvin L., Jr.; Pope, Hermon L., Jr.; and Ruggiero, Edward M., to Texas Instruments, Incorporated. Integrated heater element array and drive matrix. 3,781,515, Cl. 219-216.000.
Morris, Stanley M.: *See—*
Harnstone, Leonard A.; Levy, Robert E.; Morris, Stanley M.; Lopez, Alfredo M.; Mosler, Henry A.; and Bartman, Robert V., 3,781,533.
Morrison, Evans Lewis. Method for evaluating elevator performance. 3,781,901, Cl. 346-1.000.
Morrow, Dennis W., to Eagle Industries, Inc. Boom assembly for lift and tow truck. 3,780,878, Cl. 212-59.00r.
Morton, Ralph B.: *See—*
Frye, James A.; Morton, Ralph B.; and Vogler, Charles W., 3,780,675.
Mosler, Henry A.: *See—*
Harnstone, Leonard A.; Levy, Robert E.; Morris, Stanley M.; Lopez, Alfredo M.; Mosler, Henry A.; and Bartman, Robert V., 3,781,533.
Moss, Eual A.: *See—*
Boudreau, Paul E.; Dixon, Roy C.; Donnan, Robert A.; and Moss, Eual A., 3,781,815.
Moss, Gerald; and Rosborough, Dennis F., to Esso Research and Engineering Company. Recovery of sulphur. 3,781,445, Cl. 423-574.000.
Motobayashi, Kozo: *See—*
Watanabe, Kazuo; Kito, Yastami; Nazaki, Choji; Kono, Kiichi; Tsuzuki, Kanemitsu; and Motobayashi, Kozo, 3,780,513.
Motorola, Inc.: *See—*
Cayton, Thomas C., Jr., 3,781,018.
Cecchin, Gildo; and Hilbert, Francis H., 3,781,701.
Salners, Edward A., 3,781,730.
MTL Incorporated: *See—*
Allison, Rudolph L.; and Lindstrand, Gary L., 3,780,419.
Mueller, Kurt Hugo, to Bell Telephone Laboratories, Incorporated. Automatic tap-gain incrementation of adaptive equalizers. 3,781,720, Cl. 333-18.000.
Muhlbauer, Alfred: *See—*
Reuschel, Konrad; Dietze, Wolfgang; Muhlbauer, Alfred; and Sandmann, Herbert, 3,781,209.
Muhlrad, Wolf, to Air Industrie, mesne. Adsorption of fluorine and fluorine compounds on alumina. 3,780,497, Cl. 55-71.000.
Muilwijk, Dirk: *See—*
Van Loon, Lambertus Jacob Willem; and Muilwijk, Dirk, 3,781,696.
Mukoyama, Eiji: *See—*
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.
Muller, Erwin; Wirth, Wolf-Dieter; Blahak, Johannes; and Rohr, Harry, to Bayer Aktiengesellschaft. Blowing agents. 3,781,233, Cl. 260-2.50r.
Mulvey, Dennis M.: *See—*
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,781,284.
Mummey, Dale Brice: *See—*
Feeser, William Coover; Bosland, Cornelius William; Lockard, Joseph Larue; and Mummey, Dale Brice, 3,781,763.
Munday, Theodore F.; and Radimer, Kenneth J., to FMC Corporation. Stabilization of hydrogen peroxide. 3,781,409, Cl. 423-273.000.
Mundy, Joseph L.: *See—*
Neugebauer, Constantine A.; and Mundy, Joseph L., 3,781,831.
Munson, Harold C., to Remington Arms Company, Inc. Universal-type package for firearms. 3,780,487, Cl. 53-35.000.
Murakoshi, Makoto; Ooue, Shingo; Ueda, Hiroyuki; Hashiue, Masakazu; and Endo, Hirotoshi, to Fuji Photo Film Co., Ltd. Retrieval method in reading dictionaries. 3,781,809, Cl. 340-172.500.
Murashima, Noboru: *See—*
Takamatsu, Hideaki; Murashima, Noboru; and Nishihira, Koichi, 3,781,185.
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Tomkins, Harold E., 3,780,481.
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Kawaguchi, Hiroshi; Naito, Takayuki; and Nakagawa, Susumu, 3,781,268.
Najarian, John, to France Neckwear Co. Inc. Bow ties. 3,780,381, Cl. 22-1.540.
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Nakahara, Tsuneo; Kurauchi, Noritaka; Kitani, Hiroshi; Takemura, Kenji; and Kuroda, Masataka, to Sumitomo Electric Industries, Limited. Wireless communication system for railway vehicle including an open type transmission line mounted on a radiowave absorbnt support. 3,781,687, Cl. 325-52.000.
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Shimizu, Ryozi; Nakao, Kenji; Oguri, Masaaki; and Ohgaki, Masakatu, 3,780,654.
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Naleo Chemical Company: *See—*
Bott, Lawrence L., 3,780,806.
Nally, Phillip L. Alarm device. 3,780,692, Cl. 416-5.000.
Nambu, Shyuya; and Etoo, Yukihiro, to Nissan Motor Company, Limited. Carburetor for an internal combustion engine. 3,780,718, Cl. 123-179.00g.
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Nankivell, Erby Roy, Jr., to Ralide, Inc. Molded saddle tree and metallic saddle horn. 3,780,494, Cl. 54-44.000.
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Naraoka, Kyyotake: *See—*
Ono, Yuichi; Saida, Hiroji; Nomura, Masayoshi; and Naraoka, Kyyotake, 3,780,426.
Narco Scientific Industries, Inc.: *See—*
Bail, John W., 3,781,888.
Nason, Steven B.: *See—*
Friedman, Bernard S.; and Nason, Steven B., 3,781,342.
National Cash Register Company, The: *See—*
Coleman, William Earl; and Kessler, Clarence William, 3,781,600.
National Distillers and Chemical Corporation: *See—*
Barnard, Ronald K., 3,780,579.
National Foundry Equipment Company, Inc.: *See—*
Dupre, George T.; and Demarco, Thomas M., 3,780,502.
Nattefort, Fritz, to Rockwell International Corporation. Bearing arrangement. 3,781,072, Cl. 308-15.000.
Nauman, Edward F.: *See—*
Vassiliades, Anthony E.; and Nauman, Edward F., 3,781,230.
Nazaki, Choji: *See—*
Watanabe, Kazuo; Kito, Yastami; Nazaki, Choji; Kono, Kiichi; Tsuzuki, Kanemitsu; and Motobayashi, Kozo, 3,780,513.
Neale, Robert Schwenn, to Union Carbide Corporation. Production of allylic ethers. 3,781,368, Cl. 260-611.00r.
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Penn, Alan William; and Neighbour, Frank, 3,780,425.
Nelson, Ronald C.; and Grover, Lawrence L., to Heath Company. Automatic battery charger. 3,781,631, Cl. 320-25.000.
Nelson, Victor J.: *See—*
Paasschens, Cornelis W. M.; and Nelson, Victor J., 3,781,000.
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Neugebauer, Constantine A.; and Mundy, Joseph L., to General Electric Company. Read only memory utilizing floating gate transistors and method of programming. 3,781,831, Cl. 340-173.00r.
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Neuro-Data, Inc.: *See—*
John, Erwin Roy, 3,780,724.
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Hanes, James Gordon, Jr.; King, James Frank; Lathery, Willie M.; Beamon, Howard L.; and Newlen, Kenneth W., 3,780,679.
Newstead, Charles, to Girling Limited. Brake adjuster mechanisms. 3,780,836, Cl. 188-79.5sc.
Nichols, Parks M.: *See—*
Jennings, George L.; and Nichols, Parks M., 3,780,782.
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Nickell, Claude H., 3,781,135.
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Nikles, Erwin; Dittrich, Volker; and Pinter, Ladislaus, to Ciba-Geigy AG. Phenyl carbamates. 3,781,301, Cl. 260-327.00m.
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Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Method of manufacturing extruded rods of wire from compound material. 3,780,554, Cl. 72-60.000.
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Nancy, Denise; and Ninet, Leon, 3,781,421.
Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. Process for preparing 5-lower alkanoyl benzophenones utilizing ceric salts. 3,781,353, Cl. 260-562.00p.
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Matsuda, Tsutomu; and Takagi, Makoto, 3,780,755.
Nippon Electric Company, Limited: *See—*
Nonaka, Shunsuke; Yuuki, Tasuku; and Hara, Kouichi, 3,781,577.
Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi, 3,781,148.
Nippon Telegraph and Telephone Public Corporation: *See—*
Mizushima, Yoshihiko; and Sudo, Tsuneta, 3,781,806.
Nippon Telephone & Telephone Public Corporation: *See—*
Aizawa, Tetsuya; Sawada, Taketoyo; Tauchi, Yoshihiko; Kawamata, Tsutomu; and Saya, Hiroshi, 3,781,856.
Nippon Zeon Co., Ltd.: *See—*
Sato, Ryozi; and Chino, Yasuyoshi, 3,781,332.
Nippondenso Co., Ltd.: *See—*
Iwaki, Katsutaro; Mori, Kazumasa; Ishihama, Masaru; and Kobayashi, Yukio, 3,781,633.
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Nishihira, Koichi: *See—*
Takamatsu, Hideaki; Murashima, Noboru; and Nishihira, Koichi, 3,781,185.
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Nishioka, Matsuo: *See—*
Oka, Shunzo; and Nishioka, Matsuo, 3,781,752.
Nissan Motor Company, Limited: *See—*
Nambu, Shyuya; and Etoo, Yukihiro, 3,780,718.
Oguma, Masaaki; and Kurosaki, Mitsugi, 3,781,048.
Nisson Motor Company, Limited: *See—*
Sato, Munefumi, 3,781,147.
Nitro Nobel AB: *See—*
Fossan, Kare Ragnvald, 3,781,374.
Noddin, Kenneth W.; and Simmons, Walter J., to Du Pont de Nemours, E. I., and Company. Explosively actuated valve. 3,780,752, Cl. 137-68.000.
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Ono, Yuichi; Saida, Hiroji; Nomura, Masayoshi; and Naraoka, Kyyotake, 3,780,426.
Nomura, Osamu; and Yajima, Kanichi, to Tokyo Shibaura Electric Co., Ltd. Lighting device for a discharge lamp. 3,781,597, Cl. 315-105.000.
Nonaka, Shunsuke; Yuuki, Tasuku; and Hara, Kouichi, to Nippon Electric Company, Limited. Piezoelectric resonator. 3,781,577, Cl. 310-9.700.
Nonogaki, Saburo: *See—*
Kumada, Akio; Onishi, Yoshihiro; Ogawa, Horohumi; Ashida, Sakichi; and Nonogaki, Saburo, 3,781,086.
Nooter Corporation: *See—*
Clarkin, Edward J.; and Conlee, George D., 3,780,903.
Norbeck, Dean K.; and Kimpel, Francis A., to Borg-Warner Corporation. Temperature control system for centrifugal liquid chilling machines. 3,780,532, Cl. 62-201.000.
Nortec Computer Devices Inc.: *See—*
Curtiss, Robert H.; Holzman, Richard; and Lazarow, Seldan A., 3,780,648.
Nortech Laboratories, Inc.: *See—*
Spencer, Jacob H., 3,780,537.
North American Rockwell Corporation: *See—*
Dorsman, Adrian K.; and Adams, Clark F., 3,781,532.
Norton, Richard V., to Sun Research and Development Co. Hydrolysis of aromatic dinitriles. 3,781,343, Cl. 260-515.00p.
Norton, Richard V., to Sun Research and Development Co. Process for purification of naphthalene carboxylic acids. 3,781,346, Cl. 260-525.000.
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Novick, Harold L.: *See—*
De Burgh, Raymond J.; and Novick, Harold L., 3,781,560.
Nowell, John R.: *See—*
Genuit, Luther L.; and Nowell, John R., 3,781,636.
NUKEM, Nuklear-Chemie und- Metallurgie Gesellschaft mit beschrankter Haftung: *See—*
Hackstein, Karl-Gerhard, Kadner, Martin; and Forster, Horst, 3,781,216.
Nussbaum, Helmut; and Schnell, Hilmar, to Vereinigte Flugtechnische Werke-Fokker GmbH. Wing case for air foils. 3,780,969, Cl. 244-123.000.
Nussbaumer, Henri Jean, to International Business Machines Corporation. Digital data transmission system using multilevel encoding with variable dipulse spacing. 3,781,873, Cl. 340-347.0dd.
Nutten, Warren D., to Tecumseh Products Company. Self-priming carburetor. 3,780,996, Cl. 261-72.000.
O'Brien, Robert J.: *See—*
La Fleur, Bob A.; and O'Brien, Robert J., 3,780,700.
Ochiari, Hisashi: *See—*
Matsumura, Hisashi; Samejima, Tadanori; Orito, Hiroshi; and Ochiari, Hisashi, 3,781,150.
Oda, Richard T.: *See—*
Funk, Forrest E.; Oda, Richard T.; Luria, Norman G.; and Margherone, Edward G., 3,781,453.
Odkopaev, Boris Ivanovich; Bobkov, Alexandr Vasilievich; and Chervyakova, Ljudmila Dmitievna. Teaching machine preferably for studying foreign languages. 3,780,450, Cl. 35-9.00a.
Ofu Ofenbau-Union GmbH: *See—*
Bunzel, Eckard; Spessert, Robert; Rieskamp, Karl; and Hildebrand, Willi, 3,781,166.
Ogawa, Horohumi: *See—*
Kumada, Akio; Onishi, Yoshihiro; Ogawa, Horohumi; Ashida, Sakichi; and Nonogaki, Saburo, 3,781,086.
Ogawa, Masaya; and Seino, Kuniki, to Minolta Camera Kabushiki Kaisha. Method and apparatus for forming latent electro-static images. 3,781,108, Cl. 355-17.000.
Oguma, Masaaki; and Kurosaki, Mitsugi, to Nissan Motor Company Limited. Impact absorbing device for bumpers. 3,781,048, Cl. 293-89.000.
Oguri, Masaaki: *See—*
Shimizu, Ryozi; Nakao, Kenji; Oguri, Masaaki; and Ohgaki, Masakatu, 3,780,654.
Ohasi, Hirosi: *See—*
Inoue, Hiromitsu; Okamoto, Shinsuke; Mori, Hirokazu; and Ohasi, Hirosi, 3,781,772.
Ohgaki, Masakatu: *See—*
Shimizu, Ryozi; Nakao, Kenji; Oguri, Masaaki; and Ohgaki, Masakatu, 3,780,654.
Ohki, Kusuo: *See—*
Kominami, Naoya; Iwaisako, Toshiyuki; and Ohki, Kusuo, 3,781,221.
Ohmura, Ryuichi. Method of making integral guide for fishing lines. 3,780,684, Cl. 113-116.0hh.
Ohta, Masachika; and Wakameda, Toshio, to Kawada Kogyo Kabushiki Kaisha. Method of fillet welding. 3,780,420, Cl. 29-471.00l.
Ohtsuka, Tetsuro: *See—*
Tsukamoto, Masahide; and Ohtsuka, Tetsuro, 3,781,088.
Oishi, Masaaki; Takahashi, Yoshinaga; and Yoshizawa, Keiichi, to Kabushiki Kaisha Hattori Tokeiten. Decimal-point printing mechanism for electronic calculator. 3,780,649, Cl. 101-93.00c.
Oka, Isao: *See—*
Shima, Takeo; Orsaki, Takanori; Oka, Isao; and Funakoshi, Wataru, 3,781,375.

Oka, Shunzo; and Nishioka, Matsuo, to Matsushita Electric Industrial Co., Ltd. Device for controlling simultaneously a plurality of variable resistors. 3,781,752, Cl. 338-128.000.
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Inoue, Hiromitsu; Okamoto, Shinsuke; Mori, Hirokazu; and Ohasi, Hirosi, 3,781,772.
Okazaki, Hiroshi: *See—*
Kusunoki, Yasuo; Okazaki, Hiroshi; Sato, Yoshinori; and Sano, Eiichi, 3,781,292.
Okazaki, Toshiyoshi: *See—*
Yoshihiro, Yoshimoto; Usami, Hiroshi; and Okazaki, Toshiyoshi, 3,781,629.
OKI Electric Industry Co., Ltd.: *See—*
Shimizu, Ryozi; Nakao, Kenji; Oguri, Masaaki; and Ohgaki, Masakatu, 3,780,654.
Okuda, Minoru; Aikawa, Satoru; Kaidzu, Hiromu; and Tajima, Eiichi, to Tajima Oyo Kako Co., Ltd. Method of manufacturing synthetic resin-cement products. 3,781,396, Cl. 264-140.000.
Okuno, Chuzo: *See—*
Kometani, Yutaka; Koizumi, Shun; Suzuki, Takeshi; Nakajima, Takeaki; and Okuno, Chuzo, 3,781,258.
Olin Corporation: *See—*
Hurley, Thomas J.; and Robinson, Martin A., 3,781,321.
Oliver Machinery Company: *See—*
Davies, John R., 3,780,777.
Olivetti, Ing., C., & C., S.p.A.: *See—*
Leibowitz, Marshall, 3,781,085.
Saltini, Fabrizio, 3,781,807.
Olsen, Willi, to Siemens Aktiengesellschaft. Electric high-tension conductor assembly. 3,781,454, Cl. 174-11.00r.
Olson, Elwyn H., to Honeywell Inc. Manual reset for a switch device. 3,781,744, Cl. 337-118.000.
Olson, Mark W.; and Silva, Walter F., to Uniroyal, Inc. Electrically heated glove with a flexible lattice heating structure. 3,781,514, Cl. 219-211.000.
Olson, Rich: *See—*
Ririe, Max H.; Roland, Murray C.; and Olson, Rich, 3,780,947.
Olympia Werke AG: *See—*
Firnig, Fritz; Bettin, Hubertus; and Lorenzen, Gunter, 3,781,904.
O'Neal, Charles R., Jr. Key card operated security and accountability system. 3,781,805, Cl. 340-149.00r.
Onishi, Yoshihiro: *See—*
Kumada, Akio; Onishi, Yoshihiro; Ogawa, Horohumi; Ashida, Sakichi; and Nonogaki, Saburo, 3,781,086.
Ono, Yuichi; Saida, Hiroji; Nomura, Masayoshi; and Naraoka, Kyyotake, to Hitachi, Ltd. Method of forming a semiconductor circuit element in an isolated epitaxial layer. 3,780,426, Cl. 29-580.000.
Onuercicczuk, Sergie, to United States of America, Navy. Fluidic angular shaft position sensor. 3,780,754, Cl. 137-82.000.
Ooue, Shingo: *See—*
Murakoshi, Makoto; Ooue, Shingo; Ueda, Hiroyuki; Hashiue, Masakazu; and Endo, Hirotoshi, 3,781,809.
Opferkuch, Robert E., Jr.; and Konicek, Michael G., to Monsanto Research Corporation. Gas purification. 3,781,413, Cl. 423-574.000.
O'Reilly, Thomas B.: *See—*
Boyden, Robert E., 3,780,845.
Orito, Hiroshi: *See—*
Matsumura, Hisashi; Samejima, Tadanori; Orito, Hiroshi; and Ochiari, Hisashi, 3,781,150.
Orlando, Charles M.: *See—*
Smith, William E.; Orlando, Charles M.; and Barito, Robert W., 3,781,229.
Ornstein, Jacob L., to Texas Instruments, Incorporated. Arrangement for a shadow mask in a slim color television tube and thermostat metal for use therein. 3,781,583, Cl. 313-85.00s.
Orsaki, Takanori: *See—*
Shima, Takeo; Orsaki, Takanori; Oka, Isao; and Funakoshi, Wataru, 3,781,375.
Ort, Jay E., to Era Incorporated. Water reclamation-algae production. 3,780,471, Cl. 47-1.004.
Osborne, Eugene F.; and McGovern, Terrence L., to United States of America, Navy. Incremental phase shift frequency synthesizer. 3,781,706, Cl. 331-45.000.
Osborne, Thomas E.: *See—*
Cochran, David S.; and Osborne, Thomas E., 3,781,820.
Osowski, Henry W.: *See—*
Manor, Richard C.; and Osowski, Henry W., 3,780,439.
Oswald, Roger Derek: *See—*
Power, Basil Dixon; Oswald, Roger Derek; and Tooth, David Michael, 3,781,518.
Ota, Hiroshi, to Toyoda Koki Kabushiki Kaisha. Table positioning device for grinding machine. 3,780,474, Cl. 51-105.0sp.
Ota, Tomio: *See—*
Kurita, Masahiro; and Ota, Tomio, 3,780,521.
Otsuka, Hideo: *See—*
Nishimura, Haruo; and Otsuka, Hideo, 3,781,420.
Outboard Marine Corporation: *See—*
Whipple, Roger B.; and Miller, Allan F., 3,780,842.
Outlaw, Ronald A.; Stell, Richard E.; and Hoyt, Ronald F., to United States of America, National Aeronautics and Space Administration. In situ transfer standard for ultra-high vacuum gage calibration. 3,780,563, Cl. 73-42.000.
Ovard, John C., to Ecodyne Corporation, mesne. Drift measurement system. 3,780,567, Cl. 73-28.000.
Ovens, Christopher William, to Dunhill Lighters Limited. Lighter with a capacitor discharge ignition system and means for preventing automatic recharging of said capacitor. 3,781,163, Cl. 431-266.000.
Overture, James E., 10% to Ferguson, William C. Anti-slip ladder attachment. 3,780,828, Cl. 182-111.000.
Owens, William K., to Fairchild Camera and Instrument Corporation. Temperature compensated voltage regulator having beta compensating means. 3,781,648, Cl. 323-4.000.
Owens-Illinois, Inc.: *See—*
Scherf, Gerald F.; and Kohler, Robert D., 3,780,859.
Uhlig, Albert R., 3,781,395.
Oxford Industries, Inc.: *See—*
Frost, Wade W., 3,780,682.
Ozaltay, H. Cevdet. Boiler. 3,780,704, Cl. 122-149.000.
Paap, Hans J.; and Tanner, Harley L., to Texaco Inc. Radioactive well logging comprising detecting unstable isotopes of aluminum. 3,781,545, Cl. 250-270.000.
Paasschens, Cornelis W. M.; and Nelson, Victor J., to Chicago Bridge & Iron Company. Spring and boss sparger-mounting. 3,781,000, Cl. 261-124.000.
Pacault, Pierre Henri; and Kagans, Marc, to Babcock & Wilcox Company, The. Direct contact evaporators. 3,780,786, Cl. 159-4.00a.
Pace, John G., to Chrysler Corporation. Marine engine cooling. 3,780,712, Cl. 123-41.080.
Packard Instrument Company, Inc.: *See—*
Frank, Edmund, 3,780,892.
Pagel, Vernon E. Cable mounted bailer for well drilling and cleaning. 3,780,804, Cl. 166-162.000.
Paige, David L. Dispensing apparatus for collapsible tube container. 3,780,911, Cl. 222-101.000.
Painter, P. Eric: *See—*
McGill, Robert W.; and Painter, P. Eric, 3,780,628.
Pall Corporation: *See—*
Pall, David B., 3,780,872.
Pall, David B., to Pall Corporation. Filter comprising amisometric compressed and bonded multilayer knitted wire mesh composites. 3,780,872, Cl. 210-493.000.
Palmer, Bryan Harper: *See—*
Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, 3,781,355.
Palmer, Harold S., to Productive Aires Mfg., Co. Method and apparatus for spreading a fertilizing material. 3,780,955, Cl. 239-672.000.
Pampus, Gottfried; Schon, Nikolaus; Witte, Josef; and Marwede, Gunter, to Bayer Aktiengesellschaft. Copolymerization of cyclopentene with polycyclic polyolefines. 3,781,257, Cl. 260-88.20d.
Panhard, Jean, to Societe de Constructions Mecaniques Panhard & Levassor. Obturating device for the intake pipe of an internal combustion engine, especially for a rotary piston engine. 3,780,706, Cl. 123-8.010.
Papai, Imre F. Pastry shell filling apparatus. 3,780,643, Cl. 99-450.700.
Papsco, William G. Low voltage power distribution system. 3,781,567, Cl. 307-147.000.
Pardoe, Carroll T.; Carlton, Alvar G.; and Appel, Robert L., to Johns Hopkins University, The. Data block multiplexing system. 3,781,818, Cl. 340-172.500.
Parilla, Arthur R. Solid propellant rocket engine control and missile configurations. 3,780,968, Cl. 244-3.220.
Parke, Davis & Company: *See—*
Colburn, Walter E.; Trowern, Howard M., Jr.; and Kerfoot, Franklin W., Jr., 3,780,907.
Parker, Rollin J., to General Electric Company. Shield for permanent magnet structure. 3,781,736, Cl. 335-304.000.
Parmett, George: *See—*
Fishman, Aaron Harry; and Parmett, George, 3,780,536.
Parr, Edward L. Visible fluid pressure indicator. 3,780,693, Cl. 116-70.000.
Partlow, William D.: *See—*
Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., 3,781,707.
Partridge, Ruth; and Weiss, Martin Joseph, to American Cyanamid Company. Method of inhibiting ulcerogenesis induced by non-steroidal anti-inflammatory agents. 3,781,429, Cl. 424-234.000.
Passavant, Francis C.: *See—*
Gicca, Francis A.; Passavant, Francis C.; and Worters, Allen J., 3,781,850.
Pasternak, Stephen F., to Peerless of America, Incorporated. Heat exchangers and method of making same. 3,780,799, Cl. 165-150.000.
Patin, Pierre. Three wheeled vehicles having static and dynamic equilibrium. 3,781,031, Cl. 280-62.000.
Pattberg, Werner: *See—*
Stadie, Werner; Sperling, Kurt; Deubner, Rolf; and Pattberg, Werner, 3,780,747.
Paul, Rudolf: *See—*
Klupsch, Paul; Paul, Rudolf; and Dressler, Ulrich, 3,780,636.
Pavlecka, John. Interlocked panel structure. 3,780,478, Cl. 52-206.000.
Pawellek, Dieter; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for preparing 2-aminobenzothiazole and its N-alkyl substitution products from 2-mercaptobenzothiazole. 3,781,297, Cl. 260-305.000.
Pawlitschek, Franz: *See—*

Miericke, Jurgen; Hieronymus, Hans; and Pawlitschek, Franz, 3,780,667.

Pearce, Derek Roger: *See—*
Davis, Benjamin; Pearce, Derek Roger; and Phillipps, Gordon Hanley, 3,781,435.

Pechachek, Raymond E., to Hahn & Clay. Pin-type vessel closure connector. 3,780,901, Cl. 220-46.00p.

Peek, Vernon E., to Anderson Electric Corporation. Compression connector for electrical conductors. 3,781,459, Cl. 174-94.00r.

Peerless of America, Incorporated: *See—*
Pasternak, Stephen F., 3,780,799.

Pellman, Ronald C., to Utica Cutlery Company, mesne. Device to cut or separate masses of frozen food. 3,780,436, Cl. 30-123.00r.

Penn, Alan William; and Neighbour, Frank, to United Kingdom Atomic Energy Authority. Thermoelectric units. 3,780,425, Cl. 29-573.000.

Penn, Alan William; and Beighbour, Frank, to United Kingdom Atomic Energy Authority. Thermoelectric units. 3,781,176, Cl. 136-212.000.

Pennington, John V., to Cameron Iron Works, Inc. Switch. 3,780,756, Cl. 137-119.000.

Pennwalt Corporation: *See—*
Dohany, Julius Eugene, 3,781,265.

Penquite, Charles R.: *See—*
Roth, James F.; Gambell, James W.; and Penquite, Charles R., 3,781,406.

Pentzien, Frederick R., to Kroehler Mfg. Co. Safety guard for reclining chair and the like. 3,781,060, Cl. 297-68.000.

Pepe, Anthony E.; and Singh, Hakam, to Products Research & Chemical Corporation. Halo alkoxy metal compounds. 3,781,315, Cl. 260-429.700.

Peppin, Richard A.: *See—*
Holley, John D.; and Peppin, Richard A., 3,780,664.

Perfetti, Jacques Felix Charles: *See—*
De Longueville, Jacques Charles; Perfetti, Jacques Felix Charles; and Kessler, Ernst Jakob, 3,780,658.

Perilstein, Warren L.: *See—*
Plonsker, Larry; Perilstein, Warren L.; and Malec, Robert E., 3,781,363.

Perkins, Thomas K., to Atlantic Richfield Company. Procedure for assisting renewal of oil flow in a pipeline. 3,780,749, Cl. 137-13.000.

Perkins, Thomas K., to Atlantic Richfield Company. Facilitating renewal of oil flow in a pipeline. 3,780,750, Cl. 137-13.000.

Perkis, Leib Benyaminovich: *See—*
Dolgov, Anatoly Vladimirovich; Konovalov, Leonid Vladimirovich; Perkis, Leib Benyaminovich; Deev, Stanislav Lvovich; Dyakov, Vitaly Evgenievich; Semenov, Alexandr Efimovich; Bauer, Evgeny Teodorovich; and Suturin, Serafim Nikolaevich, 3,780,864.

Perrott, Francis Cyril. Transportation. 3,780,666, Cl. 104-88.000.

Perry, Dean A. Valve with elliptical sealing. 3,780,985, Cl. 251-309.000.

Perry, William A.; and Jobst, Raymond C. Crane bucket equipment. 3,780,880, Cl. 214-1.00r.

Pertec Corporation, mesne: *See—*
Jennings, Alan K., 3,781,874.

Peschel, Stanley G., to Hipotronics, Inc. High voltage accelerator power supply. 3,781,639, Cl. 321-15.000.

Peterson, Earl A. Towing winch. 3,780,989, Cl. 254-173.00r.

Peterson, Kenneth A.: *See—*
Kuhn, Gerald D.; Peterson, Kenneth A.; Roeschlein, Eugene R.; Weiss, Donald C.; Weiss, Kenneth F.; and Zeph, David L., 3,781,776.

Petersson, Ralf Krister Ebbe; and Holmberg, Bengt Roland, to Kalmar Verstaids AB. Supporting leg structures. 3,781,035, Cl. 280-150.500.

Petri, William E., Jr.: *See—*
Lilienthal, Alfred J.; Johnson, Theodore F.; Petri, William E., Jr.; and Gilbert, Charles E., Jr., 3,780,423.

Petrikovsky, Efim Lvovich. Machine for marking cylindrical articles. 3,780,557, Cl. 72-92.000.

Petro-Tex Chemical Corporation: *See—*
Manning, Harold E., 3,781,376.

Petrov, Gueorgui Slavov: *See—*
Krivoshiev, Cueorgui Petrov; Kolev, Dimiter Christov; Tanev, Christo Yanakiev; Erinkov, Dimiter Kostadinov; Petrov, Gueorgui Slavov; Vassilev, Alexander Traykov; and Vatev, Petko Slavtchev, 3,781,554.

Pett, Edgar A.; and Kinney, Gordon. Process for the manufacture of microcrystalline fused abrasives. 3,781,172, Cl. 51-309.000.

Pettengill, Donald Herbert; and Bass, Merlyn Duane, to Deere & Company. Crop conditioner drive. 3,780,505, Cl. 56-14.400.

Pettigrew, David D.; and Vaughn, Richard. Rotary cutting blade. 3,780,780, Cl. 144-238.000.

Pettit, Marshall G. Ambulatory system. 3,780,663, Cl. 104-1.00r.

Petukhov, Arkady Demyanovich: *See—*
Lukach, Jury Efimovich; Senatos, Vladimir Alexeevich; and Petukhov, Arkady Demyanovich, 3,781,153.

Petzetakis, Aristovoulos G. Pipe and tube coupling. 3,781,041, Cl. 285-111.000.

Peyton, Keith S.; and Jolly, Michael D. Pressure activated heat absorbing or emitting detection system. 3,780,615, Cl. 89-1.00a.

Pfiffner, Albert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,781,309.

Pfister, Alain; Arretz, Emmanuel; and Donche, Alain, to Societe Nationale des Petroles d'Aquitaine tour Aquitaine. Preparation of alpha-dithiols. 3,781,366, Cl. 260-609.00r.

Pfizer Inc.: *See—*
Carroll, Ronnie D., 3,781,277.
Lombardino, Joseph G., 3,781,294.

Pharmacia Fine Chemicals AB: *See—*
Ek, Leif V.; Wallin, Per L.; and Tibbling, Thure P. M., 3,780,866.

Phelps Dodge Industries, Inc.: *See—*
Santos, Adrian Y.; and Feder, Charles, 3,781,462.

Philco-Ford Corporation: *See—*
Houghton, Norman F., 3,781,394.

Phillipps, Gordon Hanley: *See—*
Davis, Benjamin; Pearce, Derek Roger; and Phillipps, Gordon Hanley, 3,781,435.

Phillipps, Gordon Hanley; and Turnbull, John Peter, to Glaxo Laboratories Limited. Process for preparing 3-hydroxy-9α-hydrogen-11α-hydroxy-ring a-aromatic steroids. 3,781,312, Cl. 260-397.450.

Phillips Petroleum Company: *See—*
Hsieh, Henry L., 3,781,259.
Kimbrell, William C., 3,780,516.
Mathis, Ronald D.; and Guillory, Jack P., 3,781,242.
Myers, John W., 3,781,377.
Walker, Darrell W.; Farha, Floyd E., Jr.; and Bertus, Brent J., 3,781,223.
Whitson, Bobbie L.; and Morgan, John A., 3,780,761.
Wu, Yu-Lin; and Hudson, Paul S., 3,781,341.

Phillips, William B., to International Business Machines Corporation. Web tension and speed control in a reel-to-reel web transport. 3,781,490, Cl. 179-100.20s.

Phipps, Willis M.; Holbert, Marvin L., Jr.; and McGee, John K., to Gray Tool Company. Concentric tubing hydraulic power unit, particularly for down-hole safety valve actuation. 3,780,802, Cl. 166-89.000.

Pianga, Adam: *See—*
Nickell, Claude H., 3,781,135.

Pieloth, Manfred: *See—*
Schwarz, Arnulf; Konig, Gerhard; Pieloth, Manfred; and Lang, Dietmar, 3,780,770.

Pierson, Paul Bruce, to RCA Corporation. Digitally variable delay time system. 3,781,722, Cl. 333-31.00r.

Pillnik, Burton Frank: *See—*
Holc, Henry Sylvester; and Pillnik, Burton Frank, 3,780,902.

Pines, Seemon H.: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,781,415.

Pinke, Manuel: *See—*
Nickell, Claude H., 3,781,135.

Pinnell, William R., to United States of America, Air Force. Parachute apparatus. 3,780,970, Cl. 244-152.000.

Pinter, Ladislaus: *See—*
Beriger, Ernst; and Pinter, Ladislaus, 3,781,426.
Nikles, Erwin; Dittrich, Volker; and Pinter, Ladislaus, 3,781,301.

Pipkin, Jesse E.: *See—*
Marshall, Howard D.; Gordon, Gary B.; Pipkin, Jesse E.; and Adler, Robin, 3,781,689.

Pipon, Robert: *See—*
Gobron, Georges; and Pipon, Robert, 3,781,373.

Pisani, Cesare: *See—*
Porta, Paolo Della; Zucchinelli, Mario; and Pisani, Cesare, 3,780,501.

Pitacco, Sergio, to ITT Industries, Inc. Lamp holder. 3,781,755, Cl. 339-14.00r.

Pitzalis, Mario: *See—*
Vargiu, Silvio; and Pitzalis, Mario, 3,781,244.

Platt, Steven; and Pomeranz, Jehoshua N., to International Business Machines Corporation. Three-dimensionally-addressed memory. 3,781,828, Cl. 340-173.00r.

Plessey Handel und Investments A.G.: *See—*
Rokos, George H. S., 3,781,081.

Ploetz, Ulrich; and Thiesen, Wolfgang, to VEB Ingenieurburo Schiffbau. Apparatus for welding interrupted seams. 3,781,510, Cl. 219-130.000.

Plonsker, Larry; Perilstein, Warren L.; and Malec, Robert E., to Ethyl Corporation. Fuel and lube compositions. 3,781,363, Cl. 260-583.00p.

Podlaskin, Boris Georgievich: *See—*
Berkovskaya, Karina Fridrikhovna; Lapteva, Nina Vitalievna; and Podlaskin, Boris Georgievich, 3,781,553.

Poel, Lawrence R. Purity and blue lateral assembly for delta beam type cathode ray tube. 3,781,731, Cl. 335-212.000.

Poferl, Gunter; Schmidt, Gerald; and Smejkal, Hellmuth, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Water-cooled measuring probe for measuring the temperature of hot liquid metal baths, in particular in melting or refining furnaes. 3,780,583, Cl. 73-343.00r.

Pogoretsky, Georgy Ivanovich: *See—*
Dud-Kudinov, Vladimir Mikhailovich; Bushtedt, Jury Petrovich; Dudko, Daniil Andreevich; Arkhangelsky, Georgy Alexandrovich; Pogoretsky, Georgy Ivanovich; Volgin, Leonid Alexandrovich; Kotov, Viktor Anatolievich; Surnin, Boris Anatolievich; and Degtyarev, Mikhal Vasiievich, 3,780,927.

Polcha, Raymond J., to United States of America, Navy. Wear resistant gun barrel and method of making the same. 3,780,465, Cl. 42-76.00a.

Polinski, Leon M.; and Sonn, Milton M., to Givaudan Corporation. Process for purification of hexachlorophene. 3,781,372, Cl. 260-619.00a.

Pollmann, Fritz; and Wossner, Gerhard, to Siemens Aktiengesellschaft. Electromagnetic switching device. 3,781,727, Cl. 335-132.000.

Pollution Control Systems (International) Limited: *See—*
Light, Douglas J. N., 3,780,863.

Polymer Machinery Corporation: *See—*
Frimberger, Herbert H., 3,780,446.

Polytype AG: *See—*
van der Roer, Humphrey Alphons Victor, 3,780,885.

Pomeranz, Jehoshua N.: *See—*
Platt, Steven; and Pomeranz, Jehoshua N., 3,781,828.

Pomot, Jean; and Rosenbaum, Georges, to Societe Anonyme dite: L'Oreal. Process for coloring the skin with α-dialdehydes. 3,781,418, Cl. 424-63.000.

Ponvert, Edwin K. Hemorrhoid treatment preparation produced from hot cherry peppers. 3,781,424, Cl. 424-195.000.

Pope, Hermon L., Jr.: *See—*
Morris, Marvin L., Jr.; Pope, Hermon L., Jr.; and Ruggiero, Edward M., 3,781,515.

Poppe, Martin: *See—*
Beukers, John M.; and Poppe, Martin, 3,781,893.

Poppe, Martin C., Jr.; and Friedman, Maurice, to Beukers Laboratories, Inc. Radiosonde meteorological data oscillator and pulse stretcher. 3,781,715, Cl. 332-9.00t.

Porta, Paolo Della; Zucchinelli, Mario; and Pisani, Cesare, to S.A.E.S. Getters S.p.A. Getter pumps. 3,780,501, Cl. 55-208.000.

Porter, H. K., Company, Inc.: *See—*
Weston, Donald E.; and Timmerman, Julius W., 3,780,625.

Posingies, Walter M., to Honeywell Inc. Fluidic variable capacitance network. 3,780,769, Cl. 137-819.000.

Postmaster General, Her Majesty's: *See—*
Ellen, Leonard William; and Davies, Gordon Thomas, 3,781,867.

Potter, Geoffrey, to Honeywell Information Systems, Inc. Inrush-current limiting device. 3,781,637, Cl. 321-11.000.

Poulin, Gerard: *See—*
Michaud, Treffle; Hubert, Lucien; and Poulin, Gerard, 3,780,823.

Power, Basil Dixon; Oswald, Roger Derek; and Tooth, David Michael, to British Oxygen Company Limited, The. Vacuum pumps. 3,781,518, Cl. 219-271.000.

Powers, Richard T., to AFA Corporation of Florida, The. Leakproof head for hand sprayer. 3,780,951, Cl. 239-333.000.

PPG Industries, Inc.: *See—*
DeAngelis, Willie G., 3,781,003.
Rowan, Charles M., Jr., 3,781,411.

Prange, James M., to Rockwell International Corporation. Vehicle drive system. 3,780,821, Cl. 180-44.00r.

Pregel, Alexander; and Goldman, William A., to Conrad Precision Industries. Luminous indicators involving phosphors. 3,780,462, Cl. 40-130.00r.

Preikschat, Fritz K. Impedance measuring bridge circuit. 3,781,671, Cl. 324-60.00c.

Prellwitz, Samuel B.: *See—*
Laycak, John F.; Readal, Gerald J.; and Prellwitz, Samuel B., 3,781,117.

Price, Aubrey G.: *See—*
Newcomb, Arthur L., Jr.; and Price, Aubrey G., 3,780,966.

Price, Raymond M., to United States of America, Army, mesne. Polymers containing a difluoroamino radical. 3,781,252, Cl. 260-80.730.

Primmer, Charles A., to Development Technology, Inc. Products of combustion detector. 3,781,838, Cl. 340-237.00s.

Prince, Gilles Joseph. Acoustic loading system. 3,780,824, Cl. 181-31.00b.

Prinz, Roy H.; and Kerr, Bob C., to Celanese Corporation. Stabilization of aqueous formaldehyde solutions. 3,781,365, Cl. 260-606.000.

Prochnow, Claus, to Rollei-Werke Franke & Heidecke. Spool holder for roll film cameras. 3,780,635, Cl. 95-31.0ca.

Proctor & Gamble Company, The: *See—*
McSwiggin, James L., 3,780,850.

Proctor, Stephen G.: *See—*
Conner, William V.; and Proctor, Stephen G., 3,781,404.

Productive Aires Mfg., Co.: *See—*
Palmer, Harold S., 3,780,955.

Products Research & Chemical Corporation: *See—*
Pepe, Anthony E.; and Singh, Hakam, 3,781,315.

Programmed & Remote Systems Corporation: *See—*
Wiesener, Robert W., 3,780,571.

Propst, Robert L., to Miller, Herman, Inc. Pediatric bed. 3,780,387, Cl. 5-345.000.

Protection Devices, Inc.: *See—*
Caleskie, Vincent J.; Hughes, Paul T.; and Johnson, Robert Wayne, 3,781,789.

Proul, Donald W. Food cooking form. 3,780,978, Cl. 249-135.000.

Przybylski, Zdislaw Ryszard. Rotary internal-combustion engine. 3,780,710, Cl. 123-8.470.

Pullon, Gerald E.: *See—*
Lank, Gerald W.; and Pullon, Gerald E., 3,781,886.

Pumpen und Maschinenbau Abel Kommanditgesellschaft: *See—*
Stadie, Werner; Sperling, Kurt; Deubner, Rolf; and Pattberg, Werner, 3,780,747.

Purington, Ronald G.: *See—*
Harrison, William L.; Purington, Ronald G.; and Anderson, Donald L., 3,781,843.

Quackenbush, Edward Clarke, to Tidal Sales Corporation. Connector assembly. 3,781,762, Cl. 339-89.00c.

Quatek, Inc.: *See—*
Lester, David, 3,780,392.

Quello, Henry A., to Zimmer Manufacturing Company. Traction strip. 3,780,731, Cl. 128-169.000.

Querou, Yvon: *See—*
Chabardes, Pierre; and Querou, Yvon, 3,781,307.

Quesnel, Marcel; and Guerin, Jean, to Regie Nationale des Usines Renault and Automobiles Peugeot. Pivoting window locking devices. 3,781,044, Cl. 292-200.000.

Quilico, Adolfo: *See—*
Minisci, Francesco; Galli, Remo; and Quilico, Adolfo, 3,781,286.

Quinlan, William J.; and Hover, Lawrence L., to Hastings Manufacturing Company. Windshield wiper assembly. 3,780,394, Cl. 15-250.320.

Quinlan, William J.; and Hover, Lawrence L., to Hastings Manufacturing Company. Windshield wiper assembly. 3,780,395, Cl. 15-250.360.

Radecki, Kenneth P.: *See—*
Scott, Paul F.; Radecki, Kenneth P.; and Tatge, Robert B., 3,781,782.

Rader, Edwin R.; and Ripley, Clarence A., Jr., to Monitor Systems Corporation. Method and apparatus for non-contace surface measurement. 3,781,115, Cl. 356-167.000.

Radimer, Kenneth J.: *See—*
Munday, Theodore F.; and Radimer, Kenneth J., 3,781,409.

Radscheit, Kurt: *See—*
Haede, Werner; Stache, Ulrich; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,781,269.

Ragard, Phillip A., to Universal Instruments Corporation. Dual in-line component socket insertion apparatus. 3,780,415, Cl. 29-203.00b.

Rahaim, Thomas J.; and Kish, Leslie G., to Westinghouse Electric Corporation. Gas turbine nozzle vane structure. 3,781,125, Cl. 415-115.000.

Rahenkamp, Robert A.: *See—*
Kolpek, Robert A.; and Rahenkamp, Robert A., 3,780,846.

Rakitch, Miodrag. AC ignition system. 3,780,717, Cl. 123-148.0ac.

Ralide, Inc.: *See—*
Nankivell, Erby Roy, Jr., 3,780,494.

Ramacheandran, Sundaresan: *See—*
Acre, Thomas R.; Gimbel, Frederick M.; and Ramacheandran, Sundaresan, 3,780,581.

Ramsey, Charles W., to General Motors Corporation. Bezel assembly. 3,781,537, Cl. 240-8.160.

Ramsey, Wallace Burton; and De Lapp, Darwin Fiske, to American Cyanamid Company. Preparation of polyglycolic acid in finely divided form. 3,781,349, Cl. 260-535.00p.

Randall, David I.; and Copes, Joseph P., to GAF Corporation. Production of 2-hydroxy-3,5,6-trichlorobenzylamines. 3,781,359, Cl. 260-570.900.

Rankin, R. Ray: *See—*
Jackson, William D. (said Jackson and Bell assors. of 10% each to), 3,780,452.

Rannells, David C., to Itek Corporation. Circuit for improving RF pulse reception frequency resolution without rise-time degradation. 3,781,688, Cl. 325-321.000.

Ransburg Electro-Coating Corporation: *See—*
Scharfenberger, James A., 3,780,942.

Ransford, Neil Edward; Gilbert, Leland Glen; and Hunger, Richard Herman, said Ransford and said Gilbert, assors. to said Deere & Company. Logging grapple. 3,781,056, Cl. 294-112.000.

Rapier, Allan Clarkson, to United Kingdom Atomic Energy Authority. Gas cooled nuclear reactors. 3,781,190, Cl. 176-59.000.

Rashkovich, Mikhail Pavlovich; Kon, Alexandr Ljudvigovich; Shaparev, Nikolai Konstantinovich; Shklovsky, Boris Isaakovich; and Leibovich, Grigory Abramovich. Method of breaking alternating-current electric motor and devices employing this method. 3,781,619 Cl. 318-211.000.

Rasmussen, Jans Ejnar. Method of vacuum investment casting. 3,780,787, Cl. 164-35.000.

Ratti, Michele. Process and device for producing fancy ply yarns with high efficiency uptwisters. 3,780,512, Cl. 57-16.000.

Rauschelbach, Paul A., to Sperry Rand Corporation. Autopilot pitch attitude control. 3,781,628, Cl. 318-584.000.

Ravas, Richard J., to Westinghouse Electric Corporation. Direction sensitive doppler processor. 3,781,773, Cl. 340-1.00r.

Raytheon Company: *See—*
Colombo, Sergio; Carugati, Vitaliano; Ferramola, Gianni; and Ferrari, Sergio, 3,781,557.
Deerfield, Alan J., 3,781,814.
Estlick, Raymond J., 3,781,042.
Harrold, William J., 3,781,592.
Monser, George J., 3,781,895.

RCA Corporation: *See—*.
Arnold, Anthony Francis, 3,780,795.
Gutsogeorge, George Athan, 3,781,870.
Pierson, Paul Bruce, 3,781,722.
Ross, Edward Charles, 3,781,570.
Staras, Harold; and Shefer, Joshua, 3,781,879.
Vilkomerson, David Herman Raphael, 3,781,830.

Readal, Gerald J.: *See—*
Laycak, John F.; Readal, Gerald J.; and Prellwitz, Samuel B., 3,781,117.

Recaro GmbH. and Co.: *See—*

Walz, Jorgen; and Faust, Eberhard, 3,781,061.
Reed, Samuel F., Jr.: *See—*
Baldwin, Mart G.; and Reed, Samuel F., Jr., 3,781,178.
Reeves, John R.: *See—*
Kruper, Andrew P.; Reeves, John R.; and Vercellotti, Leonard C., 3,781,836.
Regie Nationale des Usines Renault: *See—*
Quesnel, Marcel; and Guerin, Jean, 3,781,044.
Rivere, Jean-Pierre, 3,780,587.
Reichardt, Peter: *See—*
Jorn, Raoul; and Reichardt, Peter, 3,781,073.
Reichert, Gilbert A.; and Moehrle, Earl R., to Allen-Bradley Company. Selector switch with particular operator means, and detents which are restrained from rotation. 3,781,499, Cl. 200-166.0sd.
Reid, Luther J., Jr.: *See—*
Suryanarayana, Yelagondahally S.; and Reid, Luther J., Jr., 3,781,287.
Reid, Philip L.: *See—*
Waldrop, Thomas E.; and Reid, Philip L., 3,780,489.
Reimer, William A., to GTE Automatic Electric Laboratories, Incorporated. Fastening device. 3,780,401, Cl. 24-16.0pb.
Reimer, William A., to GTE Automatic Electric Laboratories, Incorporated. Air directing heat sink mounting of electrical components. 3,780,798, Cl. 165-128.000.
Reimers, James L., to FMC Corporation. Container flattening apparatus. 3,780,647, Cl. 100-232.000.
Reinhard, Ruedi. Process for the manufacture of a carpet with pile that is vertically lined up in rows and with ribbon-shaped interlayers which run through part of the height of the pile and are attached to the rows of pile. 3,781,181, Cl. 156-72.000.
Reininghaus & Co., Firma: *See—*
Seelbach, Heinz, 3,781,754.
Remachandran, Karapurath: *See—*
Lilienthal, Peter Frederick, II; Remachandran, Karapurath; and Tice, Edward Stephen, 3,780,558.
Remington Arms Company, Inc.: *See—*
Munson, Harold C., 3,780,487.
Rengo Kabushiki Kaisha Rengo Co., Ltd.: *See—*
Tokuno, Masateru; and Sawada, Tetsuya, 3,780,960.
Research Corporation: *See—*
Kauzlarich, James Joseph, 3,781,071.
Research Institute, Incorporated: *See—*
Hart, Charles H.; and Cashaw, George R., 3,781,006.
Resh, Roy E., to Agridustrial Electronics, Inc. Packing adapter for testing moist chopped materials in a grain moisture tester. 3,781,673, Cl. 324-61.00r.
Rettig, Charles E., to Allis, Louis, Company, The. Adjustable frequency power supply of the inverter type. 3,781,641, Cl. 321-21.000.
Reus, Walter, to Dunlop Limited. Uniformity test machines. 3,780,573, Cl. 73-146.000.
Reuschel, Konrad: *See—*
Keller, Wolfgang; Kersting, Arno; and Reuschel, Konrad, 3,781,152.
Reuschel, Konrad; Dietze, Wolfgang; Muhlbauer, Alfred; and Sandmann, Herbert, to Siemens Aktiengesellschaft. Method of producing homogeneous rods of semiconductor material. 3,781,209, Cl. 252-62.30r.
Reynolds, Charles Edward, to AMP Incorporated. Installation tooling for plastic locking nut in strip form. 3,780,417, Cl. 29-235.000.
Reynolds, George A.: *See—*
Drexhage, Karl H.; and Reynolds, George A., 3,781,711.
Reynolds, R. J., Tobacco Company: *See—*
Ezzell, Bobby R.; Fluck, Eugene R.; and Haefele, Louis R., 3,781,444.
Neel, Robert M.; and Johnson, Robert C., 3,780,744.
Roberts, Donald L., 3,780,743.
Rhea, James W. Intubation device and method of advancing a tube past the pylorus. 3,780,740, Cl. 128-350.00r.
Rhees, Raymond C., to Kerr-McGee Chemical Corporation. Method of reducing potassium ion concentration in perchlorate solutions. 3,781,412, Cl. 423-476.000.
Rhodes, Donald W.: *See—*
Newby, Billie J.; and Rhodes, Donald W., 3,781,217.
Rhodes, John R.: *See—*
Taylor, Morris C.; and Rhodes, John R., 3,781,556.
Rhone-Poulenc S.A.: *See—*
Chabardes, Pierre; and Querou, Yvon, 3,781,307.
Julia, Marc, 3,781,313.
Nancy, Denise; and Ninet, Leon, 3,781,421.
Ribka, Joachim: *See—*
Dietz, Erich; Ribka, Joachim; and Steckelberg, Willi, 3,781,266.
Engelhardt, Friedrich; and Ribka, Joachim, 3,781,254.
Rice, Philip J., Jr., to American Express Investment Management Corporation. Hybrid electrostatic impact printer. 3,781,474, Cl. 178-25.000.
Richard Manufacturing Company: *See—*
Garnett, Robert E., 3,780,729.
Richard, Willard H. Work scheduling apparatus. 3,780,695, Cl. 116-136.000.
Richter, Mandred: *See—*
Gajer, Richard; Skurnia, Uwe; and Richter, Mandred, 3,781,397.
Rickey, Wynn P.: *See—*
Graham, John W.; and Rickey, Wynn P., 3,780,807.
Rider, George William. Surgical tubing clip clenching tool. 3,780,416, Cl. 29-212.00d.
Rieskamp, Karl: *See—*
Bunzel, Eckard; Spessert, Robert; Rieskamp, Karl; and Hildebrand, Willi, 3,781,166.
Rigassi, Norbert: *See—*
Bollag, Werner; Rigassi, Norbert; and Schwieter, Ulrich, 3,781,314.
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,781,309.
Rikagaku Kenkyusho: *See—*
Kumabe, Junichiro; and Shimizu, Koichi, 3,781,022.
Riley, James Robert: *See—*
Turner, James Keith; and Riley, James Robert, 3,780,544.
Rinaldi, Fred J. Method and apparatus for acoustical shielding. 3,780,825, Cl. 181-33.00g.
Ripley, Clarence A., Jr.: *See—*
Rader, Edwin R.; and Ripley, Clarence A., Jr., 3,781,115.
Ririe, Max H.; Roland, Murray C.; and Olson, Rich, to Lockwood Corporation. Mobile irrigation apparatus and alignment control. 3,780,947, Cl. 239-177.000.
Ritchie, James Alexander. Thermal regenerators. 3,780,792, Cl. 165-9.000.
Rivelle, George R. Automatic toilet flushing system. 3,780,384, Cl. 4-41.000.
Rivere, Jean-Pierre, to Regie Nationale des Usines Renault and Automobiles Peugeot. Methods of measuring instantaneous mean pressures in fluid media. 3,780,587, Cl. 73-398.00r.
Rivlin, Charles A.: *See—*
Hoffberger, Charles C., II; and Rivlin, Charles A., 3,781,471.
Robert, Pierre: *See—*
Derre, Andre; Robert, Pierre; and Vuillemin, Claude, 3,780,858.
Roberts, Donald L., to Reynolds, R. J., Tobacco Company. Tobacco product. 3,780,743, Cl. 131-17.000.
Roberts, Frank B., to Victor Products (Wallsend) Limited. Lamp circuits. 3,781,594, Cl. 315-98.000.
Roberts, Richard W.; and Jernakoff, George, to General Electric Company. Instrument for guiding the blind in filling open-top vessels. 3,781,840, Cl. 340-245.000.
Roberts, Robert E.; and Zdinak, William D. Programmable toy vehicle. 3,780,470, Cl. 46-213.000.
Robertshaw Controls Company: *See—*
Genbauffe, Francis S., 3,780,940.
Genbauffs, Francis S., 3,780,954.
Katchka, Jay R., 3,780,600.
Robinson, Alan Thomas. Stringed musical instruments. 3,780,612, Cl. 84-173.000.
Robinson, Eugene A., to Collins Radio Company. RF transistor carrier. 3,781,613, Cl. 317-234.00r.
Robinson, Martin A.: *See—*
Hurley, Thomas J.; and Robinson, Martin A., 3,781,321.
Robinson, Thomas Scott, to International Business Machines Corporation. Control system employing microprogram discrete logic control routines. 3,781,799, Cl. 340-164.3ma.
Robinson, William S. Apparatus for wrapping small articles. 3,780,491, Cl. 53-226.000.
Rocca-Serra, Jean: *See—*
Boudinet, Guy; and Rocca-Serra, Jean, 3,781,710.
Rocha, Henry A. F., to General Electric Company. Ultrasonic inspection apparatus. 3,780,572, Cl. 73-67.50r.
Rochat, Alain Claude: *See—*
Spaun, Ruediger; Rochat, Alain Claude; Gallay, Jean-Jacques; and Brenneisen, Paul, 3,781,290.
Rochina, Vincent: *See—*
Couchoud, Paul; and Rochina, Vincent, 3,781,400.
Rockwell International Corporation: *See—*
Nattefort, Fritz, 3,781,072.
Prange, James M., 3,780,821.
Sprague, Frederick L., 3,780,775.
Roda, Emilio, to Fratelli Roda S.A. Machine for the automatic formation and insertion of container partitions. 3,780,627, Cl. 93-37.00r.
Rodermund, Gerd: *See—*
Rodermund, Gerd; and Kappus, Helmut (said Kappus assor. to said), 3,780,514.
Rodermund, Gerd; and Kappus, Helmut, said Kappus assor. to said Rodermund, Gerd. Method for the manufacture of wreaths, pompons, rosettes, and the like. 3,780,514, Cl. 57-156.000.
Rodriguez, Edward T. Full range light dimmer adaptor. 3,781,593, Cl. 315-58.000.
Roeschlein, Eugene R.: *See—*
Kuhn, Gerald D.; Peterson, Kenneth A.; Roeschlein, Eugene R.; Weiss, Donald C.; Weiss, Kenneth F.; and Zeph, David L., 3,781,776.
Roge, Ralph R., to Wescom, Inc. Loop extender. 3,781,480, Cl. 179-16.00f.
Rogers, Dana B.: *See—*
Van Patten, Robert E.; and Rogers, Dana B., 3,780,723.
Rohm & Haas Company: *See—*
Baldwin, Mart G.; and Reed, Samuel F., Jr., 3,781,178.
Clemens, David H.; and Kunin, Robert, 3,780,500.
Rohr, Harry: *See—*
Muller, Erwin; Wirth, Wolf-Dieter; Blahak, Johannes; and Rohr, Harry, 3,781,233.
Rohr, Lewis Hampton: *See—*
Rosenthal, Francis Joseph, Jr.; and Rohr, Lewis Hampton, 3,781,579.

Rokos, George H. S., to Plessey Handel und Investments A.G. Electro-optical waveguide arrangements. 3,781,081, Cl. 350-96.0wg.
Roland, George W.: *See—*
Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., 3,781,707.
Roland, Murray C.: *See—*
Ririe, Max H.; Roland, Murray C.; and Olson, Rich, 3,780,947.
Rolker, John H.: *See—*
Jeffers, Frederick J.; and Rolker, John H., 3,781,903.
Rollei-Werke Franke & Heidecke: *See—*
Prochnow, Claus, 3,780,635.
Rolles, Rolf: *See—*
Kondis, Thomas J.; and Rolles, Rolf, 3,781,177.
Rolls-Royce Limited: *See—*
McMurtry, David Roberts, 3,781,131.
Romell, Gunnar Vigg Riss, to Atlas Copco Aktiebolag. Hydraulic fluid actuated percussion tool. 3,780,621, Cl. 91-290.000.
Roper, Ralph E., to Wallace Expanding Machines, Inc. Container with concave belt and lock seam. 3,780,899, Cl. 220-5.00r.
Rorden, Louis H., to Develco, Inc. Magnetic detection for an anti-shoplifting system utilizing combined magnetometer and gradiometer signals. 3,781,664, Cl. 324-43.00r.
Rosano, Joseph G., Jr.; and Vaillancourt, Vincent L., to Bard, C. R., Inc. Instrument package with sterile field. 3,780,857, Cl. 206-63.200.
Rosborough, Dennis F.: *See—*
Moss, Gerald; and Rosborough, Dennis F., 3,781,445.
Rosen, Harry: *See—*
Wolf, Milton; Sellstedt, John H.; and Rosen, Harry, 3,781,300.
Rosen, Melvin Harris, to Ciba-Geigy Corporation. Methanobenzo (B) thiophenes. 3,781,293, Cl. 260-293.570.
Rosenbaum, Erik; and Martin, John Waldo, to Bendix Corporation, The. Fast time constant circuit means using time discrimination techniques. 3,781,569, Cl. 307-234.000.
Rosenbaum, Georges: *See—*
Pomot, Jean; and Rosenbaum, Georges, 3,781,418.
Rosenfeld, Daniel D.; and Gorbaty, Martin L., to Esso Research and Engineering Company. 1-Methyl-3-halomethyl-2,4-dioxo-1-3-dihydroquinazolines. 3,781,288, Cl. 260-260.000.
Rosenfeld, Howard; and Wetzler, Justin J., 1/2 to A-T-O Inc., mesne and 1/2 to American Linen Supply Co. Laundering system with soak of garments on hangers. 3,780,543, Cl. 68-18.00f.
Rosenthal, Francis Joseph, Jr.; and Rohr, Lewis Hampton, to Black and Decker Manufacturing Company, The. Protected lock means for electrically-operated hand-manipulated tools. 3,781,579, Cl. 310-68.00a.
Rosenthal, Jerome A., to Xerox Corporation. Display system. 3,781,848, Cl. 340-324.00a.
Rosner, G., & CIA, LTDA.: *See—*
Rosner, Gunther, 3,780,917.
Rosner, Gunther, to Rosner, G., & CIA, LTDA. Machine having grippers for shaping, folding and pressing collars. 3,780,917, Cl. 223-2.000.
Ross, Edward Charles, to RCA Corporation. Storage circuit using multiple condition storage elements. 3,781,570, Cl. 307-238.000.
Ross, Leonard O.; and Hill, Marion E., to United States of America, Atomic Energy Commission. Preparation of difluoronitroethylperfluoro acrylate and related compounds. 3,781,335, Cl. 260-486.00h.
Ross, Robert G.: *See—*
Baes, Charles F., Jr.; Bamberger, Carlos E.; and Ross, Robert G., 3,781,403.
Rossi, Alberto: *See—*
Jaques, Roland; and Rossi, Alberto, 3,781,267.
Roth, James F.; Gambell, James W.; and Penquite, Charles R., to Monsanto Company. Process of treating auto exhaust with shrinkage resistant copper aluminate-rare earth catalysts. 3,781,406, Cl. 423-213.000.
Roth, Robert Ingersoll, to International Business Machines Corporation. Selective shift register. 3,781,821, Cl. 340-172.500.
Roth, Willy: *See—*
Hennart, Claude; Moldovanyi, Laszlo; and Roth, Willy, 3,781,428.
Roussel-UCLAF: *See—*
Warnant, Julien; and Jolly, Jean, 3,781,311.
Rowan, Charles M., Jr., to PPG Industries, Inc. Process for the production of hydrazoic acid. 3,781,411, Cl. 423-406.000.
Rozelle, Donald S., to Magnetech Industries, Inc. Method and apparatus for transferring movable coils of a variable induction device. 3,781,738, Cl. 336-15.000.
Rubin, Alan A., to Endo Laboratories, Inc., mesne. 1,2,3,4,8,9-Hexahydro-3-methylpyrido [4',3':2,3]-indolo [1,7-ab] [1] benzazepine and the 3-ethyl homolog as tranquilizers. 3,781,437, Cl. 424-263.000.
Ruckel, Douglas J.: *See—*
Knowles, Charles R.; and Ruckel, Douglas J., 3,781,456.
Rudd, Alexander H.; Kidwell, John H.; and Murray, Thomas J., to Babcock & Wilcox Company, The. Reducing nox formation by combustion. 3,781,162, Cl. 431-115.000.
Ruggiero, Edward M.: *See—*
Morris, Marvin L., Jr.; Pope, Hermon L., Jr.; and Ruggiero, Edward M., 3,781,515.
Ruhland, John, to Xerox Corporation. Cleaning apparatus. 3,781,107, Cl. 355-15.000.
Runde, Herbert Arthur; and Kowles, Joseph Edward, to Combustion Engineering, Inc. High temperature ultrasonic transducer. 3,781,576, Cl. 310-9.100.
Ruppenthal, Wayne W. Paper storage and baling container. 3,780,854, Cl. 206-46.00r.
Rusbach, Maurice, to Sarmac S.A. Set comprising an infantry weapon and its ammunition. 3,780,616, Cl. 89-1.800.
Rushing, Frank C.; and Gilbert, Lynford W., to Westinghouse Electric Corporation. Reflector. 3,781,095, Cl. 350-310.000.
Russell, Theodore B. Mobile log-noter. 3,780,461, Cl. 40-86.000.
Russian, Ljudmila: *See—*
Shilov, Alexandr E.; Dyachkovsky, Fridrikh S.; Chirkov, Nikolai Mikhailovich; Matkovsky, Petr E.; Aronovich, Khaim-Mordkhe; Beikhold, Alina A.; and Russian, Ljudmila, 3,781,220.
Russmann, Horst: *See—*
Welters, Reiner; and Russmann, Horst, 3,781,417.
Ryan, Allen L.: *See—*
Williams, Norman L.; and Ryan, Allen L., 3,780,965.
Rygiol, Henry V. Method of welding employing square wave current pulses and causing the molten metal to resonate. 3,781,511, Cl. 219-137.000.
Sabel, Johann: *See—*
Balwe, Thomas; and Sabel, Johann, 3,781,255.
Sabina, William E., to Heyl & Patterson, Inc. Magnetic device for connecting hauling lines to a barge. 3,781,734, Cl. 335-289.000.
Sadee, Constant P. M.; Van Koppen, Christianus W. J.; and Koenders, Henricus A. A., to Stamicarbon N.V. Process and installation for the preparation of homo- or copolymers of ethylene. 3,781,256, Cl. 260-86.700.
Saeki, Arinori: *See—*
Miyajima, Tohru; Ichimoto, Yoshiharu; and Saeki, Arinori, 3,781,625.
S.A.E.S. Getters S.p.A.: *See—*
Porta, Paolo Della; Zucchinelli, Mario; and Pisani, Cesare, 3,780,501.
Saida, Hiroji: *See—*
Ono, Yuichi; Saida, Hiroji; Nomura, Masayoshi; and Naraoka, Kyyotake, 3,780,426.
Saint-Aubin, Georges Gilbert: *See—*
Tagarie, Frederic Louis Joseph; Bernard, Albert; and Saint-Aubin, Georges Gilbert, 3,780,617.
Saito, Susumu: *See—*
Itabashi, Yoshio; Saito, Susumu; and Seki, Masao, 3,781,245.
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, to Toray Industries, Inc. Method of producing acrylic copolymer. 3,781,248, Cl. 260-79.00m
Sakamaki, Hiroshi, to Nippon Piston Ring Co., Ltd. Apex seal assembly of a rotary piston engine. 3,781,148, Cl. 418-117.000.
Sakamoto, Yoshio, to Hitachi, Ltd. Differential amplifier circuit. 3,781,699, Cl. 330-30.00d.
Sakurai, Mituo: *See—*
Tahara, Hisayoshi; Sakurai, Mituo; and Yamada, Hayatoshi, 3,780,937.
Salemme, Robert M.: *See—*
Ward, William J., III; and Salemme, Robert M., 3,780,496.
Salners, Edward A., to Motorola, Inc. Yoke mounting ring with deformable finger members. 3,781,730, Cl. 335-210.000.
Salomon, George Pierre Joseph. Ski attachment. 3,781,029, Cl. 280-11.350.
Saltini, Fabrizio, to Olivetti, Ing., C., & C., S.p.A. Stored program electronic computer using macroinstructions. 3,781,807, Cl. 340-172.500.
Samejima, Tadanori: *See—*
Matsumura, Hisashi; Samejima, Tadanori; Orito, Hiroshi; and Ochiari, Hisashi, 3,781,150.
Samuels, Philip Rufus, to General Electric Company Limited, The. Electrical discharge lamp. 3,781,595, Cl. 315-101.000.
Sanders Associates: *See—*
Harrison, William L.; Purington, Ronald G.; and Anderson, Donald L., 3,781,843.
Sanders Associates Inc.: *See—*
Chomet, Marc; and Ellison, Donald E., 3,781,468.
Tallman, Charles V., 3,781,779.
Sandmann, Herbert: *See—*
Reuschel, Konrad; Dietze, Wolfgang; Muhlbauer, Alfred; and Sandmann, Herbert, 3,781,209.
Sandoz-Wander, Inc.: *See—*
Galantay, Eugene E., 3,781,433.
Sandoz-Warner, Inc.: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,781,270.
Sanford, Harry W., to Thomas, James C., III. Automatic hand gun. 3,780,618, Cl. 89-150.000.
Sangamo Electric Company: *See—*
Carney, Murray C., 3,781,906.
Sanjean, John: *See—*
Cahoy, Roger P.; and Sanjean, John, 3,781,446.
Sankyo Kozaku Kogyo Kabushiki Kaisha: *See—*
Kikuchi, Junjiro, 3,781,019.
Sano, Eiichi: *See—*
Kusunoki, Yasuo; Okazaki, Hiroshi; Sato, Yoshinori; and Sano, Eiichi, 3,781,292.

Santos, Adrian Y.; and Feder, Charles, to Phelps Dodge Industries, Inc. Paper-insulated electrical conductor and method of making same. 3,781,462, Cl. 174-121.00b.

Sanz, Manuel Claude, to Micromedic Systems, Inc. Metering and dispensing apparatus. 3,780,912, Cl. 222-282.000.

Sapsowitz, Max: *See—*
Kulesza, Stanley; and Sapsowitz, Max, 3,780,659.

Saratoga Systems, Inc.: *See—*
Brown, Alvin E., 3,780,577.

Sargent Industries, Inc.: *See—*
Balthazar, Real J.; and Halberg, Richard A., 3,780,555.

Sarmac S.A.: *See—*
Rusbach, Maurice, 3,780,616.

Sasaguri, Kiichiro: *See—*
Kobayashi, Hidehiko; Sasaguri, Kiichiro; and Shiga, Masaaki, 3,781,399.

Sasaki, Toshio, to Brother Kogyo Kabushiki Kaisha. Sewing machine with a needle positioning device. 3,780,681, Cl. 112-219.00a.

Sato, Munefumi, to Nisson Motor Company, Limited. Sealing device for a rotary internal combustion engine. 3,781,147, Cl. 418-88.000.

Sato, Ryozi; and Chino, Yasuyoshi, to Nippon Zeon Co., Ltd. Process for the extraction of methacrylic acid from aqueous solutions. 3,781,332, Cl. 260-486.00r.

Sato, Toshio: *See—*
Katsumi, Mamoru; Sato, Toshio; and Hara, Tadao, 3,781,204.

Sato, Yoshinori: *See—*
Kusunoki, Yasuo; Okazaki, Hiroshi; Sato, Yoshinori; and Sano, Eiichi, 3,781,292.

Sauer, Helmut, to Siemens Aktiengesellschaft. Circuit for converting D.C. voltage into three-phase voltage. 3,781,635, Cl. 321-9.00r.

Sawada, Taketoyo: *See—*
Aizawa, Tetsuya; Sawada, Taketoyo; Tauchi, Yoshihiko; Kawamata, Tsutomu; and Saya, Hiroshi, 3,781,856.

Sawada, Tetsuya: *See—*
Tokuno, Masateru; and Sawada, Tetsuya, 3,780,960.

Sawin, Frederick C.; and Whitfill, William A., Jr., to Schlumberger Technology Corporation. Marine streamer cable. 3,781,778, Cl. 340-7.00r.

Sawyer, Walter M.: *See—*
Long, William P.; Sawyer, Walter M.; and Arias, Lionel J. De Paula, 3,780,584.

Saya, Hiroshi: *See—*
Aizawa, Tetsuya; Sawada, Taketoyo; Tauchi, Yoshihiko; Kawamata, Tsutomu; and Saya, Hiroshi, 3,781,856.

Scarpino, John J., to Hope-Tronus, Limited. Light control circuit. 3,781,604, Cl. 315-312.000.

Schack, Warren R.; and Glenn, Francis, to Swift & Company. Shaped and formed meat products manufacture. 3,780,490, Cl. 53-122.000.

Schaefer, Ernest D., to General Motors Corporation. Parking brake control mechanism. 3,780,599, Cl. 74-516.000.

Schaeffer, Gerard: *See—*
Kneller, Klaus; and Schaeffer, Gerard, 3,780,994.

Schall, Robert A., to Dorr-Oliver Incorporated. Air pressure actuated single-acting diaphragm pump. 3,781,141, Cl. 417-395.000.

Scharfenberger, James A., to Ransburg Electro-Coating Corporation. Method of dispensing a mixture of resin and expanded thermoplastic spheres. 3,780,942, Cl. 239-1.000.

Schauberger, Helmut: *See—*
Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, 3,780,668.

Scheolov, Nikolai Illarionovich: *See—*
Sokolsky, Dmitry Vladimirovich; Zakumbaeva, Gaukhar Daulenovna; Zhubanov, Kair Akhmetovich; Mazin, Evgeny Petrovich; Scheolov, Nikolai Illarionovich; Fokin, Evgeny Pavlovich; and Livanov, Vladimir Arkadievich, 3,781,227.

Scherf, Gerald F.; and Kohler, Robert D., to Owens-Illinois, Inc. Apparatus and method for displaying the minimum thickness of a dielectric member measured by a radio frequency thickness gauge. 3,780,859, Cl. 209-73.000.

Schering AG: *See—*
Drawert, Manfred; and Griebsch, Eugen, 3,781,234.

Schering Corporation: *See—*
Shapiro, Elliot L.; Teutsch, George J.; and Herzog, Hershel L., 3,781,276.
Topliss, John G., 3,781,360.

Schieber, Hans; and Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber KG. Needle breakage safety device. 3,780,542, Cl. 66-165.000.

Schiesterl, Gerhard; and Kuhn, Hans-Ulrich, to Daimler-Benz Aktiengesellschaft. Vehicle liquid level monitor for passenger protection installations. 3,781,788, Cl. 340-59.000.

Schlage, Ernest L., to Schlage Lock Company. Binary multi-plane cylinder. 3,780,549, Cl. 70-358.000.

Schlage Lock Company: *See—*
Schlage, Ernest L., 3,780,549.

Schlegel Manufacturing Co. Inc., The: *See—*
Wells, Howard F., 3,781,390.

Schleicher, Harold E., to Arrow-Hart, Inc. Electrical connectors with internal and external strain-relief for conductor wires. 3,781,765, Cl. 339-103.00r.

Schlosberg, Samuel B.: *See—*
Hawthorne, John Q.; and Schlosberg, Samuel B., 3,781,352.

Schlossberg, Howard, to United States of America, Air Force. Isolator for high power laser system. 3,781,714, Cl. 331-94.500.

Schlumberger Technology Corporation: *See—*
Sawin, Frederick C.; and Whitfill, William A., Jr., 3,781,778.
Urbanosky, Harold J., 3,780,575.

Schmeykal, Rudolf: *See—*
Cramer, Bernhard; Domig, Herbert; Von Keller, Theodor; and Schmeykal, Rudolf, 3,781,800.

Schmidt, Felix Helmut: *See—*
Witt, Ernst-Christian; Stach, Kurt; Thiel, Max; Schmidt, Felix Helmut; and Stork, Harald, 3,781,328.

Schmidt, Frederick W.: *See—*
Bartoszevicz, Joseph G.; Murphy, George H., Jr.; and Schmidt, Frederick W., 3,780,409.

Schmidt, Gerald: *See—*
Poferl, Gunter; Schmidt, Gerald; and Smejkal, Hellmuth, 3,780,583.

Schneider, Eckart: *See—*
Leitz, Ludwig; Heitmann, Knut; and Schneider, Eckart, 3,781,110.

Schneider, Jos., & Co. Optische Werke: *See—*
Thomas, Otto, 3,781,617.

Schneider, Kenneth Roger, to Deere & Company. Interlock for transmission and parking brake controls. 3,780,839, Cl. 192-4.00a.

Schneider, Wilhelm: *See—*
Zimmer, Kurt; and Schneider, Wilhelm, 3,780,560.

Schneihofer, Adolf: *See—*
Holzgruber, Wolfgang; Machner, Peter; Schneihofer, Adolf; Kleinhagauer, Otmar; and Cerwenka, Peter, 3,781,448.

Schnell, Hilmar: *See—*
Nussbaum, Helmut; and Schnell, Hilmar, 3,780,969.

Scholl, Lillian L. Suspended hanger. 3,780,875, Cl. 211-115.000.

Schon, Nikolaus: *See—*
Pampus, Gottfried; Schon, Nikolaus; Witte, Josef; and Marwede, Gunter, 3,781,257.

Schott, Robert E.: *See—*
Matthews, Ralph W.; and Schott, Robert E., 3,780,762.

Schreiner, Horst; and Fidos, Henryk, to Siemens Aktiengesellschaft. Wire plating apparatus including doctoring die. 3,780,698, Cl. 118-125.000.

Schrewelius, Nils Gustav, to Bulten-Kanthal Aktiebolag. Heat resistant, electrical insulating heating unit. 3,781,528, Cl. 219-546.000.

Schubert, Hans-Werner; and Hoffmeister, Friedrich, to Bayer Aktiengesellschaft. Benzomorphan derivatives with analgesic agents. 3,781,431, Cl. 424-267.000.

Schulman, Norman S. Monochromatic photographic exposure process and apparatus. 3,780,631, Cl. 95-10.00c.

Schultz, Matthew; and Schultz, William L. Bead breaker and tire removal and replacement device. 3,780,785, Cl. 157-1.240.

Schultz, William L.: *See—*
Schultz, Matthew; and Schultz, William L., 3,780,785.

Schumacher, Henning: *See—*
Ellinger, Karl-Georg; and Schumacher, Henning, 3,781,416.

Schumacher, Walter C.; and Graves, Ralph L., to General Electric Company. Mercury switch with heat sink contact. 3,781,502, Cl. 200-226.000.

Schuss, Jack Ascher, to Combustion Engineering, Inc. Control logic test circuit. 3,781,161, Cl. 431-16.000.

Schwab, Delmar G.; and Graham, Dennis P., to Hyster Company. Hydrostatic auxiliary wheel motor assist drive system for vehicles. 3,780,820, Cl. 180-44.00m.

Schwartz, Albert B., to Mobil Oil Corporation. Treatment of colloidal zeolites. 3,781,225, Cl. 252-455.00z.

Schwartz, Albert B., to Mobil Oil Corporation. Treatment of colloidal zeolites. 3,781,226, Cl. 252-455.00z.

Schwarz, Arnulf; Konig, Gerhard; Pieloth, Manfred; and Lang, Dietmar, to VEB Reglerwerk Dresden. Multiple input fluidic jet element for a fluidic circuit. 3,780,770, Cl. 137-823.000.

Schwarzler, Peter; Bohn, Gerhard; and Schauberger, Helmut, to Krauss-Maffei AG. Electromagnetic suspension and/or guide system especially for magnetically suspended vehicles. 3,780,668, Cl. 104-148.0ms.

Schweitzer, E. O., Manufacturing Co., Inc.: *See—*
Schweitzer, Edmund O., Jr., 3,781,682.

Schweitzer, Edmund O., Jr., to Schweitzer, E. O., Manufacturing Co., Inc. Resettable fault indicating means having a ringlike magnetic circuit. 3,781,682, Cl. 324-133.000.

Schweizerische Industrie-Gesellschaft: *See—*
Kneller, Klaus; and Schaeffer, Gerard, 3,780,994.

Schwieter, Ulrich: *See—*
Bollag, Werner; Rigassi, Norbert; and Schwieter, Ulrich, 3,781,314.
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,781,309.

Schwinn Bicycle Company: *See—*
Brilando, Frank P., 3,781,036.

Scott, Paul F.; Radecki, Kenneth P.; and Tatge, Robert B., to General Electric Company. Directive acoustic array for noise source localization. 3,781,782, Cl. 340-16.00r.

Scudder, Philmore M.; and Warren, Robert W., to Sun Research and Development Co., mesne. Method of preparing 2,4-dimethylisophthalic acid. 3,781,345, Cl. 260-524.00r.

Seabury, Almon D.: *See—*
Didycz, William J.; and Seabury, Almon D., 3,780,793.

Searle, G. D., & Co.: *See—*
Laney, Barton H., 3,781,544.

Seelbach, Heinz, to Reminghaus & Co., Firma. Lighting device. 3,781,754, Cl. 339-14.00r.

Sehner, Karl Heinz: *See—*
Miram, Horst; and Sehner, Karl Heinz, 3,780,796.

Seiko Koki Kabushiki Kaisha: *See—*
Kitai, Kiyoshi, 3,780,525.

Seino, Kuniki: *See—*
Ogawa, Masaya; and Seino, Kuniki, 3,781,108.

Seismograph Service Corporation: *See—*
Tucker, Robert L., 3,781,783.

Seki, Masao: *See—*
Itabashi, Yoshio; Saito, Susumu; and Seki, Masao, 3,781,245.

Sellman, Paul V.; Dingman, S. Lawrence; and Atkins, Ronald T., to United States of America, Army. Measurement of the total volume flow of a watercourse. 3,780,578, Cl. 73-227.000.

Sellstedt, John H.: *See—*
Wolf, Milton; Sellstedt, John H.; and Rosen, Harry, 3,781,300.

Selman, Gordon Leslie: *See—*
Iles, Gerald Sidney; and Selman, Gordon Leslie, 3,781,749.

Semenov, Alexandr Efimovich: *See—*
Dolgov, Anatoly, Vladimirovich; Konovalov, Leonid Vladimirovich; Perkis, Leib Benyaminovich; Deev, Stanislav Lvovich; Dyakov, Vitaly Evgenievich; Semenov, Alexandr Efimovich; Bauer, Evgeny Teodorovich; and Suturin, Serafim Nikolaevich, 3,780,864.

Senatos, Vladimir Alexeevich: *See—*
Lukach, Jury Efimovich; Senatos, Vladimir Alexeevich; and Petukhov, Arkady Demyanovich, 3,781,153.

Senese, Daniel John, to Bell Telephone Laboratories Incorporated. Computer control unit capable of dynamically reinterpreting instructions. 3,781,823, Cl. 340-172.500.

Seng Company, The: *See—*
Farmer, David K.; and Dlufosinski, Theodore, 3,781,062.

Sennewald, Kurt; Erpenbach, Heinz; Handte, Heinz; Kohl, Georg; and Lork, Winfried, to Knapsack Aktiengesellschaft. Process for isolating acrylic acid from aqueous crude acrylic acid by distillations with 3,3,5-trimethycyclohexamone and thin layer evaporatin. 3,781,193, Cl. 203-8.000.

Serkh, Mikhail Borisovich: *See—*
Levina, Tatyana Abramovna; Serkh, Mikhail Borisovich; and Guzynin, Ivan Georgievich, 3,780,564.

Shaffer, William E.; and Krawczyk, Charles C., to Stromberg-Carlson Corporation. Amplifier select and control circuit. 3,781,481, Cl. 179-16.00f.

Shaparev, Nikolai Konstantinovich: *See—*
Rashkovich, Mikhail Pavlovich; Kon, Alexandr Ljudvigovich; Shaparev, Nikolai Konstantinovich; Shklovsky, Boris Isaakovich; and Leibovich, Grigory Abramovich, 3,781,619.

Shapiro, Elliot L.; Teutsch, George J.; and Herzog, Hershel L., to Schering Corporation. 6-Azido-6-dehydro steroids of the progesterone series, methods for their manufacture and intermediates produced thereby. 3,781,276, Cl. 260-239.550.

Shapland, James T., to United States Steel Corporation. Rotary gate for bottom pour vessel having removable nozzles. 3,780,916, Cl. 222-555.000.

Sharp, Paul H., to Columbia Broadcasting System, Inc. Counterbalanced two speaker rotary tremolo device. 3,781,475, Cl. 179-1.00j.

Shavrin, Adolf Ivanovich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.

Shear, Wayne G.; Spratt, Brendan J.; and McClure, Benton J., to Bendix Corporation, The. Collision avoidance system ground station synchronization. 3,781,803, Cl. 340-147.0sy.

Shefer, Joshua: *See—*
Staras, Harold; and Shefer, Joshua, 3,781,879.

Sheller-Globe Corporation: *See—*
Menger, Keith J., 3,780,598.

Shelly, Newton L., Jr., to Goulton Industries, Inc. Fluorescent lamp receptacle. 3,781,759, Cl. 339-54.000.

Shiga, Masaaki: *See—*
Kobayashi, Hidehiko; Sasaguri, Kiichiro; and Shiga, Masaaki, 3,781,399.

Shiiki, Zenya: *See—*
Nakao, Masaaki; Shiiki, Zenya; and Amagi, Yasuo, 3,781,170.

Shilov, Alexandr E.; Dyachkovsky, Fridrikh S.; Chirkov, Nikolai Mikhailovich; Matkovsky, Petr E.; Aronovich, Khaim-Mordkhe; Beikhold, Alina A.; and Russian, Ljudmila. Catalyst for ethylene polymerization and copolymerization with olefins. 3,781,220, Cl. 25-429.00b.

Shim, Ivan H.; and Stelben, John J., to United States of America, National Aeronautics and Space Administration. Recorder/processor apparatus. 3,781,902, Cl. 346-24.000.

Shima, Takeo; Orsaki, Takanori; Oka, Isao; and Funakoshi, Wataru, to Teijin Limited. Process for preparation of 1,5-dimethyl naphthalene and/or 1,6-dimethyl naphthalene and catalyst composition to be used for said process. 3,781,375, Cl. 260-668.00d.

Shimada, Tsuneo: *See—*
Fujita, Yutaka; Toda, Toshiki; and Shimada, Tsuneo, 3,781,350.

Shimizu, Koichi: *See—*
Kumabe, Junichiro; and Shimizu, Koichi, 3,781,022.

Shimizu, Ryozi; Nakao, Kenji; Oguri, Masaaki; and Ohgaki, Masakatu, to OKI Electric Industry Co., Ltd. and Taiser Corporation. Remote detonation system. 3,780,654, Cl. 102-22.000.

Shimoda, Keitaro; Kuratani, Keijiro; and Sugiura, Akira, to American Cyanamid Company. Method for producing acrylic hollow fibers. 3,781,391, Cl. 264-53.000.

Shionogi & Co., Ltd.: *See—*
Nishimura, Haruo; and Otsuka, Hideo, 3,781,420.

Shirn, George A., to Sprague Electric Company. Apparatus for stripping brittle wire insulation. 3,780,928, Cl. 228-13.000.

Shklovsky, Boris Isaakovich: *See—*
Rashkovich, Mikhail Pavlovich; Kon, Alexandr Ljudvigovich; Shaparev, Nikolai Konstantinovich; Shklovsky, Boris Isaakovich; and Leibovich, Grigory Abramovich, 3,781,619.

Short, Joe T., to Deering Milliken Research Corporation. Process and apparatus for the production of tufted pile fabrics. 3,780,678, Cl. 112-79.00a.

Shuey, Kenneth C.; and Baker, Donald E., to Westinghouse Electronic Corporation. AC power control apparatus with demand responsive driver circuit. 3,781,572, Cl. 307-252.00t.

Shuffield, Jack E., to C & W Sewing Machine. Belt-loop feeder, and strip cutter. 3,780,680, Cl. 112-121.270.

Shukoff, Walter: *See—*
Jentsch, Alfred C., Jr.; Taylor, Edward I., Jr.; and Shukoff, Walter, 3,780,606.

Shutts, Robert L.: *See—*
Sudnick, Dennis J.; and Shutts, Robert L., 3,781,869.

Siclari, Francesco; Magnoni, Franco; and Morandi, Battista, to Snia Viscosa Societa Nationale Industria Applicazioni Viscosa S.p.A. Method for the preparation of homogeneous meterable pastes and suspensions of phthalic acids and glycols, for feeding plants more particularly continuous esterification plants. 3,781,213, Cl. 252-188.300.

Siddall, John B.: *See—*
Henrick, Clive A.; and Siddall, John B., 3,781,322.

Siddall, John B., to Zoeton Corporation. Preparation of 5-benzyl-3-furylmethanol. 3,781,308, Cl. 260-347.800.

Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, to Ciba-Geigy AG. Novel p-phenylstilbyl heterocyclic and naphthyl-vinylpenylene heterocyclic optical brighteners. 3,781,278, Cl. 260-240.0ca.

Siemens Aktiengesellschaft: *See—*
Burker, Ulf; and Koch, Sigurd, 3,781,825.
Hintringer, Otmar, 3,781,709.
Keller, Wolfgang; Kersting, Arno; and Reuschel, Konrad, 3,781,152.
Kirmis, Peter; Wagner, Heinz; and Kaiserswerth, Hans-Peter, 3,781,740.
Kuenemund, Friedrich, 3,781,717.
Kunert, Paul, 3,780,441.
Miericke, Jurgen; Hieronymus, Hans; and Pawlitschek, Franz, 3,780,667.
Olsen, Willi, 3,781,454.
Pollmann, Fritz; and Wossner, Gerhard, 3,781,727.
Reuschel, Konrad; Dietze, Wolfgang; Muhlbauer, Alfred; and Sandmann, Herbert, 3,781,209.
Sauer, Helmut, 3,781,635.
Schreiner, Horst; and Fidos, Henryk, 3,780,698.
Zeidler, Guenter, 3,781,550.

Sierracin Corporation, The: *See—*
Levin, Berton P., 3,781,524.

Silva, Albert J. Automatic display racks. 3,780,873, Cl. 211-49.00d.

Silva, Walter F.: *See—*
Olson, Mark W.; and Silva, Walter F., 3,781,514.

Silver, Marshall L.: *See—*
Adler, Charles F., Jr.; and Silver, Marshall L., 3,781,861.

Simcoe, Kent W., to Hewlett-Packard Company. Switching voltage regulator circuit. 3,781,654, Cl. 323-17.000.

Simmons, Walter J.: *See—*
Noddin, Kenneth W.; and Simmons, Walter J., 3,780,752.

Simon, Ernest M.: *See—*
Helgerud, Robert J.; and Simon, Ernest M., 3,780,830.

Simond, Jacques: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,781,432.

Simorghi, Parviz. Separable key-head and filing system. 3,780,550, Cl. 70-395.000.

Simplicity Manufacturing Company Inc.: *See—*
Stevenson, William L.; and Vertanen, George J., 3,780,455.

Singer Company, The: *See—*
Harbeck, Martin B.; and Lagerstrom, Robert C., 3,780,397.
Kugler, Carl J., 3,780,580.
Mishcon, Lester, 3,780,539.

Singh, Hakam: *See—*
Pepe, Anthony E.; and Singh, Hakam, 3,781,315.

Singh, Jag J., to United States of America, National Aeronautics and Space Administration. Mossbauer spectrometer radiation detector. 3,781,562, Cl. 250-360.000.

Singh, Shanker, to International Business Machines Corporation. Test pattern generator. 3,781,829, Cl. 340-173.00r.

Sipe, Therell L., to General Motors Corporation. Grinding wheel and mounting assembly. 3,780,476, Cl. 51-168.000.

Sjoberg, Berndt Olof Harald: *See—*

Carlsson, Lars Anders Fritz; Helgstrand, John Erik; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik, 3,781,280.

Skaggs, Richard, 20% to Lee, Raymond, Organization, Inc. Automated conveyor system. 3,780,414, Cl. 29-200.00a.

Skamra, Dale William, to Xerox Corporation. Fuser thermal protector. 3,781,517, Cl. 219-216.000.

Skuin, Petar: *See—*
Geng, Hellmuth R.; Hajdu, Johann; and Skuin, Petar, 3,781,819.

Skurnia, Uwe: *See—*
Gajer, Richard; Skurnia, Uwe; and Richter, Mandred, 3,781,397.

Slan, Jack, to Dominion Luggage Co., Limited. Luggage case. 3,780,838, Cl. 190-49.000.

Slane, Gary R. Gravity projector batted ball apparatus. 3,781,012, Cl. 273-95.00r.

Sletzinger, Meyer: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,781,415.

Slovenkai, Stephen V.: *See—*
Finestone, Arnold B.; Milgrom, Jack; and Slovenkai, Stephen V., 3,781,384.

Smejkal, Hellmuth: *See—*
Poferl, Gunter; Schmidt, Gerald; and Smejkal, Hellmuth, 3,780,583.

Smillie, Winston B., to Townsend and Townsend. Aerosol enzyme detergents stabilized with carbon dioxide. 3,781,212, Cl. 252-89.000.

Smith, Allan L.; and Bowen, James G. Self-cleaning emitter. 3,780,946, Cl. 239-107.000.

Smith, Frank: *See—*
Birchall, James Derek; Cassidy, John Edward; and Smith, Frank, 3,781,239.

Smith, Irwin M., to Kidde, Walter, & Company, Inc. Low profile filter system. 3,780,503, Cl. 55-418.000.

Smith, James: *See—*
Lohr, Raymond J.; Smith, James; and Bennett, Lowell L., 3,780,665.

Smith, Jay R. Installation gauge or the like. 3,780,443, Cl. 33-180.00a.

Smith, John: *See—*
Brudy, Peter E.; and Smith, John, 3,781,538.

Smith, Joseph L., Jr.; Thullen, Philip; and Kirtley, James L., Jr., to Massachusetts Institute of Technology. Stator structure for electrical machine. 3,781,578, Cl. 310-52.000.

Smith, Kenneth Burton; and Gladstone, Shaul, to Argus Chemical Corporation mesne. Apparatus for continuously monitoring air-pollution. 3,780,566, Cl. 73-23.000.

Smith Kline Instruments, Inc.: *See—*
Goldberg, Paul R., 3,780,725.

Smith, Nicholas Kimbrough, to Bell Telephone Laboratories, Incorporated. Error detecting translator. 3,781,796, Cl. 340-146.1ae.

Smith, Robert L.; and Smith, William O. Bit construction for smoking pipes. 3,780,745, Cl. 131-212.00a.

Smith, William E.: *See—*
Trott, Gene F.; and Smith, William E., 3,781,235.

Smith, William E.; Orlando, Charles M.; and Barito, Robert W., to General Electric Company. Storage stable premix for production of polyurethane foam. 3,781,229, Cl. 260-2.5be.

Smith, William O.: *See—*
Smith, Robert L.; and Smith, William O., 3,780,745.

Smithkline Corporation: *See—*
Berkoff, Charles E.; Sutton, Blaine M.; and Walz, Donald T., 3,781,434.
Sutton, Blaine M., 3,781,295.

Snam Progetti S.p.A.: *See—*
Corbellini, Margherita; and Balducci, Agostino, 3,781,318.

Snia Viscosa Societa Nationale Industria Applicazioni Viscosa S.p.A.: *See—*
Siclari, Francesco; Magnoni, Franco; and Morandi, Battista, 3,781,213.

Sno-Start, Inc.: *See—*
Charboneau, Ben J., 3,781,632.

Soames, Michael Richard, to Image Analysing Computers Limited. Method and apparatus for measuring the length of elongate features having a substantially common orientation employing line scanning. 3,781,467, Cl. 178-6.800.

Sobolev, Jury Vasilievich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.

Societa FFSA: *See—*
Ancellin, Marcel, 3,780,646.

Societa Italiana Resine S.I.R. S.p.A.: *See—*
Vargiu, Silvio; and Pitzalis, Mario, 3,781,244.

Societa Italiana Resine S.p.A.: *See—*
Ferlazzo, Natale; Antonelli, Giambattista; and Aglietti, Giancarlo, 3,781,224.

Societe Anonyme dite: L'Oreal: *See—*
Pomot, Jean; and Rosenbaum, Georges, 3,781,418.

Societe de Constructions Mecaniques Panhard & Levassor: *See—*
Panhard, Jean, 3,780,706.

Societe d'Etudes Recherches et Constructions Electroniques (S.E.R.C.E.L.): *See—*
Lefevre, Georges; and Menard, Jean Paul, 3,781,694.

Societe Francaise d'Optique et de Mecanique S.F.O.Mo.: *See—*
Dubuisson, Bernafd Louis Yves, 3,781,104.

Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
Lehuen, Christian; and Gillet, Roger, 3,781,581.

Societe Italiana Telecommunicazioni Siemens S.p.A.: *See—*
Marini, Roberto, 3,781,653.

Societe Lannionnaise d'Electronique: *See—*
Aillet, Claude, 3,781,668.

Societe Nationale des Petroles d'Aquitaine tour Aquitaine: *See—*
Pfister, Alain; Arretz, Emmanuel; and Donche, Alain, 3,781,366.

Societe Rhodiaceta: *See—*
Couchoud, Paul; and Rochina, Vincent, 3,781,400.

Sodersten, Bo Frans Ake: *See—*
Edlund, Sven Bertil Gosta; and Sodersten, Bo Frans Ake, 3,780,990.

Soderstrom, Hans Sture, to Trelleborgs Gummifabriks Aktiebolag. Filling and emptying valve. 3,780,768, Cl. 137-625.480.

Sofie, Walter F.: *See—*
Lumby, Donovan H.; and Sofie, Walter F., 3,780,818.

Sokolsky, Dmitry Vladimirovich; Zakumbaeva, Gaukhar Daulenovna; Zhubanov, Kair Akhmetovich; Mazin, Evgeny Petrovich; Scheolov, Nikolai Illarionovich; Fokin, Evgeny Pavlovich; and Livanov, Vladimir Arkadievich. Catalyst for hydrogenation of nitro-compounds nd a method of producing same. 3,781,227, Cl. 252-466.00j.

Sommer, Lothar: *See—*
Linz, Georg; and Sommer, Lothar, 3,781,123.

Sonn, Milton M.: *See—*
Polinski, Leon M.; and Sonn, Milton M., 3,781,372.

Sorenson, Glenn P. Radar reflector deployment method. 3,780,662, Cl. 102-89.000.

Spaun, Ruediger; Rochat, Alain Claude; Gallay, Jean-Jacques; and Brenneisen, Paul, to Ciba-Geigy Corporation. Phenoxyphenyl phenylthiophenyl and phenylaminophenyl piperazinylthioureas. 3,781,290, Cl. 260-268.00c.

Speckhart, Bernard S.: *See—*
Weiss, Morton A.; and Speckhart, Bernard S., 3,780,852.

Spectrospin A.G.: *See—*
Keller, Toni, 3,781,650.

Spence, Hilton W.: *See—*
Stehlin, Robert A.; Spence, Hilton W.; and Matzen, Walter T., 3,781,680.

Spencer, Jacob H., to Nortech Laboratories, Inc. Device for use as a hot and cold compress. 3,780,537, Cl. 62-530.000.

Sperling, Kurt: *See—*
Stadie, Werner; Sperling, Kurt; Deubner, Rolf; and Pattberg, Werner, 3,780,747.

Sperry Rand Corporation: *See—*
Bonn, Theodore H., 3,781,599.
Jacobson, Robert S., 3,781,880.
Kline, Charles M., 3,780,993.
Lustig, Claude D.; and Baird, Albert W., III, 3,781,587.
Rauschelbach, Paul A., 3,781,628.

Spessert, Robert: *See—*
Bunzel, Eckard; Spessert, Robert; Rieskamp, Karl; and Hildebrand, Willi, 3,781,166.

Spier, Carl P., to United States of America, Air Force. Expandable tire retainer assembly. 3,780,784, Cl. 157-1.000.

Spietschka, Ernst: *See—*
Fuchs, Otto; Spietschka, Ernst; Hohn, Jurgen; and Troster, Helmut, 3,781,302.

Spiroll Corporation Ltd.: *See—*
Herbert, Denys; and Martens, Ernst, 3,781,154.

Spivak, Boris Volkovich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.

Splingaerd, John Peter. Safety switch with hinge type interlocking mechanism for operating switch contacts or preventing actuation thereof. 3,781,495, Cl. 200-50.00a.

Sprague Electric Company: *See—*
Shirn, George A., 3,780,928.

Sprague, Frederick L., to Rockwell International Corporation. Weft control mechanism for shuttleless looms. 3,780,775, Cl. 139-122.000.

Spratt, Brendan J.: *See—*
Shear, Wayne G.; Spratt, Brendan J.; and McClure, Benton J., 3,781,803.

Springer, Hartmut: *See—*
Meininger, Fritz; and Springer, Hartmut, 3,781,310.

Sprung, Philip D., Jr. Demountable building. 3,780,477, Cl. 52-86.000.

Stach, Kurt: *See—*
Witt, Ernst-Christian; Stach, Kurt; Thiel, Max; Schmidt, Felix Helmut; and Stork, Harald, 3,781,328.

Stache, Ulrich: *See—*
Haede, Werner; Stache, Ulrich; Fritsch, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,781,269.

Stack-Pac Corporation: *See—*
Terrasi, Chris C., 3,780,929.

Stacy, Hershel, Sr. Utility tree. 3,780,874, Cl. 211-65.000.

Stader, Richard O. Walking device. 3,780,728, Cl. 128-83.500.

Stadie, Werner; Sperling, Kurt; Deubner, Rolf; and Pattberg, Werner, to Pumpen und Maschinenbau Abel Kommanditgesellschaft. Apparatus for cleaning filter plates and the like. 3,780,747, Cl. 134-43.000.

Stamicarbon N.V.: *See—*
Sadee, Constant P. M.; Van Koppen, Christianus W. J.; and Koenders, Henricus A. A., 3,781,256.

Stamm, Ralph E., to Texaco Inc. On-stream sample collecting mechanism for high pressure liquids. 3,780,590, Cl. 73-422.0tc.

Standard Oil Company: *See—*
Akin, Cavit, 3,781,264.

Stanford, Charles O., to Fedders Corporation. Pressure compensating door catch assembly. 3,780,904, Cl. 220-55.300.

Stange, Karl; Jenne, Helmut; and Koenig, Ulrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Laminates of styrene polymers and polyphenylene oxide. 3,781,186, Cl. 161-253.000.

Stanislavsky, Lazar Yankelevich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.

Staples, Crawford E., to Westinghouse Air Brake Company. Jointless coded alternating current track circuits. 3,781,540, Cl. 246-34.0ct.

Staples, Crawford E.; and Stark, Donald E., to Westinghouse Air Brake Company. Highway crossing protection apparatus. 3,781,543, Cl. 246-130.000.

Staras, Harold; and Shefer, Joshua, to RCA Corporation. Harmonic radar detecting and ranging system for automotive vehicle. 3,781,879, Cl. 343-5.00r.

Stark, Donald E.: *See—*
Staples, Crawford E.; and Stark, Donald E., 3,781,543.

Starr, Anthony J., to Container Corporation. Package structure. 3,780,930, Cl. 229-14.0be.

Staskiewicz, Fred C.; and Fromson, Robert E. Apparatus for conditioning continuously cast bars. 3,780,552, Cl. 72-40.000.

Staub, Bernard. Food table. 3,780,794, Cl. 165-58.000.

Stauffer Chemical Company: *See—*
Baker, Don R.; and Teach, Eugene G., 3,781,442.
Greco, Carl C.; Mirviss, Stanley B.; and Martell, Arthur E., 3,781,296.
Teach, Eugene G., 3,781,305.
Teach, Eugene G., 3,781,327.

Stayer, Mark L.: *See—*
Halasa, Adel F.; and Stayer, Mark L., 3,781,262.

Stearns, Edwin Ira, to American Cyanamid Company. Reduced iteration in computer color matching. 3,781,909, Cl. 444-1.000.

Steckelberg, Willi: *See—*
Dietz, Erich; Ribka, Joachim; and Steckelberg, Willi, 3,781,266.

Stehlin, Robert A.; Spence, Hilton W.; and Matzen, Walter T., to United States of America, Air Force. Differential method of photocurrent measurement. 3,781,680, Cl. 324-123.00r.

Steigerwald, Robert L., to General Electric Company. Constant duty cycle control of induction cooking inverter. 3,781,505, Cl. 219-10.490.

Steinbruegge, Kenneth B.: *See—*
Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., 3,781,707.

Steiner, H., Limited: *See—*
Steiner, Hubert, 3,780,891.

Steiner, Hubert, to Steiner, H., Limited. Attachments for vehicles. 3,780,891, Cl. 214-138.00e.

Stelben, John J.: *See—*
Shim, Ivan H.; and Stelben, John J., 3,781,902.

Stell, Richard E.: *See—*
Outlaw, Ronald A.; Stell, Richard E.; and Hoyt, Ronald F., 3,780,563.

Stelling, William. Retractable water jet for a water jet/steering and propulsion system. 3,780,691, Cl. 115-12.00r.

Stendig, Joseph L.; and Davis, Claude A. Condition responsive receptacles. 3,781,857, Cl. 340-420.000.

Stepan Chemical Company: *See—*
Fischer, Elias, 3,780,860.

Stephenson, John Edward. Research teaching tool. 3,780,449, Cl. 35-1.000.

Stephenson, Michael J.: *See—*
Anderson, Lowell W.; and Stephenson, Michael J., 3,781,392.

Stephenson, Robert L.; and Loomba, Yogendra S., to Allied Chemical Corporation. Seat belt buckle plunger type switch and housing containing belt latch mechanism. 3,781,497, Cl. 200-61.58b.

Sterling Drug Inc.: *See—*
Crounse, Nathan N.; and Desai, Kantilal B., 3,781,279.
Langstroth, Theodore A., 3,781,215.

Sternbach, Leo Henryk: *See—*
Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, 3,781,353.

Sterwin A.G.: *See—*
Ellinger, Karl-Georg; and Schumacher, Henning, 3,781,416.

Steven Manufacturing Co.: *See—*
Taylor, Beverly W., 3,781,027.

Stevenson, William L.; and Vertanen, George J., to Simplicity Manufacturing Company Inc. Snowblower discharge spout with air-inlet means. 3,780,455, Cl. 37-43.00r.

Stewart, Hugh W.: *See—*
Coleman, Aaron H.; and Stewart, Hugh W., 3,781,816.

Stinchcomb, Raymond G., to United States of America, Army. Seismic inhibit circuit for RF mine sensor. 3,780,653, Cl. 102-19.200.

Stjernstrom, Nils Erik: *See—*
Carlsson, Lars Anders Fritz; Helgstrand, John Erik; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik, 3,781,280.

Stobb, Anton R.; and Stobb, Walter J. Sheet stacker. 3,781,005, Cl. 271-186.000.

Stobb, Walter J.: *See—*
Stobb, Anton R.; and Stobb, Walter J., 3,781,005.

Stockdale, Willis L.: *See—*
Bloemendaal, John F.; and Stockdale, Willis L., 3,780,922.

Stoeck, Paul F.: *See—*
Ziolko, Walter; and Stoeck, Paul F., 3,781,058.

Stone, Wayne B., Jr.: *See—*
Cupler, John A., II; and Stone, Wayne B., Jr., 3,780,406.

Stoneham, Jeffrey R.: *See—*
Kamp, Leonard F.; and Stoneham, Jeffrey R., 3,780,632.

Stork, Harald: *See—*
Witt, Ernst-Christian; Stach, Kurt; Thiel, Max; Schmidt, Felix Helmut; and Stork, Harald, 3,781,328.

Storti, Giancarlo. Ribbon-type composite sawing device. 3,780,609, Cl. 83-420.000.

Story Chemical Corporation: *See—*
Story, Paul R.; and Busch, Peter, 3,781,303.

Story, Paul R.; and Busch, Peter, to Story Chemical Corporation. Method of preparing tricyclohexylidene peroxide. 3,781,303, Cl. 260-338.000.

Stout, Charles R.: *See—*
Judd, Gordon W.; and Stout, Charles R., 3,781,721.

Straight, David M., to United States of America, National Aeronautics and Space Administration. Gas turbine exhaust nozzle. 3,780,827, Cl. 181-43.000.

Stromberg-Carlson Corporation: *See—*
Shaffer, William E.; and Krawczyk, Charles C., 3,781,481.

Studeny, Henry G., to Western Electric Company, Incorporated. Article transferring mechanism. 3,780,848, Cl. 198-25.000.

Styczynski, Robert J., to United States of America, Army. Rifling lands inspection gage. 3,780,438, Cl. 33-174.00r.

Styring, Ralph E., Jr., to Atlantic Richfield Company. Restoring oil flow in a pipeline. 3,780,751, Cl. 137-13.000.

Suchy, Milos: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,781,309.

Sudnick, Dennis J.; and Shutts, Robert L., to Inservco, Inc. Transducer amplifier with automatic balance. 3,781,869, Cl. 340-347.0cc.

Sudo, Tsuneta: *See—*
Mizushima, Yoshihiko; and Sudo, Tsuneta, 3,781,806.

Sugawara, Yoshiaki: *See—*
Izawa, Shinichi; Toyama, Kunio; Harada, Kazuhiko; and Sugawara, Yoshiaki, 3,781,382.

Sugiura, Akira: *See—*
Shimoda, Keitaro; Kuratani, Keijiro; and Sugiura, Akira, 3,781,391.

Sugiyama, Uichiro. Tire pressure detecting apparatus. 3,781,787, Cl. 340-58.000.

Sulger, Harold, Sr., to Dynamic Instrument Corporation. Pressure transducer. 3,781,751, Cl. 338-42.000.

Sullivan, Daniel David, to Bell Telephone Laboratories, Incorporated. Method and apparatus for decoding BCH codes. 3,781,791, Cl. 340-146.1al.

Sulzbach, Reinhard A.; and Iqbal, Abul F. M. Silylated 1,4-dihydropyridines. 3,781,291, Cl. 260-290.00h.

Sulzer Brothers Limited: *See—*
De Vivy, Dominque Le Febve, 3,780,705.

Sumita, Haruki, to Minolta Camera Kabushiki Kaisha. Four layer anti-reflection coating. 3,781,090, Cl. 350-164.000.

Sumitomo Chemical Company, Ltd.: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Akatsu, Mitsuihiro; Maruyama, Isamo; and Izumi, Takahiro, 3,781,299.

Sumitomo Electric Industries, Limited: *See—*
Nakahara, Tsuneo; Kurauchi, Noritaka; Kitani, Hiroshi; Takemura, Kenji; and Kuroda, Masataka, 3,781,687.

Sumitomo Electric Industries, Ltd.: *See—*
Yoshida, Kenichi; and Miyamoto, Yoshio, 3,781,725.

Sun Oil Company (Delaware): *See—*
Hardy, William C.; and Lichte, Henry P., Jr., 3,780,803.

Sun Oil Company of Pennsylvania: *See—*
Thompson, Sheldon L., 3,781,196.

Sun Research and Development Co.: *See—*
Davis, Ronald L., 3,781,298.
Norton, Richard V., 3,781,343.
Norton, Richard V., 3,781,346.
Norton, Richard V., 3,781,347.
Talbot, Alfred F., 3,781,371.
Wynkoop, Raymond; and Kohn, Edward M., 3,781,198.

Sun Research and Development Co., mesne: *See—*
Scudder, Philmore M.; and Warren, Robert W., 3,781,345.

Sundeen, Arthur R.: *See—*
Coleman, Richard J.; Foster, David J.; Loper, Edward J., Jr.; and Sundeen, Arthur R., 3,780,593.

Sundermann, Henry L. Brake for farm wagon. 3,780,833, Cl. 188-9.000.

Sundy, George J., to Bethlehem Steel Corporation. Method for continuously casting steel using a partially coated refactory nozzle. 3,780,788, Cl. 164-82.000.

Surko, Walter E., Jr., to Emhart Corporation. Adjustabel support. 3,781,047, Cl. 292-251.500.

Surnin, Boris Anatolievich: *See—*
Kudinov, Vladimir Mikhailovich; Bushtedt, Jury Petrovich; Dudko, Daniil Andreevich; Arkhangelsky, Georgy Alexandrovich; Pogoretsky, Georgy Ivanovich; Volgin, Leonid Alexandrovich; Kotov, Viktor Anatolievich; Surnin, Boris Anatolievich; and Degtyarev, Mikhal Vasilievich, 3,780,927.

Suryanarayana, Yelagondahally S.; and Reid, Luther J., Jr., to Ciba-Geigy Corporation. Process for the regeneration of deactivated carbon catalyst. 3,781,287, Cl. 260-248.00c.

Sussman, Arthur: *See—*
Sussman, David L.; and Sussman, Arthur, 3,781,092.

Sussman, David L.; and Sussman, Arthur. Monitoring system. 3,781,092, Cl. 350-266.000.

Suteo, Inc.: *See—*
Hollier, Joseph H., Jr., 3,780,626.

Sutton, Blaine M.: *See—*
Berkoff, Charles E.; Sutton, Blaine M.; and Walz, Donald T., 3,781,434.

Sutton, Blaine M., to Smithkline Corporation. Pyridyl ketipate lactones and derivatives. 3,781,295, Cl. 260-295.00r.

Suturin, Serafim Nikolaevich: *See—*
Dolgov, Anatoly Vladimirovich; Konovalov, Leonid Vladimirovich; Perkis, Leib Benyaminovich; Deev, Stanislav Lvovich; Dyakov, Vitaly Evgenievich; Semenov, Alexandr Efimovich; Bauer, Evgeny Teodorovich; and Suturin, Serafim Nikolaevich, 3,780,864.

Suzuki, Horoshi; and Tsutsui, Yoshiro, to Industrial Science and Technology, Agency of. Hydroxy-fatty acid amide polyoxyalkylene ether: soap compositions. 3,781,218, Cl. 252-356.000.

Suzuki, Takeshi: *See—*
Kometani, Yutaka; Kojzumi, Shun; Suzuki, Takeshi, Nakajima, Takeaki; and Okuno, Chuzo, 3,781,258.

Suzuki, Zennosuke: *See—*
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao, Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.

Swain, Kenneth W.: *See—*
DiMarco, Bernard, Kussy, Frank W.; and Swain, Kenneth W., 3,781,607.

Swain, William W.; and Hathaway, Richard A., to Avco Corporation, mesne. Reel-over-reel video tape cartridge and transport apparatus with sliding pivot. 3,781,487, Cl. 179-100.2tz.

Swatty, Eugene E., to Fluid Controls, Inc. Restrictive flow regulating valve and control circuit employing same. 3,780,765, Cl. 137-613.000.

Sweeney, Richard F.: *See—*
Anello, Louis G.; Sweeney, Richard F.; and Litt, Morton H., 3,781,370.

Swet, Charles J., to United States of America, Navy. Fiber optical solar collector. 3,780,722, Cl. 126-270.000.

Swift & Company: *See—*
Schack, Warren R.; and Glenn, Francis, 3,780,490.

Swiss Aluminium, Ltd.: *See—*
Unger, Manfred, 3,780,789.

Swoboda, Maxmillian Augustus, 1/3 to Lahr, Jack L. and 1/3 to Benson, Jack M. Method and apparatus for transmitting time compressed audio information. 3,781,479, Cl. 179-15.55t.

Sybron Corporation: *See—*
Faessler, Adelmar; and Engle, Stewart E., 3,780,847.

Sykora, Josef, to Celanese Canada Limited. Light rigid mandrel able to engage paper or fibre tubes. 3,780,962, Cl. 242-72.000.

Systron Donner Corporation: *See—*
Voyles, Richard E.; and Giles, William A., 3,781,678.

Szabo, Georges: *See—*
Weisang, Joseph Edouard; Szabo, Georges; and Maurin, Jean, 3,781,222.

Tac House, Inc.: *See—*
Cvijanovic, Alex; and Firnkas, Sepp, 3,780,480.

Tadokoro, Kinya, to Kabushiki Kaisha Sunpak. Electronic flash circuits. 3,781,602, Cl. 315-241.00p.

Taft, Philip Augustus, to Girling Limited. Brake control apparatus. 3,781,064, Cl. 303-21.00f.

Tagarie, Frederic Louis Joseph; Bernard, Albert; and Saint-Aubin, Georges Gilbert, to Etat Francais represente Par Le Ministre Charge de la Defense Nationale Delegation. Device for breaking a launching rack-to-missile umbilical cord. 3,780,617, Cl. 89-1.81.

Taguchi, Masayoshi: *See—*
Chono, Masazumi; Nakajima, Hitoshi; Taguchi, Masayoshi; and Matsuo, Noriaki, 3,781,336.

Tahara, Hisayoshi; Sakurai, Mituo; and Yamada, Hayatoshi, to Tokyo Shibaura Electric Company, Ltd. Centrifugal gas separator with electric motor drive. 3,780,937, Cl. 233-24.000.

Taiser Corporation: *See—*
Shimizu, Ryozi; Nakao, Kenji; Oguri, Masaaki; and Ohgaki, Masakatu, 3,780,654.

Tajima, Eiichi: *See—*
Okuda, Minoru; Aikawa, Satoru; Kaidzu, Hiromu; and Tajima, Eiichi, 3,781,396.

Tajima Oyo Kako Co., Ltd.: *See—*
Okuda, Minoru; Aikawa, Satoru; Kaidzu, Hiromu; and Tajima, Eiichi, 3,781,396.

Takabayashi, Teruo, to Karin Limited. Plastic clip. 3,780,402, Cl. 24-250.0he.

Takagi, Makoto: *See—*
Matsuda, Tsutomu; and Takagi, Makoto, 3,780,755.

Takahashi, Sasuke. Device for the fixing, being combined with slow lowering, of the sliding pole of a portable motion picture screen stand. 3,780,974, Cl. 248-411.000.

Takahashi, Seihachi; Katayama, Nobuaki, and Morino, Hideki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Floating support for the shift lever in a shift assembly for a transmission. 3,780,596, Cl. 74-473.00p.

Takahashi, Shiro: *See—*
Nemoto, Yuhei; and Takahashi, Shiro, 3,781,214.

Takahashi, Yoshinaga: *See—*
Oishi, Masaaki, Takahashi, Yoshinaga; and Yoshizawa, Keiichi, 3,780,649.

Takahashi, Yukiharu: *See—*
Kubo, Moritada; and Takahashi, Yukiharu, 3,781,626.

Takamatsu, Hideaki; Murashima, Noboru, and Nishihira, Koichi, to Industrial Science & Technology, Agency of and Bando Chemical Industries, Ltd. Metal and chloroprene rubber composite material 3,781,185, Cl. 161-217.000.

Takeda Chemical Industries, Ltd.: *See—*
Aoki, Katsuo, Yatani, Kozo; Kometani, Fishi, and Izuhara, Senji, 3,781,423.

Takemura, Kenji: *See—*
Nakahara, Tsuneo; Kurauchi, Noritaka; Kitani, Hiroshi; Takemura, Kenji; and Kuroda, Masataka, 3,781,687.

Takiguchi, Hisashi, to Denki Onkyo Co., Ltd. Galvano-magnetro effect device. 3,781,750, Cl. 338-32.00r.

Talbot, Alfred F., to Sun Research and Development Co. 2-Adamantyl- and 2,6-diadamantyl-p-cresols. 3,781,371, Cl. 260-619.00d.

Tall, Wayne A., to United States of America, Air Force. Turbine blade manufactured of self-carrying laminates. 3,781,130, Cl. 416-97.000

Tallman, Charles V., to Sanders Associates, Inc. Gas impermeable expansion diaphragm. 3,781,779, Cl. 340-8.00r

Talmon, Omri: *See—*
Kamil, Zvi; Amir, Yoel; and Talmon, Omri, 3,781,498.

Tamai, Akira: *See—*
Kitamura, Tetsuo; and Tamai, Akira, 3,780,619

Tamm, Richard F., to Continental Can Company, Inc. Developer mixture for electrostatic printing. 3,781,207, Cl. 252-62.100.

Tanev, Christo Yanakiev: *See—*
Krivoshiev, Cveorgui Petrov, Kolev, Dimiter Christov; Tanev, Christo Yanakiev, Ermkov, Dimiter Kostadimov, Petrov, Gueorgui Slavov; Vassilev, Alexander Traykov, and Vatev, Petko Slavtchev, 3,781,554

Tanner, Harley L.: *See—*
Paap, Hans J.; and Tanner, Harley L., 3,781,545.

Tashiro, Donald K., to International Harvester Company. Harvester drive system. 3,780,506, Cl. 56-14.000

Tashiro, Donald K., to International Harvester Company. Harvester platform suspension. 3,780,508, Cl. 56-208.000

Tatge, Robert B.: *See—*
Scott, Paul F., Radecki, Kenneth P., and Tatge, Robert B., 3,781,782.

Tauchi, Yoshihiko: *See—*
Aizawa, Tetsuya; Sawada, Taketoyo; Tauchi, Yoshihiko, Kawamata, Tsutomu; and Saya, Hiroshi, 3,781,856.

Taylor, Beverly W., to Steven Manufacturing Co. Self biasing roller skate. 3,781,027, Cl. 280-11.260.

Taylor, Edward I., Jr.: *See—*
Jentsch, Alfred C., Jr., Taylor, Edward I., Jr.; and Shukoff, Walter, 3,780,606.

Taylor, James L., to Ideal Aerosmith, Inc., mesne. Measuring instrument. 3,780,440, Cl. 33-139.000.

Taylor, Marvin, to AMBAC Industries, Incorporated. Gyrocompass. 3,780,444, Cl. 33-327.000.

Taylor, Morris C.; and Rhodes, John R., to United States of America, Atomic Energy Commission. Neutron activation analysis system. 3,781,556, Cl. 250-302.000.

Teach, Eugene G.: *See—*
Baker, Don R.; and Teach, Eugene G., 3,781,442.

Teach, Eugene G., to Stauffer Chemical Company. Substituted ureido dioxolanes and dioxanes and their utility as herbicides. 3,781,305, Cl. 260-340.900.

Teach, Eugene G., to Stauffer Chemical Company. Meta-carbanilate ethers. 3,781,327, Cl. 260-471.00c.

Teagle, William Thomas. Detachable mounting of dispenser machine parts. 3,780,915, Cl. 222-545.000.

Teagno, Vladimiro; and Campari, Luigi, to AMP Incorporated. Shroud for an electrical connector blade. 3,781,766, Cl. 339-107.000.

Technicon Instruments Corporation: *See—*
Engelhardt, Alvin, 3,781,120.
Groner, Warren; and George, Wilberdan Victor, 3,781,112.

Technology Service Corporation: *See—*
Lank, Gerald W.; and Pullon, Gerald E., 3,781,886.

Tecumseh Products Company: *See—*
Nutten, Warren D., 3,780,996.

Teichner, Stanislas: *See—*
Juillet, Francois; Teichner, Stanislas; and Formenti, Marc, 3,781,194.

Teijin Limited: *See—*

Fujita, Yutaka; Toda, Toshiki; and Shimada, Tsuneo, 3,781,350.
Izawa, Nobuharu; Toyoshima, Hiroshi; and Ikazaki, Koh, 3,780,405.
Shima, Takeo; Orsaki, Takanori; Oka, Isao; and Funakoshi, Wataru, 3,781,375.

Teikoku Piston Ring Co., Ltd.: *See—*
Kumabe, Junichiro; and Shimizu, Koichi, 3,781,022.

Tektronix, Inc.: *See—*
Horn, John J., 3,781,470.

Telefonaktiebolaget L M Ericsson: *See—*
Johannesson, Nils Olof, 3,781,477.

Telemeccanica Elettrica Officine Meccaniche Reunite S.p.A.: *See—*
Borghetti, Giuseppe, 3,781,501.

Telesco Brophey Limited: *See—*
Weber, Heinz, 3,780,748.

Tellerman, Edward M.: *See—*
Deniega, Jose Castillo; and Tellerman, Edward M., 3,780,958.

Temple, Ernest E.: *See—*
Giebel, Joseph L.; and Temple, Ernest E., 3,780,689.

Tenneco In.: *See—*
Hubbell, Franklin R., III, 3,780,826.

Ternes, Norman A. Retractable wheel for paper guiding cylinder. 3,780,925, Cl. 226-191.000.

Terrasi, Chris C., to Stack-Pac Corporation. Packaging construction 3,780,929, Cl. 229-14.00e.

Teutsch, George J.: *See—*
Shapiro, Elliot L.; Teutsch, George J.; and Herzog, Hershel L., 3,781,276.

Texaco Inc.: *See—*
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., 3,780,808.
Paap, Hans J., and Tanner, Harley L., 3,781,545.
Stamm, Ralph E., 3,780,590.

Texas Instruments, Incorporated. *See—*
Bodge, Clifford A., 3,781,839.
Cooper, Erwin E.; and Kennedy, Howard V., 3,781,559.
McKerreghan, Michael H., 3,781,457.
Morris, Marvin L., Jr.; Pope, Hermon L., Jr.; and Ruggiero, Edward M., 3,781,515.
Ornstein, Jacob L., 3,781,583.

Textron, Inc.: *See—*
Helm, Joan K., 3,781,238.

Theodore, Ares N.; and Labana, Santokh S., to Ford Motor Company. Powdered coating compositions containing glycidyl methacrylate copolymers with anhydride crosslinking agents and flow control agent. 3,781,379, Cl. 260-836.000.

Thiel, Max: *See—*
Kampe, Wolfgang, Fauland, Erich; Thiel, Max; Dietmann, Karl, and Juhran, Wolfgang, 3,781,273.
Witt, Ernst-Christian, Stach, Kurt; Thiel, Max, Schmidt, Felix Helmut, and Stork, Harald, 3,781,328.

Thiesen, Wolfgang. *See—*
Ploetz, Ulrich; and Thiesen, Wolfgang, 3,781,510.

Thomas, Albert J., Jr.: *See—*
Huskins, Chester W., and Thomas, Albert J., Jr., 3,781,179.

Thomas, Andre G., and Fetissoff, Basile, to Etablissements Hutchinson Compagnie Nationale du Caoutchouc. Inflatable air mattresses and like articles. 3,780,388, Cl. 5-349.000.

Thomas, Carlton E., to KMS Industries, Inc. Method and apparatus for personal identification. 3,781,113, Cl. 356-71.000.

Thomas, Charles T., to United States of America, Air Force. Optical receiver with extended source discrimination. 3,781,547, Cl. 250-203.00r

Thomas, Dalton A., 30% to Beasley, Hazel A., 20% to Thompson, Woodford R., Jr., 20% to Carter, Hugh and 20% to Murray, William K., mesne. Gear selector for a transmission. 3,780,840, Cl. 192-48.910.

Thomas, James C., III: *See—*
Sanford, Harry W., 3,780,618.

Thomas, Michael D.: *See—*
Martin, James M.; and Thomas, Michael D., 3,781,519.

Thomas, Otto, to Schneider, Jos., & Co. Optische Werke. Reversing drive with braking for optical components. 3,781,617, Cl. 318-261.000.

Thompson, John T.: *See—*
Anderson, Karl R., 3,781,758.

Thompson, John T.; and Gillemot, George K. Cable splice assembly and method. 3,781,461, Cl. 174-93.000.

Thompson, Richard M., to Hughes Aircraft Company. Waveguide window assembly. 3,781,726, Cl. 333-98.00p.

Thompson, Sheldon L., to Sun Oil Company of Pennsylvania. Stabilizing a hydrocracked lube oil by solvent extraction. 3,781,196, Cl. 208-96.000.

Thompson, Woodford R., Jr.: *See—*
Thomas, Dalton A., 3,780,840.

Thomson, Richard N.; and Walker, Michael F., to Dunlop Holdings Limited. Flame resistant seals. 3,781,021, Cl. 277-164.000.

Thornley, Derek, to Lucas, Joseph, (Industries) Limited. Locking arrangement for vehicle gearbox. 3,780,602, Cl. 74-850.000.

Thorpe, John Bernard Joseph: *See—*
Britland, Colin Morris; and Thorpe, John Bernard Joseph, 3,781,530.

Thullen, Philip: *See—*
Smith, Joseph L., Jr.; Thullen, Philip; and Kirtley, James L., Jr., 3,781,578.

Tibbling, Thure P. M.: *See—*
Ek, Leif V.; Wallin, Per L.; and Tibbling, Thure P. M., 3,780,866.

Tice, Edward Stephen: *See—*
Lilienthal, Peter Frederick, II; Remachandran, Karapurath; and Tice, Edward Stephen, 3,780,558.

Tidal Sales Corporation: *See—*
Quackenbush, Edward Clarke, 3,781,762.

Tideland Signal Corporation: *See—*
Jacobs, Thomas A., 3,781,853.

Timmerman, Julius W.: *See—*
Weston, Donald E.; and Timmerman, Julius W., 3,780,625.

Timofeev, Mikhail Mikhailovich: *See—*
Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich, 3,780,428.

Titmus, Robert A.: *See—*
Bryson, Millard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., 3,781,197.

Toda, Toshiki: *See—*
Fujita, Yutaka; Toda, Toshiki; and Shimada, Tsuneo, 3,781,350.

Tokunaga, Ikuo, to Kabushiki Kaisha Suwa Seikosha. Timepiece dial with electrically-conducting foot. 3,780,519, Cl. 58-23.00c.

Tokunaga, Tsugiharu. Scilliloidglycoside containing poison compositions. 3,781,419, Cl. 424-84.000.

Tokuno, Masateru; and Sawada, Tetsuya, to Rengo Kabushiki Kaisha Rengo Co., Ltd. Web splicing apparatus. 3,780,960, Cl. 242-58.100.

Tokuzumi, Tadaichi: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kashiwa, Norio; Tokuzumi, Tadaichi; Horota, Yutaka; and Fujimura, Hiroshi, 3,781,253.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Nomura, Osamu; and Yajima, Kanichi, 3,781,597.
Yakata, Akio; and Kinoshita, Tsuneo, 3,781,811.

Tokyo Shibaura Electric Company, Ltd.: *See—*
Kubo, Moritada; and Takahashi, Yukiharu, 3,781,626.
Tahara, Hisayoshi; Sakurai, Mituo; and Yamada, Hayatoshi, 3,780,937.

Tomkins, Harold E., to Myers Double Tee Structures, Inc., mesne. Composite panel fastening device having interlock feature. 3,780,481, Cl. 52-265.000.

Tompkins, Neil R., to Halsey Harbester & Supply Co., Inc. Shaker head. 3,780,510, Cl. 56-328.0ts.

Tonari, Hirohiko, to Matsushita Electric Industrial Co., Ltd. UHF tuning mechanism. 3,780,594, Cl. 74-10.520.

Toogood, Graham John: *See—*
Weaver, Cedric David; and Toogood, Graham John, 3,781,149.

Tooth, David Michael: *See—*
Power, Basil Dixon; Oswald, Roger Derek; and Tooth, David Michael, 3,781,518.

Topham, Alan Eric; and Topham, Cedric Henry. Valves for controlling fluid flow. 3,780,983, Cl. 251-158.000.

Topham, Cedric Henry: *See—*
Topham, Alan Eric; and Topham, Cedric Henry, 3,780,983.

Topliss, John G., to Schering Corporation. 2-Polyfluoroloweralkylamino benzophenones. 3,781,360, Cl. 260-570.0ab.

Toray Industries, Inc.: *See—*
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.

Toth, Tibor E., to Union Carbide Corporation. Full wave governor control system. 3,781,620, Cl. 318-331.000.

Toth, Tibor Endre, to Union Carbide Corporation. Arc working power supply with saturable reactor current control. 3,781,640, Cl. 321-18.000.

Totta, Paul A.: *See—*
Baker, Thoedore H.; Ghafghaichi, Majid; and Totta, Paul A., 3,781,609.

Toulis, William J. Engulfed superdirective arrays. 3,781,896, Cl. 343-754.000.

Towmotor Corporation: *See—*
Crawford, John T., 3,780,896.

Townsend and Townsend: *See—*
Smillie, Winston B., 3,781,212.

Townsend, Robert L.: *See—*
Kaufman, Peter; Colsen, F. Thomas; and Townsend, Robert L., 3,781,854.

Townsley, Malcolm G., to Wesley-Jessen, Inc. Method and apparatus for designing contact lenses. 3,781,096, Cl. 351-13.000.

Toyama, Kunio: *See—*
Izawa, Shinichi; Toyama, Kunio; Harada, Kazuhiko; and Sugawara, Yoshiaki, 3,781,382.

Toyoda Koki Kabushiki Kaisha: *See—*
Ota, Hiroshi, 3,780,474.

Toyoshima, Hiroshi: *See—*
Izawa, Nobuharu; Toyoshima, Hiroshi; and Ikazaki, Koh, 3,780,405.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Takahashi, Seihachi; Katayama, Nobuaki; and Morino, Hideki, 3,780,596.

Transfer Systems Incorporated: *See—*
Jones, Cecil R., 3,781,191.

Trelleborgs Gummifabriks Aktiebolag: *See—*
Soderstrom, Hans Sture, 3,780,768.
Tremarco, Paul, to Edson Enterprises, Inc. Cam operated ignition point assembly. 3,781,494, Cl. 200-30.00a.
Tridan Tool & Machine, Inc.: *See—*
Ames, Ward A., 3,780,561.
Trident Engineering Co.: *See—*
Hughes, James S., Jr., 3,781,841.
Trikilis, Emmanuel M. Magnetic material and method of producing same. 3,781,661, Cl. 324-34.000.
Trocino, Frank S., to Bohemia Lumber Company, Incorporated. Method of separating bark components. 3,781,187, Cl. 162-93.000.
Troster, Helmut: *See—*
Fuchs, Otto; Spietschka, Ernst; Hohn, Jurgen; and Troster, Helmut, 3,781,302.
Trott, Gene F.; and Smith, William E., to General Electric Company. Method for making rigid foam and compositions using such method. 3,781,235, Cl. 260-2.5be.
Trowern, Howard M., Jr.: *See—*
Colburn, Walter E.; Trowern, Howard M., Jr.; and Kerfoot, Franklin W., Jr., 3,780,907.
Trueblood, Robert Arthur, to Cornwell Company, Inc. Slide top desk. 3,781,074, Cl. 312-30.000.
Trumpf & Co., Firma: *See—*
Herb, Eugen, 3,780,814.
TRW Inc.: *See—*
Burns, Eugene A.; and Jones, Robert J., 3,781,247.
Clifford, Richard P., 3,781,561.
Hayden, Rodney, 3,781,729.
Howe, John Arthur, 3,781,768.
Lobowitz, Hyman R., 3,781,249.
Lubowitz, Hyman R., 3,781,240.
Tsilibes, George N.; D'Amico, Frank V.; and Hamm, John G., III, to Xerox Corporation. Fuser control system. 3,781,516, Cl. 219-216.000.
Tsukamoto, Masahide; and Ohtsuka, Tetsuro, to Matsushita Electric Industrial Co., Ltd. Method for changing the transparency of a liquid crystal cell. 3,781,088, Cl. 350-160.01c.
Tsuruishi, Yuki, to Kabushiki Kaisha Suwa Seikosha. Watch having tuning fork time standard. 3,780,520, Cl. 58-23.0tf.
Tsutsui, Yoshiro: *See—*
Suzuki, Horoshi; and Tsutsui, Yoshiro, 3,781,218.
Tsuzuki, Kanemitsu: *See—*
Watanabe, Kazuo; Kito, Yastami; Nazaki, Choji; Kono, Kiichi; Tsuzuki, Kanemitsu; and Motobayashi, Kozo, 3,780,513.
Tucker, Robert L., to Seismograph Service Corporation. Borehole logging system with improved display and recording apparatus. 3,781,783, Cl. 340-18.0dc.
Tull, Roger J.: *See—*
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,781,284.
Tullis, Reuben C., to Manning Environmental Corporation, mesne. Liquid level indicator and flow measuring device. 3,781,624, Cl. 318-482.000.
Tullos, Aubrey R. Adjustable chuck assembly for capillary pen system. 3,781,908, Cl. 346-140.000.
Turlabor AG: *See—*
Anderegg, Max, 3,781,801.
Turnbull, John Peter: *See—*
Phillipps, Gordon Hanley; and Turnbull, John Peter, 3,781,312.
Turner, James Keith; and Riley, James Robert, to Gaston County Dyeing Machine Company. Jet dyeing apparatus. 3,780,544, Cl. 68-177.000.
Turner, Leslie Ashton Steele, to Airfix Industries, Limited. Sheet feeding. 3,780,559, Cl. 72-361.000.
Turzillo, Lee A. Means for producing cast-in-place structures in situ. 3,780,975, Cl. 249-1.000.
Tuss, John J., to Bendix Corporation, The, motion Motion mechanism and motion amplifying device therefor. 3,780,595, Cl. 74-25.000.
Tuttle, Charles H., to General Electric Company. High voltage resonant testing circuit. 3,781,667, Cl. 324-57.00r.
Tuvell, Melvin E.; and Dewitt, William J., to Ethyl Corporation. Sulfonate mixtures based on derivatives of olefins of the vinyl, vinylidene and internal types having from 12 to 16 carbon atoms per molecule. 3,781,339, Cl. 260-513.00r.
Tymczak, Romuald W., to Carborundum Company, The. Electrical heater. 3,781,527, Cl. 219-540.000.
UCB, Societe Anonyme: *See—*
Giurgea, Corneliu Edmond, 3,781,436.
Ueda, Hiroyuki: *See—*
Murakoshi, Makoto; Ooue, Shingo; Ueda, Hiroyuki; Hashiue, Masakazu; and Endo, Hirotoshi, 3,781,809.
Ueda, Yasuo; Kamezawa, Yasutoki; Aizawa, Tatsuo; and Ikeda, Toshimitu, to Mita Industrial Company Limited. Liquid developers containing azo dyes. 3,781,208, Cl. 252-62.100.
Uhde, Friedrich, GmbH: *See—*
Von Semel, George, 3,781,410.
Uhlig, Albert R., to Owens-Illinois, Inc. Method for blow molding plastic articles. 3,781,395, Cl. 264-89.000.
Uhrig, Heinz: *See—*
Deubel, Reinhold; Diery, Helmut; Klinner, Wolfgang; List, Karl-Hermann; and Uhrig, Heinz, 3,781,169.
Uhtenwoldt, Herbert R.; Crossman, Richard E.; and Caliri, Charles T., to Cincinnati Mialcron-Haeld Corp. Machine tool. 3,781,070, Cl. 308-5.00r.
Unger, Manfred, to Swiss Aluminium, Ltd. Apparatus for the vertical multiple continuous casting of aluminium and aluminium alloys. 3,780,789, Cl. 164-283.00r.
Union Carbide Corporation: *See—*
Geist, Robert Joseph, 3,780,764.
Harp, Harry J., 3,780,921.
Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Dean, Robert, 3,781,381.
Neale, Robert Schwenn, 3,781,368.
Toth, Tibor E., 3,781,620.
Toth, Tibor Endre, 3,781,640.
Union Oil Company of California: *See—*
Fenton, Donald M., 3,781,351.
Fenton, Donald M., 3,781,364.
Ward, John W., 3,781,199.
Uniroyal, Inc.: *See—*
Jancis, Elmar H., 3,781,385.
Jennings, George L.; and Nichols, Parks M., 3,780,782.
Olson, Mark W.; and Silva, Walter F., 3,781,514.
Wheeler, Edward L., 3,781,361.
United Aircraft Corporation: *See—*
Athey, Roy L., 3,780,553.
Dooley, Philip G.; and Lambiris, Sotiris, 3,780,530.
Mesing, Arthur E., 3,780,862.
Miller, David P., 3,780,865.
United Brands Company: *See—*
McGovern, Harold Joseph, Jr.; and Granja, Louis Albert, 3,780,843.
United Kingdom Atomic Energy Authority: *See—*
Penn, Alan William; and Neighbour, Frank, 3,780,425.
Penn, Alan William; and Beighbour, Frank, 3,781,176.
Rapier, Allan Clarkson, 3,781,190.
United Kingdom of Great Britain and Northern Ireland, Minister of Supply in Her Majesty's Government of the: *See—*
Ford-Moore, Arthur Henry; and Bebbington, Alan, 3,781,387.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Britland, Colin Morris; and Thorpe, John Bernard Joseph, 3,781,530.
United States of America
Air Force: *See—*
Barry, James D.; and Boney, William E., 3,781,713.
Gaheen, Alfred F., 3,781,887.
Griest, Raymond H., 3,781,094.
Hassencahl, Lloyd J., 3,781,885.
Huang, David H., 3,780,533.
Huang, David H., 3,780,952.
Pinnell, William R., 3,780,970.
Schlossberg, Howard, 3,781,714.
Spier, Carl P., 3,780,784.
Stehlin, Robert A.; Spence, Hilton W.; and Matzen, Walter T., 3,781,680.
Tall, Wayne A., 3,781,130.
Thomas, Charles T., 3,781,547.
Van Patten, Robert E.; and Rogers, Dana B., 3,780,723.
Webb, George; and Malott, Bernard, 3,780,660.
Air Force, mesne: *See—*
Allen, Robert A.; and Bement, Elmore L., 3,780,655.
Army: *See—*
Babbitt, Richard W.; and LoCicero, Joseph, 3,780,696.
Campagnuolo, Carl J., 3,781,575.
Christian, Joseph Robert, Goubau, Georg J. E.; and Mink, James W., 3,781,546.
Clark, Samuel A., Jr., 3,780,661.
Coordes, John E., 3,780,819.
Evers, Ernst T.; and Morgan, Robert L., 3,780,967.
Hughes, Nathaniel, 3,780,945.
Insterman, Hans E., 3,781,684.
Jasper, Louis J., Jr., 3,781,702.
Milo, William C., 3,780,585.
Morris, Derek S., 3,781,794.
Sellman, Paul V.; Dingman, S. Lawrence; and Atkins, Ronald T., 3,780,578.
Stinchcomb, Raymond G., 3,780,653.
Styczynski, Robert J., 3,780,438.
Wisniewski, Raymond B., 3,780,763.
Army, mesne: *See—*
Price, Raymond M., 3,781,252.
Atomic Energy Commission: *See—*
Anderson, Lowell W.; and Stephenson, Michael J., 3,781,392.
Baes, Charles F., Jr.; Bamberger, Carlos E.; and Ross, Robert G., 3,781,403.
Conner, William V.; and Proctor, Stephen G., 3,781,404.
Gerst, Thomas E.; and Webb, John G., Jr., 3,781,716.
Heim, Joseph R., 3,781,733.
Llacer, Jorge; and Kraner, Hobart W., 3,781,612.
Newby, Billie J.; and Rhodes, Donald W., 3,781,217.
Ross, Leonard O.; and Hill, Marion E., 3,781,335.
Taylor, Morris C.; and Rhodes, John R., 3,781,556.
Health, Education and Welfare: *See—*
Bush, Ian E., 3,780,936.
Nishi, Hiroshi H.; and McCarthy, Charles, 3,780,992.
National Aeronautics and Space Administration: *See—*

Forestieri, Americo F.; Broder, Jacob D.; and Bernatowicz, Daniel T., 3,780,424.
Newcomb, Arthur L., Jr.; and Price, Aubrey G., 3,780,966.
Outlaw, Ronald A.; Stell, Richard E.; and Hoyt, Ronald F., 3,780,563.
Shim, Ivan H.; and Stelben, John J., 3,781,902.
Singh, Jag J., 3,781,562.
Straight, David M., 3,780,827.
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Kuriger, William L. Short range laser obstacle detector. 3,781,111, Cl. 356-5.000.
Lewicki, George W.; and Maserjian, Joseph. Use of thin film light detector. 3,781,549, Cl. 250-211.00j.
Navy: *See—*
Bishop, Stephen G.; and Moore, William J., 3,781,748.
Davidson, James J., 3,781,911.
Dow, Willard, 3,781,780.
Groves, Ivor D., Jr., 3,781,781.
Hovey, John M., 3,781,881.
Jablansky, Louis, 3,780,753.
Keich, John D.; and Laliberte, George A., 3,781,055.
Kuhn, Gerald D.; Peterson, Kenneth A.; Roeschlein, Eugene R.; Weiss, Donald C.; Weiss, Kenneth F.; and Zeph, David L., 3,781,776.
Kulesza, Stanley; and Sapsowitz, Max, 3,780,659.
Larrimore, Herbert, 3,781,786.
Mallory, H. Dean, 3,780,576.
Malloy, Richard J.; and Hitchcock, Robert D., 3,781,775.
Naeseth, Manley H.; and Larrimore, Herbert, 3,781,536.
Onuercizcuk, Sergic, 3,780,754.
Osborne, Eugene F.; and McGovern, Terrence L., 3,781,706.
Polcha, Raymond J., 3,780,465.
Swet, Charles J., 3,780,722.
Winslow, Lester M., 3,781,588.
Yahle, Daniel L., 3,780,759.
United States Steel Corporation: *See—*
Abarotin, Eugene V.; and Bollinger, Edward R., Jr., 3,781,663.
Didycz, William J.; and Seabury, Almon D., 3,780,793.
Hawthorne, John Q.; and Schlosberg, Samuel B., 3,781,352.
Laycak, John F.; Readal, Gerald J.; and Prellwitz, Samuel B., 3,781,117.
Shapland, James T., 3,780,916.
Universal Instruments Corporation: *See—*
Ragard, Phillip A., 3,780,415.
Universal Maschinenfabrik Dr. Rudolf Schieber KG: *See—*
Schieber, Hans; and Krause, Erich, 3,780,542.
Universal Oil Products Company: *See—*
Carnanhan, Robert D.; and Youtsey, Karl J., 3,780,772.
Wenner, John G., 3,780,498.
Universite de Sherbrooke: *See—*
Michaud, Treffle; Hubert, Lucien; and Poulin, Gerard, 3,780,823.
University of Sydney, The: *See—*
Maguire, Mary Helen; Gough, Geoffrey; and Michal, Frank, 3,781,274.
Upjohn Company, The: *See—*
Hester, Jackson B., Jr., 3,781,289.
Kelly, Robert C., 3,781,306.
Lincoln, Frank H., Jr., 3,781,325.
Ur, Amiram. Conductivity measuring system and conductivity cells therefor. 3,781,659, Cl. 324-30.00r.
Uramoto, Tatsuro. Openable bag. 3,780,781, Cl. 150-3.000.
Urbach, Roy J. G.: *See—*
Wisotzky, Otto G.; Blackburn, Tom L.; and Urbach, Roy J. G., 3,781,482.
Urbanosky, Harold J., to Schlumberger Technology Corporation. Formation-testing tool for obtaining multiple measurements and fluid samples. 3,780,575, Cl. 73-152.000.
U.S. Industries, Inc.: *See—*
Mankowsky, Vincent J.; and Ceroke, Clarence J., 3,781,160.
U.S. Philips Corporation: *See—*
Baas, Gerardus; and Bloemenoal, Frans Victor Willem Ten, 3,780,432.
Barten, Piet Gerard Joseph; and Ferguson, Eric Tapley, 3,780,629.
Boekhorst, Antonius, 3,781,603.
Brandenburg, Klaus, 3,780,528.
Brockmann, Hans-Jurgen, 3,781,589.
Bruinshorst, Berend Theodorus Jan; and Van Kessel, Theodorus Jozef, 3,781,697.
DeBoer, Jan; and Vaes, Petrus Jozephus Johannes, 3,780,434.
Dheilly, Jacky, 3,781,646.
Donjon, Jacques; and Marie, Gerard Joseph Marcel, 3,781,469.
Ferguson, Eric Tapley, 3,781,091.
Friebel, Hendrikus Johannes Christianos; Jonker, Simon; and Benschop, Gerardus Cornelis Marie, 3,780,429.
Fuller, Keith Lewis; and Lambell, Anthony John, 3,781,900.
Van Den Bussche, Willem, 3,781,463.
Van Ginkel, Johannes; and Van Heelsbergen, Teunis Robert, 3,781,834.
Van Loon, Lambertus Jacob Willem; and Muilwijk, Dirk, 3,781,696.
Zegers, Leo Eduard, 3,781,795.
Usami, Hiroshi: *See—*
Yoshihiro, Yoshimoto; Usami, Hiroshi; and Okazaki, Toshiyoshi, 3,781,629.
USM Corporation of Flemington, N.J.: *See—*
Jentsch, Alfred C., Jr.; Taylor, Edward I., Jr.; and Shukoff, Walter, 3,780,606.
Utica Cutlery Company, mesne: *See—*
Pellman, Ronald C., 3,780,436.
Vadnagara, Ramanlal R., to Joslyn Mfg. and Supply Co. Fused coupler assembly. 3,781,745, Cl. 337-199.000.
Vaes, Petrus Jozephus Johannes: *See—*
DeBoer, Jan; and Vaes, Petrus Jozephus Johannes, 3,780,434.
Vaillancourt, Vincent L.: *See—*
Rosano, Joseph G., Jr.; and Vaillancourt, Vincent L., 3,780,857.
Valley Engineering, Inc.: *See—*
Wallingford, Otto H., 3,780,829.
Valpreda, Luigi, to Fiat Societa per Azioni. Motor vehicle braking circuits. 3,781,063, Cl. 303-6.00c.
Van Den Bosch, Francois J. G. Selective information retrieval systems. 3,781,847, Cl. 340-324.0al.
Van Den Bussche, Willem, to U.S. Philips Corporation. Colour television circuit. 3,781,463, Cl. 178-5.4cd.
van der Roer, Humphrey Alphons Victor, to Polytype AG. Device for placing cups on a moving carrier member. 3,780,885, Cl. 214-8.50a.
Van Ginkel, Johannes; and Van Heelsbergen, Teunis Robert, to U.S. Philips Corporation. Reduction cross-talk in double gap head. 3,781,834, Cl. 340-174.10f.
Van Heelsbergen, Teunis Robert: *See—*
Van Ginkel, Johannes; and Van Heelsbergen, Teunis Robert, 3,781,834.
Van Kessel, Theodorus Jozef: *See—*
Bruinshorst, Berend Theodorus Jan; and Van Kessel, Theodorus Jozef, 3,781,697.
Van Koppen, Christianus W. J.: *See—*
Sadee, Constant P. M.; Van Koppen, Christianus W. J.; and Koenders, Henricus A. A., 3,781,256.
Van Loon, Lambertus Jacob Willem; and Muilwijk, Dirk, to U.S. Philips Corporation. Regenerator for generating a pulse series which is to be stabilized on an incoming impulse series. 3,781,696, Cl. 328-164.000.
Van Osch, John H. System for taking and processing still pictures. 3,780,634, Cl. 95-31.0ca.
Van Patten, Robert E.; and Rogers, Dana B., to United States of America, Air Force. Pressure control system for G-suit. 3,780,723, Cl. 128-1.00a.
Vanguard Industries Inc.: *See—*
Herolzer, Ralph H., 3,780,905.
Vargiu, Silvio; and Pitzalis, Mario, to Societa Italiana Resine S.I.R. S.p.A. Process for preparing epoxidic resins. 3,781,244, Cl. 260-47.0ep.
Varsanyi, Frank L.: *See—*
Hansch, Theodor W.; and Varsanyi, Frank L., 3,781,700.
Varta Aktiengesellschaft: *See—*
Dennstedt, Welf, 3,781,657.
Vassilev, Alexander Traykov: *See—*
Krivoshiev, Cueorgui Petrov; Kolev, Dimiter Christov; Tanev, Christo Yanakiev; Erinkov, Dimiter Kostadinov; Petrov, Gueorgui Slavov; Vassilev, Alexander Traykov; and Vatev, Petko Slavtchev, 3,781,554.
Vassiliades, Anthony E.; and Nauman, Edward F., to Champion International Corporation. Microcapsular opacifier system. 3,781,230, Cl. 260-2.50b.
Vatev, Petko Slavtchev: *See—*
Krivoshiev, Cueorgui Petrov; Kolev, Dimiter Christov; Tanev, Christo Yanakiev; Erinkov, Dimiter Kostadinov; Petrov, Gueorgui Slavov; Vassilev, Alexander Traykov; and Vatev, Petko Slavtchev, 3,781,554.
Vauclain, Andre C. Method and apparatus for assembling recordings of musical scores. 3,781,452, Cl. 84-1.280.
Vaughn, Richard: *See—*
Pettigrew, David D.; and Vaughn, Richard, 3,780,780.
Vaughn, Thomas C.: *See—*
Darrow, John O. G.; and Vaughn, Thomas C., 3,781,541.
V.C.A. Corporation: *See—*
Hayes, Thomas H., 3,780,746.
VEB Ingenieurburo Schiffbau: *See—*
Ploetz, Ulrich; and Thiesen, Wolfgang, 3,781,510.
VEB Reglerwerk Dresden: *See—*
Schwarz, Arnulf; Konig, Gerhard; Pieloth, Manfred; and Lang, Dietmar, 3,780,770.
Veeco Instruments, Inc.: *See—*
Hall, Lewis D., 3,781,133.
Veeder Industries Inc.: *See—*
Haynes, Jerry L., 3,780,541.
McComb, Richard C., 3,781,876.
Velcro France: *See—*
Billarani, Patrick; Goubeau, Robert; and Langlois, Jacques, 3,780,479.
Vercellotti, Leonard C.: *See—*
Kruper, Andrew P.; Reeves, John R.; and Vercellotti, Leonard C., 3,781,836.
Vereinigte Flugtechnische Werke-Fokker GmbH: *See—*
Nussbaum, Helmut; and Schnell, Hilmar, 3,780,969.
Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*

Poferl, Gunter; Schmidt, Gerald; and Smejkal, Hellmuth, 3,780,583.

Vertanen, George J.: *See—*
Stevenson, William L.; and Vertanen, George J., 3,780,455.

Victor Products (Wallsend) Limited: *See—*
Roberts, Frank B., 3,781,594.

Victory Kidder Limited: *See—*
Zadow, Herbert, 3,780,610.

Vidar Laboratories Inc.: *See—*
Campman, James P., 3,781,842.

Videon, John A. Weighing devices. 3,780,817, Cl. 177-136.000.

Vilkomerson, David Herman Raphael, to RCA Corporation. Holographic memory with light intensity compensation means. 3,781,830, Cl. 340-173.0lm.

Villeroy & Boch S.A.: *See—*
Maringer, Robert; and Cordelle, Claude, 3,781,157.

Vogel, Arthur E. Hydraulic oscillator and systems actuated thereby. 3,780,622, Cl. 91-296.000.

Vogler, Charles W.: *See—*
Frye, James A.; Morton, Ralph B.; and Vogler, Charles W., 3,780,675.

Volgin, Leonid Alexandrovich: *See—*
Kudinov, Vladimir Mikhailovich; Bushtedt, Jury Petrovich; Dudko, Daniil Andreevich; Arkhangelsky, Georgy Alexandrovich; Pogoretsky, Georgy Ivanovich; Volgin, Leonid Alexandrovich; Kotov, Viktor Anatolievich; Surnin, Boris Anatolievich; and Degtyarev, Mikhal Vasilievich, 3,780,927.

Von Keller, Theodor: *See—*
Cramer, Bernhard; Domig, Herbert; Von Keller, Theodor; and Schmeykal, Rudolf, 3,781,800.

Von Kulmer, Olrich, to Kleindienst & Co. Apparatus for drying washed vehicles. 3,780,448, Cl. 34-229.000.

von Meyer, Walter G. Magnetic tic-tac-toe game. 3,781,013, Cl. 273-130.00b.

Von Semel, George, to Uhde, Friedrich, GmbH. Process for the concentration and defluorination of phosphoric acid. 3,781,410, Cl. 423-321.000.

Voves, Robert A.: *See—*
Bachel, Francis D.; and Voves, Robert A., 3,781,038.

Voyles, Richard E.; and Giles, William A., to Systron Donner Corporation. Automatic transfer oscillator with improved FM tolerance. 3,781,678, Cl. 324-79.00d.

Vretener, John: *See—*
Horak, Vladimir; and Vretener, John, 3,780,981.

Vuillemin, Claude: *See—*
Derre, Andre; Robert, Pierre; and Vuillemin, Claude, 3,780,858.

Wacker-Chemie G.m.b.H.: *See—*
Balwe, Thomas; and Sabel, Johann, 3,781,255.

Wagner Electric Corporation. *See—*
Kersting, Raymond J., 3,781,065.

Wagner, Heinz: *See—*
Kirmis, Peter; Wagner, Heinz; and Kaiserswerth, Hans-Peter, 3,781,740.

Wagner, John W.; and Young, Paul M., to International Business Machines Corporation. Test probe apparatus. 3,781,681, Cl. 324-158.00p.

Wagner, Klaus; Eue, Ludwig; and Klauke, Erich, to Bayer Aktiengesellschaft. Cyano- and trifluoromethyl-substituted 6-nitroanilines. 3,781,323, Cl. 260-465.00e.

Wagner, Ruprecht, to Moeller & Neumann G.m.b.H. Plate turn-over mechanism. 3,780,882, Cl. 214-1.0qa.

Wagner, William. Pressurized liquid mixer and dispenser. 3,780,910, Cl. 222-95.000.

Wakameda, Toshio: *See—*
Ohta, Masachika; and Wakameda, Toshio, 3,780,420.

Walden, John P.: *See—*
Anderson, Thomas E.; and Walden, John P., 3,781,638.

Waldrop, Thomas E.; and Reid, Philip L., to Grace, W. R., & Co. Vacuum packaging apparatus. 3,780,489, Cl. 53-112.00b.

Walker, Darrell W.; Farha, Floyd E., Jr.; and Bertus, Brent J., to Phillips Petroleum Company. Catalyst for oxidative dehydrogenation. 3,781,223, Cl. 252-437.000.

Walker, Michael F.: *See—*
Thomson, Richard N.; and Walker, Michael F., 3,781,021.

Wallace Expanding Machines, Inc.: *See—*
Roper, Ralph E., 3,780,899.

Wallace-Murry Corporation: *See—*
Benisek, Edward F., 3,781,126.

Wallin, Per L.: *See—*
Ek, Leif V.; Wallin, Per L.; and Tibbling, Thure P. M., 3,780,866.

Wallingford, Otto H., to Valley Engineering, Inc. Ladder for evacuating persons from chair aerial cable lifts. 3,780,829, Cl. 182-206.000.

Walton, Nicholas: *See—*
Cairns, James; and Walton, Nicholas, 3,781,205.

Walton, William Byron, to Clark Equipment Company. Synchronizing pulse generator for communication network. 3,781,565, Cl. 307-106.000.

Walz, Donald T.: *See—*
Berkoff, Charles E.; Sutton, Blaine M.; and Walz, Donald T., 3,781,434.

Walz, Jorgen; and Faust, Eberhard, to Recaro GmbH. and Co. Safety device for a vehicle seat. 3,781,061, Cl. 297-388.000.

Wandel u. Goltermann: *See—*
Dick, Rudolf, 3,781,669.

Ward Foods, Inc.: *See—*
Farmer, John, 3,780,645.

Ward, John W., to Union Oil Company of California. Catalytic hydrocracking of ammonia containing feedstocks. 3,781,199, Cl. 208-89.000.

Ward, William J., III; and Salemme, Robert M., to General Electric Company. Sulfonated polyxylene oxide as a permselective membrane for gas separations. 3,780,496, Cl. 55-16.000.

Warnant, Julien; and Jolly, Jean, to Roussel-UCLAF. Novel preparation of trienic steroids. 3,781,311, Cl. 260-397.450.

Warner, Ellis R., Jr.: *See—*
Miller, Blaine Monroe, Jr.; Buckman, Wayne T.; and Warner, Ellis R., Jr., 3,780,956.

Warren, Robert W.: *See—*
Scudder, Philmore M.; and Warren, Robert W., 3,781,345.

Warren, William Edward, to Bespak Industries Limited. Aerosol valves. 3,780,913, Cl. 222-402.240.

Warwick Electronics, Inc.: *See—*
Chapman, Steven J., 3,781,590.
Williams, Norman L.; and Ryan, Allen L., 3,780,965.

Wassilieff, Victor. Stoppers. 3,780,897, Cl. 215-41.000.

Watanabe, Kazuo; Kito, Yastami; Nazaki, Choji; Kono, Kiichi; Tsuzuki, Kanemitsu; and Motobayashi, Kozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kabushiki Kaisha Toyota Chuo Kenkyusho and Kabushiki Kaisha Meidensha. Method and apparatus for drivin open-end spinning frame. 3,780,513, Cl. 57-93.000.

Waterbury, Richard N. Power operated animal feeding and watering device. 3,780,702, Cl. 119-51.130.

Watermann, Hans-Dieter, to Arn. Kiekert Sohne. Motor-vehicle door latch with lock mechanism only actuatable with door closed. 3,781,045, Cl. 292-216.000.

Waters, Graham Thomas, to Imperial Chemical Industries, Limited. Textured core yarns. 3,780,515, Cl. 57-157.00r.

Watson, Arthur: *See—*
Locke, Walter Frederick; Watson, Arthur; and Edwards, Thomas Philip, 3,781,039.

Wawzonek, Stanley; and Gueldner, Richard C., to Iowa University of Iowa, State of. Process for preparing isocyanates. 3,781,319, Cl 260-453.00p.

Weaver, Cedric David; and Toogood, Graham John, to Dowty Hydraulic Units Limited. Rotary fluid-pressure machines. 3,781,149, Cl 418-131.000.

Weaver, George B., to Honeywell Information Systems, Inc. Apparatus for adaptively checking document thickness. 3,781,652, Cl. 328-1.000.

Webb, Frank Alan, to Martonair Limited. Rotary air motor. 3,780,624, Cl. 91-491.000.

Webb, George; and Malott, Bernard, to United States of America, Air Force. Multiple function safe and arm mechanism. 3,780,660, Cl. 102-70.02r.

Webb, John G., Jr.: *See—*
Gerst, Thomas E.; and Webb, John G., Jr., 3,781,716.

Weber, Heinz, to Telesco Brophey Limited. Collapsible umbrella. 3,780,748, Cl. 135-20.00r.

Weber, Kurt: *See—*
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,781,278.

Webster Electric Company, Inc.: *See—*
Dalziel, Donald F.; and Heide, Charles H., 3,781,742.

Wedemeyer, Karlfried: *See—*
Pawellek, Dieter; and Wedemeyer, Karlfried, 3,781,297.

Weeden, Otto P., Jr., to Honeywell Information Systems, Inc. Solid-state long-period timer. 3,781,573, Cl. 307-293.000.

Wehrli, Hansuli; and Jeger, Oskar, to Ciba-Geigy Corporation. Process for the production of 14β-hydroxy-Δ^{16}- and 7α-hydroxy-Δ4-steroids. 3,781,271, Cl. 260-239.55r.

Weiertz, Axel Hugo. Internal combustion engine. 3,780,719, Cl. 123-188.00c.

Weiner, Norbert. Transformer assembly. 3,781,741, Cl. 336-192.000.

Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., to Frosst, Charles E., & Co. Process for making 4-(3-amino-2-hydroxy propoxy)-1,2,5-thiadiazoles. 3,781,284, Cl. 260-247.100.

Weinz, Ernst August: *See—*
Batsch, Helmut; Jahnel, Benno; Weinz, Ernst August; Berger, Wolfgang; and Dickopp, Gerhard, 3,781,020.

Weisang, Joseph Edouard; Szabo, Georges; and Maurin, Jean, to Compagnie Francaise de Raffinage. Dehydration catalysts, particularly for the dehydration of diols. 3,781,222, Cl. 252-437.000.

Weisman, Abner I. Contraceptive. 3,780,730, Cl. 128-127.000.

Weiss, Donald C.: *See—*
Kuhn, Gerald D.; Peterson, Kenneth A.; Roeschlein, Eugene R.; Weiss, Donald C.; Weiss, Kenneth F.; and Zeph, David L., 3,781,776.

Weiss, Kenneth F.: *See—*
Kuhn, Gerald D.; Peterson, Kenneth A.; Roeschlein, Eugene R.; Weiss, Donald C.; Weiss, Kenneth F.; and Zeph, David L., 3,781,776.

Weiss, Martin Joseph: *See—*
Partridge, Ruth; and Weiss, Martin Joseph, 3,781,429.

Weiss, Morton A.; and Speckhart, Bernard S., to White Machine Co. Article storage and retrieval apparatus. 3,780,852, Cl. 198-181.000.

Weldon, Winfred D.: *See—*
Nickell, Claude H., 3,781,135.

Wells, Howard F., to Schlegel Manufacturing Co. Inc., The. Continuous molding method. 3,781,390, Cl. 264-47.000.

Wells, William T. Variable automatic transmission. 3,780,841, Cl. 192-61.000.

Welters, Reiner; and Russmann, Horst, to Merck Patent Gesellschaft mit beschrankter Haftung. Light protection agent for cosmetic purposes. 3,781,417, Cl. 424-59.000.

Wemac Company: *See—*
Kellel, Allen, 3,780,980.

Wenner, John G., to Universal Oil Products Company. Sulfur oxides removal system. 3,780,498, Cl. 55-73.000.

Wentworth, William M., Sr. Wildlife feeder. 3,780,701, Cl. 119-51.00r.

Wentworth, William P.: *See—*
Melead, James J.; and Wentworth, William P., 3,780,697.

Werner, Charles E., to Mead Corporation, The. Roll cleaning apparatus for paper-making machines and the like. 3,780,396, Cl. 15-256.510.

Wesco Industries Corporation, mesne: *See—*
Deniega, Jose Castillo; and Tellerman, Edward M., 3,780,958.

Wescom, Inc.: *See—*
Roge, Ralph R., 3,781,480.

Wesley-Jessen, Inc.: *See—*
Townsley, Malcolm G., 3,781,096.

Westergren, George A.; Fish, Warren H.; Crooks, Stanley R.; and Koland, David G., to Whirlpool Corporation. Vacuum cleaner construction. 3,781,460, Cl. 174-52.00r.

Western Electric Company, Incorporated: *See—*
Dornberger, Georg Christian Ernst, 3,781,666.
Gresho, William Milan, 3,780,442.
Lilienthal, Peter Frederick, II; Remachandran, Karapurath; and Tice, Edward Stephen, 3,780,558.
Studeny, Henry G., 3,780,848.

Westinghouse Air Brake Company: *See—*
Darrow, John O. G.; and Vaughn, Thomas C., 3,781,541.
Haydo, Andrew G., 3,780,837.
Mokrytzki, Boris; and Hammond, Peter W., 3,781,614.
Mokrytzki, Boris; and Meier, Udo, 3,781,615.
Mokrytzki, Boris, 3,781,616.
Staples, Crawford E., 3,781,540.
Staples, Crawford E.; and Stark, Donald E., 3,781,543.
Wright, Raymond C., 3,780,879.

Westinghouse Electric Corporation: *See—*
Alvino, William M.; and Koryak, William R., 3,781,237.
Blewitt, Donald D.; and Ayers, David L., 3,781,747.
Corson, Charles A., 3,781,690.
De Caro, Artitide R., 3,781,582.
Grunert, Kurt A., 3,781,500.
Grunert, Kurt A.; Dauer, John J., Jr.; and Dobrosielski, Stephen S., 3,781,728.
Hopkins, Richard H., Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., 3,781,707.
Huber, Charles J., 3,781,868.
Jackson, Edward J., 3,781,695.
Jessee, Ralph D., 3,781,634
Kircher, Paul J., 3,781,521
Kruper, Andrew P., Reeves, John R.; and Vercellotti, Leonard C., 3,781,836
Mattern, John, 3,781,871
Meyer, Lloyd E., 3,781,739
Rahaim, Thomas J., and Kish, Leslie G., 3,781,125.
Ravas, Richard J., 3,781,772
Rushing, Frank C.; and Gilbert, Lynford W., 3,781,095.
White, Marvin H.; McCann, David H., Jr.; Mack, Ingham A. G.; and Blaha, Franklyn C., 3,781,574
Wiley, Roy A., 3,781,769
Wolf, Charles B.; and Akers, Ronald R., 3,781,449.
Wood, Carl O., 3,781,127.

Westinghouse Electronic Corporation: *See—*
Shuey, Kenneth C.; and Baker, Donald E., 3,781,572.

Weston, Donald E.; and Timmerman, Julius W., to Porter, H. K., Company, Inc. Operating mechanism for high tension electric switch gear. 3,780,625, Cl. 91-418.000.

Westphal, Richard C.: *See—*
Finestone, Arnold B.; Westphal, Richard C.; and Brac, Charles, Jr., 3,781,383.

Wetzler, Justin J.: *See—*
Rosenfeld, Howard; and Wetzler, Justin J., 3,780,543.

Wheeler, Edward L., to Uniroyal, Inc. N-(4-alpha, alpha-dimethylbenzylphenyl)-1-or- 2-naphthylamines. 3,781,361, Cl. 260-570.00r.

Wheeler, Lionel H.: *See—*
Clavin, Edward A.; and Wheeler, Lionel H., 3,780,591.

Whipple, Roger B.; and Miller, Allan F., to Outboard Marine Corporation. Single clutch and throttle lever combined with a throttle warm up lever. 3,780,842, Cl. 192-.096.

Whirlpool Corporation: *See—*
Westergren, George A.; Fish, Warren H.; Crooks, Stanley R.; and Koland, David G., 3,781,460.

Whitaker, George C., to Wolff Sales Engineering Company. Impact control for impact wrenches. 3,780,603, Cl. 81-52.300.

White, Albert H.: *See—*
Kampe, Robert F.; and White, Albert H., 3,780,771.

White, Edward A.; and Bunting, James H., to Bowmor Instrument Corporation. Calculator display circuit. 3,781,852, Cl. 340-324.00r.

White, Frederick K.: *See—*
Bryson, Millard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., 3,781,197.

White Machine Co.: *See—*
Weiss, Morton A.; and Speckhart, Bernard S., 3,780,852.

White, Marvin H.; McCann, David H., Jr.; Mack, Ingham A. G.; and Blaha; Franklyn C., to Westinghouse Electric Corporation. Coherent sampled readout circuit and signal processor for a charge coupled device array. 3,781,574, Cl. 307-304.000.

White, Robert L., to General Motors Corporation. Pushbutton shift mechanism. 3,780,597, Cl. 74-483.0pm.

White, William E., Jr.; and Billingsly, Lloyd E., to Hydrotech Services, Inc. Method of joining pipes in a hostile environment. 3,780,421, Cl. 29-466.000.

White, William T. Study device. 3,780,451, Cl. 35-9.00e.

Whitehead, Robert C., Jr.; and Honeywell Lester R., Jr., to Honeywell, Inc. Differential pressure responsive apparatus. 3,780,588, Cl. 73-398.0ar.

Whitfill, William A., Jr.: *See—*
Sawin, Frederick C.; and Whitfill, William A., Jr., 3,781,778.

Whitlock, Inc.: *See—*
Evans, Arthur J.; and Morin, Joseph C., 3,780,991.

Whitson, Bobbie L.; and Morgan, John A., to Phillips Petroleum Company. Apparatus including an equalization chamber for discontinuous venting of a vessel. 3,780,761, Cl. 137-565.000.

Whitworth, Clyde Jesse, Jr.: *See—*
Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Dean, Robert, 3,781,381.

Wicks, Norman L. Fork. 3,781,053, Cl. 294-55.500.

Widmayer, Don F., to Controlled Environment Systems, Inc. Electric current control apparatus. 3,781,598, Cl. 315-107.000.

Wiegert, Philip E., to Mallinekrodt Chemical Works. Nitrilotriacyltriimino-tris-(2,4,6-triiodobenzoic acid) compounds. 3,781,338, Cl. 260-501.110.

Wiesener, Robert W., to Programmed & Remote Systems Corporation. Reactor vessel inspecation device. 3,780,571, Cl. 73-67.80s.

Wight, David C.: *See—*
Caiati, Frank P.; and Wight, David C., 3,781,824.

Wilbur, Robert L., to Eastern Company, The. Valve structure for gas operated horn. 3,780,694, Cl. 116-112.000.

Wilcox, Jack W., to Abex Corporation. Vane pump with pressure ramp tracking assist. 3,781,145, Cl. 418-1.000.

Wild, Jost: *See—*
Kappeler, Heinrich; and Wild, Jost, 3,781,333.

Wildhaber, Ernest. Optical scanner with laser. 3,781,078, Cl. 350-6.000.

Wildman, Alexander J., to Consyne Corporation. Orthodontic bracket. 3,780,437, Cl. 32-14.00a.

Wiley, Roy A., to Westinghouse Electric Corporation. Wiring device such as female connector with deformable insulating housing element for maintaining contact alignment. 3,781,769, Cl. 339-189.00r.

Wilhelm Karl-Heinz, to Draiswerke GmbH., Firma. Screen arrangement for stirring mills. 3,780,957, Cl. 241-172.000.

Wilkinson, David B. Forced air heater. 3,781,165, Cl. 432-62.000.

Williams, Benjamin F., to Benwilco Inc. Rotary engine having axially sliding vanes. 3,780,709, Cl. 123-8.230.

Williams, Francis A.; and Dudley, Harvey H., to Eastman Kodak Company. Automatic or presettable diaphragm apparatus. 3,781,099, Cl. 352-141.000.

Williams Instruments, Inc., mesne: *See—*
Williams, Robert A., 3,781,676.

Williams, Malcolm; and Cockshott, Charles Peter, to Lucas, Joseph, (Industries) Limited. Inductor alternator. 3,781,580, Cl. 310-168.000.

Williams, Norman L.; and Ryan, Allen L., to Warwick Electronics, Inc. Tape recorder. 3,780,965, Cl. 242-204.000.

Williams, Robert A., to Williams Instruments, Inc., mesne. Contact structure for test probe. 3,781,676, Cl. 324-72.500.

Williams, Robert E.: *See—*
Ayers, Robert C., Jr.; Bayless, Jack H.; Graham, John W.; Lloyd, James R.; Loth, William D.; and Williams, Robert E., 3,780,809.

Williamson, Walter A., mesne: *See—*
Freyling, Edward N., Jr., 3,781,860.

Wilms, Carl Alfred: *See—*
Barron, Charles Dwain; Geczy, Bela; and Wilms, Carl Alfred, 3,780,815.

Wiltshire, Arthur J. Apparatus for inserting a flexible preform in a mold. 3,781,155, Cl. 425-392.000.

Win, Maung Hla: *See—*
McDonnell, Robert William; and Win, Maung Hla, 3,781,228.

Windmoller & Holscher: *See—*
Mirar, Horst; and Schner, Karl Heinz, 3,780,796.

Winner, Richard N.: *See—*
Ernstoff, Michael N.; Fehr, Eric R.; Hoffman, William C.; and Winner, Richard N., 3,781,465.

Winslow, Lester M., to United States of America, Navy. Backward wave prevention for a TWT helix. 3,781,588, Cl. 315-3.500.

Wirth, Wolf-Dieter: *See—*
Muller, Erwin; Wirth, Wolf-Dieter; Blahak, Johannes; and Rohr, Harry, 3,781,233.

Wisniewski, Raymond B., to United States of America, Army. Pulse ratio modulation valve. 3,780,763, Cl. 137-599.000.

Wisotzky, Otto G.; Blackburn, Tom L.; and Urbach, Roy J. G., to GTE Automatic Electric Laboratories, Incorporated. Pulse-correcting system for a telephone signaling system. 3,781,482, Cl. 179-16.0ea.

Witt, Ernst-Christian; Stach, Kurt; Thiel, Max; Schmidt, Felix Helmut; and Stork, Harald, to Boehringer Mannheim Gesellschaft mit

beschrankter Haftung. Phenoxy-alkyl-carboxylic acid compounds. 3,781,328, Cl. 260-471.00r.

Witte, Josef: *See—*
Pampus, Gottfried; Schon, Nikolaus; Witte, Josef; and Marwede, Gunter, 3,781,257.

Witten, Rolf Groth. Heat-reflecting window pane. 3,781,077, Cl. 350-1.000.

Woelffer, Neill C., to Jacobsen Manufacturing Company. Rotary lawn mower cutter bar with bi-level cutter. 3,780,509, Cl. 56-295.000.

Wolf, Charles B.; and Akers, Ronald R., to Westinghouse Electric Corporation. Nonconsumable electrode for an electric arc furnace with integrated cooling and electrically conducting means. 3,781,449, Cl. 13-18.000.

Wolf, Milton; Sellstedt, John H.; and Rosen, Harry, to American Home Products Corporation. Method of producing 2-halo-3-substituted indoles. 3,781,300, Cl. 260-326.150.

Wolff Sales Engineering Company: *See—*
Whitaker, George C., 3,780,603.

Wollnik, Hermann. Coil arrangement for adjusting the focus and/or correcting the aberration of streams of charged particles by electromagnetic deflection, particularly for sector field lenses in mass spectrometers. 3,781,732, Cl. 335-213.000.

Wolpers, Jurgen, to Chemische Werke Huls Aktiengesellschaft. Process for the vulcanization of homo-or copolymers of conjugated dienes. 3,781,250, Cl. 260-79.50b.

Wolverine Brass Works; a division of Wolverine Industries, Inc.: *See—*
De Vries, Robert Wopke, 3,780,758.

Wood, Bonnie G.: *See—*
Wood, Gary J.; and Wood, Bonnie G., 3,780,604.

Wood, Carl O., to Westinghouse Electric Corporation. Centrifugal fan inlet vane capacity control. 3,781,127, Cl. 415-147.000.

Wood, Gary J.; and Wood, Bonnie G. Split socket wrench and method of using same. 3,780,604, Cl. 81-64.000.

Wood, Geoffrey Brian. Chimney liners. 3,780,639, Cl. 98-58.000.

Wood, Harrison F.; and Bernstein, Sidney. Test for hemolytic streptococci and test media therefor. 3,781,192, Cl. 195-100.000.

Wood, Lawrence H.: *See—*
Eichelberger, William E.; and Wood, Lawrence H., 3,781,846.

Woodie, Paul E., to American Totalisator Company, Inc. Selective punch. 3,780,939, Cl. 234-115.000.

Woodward, John W., to GTE Automatic Electric Laboratories, Incorporated. Trunk selection scanning circuit. 3,781,485, Cl. 179-18.0fg.

Worm, Manfred: *See—*
Bormann, Dieter; and Worm, Manfred, 3,781,283.

Worters, Allen J.: *See—*
Gicca, Francis A.; Passavant, Francis C.; and Worters, Allen J., 3,781,850.

Wortman, Donald E. Valveless fluid pump. 3,781,143, Cl. 417-557.000.

Wossner, Gerhard: *See—*
Pollmann, Fritz; and Wossner, Gerhard, 3,781,727.

Wriggins, Donald H.: *See—*
Fouks, Philip H.; and Wriggins, Donald H., 3,780,386.

Wright, Raymond C., to Westinghouse Air Brake Company. Manual latch retriever apparatus for car uncoupler. 3,780,879, Cl. 213-159.000.

Wu, Yu-Lin; and Hudson, Paul S., to Phillips Petroleum Company. Disproportionation of alkali metal salts of aromatic carboxylic acids. 3,781,341, Cl. 260-515.00p.

Wulff, Goldwyn L. Hypodermic syringe holder and injector device. 3,780,734, Cl. 128-218.00r.

Wymore, Charles E.; and Dahlberg, Clayton P., to Burroughs Corporation. Addressing system responsive to a transfer vector for accessing a memory. 3,781,812, Cl. 340-172.500.

Wynkoop, Raymond; and Kohn, Edward M., to Sun Research and Development Co. Process for making electrode grade coke. 3,781,198, Cl. 208-86.000.

W4: Pains-Wessex - Wessex Limited: *See—*
Murray, Dudley Charles, 3,780,656.

Xerox Corporation: *See—*
Buddendeck, Gerald A.; Hubler, Lawrence C.; Heiler, Paul S.; and Koch, Gilbert E., 3,781,004.
Gallo, Charles F., 3,781,585.
Gerace, Robert E., 3,781,548.
Meagher, Thomas, 3,781,105.
Rosenthal, Jerome A., 3,781,848.
Ruhland, John, 3,781,107.
Skamra, Dale William, 3,781,517.
Tsilibes, George N.; D'Amico, Frank V.; and Hamm, John G., III, 3,781,516.

Yahle, Daniel I., to United States of America, Navy. Reusable pressure release valve. 3,780,759, Cl. 137-467.000.

Yajima, Kanichi: *See—*
Nomura, Osamu; and Yajima, Kanichi, 3,781,597.

Yakata, Akio; and Kinoshita, Tsuneo, to Tokyo Shibaura Electric Co., Ltd. Memory protective systems for computers. 3,781,811, Cl. 340-172.500.

Yamada, Hayatoshi: *See—*
Tahara, Hisayoshi; Sakurai, Mituo; and Yamada, Hayatoshi, 3,780,937.

Yamada, Yasuo: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,781,386.

Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Akatsu, Mitsuhiro; Maruyama, Isamo; and Izumi, Takahiro, to Sumitomo Chemical Company, Ltd. 2-Aminomethyl-indole derivatives. 3,781,299, Cl. 260-326.150.

Yamamoto, Katsuro, to Bridgestone Liquefied Gas Company, Ltd. Low temperature liquefied gas tank of a membrane type. 3,780,900, Cl. 220-9.01g.

Yamamura, Katsumi, to Kabushiki Kaisha Suwa Seikosha. Display device for electronic calculator. 3,781,862, Cl. 340-336.000.

Yamanaka, Yoshio: *See—*
Sakai, Hiroshi; Hamada, Satoshi; Yamanaka, Yoshio; Ito, Isao; Izumi, Zenji; Kitagawa, Hideji; Mukoyama, Eiji; Suzuki, Zennosuke; Kato, Tadashi; and Hosaka, Shuntaro, 3,781,248.

Yamazaki, Yoshio, to Kabushiki Kaisha Suwa Seikosha. Display device for electronic desk calculator. 3,781,865, Cl. 340-336.000.

Yao, Cheng, to Factory Mutual Research Corporation. Method of fire protection using recirculation of combustion products. 3,780,811, Cl. 169-12.000.

Yatani, Kozo: *See—*
Aoki, Katsuo; Yatani, Kozo; Kometani, Eishi; and Izuhara, Seiji, 3,781,423.

Yatsuk, Vladimir Grigorievich: *See—*
Grom, Jury Ivanovich; and Yatsuk, Vladimir Grigorievich, 3,781,645.

Yatsuk, Vladimir Grigorievich. Independently controlled inverter with universal commutating circuit. 3,781,644, Cl. 321-45.00c.

Yawata Chemical Industry Co., Ltd.: *See—*
Kusunoki, Yasuo; Okazaki, Hiroshi; Sato, Yoshinori; and Sano, Eiichi, 3,781,292.

Yoshida, Kenichi; and Miyamoto, Yoshio, to Sumitomo Electric Industries, Ltd. Leaky coaxial cable. 3,781,725, Cl. 333-84.00r.

Yoshida, Makoto, to Citizen Watch Co., Ltd. Alarm timepiece. 3,780,522, Cl. 58-38.000.

Yoshida, Toshio: *See—*
Kaneko, Keiji; and Yoshida, Toshio, 3,781,101.

Yoshihiro, Yoshimoto; Usami, Hiroshi; and Okazaki, Toshiyoshi, to Fujitsu Limited. Synchronous control system adapted for a numerically controlled machine. 3,781,629, Cl. 318-632.000.

Yoshizawa, Keiichi: *See—*
Oishi, Masaaki; Takahashi, Yoshinaga; and Yoshizawa, Keiichi, 3,780,649.

Young, James L.: *See—*
Geiger, Franklin O.; and Young, James L., 3,780,669.

Young, Paul M.: *See—*
Wagner, John W.; and Young, Paul M., 3,781,681.

Youtsey, Karl J.: *See—*
Carnanhan, Robert D.; and Youtsey, Karl J., 3,780,772.

Ysteboe, Howard T.: *See—*
Manacini, Lloyd; and Ysteboe, Howard T., 3,781,760.

Yuuki, Tasuku: *See—*
Nonaka, Shunsuke; Yuuki, Tasuku; and Hara, Kouichi, 3,781,577.

Zadow, Herbert, to Victory Kidder Limited. Guillotines or the like machines. 3,780,610, Cl. 83-643.000.

Zaid, Melvin, to Colt's Inc. Frangible projectile. 3,780,657, Cl. 102-41.000.

Zajkowski, Arthur J., to International Harvester Company. Means for extending wires through the center pivot of an articulated vehicle. 3,781,037, Cl. 280-241.000.

Zakumbaeva, Gaukhar Daulenovna. *See—*
Sokolsky, Dmitry Vladimirovich; Zakumbaeva, Gaukhar Daulenovna; Zhubanov, Kair Akhmetovich; Mazin, Evgeny Petrovich; Scheolov, Nikolai Illarionovich; Fokin, Evgeny Pavlovich; and Livanov, Vladimir Arkadievich, 3,781,227.

Zdinak, William D.: *See—*
Roberts, Robert E.; and Zdinak, William D., 3,780,470.

Zecher, Wilfried; and Merten, Rudolf, to Bayer Aktiengesellschaft. Process for the production of polyimides by reacting a Schiff base with a cyclic acid anhydride. 3,781,246, Cl. 260-78.0tf.

Zegers, Leo Eduard, to U.S. Philips Corporation. Error-Correcting data transmission system. 3,781,795, Cl. 340-146.1be.

Zeidler, Guenter, to Siemens Aktiengesellschaft. Receiver for laser beams. 3,781,550, Cl. 250-211.00j.

Zenith Radio Corporation: *See—*
Dietch, Leonard; and Lerner, Martin L., 3,781,076.

Zeph, David L.: *See—*
Kuhn, Gerald D.; Peterson, Kenneth A.; Roeschlein, Eugene R.; Weiss, Donald C.; Weiss, Kenneth F.; and Zeph, David L., 3,781,776.

ZF-Borg Warner GmbH Industriegebit: *See—*
Dach, Hansjorg; Bordowsky, Karl Heinz; and Bucksch, Manfred, 3,780,601.

Zhubanov, Kair Akhmetovich: *See—*
Sokolsky, Dmitry Vladimirovich; Zakumbaeva, Gaukhar Daulenovna; Zhubanov, Kair Akhmetovich; Mazin, Evgeny Petrovich; Scheolov, Nikolai Illarionovich; Fokin, Evgeny Pavlovich; and Livanov, Vladimir Arkadievich, 3,781,227.

Zimmer, Kurt; and Schneider, Wilhelm, to Beche & Grohs GmbH. Double-acting press with hydraulically coupled hammer and anvil. 3,780,560, Cl. 72-407.000.

Zimmer Manufacturing Company: *See—*
Quello, Henry A., 3,780,731.

Ziolko, Walter; and Stoeck, Paul F., to International Harvester Company. Shock and vibration dampening mount assembly. 3,781,058, Cl. 296-35.00r.

Zipser, Frederick S., M.D.: *See—*
Hagen, Thomas E., 3,781,677.

Zirlis, Joseph V., to H. N. Industries Inc. Water purification apparatus and cartridge therefor. 3,780,867, Cl. 210-266.000.

Zoeton Corporation: *See—*
Siddall, John B., 3,781,308.

Zoni, Giorgio, to Italfarmaco S.p.A. Pharmaceutical composition having analgesic and antiphlogistic activities. 3,781,439, Cl. 424-273.000.

Zorev, Nikolai Nikolaevich; Chernykh, Viktor Vasilievich; Stanislavsky, Lazar Yankelevich; Timofeev, Mikhail Mikhailovich; Kudryavtsev, Ivan Vasilievich; Isaev, Alexei Ilich; Grinchenko, Nikolai Grigorievich; Spivak, Boris Volkovich; Belov, Vladimir Alexanrovich; Kozik, Adolf Efimovich; Shavrin, Adolf Ivanovich; and Sobolev, Jury Vasilievich. Method of making generator rotor of turbogenerator unit. 3,780,428, Cl. 29-598.000.

Zubalik, Stanley G. Drinking straw. 3,780,944, Cl. 239-33.000.

Zucchinelli, Mario: *See—*
Porta, Paolo Della; Zucchinelli, Mario; and Pisani, Cesare, 3,780,501.

Zweig, Leon A., to Flow Technology Corporation. Peristaltic pump with adjustable tensioning means. 3,781,142, Cl. 417-477.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF DECEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alessi, Samuel P., to Borg-Warner Corp. Hard facing alloy composition and method of manufacture. Re. 27,851, 12–25–73, Cl. 106—1.
Borg-Warner Corp.: *See*—
Alessi, Samuel P. Re. 27,851.
Britt Tech Corp.: *See*—
Nortsrud, Iven R., and Threlkeld. Re. 27,855.
Ceramic Cooling Tower Co.: *See*—
Frohwerk, Paul A. Re. 27,853.
Eastman Kodak Co.: *See*—
Weissberger, Arnold, and Kibler. Re. 27,848.
Eisenberg, Bernard C., to Solbern Corp. Spear packing apparatus. Re. 27,852, 12–25–73, Cl. 53—123.
Frohwerk, Paul A., to Ceramic Cooling Tower Co. Modular floating water-cooling system. Re. 27,853, 12–25–73, Cl. 239—11.
Kibler, Charles J.: *See*—
Weissberger, Arnold, and Kibler. Re. 27,848.
Nortsrud, Iven R., and J. H. Threlkeld, to Britt Tech Corp. Cleaning apparatus with relief control valve. Re. 27,855, 12–25–73, Cl. 239—126.
Schoerner, Roger J., to Southwire Co. Insulated telephone cable. Re. 27,854, 12–25–73, Cl. 174—113.
Solbern Corp.: *See*—
Eisenberg, Bernard C. Re. 27,852.
Southwire Co.: *See*—
Schoerner, Roger J. Re. 27,854.
Threlkeld, John H.: *See*—
Nortsrud, Iven R., and Threlkeld. Re. 27,855.
Watts, Glen Armon. Two-way plow with synchronized guided tail wheel. Re. 27,850, 12–25–73, Cl. 172—212.
Weissberger, Arnold, and C. J. Kibler, to Eastman Kodak Co. Yellow forming couplers. Re. 27,848, 12–25–73, Cl. 96—100.
Wortman, Donald E. Dynamic action valveless artificial heart utilizing dual fluid oscillator. Re. 27,849, 12–25–73, Cl. 3—1.

LIST OF DESIGN PATENTEES

A B Automatic: *See*—
Sonnergaard, Arne N. C. 229,650.
American Filtrona Corp.: *See*—
Berger, Richard M. 229,725.
Aqua-Mist Inc.: *See*—
Morrow, William B. 229,693.
Morrow, William B. 229,695.
Ashton, Harold P.: *See*—
Croyle, Jack V., and Ashton. 229,654.
BIO Research Glass, Inc.: *See*—
Dragotta, Robert. 229,689.
Babbitt, John H., Jr., R. G. Boyer, A. E. Olt, Jr., P. E. Schuck, and S. L. Stark, to Caterpillar Tractor Co. Tractor cab. 229,687, 12–25–73, D14—27.
Bard, C. R., Inc.: *See*—
Ericson, Richard E. 229,724.
Becker, Robert W., and M. H. Boldt, to Zenith Radio Corp. Speaker enclosure. 229,701, 12–25–73, Cl. D26—14.
Bednarczuk, Daniel, and A. T. Milton. Knee guard. 229,643, 12–25–73, D2—27.
Berger, Richard M., to American Filtrona Corp. Filtered cigarette. 229,725, 12–25–73, Cl. D85—6.
Blazey, Lawrence, D. Silverstrom, and E. Rocker, to Century Products, Inc. Child's car seat. 229,646, 12–25–73, Cl. 6—9.
Bobrick, Mitchell: *See*—
Wince, Vearl S., and Bobrick. 229,713.
Boldt, Melvin H.: *See*—
Becker, Robert W., and Boldt. 229,701.
Boone, Edgar. Reel for holding electric wire. 229,668, 12–25–73, D8—220.
Bott, Winston F. Storefront awning. 229,690, 12–25–73, Cl. D21—6.
Bound, Lloyd R., to Texas Instruments, Inc. Sensor housing for an alarm system. 229,720, 12–25–73, Cl. D72—1.
Boyce, Frank J., to Stow Manufacturing Co. Portable wire reels. 229,669, 12–25–73, Cl. D8—222.
Boyer, Ronald G.: *See*—
Babbitt, John H., Jr., Boyer, Olt, Schuck, and Stark. 229,687.
Brooke, Barton E., Jr. Table. 229,652, 12–25–73, Cl. D6—175.
Bud Radio Inc.: *See*—
Hehs, Allen B. 229,699.
California R&D Center: *See*—
Schmidt, Gerald W., and Sims. 229,707.
Caterpillar Tractor Co.: *See*—
Babbitt, John H., Jr., Boyer, Olt, Schuck, and Stark. 229,687.
Century Products, Inc.: *See*—
Blazey, Lawrence, Silverstrom, and Rocker. 229,646.
Cook, David C., Publishing Co.: *See*—
Odell, Russell B. 229,703.
Odell, Russell B. 229,704.
Odell, Russell B. 229,705.
Corini, Louis J., to Melbro Corp. Modular display unit. 229,651, 12–25–73, Cl. D6—171.
Croyle, Jack V., and H. P. Ashton, to Dart Industries Inc. Serving bowl and closure or the like. 229,654, 12–25–73, Cl. D7—18.
Cyren, Gunnar, to Dansk Designs Ltd. Coaster. 229,655, 12–25–73, Cl. D7—45.
Cyren, Gunnar, to Dansk Designs Ltd. Pitcher. 229,657, 12–25–73, Cl. D7—65.
Danjczek, William E., to Koh-I-Noor Radiograph, Inc. Lead box. 229,673, 12–25–73, Cl. D9—184.
Dansk Designs Ltd.: *See*—
Cyren, Gunnar. 229,655.
Cyren, Gunnar. 229,657.
Dart Industries Inc.: *See*—
Croyle, Jack V., and Ashton. 229,654.
Davis, Myron F., and W. Furlani, to International Business Machines Corp. Cabinet design for data processing equipment. 229,697, 12–25–73, Cl. D26—5.
Decision Data Computer Corp.: *See*—
Richardson, Thomas L., Kersten, and Johnson. 229,700.
Dietz, R. E. Co.: *See*—
Knapp, George A., Nitsch, Stube, and Steltzer. 229,714.
Dorsa, Richard L. Waffle or the like. 229,642, 12–25–73, Cl. D1—18.
Dragotta, Robert, to BIO Research Glass, Inc. Cell culture vessel or the like. 229,689, 12–25–73, Cl. D16—1.
Dugan-Chapman, Charles, to Steward Plastics Ltd. Tray for preparing seed propagation. 229,708, 12–25–73, Cl. D35—3.
Erieson, Richard E., to C. R. Bard, Inc. Surgical clamp. 229,724, 12–25–73, Cl. D83—12.
Esterline Corp.: *See*—
Felton, Mickey L. 229,722.
Felton, Mickey L., to Esterline Corp. Combined stylus and ink reservoir. 229,722, 12–25–73, Cl. D74—17.
Feth, Karl G. Security partition for police vehicles. 229,688, 12–25–73, Cl. D14—6.
Finn, Richard J. Pipe or similar device. 229,726, 12–25–73, Cl. D85—8.
Ford, William E.: *See*—
Winsett, Walter P. 229,709.
Frawley, Paul F., to John Inglis Co., Ltd. Appliance handle. 229,666, 12–25–73, Cl. D8—169.
Friedman, Harry, to Jet Aer Corp. Knife. 229,662, 12–25–73, Cl. D7—150.
Furlani, Walter: *See*—
Davis, Myron F., and Furlani. 229,697.
Gammon, William A. Barbecue cooker. 229,660, 12–25–73, Cl. D7—107.
Ganger, Richard J., to Gruber Systems, Inc. Lavatory. 229,692, 12–25–73, Cl. D23—58.
Garcia, Humberto A. Roaster. 229,650, 12–25–73, Cl. D7—64.
Garcia, Richard R., to Miracle Candle Co. Display rack. 229,649, 12–25–73, Cl. D6—25.
Genaro, Donald M., to The Singer Co. Sewing machine carrying case or similar article. 229,727, 12–25–73, Cl. D87—1.
General Educational Technology Corp.: *See*—
Shirley, Carl S. 229,716.
General Electric Co.: *See*—
Rochford, Paul E., and Neuwirth. 229,667.
Gold Seal Vineyards, Inc.: *See*—
Nelson, James G. 229,671.
Grimes, Gary S., to Questor Corp. Nurser. 229,723, 12–25–73, Cl. D83—8.
Gruber Systems, Inc.: *See*—
Ganger, Richard J. 229,692.
Hatton, Sylvia A. Signaling garment. 229,721, 12–25–73, Cl. D72—1.
Hebel, Walter, Kommanditgesellschaft: *See*—
Kretzer, Erich. 229,698.
Hehs, Allen B., to Bud Radio Inc. Flip-top instrument cabinet. 229,699, 12–25–73, Cl. D26—5.
Hendrickson, Ruth E. Appliance cover. 229,653, 12–25–73, Cl. D6—269.
Hildebrand, Mark L. Architectural unit. 229,677, 12–25–73, Cl. D13—1.
Hildebrand, Mark L. Architectural unit. 229,678, 12–25–73, Cl. D13—1.
Hildebrand, Mark L. Architectural unit. 229,679, 12–25–73, Cl. D13—1.
Hildebrand, Mark L. Architectural unit. 229,680, 12–25–73, Cl. D13—1.

Hildebrand, Mark L. Architectural unit. 229,681, 12–25–73, Cl. D13—1.
Hildebrand, Mark L. House. 229,682, 12–25–73, Cl. D13—1.
Hildebrand, Mark L. House. 229,683, 12–25–73, Cl. D13—1.
Hildebrand, Mark L. Architectural unit. 229,684, 12–25–73, Cl. D13—1.
Hildebrand, Mark L. Housing module. 229,685, 12–25–73, Cl. D13—1.
Hildebrand, Mark L. Architectural unit. 229,686, 12–25–73, Cl. D13—1.
Holmberg, Gote E. Y. Buckle for safety belts. 229,645, 12–25–73, Cl. D2—408.
Holophane Co., Inc.: *See*—
Wince, Vearl S., and Bobrick. 229,713.
Hoover Ball and Bearing Co.: *See*—
Platte, Richard L. 229,670.
Hoover Co., The: *See*—
Oxel, Berton R. 229,658.
Howard Displays, Inc.: *See*—
Howard, Fred, and O'Neill. 229,647.
Howard, Fred, and O'Neill. 229,648.
Howard, Fred, and D. O'Neill, to Howard Displays, Inc. Display stand for flat articles. 229,647, 12–25–73, Cl. D6—24.
Howard, Fred, and D. O'Neill, to Howard Displays, Inc. Display stand. 229,648. 12–25–73, Cl. D6—24.
Hull, Richard B. Twin hull boat. 229,719, 12–25–73, Cl. D71—1.
Inglis, John, Co., Ltd.: *See*—
Frawley, Paul E. 229,666.
International Business Machines Corp.: *See*—
Davis, Myron F., and Furlani. 229,697.
Jet Air Corp.: *See*—
Friedman, Harry. 229,662.
Johns-Manville Corp.: *See*—
Koch, Robert G. 229,676.
Johnson, Charles T.: *See*—
Richardson, Thomas L., Kersten, and Johnson. 229,700.
Kersten, Bruno: *See*—
Richardson, Thomas L., Kersten, and Johnson. 229,700.
Knapp, George A., E. J. Nitsch, F. F. Stube, and E. R. Steltzer, to R. E. Dietz Co. Recreational vehicle combination light body. 229,714, 12–25–73, Cl. D48—32.
Koch, Robert G., to Johns-Manville Corp. Decorative panel or similar article. 229,676, 12–25–73, Cl. D13—1.
Koh-I-Noor Radiograph, Inc.: *See*—
Danjczek, William E. 229,673.
Kretzer, Erich, to Walter Hebel, Kommanditgesellschaft. Separable magnetic holder for sheet-like material. 229,698, 12–25–73, Cl. D26—1.
Kunez, Frank, Jr. Pouring spout for a paint can or the like. 229,675, 12–25–73, Cl. D9—290.
Lambertson, Theodore C. Mobile cooking cart. 229,661, 12–25–73, Cl. D7—108.
Lewis, Scott. Card game score holder for attachment to table corner. 229,706, 12–25–73, Cl. D34—13.
Lindy Pen Co., Inc.: *See*—
Vogel, Jerome P. 229,712.
Maxwell, James D. Fishing net yoke. 229,691, 12–25–73, Cl. D22—22.
Melbro Corp.: *See*—
Corini, Louis J. 229,651.
Milton, Arnold T.: *See*—
Bednarczuk, Daniel, and Milton. 229,643.
Miracle Candle Co.: *See*—
Garcia, Richard R. 229,649.
Mixon, James A. Mobile double diaphragm pump or the like. 229,717, 12–25–73, Cl. D65—1.
Morita, Robert Y. Wheeled, dual-access clothes hamper. 229,663, 12–25–73, Cl. D7—163.
Morrow, William B., to Aqua-Mist Inc. Air scoop cover for a humidifier unit. 229,693, 12–25–73, Cl. D23—146.
Morrow, William B., to Aqua-Mist Inc. Humidifier unit receptacle for attachment to heating system air conveying duct and the like. 229,695, 12–25–73, Cl. D23—146.
Murnan, Leo R. Fish cleaning tool. 229,659, 12–25–73, Cl. D7—106.
Nelson, James G., to Gold Seal Vineyards, Inc. Bottle. 229,671, 12–25–73, Cl. D9—47.
Neuwirth, Frances: *See*—
Rochford, Paul E., and Neuwirth. 229,667.
Nitsch, Edward J.: *See*—
Knapp, George A., Nitsch, Stube, and Steltzer. 229,714.
Nowak, Frank A. Adjustable dial angle meter. 229,715, 12–25–73, Cl. D52—6.
Odell, Russell B., to David C. Cook Publishing Co. Puppet. 229,703, 12–25–73, Cl. D34—2.
Odell, Russell B., to David C. Cook Publishing Co. Puppet. 229,704, 12–25–73, Cl. D34—2.
Odell, Russell B., to David C. Cook Publishing Co. Puppet. 229,705, 12–25–73, Cl. D34—2.
Olt, Arthur E., Jr.: *See*—
Babbitt, John H., Jr., Boyer, Olt, Schuck, and Stark. 229,687.
O'Neill, David: *See*—
Howard, Fred, and O'Neill. 229,647.
Howard, Fred, and O'Neill. 229,648.
Oxel, Berton R., to The Hoover Co. Toaster end panel with cord storage. 229,658, 12–25–73, Cl. D7—93.
Pambello, Samuel M. Lamp. 229,710, 12–25–73, Cl. D48—20.
Persson, Helge. Shoe sole. 229,644, 12–25–73, Cl. D2—320.
Phillips Petroleum Co.: *See*—
Quigg, Donald J. 229,674.
Platte, Richard L., to Hoover Ball and Bearing Co. Jug. 229,670, 12–25–73, Cl. D9—40.
Poff, Richard B. Lamp fixtures. 229,711, 12–25–73, Cl. D48—23.
Questor Corp.: *See*—
Grimes, Gary S. 229,723.
Quigg, Donald J., to Phillips Petroleum Co. Egg tray or the like. 229,674, 12–25–73, Cl. D9—190.
Richardson, Thomas L., B. Kersten, and C. T. Johnson, to Decision Data Computer Corp. Data recorder. 229,700, 12–25–73, Cl. D26—5.
Rochford, Paul E., and F. Neuwirth, to General Electric Co. Wall plate. 229,667, 12–25–73, Cl. D8—182.
Rocker, Elmer: *See*—
Blazey, Lawrence, Silverstrom, and Rocker. 229,646.
Rowenta-Werke G.m.b.H.: *See*—
Stutzer, Franz A. 229,664.
Schmidt, Gerald W., and A. Sims, to California R&D Center. Combined toy tractor and plow. 229,707, 12–25–73, Cl. D34—15.
Schmitt, Jack B., to Sunbeam Corp. Top panel for electric humidifier. 229,694, 12–25–73, Cl. D23—146.
Schramm, Buford J. Helicopter fuselage. 229,718, 12–25–73, Cl. D71—1.
Schuck, Paul E.: *See*—
Babbitt, John H., Jr., Boyer, Olt, Schuck, and Stark. 229,687.
Shirley, Carl S., to General Educational Technology Corp. Rear projection viewer. 229,716, 12–25–73, Cl. D61—1.
Silverstrom, David: *See*—
Blazey, Lawrence, Silverstrom, and Rocker. 229,646.
Sims, Anson: *See*—
Schmidt, Gerald W., and Sims. 229,707.
Singer Co., The: *See*—
Genaro, Donald M. 229,727.
Sonnergaard, Arne N. C., to A B Automatic. Stand for household paper rolls. 229,650, 12–25–73, Cl. D6—97.
Stark, Sheldon L.: *See*—
Babbitt, John H., Jr., Boyer, Olt, Schuck, and Stark. 229,687.
Steltzer, Ernest R.: *See*—
Knapp, George A., Nitsch, Stube, and Steltzer. 229,714.
Stevenson, Robert L. Toilet stool air deodorizer. 229,696, 12–25–73, Cl. D23—150.
Steward Plastics Ltd.: *See*—
Dugan-Chapman, Charles. 229,708.
Stow Manufacturing Co.: *See*—
Boyce, Frank J. 229,669.
Stube, Fred F.: *See*—
Knapp, George A., Nitsch, Stube, and Steltzer. 229,714.
Stutzer, Franz A., to Rowenta-Werke G.m.b.H. Portable steamer. 229,664, 12–25–73, Cl. D7—164.
Sunbeam Corp.: *See*—
Schmitt, Jack B. 229,694.
Texas Instruments, Inc.: *See*—
Bound, Lloyd R. 229,720.
Thomas, Morton I. Cane. 229,728, 12–25–73, Cl. D88—4.
Torlone, John T. Miniature shrine or the like. 229,702, 12–25–73, Cl. D29—23.
Van Geem, John D. Bottle crate. 229,672, 12–25–73, Cl. 9—177.
Vogel, Jerome P., to Lindy Pen Co., Inc. Cigarette lighter. 229,712, 12–25–73, Cl. D48—27.
Wilmot, Paul C. Protective latch cover. 229,665, 12–25–73, Cl. D8—137.
Wince, Vearl S., and M. Bobrick, to Holophane Co., Inc. Postop luminaire. 229,713, 12–25–73, Cl. D48—31.
Winsett, Marion H.: *See*—
Winsett, Walter P. 229,709.
Winsett, Walter P., 50% each to Marion H. Winsett, and William E. Ford. Narrow slit ditcher. 229,709, 12–25–73, Cl. D39—1.
Zenith Radio Corp.: *See*—
Becker, Robert W., and Boldt. 229,701.

CLASSIFICATION OF PATENTS

ISSUED DECEMBER 25, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
15 3,780,379
78R 3,780,380
154 3,780,381
182.6 3,780,382

CLASS 3
1 Re.27,849

CLASS 4
10 3,780,383
41 3,780,384
172.12 3,780,385

CLASS 5
296 3,780,386
345 3,780,387
349 3,780,388

CLASS 8
26 3,781,168
34 3,781,169

CLASS 10
10R 3,780,389

CLASS 12
1R 3,780,390

CLASS 13
12 3,781,448
18 3,781,449

CLASS 15
1.5 3,780,391
104.93 3,780,392
105 3,780,393
250.32 3,780,394
250.36 3,780,395
256.51 3,780,396
413 3,780,397
415 3,780,398

CLASS 19
97 3,780,399

CLASS 24
16PB 3,780,400
3,780,401
261D 3,780,403

CLASS 27
250HE 3,780,402

CLASS 28
1.3 3,780,404
1.6 3,780,405

CLASS 29
26A 3,780,406
90 3,780,407
96 3,780,408
97 3,780,409
155R 3,780,410
156.4R 3,780,411
157.1R 3,780,412
159.2 3,780,413
182.5 3,781,170
200A 3,780,414
203B 3,780,415
212D 3,780,416
235 3,780,417
420 3,780,418
451 3,780,419
466 3,780,421
470.3 3,780,422
471.1 3,780,420
568 3,780,423
572 3,780,424
573 3,780,425
580 3,780,426
590 3,780,427
598 3,780,428
625 3,780,432
626 3,780,429
3,780,430
3,780,431
628 3,780,433

CLASS 30
34.1 3,780,434
113.1 3,780,435
123R 3,780,436

CLASS 32
14A 3,780,437
71 3,780,439

CLASS 33
139 3,780,440
174Q 3,780,441
174R 3,780,438
178E 3,780,442
180R 3,780,443
327 3,780,444

CLASS 34
57D 3,780,445
57R 3,780,446
136 3,780,447
229 3,780,448

CLASS 35
1 3,780,449
9A 3,780,450
9E 3,780,451
20 3,780,452
48R 3,780,453

CLASS 36
58.6 3,780,454

CLASS 37
43R 3,780,455
125 3,780,456

CLASS 38
77.81 3,780,457

CLASS 40
31 3,780,458
36 3,780,459
78 3,780,460
86 3,780,461
130K 3,780,463
130R 3,780,462

CLASS 42
69R 3,780,464
76A 3,780,465

CLASS 43
17 3,780,466
44.87 3,780,467
54.5R 3,780,468

CLASS 44
1R 3,781,171

CLASS 46
25 3,780,469
213 3,780,470

CLASS 47
1.4 3,780,471

CLASS 49
62 3,780,473
501 3,780,472

CLASS 51
105SP 3,780,474
164 3,780,475
168 3,780,476
309 3,781,172

CLASS 52
86 3,780,477
206 3,780,478
222 3,780,479
227 3,780,480
265 3,780,481
309 3,780,482
550 3,780,483
585 3,780,484
665 3,780,485

CLASS 53
14 3,780,486
35 3,780,487
38 3,780,488
112B 3,780,489
122 3,780,490
123 Re.27,852
226 3,780,491
247 3,780,492
287 3,780,493

CLASS 54
44 3,780,494

CLASS 55
1 3,780,495
16 3,780,496
32 3,780,499
71 3,780,497
73 3,780,498
3,780,500
208 3,780,501
337 3,780,502
418 3,780,503

CLASS 56
13.6 3,780,504
14.4 3,780,505
14.5 3,780,506
27.5 3,780,507
208 3,780,508
295 3,780,509
328TS 3,780,510
364 3,780,511

CLASS 57
16 3,780,512
93 3,780,513
156 3,780,514
157TS 3,780,516
157R 3,780,515

CLASS 58
7 3,780,517
23TF 3,780,520
23C 3,780,519
23D 3,780,518
28A 3,780,521
38 3,780,522
50R 3,780,523
125C 3,780,524
3,780,525
126R 3,780,526

CLASS 60
39.16R 3,780,527
39.27 3,780,528
39.36 3,780,529
39.69 3,780,530
40 3,780,531
260 3,780,533

CLASS 62
28 3,780,534
40 3,780,535
201 3,780,532
342 3,780,536
530 3,780,537

CLASS 64
30C 3,780,538

CLASS 66
42 3,780,539
50B 3,780,540
125R 3,780,541
165 3,780,542

CLASS 68
18F 3,780,543
177 3,780,544
210 3,780,545

CLASS 70
58 3,780,546
78 3,780,547
352 3,780,548
358 3,780,549
395 3,780,550

CLASS 72
4 3,780,551
40 3,780,552
41 3,780,553
60 3,780,554
69 3,780,555
78 3,780,556
92 3,780,557
98 3,780,558
361 3,780,559
407 3,780,560
417 3,780,561
465 3,780,591
479 3,780,562

CLASS 73
4V 3,780,563
17A 3,780,564
3,780,565
23 3,780,566
28 3,780,567
64.4 3,780,568
3,780,569
67.5R 3,780,572
67.8S 3,780,571
146 3,780,573
151 3,780,574
152 3,780,575
167 3,780,576
194A 3,780,577
227 3,780,578
229R 3,780,579
233 3,780,580
302 3,780,581
320 3,780,582
343R 3,780,583
349 3,780,584
362SC 3,780,585
374 3,780,586
398AR 3,780,588
398R 3,780,587
418 3,780,589
422TC 3,780,590
457 3,780,592

CLASS 74
5R 3,780,593
10.52 3,780,594
25 3,780,595
473P 3,780,596
483PB 3,780,597
501M 3,780,598
516 3,780,599
519 3,780,600
762 3,780,601
850 3,780,602

CLASS 76
67.5R 3,780,570

CLASS 81
52.3 3,780,603
64 3,780,604

CLASS 83
4 3,780,605
23 3,780,606
49 3,780,607
375 3,780,608
420 3,780,609
643 3,780,610
751 3,780,611

CLASS 84
1.01 3,781,450
1.16 3,781,451
1.28 3,781,452
173 3,780,612
421 3,780,613

CLASS 86
1R 3,780,614

CLASS 89
1A 3,780,615
1.8 3,780,616
1.813 3,780,617
150 3,780,618

CLASS 90
15 3,780,619

CLASS 91
6 3,780,620
290 3,780,621
296 3,780,622
418 3,780,625
459 3,780,623
491 3,780,624

CLASS 93
1G 3,780,626
37R 3,780,627
82 3,780,628

CLASS 95
1R 3,780,629
4.5 3,780,630
10C 3,780,631
11L 3,780,632
19 3,780,633
31CA 3,780,634
3,780,635
64R 3,780,636
93 3,780,637

CLASS 96
100 Re.27,848

CLASS 98
31 3,780,638
58 3,780,639
110 3,780,640

CLASS 99
347 3,780,642
450.7 3,780,643
455 3,780,644

CLASS 100
117 3,780,645
155 3,780,646
232 3,780,647

CLASS 101
93C 3,780,648
3,780,649
3,780,650
115 3,780,651
124 3,780,652
269 3,780,669
363 3,780,670

CLASS 102
19.2 3,780,653
22 3,780,654
31 3,780,655
37.6 3,780,656
41 3,780,657
52 3,780,658
70B 3,780,659
70.2P 3,780,661
70.2R 3,780,660
89 3,780,662

CLASS 104
1R 3,780,663
9 3,780,664
69 3,780,665
88 3,780,666
148MS 3,780,667
3,780,668

CLASS 105
197A 3,780,671
253 3,780,672
376 3,780,673

CLASS 106
1 Re.27,851

CLASS 110
8A 3,780,676
8C 3,780,677
8E 3,780,675
8R 3,780,674

CLASS 112
79A 3,780,678
121.27 3,780,679
3,780,680
219A 3,780,681
262 3,780,682

CLASS 113
116HH 3,780,684

CLASS 114
.5D 3,780,685
.5F 3,780,686
41 3,780,687
145R 3,780,683
208R 3,780,688
218 3,780,690
221A 3,780,689

CLASS 115
12R 3,780,691

CLASS 116
5 3,780,692
70 3,780,693
112 3,780,694
136 3,780,695

CLASS 117
95 3,781,173
227 3,781,275

CLASS 118
49.5 3,780,696
65 3,780,697
125 3,780,698
420 3,780,699
503 3,780,700

CLASS 119
51R 3,780,701
51.13 3,780,702
53 3,780,703

CLASS 122
149 3,780,704
451R 3,780,705

CLASS 123
8.01 3,780,706
8.13 3,780,707
8.17 3,780,708
8.23 3,780,709
8.47 3,780,710
32EA 3,780,711
41.08 3,780,712
117A 3,780,713
122AA 3,780,714
122AB 3,780,715
139AS 3,780,716
148AC 3,780,717
179G 3,780,718
188C 3,780,719

CLASS 124
11A 3,780,720

CLASS 126
21A 3,780,721
270 3,780,722

CLASS 127
46A 3,781,174

CLASS 128
1A 3,780,723
2.05T 3,780,725
3,780,726
2.06R 3,780,727
2.1B 3,780,724
83.5 3,780,728
94 3,780,729
127 3,780,730
169 3,780,731
214F 3,780,732
215 3,780,733
218R 3,780,734
223 3,780,735
231 3,780,736
260 3,780,737
277 3,780,738
283 3,780,739
350R 3,780,740
516 3,780,741
588 3,780,742

CLASS 131
17 3,780,743
143 3,780,744
212A 3,780,745

CLASS 132
83R 3,780,746

CLASS 134
43 3,780,747

CLASS 135
20R 3,780,748

CLASS 136
7 3,781,175
212 3,781,176

CLASS 137
13 3,780,749
3,780,750
3,780,751
68 3,780,752
3,780,753
82 3,780,754
110 3,780,755
119 3,780,756
205 3,780,757
454.6 3,780,758
467 3,780,759
516.25 3,780,760
565 3,780,761
596 3,780,762
599 3,780,763
613 3,780,764
3,780,765
624.2 3,780,766
625.3 3,780,767
625.48 3,780,768
819 3,780,769
823 3,780,770
829 3,780,771

CLASS 138
37 3,780,772
89 3,780,773

CLASS 139
87 3,780,774
122W 3,780,775

CLASS 141
207 3,780,776

CLASS 144
3N 3,780,777
39 3,780,778

193A 3,780,779
238 3,780,780

CLASS 149

6 3,781,177
19.2 3,781,179
19.9 3,781,178
21 3,781,180

CLASS 150

3 3,780,781

CLASS 152

356 3,780,782
3,780,783

CLASS 156

72 3,781,181

CLASS 157

1 3,780,784
1.24 3,780,785

CLASS 159

4A 3,780,786

CLASS 161

5 3,781,182
109 3,781,183
165 3,781,184
217 3,781,185
253 3,781,186

CLASS 162

93 3,781,187
233 3,781,188

CLASS 164

35 3,780,787
82 3,780,788
283R 3,780,789
392 3,780,790

CLASS 165

9 3,780,791
3,780,792
39 3,780,796
47 3,780,793
55 3,780,797
58 3,780,794
80 3,780,795
120 3,780,801
128 3,780,798
150 3,780,799
166 3,780,800

CLASS 166

59 3,780,803
89 3,780,802
162 3,780,804
266 3,780,805
275 3,780,806
3,780,808
278 3,780,807
314 3,780,809

CLASS 168

4 3,780,810

CLASS 169

12 3,780,811
15 3,780,812

CLASS 172

212 Re.27,850
438 3,780,813

CLASS 173

2 3,780,814
43 3,780,815
152 3,780,816

CLASS 174

11R 3,781,453
3,781,454
15C 3,781,455
23R 3,781,456
52R 3,781,460
52S 3,781,457
84C 3,781,458
93 3,781,461
94R 3,781,459
113R Re.27,854
121B 3,781,462

CLASS 176

28 3,781,189
59 3,781,190
86R 3,781,191

CLASS 177

136 3,780,817
256 3,780,818

CLASS 178

5.4BD 3,781,465
5.4CD 3,781,463
5.4 3,781,464
6.8 3,781,466
3,781,467
3,781,468
7.3D 3,781,469
7.3R 3,781,470
7.82 3,781,471
22 3,781,472
3,781,473
25 3,781,474

CLASS 179

1J 3,781,475
2TV 3,781,477
15AL 3,781,478
15.55T 3,781,479
16EA 3,781,482
16F 3,781,480
3,781,481
18FG 3,781,485
18GF 3,781,484
18F 3,781,483
100.2C 3,781,476
3,781,486
100.2K 3,781,488
100.2R 3,781,489
100.2S 3,781,490
100.2Z 3,781,487
107R 3,781,491
156A 3,781,492

CLASS 180

14A 3,780,819
44M 3,780,820
44R 3,780,821
114 3,780,822
121 3,780,823

CLASS 181

31B 3,780,824
33G 3,780,825
36B 3,780,826
43 3,780,827

CLASS 182

111 3,780,828
206 3,780,829

CLASS 184

105A 3,780,830

CLASS 187

9 3,780,831

CLASS 188

3R 3,780,832
9 3,780,833
18A 3,780,834
74 3,780,835
79 5SC 3,780,836
195 3,780,837

CLASS 190

49 3,780,838

CLASS 192

.096 3,780,842
4A 3,780,839
48.91 3,780,840
61 3,780,841

CLASS 193

35TE 3,780,843

CLASS 194

4 3,780,844

CLASS 195

100 3,781,192

CLASS 197

18 3,780,845
19 3,780,846

CLASS 198

25 3,780,847
3,780,848
30 3,780,849
31AC 3,780,850
175 3,780,851
181 3,780,852

CLASS 199

63 3,780,853

CLASS 200

6A 3,781,493
30A 3,781,494
50A 3,781,495
61.45R 3,781,496
61.58B 3,781,497
84C 3,781,498
166BC 3,781,501
166SD 3,781,499
166K 3,781,500
226 3,781,502

CLASS 203

8 3,781,193

CLASS 204

162R 3,781,194

CLASS 206

46R 3,780,854
50 3,780,855
56AB 3,780,856
63.2 3,780,857

CLASS 208

57 3,781,195
86 3,781,198
89 3,781,199
96 3,781,196
120 3,781,197

CLASS 209

73 3,780,858
3,780,859
3,780,860

CLASS 210

21 3,781,200
27 3,781,201
80 3,780,861
84 3,780,862
97 3,780,863
152 3,780,864
195 3,780,865
198C 3,780,866
266 3,780,867
317 3,780,869
321 3,780,870
333 3,780,868
471 3,780,871
493 3,780,872

CLASS 211

49D 3,780,873
65 3,780,874
115 3,780,875
184 3,780,876

CLASS 212

8B 3,780,877
59R 3,780,878

CLASS 213

159 3,780,879

CLASS 214

1GE 3,780,881
1QA 3,780,882
1R 3,780,880
2.5 3,780,883
8.5A 3,780,885
8.5D 3,780,884
17CA 3,780,886
17CB 3,780,887
18K 3,780,888
33 3,780,889
36 3,780,890
138C 3,780,891
152 3,780,892
3,780,893
505 3,780,894
731 3,780,896
770 3,780,895

CLASS 215

41 3,780,897
43R 3,780,898

CLASS 219

10.49 3,781,503
3,781,504
3,781,505
3,781,506
69G 3,781,507
121P 3,781,508
125 3,781,509
130 3,781,510
137 3,781,511
3,781,512
3,781,513
211 3,781,514
216 3,781,515
3,781,516
3,781,517
271 3,781,518
273 3,781,519
309 3,781,520
442 3,781,521
462 3,781,522
3,781,523
522 3,781,524
532 3,781,525
538 3,781,526
540 3,781,527
546 3,781,528

CLASS 220

5R 3,780,899
9LG 3,780,900
46P 3,780,901
54 3,780,902
55.3 3,780,904
71 3,780,903
97D 3,780,905
113 3,780,906

CLASS 221

2 3,780,907
48 3,780,908
85 3,780,909

CLASS 222

95 3,780,910
101 3,780,911
282 3,780,912
402.24 3,780,913
407 3,780,914
545 3,780,915
555 3,780,916

CLASS 223

2 3,780,917

CLASS 224

4H 3,780,918
6 3,780,919
49 3,780,920

CLASS 225

2 3,780,921

CLASS 226

92 3,780,922
151 3,780,923
155 3,780,924
191 3,780,925

CLASS 228

1 3,780,926
3 3,780,927
13 3,780,928

CLASS 229

14BE 3,780,930
14C 3,780,929
27 3,780,931
37R 3,780,932
40 3,780,933
52B 3,780,934

CLASS 233

1A 3,780,935
20R 3,780,936
24 3,780,937

CLASS 234

1 3,780,938
115 3,780,939

CLASS 235

92GA 3,781,529
150.1 3,781,533
150.26 3,781,530
151.3 3,781,531
151.32 3,781,532
151.34 3,781,534

CLASS 236

15A 3,780,940
49 3,780,941

CLASS 239

1 3,780,942
8 3,780,943
11 Re.27,853
33 3,780,944
102 3,780,945
107 3,780,946
126 Re.27,855
177 3,780,947
236 3,780,948
291 3,780,949
306 3,780,950
333 3,780,951
424.5 3,780,952
526 3,780,953
560 3,780,954
672 3,780,955

CLASS 240

1.3 3,781,535
2.25 3,781,536
8.16 3,781,537
49 3,781,538
52R 3,781,539

CLASS 241

34 3,780,956
172 3,780,957

CLASS 242

47.12 3,780,958
55.18 3,780,959
58.1 3,780,960
67.3R 3,780,961
72 3,780,962
82 3,780,963
129 3,780,964
204 3,780,965

CLASS 244

1SA 3,780,966
3.16 3,780,967
3.22 3,780,968
123 3,780,969
152 3,780,970

CLASS 246

128 3,781,541
3,781,542
130 3,781,543
345T 3,781,540

CLASS 248

309 3,780,971
313 3,780,972
342 3,780,973
411 3,780,974

CLASS 249

1 3,780,975
14 3,780,976
15 3,780,977
135 3,780,978

CLASS 250

201R 3,781,546
203R 3,781,547
206R 3,781,548
206 3,781,552
211J 3,781,549
3,781,550
214P 3,781,551
220 3,781,545
226 3,781,554
227R 3,781,555
302 3,781,556
320 3,781,557
332 3,781,558
333 3,781,560
334 3,781,559
341 3,781,910
352 3,781,561
360 3,781,562
362 3,781,544
3,781,563
505 3,781,564
553 3,781,553

CLASS 251

138 3,780,980
144 3,780,981
158 3,780,983
210 3,780,982
282 3,780,984
309 3,780,985
315 3,780,986

CLASS 252

8.55C 3,781,203
8.7 3,781,202
8.75 3,781,204
12.6 3,781,205
51.5R 3,781,206
62.1 3,781,207
3,781,208
62.3R 3,781,209
62.54 3,781,210
3,781,211
89 3,781,212
188.3 3,781,213
301.1R 3,781,216
301.1W 3,781,217
301.3W 3,781,215
356 3,781,218
415 3,781,219
429B 3,781,220
432 3,781,221
437 3,781,222
3,781,223
447 3,781,224
455Z 3,781,225
3,781,226
466J 3,781,227
539 3,781,228

CLASS 254

8R 3,780,987
100 3,780,988
173R 3,780,989
173 3,780,990

CLASS 259

18 3,780,991
3,780,992
97 3,780,993
191 3,780,994
193 3,780,995

CLASS 260

2.5BE 3,781,229
3,781,231
3,781,235
2.5B 3,781,230
2.5R 3,781,233
17.4GC 3,781,232
18N 3,781,234
22TN 3,781,214
23.7M 3,781,236
29.1SB 3,781,237
29.2TN 3,781,238
30.6R 3,781,239
37N 3,781,240
38 3,781,241
45.7P 3,781,242
47EP 3,781,244
75R 3,781,245
78TF 3,781,246
3,781,249
78.4D 3,781,247
79.3M 3,781,248
79.5B 3,781,250
80.71 3,781,251
80.73 3,781,252
85.3R 3,781,253
85.5R 3,781,254
86.7 3,781,256
87.1 3,781,255
87.5C 3,781,243
88.2DE 3,781,257
92.1R 3,781,265
92.1 3,781,258
93.5C 3,781,259
94.7A 3,781,260
3,781,262
3,781,263
94.7 3,781,261
112R 3,781,264
112.5 3,781,272
157 3,781,266
210AB 3,781,268
210R 3,781,267
210.5 3,781,269
211.5R 3,781,273
3,781,274
239BB 3,781,270
239.1 3,781,277
239.55R 3,781,271
239.55 3,781,276
240CA 3,781,278
3,781,279
240F 3,781,281
240J 3,781,280
243C 3,781,282
3,781,283
247.1 3,781,284
3,781,285
250R 3,781,286
251AQ 3,781,287
260 3,781,288
268C 3,781,290
288R 3,781,289
290H 3,781,291
290P 3,781,292
293.57 3,781,293
294.8A 3,781,294
295R 3,781,295
295.5R 3,781,296
305 3,781,297
326.15 3,781,299
3,781,300
326.5EN 3,781,298
327M 3,781,301
328 3,781,302
338 3,781,303
340 3,781,304
340.9 3,781,305
343.3 3,781,306
347.8 3,781,307
3,781,308
348R 3,781,309
374 3,781,310
397.45 3,781,311
3,781,312
402 3,781,313
410.9 3,781,314
429.7 3,781,315
3,781,316
430 3,781,317
448R 3,781,318
453PC 3,781,321
453PH 3,781,320
453P 3,781,319
455R 3,781,322
465D 3,781,324
465E 3,781,323
466D 3,781,325
470 3,781,326
471C 3,781,327
471R 3,781,328
479C 3,781,330
3,781,331
479S 3,781,329
484A 3,781,334
486D 3,781,336
486H 3,781,335
486R 3,781,332
3,781,333
491 3,781,337
501.11 3,781,338
513R 3,781,339
515P 3,781,340
3,781,341
3,781,343
515R 3,781,342
524R 3,781,344
3,781,345
525 3,781,346
3,781,347
534S 3,781,348
535P 3,781,349
535R 3,781,350
559R 3,781,351
561R 3,781,352
562B 3,781,354
562P 3,781,353
564R 3,781,355
3,781,356
3,781,357
566B 3,781,358
570AB 3,781,360
570R 3,781,361
570.9 3,781,359
583N 3,781,362
583P 3,781,363
601R 3,781,364
606 3,781,365
609D 3,781,367
609R 3,781,366
611R 3,781,368
613D 3,781,369
615F 3,781,370
619A 3,781,372
619D 3,781,371
635C 3,781,373
3,781,374
668D 3,781,375
683.2 3,781,377
683.3 3,781,376
824R 3,781,378
836 3,781,379
3,781,380
857PE 3,781,381
874 3,781,382
876 3,781,383

879 3,781,384
930 3,781,385
953 3,781,388
958 3,781,386
979 3,781,387
986 3,781,389

CLASS 261

72 3,780,996
77 3,780,997
91 3,780,998
109 3,780,999
124 3,781,000

CLASS 264

47 3,781,390
53 3,781,391
65 3,781,392
89 3,781,393
3,781,394
3,781,395
140 3,781,396
142 3,781,397
146 3,781,398
171 3,781,399
210F 3,781,400
228 3,781,401
243 3,781,402

CLASS 266

41 3,781,001
3,781,002

CLASS 269

40 3,781,003

CLASS 271

10 3,781,004
18R 3,781,006
186 3,781,005

CLASS 272

84 3,781,007

CLASS 273

19 3,781,008
54B 3,781,009
85C 3,781,010
86G 3,781,011
95R 3,781,012
130B 3,781,013
131AC 3,781,014
153R 3,781,015

CLASS 274

4A 3,781,018
4C 3,781,016
3,781,017
4E 3,781,019
38 3,781,020

CLASS 277

164 3,781,021
213 3,781,022

CLASS 279

19.6 3,781,023
20 3,781,024
83 3,781,025

CLASS 280

11 13B 3,781,026
11 26 3,781,027
11.35K 3,781,028
11.35T 3,781,029
36C 3,781,030
62 3,781,031
124A 3,781,032
124R 3,781,033
150SB 3,781,034
150.5 3,781,035
289 3,781,036
421 3,781,037
493 3,781,038

CLASS 285

1 3,781,039
110 3,781,040
111 3,781,041
339 3,781,042
363 3,781,043

CLASS 292

200 3,781,044
216 3,781,045
251.5 3,781,047
264 3,781,046

CLASS 293

23MC 3,781,057
89 3,781,048
99 3,781,049

CLASS 294

1CA 3,781,050
1R 3,781,051
25 3,781,052
55.5 3,781,053
81R 3,781,054
83A 3,781,055
112 3,781,056

CLASS 296

35R 3,781,058
137B 3,781,059

CLASS 297

68 3,781,060
379 3,781,062
388 3,781,061

CLASS 303

6C 3,781,063
21F 3,781,064
71 3,781,065

CLASS 305

11 3,781,066
35EB 3,781,067

CLASS 307

106 3,781,565
116 3,781,566
147 3,781,567
232 3,781,568
234 3,781,569
235R 3,781,571
238 3,781,570
252T 3,781,572
293 3,781,573
304 3,781,574

CLASS 308

4R 3,781,068
5R 3,781,069
3,781,070
9 3,781,071
15 3,781,072
238 3,781,073

CLASS 310

8.8 3,781,575
9.1 3,781,576
9.7 3,781,577
52 3,781,578
68A 3,781,579
168 3,781,580
215 3,781,581

CLASS 312

3D 3,781,074
208 3,781,075

CLASS 313

37 3,781,582
85S 3,781,583
109.5 3,781,584
174 3,781,586
184 3,781,585
217 3,781,587

CLASS 315

3.5 3,781,588
27SR 3,781,590
271D 3,781,589
30 3,781,591
39.71 3,781,592
58 3,781,593
98 3,781,594
101 3,781,595
105 3,781,597
107 3,781,598
169TV 3,781,599
3,781,600
227 3,781,601
241P 3,781,602
276D 3,781,603
312 3,781,604

CLASS 316

2 3,781,076

CLASS 317

5 3,781,605
11A 3,781,606
13R 3,781,607
20 3,781,608
101A 3,781,609
3,781,610
3,781,611
101F 3,781,596
234R 3,781,612
3,781,613

CLASS 318

211 3,781,619
227 3,781,614
3,781,615
230 3,781,616
261 3,781,617
265 3,781,618
331 3,781,620
373 3,781,621
466 3,781,622
481 3,781,623
482 3,781,624
547 3,781,625
561 3,781,626
562 3,781,627
584 3,781,628
632 3,781,629

CLASS 320

21 3,781,630
25 3,781,631
39 3,781,632
48 3,781,633

CLASS 321

9A 3,781,634
9R 3,781,635
3,781,636
11 3,781,637
14 3,781,638
15 3,781,639
18 3,781,640
21 3,781,641
43 3,781,642
45C 3,781,643
95C 3,781,644
3,781,645
97 3,781,646

CLASS 322

2 3,781,647
8 3,781,651

CLASS 323

4 3,781,648
17 3,781,653
3,781,654
19 3,781,649

CLASS 324

.5R 3,781,650
16R 3,781,655
3,781,656
29.5 3,781,657
3,781,658
30R 3,781,659
3,781,660
34ST 3,781,662
34 3,781,661
37 3,781,663
43R 3,781,664
52 3,781,665
54 3,781,666
57R 3,781,667
3,781,668
3,781,669
3,781,670
60C 3,781,671
61R 3,781,672
3,781,673
65R 3,781,911
71CP 3,781,674
3,781,675
72.5 3,781,676
78R 3,781,677
79D 3,781,678
115 3,781,679
123R 3,781,680
133 3,781,682
158F 3,781,683
158P 3,781,681

CLASS 325

5 3,781,684
38B 3,781,685
3,781,686
52 3,781,687
321 3,781,688

CLASS 328

1 3,781,652
61 3,781,689
67 3,781,690
109 3,781,691
138 3,781,692
145 3,781,693
150 3,781,694
155 3,781,695
164 3,781,696
167 3,781,697

CLASS 329

178 3,781,698

CLASS 330

4.3 3,781,700
30D 3,781,699
3,781,701
43 3,781,702
51 3,781,912
52 3,781,703
53 3,781,704

CLASS 331

17 3,781,705
45 3,781,706
94.5 3,781,707
3,781,708
3,781,709
3,781,710
3,781,711
3,781,712
3,781,713
3,781,714

CLASS 332

9R 3,781,716
9T 3,781,715

CLASS 333

6 3,781,717
11 3,781,718
13 3,781,719
18 3,781,720
30R 3,781,721
31R 3,789,722
79 3,781,723
3,781,724
3,781,725
98P 3,781,726

CLASS 335

132 3,781,727
3,781,728
187 3,781,729
210 3,781,730
212 3,781,731
213 3,781,732
216 3,781,733
289 3,781,734
298 3,781,735
304 3,781,736
407 3,781,737

CLASS 336

15 3,781,738
70 3,781,739
96 3,781,740
192 3,781,741

CLASS 337

77 3,781,742
118 3,781,743
3,781,744
199 3,781,745
204 3,781,746
295 3,781,747

CLASS 338

15 3,781,748
25 3,781,749
32R 3,781,750
42 3,781,751
128 3,781,752
151 3,781,753

CLASS 339

14RP 3,781,756
14L 3,781,757
14R 3,781,754
3,781,755
29 3,781,758
37 3,781,913
54 3,781,759
59M 3,781,760
75P 3,781,761
89C 3,781,762
91P 3,781,763
94 3,781,764
103R 3,781,765
107 3,781,766
125L 3,781,768
125R 3,781,767
189R 3,781,769
259R 3,781,770
272A 3,781,771

CLASS 340

1R 3,781,772
3,781,773
3C 3,781,777
3D 3,781,774
3R 3,781,775
3,781,776
7R 3,781,778
8R 3,781,779
8S 3,781,780
9 3,781,781
15.5AC 3,781,784
15.5DS 3,781,785
16R 3,781,782
18DC 3,781,783
29 3,781,786
3,781,853
3,781,787
58 3,781,788
59 3,781,789
64 3,781,854
3,781,790
97 3,781,796
146.1AB 3,781,793
146.1AG 3,781,791
146.1AL 3,781,792
146.1BA 3,781,795
146.1BE 3,781,794
146.1R 3,781,797
3,781,799
146.3MA 3,781,801
3,781,855
146.3E 3,781,800
146.3F 3,781,798
146.3R 3,781,804
147MD 3,781,803
147SY 3,781,802
147R 3,781,805
149R 3,781,806
166R 3,781,807
172.5 3,781,808
3,781,809
3,781,810
3,781,811
3,781,812
3,781,813
3,781,814
3,781,815
3,781,816
3,781,817
3,781,818
3,781,819
3,781,820
3,781,821
3,781,822
3,781,823
3,781,824
3,781,856
173CA 3,781,827
173LM 3,781,830
173SP 3,781,825
173R 3,781,826
3,781,828
3,781,829
3,781,831
174EB 3,781,832
174TF 3,781,833
174.1B 3,781,835
174.1F 3,781,834
224 3,781,836
233 3,781,837
237S 3,781,838
239R 3,781,839
244A 3,781,858
245 3,781,840
251 3,781,841
258A 3,781,859
258B 3,781,842
279 3,781,843
280 3,781,860
3,781,861
281 3,781,844
306 3,781,845
324AD 3,781,847
3,781,849
3,781,850
324A 3,781,846
3,781,848
324M 3,781,851
324R 3,781,852
336 3,781,862
3,781,863
3,781,864
3,781,865
347AD 3,781,867
3,781,870
3,781,871
3,781,872
347CC 3,781,869
347DD 3,781,873
347P 3,781,866
3,781,868
365R 3,781,875
365S 3,781,874
378MW 3,781,876
396 3,781,877
420 3,781,857

CLASS 343

5R 3,781,879
5W 3,781,878
6R 3,781,880
6.5R 3,781,881
7PF 3,781,884
7A 3,781,882
3,781,883
7.3 3,781,885
7.4 3,781,886
13R 3,781,887
3,781,888
17.1R 3,781,889
100CS 3,781,890
108R 3,781,891
112PT 3,781,892
702 3,781,893
706 3,781,894
708 3,781,895
754 3,781,896
836 3,781,897
872 3,781,898
880 3,781,899
911L 3,781,900

CLASS 346

1 3,781,901
24 3,781,902
74MP 3,781,903
74MT 3,781,905
74SB 3,781,904
137 3,781,906
140 3,781,907
3,781,908

CLASS 350

1 3,781,077
6 3,781,078
7 3,781,079
10 3,781,080
96WG 3,781,081
99 3,781,082
105 3,781,083
150 3,781,084
3,781,085
3,781,086
160LC 3,781,087
3,781,088
164 3,781,089
3,781,090
167 3,781,091
266 3,781,092
288 3,781,093
310 3,781,094
3,781,095

CLASS 351

13 3,781,096
16 3,780,979
167 3,781,097

CLASS 352

140 3,781,098
141 3,781,099
180 3,781,100
221 3,781,101

CLASS 353

26 3,781,102
111 3,781,103

CLASS 355

3 3,781,105
9 3,781,106
15 3,781,107
17 3,781,108
22 3,781,104
52 3,781,109

CLASS 356

4 3,781,110
5 3,781,111
39 3,781,112
71 3,781,113
152 3,781,114
167 3,781,115
180 3,781,116
200 3,781,117
201 3,781,118
222 3,781,119
244 3,781,120
247 3,781,121

CLASS 401

202 3,781,122
216 3,781,123

CLASS 408

61 3,781,124

CLASS 415

115 3,781,125
143 3,781,126
147 3,781,127
211 3,781,128

CLASS 416

97 3,781,129
3,781,130
155 3,781,131
200 3,781,132

CLASS 417

49 3,781,133
176 3,781,134
295 3,781,135
313 3,781,139
326 3,781,140
353 3,781,136
360 3,781,137
368 3,781,138
395 3,781,141
477 3,781,142
525 3,781,144
557 3,781,143

CLASS 418

1 3,781,145
6 3,781,146
88 3,781,147
117 3,781,148
131 3,781,149

CLASS 423

5 3,781,403
11 3,781,404
142 3,781,405
213 3,781,406
242 3,781,407
244 3,781,408
273 3,781,409
321 3,781,410
406 3,781,411
476 3,781,412
574 3,781,413
3,781,445

CLASS 424

12 3,781,414
44 3,781,416
59 3,781,417
63 3,781,418
84 3,781,419
118 3,781,420
3,781,421
147 3,781,422
175 3,781,423
195 3,781,424
204 3,781,425
212 3,781,426
217 3,781,427
219 3,781,428
234 3,781,429
239 3,781,435
246 3,781,430
3,781,434
250 3,781,432
3,781,433
258 3,781,436

263	3,781,437	321	3,781,441	145	3,781,151	435	3,781,157	513	3,781,447	CLASS 432	
267	3,781,431	324	3,781,442	174.8R	3,781,152		3,781,158	CLASS 431		62	3,781,165
272	3,781,438	330	3,781,443	207	3,781,153	450	3,781,159	16	3,781,161	126	3,781,166
273	3,781,439	331	3,781,444	329	3,781,154		3,781,160	115	3,781,162	234	3,781,167
300	3,781,440	CLASS 425		392	3,781,155	CLASS 426		266	3,781,163	CLASS 444	
	3,781,446										
308	3,781,415	80	3,781,150	424	3,781,156	482	3,780,641	291	3,781,164	1	3,781,909

CLASSIFICATION OF DESIGNS

D01—	18	229,642		65	229,657		177	229,672	D14—	6	229,688		14G	229,701	D52—	6R	229,715
D02—	27	229,643		93	229,658		184	229,673		27B	229,687	D29—	23A	229,702	D61—	1N	229,716
	320	229,644		106	229,659		190	229,674	D16—	1R	229,689	D34—	2R	229,703	D65—	A	229,717
	408	229,645		107	229,660		290	229,675	D21—	6B	229,690			229,704	D71—	J	229,718
D06—	9	229,646		108	229,661	D13—	1A	229,682	D22—	22	229,691			229,705		Q	229,719
	24	229,647		150	229,662			229,683	D23—	58	229,692		13A	229,706	D72—	A	229,720
		229,648		163	229,663		J	229,676		146	229,693		15AN	229,707		E	229,721
	25	229,649		164	229,664			229,677			229,694	D35—	3A	229,708	D74—	17B	229,722
	97	229,650	D08—	137	229,665			229,678			229,695	D39—	1B	229,709	D83—	8A	229,723
	171	229,651		169	229,666			229,679		150	229,696	D48—	20	229,710		12R	229,724
	175	229,652		182	229,667			229,680	D26—	1M	229,698		23R	229,711	D85—	6C	229,725
	269	229,653		220	229,668			229,681		5C	229,697		27	229,712		8A	229,726
D07—	18	229,654		222	229,669			229,684			229,699		31	229,713	D87—	1R	229,727
	45	229,655	D09—	40	229,670			229,686			229,700		32C	229,714	D88—	4	229,728
	64	229,656		47	229,671		R	229,685									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force..... 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,780,664	3,780,685	3,781,414	3,781,897	3,781,761	3,781,303
	3,780,763	3,780,693	3,781,442	3,781,898	3,781,765	15 :	3,780,645
	3,780,840	3,780,695	3,781,453	3,781,903	3,781,769	16 :	3,780,456
	3,780,967	3,780,702	3,781,461	8 :	3,780,551	3,781,876		3,781,217
	3,781,179	3,780,720	3,781,464	3,780,570	3,781,877	17 :	Re.27,851
	3,781,459	3,780,725	3,781,465	3,780,739	3,781,902		3,780,386
	3,781,552	3,780,766	3,781,474	3,780,919	3,781,907		3,780,389
2	Re.27,850	3,780,815	3,781,475	3,781,008	10 :	3,780,566		3,780,401
3	3,781,305	3,780,845	3,781,482	3,781,016	3,780,930		3,780,419
4	3,780,709	3,780,873	3,781,486	3,781,017	3,780,984		3,780,423
	3,780,804	3,780,875	3,781,487	3,781,404	3,781,125		3,780,451
	3,780,841	3,780,945	3,781,488	3,781,490	3,781,251		3,780,490
	3,780,972	3,780,946	3,781,489	3,781,529	3,781,281		3,780,493
	3,781,156	3,780,952	3,781,496	3,781,654	3,781,298		3,780,498
	3,781,175	3,780,977	3,781,511	3,781,695	3,781,320		3,780,502
	3,781,573	3,780,978	3,781,524	3,781,785	3,781,343		3,780,545
	3,781,628	3,780,980	3,781,532	3,781,844	3,781,346		3,780,556
	3,781,636	3,780,985	3,781,535	9 :	3,780,409	3,781,347		3,780,561
	3,781,666	3,780,988	3,781,549	3,780,436	3,781,354		3,780,579
	3,781,860	3,780,989	3,781,561	3,780,446	3,781,596		3,780,611
	3,781,880	3,781,009	3,781,567	3,780,447	11 :	3,781,802		3,780,613
	3,781,899	3,781,030	3,781,584	3,780,470	12 :	3,780,403		3,780,672
5	3,780,626	3,781,043	3,781,591	3,780,530	3,780,461		3,780,697
6	3,780,382	3,781,046	3,781,606	3,780,607	3,780,531		3,780,714
	3,780,383	3,781,053	3,781,610	3,780,746	3,780,539		3,780,737
	3,780,384	3,781,054	3,781,624	3,780,771	3,780,553		3,780,772
	3,780,393	3,781,055	3,781,648	3,780,825	3,780,688		3,780,798
	3,780,427	3,781,057	3,781,664	3,780,862	3,780,690		3,780,799
	3,780,440	3,781,094	3,781,678	3,780,865	3,780,733		3,780,806
	3,780,457	3,781,113	3,781,688	3,780,867	3,780,759		3,780,822
	3,780,463	3,781,118	3,781,689	3,780,868	3,780,780		3,780,842
	3,780,467	3,781,121	3,781,691	3,781,025	3,780,817		3,780,848
	3,780,481	3,781,133	3,781,700	3,781,040	3,780,881		3,780,851
	3,780,510	3,781,134	3,781,721	3,781,047	3,780,910		3,780,860
	3,780,533	3,781,158	3,781,724	3,781,141	3,780,971		3,780,892
	3,780,549	3,781,199	3,781,726	3,781,161	3,780,997		3,780,902
	3,780,550	3,781,210	3,781,753	3,781,191	3,781,116		3,780,904
	3,780,555	3,781,211	3,781,758	3,781,192	3,781,411		3,780,909
	3,780,567	3,781,212	3,781,775	3,781,277	3,781,536		3,780,926
	3,780,574	3,781,240	3,781,812	3,781,287	3,781,655		3,780,934
	3,780,576	3,781,247	3,781,820	3,781,294	3,781,674		3,780,938
	3,780,577	3,781,249	3,781,835	3,781,296	3,781,781		3,780,965
	3,780,585	3,781,252	3,781,854	3,781,321	3,781,786		3,781,011
	3,780,600	3,781,308	3,781,859	3,781,329	3,781,803		3,781,018
	3,780,603	3,781,315	3,781,874	3,781,349	3,781,805		3,781,036
	3,780,604	3,781,322	3,781,882	3,781,361	13 :	Re.27,854		3,781,037
	3,780,618	3,781,326	3,781,883	3,781,385	3,780,454		3,781,058
	3,780,641	3,781,327	3,781,885	3,781,531	3,780,484		3,781,060
	3,780,647	3,781,335	3,781,886	3,781,576	3,780,485		3,781,062
	3,780,662	3,781,351	3,781,895	3,781,601	3,780,678		3,781,066
	3,780,663	3,781,364	3,781,896	3,781,675	3,780,682		3,781,076

3,781,082
3,781,096
3,781,151
3,781,160
3,781,207
3,781,219
3,781,230
3,781,264
3,781,272
3,781,275
3,781,342
3,781,447
3,781,480
3,781,483
3,781,484
3,781,485
3,781,519
3,781,544
3,781,590
3,781,682
3,781,701
3,781,730
3,781,733
3,781,745
3,781,757
3,781,796
3,781,797
3,781,861
3,781,906
18 : 3,780,422
3,780,483
3,780,529
3,780,620
3,780,640
3,780,660
3,780,713
3,780,731
3,780,899
3,780,906
3,780,942
3,781,074
3,781,126
3,781,128
3,781,129
3,781,235
3,781,282
3,781,394
3,781,408
3,781,443
3,781,451
3,781,651
3,781,737
3,781,776
3,781,852
3,781,911
19 : Re 27,855
3,780,380
3,780,411
3,780,505
3,780,790
3,780,828
3,780,839
3,780,955
3,781,056
3,781,319
3,781,673
3,781,764
3,781,912
20 : 3,780,673
3,780,813
3,780,846
3,780,854
3,781,140
3,781,446
21 : 3,780,653
3,780,692
3,780,874
22 : 3,780,687
3,780,843
3,781,201
3,781,339
3,781,512
23 : 3,780,625
3,780,694
3,780,829
24 : Re 27,849
3,780,406
3,780,661
3,780,722
3,780,870
3,780,939
3,780,992
3,781,095
3,781,143
3,781,471
3,781,479
3,781,560
3,781,569
3,781,574
3,781,575
3,781,579
3,781,598
3,781,690
3,781,706
3,781,818
3,781,842

3,781,868
3,781,871
3,781,875
3,781,881
3,781,884
3,781,887
25 : 3,780,392
3,780,430
3,780,431
3,780,480
3,780,524
3,780,648
3,780,767
3,780,775
3,780,811
3,780,918
3,780,928
3,780,931
3,780,949
3,780,976
3,780,979
3,781,042
3,781,070
3,781,127
3,781,132
3,781,383
3,781,384
3,781,578
3,781,583
3,781,587
3,781,592
3,781,593
3,781,599
3,781,621
3,781,637
3,781,642
3,781,647
3,781,667
3,781,693
3,781,714
3,781,719
3,781,746
3,781,780
3,781,814
3,781,839
3,781,850
3,781,889
26 : 3,780,387
3,780,394
3,780,395
3,780,439
3,780,472
3,780,478
3,780,482
3,780,488
3,780,503
3,780,511
3,780,597
3,780,651
3,780,652
3,780,707
3,780,708
3,780,712
3,780,715
3,780,735
3,780,736
3,780,742
3,780,757
3,780,758
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